



## Contract For

Emergent External Work in the East  
Region

Contract Number: IT-2018-1w-247

P.O. Number 209843



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Emergent External Work in the East Region

Contract Number IT-2018-1w-247

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## ARTICLES OF AGREEMENT

These Articles of Agreement are made as of the 7<sup>th</sup> day of January , 2019

BETWEEN:

**METROLINX, 277 Front Street West, Suite 400, Toronto, Ontario, M5V 2X4,**  
a provincial Crown corporation incorporated under the laws of Ontario  
(hereinafter referred to as “Metrolinx”)

- and –

**RUTHERFORD CONTRACTING LTD.**

(hereinafter referred to as the “Vendor”)

### Vendor Contact Information

Mailing Address:	224 EARL STEWART DRIVE, AURORA, ON, L4G 6V7		
General Phone No.:	905-726-4883	General Facsimile No.	905-726-4889
Contact Person, Name and Title:	RYAN SCOTT, VICE PRESIDENT SITE DIVISION		
Contact Person Email Address:	RSCOTT@RUTHCON.CA	Phone No.	416-717-4169

In consideration of the mutual covenants and agreements contained herein, and other good and valuable consideration, the receipt and sufficiency of which are mutually acknowledged, Metrolinx and the Vendor agree as follows:



## **1.0 Contract**

- 1.1 The following documents and any amendments relating thereto form the contract between Metrolinx and the Vendor (the “Contract”):
- (a) these Articles of Agreement;
  - (b) Addenda
  - (c) the document attached hereto and entitled “General Conditions of the Contract”;
  - (d) the document attached hereto and entitled “Scope of Work”;
  - (e) the documents attached hereto and entitled “Specifications”
  - (f) the document attached hereto and entitled “Attachments”
  - (g) the documents attached hereto and entitled “Drawings”
- 1.2 In the event of discrepancies, inconsistencies or ambiguities of the wording of these documents, the wording of the document that first appears on the above list shall prevail over the wording of a document subsequently appearing on the list.
- 1.3 The Vendor has informed itself of the conditions relating to the Work to be performed and is thoroughly familiar with all information and documentation contained in the Contract Document.
- 1.4 The Vendor declares that no Conflict of Interest exists in accordance with the General Conditions of the Contract.
- 1.5 The Vendor agrees to be bound to each and every term, condition, article, covenant and obligation of the Contract.

## **2.0 Requirement**

- 2.1 The Bidder shall provide all labour, superintendence, plant, tools, appliances, equipment, supplies and other accessories, services and facilities necessary for Emergent External Works in the East Region, as further described in this Tender Document.
- 2.2 The Work is to be performed to the satisfaction of Manager of Operations, unless otherwise specified.

## **3.0 Assignments**

- 3.1 Work shall be assigned and quoted by the Vendor in accordance with General Conditions of the Contract.



#### **4.0 Harmonized Sales Tax**

- 4.1 The Vendor is bound by the General Conditions of the Contract as it relates to Harmonized Sales Tax.

#### **5.0 Options**

##### **5.1 Option Years**

- (a) Option Year is defined as a specified timeframe, in accordance with Section 8.0 below, in which the Work shall be carried out in accordance with the Contract requirements at the fixed all-inclusive prices stated in Section 4.0 herein solely if Metrolinx exercises its option to proceed with an Option Year in accordance with Sections 6.3 and 6.4 below.
- (b) It is understood that Option Year Two, and Option Year Three are options exercisable at the sole discretion of Metrolinx. In the event Metrolinx does not exercise its option, the Contract shall be considered complete upon expiration of the current year.
- (c) Each Option Year shall be automatically exercised unless Metrolinx informs the Vendor with sixty (60) days written notice prior to the end of the current year that Metrolinx will not be exercising such Option Year.

#### **6.0 Project Schedule**

- 6.1 The Work shall be carried out from the date of these Articles of Agreement and in accordance with the dates noted in the Project Schedule for the Work as follows:
- 6.2 Year One: upon execution of the Contract and continuing until March 31, 2019
- 6.3 Year Two: commencing April 1, 2019 to March 31, 2020  
(Option Year Two to be exercised at the sole discretion of Metrolinx)
- 6.4 Year Three: commencing April 1, 2020 to March 31, 2021  
(Option Year Three to be exercised at the sole discretion of Metrolinx)

#### **7.0 Limitation of Expenditures**

- 7.1 It is understood that Section 2.0, Limitation of Expenditure, of Schedule B – Financial Terms of General Conditions of the Contract applies.
- 7.2 No individual Assignment shall have a value greater than two hundred and fifty thousand dollars (\$250,000.00).



## ARTICLES OF AGREEMENT

- 7.3 The Vendor shall not perform any Work under this Contract which would result in an increase to the Total Contract Price, unless an increase is so authorized by Metrolinx and effected by a written amendment to the Contract.

### **8.0 Contract Price**

- 8.1 Payment for services rendered and goods supplied in accordance with the terms and conditions of the Contract shall be based on the requirements of the "Tender Document Form: Form of Tender" in addition to the following:
- (a) The Rates shall include all applicable taxes, except Harmonized Sales Tax (H.S.T.).
  - (b) The Rates quoted shall be fixed all-inclusive prices, quoted in Canadian funds, for performance of the Work.
  - (c) The Rates include all labour, superintendence, plant, tools, appliances, equipment, supplies and other accessories, services and facilities customs, duties, royalties, handling, transportation, travel, mileage, overhead, profit and all other charges.



## CONTRACT PRICES

Item No.	Spec	Detailed Description	Unit	Contract Unit Price
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**YEAR ONE: SEPTEMBER 01, 2018 TO MARCH 31, 2019**

### PART A – GENERAL REQUIREMENTS

1.	01200	Supply, install, and maintain 2.4m high metallic construction fence, when requested by the Owner. Remove upon completion	m per week	\$ 6.30
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### PART B – REMOVALS

1.	02070	Saw cut existing asphalt	m	\$ 9.42
2.	02070	Horizontal saw cutting and removing and disposing of existing curb (OPSD. 600.110 & OPSD. 310.030)	m	\$ 137.39
3.	02070	Remove existing asphalt and dispose offsite (full depth)	m <sup>2</sup>	\$ 6.91
4.	02070 02701	Mill existing asphalt in small areas.	m <sup>2</sup>	\$ 37.94
5.	02070	Remove platform concrete curb of all types.	m	\$ 20.70
6.	02070	Remove concrete barrier curb	m	\$ 20.70
7.	02070	Remove existing parking curbs and dispose offsite.	ea	\$ 15.68
8.	02070 02223	Remove concrete sidewalk and granular base and dispose offsite	m <sup>2</sup>	\$ 17.25
9.	02070 02223	Remove concrete pad and granular base and dispose offsite	m <sup>2</sup>	\$ 17.25
10.	02070	Remove concrete pavers including sub excavation and dispose offsite	m <sup>2</sup>	\$ 24.15
11.	02070	Remove chain link fence including posts, footings, and disposal offsite	m	\$ 6.91
12.	02070	Remove sign post and signs and dispose offsite.	ea	\$ 20.70
13.	02070	Remove existing bollards including base and full restoration	ea	\$ 171.74
14.	02070	Remove pavement marking including vacuuming and offsite disposal	m	\$ 3.46
15.	03730	Concrete grinding to eliminate raised trip hazards in sidewalks and walkways (up to 25mm depth) including vacuuming and offsite disposal	m	\$ 53.50

### PART C – SURFACE WORKS

1.	02223 02210	Strip topsoil and dispose unsuitable/excess material offsite	m <sup>3</sup>	\$ 20.70
2.	02223	Earth excavation - export material offsite	m <sup>3</sup>	\$ 24.15
3.	02911 02920 02900	Supply and place 150mm depth topsoil and sod	m <sup>2</sup>	\$ 7.16
4.	02911 02920	Supply and place 150mm depth natural mulch	m <sup>2</sup>	\$ 24.81



5.	02920	Supply and plant min. 125mm dia. Caliper Coniferous tree, c/w arbour ties, min. 1m height.	ea	\$ 321.00
6.	02920	Supply and plant 3 gal. evergreen shrub	ea	\$ 85.60
7.	02920	Supply and install heavy duty, puncture resistant landscaping fabric	m <sup>2</sup>	\$ 5.35
8.	02920	Supply and install decorative Armorstone; scale code: Q ARM14/16	ea	\$ 214.27
9.	02920	Supply and install concrete platform curbs (Assume Unilock Durahold II curb, new work, to be installed per manufacturer recommendations)	m	\$ 321.00
10.	02920	Supply and install heavy duty permeable unilock pavers with edging (up to 4"x12")	m <sup>2</sup>	\$ 214.00
11.	09200	Supply and install tactile detectable warning tile (cast-in-place or surface applied), including all s/s weather resistant hardware.	m <sup>2</sup>	\$ 214.00
12.	05500 10210	Supply and install 6" interior bollard	ea	\$ 535.00
13.	05500 10210	Supply and install 8" bollards, including excavation and concrete base.	ea	\$ 572.45
14.	05500 10210	Supply and install removable 8" s/s bollard with embedded receiver, chain and pad lock.	ea	\$ 572.45
15.	02223	Supply and place non-shrink fill	m <sup>3</sup>	\$ 139.10
16.	02223	Supply, place, and compact 19mm crusher run limestone	m <sup>3</sup>	\$ 84.87
17.	02223	Supply, place, and compact 50mm crusher run limestone	m <sup>3</sup>	\$ 84.87
18.	02223	Supply, place, and compact Granular 'A' to required depth	m <sup>3</sup>	\$ 80.25
19.	02223	Supply, place, and compact Granular 'B' to required depth	m <sup>3</sup>	\$ 74.90
20.	02513	Install 200mm wide lap joint where new pavement meets existing asphalt and groove seal new asphalt with existing using hot pour rubberized compound	m	\$ 33.07
21.	02540	Supply and place 19mm clear stone	m <sup>3</sup>	\$ 99.19
22.	02540	Supply and place 300mm depth rip-rap	m <sup>3</sup>	\$ 104.70
23.	02223 02630 02700 02540	Supply and install High-density Polyethylene (HDPE) culvert up to 300mm dia. Include excavation to minimum 0.30m cover, granular bedding and backfill.	m	\$ 160.50
24.	02223 02540 16010	Adjust, raise or lower existing electrical and communicational hand wells, up to 460mm dia.	ea	\$ 771.47
25.	02223 02540 16010 16100	Supply and install new electrical and communicational handwell (up to 460mm dia.) including excavation, bedding and backfill.	ea	\$ 1,926.00
26.	02223 02540 16010 16100	Adjust, raise or lower existing electrical and communicational hand wells 600x600 mm	ea	\$ 771.47
27.	02223 02540 16010 16100	Supply and install new electrical and communicational handwell (600x 600 mm ) including excavation, bedding and backfill.	ea	\$ 2,300.50
28.	16010 16100	Supply and install solar LED luminaire type MFS Aron Grande or approved equal	ea	\$ 12,305.00
29.	16010 16100	Supply and construct concrete base for light poles (6m)	ea	\$ 2,675.00



30.	16010 16100	Supply and construct concrete base for light poles (12m)	ea	\$ 3,210.00
31.	16107 16133	Supply and install 2 x 53mm PVC conduit c/w all bends, elbows, couplings, bell ends, wood planks, warning tape, junctions, and fish line	m	\$ 64.20
32.	02223 02540	Supply and install conduit trench complete with backfill and compaction to 95% S.P.D. Restore disrupted surfaces to original or better condition where applicable. Dispose excess material offsite.	m	\$ 27.56
33.	03300	Install display board supplied by GO, frame and concrete base	ea	\$ 5,350.00
34.	02631 02700	Supply and install new catch basin frame and cover	ea	\$ 2,407.50
35.	02513 02701	Supply, place, and compact HL3 asphalt to required depth	m <sup>3</sup>	\$ 358.62
36.	02513	Supply, place, and compact HL3A asphalt to required depth	m <sup>3</sup>	\$ 369.32
37.	02513 02701	Supply, place, and compact HL8 asphalt to required depth	m <sup>3</sup>	\$ 347.92
38.	02513	Repair asphalt crack by route and seal method. Include sweeping and cleanup upon completion.	m.	\$ 3.15
39.	02513	Supply and install hot asphalt patch including compaction	t	\$ 267.50
40.	02513	Supply and install cold asphalt patch including compaction	t	\$ 267.50
41.	02920	Leveling of Interlocking Pavement stone	m <sup>2</sup>	\$ 110.21
42.	03100 03300	Supply and install 150mm deep concrete sidewalk including required excavation, granular base, and formwork	m <sup>2</sup>	\$ 107.00
43.	03300	Supply and install concrete barrier curbs (OPSD. 600.110) including required excavation, granular base, and formwork	m	\$ 80.25
44.	3300.	Supply and install concrete curbs & gutter (OPSD. 600.040) including required excavation, granular base, and formwork	m	\$ 133.75
45.	03100 03300	Supply and install 250mm thick concrete pad with 14 gauge 6x6 wire mesh including required excavation, granular base, and formwork	m <sup>2</sup>	\$ 133.75
46.	02223 02720 02630 02540	Supply and install 150mm sub-drain perforated with non-woven filter fabric including granular cover	m	\$ 19.18
47.	02825	Supply and install galvanized chain link fence up to 2.1m height including posts and footings	m	\$ 165.85
48.	02825	Supply and install pressure treated wooden fence up to 2.1m height including concrete footings	m	\$ 588.50
49.	02825	Chain link fence swing gate up to 2.1m height including posts and footings	m	\$ 374.50
50.	02825	Chain link fence sliding gate up to 2.1m height including posts and footings	m	\$ 963.00
51.	02580	Line Painting – 150 mm	m	\$ 2.07
52.	02580	Line painting symbols and text (arrows, accessible parking, etc)	ea	\$ 34.47
53.	02870 10440	New sign posts and signs including coring and plastic sleeve	ea	\$ 214.00
54.	02513	Install speed bump (up to 400mm wide & 80 mm high) including cutting, removal of existing pavement for tie in, yellow painting, and signage.	m	\$ 110.21
55.	OPSD 603.020	Supply and install 2.4m wide parking curb (OPSD. 603.020)	ea	\$ 94.00
56.	04100	Supply and install precast retaining wall up to 0.6m height	m <sup>2</sup>	\$ 428.00



57.	04100	Supply and install precast retaining wall up to 1m height, including safety rail	m <sup>2</sup>	\$ 508.25
58.	04100	Supply and install engineered retaining wall up to 2m height, including safety rail.	m <sup>2</sup>	\$ 615.25
59.	01710	Cleaning of single catch basin by Vac truck	ea	\$ 428.00
60.	01710	Cleaning of double catch basin by Vac truck	ea	\$ 535.00
<b>PART D – ADDITIONAL WORK</b>				
1.		Labour – Skilled including all overhead	h	\$ 119.84
2.		Labour – Semi-skilled including all overhead	h	\$ 90.95
3.		Journeyman electrician	h	\$ 101.65
4.		Mark up on material to cover profit and overhead	%	10%
5.		After hours and weekend works hourly rate for all categories above normal rate	%	50%
6.		Statutory Holiday works hourly rate for all categories above normal rate	%	50%
7.		Extra for after hours, weekend or holiday works over normal hours work	%	50%
8.		Equipment supplied in accordance with rates set out in the current OPSS 127 (schedule of rental rate of construction equipment) for any work not listed above at a discount of	%	0%
<b>YEAR TWO: APRIL 01, 2019 TO MARCH 31, 2020</b>				
<b>PART A – GENERAL REQUIREMENTS</b>				
1.	01200	Supply, install, and maintain 2.4m high metallic construction fence, when requested by the Owner. Remove upon completion	m per week	\$ 6.49
<b>PART B – REMOVALS</b>				
1.	02070	Saw cut existing asphalt	m	\$ 9.70
2.	02070	Horizontal saw cutting and removing and disposing of existing curb (OPSD. 600.110 & OPSD. 310.030)	m	\$ 141.51
3.	02070	Remove existing asphalt and dispose offsite (full depth)	m <sup>2</sup>	\$ 7.11
4.	02070 02701	Mill existing asphalt in small areas.	m <sup>2</sup>	\$ 39.07
5.	02070	Remove platform concrete curb of all types.	m	\$ 21.32
6.	02070	Remove concrete barrier curb	m	\$ 21.32
7.	02070	Remove existing parking curbs and dispose offsite.	ea	\$ 16.15
8.	02070 02223	Remove concrete sidewalk and granular base and dispose offsite	m <sup>2</sup>	\$ 17.77
9.	02070 02223	Remove concrete pad and granular base and dispose offsite	m <sup>2</sup>	\$ 17.77
10.	02070	Remove concrete pavers including sub excavation and dispose offsite	m <sup>2</sup>	\$ 24.88
11.	02070	Remove chain link fence including posts, footings, and disposal offsite	m	\$ 7.11
12.	02070	Remove sign post and signs and dispose offsite.	ea	\$ 21.32
13.	02070	Remove existing bollards including base and full restoration	ea	\$ 176.89



14.	02070	Remove pavement marking including vacuuming and offsite disposal	m	\$ 3.56
15.	03730	Concrete grinding to eliminate raised trip hazards in sidewalks and walkways (up to 25mm depth) including vacuuming and offsite disposal	m	\$ 55.11
<b>PART C – SURFACE WORKS</b>				
1.	02223 02210	Strip topsoil and dispose unsuitable/excess material offsite	m <sup>3</sup>	\$ 21.32
2.	02223	Earth excavation - export material offsite	m <sup>3</sup>	\$ 24.88
3.	02911 02920 02900	Supply and place 150mm depth topsoil and sod	m <sup>2</sup>	\$ 7.38
4.	02911 02920	Supply and place 150mm depth natural mulch	m <sup>2</sup>	\$ 25.55
5.	02920	Supply and plant min. 125mm dia. Caliper Coniferous tree, c/w arbour ties, min. 1m height.	ea	\$ 330.63
6.	02920	Supply and plant 3 gal. evergreen shrub	ea	\$ 88.17
7.	02920	Supply and install heavy duty, puncture resistant landscaping fabric	m <sup>2</sup>	\$ 5.52
8.	02920	Supply and install decorative Armorstone; scale code: Q ARM14/16	ea	\$ 220.70
9.	02920	Supply and install concrete platform curbs (Assume Unilock Durahold II curb, new work, to be installed per manufacturer recommendations)	m	\$ 330.63
10.	02920	Supply and install heavy duty permeable unilock pavers with edging (up to 4"x12")	m <sup>2</sup>	\$ 220.42
11.	09200	Supply and install tactile detectable warning tile (cast-in-place or surface applied), including all s/s weather resistant hardware.	m <sup>2</sup>	\$ 220.42
12.	05500 10210	Supply and install 6" interior bollard	ea	\$ 551.02
13.	05500 10210	Supply and install 8" bollards, including excavation and concrete base.	ea	\$ 589.63
14.	05500 10210	Supply and install removable 8" s/s bollard with embedded receiver, chain and pad lock.	ea	\$ 589.63
15.	02223	Supply and place non-shrink fill	m <sup>3</sup>	\$ 143.28
16.	02223	Supply, place, and compact 19mm crusher run limestone	m <sup>3</sup>	\$ 87.41
17.	02223	Supply, place, and compact 50mm crusher run limestone	m <sup>3</sup>	\$ 87.41
18.	02223	Supply, place, and compact Granular 'A' to required depth	m <sup>3</sup>	\$ 82.66
19.	02223	Supply, place, and compact Granular 'B' to required depth	m <sup>3</sup>	\$ 77.15
20.	02513	Install 200mm wide lap joint where new pavement meets existing asphalt and groove seal new asphalt with existing using hot pour rubberized compound	m	\$ 34.06
21.	02540	Supply and place 19mm clear stone	m <sup>3</sup>	\$ 102.17
22.	02540	Supply and place 300mm depth rip-rap	m <sup>3</sup>	\$ 107.85
23.	02223 02630 02700 02540	Supply and install High-density Polyethylene (HDPE) culvert up to 300mm dia. Include excavation to minimum 0.30m cover, granular bedding and backfill.	m	\$ 165.32
24.	02223 02540 16010	Adjust, raise or lower existing electrical and communicational hand wells, up to 460mm dia.	ea	\$ 794.62



25.	02223 02540 16010 16100	Supply and install new electrical and communcal handwell (up to 460mm dia.) including excavation, bedding and backfill.	ea	\$ 1,983.78
26.	02223 02540 16010 16100	Adjust, raise or lower existing electrical and communicational hand wells 600x600 mm	ea	\$ 794.62
27.	02223 02540 16010 16100	Supply and install new electrical and communcal handwell (600x 600 mm ) including excavation, bedding and backfill.	ea	\$ 2,369.52
28.	16010 16100	Supply and install solar LED luminaire type MFS Aron Grande or approved equal	ea	\$ 12,674.15
29.	16010 16100	Supply and construct concrete base for light poles (6m)	ea	\$ 2,755.25
30.	16010 16100	Supply and construct concrete base for light poles (12m)	ea	\$ 3,306.30
31.	16107 16133	Supply and install 2 x 53mm PVC conduit c/w all bends, elbows, couplings, bell ends, wood planks, warning tape, junctions, and fish line	m	\$ 66.13
32.	02223 02540	Supply and install conduit trench complete with backfill and compaction to 95% S.P.D. Restore disrupted surfaces to original or better condition where applicable. Dispose excess material offsite.	m	\$ 28.38
33.	03300	Install display board supplied by GO, frame and concrete base	ea	\$ 5,510.50
34.	02631 02700	Supply and install new catch basin frame and cover	ea	\$ 2,479.73
35.	02513 02701	Supply, place, and compact HL3 asphalt to required depth	m <sup>3</sup>	\$ 369.37
36.	02513	Supply, place, and compact HL3A asphalt to required depth	m <sup>3</sup>	\$ 380.39
37.	02513 02701	Supply, place, and compact HL8 asphalt to required depth	m <sup>3</sup>	\$ 358.35
38.	02513	Repair asphalt crack by route and seal method. Include sweeping and cleanup upon completion.	m.	\$ 3.25
39.	02513	Supply and install hot asphalt patch including compaction	t	\$ 275.53
40.	02513	Supply and install cold asphalt patch including compaction	t	\$ 275.53
41.	02920	Leveling of Interlocking Pavement stone	m <sup>2</sup>	\$ 113.52
42.	03100 03300	Supply and install 150mm deep concrete sidewalk including required excavation, granular base, and formwork	m <sup>2</sup>	\$ 110.21
43.	03300	Supply and install concrete barrier curbs (OPSD. 600.110) including required excavation, granular base, and formwork	m	\$ 82.66
44.	3300.	Supply and install concrete curbs & gutter (OPSD. 600.040) including required excavation, granular base, and formwork	m	\$ 137.77
45.	03100 03300	Supply and install 250mm thick concrete pad with 14 gauge 6x6 wire mesh including required excavation, granular base, and formwork	m <sup>2</sup>	\$ 137.77
46.	02223 02720 02630 02540	Supply and install 150mm sub-drain perforated with non-woven filter fabric including granular cover	m	\$ 19.75
47.	02825	Supply and install galvanized chain link fence up to 2.1m height including posts and footings	m	\$ 170.83
48.	02825	Supply and install pressure treated wooden fence up to 2.1m height including concrete footings	m	\$ 606.16
49.	02825	Chain link fence swing gate up to 2.1m height including posts and footings	m	\$ 385.74
50.	02825	Chain link fence sliding gate up to 2.1m height including posts and footings	m	\$ 991.89



51.	02580	Line Painting – 150 mm	m	\$ 2.13
52.	02580	Line painting symbols and text (arrows, accessible parking, etc)	ea	\$ 35.50
53.	02870 10440	New sign posts and signs including coring and plastic sleeve	ea	\$ 220.42
54.	02513	Install speed bump (up to 400mm wide & 80 mm high) including cutting, removal of existing pavement for tie in, yellow painting, and signage.	m	\$ 113.52
55.	OPSD 603.020	Supply and install 2.4m wide parking curb (OPSD. 603.020)	ea	\$ 96.82
56.	04100	Supply and install precast retaining wall up to 0.6m height	m <sup>2</sup>	\$ 440.84
57.	04100	Supply and install precast retaining wall up to 1m height, including safety rail	m <sup>2</sup>	\$ 523.50
58.	04100	Supply and install engineered retaining wall up to 2m height, including safety rail.	m <sup>2</sup>	\$ 633.71
59.	01710	Cleaning of single catch basin by Vac truck	ea	\$ 440.84
60.	01710	Cleaning of double catch basin by Vac truck	ea	\$ 551.05

#### PART D – ADDITIONAL WORK

1.		Labour – Skilled including all overhead	h	\$ 123.44
2.		Labour – Semi-skilled including all overhead	h	\$ 93.68
3.		Journeyman electrician	h	\$ 104.70
4.		Mark up on material to cover profit and overhead	%	13%
5.		After hours and weekend works hourly rate for all categories above normal rate	%	55%
6.		Statutory Holiday works hourly rate for all categories above normal rate	%	55%
7.		Extra for after hours, weekend or holiday works over normal hours work	%	55%
8.		Equipment supplied in accordance with rates set out in the current OPSS 127 (schedule of rental rate of construction equipment) for any work not listed above at a discount of	%	0%

#### YEAR THREE: APRIL 01, 2020 TO MARCH 31, 2021

#### PART A – GENERAL REQUIREMENTS

1.	01200	Supply, install, and maintain 2.4m high metallic construction fence, when requested by the Owner. Remove upon completion	m per week	\$ 6.68
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#### PART B – REMOVALS

1.	02070	Saw cut existing asphalt	m	\$ 9.99
2.	02070	Horizontal saw cutting and removing and disposing of existing curb (OPSD. 600.110 & OPSD. 310.030)	m	\$ 145.76
3.	02070	Remove existing asphalt and dispose offsite (full depth)	m <sup>2</sup>	\$ 7.33
4.	02070 02701	Mill existing asphalt in small areas.	m <sup>2</sup>	\$ 40.25
5.	02070	Remove platform concrete curb of all types.	m	\$ 21.96
6.	02070	Remove concrete barrier curb	m	\$ 21.96
7.	02070	Remove existing parking curbs and dispose offsite.	ea	\$ 16.64



8.	02070 02223	Remove concrete sidewalk and granular base and dispose offsite	m <sup>2</sup>	\$ 18.30
9.	02070 02223	Remove concrete pad and granular base and dispose offsite	m <sup>2</sup>	\$ 18.30
10.	02070	Remove concrete pavers including sub excavation and dispose offsite	m <sup>2</sup>	\$ 25.63
11.	02070	Remove chain link fence including posts, footings, and disposal offsite	m	\$ 7.33
12.	02070	Remove sign post and signs and dispose offsite.	ea	\$ 21.96
13.	02070	Remove existing bollards including base and full restoration	ea	\$ 182.20
14.	02070	Remove pavement marking including vacuuming and offsite disposal	m	\$ 3.67
15.	03730	Concrete grinding to eliminate raised trip hazards in sidewalks and walkways (up to 25mm depth) including vacuuming and offsite disposal	m	\$ 56.76
<b>PART C – SURFACE WORKS</b>				
1.	02223 02210	Strip topsoil and dispose unsuitable/excess material offsite	m <sup>3</sup>	\$ 21.96
2.	02223	Earth excavation - export material offsite	m <sup>3</sup>	\$ 25.63
3.	02911 02920 02900	Supply and place 150mm depth topsoil and sod	m <sup>2</sup>	\$ 7.60
4.	02911 02920	Supply and place 150mm depth natural mulch	m <sup>2</sup>	\$ 26.32
5.	02920	Supply and plant min. 125mm dia. Caliper Coniferous tree, c/w arbour ties, min. 1m height.	ea	\$ 340.55
6.	02920	Supply and plant 3 gal. evergreen shrub	ea	\$ 90.82
7.	02920	Supply and install heavy duty, puncture resistant landscaping fabric	m <sup>2</sup>	\$ 5.68
8.	02920	Supply and install decorative Armorstone; scale code: Q ARM14/16	ea	\$ 227.32
9.	02920	Supply and install concrete platform curbs (Assume Unilock Durahold II curb, new work, to be installed per manufacturer recommendations)	m	\$ 340.55
10.	02920	Supply and install heavy duty permeable unilock pavers with edging (up to 4"x12")	m <sup>2</sup>	\$ 227.04
11.	09200	Supply and install tactile detectable warning tile (cast-in-place or surface applied), including all s/s weather resistant hardware.	m <sup>2</sup>	\$ 227.04
12.	05500 10210	Supply and install 6" interior bollard	ea	\$ 567.59
13.	05500 10210	Supply and install 8" bollards, including excavation and concrete base.	ea	\$ 607.32
14.	05500 10210	Supply and install removable 8" s/s bollard with embedded receiver, chain and pad lock.	ea	\$ 607.32
15.	02223	Supply and place non-shrink fill	m <sup>3</sup>	\$ 147.58
16.	02223	Supply, place, and compact 19mm crusher run limestone	m <sup>3</sup>	\$ 90.03
17.	02223	Supply, place, and compact 50mm crusher run limestone	m <sup>3</sup>	\$ 90.03
18.	02223	Supply, place, and compact Granular 'A' to required depth	m <sup>3</sup>	\$ 85.14
19.	02223	Supply, place, and compact Granular 'B' to required depth	m <sup>3</sup>	\$ 79.47



20.	02513	Install 200mm wide lap joint where new pavement meets existing asphalt and groove seal new asphalt with existing using hot pour rubberized compound	m	\$ 35.08
21.	02540	Supply and place 19mm clear stone	m <sup>3</sup>	\$ 105.23
22.	02540	Supply and place 300mm depth rip-rap	m <sup>3</sup>	\$ 111.08
23.	02223 02630 02700 02540	Supply and install High-density Polyethylene (HDPE) culvert up to 300mm dia. Include excavation to minimum 0.30m cover, granular bedding and backfill.	m	\$ 170.28
24.	02223 02540 16010	Adjust, raise or lower existing electrical and communicational hand wells, up to 460mm dia.	ea	\$ 818.46
25.	02223 02540 16010 16100	Supply and install new electrical and communicational handwell (up to 460mm dia.) including excavation, bedding and backfill.	ea	\$ 2,043.30
26.	02223 02540 16010 16100	Adjust, raise or lower existing electrical and communicational hand wells 600x600 mm	ea	\$ 818.46
27.	02223 02540 16010 16100	Supply and install new electrical and communicational handwell (600x 600 mm ) including excavation, bedding and backfill.	ea	\$ 2,440.61
28.	16010 16100	Supply and install solar LED luminaire type MFS Aron Grande or approved equal	ea	\$ 13,054.38
29.	16010 16100	Supply and construct concrete base for light poles (6m)	ea	\$ 2,837.91
30.	16010 16100	Supply and construct concrete base for light poles (12m)	ea	\$ 3,405.49
31.	16107 16133	Supply and install 2 x 53mm PVC conduit c/w all bends, elbows, couplings, bell ends, wood planks, warning tape, junctions, and fish line	m	\$ 68.11
32.	02223 02540	Supply and install conduit trench complete with backfill and compaction to 95% S.P.D. Restore disrupted surfaces to original or better condition where applicable. Dispose excess material offsite.	m	\$ 29.24
33.	03300	Install display board supplied by GO, frame and concrete base	ea	\$ 5,675.82
34.	02631 02700	Supply and install new catch basin frame and cover	ea	\$ 2,554.12
35.	02513 02701	Supply, place, and compact HL3 asphalt to required depth	m <sup>3</sup>	\$ 380.45
36.	02513	Supply, place, and compact HL3A asphalt to required depth	m <sup>3</sup>	\$ 391.81
37.	02513 02701	Supply, place, and compact HL8 asphalt to required depth	m <sup>3</sup>	\$ 369.10
38.	02513	Repair asphalt crack by route and seal method. Include sweeping and cleanup upon completion.	m.	\$ 3.34
39.	02513	Supply and install hot asphalt patch including compaction	t	\$ 283.80
40.	02513	Supply and install cold asphalt patch including compaction	t	\$ 283.80
41.	02920	Leveling of Interlocking Pavement stone	m <sup>2</sup>	\$ 116.93
42.	03100 03300	Supply and install 150mm deep concrete sidewalk including required excavation, granular base, and formwork	m <sup>2</sup>	\$ 113.52
43.	03300	Supply and install concrete barrier curbs (OPSD. 600.110) including required excavation, granular base, and formwork	m	\$ 85.14
44.	3300.	Supply and install concrete curbs & gutter (OPSD. 600.040) including required excavation, granular base, and formwork	m	\$ 141.90
45.	03100 03300	Supply and install 250mm thick concrete pad with 14 gauge 6x6 wire mesh including required excavation, granular base, and formwork	m <sup>2</sup>	\$ 141.90



46.	02223 02720 02630 02540	Supply and install 150mm sub-drain perforated with non-woven filter fabric including granular cover	m	\$ 20.35
47.	02825	Supply and install galvanized chain link fence up to 2.1m height including posts and footings	m	\$ 175.96
48.	02825	Supply and install pressure treated wooden fence up to 2.1m height including concrete footings	m	\$ 624.34
49.	02825	Chain link fence swing gate up to 2.1m height including posts and footings	m	\$ 397.31
50.	02825	Chain link fence sliding gate up to 2.1m height including posts and footings	m	\$ 1,021.65
51.	02580	Line Painting – 150 mm	m	\$ 2.20
52.	02580	Line painting symbols and text (arrows, accessible parking, etc)	ea	\$ 36.57
53.	02870 10440	New sign posts and signs including coring and plastic sleeve	ea	\$ 227.04
54.	02513	Install speed bump (up to 400mm wide & 80 mm high) including cutting, removal of existing pavement for tie in, yellow painting, and signage.	m	\$ 116.93
55.	OPSD 603.020	Supply and install 2.4m wide parking curb (OPSD. 603.020)	ea	\$ 99.73
56.	04100	Supply and install precast retaining wall up to 0.6m height	m <sup>2</sup>	\$ 454.07
57.	04100	Supply and install precast retaining wall up to 1m height, including safety rail	m <sup>2</sup>	\$ 539.21
58.	04100	Supply and install engineered retaining wall up to 2m height, including safety rail.	m <sup>2</sup>	\$ 652.72
59.	02070	Cleaning of single catch basin by Vac truck	ea	\$ 454.07
60.	02070	Cleaning of double catch basin by Vac truck	ea	\$ 567.59
<b>PART D – ADDITIONAL WORK</b>				
1.		Labour – Skilled including all overhead	h	\$ 127.14
2.		Labour – Semi-skilled including all overhead	h	\$ 96.49
3.		Journeyman electrician	h	\$ 107.85
4.		Mark up on material to cover profit and overhead	%	15%
5.		After hours and weekend works hourly rate for all categories above normal rate	%	60%
6.		Statutory Holiday works hourly rate for all categories above normal rate	%	60%
7.		Extra for after hours, weekend or holiday works over normal hours work	%	60%
8.		Equipment supplied in accordance with rates set out in the current OPSS 127 (schedule of rental rate of construction equipment) for any work not listed above at a discount of	%	0%



## ARTICLES OF AGREEMENT

### 9.0 Total Contract Price

9.1 The Total Contract Price shall be established as follows:

- |  |                |
|--|----------------|
| (a) Total Upset Limit                        | \$1,350,000.00 |
| (b) 13% Harmonized Sales Tax (H.S.T.) amount | \$175,500.00   |

9.2 Contractors H.S.T. Number: R124580911

### RUTHERFORD CONTRACTING LTD.

Per: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

**RYAN SCOTT  
VICE PRESIDENT**

Per: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

I/We have authority to bind the Corporation

### METROLINX

Per: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Mike Newman

Manager

Procurement - Operations

Per: \_\_\_\_\_



## ARTICLES OF AGREEMENT

---

Name:

Title:

I/We have authority to bind the Corporation

IN WITNESS WHEREOF, the above signed have executed this agreement, this       day  
of       , 20       .



**Date:** August 10, 2018

**Tender No.** IT-2018-1w-247

Emergent External Work in the East Region

---

The following amendments/clarifications hereby form part of this Addendum, which in turn form part of the Tender Document. The contents of this Addendum shall be accounted for in the Submission, including any prices bid for the Work.

No consideration will be given for extras and/or changes due to the Bidder not being familiar with the contents of this Addendum.

By way of submitting a Submission, the Bidder acknowledges receipt of this Addendum. All other terms and conditions remain the same.

**1.0 SPECIFICATIONS**

- 1.1 Specification 02870 Signpost Installation - has been revised. Please see revised 02870 Specification as an attachment to this Addendum No. 2

**2.0 CLARIFICATIONS**

- 2.1 Refer to the attached file entitled “Addendum No. 2 Clarifications – IT-2018-1w-247.pdf”, for responses to Bidder enquiries.

Sincerely,



Susy Avila  
Procurement Officer  
Procurement Services, Metrolinx  
Direct Dial: 416-202-7054  
Email: Susy.Avila@metrolinx.com



REFERENCE NO.	IT-2018-1w-247
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Q #	Reference Document Section (i.e. Instructions, Form of Tender, Drawing No., etc.)	Page # of Section (i.e. Page 1 of 5)	Insert Section # (i.e. Section 1.1.1(a))	Question	Response
1	Specifications 02870	Page 1 of 1	2. (iii)	This Spec refers to drawing C-104 for the yellow sleeve requirement for Metrolinx signs. Please provide this drawing. This Spec relates to Item C53.	Please refer to revised Specification 02870
2					
3					
4					
5					
6					
7					
8					
9					
10					



**Date:** August 1, 2018

**Tender No.** IT-2018-1w-247

Emergent External Work in the East Region

---

The following amendments/clarifications hereby form part of this Addendum, which in turn form part of the Tender Document. The contents of this Addendum shall be accounted for in the Submission, including any prices bid for the Work.

No consideration will be given for extras and/or changes due to the Bidder not being familiar with the contents of this Addendum.

By way of submitting a Submission, the Bidder acknowledges receipt of this Addendum. All other terms and conditions remain the same.

## **1.0 TENDER DOCUMENT REVISIONS**

- 1.1 The Tender Document has been revised and sections affected are noted below. The revised Tender Document is attached in the file entitled “Revised Tender Document IT-2018-1w-247” which supersedes all previous Tender Document versions.

Changes are highlighted in yellow and are as follows:

<b>Section Affected:</b>	<b>Revisions</b>
List of Contents	<ul style="list-style-type: none"><li>➤ To remove Metrolinx Safety Guidelines for Contractors, Consultants, Project Coordinators from the Attachments Section.</li><li>➤ To add <b>Construction Safety Management Program</b> to the Attachments Section.</li></ul>

Sincerely,



Susy Avila  
Procurement Officer  
Procurement Services, Metrolinx  
Direct Dial: 416-202-7054  
Email: Susy.Avila@metrolinx.com



**TENDER DOCUMENT FORM  
FORM OF TENDER**

Emergent External Work in the East Region

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**1.0 Contact Information**

The Bidder submitting a Submission is as follows:

- 1.1 Bidder's registered legal business name (or individual) and any other name under which it carries on business:

Rutherford Contracting Ltd.

- (a) If a Joint Venture, enter the registered legal business name of the Participant-in-Charge:

Click here to enter text.

- (b) If a Joint Venture, enter the registered legal business name of the other Joint Venture members:

Click here to enter text.

- 1.2 The Bidder's address, telephone and facsimile numbers (if Joint Venture, insert Participant-in-Charge information):

224 Earl Stewart Drive, Aurora, ON, L4G 6V7, 905 726 4883, 905 726 4889

- 1.3 Name, title, address, telephone, e-mail and facsimile numbers of the contact person(s) for the Bidder (if a Joint Venture, insert Participant-in-Charge information)

Ryan Scott, VP Site Division, 224 Earl Stewart Drive, 9057264883, 9057264889

- 1.4 Name of the person who is primarily responsible for the Submission:

Ryan Scott

- 1.5 New Vendor Information

- (a) If you haven't previously done business with Metrolinx, or have and continue to do business with Metrolinx, and are submitting a Submission for the first time or have in the past, please fully complete and provide with the Submission the "New/Update Vendor Form" under "Attachments" and submit the additional documentation as indicated, including:

- (i) Vendor Registration (Articles of Incorporation, Sole Proprietorship Registration, and Partnership Agreements, etc.);



**TENDER DOCUMENT FORM  
FORM OF TENDER**

Emergent External Work in the East Region

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- (ii) Canada Revenue Agency Registration (Business Number);
- (iii) Void Cheque (for Electronic Transfer setup); and
- (iv) Sample Invoice.

**2.0 Acknowledgements and Declarations**

- 2.1 The Bidder acknowledges that its Submission includes the appropriate Tender Document Forms submitted in accordance with the terms and requirements of the Instructions to Bidders. Failure to comply may result in the Bidder's Submission being found non-compliant and disqualified at the sole discretion of Metrolinx.
- 2.2 The Bidder has informed itself of the conditions relating to the Work to be performed and have inspected and is thoroughly familiar with the location of the Work and the plans, specifications, drawings and all terms, conditions and covenants of the Contract.
- 2.3 The Bidder acknowledges receipt of any and all Addenda/Addendum issued hereto and that its Submission has been developed in consideration of the Addenda/Addendum.
- 2.4 The Bidder acknowledges that it meets all mandatory requirements in order for their Submission to be considered further. Failure of a Bidder to meet all of the mandatory requirements shall result in the Bidder's Submission to be non-compliant and disqualified.
- 2.5 All Addenda, Tender Document Forms, the General Conditions of the Contract, specifications and attachments set out in this Tender Document shall be included in and form part of the Contract. Submitting a Submission constitutes acknowledgement that the Bidder has read and agrees to be bound by such conditions.
- 2.6 The Submission is hereby submitted on the condition and with the full understanding that it is an irrevocable offer by the Bidder for a period of one hundred and twenty (120) calendar days from the Closing. The Bidder hereby covenants that it enter into the Contract with Metrolinx as contemplated by the Tender Documents by executing the Contract and will perform and execute the Work at the Rates quoted up to the established Total Contract Price amount if it is notified, in writing, by Metrolinx within one hundred and twenty (120) days of the Closing that it is the successful Bidder.
- 2.7 The Bidder hereby declares that it has the physical and financial resources to sustain and complete the Work.



## TENDER DOCUMENT FORM FORM OF TENDER

Emergent External Work in the East Region

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- 2.8 The Bidder hereby declares that no Conflict of Interest exists in accordance with "Tender Document Form: Conflict of Interest".
- 2.9 The Bidder hereby declares that no person, firm or corporation (including any agent of Metrolinx), other than the undersigned or Suppliers or Subvendors engaged in the ordinary course of business, has any interest in this call for Tenders or the proposed Contract for which the Submission is made.
- 2.10 The Bidder acknowledges that by way of the E-Bid Authorized Signer submitting a Submission, the Bidder is agreeing to be bound to each and every term, condition, article and obligation of the Tender Document and any resultant Contract.
- 2.11 The Bidder acknowledges that consistent with Section **Error! Reference source not found.** of Instructions to Bidders, failure by the Bidder, whose Submission was accepted by Metrolinx, to execute and deliver executed Contract with the required Insurance Certificates, Workplace Safety and Insurance Clearance Certificate and the Performance and Labour and Materials Payment Bonds, or specified alternatives, or any other required documentation (as applicable to this Tender Process) shall result in the cancellation of acceptance of the Bidder's Submission by Metrolinx and forfeiture of the Bidder's Bid Deposit (if applicable).
- 2.12 The submitting of a Submission by a Bidder shall be considered prima facie evidence that the above requirements have been met. Failure to have complied with said requirements shall not relieve the Bidder of its obligation to enter into the Contract and to carry out the Work for the terms and conditions set forth in the Tender Documents.

### 3.0 Requirement

- 3.1 The Bidder shall provide all labour, superintendence, plant, tools, appliances, equipment, supplies and other accessories, services and facilities necessary for Emergent External Works in the East Region, as further described in this Tender Document.
- 3.2 The Work is to be performed to the satisfaction of Metrolinx, unless otherwise specified.

### 4.0 Assignments

- 4.1 Work shall be assigned and quoted by the Vendor in accordance with General Conditions of the Contract.



**TENDER DOCUMENT FORM  
FORM OF TENDER**

Emergent External Work in the East Region

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**5.0 Total Contract Price**

- 5.1 The Bidder, by submitting this Submission, hereby offers to Metrolinx to provide all goods and services necessary to execute the Work described by the Tender Documents, including Addenda, and to perform the Work for the Rates quoted in "Tender Document Form: Contract Prices" up to the established Total Contract Price amount.

**6.0 Harmonized Sales Tax**

- 6.1 The Bidder acknowledges it has read and agrees to be bound by the General Conditions of the Contract as it relates to Harmonized Sales Tax.
- 6.2 The Bidder declares that the H.S.T. registration number, as stated in the Excel spreadsheet of "Tender Document Form: Contract Prices", is registered to the Bidder providing this Submission.
- 6.3 A non-resident Bidder unable to provide a H.S.T. Registration Number at the time of Submission shall be required to provide a H.S.T. Registration Number within five (5) Business Days of acceptance of its Submission by Metrolinx. The Bidder acknowledges that failure to comply with this requirement may result in the Contract being declared VOID.

**7.0 Options**

**7.1 Option Years**

- (a) Option Year is defined as a specified timeframe, in accordance with Section 8.0 below, in which the Work shall be carried out in accordance with the Contract requirements at the fixed all-inclusive prices quoted in "Tender Document Form – Contract Prices" (which shall form part of the Articles of Agreement) solely if Metrolinx exercises its option to proceed with an Option Year in accordance with Sections 7.1(b) and 7.1(c) below.
- (b) It is understood that Option Year Two, and Option Year Three, are options exercisable at the sole discretion of Metrolinx. In the event Metrolinx does not exercise its option, the Contract shall be considered complete upon expiration of the current year.
- (c) Each Option Year shall be automatically exercised unless Metrolinx informs the Vendor with sixty (60) days written notice prior to the end of the current year that Metrolinx will not be exercising such Option Year.



**TENDER DOCUMENT FORM  
FORM OF TENDER**

Emergent External Work in the East Region

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**8.0 Project Schedule**

- 8.1 Year One: upon execution of the Contract and continuing until March 31, 2019
- 8.2 Year Two: commencing April 1, 2019 to March 31, 2020  
(Option Year Two to be exercised at the sole discretion of Metrolinx)
- 8.3 Year Three: commencing April 1, 2020 to March 31, 2021  
(Option Year Three to be exercised at the sole discretion of Metrolinx)



## **TENDER DOCUMENT FORM CONTRACT PRICES**

Emergent External Work in the East Region

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### **1.0 Contract Unit Prices**

Contract Unit Prices are subject to "Tender Document Form: Form of Tender" in addition to this "Tender Document Form: Contract Prices".

1.1 Payment for services rendered and goods supplied in accordance with the terms and conditions of the Contract shall be based on the requirements of the "Tender Document Form: Form of Tender" in addition to the following:

- (a) The Total Evaluated Price bid shall be firm and quoted in Canadian funds.
- (b) The Rates shall include all applicable taxes, except Harmonized Sales Tax (H.S.T.), in force at the date the Submission is submitted.
- (c) The Rates quoted shall be fixed all-inclusive prices, quoted in Canadian funds, for performance of the Work.
- (d) The Rates include all labour, superintendence, plant, tools, appliances, equipment, supplies and other accessories, services and facilities customs, duties, royalties, handling, transportation, travel, mileage, overhead, profit and all other charges.
- (e) Estimated Quantities
  - (i) The estimated quantities listed in the attached Excel file are arbitrary numbers for a hypothetical project and are to be used for the purpose of assisting in evaluating Submissions.
  - (ii) Metrolinx reserves the right to purchase quantities other than those stated for each year of the Contract at the Rates quoted.
- (f) Work shall be assigned and quoted by the Vendor in accordance with Section 8.4, Task Assignment Process, of General Conditions of the Contract.

### **2.0 Limitation of Expenditures**

- 2.1 It is understood that Section 2.0, Limitation of Expenditure, of Schedule B – Financial Terms of General Conditions of the Contract applies.
- 2.2 The upset limit for the Work to be provided under this Contract is stated in Section 17.1(b) of Instructions to Bidders.



**TENDER DOCUMENT FORM  
CONTRACT PRICES**

Emergent External Work in the East Region

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- 2.3 No individual Assignment shall have a value greater than two hundred and fifty thousand dollars (\$250,000.00).
- 2.4 The Vendor shall not perform any Work under this Contract which would result in an increase to the Total Contract Price, unless an increase is so authorized by Metrolinx and effected by a written amendment to the Contract.

**3.0 Allowances**

- 3.1 Not Applicable

**4.0 Completion of Pricing Schedules**

- 4.1 Bidders shall fully complete the Excel file entitled "Contract Prices" and insert a Unit Price into each space provided under the Contract Unit Price column.
- 4.2 "Tender Document Form: Contract Prices" must be submitted as a separate file preferably in Excel format to facilitate the pricing evaluation process, and may not be retyped or recreated. Failure to follow the submission instructions or format requirements may result in the Submission being found non-compliant and disqualified.
- 4.3 If a "0" is entered in any of the spaces where price information is to be provided, it shall be interpreted as meaning the Vendor shall provide the specified service to Metrolinx at no charge.
- 4.4 If any space is left blank or an entry of "N/C" or "N/A" or "-" is entered where price information should be entered then the Submission may be found non-compliant and disqualified consistent with the provisions of the Instructions to Bidders.



**APPENDIX "B"**  
**Contract No. IT-2018-1w-247**

**= Data Entry Cells for Contractors**

REQUEST NUMBER IT-2018-1w-247

TENDER SUBMITTED BY \* Rutherford Contracting Ltd.  
 (Full Legal Name of Company or Individual)

224 Earl Stewart Drive, Aurora ON L4G 6V7  
 (Address)

9057264883  
 (Phone No.)

rscott@ruthcon.ca  
 (E-mail Address)

BIDDER'S H.S.T NUMBER \* R124580911

CONTRACT PRICES						Rutherford Contracting Ltd.
Item No.	Spec	Detailed Description	Unit	Estimated Quantity	Contract Unit Price	Extended Price
YEAR ONE: SEPTEMBER 01, 2018 TO MARCH 31, 2019						
<b>PART A – GENERAL REQUIREMENTS</b>						
1.	01200	Supply, install, and maintain 2.4m high metallic construction fence, when requested by the Owner. Remove upon completion	m per week	600	\$ 6.30	\$3,780.00
<b>PART B – REMOVALS</b>						
1.	02070	Saw cut existing asphalt	m	250	\$ 9.42	\$2,355.00
2.	02070	Horizontal saw cutting and removing and disposing of existing curb (OPSD. 600.110 & OPSD. 310.030)	m	150	\$ 137.39	\$20,608.50
3.	02070	Remove existing asphalt and dispose offsite (full depth)	m <sup>2</sup>	100	\$ 6.91	\$691.00
4.	02070 02701	Mill existing asphalt in small areas.	m <sup>2</sup>	400	\$ 37.94	\$15,176.00
5.	02070	Remove platform concrete curb of all types.	m	70	\$ 20.70	\$1,449.00
6.	02070	Remove concrete barrier curb	m	30	\$ 20.70	\$621.00
7.	02070	Remove existing parking curbs and dispose offsite.	ea	150	\$ 15.68	\$2,352.00
8.	02070 02223	Remove concrete sidewalk and granular base and dispose offsite	m <sup>2</sup>	150	\$ 17.25	\$2,587.50
9.	02070 02223	Remove concrete pad and granular base and dispose offsite	m <sup>2</sup>	100	\$ 17.25	\$1,725.00
10.	02070	Remove concrete pavers including sub excavation and dispose offsite	m <sup>2</sup>	100	\$ 24.15	\$2,415.00
11.	02070	Remove chain link fence including posts, footings, and disposal offsite	m	250	\$ 6.91	\$1,727.50
12.	02070	Remove sign post and signs and dispose offsite.	ea	100	\$ 20.70	\$2,070.00
13.	02070	Remove existing bollards including base and full restoration	ea	10	\$ 171.74	\$1,717.40
14.	02070	Remove pavement marking including vacuuming and offsite disposal	m	200	\$ 3.46	\$692.00
15.	03730	Concrete grinding to eliminate raised trip hazards in sidewalks and walkways (up to 25mm depth) including vacuuming and offsite disposal	m	100	\$ 53.50	\$5,350.00
<b>PART C – SURFACE WORKS</b>						
1.	02223 02210	Strip topsoil and dispose unsuitable/excess material offsite	m <sup>3</sup>	300	\$ 20.70	\$6,210.00
2.	02223	Earth excavation - export material offsite	m <sup>3</sup>	300	\$ 24.15	\$7,245.00



3.	02911 02920 02900	Supply and place 150mm depth topsoil and sod	m <sup>2</sup>	600	\$ 7.16	\$4,296.00
4.	02911 02920	Supply and place 150mm depth natural mulch	m <sup>2</sup>	600	\$ 24.81	\$14,886.00
5.	02920	Supply and plant min. 125mm dia. Caliper Coniferous tree, c/v arbour ties, min. 1m height.	ea	30	\$ 321.00	\$9,630.00
6.	02920	Supply and plant 3 gal. evergreen shrub	ea	50	\$ 85.60	\$4,280.00
7.	02920	Supply and install heavy duty, puncture resistant landscaping fabric	m <sup>2</sup>	200	\$ 5.35	\$1,070.00
8.	02920	Supply and install decorative Armorstone; scale code: Q ARM14/16	ea	40	\$ 214.27	\$8,570.80
9.	02920	Supply and install concrete platform curbs (Assume Unilock Durahold II curb, new work, to be installed per manufacturer recommendations)	m	50	\$ 321.00	\$16,050.00
10.	02920	Supply and install heavy duty permeable unilock pavers with edging (up to 4"x12")	m <sup>2</sup>	250	\$ 214.00	\$53,500.00
11.	09200	Supply and install tactile detectable warning tile (cast-in-place or surface applied), including all s/s weather resistant hardware.	m <sup>2</sup>	200	\$ 214.00	\$42,800.00
12.	05500 10210	Supply and install 6" interior bollard	ea	20	\$ 535.00	\$10,700.00
13.	05500 10210	Supply and install 8" bollards, including excavation and concrete base.	ea	20	\$ 572.45	\$11,449.00
14.	05500 10210	Supply and install removable 8" s/s bollard with embedded receiver, chain and pad lock.	ea	20	\$ 572.45	\$11,449.00
15.	02223	Supply and place non-shrink fill	m <sup>3</sup>	50	\$ 139.10	\$6,955.00
16.	02223	Supply, place, and compact 19mm crusher run limestone	m <sup>3</sup>	50	\$ 84.87	\$4,243.50
17.	02223	Supply, place, and compact 50mm crusher run limestone	m <sup>3</sup>	100	\$ 84.87	\$8,487.00
18.	02223	Supply, place, and compact Granular 'A' to required depth	m <sup>3</sup>	200	\$ 80.25	\$16,050.00
19.	02223	Supply, place, and compact Granular 'B' to required depth	m <sup>3</sup>	300	\$ 74.90	\$22,470.00
20.	02513	Install 200mm wide lap joint where new pavement meets existing asphalt and groove seal new asphalt with existing using hot pour rubberized compound	m	200	\$ 33.07	\$6,614.00
21.	02540	Supply and place 19mm clear stone	m <sup>3</sup>	80	\$ 99.19	\$7,935.20
22.	02540	Supply and place 300mm depth rip-rap	m <sup>3</sup>	50	\$ 104.70	\$5,235.00
23.	02223 02630 02700 02540	Supply and install High-density Polyethylene (HDPE) culvert up to 300mm dia. Include excavation to minimum 0.30m cover, granular bedding and backfill.	m	10	\$ 160.50	\$1,605.00
24.	02223 02540 16010	Adjust, raise or lower existing electrical and communicational hand wells, up to 460mm dia.	ea	20	\$ 771.47	\$15,429.40
25.	02223 02540 16010 16100	Supply and install new electrical and communicational handwell (up to 460mm dia.) including excavation, bedding and backfill.	ea	10	\$ 1,926.00	\$19,260.00
26.	02223 02540 16010 16100	Adjust, raise or lower existing electrical and communicational hand wells 600x600 mm	ea	20	\$ 771.47	\$15,429.40
27.	02223 02540 16010	Supply and install new electrical and communicational handwell (600x 600 mm ) including excavation, bedding and backfill.	ea	10	\$ 2,300.50	\$23,005.00
28.	16010 16100	Supply and install solar LED luminaire type MFS Aron Grande or approved equal	ea	5	\$ 12,305.00	\$61,525.00
29.	16010 16100	Supply and construct concrete base for light poles (6m)	ea	5	\$ 2,675.00	\$13,375.00
30.	16010 16100	Supply and construct concrete base for light poles (12m)	ea	5	\$ 3,210.00	\$16,050.00
31.	16107 16133	Supply and install 2 x 53mm PVC conduit c/v all bends, elbows, couplings, bell ends, wood planks, warning tape, junctions, and fish line	m	200	\$ 64.20	\$12,840.00
32.	02223 02540	Supply and install conduit trench complete with backfill and compaction to 95% S.P.D. Restore disrupted surfaces to original or better condition where applicable. Dispose excess material	m	200	\$ 27.56	\$5,512.00
33.	03300	Install display board supplied by GO, frame and concrete base	ea	6	\$ 5,350.00	\$32,100.00
34.	02631 02700	Supply and install new catch basin frame and cover	ea	20	\$ 2,407.50	\$48,150.00
35.	02513 02701	Supply, place, and compact HL3 asphalt to required depth	m <sup>3</sup>	80	\$ 358.62	\$28,689.60
36.	02513	Supply, place, and compact HL3A asphalt to required depth	m <sup>3</sup>	100	\$ 369.32	\$36,932.00
37.	02513 02701	Supply, place, and compact HL8 asphalt to required depth	m <sup>3</sup>	200	\$ 347.92	\$69,584.00
38.	02513	Repair asphalt crack by route and seal method. Include sweeping and cleanup upon completion.	m.	500	\$ 3.15	\$1,575.00
39.	02513	Supply and install hot asphalt patch including compaction	t	50	\$ 267.50	\$13,375.00



40.	02513	Supply and install cold asphalt patch including compaction	l	30	\$ 267.50	\$8,025.00
41.	02920	Leveling of Interlocking Pavement stone	m <sup>2</sup>	300	\$ 110.21	\$33,063.00
42.	03100 03300	Supply and install 150mm deep concrete sidewalk including required excavation, granular base, and formwork	m <sup>2</sup>	300	\$ 107.00	\$32,100.00
43.	03300	Supply and install concrete barrier curbs (OPSD. 600.110) including required excavation, granular base, and formwork	m	50	\$ 80.25	\$4,012.50
44.	3300.	Supply and install concrete curbs & gutter (OPSD. 600.040) including required excavation, granular base, and formwork	m	50	\$ 133.75	\$6,687.50
45.	03100 03300	Supply and install 250mm thick concrete pad with 14 gauge 6x6 wire mesh including required excavation, granular base, and formwork	m <sup>2</sup>	100	\$ 133.75	\$13,375.00
46.	02223 02720 02630	Supply and install 150mm sub-drain perforated with non-woven filter fabric including granular cover	m	100	\$ 19.18	\$1,918.00
47.	02825	Supply and install galvanized chain link fence up to 2.1 m height including posts and footings	m	200	\$ 165.85	\$33,170.00
48.	02825	Supply and install pressure treated wooden fence up to 2.1m height including concrete footings	m	20	\$ 588.50	\$11,770.00
49.	02825	Chain link fence swing gate up to 2.1 m height including posts and footings	m	10	\$ 374.50	\$3,745.00
50.	02825	Chain link fence sliding gate up to 2.1m height including posts and footings	m	10	\$ 963.00	\$9,630.00
51.	02580	Line Painting – 150 mm	m	700	\$ 2.07	\$1,449.00
52.	02580	Line painting symbols and text (arrows, accessible parking, etc)	ea	30	\$ 34.47	\$1,034.10
53.	02870 10440	New sign posts and signs including coring and plastic sleeve	ea	20	\$ 214.00	\$4,280.00
54.	02513	Install speed bump (up to 400mm wide & 80 mm high) including cutting, removal of existing pavement for tie in, yellow painting, and signage	m	30	\$ 110.21	\$3,306.30
55.	OPSD 603.020	Supply and install 2.4m wide parking curb (OPSD. 603.020)	ea	150	\$ 94.00	\$14,100.00
56.	04100	Supply and install precast retaining wall up to 0.6m height	m <sup>2</sup>	30	\$ 428.00	\$12,840.00
57.	04100	Supply and install precast retaining wall up to 1 m height, including safety rail	m <sup>2</sup>	20	\$ 508.25	\$10,165.00
58.	04100	Supply and install engineered retaining wall up to 2m height, including safety rail.	m <sup>2</sup>	20	\$ 615.25	\$12,305.00
59.	01710	Cleaning of single catch basin by Vac truck	ea	10	\$ 428.00	\$4,280.00
60.	01710	Cleaning of double catch basin by Vac truck	ea	10	\$ 535.00	\$5,350.00

#### PART D – ADDITIONAL WORK

1.		Labour – Skilled including all overhead	h	250	\$ 119.84	\$29,960.00
2.		Labour – Semi-skilled including all overhead	h	400	\$ 90.95	\$36,380.00
3.		Journeyman electrician	h	150	\$ 101.65	\$15,247.50
4.		Mark up on material to cover profit and overhead	%	15000	1.10	\$16,500.00
5.		After hours and weekend works hourly rate for all categories above normal rate	%	3000	1.50	\$4,500.00
6.		Statutory Holiday works hourly rate for all categories above normal rate	%	5000	1.50	\$7,500.00
7.		Extra for after hours, weekend or holiday works over normal hours work	%	4000	1.50	\$6,000.00
8.		Equipment supplied in accordance with rates set out in the current OPSS 127 (schedule of rental rate of construction equipment) for any work not listed above at a discount of	%	3000	\$ -	\$0.00

YEAR TWO: APRIL 01, 2019 TO MARCH 31, 2020

#### PART A – GENERAL REQUIREMENTS

1.	01200	Supply, install, and maintain 2.4m high metallic construction fence, when requested by the Owner. Remove upon completion	m per week	600	\$ 6.49	\$3,894.00
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#### PART B – REMOVALS

1.	02070	Saw cut existing asphalt	m	250	\$ 9.70	\$2,425.00
2.	02070	Horizontal sawcutting and removing and disposing of existing curb (OPSD. 600.110 & 600.040)	m	150	\$ 141.51	\$21,226.50
3.	02070	Remove existing asphalt and dispose offsite (full depth)	m <sup>2</sup>	100	\$ 7.11	\$711.00
4.	02070 02701	Mill existing asphalt in small areas.	m <sup>2</sup>	400	\$ 39.07	\$15,628.00
5.	02070	Remove platform concrete curb of all types.	m	70	\$ 21.32	\$1,492.40
6.	02070	Remove concrete barrier curb	m	30	\$ 21.32	\$639.60
7.	02070	Remove existing parking curbs and dispose offsite.	ea	150	\$ 16.15	\$2,422.50



8.	02070 02221	Remove concrete sidewalk and granular base and dispose offsite	m <sup>2</sup>	150	\$ 17.77	\$2,665.50
9.	02070 02221	Remove concrete pad and granular base and dispose offsite	m <sup>2</sup>	100	\$ 17.77	\$1,777.00
10.	02070	Remove concrete pavers including sub excavation and dispose offsite	m <sup>2</sup>	100	\$ 24.88	\$2,488.00
11.	02070	Remove chain link fence including posts, footings, and disposal offsite	m	250	\$ 7.11	\$1,777.50
12.	02070	Remove sign post and signs and dispose offsite.	ea	100	\$ 21.32	\$2,132.00
13.	02070	Remove existing bollards including base and full restoration	ea	10	\$ 176.89	\$1,768.90
14.	02070	Remove pavement marking including vacuuming and offsite disposal	m	200	\$ 3.56	\$712.00
15.	03730	Concrete grinding to eliminate raised trip hazards in sidewalks and walkways (up to 25mm depth) including vacuuming and offsite disposal	m	100	\$ 55.11	\$5,511.00
<b>PART C – SURFACE WORKS</b>						
1.	02223 02210	Strip topsoil and dispose unsuitable/excess material offsite	m <sup>3</sup>	300	\$ 21.32	\$6,396.00
2.	02223	Earth excavation - export material offsite	m <sup>3</sup>	300	\$ 24.88	\$7,464.00
3.	02911 02920 02900	Supply and place 150mm depth topsoil and sod	m <sup>2</sup>	600	\$ 7.38	\$4,428.00
4.	02911 02920	Supply and place 150mm depth natural mulch	m <sup>2</sup>	600	\$ 25.55	\$15,330.00
5.	02920	Supply and plant min. 125mm dia. Caliper Coniferous tree, c/v arbour ties, min. 1m height.	ea	30	\$ 330.63	\$9,918.90
6.	02920	Supply and plant 3 gal. evergreen shrub	ea	50	\$ 88.17	\$4,408.50
7.	02920	Supply and install heavy duty, puncture resistant landscaping fabric	m <sup>2</sup>	200	\$ 5.52	\$1,104.00
8.	02920	Supply and install decorative Armorstone; scale code: Q ARM14/L6	ea	40	\$ 220.70	\$8,828.00
9.	02920	Supply and install concrete platform curbs (Assume Unilock Durahold II curb, new work, to be installed per manufacturer recommendations)	m	50	\$ 330.63	\$16,531.50
10.	02920	Supply and install heavy duty permeable unilock pavers with edging (up to 4"x12")	m <sup>2</sup>	250	\$ 220.42	\$55,105.00
11.	09200	Supply and install tactile detectable warning tile (cast-in-place or surface applied), including all s/s weather resistant hardware.	m <sup>2</sup>	200	\$ 220.42	\$44,084.00
12.	05500 10210	Supply and install 6" interior bollard	ea	20	\$ 551.05	\$11,021.00
13.	05500 10210	Supply and install 8" bollards, including excavation and concrete base.	ea	20	\$ 589.63	\$11,792.60
14.	05500 10210	Supply and install removable 8" s/s bollard with embedded receiver, chain and pad lock.	ea	20	\$ 589.63	\$11,792.60
15.	02223	Supply and place non-shrink fill	m <sup>3</sup>	50	\$ 143.28	\$7,164.00
16.	02223	Supply, place, and compact 19mm crusher run limestone	m <sup>3</sup>	50	\$ 87.41	\$4,370.50
17.	02223	Supply, place, and compact 50mm crusher run limestone	m <sup>3</sup>	100	\$ 87.41	\$8,741.00
18.	02223	Supply, place, and compact Granular 'A' to required depth	m <sup>3</sup>	200	\$ 82.66	\$16,532.00
19.	02223	Supply, place, and compact Granular 'B' to required depth	m <sup>3</sup>	300	\$ 77.15	\$23,145.00
20.	02513	Install 200mm wide lap joint where new pavement meets existing asphalt and groove seal new asphalt with existing using hot pour rubberized compound	m	200	\$ 34.06	\$6,812.00
21.	02540	Supply and place 19mm clear stone	m <sup>3</sup>	80	\$ 102.17	\$8,173.60
22.	02540	Supply and place 300mm depth rip-rap	m <sup>3</sup>	50	\$ 107.85	\$5,392.50
23.	02223 02630 02700 02540	Supply and install High-density Polyethylene (HDPE) culvert up to 300mm dia. Include excavation to minimum 0.30m cover, granular bedding and backfill.	m	10	\$ 165.32	\$1,653.20
24.	02223 02540 16010	Adjust, raise or lower existing electrical and communicational hand wells, up to 460mm dia.	ea	20	\$ 794.62	\$15,892.40
25.	02223 02540 16010 16100	Supply and install new electrical and communicational handwell (up to 460mm dia.) including excavation, bedding and backfill.	ea	10	\$ 1,983.78	\$19,837.80
26.	02223 02540 16010 16100	Adjust, raise or lower existing electrical and communicational hand wells 600x600 mm	ea	20	\$ 794.62	\$15,892.40
27.	02223 02540 16010 16100	Supply and install new electrical and communicational handwell (600x 600 mm ) including excavation, bedding and backfill.	ea	10	\$ 2,369.52	\$23,695.20
28.	16010 16100	Supply and install solar LED luminaire type MFS Aron Grando or approved equal	ea	5	\$ 12,674.15	\$63,370.75
29.	16010 16100	Supply and construct concrete base for light poles (6m)	ea	5	\$ 2,755.25	\$13,776.25



30.	16010 16100	Supply and construct concrete base for light poles (12m)	ea	5	\$ 3,306.30	\$16,531.50
31.	16107 16133	Supply and install 2 x 53mm PVC conduit c/w all bends, elbows, couplings, bell ends, wood planks, warning tape, junctions, and fish line	m	200	\$ 66.13	\$13,226.00
32.	02223 02540	Supply and install conduit trench complete with backfill and compaction to 95% S.P.D. Restore disrupted surfaces to original or better condition where applicable. Dispose excess material	m	200	\$ 28.38	\$5,676.00
33.	03300	Install display board supplied by GO, frame and concrete base	ea	6	\$ 5,510.50	\$33,063.00
34.	02631 02700	Supply and install new catch basin frame and cover	ea	20	\$ 2,479.73	\$49,594.60
35.	02513 02701	Supply, place, and compact HLC asphalt to required depth	m <sup>3</sup>	80	\$ 369.37	\$29,549.60
36.	02513	Supply, place, and compact HL3A asphalt to required depth	m <sup>3</sup>	100	\$ 380.39	\$38,039.00
37.	02513 02701	Supply, place, and compact H7.8 asphalt to required depth	m <sup>3</sup>	200	\$ 358.35	\$71,670.00
38.	02513	Repair asphalt crack by route and seal method. Include sweeping and cleanup upon completion.	m.	500	\$ 3.25	\$1,625.00
39.	02513	Supply and install hot asphalt patch including compaction	t	50	\$ 275.53	\$13,776.50
40.	02513	Supply and install cold asphalt patch including compaction	t	30	\$ 275.53	\$8,265.90
41.	02920	Leveling of Interlocking Pavement stone	m <sup>2</sup>	300	\$ 113.52	\$34,056.00
42.	03100 03300	Supply and install 150mm deep concrete sidewalk including required excavation, granular base, and formwork	m <sup>2</sup>	300	\$ 110.21	\$33,063.00
43.	03300	Supply and install concrete barrier curbs (OPSD. 600.110) including required excavation, granular base, and formwork	m	50	\$ 82.66	\$4,133.00
44.	3300.	Supply and install concrete curbs & gutter (OPSD. 600.040) including required excavation, granular base, and formwork	m	50	\$ 137.77	\$6,888.50
45.	03100 03300	Supply and install 250mm thick concrete pad with 14 gauge 6x6 wire mesh including required excavation, granular base, and formwork	m <sup>2</sup>	100	\$ 137.77	\$13,777.00
46.	02223 02720 02630 02540	Supply and install 150mm sub-drain perforated with non-woven filter fabric including granular cover	m	100	\$ 19.75	\$1,975.00
47.	02825	Supply and install galvanized chain link fence up to 2.1m height including posts and footings	m	200	\$ 170.83	\$34,166.00
48.	02825	Supply and install pressure treated wooden fence up to 2.1m height including concrete footings	m	20	\$ 606.16	\$12,123.20
49.	02825	Chain link fence swing gate up to 2.1m height including posts and footings	m	10	\$ 385.74	\$3,857.40
50.	02825	Chain link fence sliding gate up to 2.1m height including posts and footings	m	10	\$ 991.89	\$9,918.90
51.	02580	Line Painting - 150 mm	m	700	\$ 2.13	\$1,491.00
52.	02580	Line painting symbols and text (arrows, accessible parking, etc)	ea	30	\$ 35.50	\$1,065.00
53.	02870 10440	New sign posts and signs including coring and plastic sleeve	ea	20	\$ 220.42	\$4,408.40
54.	02513	Install speed bump (up to 400mm wide & 80 mm high) including cutting, removal of existing pavement for tie in, yellow painting.	m	30	\$ 113.52	\$3,405.60
55.	OPSD 603.020	Supply and install 2.4m wide parking curb (OPSD. 603.020)	ea	150	\$ 96.82	\$14,523.00
56.	04100	Supply and install precast retaining wall up to 0.6m height	m <sup>2</sup>	30	\$ 440.84	\$13,225.20
57.	04100	Supply and install precast retaining wall up to 1m height, including safety rail	m <sup>2</sup>	20	\$ 523.50	\$10,470.00
58.	04100	Supply and install engineered retaining wall up to 2m height, including safety rail.	m <sup>2</sup>	20	\$ 633.71	\$12,674.20
59.	01710	Cleaning of single catch basin by Vac truck	ea	10	\$ 440.84	\$4,408.40
60.	01710	Cleaning of double catch basin by Vac truck	ea	10	\$ 551.05	\$5,510.50
<b>PART D - ADDITIONAL WORK</b>						
1.		Labour - Skilled including all overhead	h	250	\$ 123.44	\$30,860.00
2.		Labour - Semi-skilled including all overhead	h	400	\$ 93.68	\$37,472.00
3.		Journeyman electrician	h	150	\$ 104.70	\$15,705.00
4.		Mark up on material to cover profit and overhead	%	15000	1.13	\$16,950.00
5.		After hours and weekend works hourly rate for all categories above normal rate	%	3000	1.55	\$4,650.00
6.		Statutory Holiday works hourly rate for all categories above normal rate	%	5000	1.55	\$7,750.00
7.		Extra for after hours, weekend or holiday works over normal hours work	%	4000	1.55	\$6,200.00
8.		Equipment supplied in accordance with rates set out in the current OPS 127 (schedule of rental rate of construction equipment) for any work not listed above at a discount of	%	3000	-	\$0.00



YEAR THREE: APRIL 01, 2020 TO MARCH 31, 2021

PART A – GENERAL REQUIREMENTS

1.	01200	Supply, install, and maintain 2.4m high metallic construction fence, when requested by the Owner. Remove upon completion	m per week	600	\$ 6.68	\$4,008.00
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PART B – REMOVALS

1.	02070	Saw cut existing asphalt	m	250	\$ 9.99	\$2,497.50
2.	02070	Horizontal saw cutting and removing and disposing of existing curb (OPSD. 600.110 & OPSD. 310.030)	m	150	\$ 145.76	\$21,864.00
3.	02070	Remove existing asphalt and dispose offsite (full depth)	m <sup>2</sup>	100	\$ 7.33	\$733.00
4.	02070 02701	Mill existing asphalt in small areas.	m <sup>2</sup>	400	\$ 40.25	\$16,100.00
5.	02070	Remove platform concrete curb of all types.	m	70	\$ 21.96	\$1,537.20
6.	02070	Remove concrete barrier curb	m	30	\$ 21.96	\$658.80
7.	02070	Remove existing parking curbs and dispose offsite.	ea	150	\$ 16.64	\$2,496.00
8.	02070 02223	Remove concrete sidewalk and granular base and dispose offsite	m <sup>2</sup>	150	\$ 18.30	\$2,745.00
9.	02070 02223	Remove concrete pad and granular base and dispose offsite	m <sup>2</sup>	100	\$ 18.30	\$1,830.00
10.	02070	Remove concrete pavers including sub excavation and dispose offsite	m <sup>2</sup>	100	\$ 25.63	\$2,563.00
11.	02070	Remove chain link fence including posts, footings, and disposal offsite	m	250	\$ 7.33	\$1,832.50
12.	02070	Remove sign post and signs and dispose offsite.	ea	100	\$ 21.96	\$2,196.00
13.	02070	Remove existing bollards including base and full restoration	ea	10	\$ 182.20	\$1,822.00
14.	02070	Remove pavement marking including vacuuming and offsite disposal	m	200	\$ 3.67	\$734.00
15.	03730	Concrete grinding to eliminate raised trip hazards in sidewalks and walkways (up to 25mm depth) including vacuuming and offsite disposal	m	100	\$ 56.76	\$5,676.00

PART C – SURFACE WORKS

1.	02223 02210	Strip topsoil and dispose unsuitable/excess material offsite	m <sup>3</sup>	300	\$ 21.96	\$6,588.00
2.	02223	Earth excavation - export material offsite	m <sup>3</sup>	300	\$ 25.63	\$7,689.00
3.	02911 02920	Supply and place 150mm depth topsoil and sod	m <sup>2</sup>	600	\$ 7.60	\$4,560.00
4.	02911 02920	Supply and place 150mm depth natural mulch	m <sup>2</sup>	600	\$ 26.32	\$15,792.00
5.	02920	Supply and plant min. 125mm dia. Caliper Coniferous tree, c/v arbour ties, min. 1 m height.	ea	30	\$ 340.55	\$10,216.50
6.	02920	Supply and plant 3 gal. evergreen shrub	ea	50	\$ 90.82	\$4,541.00
7.	02920	Supply and install heavy duty, puncture resistant landscaping fabric	m <sup>2</sup>	200	\$ 5.68	\$1,136.00
8.	02920	Supply and install decorative Armortone; scale code: Q ARM14/16	ea	40	\$ 227.32	\$9,092.80
9.	02920	Supply and install concrete platform curbs (Assume Unilock Durahold II curb, new work, to be installed per manufacturer recommendations)	m	50	\$ 340.55	\$17,027.50
10.	02920	Supply and install heavy duty permeable unilock pavers with edging (up to 4"x12")	m <sup>2</sup>	250	\$ 227.04	\$56,760.00
11.	09200	Supply and install tactile detectable warning tile (cast-in-place or surface applied), including all s/s weather resistant hardware.	m <sup>2</sup>	200	\$ 227.04	\$45,408.00
12.	05500 10210	Supply and install 6" interior bollard	ea	20	\$ 567.59	\$11,351.80
13.	05500 10210	Supply and install 8" bollards, including excavation and concrete base.	ea	20	\$ 607.32	\$12,146.40
14.	05500 10210	Supply and install removable 8" s/s bollard with embedded receiver, chain and pad lock.	ea	20	\$ 607.32	\$12,146.40
15.	02223	Supply and place non-shrink fill	m <sup>3</sup>	50	\$ 147.58	\$7,379.00
16.	02223	Supply, place, and compact 19mm crusher run limestone	m <sup>3</sup>	50	\$ 90.03	\$4,501.50
17.	02223	Supply, place, and compact 50mm crusher run limestone	m <sup>3</sup>	100	\$ 90.03	\$9,003.00
18.	02223	Supply, place, and compact Granular 'A' to required depth	m <sup>3</sup>	200	\$ 85.14	\$17,028.00
19.	02223	Supply, place, and compact Granular 'B' to required depth	m <sup>3</sup>	300	\$ 79.47	\$23,841.00
20.	02513	Install 200mm wide lap joint where new pavement meets existing asphalt and groove seal new asphalt with existing using hot pour rubberized compound	m	200	\$ 35.08	\$7,016.00
21.	02540	Supply and place 19mm clear stone	m <sup>3</sup>	80	\$ 105.23	\$8,418.40
22.	02540	Supply and place 300mm depth rip-rap	m <sup>3</sup>	50	\$ 111.08	\$5,554.00



23.	02223 02630 02700	Supply and install High-density Polyethylene (HDPE) culvert up to 300mm dia. Include excavation to minimum 0.30m cover, granular bedding and backfill.	m	10	\$ 170.28	\$1,702.80
24.	02223 02540	Adjust, raise or lower existing electrical and communicational hand wells, up to 460mm dia.	ea	20	\$ 818.46	\$16,369.20
25.	02223 02540	Supply and install new electrical and communicational handwell (up to 460mm dia.) including excavation, bedding and backfill.	ea	10	\$ 2,043.30	\$20,433.00
26.	02223 02540 16010 16100	Adjust, raise or lower existing electrical and communicational hand wells 600x600 mm	ea	20	\$ 818.46	\$16,369.20
27.	02223 02540 16010	Supply and install new electrical and communicational handwell (600x 600 mm ) including excavation, bedding and backfill.	ea	10	\$ 2,440.61	\$24,406.10
28.	16010 16100	Supply and install solar LED luminaire type MFS Aron Grande or approved equal	ea	5	\$ 13,054.38	\$65,271.90
29.	16010 16100	Supply and construct concrete base for light poles (6m)	ea	5	\$ 2,837.91	\$14,189.55
30.	16010 16100	Supply and construct concrete base for light poles (12m)	ea	5	\$ 3,405.49	\$17,027.45
31.	16107 16133	Supply and install 2 x 53mm PVC conduit c/w all bends, elbows, couplings, bell ends, wood planks, warning tape, junctions, and fish line	m	200	\$ 68.11	\$13,622.00
32.	02223 02540	Supply and install conduit trench complete with backfill and compaction to 95% S.P.D. Restore disrupted surfaces to original or better condition where applicable. Dispose excess material offsite.	m	200	\$ 29.24	\$5,848.00
33.	03300	Install display board supplied by GO, frame and concrete base	ea	6	\$ 5,675.82	\$34,054.92
34.	02631 02700	Supply and install new catch basin frame and cover	ea	20	\$ 2,554.12	\$51,082.40
35.	02513 02701	Supply, place, and compact HL3 asphalt to required depth	m <sup>3</sup>	80	\$ 380.45	\$30,436.00
36.	02513	Supply, place, and compact HL3A asphalt to required depth	m <sup>3</sup>	100	\$ 391.81	\$39,181.00
37.	02513 02701	Supply, place, and compact HL8 asphalt to required depth	m <sup>3</sup>	200	\$ 369.10	\$73,820.00
38.	02513	Repair asphalt crack by route and seal method. Include sweeping and cleanup upon completion.	m	500	\$ 3.34	\$1,670.00
39.	02513	Supply and install hot asphalt patch including compaction	t	50	\$ 283.80	\$14,190.00
40.	02513	Supply and install cold asphalt patch including compaction	t	30	\$ 283.80	\$8,514.00
41.	02920	Leveling of Interlocking Pavement stone	m <sup>2</sup>	300	\$ 116.93	\$35,079.00
42.	03100 03300	Supply and install 150mm deep concrete sidewalk including required excavation, granular base, and formwork	m <sup>2</sup>	300	\$ 113.52	\$34,056.00
43.	03300	Supply and install concrete barrier curbs (OPSD. 600.110) including required excavation, granular base, and formwork	m	50	\$ 85.14	\$4,257.00
44.	3300.	Supply and install concrete curbs & gutter (OPSD. 600.040) including required excavation, granular base, and formwork	m	50	\$ 141.90	\$7,095.00
45.	03100 03300	Supply and install 250mm thick concrete pad with 14 gauge 6x6 wire mesh including required excavation, granular base, and formwork	m <sup>2</sup>	100	\$ 141.90	\$14,190.00
46.	02223 02720	Supply and install 150mm sub-drain perforated with non-woven filter fabric including granular cover	m	100	\$ 20.35	\$2,035.00
47.	02825	Supply and install galvanized chain link fence up to 2.1m height including posts and footings	m	200	\$ 175.96	\$35,192.00
48.	02825	Supply and install pressure treated wooden fence up to 2.1m height including concrete footings	m	20	\$ 624.34	\$12,486.80
49.	02825	Chain link fence swing gate up to 2.1m height including posts and footings	m	10	\$ 397.31	\$3,973.10
50.	02825	Chain link fence sliding gate up to 2.1m height including posts and footings	m	10	\$ 1,021.65	\$10,216.50
51.	02580	Line Painting - 150 mm	m	700	\$ 2.20	\$1,540.00
52.	02580	Line painting symbols and text (arrows, accessible parking, etc)	ea	30	\$ 36.57	\$1,097.10
53.	02870 10440	New sign posts and signs including coring and plastic sleeve	ea	20	\$ 227.04	\$4,540.80
54.	02513	Install speed bump (up to 400mm wide & 80 mm high) including cutting, removal of existing pavement for tie in, yellow painting, and signage.	m	30	\$ 116.93	\$3,507.90
55.	OPSD 603.020	Supply and install 2.4m wide parking curb (OPSD. 603.020)	ea	150	\$ 99.73	\$14,959.50
56.	04100	Supply and install precast retaining wall up to 0.6m height	m <sup>2</sup>	30	\$ 454.07	\$13,622.10
57.	04100	Supply and install precast retaining wall up to 1m height, including safety rail	m <sup>2</sup>	20	\$ 539.21	\$10,784.20
58.	04100	Supply and install engineered retaining wall up to 2m height, including safety rail.	m <sup>2</sup>	20	\$ 652.72	\$13,054.40
59.	02070	Cleaning of single catch basin by Vao truck	ea	10	\$ 454.07	\$4,540.70
60.	02070	Cleaning of double catch basin by Vao truck	ea	10	\$ 567.59	\$5,675.90



PART D -- ADDITIONAL WORK						
1.		Labour - Skilled including all overhead	h	250	\$ 127.14	\$31,785.00
2.		Labour - Semi-skilled including all overhead	h	400	\$ 96.49	\$38,596.00
3.		Journeyman electrician	h	150	\$ 107.85	\$16,177.50
4.		Mark up on material to cover profit and overhead	%	15000	1.15	\$17,250.00
5.		After hours and weekend works hourly rate for all categories above normal rate	%	3000	\$ 1.60	\$4,800.00
6.		Statutory Holiday works hourly rate for all categories above normal rate	%	5000	\$ 1.60	\$8,000.00
7.		Extra for after hours, weekend or holiday works over normal hours work	%	4000	\$ 1.60	\$6,400.00
8.		Equipment supplied in accordance with rates set out in the current OPSS 127 (schedule of rental rate of construction equipment) for any work not listed above at a discount of	%	3000	\$ -	\$0.00
TOTAL CONTRACT PRICE						\$3,407,752.02
13% Harmonized Sales Tax (H.S.T.) Amount						\$443,007.76

NOTE: All of the above line items are estimates only. Metrolinx is not in anyway committed to using the quantities above. Unit Price given includes all material, labour and equipments, travel time or any other cost involved for the item to be completed. Item 1, 2, 3 and 4 (Part D) are applicable for works performed based on time and materials. Item 5, 6 and 7 (Part D) are to be calculated on the percentage basis. For example, in Item 5 (Part D) the Contractor is to take Metrolinx estimated \$3,000 of total work performed at normal hourly rate by different categories of labour. Multiply it by % for additional charge for weekend work. Add this extra amount to \$3,000. Enter the price in the extended total column.



## TENDER DOCUMENT FORM CONFLICT OF INTEREST

Emergent External Work in the East Region

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### 1.0 Conflict of Interest

As it pertains to Conflict of Interest:

1.1 If the box below is left blank or if this “Tender Document Form: Conflict of Interest” is not included as part of the Submission, the Bidder shall be deemed to declare that:

(a) there was no Conflict of Interest in preparing its Submission; and

there is no foreseeable Conflict of Interest in performing the contractual obligations contemplated in the Tender Document. Otherwise, if the statement in Section 1.1(b) below applies, check (“X”) the box.

(b) ☐ The Bidder declares that there is an actual or potential Conflict of Interest relating to the preparation of its Submission, and/or the Bidder foresees an actual or potential Conflict of Interest in performing the contractual obligations contemplated in the Tender Document.

1.2 If the Bidder declares an actual or potential Conflict of Interest by marking the box above, the Bidder must set out below details of the actual or potential Conflict of Interest:

Click here to enter text.

1.3 The following individuals, as employees, advisers, or in any other capacity (a) participated in the preparation of our Submission (whether as employees, advisers, or in any other capacity); AND (b) were employees, advisers or consultants of Metrolinx at any time within the twelve (12) months prior to the Closing:

Name of Individual:	Click here to enter text.
Job Classification:	Click here to enter text.
Department:	Click here to enter text.
Last Date of Employment with Metrolinx:	Click here to enter text.
Name of Last Supervisor:	Click here to enter text.
Brief Description of Individual’s Job Functions:	Click here to enter text.
Brief Description of Nature of	Click here to enter text.



**TENDER DOCUMENT FORM  
CONFLICT OF INTEREST**

Emergent External Work in the East Region

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Individual's participation in the Preparation of the Submission:	
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(Repeat above for each identified individual)

- 1.4 The Bidder agrees that, upon request, the Bidder shall provide Metrolinx with additional information from each individual identified above in the form prescribed by Metrolinx.



- 1.1 Bidders must meet all mandatory requirements stated below in order for their Submission to be considered further. Failure of a Bidder to meet all of the mandatory requirements listed below shall result in the Bidder's Submission being found non-compliant. Non-compliant Submissions shall not be considered further and shall be disqualified.
- 1.2 Bidders shall provide supporting documentation to substantiate compliance to each of the listed mandatory requirements. If the Bidder has not provided the supporting documentation specified for that mandatory requirement, Metrolinx has the right but not the obligation, following the Closing, to request that the Bidder provide such supporting documentation or to request that the Bidder identify where in its Submission this information has been provided. Failure of a Bidder to provide information required to substantiate compliance to a mandatory requirement may result in the Bidder's Submission being found non-compliant and disqualified.
- 1.3 Metrolinx has the right but not the obligation, to carry out further investigations to ensure the Bidder can meet the mandatory corporate, personnel and technical requirements to the satisfaction of Metrolinx in its sole discretion.

Mandatory Corporate, Personnel and Technical Requirements	Supporting Documentation Required to Substantiate Compliance
Mandatory Corporate Requirements	
The Bidder has a valid Workplace Safety and Insurance Clearance Certificate for the premium rate class, subclass or group as appropriate for the Work of this Contract, as issued by the Workplace Safety and Insurance Board.	<ul style="list-style-type: none"> <li>No supporting documentation required with the Submission. Metrolinx reserves the right to request a valid Workplace Safety and Insurance Clearance Certificate for the premium rate class, subclass or group as appropriate for the Work of this Tender Document, as issued by the Workplace Safety and Insurance Board, at any time after Closing.</li> </ul>
The Bidder has obtained a Bid Deposit for this Tender Process in accordance with Article 12.0 of Instructions to Bidders and shall provide the original Bid Deposit to Metrolinx, within three (3) Business Days after Closing.	<ul style="list-style-type: none"> <li>The Bidder shall provide an original Bid Deposit to Metrolinx in accordance with Article 12.0 of Instructions to Bidders of this Tender Document.</li> </ul>
<p>The Bidder has achieved one of the following:</p> <ol style="list-style-type: none"> <li>COR™ Certified Status with IHSA; or</li> <li>OHSAS 18001 Certification; or</li> </ol> <p>Out-of-Province COR™ certification and intends to apply for Out-of-Province COR™ Reciprocity (for bidding purposes only) through IHSA. Bidders applying for Out-of-Province Reciprocity must</p>	<ol style="list-style-type: none"> <li>A screen shot demonstrating the Bidder has achieved "Certified" status in Ontario, with IHSA, as it pertains to COR™</li> <li>A copy of the Bidder's OHSAS 18001 certificate or a screen shot demonstrating that the Bidder is certified in OHSAS 18001.</li> </ol>



<b>Mandatory Corporate, Personnel and Technical Requirements</b>	<b>Supporting Documentation Required to Substantiate Compliance</b>
submit the request directly to the Procurement Representative, for approval by Metrolinx, prior to reaching out to their COR <sup>TM</sup> associations for a reciprocity letter. Out-of-Province COR <sup>TM</sup> Reciprocity shall be approved on a case by case basis until such time Metrolinx issues a definitive list.	3 Upon receipt of Metrolinx approval, a letter from IHSA approving the Bidder's request for Out-of-Province COR <sup>TM</sup> Reciprocity."



## **GENERAL CONDITIONS OF THE CONTRACT**

**Emergent External Work in the East Region**  
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The documents, as stated under “General Conditions” of List of Contents, hereby form part of the General Conditions of the Contract and are appended to this Tender Document.



## GENERAL CONDITIONS OF THE CONTRACT

**Emergent External Work in the East Region**  
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### **1.0 Interpretation**

#### **1.1 Definitions**

- (a) Capitalized terms used in this Contract shall have the respective meanings ascribed thereto in Schedule A - Definitions.

#### **1.2 Time of the Essence**

- (a) Time is of the essence in the performance of a Party's respective obligations under this Contract.

#### **1.3 Currency**

- (a) All prices and sums of money and all payments made under this Contract shall be in Canadian dollars.

#### **1.4 Units of Measure**

- (a) All dimensions, quantities, performance specifications, calibrations and other quantitative elements used in this Contract shall be expressed in the International System of Units (SI), except where otherwise indicated.

#### **1.5 Language**

- (a) All communication between Metrolinx and the Vendor and between the Vendor and each of the Subvendors with regard to the Work shall be in the English language.

#### **1.6 References**

- (a) Each reference to a statute in this Contract is deemed to be a reference to that statute and to the regulations made under that statute, all as amended or re-enacted from time to time. Following any and all changes to Applicable Laws, the Vendor shall perform the Work in accordance with the terms of this Contract, including in compliance with Applicable Laws.
- (b) Any provision establishing a higher standard of safety, reliability, performance or service shall take precedence over a provision establishing a lower standard of safety, reliability, durability, performance or service.
- (c) Each reference, whether express or implied, to a Standard of any technical organization or Governmental Authority is deemed to be a reference, to that Standard as amended, supplemented, restated, substituted or replaced.



## GENERAL CONDITIONS OF THE CONTRACT

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- (d) Subject to any express definitions contained in this Contract, words and abbreviations which have well known technical or trade meanings are used in this Contract in accordance with such recognized meanings.
- (e) Where used in this Contract, "including" means including without limitation, and the terms "include", "includes", and "included" have similar meanings.
- (f) Each reference to an Article or Section within the Contract or Schedules shall refer to that Article or Section number in the Contract or the Schedule in which the reference occurs unless otherwise specified.
- (g) The division of this Contract into Articles and Sections, the insertion of headings, and the provision of a table of contents are for convenience of reference only and do not affect the construction or interpretation of this Contract.

### 1.7 Time

- (a) Unless otherwise specified, references to time of day or date mean the local time or date in Toronto, Ontario. When any period of time is referred to in this Contract by days between two dates, it will be calculated by excluding the first and including the last day of such period.
- (b) If, under this Contract, any payment or other event falls due on or as of a day that is not a Business Day, that payment or other event shall fall due instead on the next day that is a Business Day, unless expressly stated otherwise.
- (c) Unless otherwise specified, references to "day" shall mean calendar day.

### 1.8 Schedules

- (a) The following Schedules attached to this Contract shall constitute an integral part of this Contract and all expressions defined in this Contract shall have the same meanings in such Schedules:
  - (i) Schedule A - Definitions
  - (ii) Schedule B - Financial Terms
  - (iii) Schedule C - Insurance
  - (iv) Schedule D - Dispute Resolution
  - (v) Schedule E - Vendor Personnel



## GENERAL CONDITIONS OF THE CONTRACT

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### 1.9 Order of Precedence

- (a) In the event of discrepancies, inconsistencies or ambiguities of the wording of the documents noted in the List of Contents, the wording of the document that first appears in the List of Contents shall prevail over the wording of a document subsequently appearing in the List of Contents.

## 2.0 Performance

### 2.1 Term of the Contract

- (a) This Contract shall take effect on the Effective Date hereof and shall continue in full force and effect until the earlier of: (i) Contract Closeout or (ii) the date that this Contract is terminated in accordance with its terms (the "Term").

### 2.2 Performance of the Work

- (a) The Vendor shall carry out and complete the work set forth in "Scope of Work" (the "Work") to the satisfaction of Metrolinx in accordance with all the terms of this Contract.
- (b) The Vendor shall supply the Work diligently and continuously in accordance with the scheduling requirements set out in the Project Schedule. Without limiting the generality of the foregoing, the Vendor shall perform the Work so as to enable Metrolinx to meet any timelines imposed on it under any Third Party Contracts, provided that such timelines have been identified in the Project Schedule or otherwise expressly communicated to the Vendor.
- (c) The Vendor acknowledges and agrees that each of the Vendor's Personnel shall be available to perform the Work in accordance with the required duration specified in Schedule E - Vendor Personnel. The Vendor further acknowledges and agrees that Metrolinx may, acting in its sole discretion, change the schedule including in respect of the timing of the provision of the Work and availability and number of the Vendor's Personnel. Without limiting the generality of the foregoing, Metrolinx may from time to time, on prior written notice to the Vendor twenty (20) Business Days', unilaterally extend or reduce the required duration with respect to the availability of any of the Vendor's Personnel or direct the Vendor to increase the number of Vendor's Personnel available. Metrolinx and the Vendor shall meet at a minimum, on a quarterly basis to discuss the progress of the Work and the anticipated scheduling needs with respect to the Vendor's Personnel.



## **GENERAL CONDITIONS OF THE CONTRACT**

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- (d) Metrolinx may, from time to time, in its sole discretion, but is not required to, direct the Vendor to cause specific Vendor Personnel to perform certain tasks or activities that form part of the Work in accordance with the scheduling requirements provided by Metrolinx. Any such instructions shall be provided by Metrolinx in writing to the Vendor no less than five (5) Business Days before the specified tasks or activities are required to be performed by the Vendor Personnel.
- (e) The Vendor shall provide, at the sole cost and expense of the Vendor, save as otherwise provided in this Contract, all necessary equipment, goods, materials, analysis, transportation, accommodation, labour, staff and technical assistance and incidentals required in performing the Work and to undertake, perform and complete its undertakings, obligations and responsibilities provided for in this Contract.
- (f) The Work shall be provided in a professional, timely and economical manner according to the Required Standard of Care. Without limitation, the Vendor shall ensure that the Work is conducted in a manner that will maintain good relations with the general public and Metrolinx.
- (g) The Vendor shall comply with and conform to all Applicable Laws, applicable to the Work to be provided by, and the responsibilities and obligations of, the Vendor under this Contract.
- (h) The Vendor shall not alter any part of a Joint Venture except with the prior written consent of Metrolinx in its sole discretion.

### **2.3 Subvendors**

- (a) Other than the Subvendors identified in the Submission, the Vendor shall not subcontract the Work to any Person without the prior written consent of Metrolinx. No subcontracting by the Vendor shall relieve the Vendor of any responsibility for the full performance of all obligations of the Vendor under this Contract. Notwithstanding the approval of any Subvendors by Metrolinx, the Vendor shall be fully responsible for every Subvendor's activities, works, services and acts or omissions.
- (b) The Vendor shall be solely responsible for the payment of any Subvendors.
- (c) The Vendor shall co-ordinate the services of all Subvendors employed, engaged or retained by the Vendor with Metrolinx and, without limiting the generality of any other provision of this Contract, the Vendor shall be liable to Metrolinx for costs or damages arising from errors or omissions of such Subvendors or any of them. It shall be the Vendor's responsibility to control and review the Work of its own forces and of all its Subvendors and to



## GENERAL CONDITIONS OF THE CONTRACT

ascertain that all Work are performed in accordance with this Contract, all governing regulations and the Required Standard of Care.

- (d) In any subcontract, the Vendor shall ensure that the Subvendor is bound by conditions compatible with, and no less favorable to Metrolinx than, the conditions of this Contract.
- (e) The Vendor warrants and represents that it and any of its permitted Subvendors and the respective workforce of each are fully qualified to perform the Work and perform this Contract and hold all requisite Approvals.
- (f) The Vendor shall only employ, for the purposes of this Contract, such persons as are careful, skilled and experienced in the duties required of them and have the required Domain Expertise, and must ensure that every such person is properly and sufficiently trained and instructed. The Vendor shall ensure that all workers and persons employed by them or under their control or employed by or under the control of its Subvendors comply with the terms of this Contract and, in particular without limiting the foregoing, the responsibilities of the Vendor with respect to matters concerning safety, compliance with the Applicable Laws and the conduct of the Work.
- (g) The Vendor shall be an independent vendor with respect to the Work to be provided under this Contract and nothing contained in this Contract shall be construed as constituting a joint venture or partnership between the Vendor and Metrolinx. Neither the Vendor nor its Subvendors shall be deemed to be employees, agents, servants or representatives of Metrolinx in the performance of the Work hereunder.
- (h) The Vendor shall not remove or change any Subvendors, or materially reduce the responsibilities of any Subvendors in relation to the provision of the Work except with the prior written consent of Metrolinx in its sole discretion. The proposed replacement Subvendor shall possess the requisite Domain Expertise and similar qualifications, experience and ability as the outgoing Subvendor.

### 2.4 Vendor Personnel

- (a) The Vendor shall select and employ a sufficient number of suitably qualified and experienced Vendor Personnel to perform and provide the Work, as determined with reference to the requirements of the Work to be performed by each individual or otherwise as required pursuant to the Contract. All Vendor Personnel shall possess or, where permitted, shall be supervised by persons who possess, the professional accreditation required to complete the Work.



## **GENERAL CONDITIONS OF THE CONTRACT**

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- (b) If a role is described in Schedule E - Vendor Personnel, the Vendor shall fill that role with a person who meets the qualifications, experience and minimum years of experience requirements that are contained in Schedule E - Vendor Personnel.
- (c) The Vendor shall provide effective and efficient supervision to ensure that the quality of workmanship meets the requirements of the Contract.
- (d) The Vendor shall ensure that the Vendor Personnel assigned to perform the Work shall:
  - (i) act in a proper and professional manner in accordance with the standards generally used recognized by the industry; and
  - (ii) comply with all applicable Metrolinx policies and procedures, provided that the Vendor has been made aware of same.

### **2.5 Third Party Work**

- (a) The Vendor shall reasonably cooperate with Metrolinx and any Third Party and shall co-ordinate the Work with any and all Third Party Work. Without limiting the generality of the foregoing, the Vendor shall not alter, unreasonably interfere with or make it difficult to access any Third Party Work, except with the express written consent of Metrolinx.
- (b) The Vendor shall make best efforts to coordinate with Metrolinx and all applicable Third Parties in order to minimize:
  - (i) any delays to or interference with any Third Party Work within the rail corridors;
  - (ii) costs resulting from any delays to or interference with Third Party Work; and
  - (iii) impacts on the operations of, or use of the rail corridors by, Third Party Operators, including any delays to rail passenger or freight service on the rail corridors.
- (c) When and as directed by Metrolinx, the Vendor shall participate with Metrolinx employees and any applicable Third Parties in reviewing their respective schedules and cause designated Vendor Personnel to attend such meetings with Third Parties as may be reasonably requested by Metrolinx from time to time.
- (d) In the event that the proper performance of any part of the Work depends upon Third Party Work, the Vendor shall promptly inspect such Third Party Work and provide written notice to Metrolinx of any delays or defects in



## GENERAL CONDITIONS OF THE CONTRACT

**Emergent External Work in the East Region**  
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such Third Party Work that render such Third Party Work unavailable or unsuitable for integration with the Work.

- (e) Claims, disputes and other matters in question between the Vendor and Third Parties shall be dealt with in accordance with Schedule D - Dispute Resolution, provided that the Third Party has reciprocal obligations. The Vendor and Metrolinx shall be deemed to have consented to arbitration of any dispute with any Third Party whose contract with Metrolinx contains a similar dispute resolution provision that includes an agreement to submit to binding arbitration, provided that Metrolinx, at its sole and absolute discretion, shall be entitled to refuse to include any dispute with a Third Party from this Contract.

### 2.6 Non-Interference with Operations

- (a) The Vendor understands and agrees that:
  - (i) Metrolinx and Third Party Operators are in the business of moving large volumes of passengers and cargo through rail corridors safely, expeditiously and according to a fixed timetable;
  - (ii) the success of the businesses of Metrolinx and Third Party Operators depends on meeting the above objectives on a daily basis;
  - (iii) Metrolinx has contractual and statutory obligations to ensure the safety of all persons on the rail corridors and the property and facilities adjacent thereto; and
  - (iv) Third Party Operators operating in and through the rail corridors and Third Party Vendors working in the rail corridors have similar restrictions and requirements.
- (b) Notwithstanding any other term or condition set out in this Contract, the safety and non-disruption of all Third Parties operating in the rail corridors is of paramount importance. Consequently, the Vendor acknowledges and agrees that the safety of all trains, passengers, operating and maintenance personnel, goods and other transported cargos, as well as the Vendor Personnel and the public in general will take precedence over all actions or non-actions of the Vendor, whether mandated or not by any other terms and conditions of this Contract.
- (c) The Vendor shall not disrupt the movement of any rail traffic in or through the rail corridors of either Metrolinx or the Third Party Operators except where it has obtained the prior written consent of Metrolinx to such



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disruption (which consent may be withheld in the sole discretion of Metrolinx).

### 2.7 Key Personnel

Not Applicable

### 2.8 Vendor's Representative

- (a) The Vendor shall assign a Vendor's Representative who will direct the provision of the Work. During the Term, the Vendor's Representative will maintain ongoing contact with Metrolinx to ensure that issues are dealt with in an efficient, effective and timely manner. The Vendor's Representative shall be the primary point of contact for Metrolinx for significant issues including commercial issues and Disputes and shall have overall responsibility for coordinating the performance of the Vendor's obligations under this Contract.

### 2.9 Metrolinx Responsibilities

- (a) Metrolinx shall designate an individual to act as its representative (the "Metrolinx Representative") who will transmit instructions to, and receive information from the Vendor. The Metrolinx Representative will be accountable for all project expenditures relative to design, procurement and construction activities.

### 2.10 French Language Services

- (a) Insofar as this Contract relates to the provision of services directly to the public on behalf of Metrolinx, the French Language Services Act shall be applicable to the performance of the Work. A service for the purposes of the French Language Services Act refers to any service or procedure provided to the public. Services being provided in French must be equivalent to those offered in English, and must be available within the same timeframe and of the same quality.
- (b) The Vendor shall provide and perform the Work in a manner so as to comply with the requirements set out in the French Language Services Act.
- (c) Without limitation, services and communications which must be provided in French in French Designated Areas may include:
  - (i) Consultations/Public Meetings: Presentation materials, displays, comments cards/feedback mechanism or other materials. Vendor must have at least one bilingual staff or interpreter on hand able to answer questions and discuss technical drawings/documents in



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French. As applicable, the Vendor shall compile and analyze the views of Francophones separately, as they may have different concerns.

- (ii) Signage: Construction contracts may from time to time involve erecting temporary signage to redirect or warn the public of hazards. Such signage shall be bilingual.
- (iii) Communications: Communication plans, customer impact documents, information bulletins, notices of service disruption and public relations information.

### 2.11 Vendor Work Performance Rating

- (a) Metrolinx shall during the term of the Contract, maintain a record of the performance of the Vendor completing Work for Metrolinx. This information shall be used to complete a “Contract Performance Appraisal” report, a copy of which will be forwarded to the Vendor upon completion of the Work. Interim “Vendor Performance Appraisal” reports may be issued, as deemed appropriate by Metrolinx, at any time during the Term of the Contract. A copy of the Contract Performance Appraisal template can be found under “Attachments”.
- (b) The overall history of the Vendor in performing work for Metrolinx, including the Vendor’s performance pursuant to this Contract, will be considered in the evaluation of future submissions from the Vendor.
- (c) Metrolinx reserves the right in future procurements, during any procurement process, to reject any submissions by the Vendor due to unsatisfactory performance history with Metrolinx.
- (d) Non-compliance with Contract requirements will be identified to the Vendor.
- (e) The information contained in the “Contract Performance Appraisal” may be provided to the Ministry of Transportation, other ministries and other government agencies. Such performance reviews may be relied upon to reject the Vendor’s submission on any procurement processes.

## 3.0 Health and Safety

### 3.1 Occupational Health & Safety Act

- (a) The Vendor shall comply with OHSA, and any obligations of the Vendor as an "employer" thereunder, and with all regulations made under the OHSA.



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- (b) The Vendor shall report to Metrolinx any non-compliance by a Subvendor in the performance of the Work with the regulations under the OHSA if and when brought to the attention of the Vendor.
- (c) The Vendor acknowledges that lack of compliance with applicable provincial or municipal health and safety requirements will be and are intended to be documented and kept on file, and that such lack of compliance may cause:
  - (i) the Vendor's performance of the Work to be suspended; or
  - (ii) this Contract to be cancelled by Metrolinx.
- (d) The Vendor will be under an obligation to cease the Work, or any part thereof, if an authorized representative of Metrolinx so requires orally or in writing on the grounds that there has been any violation of the OHSA or any of the regulations under it, and thereafter the Work or affected part thereof shall not resume until any such violation has been rectified.
- (e) The Vendor shall be responsible for any delay caused by the Vendor in the progress of the Work as a result of any violation of provincial or municipal health and safety requirements by the Vendor, it being understood that such delay shall be not be a Force Majeure for the purposes of extending the time for performance of the Work or entitling the Vendor to additional compensation, and the Vendor shall take all necessary steps to avoid delay in the final completion of the Work without additional cost to Metrolinx, which shall not be responsible for any additional expense or liability resulting from any such delay.
- (f) Nothing in this Section 3.1 shall be taken as making Metrolinx the "employer" (as described in Section 3.1(a) of any workers employed or engaged by the Vendor for the Work, either instead of or jointly with the Vendor.

### 3.2 Safety Requirements

- (a) The Vendor shall comply with the "Safety Requirements" and "Environmental Protection" (if applicable) sections of the of Scope of Work. Safety of Persons at or near a Place of Work and the public is of paramount concern to Metrolinx. In the performance of the Work, the Vendor shall not in any manner endanger the safety of, or unlawfully interfere with, Persons on or off the Place of Work, including the public.
- (b) The Vendor specifically covenants and agrees that:



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- (i) it shall comply with best industry practice in Ontario respecting health and safety in a manner that recognizes and minimizes the risk to workers, other individuals, property and the operations of Metrolinx and any railways, to the extent that such practices are not inconsistent with an express instruction set out in this Contract or provided by Metrolinx;
- (ii) it shall comply, and shall ensure that all Vendor Personnel comply, in all regards with the requirements of OHSA and/or the Canadian Labour Code, Part II, as applicable;
- (iii) it shall comply, and shall ensure that all Vendor Personnel comply, in all regards with the safety requirements set out in the Contract Documents;
- (iv) it shall maintain, strictly enforce and comply, and ensure that all Vendor Personnel comply, in all regards with the Vendor's own health and safety program, to the extent not inconsistent with this Contract and Metrolinx' health and safety program;
- (v) it shall comply, and shall ensure that all Vendor Personnel comply, with any and all safety-related directives or instructions issued by Metrolinx;
- (vi) it shall take all steps reasonable in the circumstances to ensure the health and safety of all workers for which it has responsibility under OHSA; and
- (vii) it shall make available, at Metrolinx' request, such policies and procedures relating to its occupational health and safety matters as Metrolinx may from time to time request, and hereby covenants that all Vendor Personnel have been properly trained and are knowledgeable with respect to these policies and procedures.

### 3.3 Railway Safety

- (a) If applicable, the Vendor shall comply with "Railway Safety Requirements" of Scope of Work and acknowledges and agrees that:
  - (i) access to the rail corridors by the Vendor and any Vendor Personnel, shall at all times be subject to the direction of Metrolinx and/or a third party designated by Metrolinx as to rail safety matters and any applicable railway operating rules; and
  - (ii) any and all questions, matters or disputes which may arise affecting the safety of railway operations or the maintenance of the



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railways shall be referred to Metrolinx which shall in its discretion decide all such questions, matters and disputes.

- (b) The Vendor shall perform the Work, and shall ensure that all Vendor Personnel perform the Work, in accordance with the Canadian Rail Operating Rules from time to time approved by the Minister of Transport under the authority of the Railway Safety Act (Canada), the Standards, and all other applicable Transport Canada guidelines, railway standards, and practices.
- (c) In the event that the Work is the subject of an audit or inspection by any Governmental Authority, the Vendor shall at its own expense:
  - (i) provide notice of such audit or inspection to Metrolinx;
  - (ii) make available or cause to be made available such reasonable information and material as may be required and shall otherwise reasonably cooperate with Transport Canada officials;
  - (iii) provide Metrolinx with a copy of any audit or inspection report or other results or recommendations issued by Transport Canada, as soon as practicable but in any event within five (5) Business Days of receipt thereof by the Vendor; and
  - (iv) take all steps necessary to rectify, in consultation with and as directed by Metrolinx, any issues identified by Transport Canada.

### 3.4 Workers' Rights

- (a) The Vendor shall at all times pay or cause to be paid any assessments or compensation required to be paid by the Vendor or its Subvendors pursuant to any applicable workers' compensation legislation, and upon failure to do so, Metrolinx may pay such assessments or compensation to the Workplace Safety and Insurance Board and may deduct such assessments or compensation from monies due to the Vendor. The Vendor shall comply with all regulations and laws relating to workers' compensation.

### 3.5 Delays

- (a) Without limiting the obligations of the Vendor described in Section 3.6 – Construction Safety, Metrolinx may, by Notice in Writing, direct the Vendor to stop the Work or stop parts of the Work where Metrolinx determines that there is an imminent risk to the safety of persons or property at the Place of the Work. In the event that the Vendor receives such notice, it shall immediately stop the Work, secure the Place of the Work, rectify the safety issue to the satisfaction of Metrolinx, and make up any lost time due



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to the safety issue, all at the Vendor's cost. The Vendor shall not be entitled to an extension of the agreed to time and cost, per Task Assignment.

### 3.6 Construction Safety

- (a) The Vendor shall be solely responsible for construction safety at the Place of the Work and for compliance with the rules, regulations and practices required by the applicable construction health and safety legislation and shall be responsible for initiating, maintaining and supervising all safety precautions and programs, in connection with the performance of the Work."
- (b) Metrolinx shall be the "Constructor" for the Work as defined in and in accordance with OHSA. As Constructor, Metrolinx shall file the "Notice of Project" with the Ontario Ministry of Labour. The Vendor further covenants and agrees to promptly provide such information and do such things as may be required to enable Metrolinx to fulfill its obligations pursuant to OHSA. Without limiting the generality of the foregoing, the Vendor shall:
  - (i) immediately provide written notice to Metrolinx of any accident at the Place of the Work causing personal or possible personal injury to any individual, and to immediately provide such details to Metrolinx, including the identity of the personnel, the nature of such injuries which were suffered or may have been suffered and any other information as Metrolinx may require or request; and
  - (ii) participate in or provide to its personnel such health and safety training, as Metrolinx may reasonably require, prior to the Commencement of the Work for each Task Assignment, and from time to time.
- (c) The Vendor represents and warrants that it is familiar with the obligations imposed on an "employer" as defined in the Occupational Health and Safety Act (Ontario), and that it has in place a health and safety program to ensure the health and safety of all workers for which it has responsibility under the said Act."
- (d) The Vendor shall comply in all respects with the requirements of the Occupational Health and Safety Act (Ontario) and its own health and safety program to take all steps reasonable in the circumstances to ensure the health and safety of all workers for which it has responsibility under the said Act. The Vendor shall maintain and strictly enforce its health and safety program. The Vendor shall also provide such information within such timeframes as may be required in order to allow Metrolinx to fulfill its obligations pursuant to the Occupational Health and Safety Act (Ontario),



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including, without limitation, the obligation to notify the Director under such Act in the event of an accident causing personal injury.”

- (e) The Vendor shall comply with all requirements of the Workplace Hazardous Materials System (WHMIS) regarding the use, handling and storage of controlled products.”
- (f) Prior to commencing the Work, of each Task Assignment, the Vendor shall:
  - (i) ensure that all prescribed posting requirements are posted on site for all workers to view;
  - (ii) provide a copy of the Vendor’s Health & Safety Policy to Metrolinx;
  - (iii) prepare and submit to Metrolinx a Site Specific Work Plan Submittal (this includes: site-specific hazardous assessment plans as applicable pertaining to but not limited to: live power work, lock out/tag out/shut down/switch covers, confined space entry, cranes and crane lifts, and other hazardous assessment plans as required); and
  - (iv) review and comply with facility specific hazard, safety and orientation requirements as applicable.
- (g) The Vendor shall indemnify and save harmless Metrolinx, its agents, officers, directors, employees, consultants, successors and assigns from and against the consequences of any and all safety infractions committed by the Vendor or any of its Subvendors or their subcontractors under the construction health and safety legislation applicable to the Place of the Work, including but not limited to, payment of legal fees and disbursements on a full indemnity basis.
- (h) Metrolinx shall have the right, from time to time during the performance of the Work, to perform or cause to be performed, an on-site safety audit of the Work at the Place of the Work. Metrolinx may identify specific safety issues or Safety Incidents as set out in Section 20.0 – Liquidated Damages of Schedule B, and the Vendor shall address such issues or Safety Incidents promptly to the satisfaction of Metrolinx, at the Vendor’s cost, and provide Metrolinx with sufficient evidence of correction. No act or omission of Metrolinx during the audit shall constitute a transfer of liability from the Vendor to Metrolinx. The Vendor remains responsible for ensuring safety of the Work and the Place of the Work.”



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### **4.0 Financial Terms**

#### **4.1 Financial Terms**

- (a) All financial and payment terms applicable to this Contract and the Work are set out in Schedule B - Financial Terms.

### **5.0 Construction Act**

#### **5.1 Construction Act**

- (a) If applicable, Metrolinx shall retain an amount equal to the amount required to be held back Pursuant to the Construction Act from each sum otherwise payable to the Vendor under this Contract that is not a release of any monies so retained.
- (b) Subject to Section 5.1(c), any holdbacks retained pursuant to Section 5.1(a) shall not be due and payable until after the expiry of any applicable period for preservation of liens under the Construction Act, and provided that no liens are preserved by persons supplying services or materials to the Vendor.
- (c) Notwithstanding any provision of this Contract,
  - (i) The Vendor shall cause any and all construction liens and certificates of action relating to the Work registered or preserved by any Subvendor, supplier, Vendor's employees, or any other party to whom the Vendor is or may be responsible at law, to be discharged or vacated, or cause to be discharged or vacated, immediately but in any case no later than five (5) Business Days of the date of registration or preservation, all at the Vendor's sole expense. The Vendor shall not be entitled to receive any payment from Metrolinx until all such claims for lien and certificates of action have been vacated or discharged.
  - (ii) The Vendor shall cause any and all written notices of lien relating to the Work given to any person, including, but not limited to, Metrolinx by any Subvendor, supplier, Vendor's employees, or any party to whom the Vendor is or may be responsible at law, to be withdrawn or vacated, and the Vendor shall do so immediately but in any case no later than ten (10) Business Days of the written notice of lien having been given, all at the Vendor's sole expense.
  - (iii) If the Vendor fails to discharge or vacate any such lien or certificate of action within five (5) Business Days, or to have any such written notice of lien withdrawn or vacated within ten (10) Business Days, then Metrolinx may, at its sole option, do so and set off and deduct



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from any amount owing to the Vendor, all costs and expenses of so doing, and of defending any related action, including without limitation, the costs of borrowing the appropriate cash, letter of credit or bond as security, and legal fees and disbursements on a full indemnity basis. If there is no amount owing by Metrolinx to the Vendor, then the Vendor shall reimburse Metrolinx for all of the said costs and expenses of so doing.

### **6.0 Right of Ownership and Use**

#### **6.1 General**

- (a) The Vendor shall be responsible for procuring for Metrolinx the right to use all Vendor Intellectual Property required in connection with the Work.
- (b) In the event that any third party Intellectual Property (other than the Metrolinx Intellectual Property) is required in connection with the Work, the Vendor shall, at its own cost, be responsible for entering into and fully maintaining, during the Term, all related and applicable license, and maintenance and support agreements for such third party Intellectual Property.
- (c) If during the Term, third party Intellectual Property (other than Metrolinx Intellectual Property) used in connection with the Work ceases to be commercially available, then the Vendor shall:
  - (i) promptly provide Metrolinx with notice of such event; and
  - (ii) promptly replace such third party Intellectual Property with an alternative product.
- (d) Any increased costs resulting from the foregoing shall be addressed pursuant to the change management process described in Article 8; provided that, in the event such Intellectual Property ceases to be available as a result of any act or omission of the Vendor, the Vendor shall be responsible for all costs associated therewith.

#### **6.2 Ownership of Metrolinx Intellectual Property**

- (a) As between Metrolinx and the Vendor, Metrolinx owns and shall own all right, title and interest in and to the Metrolinx Intellectual Property. To the extent that the Vendor requires the use of any Metrolinx Intellectual Property in connection with this Contract or the Work, Metrolinx hereby grants to the Vendor, during the Term, a non-exclusive, non-transferable, non-sublicenseable, fully paid-up, royalty-free right and license for the Vendor and the Vendor Personnel to access, use, copy, support, maintain



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and, to the extent reasonably necessary to provide the Work, modify, the Metrolinx Intellectual Property solely for the purposes of fulfilling the Vendor's obligations under this Contract, subject to compliance with the confidentiality obligations set out in this Contract.

- (b) Metrolinx grants no rights other than explicitly granted herein, and the Vendor shall not exceed the scope of this license. Except for the limited right to use such Metrolinx Intellectual Property as set forth in this section, the Vendor shall not have or acquire any rights in or to the Metrolinx Intellectual Property.

### 6.3 Ownership of Vendor Intellectual Property

- (a) As between Metrolinx and the Vendor, the Vendor owns all right, title and interest in and to the Vendor Intellectual Property. The Vendor hereby grants to Metrolinx a non-exclusive, irrevocable, perpetual, fully paid-up, royalty-free and worldwide right and license to access, use, copy, support, maintain, modify (including create derivative works from), sublicense (through multiple tiers), assign, distribute or otherwise exploit any Vendor Intellectual Property that is integrated with, embedded in, forms part of or is otherwise required to access, use, copy, support, maintain, modify (including create derivative works from), sublicense, assign, distribute or otherwise exploit any Custom Intellectual Property; provided, however, that the foregoing license does not permit Metrolinx to use the Vendor Intellectual Property in its standalone form or for any purpose other than as part of or in conjunction with the Custom Intellectual Property it is associated with. The Vendor grants no rights other than explicitly granted herein, and Metrolinx shall not exceed the scope of this license.
- (b) If the Vendor integrates with or embeds in any Deliverables any Intellectual Property provided by a third party vendor, Subvendor, independent vendor, Subvendor or other Person, the Vendor shall obtain for Metrolinx the same license rights for Metrolinx has set forth in Section 6.3(a).

### 6.4 Ownership of Custom Intellectual Property

- (a) Metrolinx owns and shall own all right, title and interest in and to the Custom Intellectual Property. The Vendor hereby irrevocably assigns and transfers to Metrolinx all right, title and interest, throughout the world in and to all Custom Intellectual Property produced pursuant to this Contract including all applicable Intellectual Property Rights thereto. If the Vendor has any rights to Custom Intellectual Property that cannot, or which the Parties agree will not, be assigned to Metrolinx, the Vendor hereby grants to Metrolinx a non-exclusive, irrevocable, perpetual, fully paid-up, royalty-free and worldwide right and license to access, use, copy, support, maintain, modify (including create derivative works from), sublicense (through



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multiple tiers), assign, distribute or otherwise exploit the Custom Intellectual Property.

### 6.5 Employee and Subvendor Contracts

- (a) The Vendor shall obtain from each of the Contract Personnel an assignment of rights to the Custom Intellectual Property and a waiver of any moral rights (and any similar rights to the extent that such rights exist and may be waived in each and any jurisdiction throughout the world) in and to the Custom Intellectual Property, for the benefit of Metrolinx and its respective successors, assigns, licensees and vendors, prior to the performance of any Work by each such individual. The Vendor shall provide copies of such documentation to Metrolinx upon request.

### 6.6 Title and Risk of Loss

- (a) Risk of loss of or damage to the goods shall remain with the Vendor, and shall pass to Metrolinx upon acceptance of the goods at the designated Place of Work.
- (b) The Vendor shall be liable for all costs up to the full replacement value of any good(s) prior to passage of title of the goods to Metrolinx. Any goods, which prior to acceptance by Metrolinx shall become damaged from any cause whatsoever, shall be made good at the expense of the Vendor, except that, in the event that and to the extent that negligence on the part of Metrolinx or its employees or representatives causes the above-mentioned damage, Metrolinx shall accept responsibility and reimburse the Vendor for the price of necessary repairs. In either event the time for delivery shall be adjusted accordingly.
- (c) Risk of loss of or damage to spare parts, capital spares, diagnostic tools and other deliverables covered by the Contract shall remain with the Vendor until, and shall pass to Metrolinx upon, delivery and acceptance of the good by Metrolinx at the designated Place of Work.
- (d) The Vendor shall be liable for all costs up to the full replacement value of any spare parts, capital spares, diagnostic tools and other deliverables covered by this Contract prior to acceptance by Metrolinx.
- (e) Upon any payment being made to the Vendor for or on account of materials, parts, Work-in-process, or finished Work, either by way of progress payments or accountable advances or otherwise, title in and to all materials, parts, Work-in-process and finished Work so paid for by such progress payments or accountable advances or otherwise shall vest and remain in Metrolinx unless already so vested under any provision of the Contract and the Vendor shall be responsible therefor in accordance with



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the provisions of Section 6.6 herein, it being understood and agreed that such vesting of title in Metrolinx shall not constitute acceptance by Metrolinx of such materials, parts, work-in-progress and finished work and shall not relieve the Vendor of its obligations to perform the Work in conformity with the requirements of the Contract.

- (f) The Vendor shall take reasonable and proper care of all property, title to which is vested in Metrolinx, while the same is in, on or about the plant and premises of the Vendor or otherwise in his possession or subject to his control and shall be responsible for any loss or damage resulting from his failure to do so other than loss or damage caused by ordinary wear and tear.

### **7.0 Insurance**

#### **7.1 Insurance Requirements**

- (a) The Vendor agrees to purchase and maintain in force, at its own expense and for the duration of this Contract, the policies of insurance set forth in Schedule C - Insurance, which policies will be in a form and with an insurer or insurers acceptable to Metrolinx. A certificate of these policies originally signed by the insurer or an authorized agent of the insurer and copies of the policies must be delivered to Metrolinx prior to the commencement of the Work.

### **8.0 Changes and Task Assignment Process**

#### **8.1 Changes Requested by Metrolinx**

- (a) Metrolinx may, in writing, request changes or alterations to the Work, or request additional services from the Vendor (any of the foregoing, "Changes"). Subject to this Article 8, the Vendor shall comply with and implement all reasonable Metrolinx Change requests, and the performance of such requests shall be in accordance with this Contract.

#### **8.2 Changes Recommended by the Vendor**

- (a) The Vendor shall promptly notify Metrolinx in writing if the Vendor considers that any notice, direction, requirement, request, correspondence, or other fact, event, or circumstance comprises, requires, or results in a Change, and seek instructions as to whether or not to proceed to implement such Change.

#### **8.3 Change Management Process**

- (a) Where a Change request is initiated by Metrolinx pursuant to Section 8.1, Metrolinx shall set out, in the Change request:



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- (i) the proposed prices for the contemplated changes;
  - (ii) the timing requirements for the implementation of the Change; and
  - (iii) any other information which may reasonably be required.
- (b) The Vendor shall respond to Metrolinx' Change request in writing within ten (10) Business Days.
- (c) Where a Change is initiated by the Vendor pursuant to Section 8.2, the Vendor shall set out in the Change request, conforming to Section 8.3(a):
  - (i) a description of the proposed Change;
  - (ii) the estimated cost of the proposed Change;
  - (iii) any proposals, designs or other details or information which may be reasonably required; and
  - (iv) the reasons for the proposed Change, including the benefits of the proposed Change and any consequences of not proceeding with the Change.
- (d) No Changes shall be implemented and no Change request shall become effective until an amendment or change order documenting the Change has been executed by both Parties, and such executed instrument shall be the final determination of any adjustments to the Contract price, the Project Schedule, or the terms and conditions of the Contract, as applicable, with respect to the Change set out therein.
- (e) Where Metrolinx and the Vendor cannot agree as to whether or not a particular notice, direction, requirement, request, correspondence, or other fact, event, or circumstance comprises, requires, or results in a change to the scope of the Work, then either Party may refer the issue to dispute resolution in accordance with Article 16.

### **8.4 Task Assignment Process**

- (a) The Vendor shall be responsible for facilitating the Task Assignment Process described in this Section, including the time required to review scope of work and schedule prior to submitting a Quotation to Metrolinx, pursuant to Sections 14.0 and 15.0 of Schedule B - Financial Terms.
- (b) The Task Assignment Process shall be administered and authorized as follows (the "Task Assignment Process"):



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- (i) The Metrolinx Representative shall submit to the Vendor a request for a quotation related to a specific Task Assignment;
  - (ii) Upon receipt of such request from Metrolinx, the Vendor shall, in respect of the identified Task Assignment, provide to Metrolinx a response in the form of a Quotation, as per Section 15.0 of Schedule B - Financial Terms.
- (c) As and if required, the Parties shall meet to review the requirements for the Task Assignment.
- (d) Subsequent to the review meeting, and based on the results of the review meeting, the Vendor shall make its own determination of the Vendor's work effort and fee cost to provide the Vendor's scope of services for the task.
- (e) No amounts shall be payable in respect of any Task Assignment unless and until Metrolinx has approved such expenditure in writing, which shall be subject to Schedule B - Financial Terms.
- (f) Upon the approval by Metrolinx of any Quotation, the Vendor shall be responsible for the completion of the Work related to the Task Assignment thereof in accordance with the terms and conditions set out in this Contract.

### **8.5 Performance of Changes**

- (a) Metrolinx shall determine by whom and for what amounts the items included in each Change will be performed.
- (b) Metrolinx shall have the right, exercisable at its sole discretion, to require the Vendor to use a third party to perform any Work related to a Change. Metrolinx may exercise this right generally, by requiring the Vendor to provide the Work through a third party selected by the Vendor, or by requiring the Vendor to utilize a third party identified by Metrolinx.
- (c) The Vendor shall obtain prior approval of Metrolinx before entering into a subcontract, amending an existing subcontract or performing own forces work included in a Change.

## **9.0 Additional Resources**

### **9.1 Additional Resources**

- (a) In addition to, or in connection with, a request for additional or altered services pursuant to Article 8, at any time during the Term, Metrolinx shall have the right in its discretion to require the Vendor to increase the number of Vendor Personnel upon twenty (20) days' notice.



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- (b) Unless otherwise agreed to in writing by Metrolinx, such additional Vendor Personnel shall be available to report for work at any Place of Work designated by Metrolinx within twenty (20) days of receipt of a written request from Metrolinx pursuant to Section 9.1(a).
- (c) The hourly rate payable in respect of additional Vendor Personnel shall be as set out in the Articles of Agreement.

### **10.0 Confidential Information, Personal Information, Freedom of Information, Access and Audit Rights**

#### **10.1 Confidential Information**

- (a) The Vendor shall keep all Confidential Information confidential. Without limiting the generality of the foregoing, the Vendor shall:
- (b) not disclose, reveal, publish, or disseminate any Confidential Information to anyone, except as permitted pursuant to this Contract;
- (c) shall use Confidential Information only in connection with this Contract and the performance of the Work;
- (d) shall take all reasonable steps required to prevent any unauthorized reproduction, use, disclosure, publication, or dissemination of the Confidential Information; and
- (e) shall immediately notify Metrolinx in the event that it becomes aware of any unauthorized disclosure of Confidential Information.

#### **10.2 Permitted Disclosure**

- (a) Notwithstanding the obligations set out in Section 10.1, the Vendor may disclose Metrolinx' Confidential Information to those of its Subvendors and Vendor's Personnel who need to know such Confidential Information in connection with this Contract, provided that such Subvendor or Vendor's Personnel, as applicable, is subject to obligations of confidentiality substantially similar to those contained in this Article 10.

#### **10.3 Exceptions**

- (a) The obligations of confidentiality set out in Section 10.1 shall not apply to Confidential Information which:
  - (i) becomes generally available to the public through no fault of the Vendor;



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- (ii) prior to receipt from Metrolinx, was known to the Vendor on a non-confidential basis and is not subject to another obligation of secrecy and non-use, as documented by written records possessed by the Vendor;
  - (iii) was independently developed by the Vendor prior to receipt from Metrolinx, as documented by written records possessed by the Vendor; or
  - (iv) becomes available to the Vendor on a non-confidential basis from a source other than Metrolinx that is not under other obligations of confidence.
- (b) If the Vendor becomes compelled to disclose any Confidential Information pursuant to Applicable Law, the Vendor shall provide Metrolinx with prompt written notice of any such requirement and shall cooperate with Metrolinx in seeking to obtain any protective order or other arrangement pursuant to which the confidentiality of the relevant Confidential Information is preserved. If such an order or arrangement is not obtained, the Vendor shall disclose only that portion of the Confidential Information as is required pursuant to Applicable Law. Any such required disclosure shall not, in and of itself, change the status of the disclosed information as Confidential Information under the terms of this Article 10.
- (c) Without limiting the generality of Section 10.3(a) and notwithstanding Section 10.3(b), the Parties acknowledge and agree that the treatment and disclosure of Confidential Information shall in all cases be subject to the requirements of FIPPA and the Construction Act.

### 10.4 Security Measures

- (a) The Vendor shall select, implement (prior to the commencement of the Work), use and maintain the most appropriate products, tools, measures and procedures to ensure the security of all Confidential Information, as determined with reference to and generally in compliance with Applicable Laws, Industry Standards, the security requirements specified in "Scope of Work" and best practices, or as otherwise prescribed by Metrolinx during the Term. Without limiting the generality of the foregoing, such practices shall include:
  - (i) privacy due diligence safeguards; and
  - (ii) physical and electronic security measures and confidentiality enhancing technologies to guard against unauthorized disclosures, access and use, such as firewalls, encryption, the use of user identification and passwords, software or other automated systems



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to control and track the addition and deletion of users, and software or other automated systems to control and track user access to areas and features of information systems.

- (b) For greater certainty, Metrolinx reserves the right to prescribe the specific manner in which Vendor shall perform its obligations relating to this Section 10.4.

### 10.5 Intellectual Property Rights

- (a) Metrolinx, its vendors, Subvendors, consultants, advisors, agents, strategic business partners, and affiliates shall retain all right, title and interest, including all Intellectual Property Rights, in and to its Confidential Information.

### 10.6 Return or Destruction of Confidential Information

- (a) Immediately upon expiration or termination of this Contract or at any other time upon the request of Metrolinx, and subject to Section 10.10, the Vendor agrees to:
  - (i) promptly return all Confidential Information (other than the Contract Records) to Metrolinx; or
  - (ii) promptly delete or destroy the Confidential Information (other than the Contract Records) and all copies thereof in any form whatsoever under its power or control and provide Metrolinx with a destruction certificate signed by an appropriate officer of the Vendor certifying such destruction.
- (b) Notwithstanding the foregoing, the Vendor shall have no obligation to return or destroy:
  - (i) Confidential Information that is captured and retained within the Vendor's routine computer systems backup processes, provided that (a) no specific effort is made to retrieve such archived Confidential Information for purposes that would violate the confidentiality obligations under this Contract and (b) the confidentiality obligations of under this Contract shall continue to apply to such archived Confidential Information for so long as such information is retained; and
  - (ii) working papers or other documentation which it is required to retain pursuant to Applicable Law or any rules of professional conduct applicable to the Vendor or the Vendor Personnel.



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### 10.7 FIPPA and Personal Information

- (a) Metrolinx and the Vendor acknowledge and agree the collection, use, retention and disclosure of Personal Information is governed by FIPPA. Metrolinx acknowledges that the Vendor may also be subject to the requirements of PIPEDA. In the event of a conflict between the requirements of FIPPA and the requirements of PIPEDA or any other legislation governing the treatment of Personal Information, the more onerous provision shall apply.
- (b) The Vendor shall ensure that all collection, access, use, retention and disclosure of Personal Information under this Contract, whether through the performance of the Work or otherwise, complies with Applicable Laws including FIPPA, PIPEDA, Standards, and applicable requirements to collect, record and retain relevant consents pertaining to the collection, access, use, retention and disclosure of Personal Information in respect of the Work.
- (c) At Metrolinx's request at any time during the Term, the Vendor shall fully participate in a Privacy Impact Assessment with respect to the performance of the Work. The Privacy Impact Assessment may be conducted by Metrolinx or external third party advisors to Metrolinx at various times throughout the Term. The Vendor and all Vendor Personnel shall cooperate with Metrolinx and/or its third party advisors to provide the resources required to facilitate and fulfill this assessment. The Vendor shall implement any recommendations resulting from the Privacy Impact Assessment process.
- (d) The Vendor shall ensure the security and integrity of any Personal Information collected by the Vendor and shall protect it against loss, unauthorized access, destruction, or alteration, in accordance with the following:
  - (i) The Vendor shall not directly or indirectly collect, use, disclose, store or destroy any Personal Information, or give, exchange, disclose, provide, or sell Personal Information to any third party, except as expressly permitted, and for a purpose(s) authorized, under this Contract or otherwise agreed to in writing by Metrolinx.
  - (ii) The Vendor shall ensure that access to Personal Information is restricted to those Vendor Personnel who have a need to know or use such information in the performance of the Work and who have been specifically authorized to have such access for the purposes of performing the Work. Access shall be limited to only that Personal Information which is required for the performance of the Work.



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- (iii) All Personal Information shall be kept in a physically secure location and separate from all other records and databases. The Vendor shall not place, input, match, insert or intermingle, nor shall it permit any Person to place, input, match or intermingle, any data or records in any form whatsoever into or with any records or database containing such Personal Information.
- (e) For greater certainty, Metrolinx reserves the right to prescribe the specific manner in which the Vendor shall perform its obligations relating to this Section 10.7.

### 10.8 FIPPA and Freedom of Information

- (a) The Vendor acknowledges that Metrolinx is a provincial crown agency subject to FIPPA, and acknowledges and agrees as follows:
  - (i) All FIPPA Records are subject to, and the collection, use, storage and treatment thereof is governed by FIPPA. The Vendor agrees to keep all FIPPA Records secure and available, in accordance with the requirements of FIPPA. The Vendor acknowledges that all information, data, records and materials, however recorded, that are held by the Vendor and/or created by the Vendor in the course of performing the Work are considered to be FIPPA Records and subject to FIPPA.
  - (ii) Section 10.5 shall apply to all FIPPA Records (other than the Contract Records), which shall be returned and/or destroyed in accordance with that section.
  - (iii) In the event of a conflict between the requirements of this Contract and the requirements of FIPPA, the requirements of FIPPA shall take precedence.
  - (iv) In the event that a request is made under FIPPA for the disclosure of any FIPPA Records, Metrolinx shall provide prompt written notice thereof to the Vendor and the Vendor shall provide any and all relevant FIPPA Records to Metrolinx on demand for the purposes of responding to an access request under FIPPA. In these circumstances, the Vendor shall provide all FIPPA Records requested to Metrolinx's Freedom of Information Coordinator (or equivalent) within seven (7) Business Days of receipt of the request from Metrolinx. Notwithstanding anything to the contrary in this Contract and subject to the Vendor's rights of appeal pursuant to Section 28(9) of FIPPA, Metrolinx shall determine what FIPPA Records will be disclosed in connection with any such request, in accordance with the requirements of FIPPA.



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(including, without limitation, the requirements with respect to affected persons set out in Section 28 thereof).

- (v) Storage of FIPPA Records (including the Contract Records) at a location outside Canada shall only be permitted with Metrolinx's express written consent.

### **10.9 Access**

- (a) The Vendor shall provide to Metrolinx the network access requirements and access level that will be required by the Vendor to perform the Work. All requests to access Metrolinx's network will be subject to Metrolinx's written approval.
- (b) The Vendor shall aggregate all access into a central network access point before network access is granted to Metrolinx's information systems. The network controls used to facilitate access between the Vendor and Metrolinx will be subject to Metrolinx's written approval.
- (c) Contract Personnel shall not attempt to access, or allow access to, any Metrolinx data to which they are not permitted access under this Contract. If such access is attained, the Vendor shall immediately report such incident to Metrolinx, describe in detail any accessed Metrolinx data, and return to Metrolinx any copied or removed Metrolinx data.
- (d) The Vendor is responsible for ensuring that Vendor Personnel do not access, or allow access, to any Metrolinx data to which they are not permitted access under this Contract. The Vendor shall utilize commercially reasonable efforts, including through the use of rigorous systems security measures, to guard against, identify and promptly terminate the unauthorized access, alteration or destruction of software and Metrolinx data.

### **10.10 Audit Rights**

- (a) During the Term and for a period of seven (7) years thereafter, the Vendor shall, at its cost and expense, retain and maintain, in an organized, accurate and accessible mode and manner, all financial and other books, records and documentation relating or pertaining to the Contract and the performance of the Work, including (i) original invoices and accounts, along with related records showing costs and expenses incurred, including but not limited to the cost to the Vendor of the Work and of all expenditures or commitments made by the Vendor in connection therewith; (ii) correspondence, e-mails, tenders, minutes of meetings, notes, reports, timesheets, memoranda and other documents associated with the Contract; (iii) records relating to any service level agreements and key performance indicators included in the



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Contract, and (iv) records related to matters of security and privacy (collectively, the "Contract Records").

- (b) The Contract Records shall be retained and maintained in accordance with all generally acceptable accounting principles and Applicable Laws and Industry Standards, or as otherwise may be required to substantiate compliance with this Contract and/or any payment to be made to the Vendor under this Contract.
- (c) During the Term and for a period of seven (7) years thereafter, Metrolinx or any third party acting on behalf of Metrolinx, shall have the right, upon no less than twenty-four (24) hours' notice in writing to the Vendor and during normal office hours, to inspect and audit, and to have access to, all Contract Records whether maintained by the Vendor or a Vendor Personnel, reasonably required to confirm the Vendor's compliance with the terms of this Contract and Applicable Laws, and to make copies thereof. The Vendor shall make available or cause to be made available the Corporate Records that are requested by Metrolinx or that may be required given the scope of the audit (provided such scope is disclosed to the Vendor), and shall otherwise reasonably cooperate with Metrolinx and any third party acting on Metrolinx's behalf, including by providing reasonable access to all of the Vendor's premises and to the Vendor's employees. Where access is needed to a Vendor Personnel's employees or to Contract Records that are maintained by a Vendor Personnel, the Vendor shall use reasonable efforts to arrange for such access on a timely basis. Without limiting the generality of the foregoing, the rights set out in this Section 10.10 shall extend to any Governmental Authority exercising its right to audit pursuant to Applicable Law or any contract with Metrolinx.
- (d) The Vendor shall maintain a competent and independent audit function to assess the internal controls over its environment and its compliance with Applicable Laws and Industry Standards. The Vendor shall provide Metrolinx, upon request, the results of all internal controls and security audits performed by the Vendor's auditors.
- (e) The Vendor shall upon advance written request, provided by e-mail or otherwise, provide Metrolinx with reasonable access to all premises that may reasonably be required to enable Metrolinx and/or Metrolinx's agents to monitor the progress of the Work. Any such monitoring or verifications shall be without prejudice to any other rights of Metrolinx under this Contract and shall not relieve the Vendor from any of its obligations under this Contract nor shall such verification be used by the Vendor as evidence of effective control of quality.
- (f) The Vendor and Metrolinx shall meet to review each audit report promptly after the issuance thereof and to mutually agree upon the appropriate



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manner, if any, in which to respond to the changes suggested or issued identified by the audit report. Without limiting any remedies which may be available to Metrolinx, the Vendor shall promptly remedy any violations of this Contract of which it becomes aware, pursuant to any audit or otherwise.

### **10.11 Vendor Compliance**

- (a) The Vendor shall advise all of its Vendor Personnel, all of its Subvendors, and all of its Subvendor's Vendor Personnel of the requirements of this Article 10, and associated requirements set out elsewhere in this Contract, and take appropriate action to ensure compliance by such persons with the terms of this Article 10. In addition to any other liabilities of the Vendor pursuant to this Contract or otherwise at law or in equity, the Vendor shall be liable for all claims arising from any non-compliance with this Article 10 by the Vendor, any of its Vendor Personnel, any Subvendor and of its Subvendor's Vendor Personnel.
- (b) The Vendor warrants that each of its Vendor Personnel, each of its Subvendors and each of its Subvendor's Vendor Personnel engaged by the Vendor to provide the services pursuant to this Contract is under a written obligation to the Vendor requiring such person to comply with the terms of this Article 10.

### **10.12 Publicity**

- (a) Neither Party may make any public announcement or press release regarding this Contract or any relationship between the Vendor and Metrolinx, without the other Party's prior written consent.

### **10.13 Damages**

- (a) The Vendor acknowledges and agrees that any breach or threatened breach of this Article 10 or the obligations set out herein shall cause immediate and irreparable harm to Metrolinx for which damages alone are not an adequate remedy. The Vendor hereby acknowledges and agrees that Metrolinx shall be entitled to seek, in addition to any other legal remedies which may be available to it, such equitable relief as may be necessary and available to protect Metrolinx against such breach or threatened breach. No failure or delay by Metrolinx in exercising any right hereunder shall operate as a waiver hereof, or shall estop Metrolinx from obtaining permanent injunctive relief.

## **11.0 Representations, Warranties and Covenants**

### **11.1 Representations, Warranties and Covenants of the Vendor**



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- (a) The Vendor covenants and agrees with and represents and warrants to Metrolinx, and acknowledges and confirms that Metrolinx is relying on such covenants, agreements, representations and warranties, as follows:
  - (i) the Vendor is validly existing under the laws of the location of its head office and the Vendor has all necessary corporate power, authority and capacity to enter into this Contract and to perform its obligations hereunder;
  - (ii) the entering into of this Contract by the Vendor and the performance of its obligations hereunder has been authorized by all necessary corporate action;
  - (iii) the execution and delivery of this Contract, the consummation of the transactions contemplated herein and compliance with and performance of the provisions of this Contract does not and shall not:
    - (A) result in a breach of or constitute a default under, or create a state of fact, which after notice or lapse of time or both, or otherwise, would constitute a default under any term or provision of the constating documents of the Vendor, the by-laws or resolutions of the Vendor or any agreement or instrument to which the Vendor is a party or by which it is bound, or
    - (B) require the Vendor to obtain any Approval or action of any other Persons and, if required, any such Approvals have already been obtained as of the date of this Contract;
  - (iv) this Contract constitutes a legally valid and binding obligation of the Vendor enforceable against it in accordance with its terms, subject only to applicable bankruptcy, insolvency and other similar laws affecting the enforceability of the rights of creditors generally, the principles of equity and that equitable remedies such as specific performance and injunction are available only in the discretion of a court of competent jurisdiction;
  - (v) the Vendor has carefully reviewed the whole of this Contract, including all of the Contract Documents, and all other documents made available to the Vendor by Metrolinx, and, to the Vendor's knowledge, nothing contained herein or therein inhibits or prevents the Vendor from performing the Work in accordance with the Required Standard of Care so as to achieve and satisfy the requirements of this Contract;



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- (vi) the Vendor has engaged and shall engage only Subvendors and Vendor Personnel that are qualified and competent to perform the portions of the Work they are responsible for and possess the requisite Domain Expertise;
- (vii) the Vendor has available the resources and personnel to complete all of its obligations under this Contract in a timely, efficient and professional manner in accordance with the Required Standard of Care;
- (viii) the Vendor is not aware of any legal action instituted, threatened or pending against the Vendor that could have a material adverse effect on its ability to perform its obligations under this Contract;
- (ix) Except as disclosed in the Submission, the Vendor is free of any actual or potential Tender Conflict of Interest;
- (x) the Vendor is registered as an employer pursuant to the Workplace Safety and Insurance Act (Ontario) and has completed all filings and paid all assessments as required pursuant to that Act and the regulations thereunder;
- (xi) the Vendor is familiar with the obligations imposed on an "employer" as defined in OHSA, and that it has in place a health and safety program to ensure that it takes all steps reasonable in the circumstances to ensure the health and safety of all workers for which it has responsibility under that Act; and
- (xii) the Vendor represents, warrants and covenants to Metrolinx that the Vendor is and shall remain duly registered for the purposes of Part IX of the Excise Tax Act.

### 11.2 Continuing Effect of Representations, Warranties and Covenants

- (a) The Vendor hereto agrees that its covenants, representations and warranties contained in this Article 11 are continuing covenants, representations and warranties and shall apply and be true and correct at all times during the Term.

## 12.0 Indemnity

### 12.1 Indemnification

- (a) The Vendor shall at all times indemnify and save harmless Metrolinx, its officers, directors, employees, members, agents, representatives, successors



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and assigns (hereinafter the "Indemnified Parties"), from and against any and all Losses resulting from:

- (i) any breach, violation or non-performance by or on behalf of the Vendor of any covenant, obligation or agreement of the Vendor contained in this Contract, including any warranty;
- (ii) any negligent acts, errors or omissions or wilful misconduct by or on behalf of the Vendor relating to the Work to be provided under this Contract;
- (iii) any acts performed by or on behalf of the Vendor beyond the authority of the Vendor hereby conferred;
- (iv) any inaccuracy in or breach of any of the representations or warranties of the Vendor contained in this Contract;
- (v) any preserved or perfected lien under the Construction Act filed or made on account of the Work performed hereunder, provided that the liens herein referenced are not the direct result of the default in payment by Metrolinx to the Vendor of amounts properly due under this Contract. The Vendor shall cause any such lien or claim which may be filed or made to be released, vacated or otherwise discharged within five (5) days of obtaining notice of the lien or claim or from receipt by the Vendor of written notice from Metrolinx. If the Vendor fails to release, vacate or discharge any such lien or claim, then Metrolinx may, but without obligation to do so, discharge or release the lien or claim or otherwise deal with the lien or claim, and the Vendor shall pay any and all reasonable costs and expenses, including but not limited to reasonable legal fees incurred by Metrolinx in so releasing, discharging, or otherwise dealing with such lien or claim;
- (vi) any breach of the terms and conditions set out in Article 3 or arising as a result of any illness, injury or death of any employee of the Vendor or any Subvendor, including:
  - (A) any resulting expenses incurred by Metrolinx as a result of stoppage of the Work on account of failure by the Vendor to meet its obligations under and/or with respect to the OHSA; and
  - (B) any resulting fine(s) levied against Metrolinx as a result of any breach of the responsibilities of the employer for the work, to the extent attributable to the Vendor's failure to fulfil its obligations as described in Section 3.1; and/or



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- (vii) any infringement or alleged infringement of any patent, trade secret, service mark, trade name, copyright, official mark, moral right, trade-mark, industrial design or other proprietary rights conferred by contract, common law, statute or otherwise in respect to the Work or any matter provided to Metrolinx or performed by the Vendor, or anyone else for whom at law the Vendor is responsible provided, however, the Vendor shall not be required to indemnify the Indemnified Parties pursuant to this subsection if (i) the infringement or alleged infringement was caused by the modification of a deliverable or work product prepared pursuant to this Contract by any person other than the Vendor or a Vendor Personnel, (ii) the deliverable or work product was based upon designs provided by Metrolinx, or (iii) the Work relating to the infringement or alleged infringement were used in a manner not permitted by the Contract.
- (b) The Vendor shall pay all reasonable costs, expenses and legal fees that may be incurred or paid by the Indemnified Parties in connection with any demand, claim, execution, action, suit or proceeding with respect to a matter for which the Vendor is obligated to indemnify the Indemnified Parties pursuant to this Article 12, provided that the indemnity obligations of the Vendor under this Article 12 shall not extend to Loss attributable to the negligence or willful misconduct of any Indemnified Parties to the extent that such Indemnified Parties' negligence or willful misconduct caused the Loss.
- (c) In the event any Loss is asserted in respect to which an Indemnified Party is entitled to indemnification under this Article 12, and without prejudice to any other right or remedy Metrolinx may have, Metrolinx shall be entitled to deduct or withhold a reasonable sum on account of such claim, action, suit, execution or demand, including legal costs, from monies owed or payable by Metrolinx to the Vendor under this Contract pending the final determination or settlement of such claim, action, suit, execution or demand. In the event,
  - (i) the Vendor is, becomes, or is deemed to be bankrupt or an insolvent person pursuant to the Bankruptcy and Insolvency Act (Canada);
  - (ii) the Vendor makes a general assignment for the benefit of creditors; or
  - (iii) a receiver or interim-receiver is appointed with respect to some or all of the Vendor's business, assets, or property,



then Metrolinx shall be entitled, without prejudice to any other right or remedy Metrolinx may have, to further deduct or withhold a reasonable sum on account of such Loss, from any monies owed or payable by Metrolinx to the Vendor under any other agreement or account. The provisions of this Section 12.1(c) shall not apply in the event that such Loss is otherwise provided for under any insurance provided by the Vendor to or for the benefit of Metrolinx.

### **13.0 Limitation of Liability**

#### **13.1 General Intent**

- (a) It is the intent of the Parties that each Party shall be liable to the other Party for any actual damages incurred by the non-breaching Party as a result of the breaching Party's failure to perform its obligations in the manner required by the Contract.

#### **13.2 Limitations on Liability**

- (a) Subject to Section 13.2(c), in no event shall either Party be liable for indirect, consequential, exemplary, punitive or special damages relating to the Contract even if such Party has been advised in advance of the possibility of such damages.
- (b) Subject to Section 13.2(c), each Party's aggregate liability to the other under the Contract for direct damages for all events giving rise to liability hereunder shall be limited to an amount equal to the Total Contract Price.
- (c) The limitations of liability set forth in Sections 13.2(c) and 13.2(b) shall not apply with respect to Losses:
  - (i) that are the subject of indemnification pursuant to Articles 12.1(a)(ii), (iii), (v), (vi) or (vii); or
  - (ii) occasioned by a breach of Article 10.
- (d) Each party shall have a duty to mitigate damages for which the Vendor is responsible.

### **14.0 Termination**

#### **14.1 Termination for Cause by Metrolinx**

- (a) Metrolinx may, by ten (10) days' written notice to the Vendor, suspend or terminate the whole or any part of the provision of the Work or this Contract for cause in the event that the Vendor is in breach of any of its obligations under this Contract, and it fails to cure such breach (which



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breach must be curable) within thirty (30) days of being notified thereof, and thereupon:

- (b) Metrolinx may appoint officials of Metrolinx or any other person or persons in the place and stead of the Vendor to perform the Work or any portion thereof;
- (c) the Vendor shall immediately discontinue the Work on the date and to the extent specified in the notice and place no further orders for materials or services for the terminated portion of the Work;
- (d) nothing contained herein shall limit the rights of Metrolinx to recover damages from the Vendor arising from the failure of the Vendor to perform the Work satisfactorily in accordance with the terms of this Contract.

### **14.2 Termination for Convenience by Metrolinx**

- (a) Metrolinx may, by thirty (30) days' written notice to the Vendor, terminate this Contract for convenience, and thereupon Metrolinx shall be liable for payment to the Vendor for those monies attributable to the part of the Work performed to the satisfaction of Metrolinx to the date of termination stipulated in such notice. Metrolinx shall also be liable for any reasonable demobilization costs and the reasonable cost of cancellation of any contracts, but in no event will Metrolinx be liable for any loss of profits, loss of revenue or other consequential damages.

## **15.0 Force Majeure**

### **15.1 Force Majeure**

- (a) Neither Party shall be liable for Losses caused by a delay or failure to perform its obligations under this Contract where such delay or failure is caused by an event beyond its reasonable control (a "Force Majeure Event"). The Parties agree that an event shall not be considered beyond one's reasonable control if a reasonable business person applying due diligence in the same or similar circumstances under the same or similar obligations as the provisions of this Contract would have put in place contingency plans to either materially mitigate or negate the effects of such event.
- (b) Without limiting the generality of the foregoing, the Parties agree that Force Majeure Events may include acts of God, natural disasters, acts of war, war-like operations, civil war, acts of foreign enemy, plagues, epidemics, insurrection and terrorism (provided that the conditions of Section 15.1(a) are met) but shall in no event include:



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- (i) shortages or delays relating to supplies or services; or
- (ii) on the part of the Vendor, lack of financing or inability to perform because of the financial condition of the Vendor.
- (c) A failure by Metrolinx to furnish instructions is not a Force Majeure Event until fourteen (14) days after a demand for such instructions has been made in writing by the Vendor and not then unless such claim is reasonable and justified to Metrolinx.

### **15.2 Process**

- (a) If a Party seeks to excuse itself from its obligations under this Contract due to a Force Majeure Event:
  - (i) that Party shall immediately notify the other Party of the delay or non-performance, the reason for such delay or non-performance and the anticipated period thereof; and
  - (ii) the Party giving the notice shall thereupon be excused the performance or punctual performance, as the case may be, of such obligation for the period of time directly attributable to such Force Majeure Event.
- (b) This Section shall not apply or be available to a Party in respect of any event, or resulting delay or failure to perform, occurring more than fourteen (14) days before notice is given to Metrolinx pursuant to Section 15.2(a).
- (c) In the case of a continuing Force Majeure Event, only one notice shall be necessary.

### **15.3 Metrolinx Rights**

- (a) Without limiting any other rights available to Metrolinx under this Contract, Metrolinx reserves the right to contract any Work from a third party during any period of Force Majeure claimed by the Vendor.

## **16.0 Dispute Resolution**

- 16.1 All Disputes shall be resolved in accordance with, and the Parties shall comply with, Schedule D - Dispute Resolution.

## **17.0 Set Off**

- 17.1 Metrolinx shall have the right to satisfy any amount from time to time owing by it to the Vendor under the Contract by way of a set-off against any amount from time to time owing by the Vendor to Metrolinx under the Contract, including but



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not limited to any amount owing to Metrolinx pursuant to the Vendor's indemnification of Metrolinx in this Contract.

### **18.0 General**

#### **18.1 Entire Agreement**

- (a) This Contract constitutes the entire agreement between the Parties regarding the Work and supersedes any prior understandings, negotiations, representations or agreements, whether written or verbal.

#### **18.2 Governing Law and Jurisdiction**

- (a) This Contract shall be governed by and interpreted in accordance with the laws of the Province of Ontario and the federal laws applicable therein, without regard to principles of conflicts of law that would impose the law of another jurisdiction. The Parties hereby irrevocably and unconditionally attorn and submit to the non-exclusive jurisdiction of the courts of the Province of Ontario and all courts competent to hear appeals therefrom.

#### **18.3 Survival**

- (a) The obligations set out in Articles 1, 2, 3, 7, 8, 10, 11 and 12 and this Article 18 of this Contract shall continue to bind the Vendor notwithstanding expiration or termination of this Contract for any reason whatsoever or completion of the Work as contemplated hereunder.

#### **18.4 Enurement**

- (a) This Contract shall enure to the benefit of, and be binding upon the Parties and their respective heirs, executors, administrators, personal representatives, successors and permitted assigns.

#### **18.5 Assignment**

- (a) The Vendor shall not be entitled to assign this Contract in whole or in part without the prior written consent of Metrolinx, which consent shall not be unreasonably withheld or delayed.

#### **18.6 Independent Parties**

- (a) This Contract does not create and is not intended to create an agency or employment relationship, partnership, joint venture or other similar association between the Parties. The relationship between the Parties is to be considered at all times as that of a purchaser and an independent Vendor. Neither Party shall have the right to bind the other to any agreement with any third party or to incur any obligation or liability on behalf of the other



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Party. Except as expressly provided for in this Contract, neither Party shall represent, directly or indirectly by conduct, to any third party that it is an agent, employee, partner or joint venturer of the other.

- (b) The Vendor Personnel and all other personnel providing the Work are solely the employees of the Vendor and applicable Subvendors (and not Metrolinx') for all purposes under this Contract, including for all purposes under any Applicable Laws. Accordingly, none of the foregoing personnel is entitled to any benefits respecting any pension or other benefit plan, program or policy of Metrolinx.

### 18.7 Third Party Beneficiaries

- (a) This Contract is made solely for the benefit of the Parties and, to the extent expressly and specifically stated, any other Parties made beneficiaries of this Contract. No terms of this Contract shall be deemed to confer upon any other third parties any claim, remedy, reimbursement or other right.
- (b) The Vendor represents and warrants to Metrolinx that the Vendor is entering into this Contract solely on the Vendor's own behalf and not as an agent for any other Person.

### 18.8 Joint and Several Liability

- (a) Where the Vendor comprises two or more Persons, each of them shall be jointly and severally liable for the obligations of the Vendor under this Contract.

### 18.9 Notice

- (a) Unless expressly provided elsewhere in the Contract Documents, every notice required or permitted under this Contract must be in writing and may be delivered in person, by courier or by fax to the applicable party at the address or fax number in the Articles of Agreement or to any other address, fax number or individual that a party subsequently designates by notice.
- (b) Any notice under this Contract, if delivered personally or by courier on a Business Day will be deemed to have been given when actually received, if delivered by fax before 3:00 p.m. on a Business Day will be deemed to have been delivered on that Business Day and if delivered by fax after 3:00 p.m. on a Business Day or on a day that is not a Business Day will be deemed to be delivered on the next Business Day. For greater clarity, notice shall not be given by email.

### 18.10 Amendments



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- (a) Except as expressly provided in this Contract, no amendment, supplement or restatement of any provision of this Contract is binding unless it is in writing and signed by both Parties.

### **18.11 No Waiver**

- (a) No provision of this Contract shall be deemed waived, amended or modified by either Party unless such waiver, amendment or modification is in writing and signed by the Party against whom it is sought to enforce the waiver, amendment or modification. The failure by a Party to exercise any of its rights, powers or remedies hereunder or its delay to do so does not constitute a waiver of those rights, powers or remedies. No waiver made with respect to any instance involving the exercise of any such right is to be deemed to be a waiver with respect to any other instance involving the exercise of the right or with respect to any other such right.

### **18.12 Severability**

- (a) If any term or condition of this Contract, or the application thereof to the Parties or circumstances, is to any extent invalid or unenforceable in whole or in part, the remainder of this Contract shall continue in full force and effect, and the application of such term or condition to the Parties or circumstances other than those to which it is held invalid or unenforceable shall not be affected thereby.

### **18.13 Further Assurances**

- (a) Each Party agrees that it shall at any time and from time to time, at its own expense, execute and deliver such further documents and do such further acts and things as the other Party may reasonably request for the purpose of giving effect to this Contract or carrying out the intention or facilitating the performance of the terms of this Contract.

### **18.14 Conflict of Interest Acknowledgement and Agreement**

- (a) For the purposes of this Contract, a "Conflict of Interest" includes any situation or circumstances where, in relation to the performance of its contractual obligations in this Contract, the Vendor's other commitments, relationships or financial interests:
  - (i) could or could be seen to exercise an improper influence over the objective, unbiased and impartial exercise of its independent judgment; or
  - (ii) could or could be seen to compromise, impair or be incompatible with the effective performance of its contractual obligations.



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- (b) The Vendor acknowledges that participation (directly or indirectly) in any procurement process arising from or related to this Contract (the "Prohibited Procurements") would constitute a Conflict of Interest with this Contract, and the Vendor agrees that it shall not, and shall take reasonable steps (including obtaining covenants substantially similar to those set out in this section) to ensure that its Subvendors do not participate in or be involved with such Prohibited Procurements either directly or indirectly, including as a bidder or as a Subvendor, Vendor or advisor to any bidder.
- (c) The Vendor shall:
  - (i) avoid all Conflict of Interest in the performance of its contractual obligations;
  - (ii) disclose to Metrolinx without delay any actual or potential Conflict of Interest that arises during the performance of its contractual obligations; and
  - (iii) comply with any requirements prescribed by Metrolinx to resolve any Conflict of Interest.
- (d) In addition to all other contractual rights or rights available at law or in equity, Metrolinx shall have the right to immediately terminate this Contract, by giving notice in writing to the Vendor, where:
  - (i) the Vendor fails to disclose an actual or potential Conflict of Interest;
  - (ii) the Vendor fails to comply with any requirements prescribed by Metrolinx to resolve a Conflict of Interest; or
  - (iii) the Vendor's Conflict of Interest cannot be resolved.
- (e) This section shall survive any termination or expiry of this Contract.

### 18.15 Counterparts

- (a) This Contract may be executed in one or more counterparts. Any single counterpart or a set of counterparts executed, in either case, by all Parties shall constitute a full, original and binding agreement for all purposes. Counterparts may be executed either in original or electronic form, provided that the Party providing its signature in electronic form shall promptly forward to the other Party an original signed copy of this Contract which was so sent electronically.



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### **19.0 Warranty**

#### **19.1 General**

- (a) The Vendor represents, warrants and covenants:
  - (i) That all workmanship shall be in compliance with the requirements of the Contract;
  - (ii) That all goods shall be in compliance with the requirements of the Contract and be free from defects in design, material, workmanship, manufacture, fabrication, packaging, shipment and delivery.
- (b) The express warranties contained herein are in addition to all other warranties and conditions, express or implied, including all legal and statutory warranties, all warranties arising at law, warranties of merchantability and fitness for a particular purpose, and warranties of the Vendor.
- (c) The warranty period, per Task Assignment, shall commence on the date of substantial performance of the Work.

#### **19.2 Warranty Conditions**

- (a) If, within twenty-four (24) months, the Work supplied by the Vendor or any part thereof, as it relates to each Task Assignment, becomes defective or fails due to any default by the Vendor in fulfilling the requirements of the Contract including, without limitation, improper, faulty or defective design, materials, workmanship, manufacture, fabrication, packaging, shipment or delivery, then the Vendor, upon notification in writing from Metrolinx, shall forthwith repair or remedy every such defect or failure, or replace the goods, without cost (including without limitation transportation cost) to Metrolinx.
- (b) All labour cost incurred by Metrolinx in respect of the repair or remedy of defects or failures, and of the replacement of goods during the warranty period, shall be reimbursed to Metrolinx by the Vendor in accordance with the agreed to hourly rates to be negotiated.
- (c) Metrolinx shall provide the Vendor with reasonable access to the Place of Work for the purpose of performing warranty work when practical.
- (d) The Vendor shall prepare and furnish data and reports pertaining to any repairs, replacements and remedies pursuant to the Warranty, including, but



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not limited to, revisions and updating of contract drawings, data and contract deliverables.

- (e) In the event the Vendor fails to fulfil any obligation stipulated in this Warranty, Metrolinx shall have the right to repair, remedy or replace the goods at the Vendor's expense.
- (f) The Vendor shall cause those warranties that are provided by Subvendors and suppliers that extend beyond the Vendor's warranty period, be assigned to Metrolinx. Should there be any claim under the said warranties after the expiration of the Vendor's warranty period, such claim shall be made and processed directly by Metrolinx with the relevant Subvendors or suppliers. Subvendors' and suppliers' warranties shall also pass to Metrolinx in the event that the Vendor is unable to complete its obligations under the Contract. In any event, the Vendor shall make provision in all subcontracts and purchase orders for all warranties to be directly assigned to Metrolinx.
- (g) Any product that does not meet the Contract Scope of Work, notwithstanding tests, inspection or acceptance at any time or location, are found to contain deficiencies, will be subject to rejection and shall be returned to the Vendor. The Vendor shall be entitled to a joint inspection of the defective component at the premises of Metrolinx. The Vendor shall assume the expenses of handling and transportation in both directions.

### 19.3 Intellectual Property

- (a) In addition to the warranties and conditions implied by the Sales of Goods Act (Ontario), the Vendor represents and warrants that there are no patents, trademarks, copyrights or other rights restricting the use, repair or replacement of the goods, or any part thereof, furnished under this Contract.

## 20.0 Custom Duties and Import Charges

- 20.1 The Vendor shall be responsible for all costs, including administrative costs, relating to delivery of the goods and shall acquire and pay for all necessary permits and licences required for the importation and delivery of goods to the Place of Work.
- 20.2 The Vendor shall be responsible for freight, insurance, importation taxes and duties, custom broker and/or clearance fees and container packing (direct labour and packing material) costs for delivery of goods, components, diagnostic tools, equipment and spare parts and shall pay for such costs. The Vendor shall use commercially reasonable efforts to minimize freight, duty and other delivery costs reimbursed to the Vendor by Metrolinx and incurred under the Contract during the Term. The Vendor shall provide to Metrolinx on a semi-annual basis during the Term of the Contract evidence of the costs in this Section 20.2 incurred under



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the Contract and any actions taken to minimize these costs. Reductions in freight, insurance, importation taxes and duties, custom broker and/or clearance fees and container packing (direct labour and packing material) costs shall inure to the benefit of Metrolinx.

### **20.3 Customs Clearance Services**

- (a) The Vendor shall be the importer of record for this Contract. The Vendor shall provide and shall arrange for customs brokerage services and other services required to comply with all requirements imposed or administered by Canada Border Services Agency regarding the import of the goods into Canada. All communications with customs authorities or customs brokers shall be handled by the Vendor. In the event that a document or thing is required from Metrolinx as the ultimate Metrolinx of the goods, the Vendor shall prepare such document or thing for review by Metrolinx prior to submission of such document or thing to the Party requiring same. All costs for these services are included in the Total Contract Price.

**END OF SECTION**



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**1.0 In this Contract Document,**

- 1.1 "Acceptance" or "Acceptable" or "Accepted" means the act of formal notification by Metrolinx of no further objections regarding content, construction or compliance.
- 1.2 "Applicable Laws" means all applicable laws, statutes, regulations, orders, by-laws, treaties, judgements, decrees and ordinances applicable from time to time and, whether or not having the force of law, all applicable Approvals, Standards, codes, requirements, requests, directives, rules, guidelines, instructions, circulars, manuals, and policies of any Governmental Authority having or purporting to have jurisdiction or authority over a Party, property, transaction or event, including laws relating to workplace safety and insurance, occupational health and safety and employment standards.
- 1.3 "Approvals" means any permits, licences, consents, approvals, clearances, orders, ordinances, registrations, filings or other authorizations respecting the work undertaken as part of the Work as may be required from any applicable Governmental Authority or otherwise by the Vendor's contract documents.
- 1.4 "Arbitration Act" means the Arbitration Act, 1991, S.O. 1991, Chapter 17.
- 1.5 "Business Day" means any day other than: (a) a Saturday or Sunday and (b) any other day on which Metrolinx is not open for business. Each Business Day will end at 4:00 p.m. on that day.
- 1.6 "Cash Allowance", if applicable, means a sum included in the Total Contract Price by Metrolinx as a predetermined allowance to cover the items identified in "Tender Document Form: Contract Prices" which shall form part of the Articles of Agreement.
- 1.7 "Changes" has the meaning ascribed to it in Section 8.1 of General Conditions of the Contract.
- 1.8 "Construction Act", if applicable, means the Construction Act, R.S.O. 1990, Chapter C.30.
- 1.9 "Confidential Information" means all information of a confidential nature (as determined with reference to its treatment by Metrolinx) which is provided, disclosed or made available (orally, electronically or in writing or by any other media) by Metrolinx (or its representatives) to the Vendor (including to employees, vendors, Vendors or other representatives thereof) and includes any copies or reproductions thereof. For greater certainty, all Personal Information, Contract Records, construction documents, personal information, and anything



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else specifically marked or identified by Metrolinx as confidential or proprietary are deemed to be "Confidential Information" for the purposes of this Contract.

- 1.10 "Conflict of Interest" has the meaning ascribed to it in Section 18.14 of General Conditions of the Contract.
- 1.11 "Contract" means this contract between the Vendor and Metrolinx pursuant to Tender No. [...] including the Articles of Agreement, General Conditions of the Contract and the Schedules thereto and the Contract Documents.
- 1.12 "Contract Closeout" means the date that the services are complete as per the Construction Lien Act.
- 1.13 "Contract Documents" means the Contract and those documents listed in "Scope of Work" and any written amendments thereto as agreed to by the Parties.
- 1.14 "Contract Performance Appraisal" has the meaning ascribed to it in Section 2.11(a) of General Conditions of the Contract.
- 1.15 "Contract Records" has the meaning ascribed to it in Section 10.8 of General Conditions of the Contract.
- 1.16 "Custom Intellectual Property" means any Intellectual Property created, developed or produced by the Vendor or any Vendor Personnel under this Contract specifically for use in connection with the performance of the Work, all documentation and media related thereto, and all Intellectual Property Rights therein.
- 1.17 "Deliverables" means the work product created by the Vendor and/or the Vendor Personnel in connection with or as a requirement of the Work, including all reports, drawings, plans, designs, processes, tools, standards, registers, logs, updates, files, databases, Software, and documentation.
- 1.18 "Dispute" means all disputes, controversies, or claims arising out of or relating to: (a) this Contract; (b) the alleged wrongful exercise or failure to exercise by a Party of a discretion or power given to that Party under this Contract; and/or (c) the interpretation, enforceability, performance, application, or administration, breach, termination, or validity of this Contract or any failure to agree where agreement between the Parties is called for.
- 1.19 "Dispute Notice" has the meaning given in Schedule D - Dispute Resolution of General Conditions.
- 1.20 "Domain Expertise" means the required level of depth and breadth of qualifications and experience in respect of the tasks to be performed in connection



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with the Work, gained through a practical application of the knowledge underlying the tasks in an environment substantially similar to that of the Work.

- 1.21 "Drawings" describe the detailed technical requirements of the Work and form part of the Scope of Work.
- 1.22 "Effective Date" means the final date of execution of this Contract by both Parties.
- 1.23 "Encumbrance" means any mortgage, charge, pledge, hypothecation, Lien, security interest, hypothec, easement, right-of-way, right-of-first refusal, option, encroachment, building or use restriction, conditional sales agreement, personal property lease, licence, restrictive covenant, adverse claim, promissory right or other encumbrance of any nature however arising, or any other security agreement or arrangement creating in favour of any creditor a right in respect of any property that is prior to the right of any other creditor in respect of such property.
- 1.24 "Excise Tax Act" means the Excise Tax Act, R.S.C. 1985, Chapter E-15.
- 1.25 "FIPPA" means the Freedom of Information and Protection of Privacy Act, R.S.O. 1990, Chapter F.31.
- 1.26 "FIPPA Records" means all information, data, records and materials, however recorded, in the custody or control of Metrolinx, including Confidential Information, Personal Information and Contract Records. For the purposes of this definition, documents held by the Vendor in connection with this Contract are considered to be in the control of Metrolinx.
- 1.27 "French Designated Area" means an area designated as such in the Schedule to the French Language Services Act. A map and complete listing of French Designated Areas is available at <http://www.ofa.gov.on.ca/en/flsa-mapdesig.html>.
- 1.28 "French Language Services Act" means the French Language Services Act, R.S.O. 1990, Chapter F.32.
- 1.29 "Governmental Authority" means any domestic government, including any federal, provincial, territorial, municipal, regional or other local government, and any government established court, agency, tribunal, commission or other authority exercising or purporting to exercise executive, legislative, judicial, regulatory or administrative functions respecting government; provided, however, "Governmental Authority" does not include Metrolinx.
- 1.30 "Income Tax Act" means the Income Tax Act, R.S.C. 1985, Chapter 1 (5th Supp.).



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- 1.31 "Indemnified Parties" has the meaning ascribed to it in Section 12.1 of General Conditions of the Contract.
- 1.32 "Insurance Act (Ontario)" means the Insurance Act, R.S.O. 1990, Chapter I.8
- 1.33 "Intellectual Property" means all intellectual and industrial property, including: (a) materials, images, reports, Software, applications, audio or video recordings, specifications, performance requirements, software development tools, technologies, content, data (including all information whether or not contained in or on any database or electronic information storage system or media owned by or in the custody or control of Metrolinx), technical information, interfaces, web portals, components, services, information, databases, and documentation; (b) patents, patent application rights, rights to file patents, inventions, trade-marks (whether registered or not), trade-mark applications, rights to file trade-marks, trade names, copyrights (whether registered or not), design registrations, trade secrets, confidential information, industrial and similar designs, rights to file for industrial and similar designs, processes, methodologies, techniques and know-how; and (c) all Intellectual Property Rights therein.
- 1.34 "Intellectual Property Rights" means any right to Intellectual Property recognized by law, including any Intellectual Property right protected by legislation or arising from protection of information as a trade secret or as confidential information.
- 1.35 "Joint Venture" is the business arrangement of two or more parties proposed as identified in the Submission.
- 1.36 "Key Personnel" means the people identified by name in Section 1.1(a) of Schedule E - Vendor Personnel.
- 1.37 "Key Responsibilities" means the main responsibilities and tasks to be performed by each category of Vendor Personnel, as identified in Schedule E: Vendor Personnel.
- 1.38 "Lien" means any statutory lien, or claim, in relation to this Contract and constituting a charge against the statutory holdback and any other amounts, all as defined in the Construction Act.
- 1.39 "List of Contents" shall mean the section of the Contract Document entitled "List of Contents".
- 1.40 "Losses" means claims, actions, suits, executions, and demands and all loss, liability, judgments, costs, charges, damages, liens and expenses of any nature whatsoever and howsoever caused.



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- 1.41 "Metrolinx" means Metrolinx, a provincial crown agency continued under the Metrolinx Act, S.O. 2006, Chapter 16, and its successors and assigns.
- 1.42 "Metrolinx Intellectual Property" means: (a) all Intellectual Property that is proprietary to, or controlled or licensed by, Metrolinx and provided to the Vendor; (b) all Metrolinx Marks; (c) all procurement documents issued by Metrolinx; (d) all documentation or source materials (including source code) related to any of the foregoing; and (e) all copies, translations, improvements, modifications, enhancements, adaptations, or derivations made to the Metrolinx Intellectual Property by Metrolinx and/or any third party not performing work under this Contract.
- 1.43 "Metrolinx Marks" means any trademarks, service marks, trade names, logos or other commercial or product designations owned or licensed by Metrolinx, whether registered or not.
- 1.44 "Metrolinx Representative" or "Metrolinx's Representative" has the meaning ascribed to it in Section 2.9 of General Conditions of the Contract.
- 1.45 "OHSA" means the Occupational Health and Safety Act, R.S.O. 1990, Chapter O.1.
- 1.46 "Parties" means both of Metrolinx and the Vendor and a "Party" means either one of them.
- 1.47 "Person" means any individual, sole proprietorship, partnership, limited partnership, corporation or company (with or without share capital), trust, foundation, joint venture, Governmental Authority or any other incorporated or unincorporated entity or association of any nature.
- 1.48 "Personal Information" has the meaning ascribed to it in FIPPA.
- 1.49 "PIPEDA" means the Personal Information Protection and Electronic Documents Act, S.C. 2000, Chapter 5.
- 1.50 "Place of Work" is the designated site or location of the Work.
- 1.51 "Privacy Impact Assessment" refers to a systematic and consistent method of analysis to identify and analyze privacy risks in a program, technology or service.
- 1.52 "Prohibited Procurements" has the meaning ascribed to it in Section 18.14 of General Conditions of the Contract.
- 1.53 "Product" means any goods, machinery, equipment, fixtures and Software (including any components of any of the foregoing) forming part of the



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Deliverables, but does not include machinery and equipment used solely to perform the Work.

- 1.54 "Professional Engineer" means an engineer licensed to practice engineering in the Province of Ontario.
- 1.55 "Project Schedule" means the schedule of work identified in Tender Document Form: Form of Tender, which shall form part of the Contract and may be amended at the sole discretion of Metrolinx.
- 1.56 "Quotation" has the meaning given in Section 15.0 of Schedule B - Financial Terms of General Conditions.
- 1.57 "Rates" has the meaning ascribed to it in Section 1.1 of Schedule B - Financial Terms of General Conditions.
- 1.58 "Required Standard of Care" means: (a) using the Standards, practices, methods and procedures among the highest commercial standards of practice and professionalism as understood in the Province of Ontario; (b) confirming to Applicable Laws and all rules of professional conduct applicable to the Vendor or the Vendor Personnel; (c) exercising that degree of skill and care, diligence, prudence and foresight which would be expected from a leading Person or professional performing work similar to those called for under this Contract; and (d) using only proper materials and methods as are suited to the function and performance intended.
- 1.59 "Software" means any set of machine readable instructions that directs the performance of specific operations, including computer programs, computer code, software programs (whether executable or not executable), system software, application software, embedded software, databases, data, middleware, GUI's, objects, firmware, components and modules and related documentation.
- 1.60 "Standards" means, at a given time, those standards, specifications, manuals, codes, practices, methods and procedures applicable to the Required Standard of Care.
- 1.61 "Statutory Holdback" has the meaning ascribed to it in Section 7.1 of Schedule B - Financial Terms of General Conditions.
- 1.62 "Subvendor" means an individual, firm, partnership, corporation or design professional having a direct contract with the Vendor or another Subvendor to perform a part or parts of the Work as identified in the Submission or as otherwise identified in a request to add a new Subvendor.



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- 1.63 "Submission" means all documentation and other materials and information submitted by the Bidder in response to Tender No IT-2018-1w-247.
- 1.64 "Supplier" means an individual, firm, partnership or corporation having a direct contract with the Vendor or another Subvendor to provide goods and/or services required to carry out the Work of the Contract.
- 1.65 "Scope of Work" describe the general and detailed requirements of the Work and are to be read in conjunction with any Drawings, if applicable, contained herein.
- 1.66 "Task Assignment Items", if applicable, means those items, work and/or services identified in the "Tender Document Form: Contract Prices" which shall form part of Articles of Agreement as items to be paid for under the Total Contract Price.
- 1.67 "Task Assignment Process" has the meaning ascribed to it in Section 8.4 of General Conditions of the Contract.
- 1.68 "Taxes" means all present and future taxes, surtaxes, duties, levies, imposts, rates, fees, premiums, assessments, withholdings, dues and other charges of any nature imposed by any Governmental Authority (including, income, capital (including large corporations), gross receipts, consumption, sales, use, transfer, goods and services or other Value Added Taxes, excise, customs or other import, anti-dumping, countervail, net worth, alternative or add-on minimum, windfall profits, stamp, registration, franchise, payroll, employment insurance, Canada Pension Plan, worker's compensation, health, education, school, business, property, local improvement, environmental, development and occupation taxes, surtaxes, duties, levies, imposts, rates, fees, premiums, assessments, withholdings, dues and charges) together with all fines, interest and penalties in respect thereof or in lieu of or for non-collection thereof.
- 1.69 "Tender Conflict of Interest" means the Vendor had an unfair advantage or engaged in conduct, directly or indirectly, that gave it an unfair advantage, including but not limited to (i) having, or having had access to, confidential information of Metrolinx in the preparation of its submission during the Tender process that was not available to other bidders, (ii) communicating with any person with a view to influencing preferred treatment in the Tender process (including but not limited to the lobbying of decision makers involved in the Tender process), or (iii) engaging in conduct that compromises, or could be seen to compromise, the integrity of the Tender process.
- 1.70 "Term" has the meaning ascribed to it in Section 2.1 of General Conditions of the Contract.
- 1.71 "Third Party" or "Third Parties" means any Third Party Vendors or Third Party Operators.



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- 1.72 "Third Party Contract" means a contract between Metrolinx and any other Person which is in any way related to, impacts or is impacted by the Work and/or the Vendor's acts or omissions, whether expressly identified to the Vendor or not.
- 1.73 "Third Party Vendors" means vendors, suppliers, service providers, utility owners or any other third party (excluding the Vendor and any Subvendors and Vendor Personnel) performing work and/or providing products and services in, or in respect of, the rail corridors, where such work, products or services (a) are on behalf and for the benefit of Metrolinx or (b) are being undertaken to enable work, products or services on behalf of and for the benefit of Metrolinx.
- 1.74 "Third Party Operators" means (a) any third party providing products and/or services in the rail corridors on their own behalf, pursuant to rights granted by Metrolinx, including VIA Rail Canada Limited, Canadian Pacific Railway Company and Canadian National Railway Company; and (b) any third party who otherwise has a right to occupy, access, or use property or facilities on or adjacent to the rail corridors.
- 1.75 "Third Party Work" means work and services conducted or provided by Third Parties.
- 1.76 "Total Contract Price" means the upset limit amount established as the total contract price for the Contract by Metrolinx which shall form part of the Articles of Agreement.
- 1.77 "Value Added Taxes" means such sum as shall be levied upon amounts payable to the Vendor under this Contract by any Governmental Authority that is computed as a percentage of the amounts payable to the Vendor (including all other Taxes but excluding Value Added Taxes), and includes the HST, and any similar tax, the payment or collection of which, by the legislation imposing such tax, is an obligation of the Vendor.
- 1.78 "Vendor" means the company identified as such in the Articles of Agreement.
- 1.79 "Vendor Intellectual Property" means any Intellectual Property which (a) the Vendor has already created, developed or produced prior to the Effective Date; (b) which the Vendor creates, develops or produces independently of this Contract and/or the performance of the Work; (c) which the Vendor licenses from a third party; (d) all documentation or source materials (including source code) related to any of the foregoing; and (e) all copies, translations, improvements, modifications, enhancements, adaptations, or derivations made to the Vendor Intellectual Property by the Vendor and/or any third party not performing work under this Contract; provided, however, that Vendor Intellectual Property does not include Custom Intellectual Property.



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- 1.80 "Vendor Personnel" or "Vendor's Personnel" means (a) with respect to the Vendor, all of the Vendor's personnel, employees and independent contractors (including the Key Personnel and the Vendor's Representative) engaged in the performance of the Work; and (b) with respect to each Subvendor, all of that Subvendor's personnel, employees and independent contractors engaged in the performance of the Work.
- 1.81 "Vendor Policies" has the meaning ascribed to it in Schedule C - Insurance of General Conditions.
- 1.82 "Vendor's Representative" means the person identified by the Vendor, and Accepted by Metrolinx, as the Vendor's authorized representative pursuant to Section 2.8 of General Conditions of the Contract.
- 1.83 "Work" means all activities, services, goods, equipment, matters and things required to be done, including all of the work, labour, services, goods, equipment, if applicable, described in the Scope of Work and Drawings and is further described in Section 2.2(a) of General Conditions.
- 1.84 "Working Day" means any day other than: (a) a Saturday or Sunday and (b) any other day on which Metrolinx is not open for business. Each Business Day will end at 4:00 p.m. on that day.

END OF SECTION



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**1.0 Payment**

- 1.1 Metrolinx will pay the Vendor for the Work performed by the Vendor pursuant to this Contract, in the amounts and manner, at the rates set out in the Articles of Agreement (the "Rates") and at the times, set forth in the Articles of Agreement and this Schedule B - Financial Terms.
- 1.2 The Vendor shall perform all of the Work notwithstanding that the value of the time spent by the Vendor in performance thereof may exceed the maximum amount payable to the Vendor pursuant to Section 3.0 of this Schedule B - Financial Terms.

**2.0 Limitation of Expenditure**

- 2.1 It is understood that the Contract is based on reimbursement for actual Work requested by Metrolinx and performed by the Vendor, to the satisfaction of Metrolinx.
- 2.2 Metrolinx does not guarantee any minimum or maximum of work.

**3.0 Total Contract Price**

- 3.1 Subject to Sections 8.1, 8.2 and Article 9 - Additional Resources of General Conditions of the Contract, Metrolinx and the Vendor acknowledge and agree that the Total Contract Price set out in the Articles of Agreement is the maximum amount payable in respect to the provision of the Work provided, however, that the foregoing is not an entitlement to, nor a guarantee that the Vendor will be paid the full amount of the Total Contract Price which is subject to Section 2.0 herein.

**4.0 Rates for Work**

- 4.1 The Vendor acknowledges and agrees that the Rates are inclusive of all labour and materials, insurance costs, disbursements and all other overhead including any fees or other charges required under Applicable Laws and noted in the Articles of Agreement. Without limiting the generality of the foregoing, the Rates include costs for the coordination, administration of the provision and management of the Work necessary to achieve compliance with external agencies and Governmental Authorities as required to obtain any Approvals, provided, however, that the specific costs associated with application and permit fees in respect of the Approvals shall be paid directly by Metrolinx.
- 4.2 Metrolinx shall not reimburse the Vendor for any hospitality, food or incidental expenses incurred. Subject to the prior consent of Metrolinx, Metrolinx shall reimburse the Vendor for reasonable traveling expenses incurred in connection with the performance of the Work, such reimbursement to be made in accordance



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with the Government of Ontario's Travel, Meal, and Hospitality Expenses Directive.

- 4.3 As part of the Work, the Vendor shall also be responsible for obtaining and registering all of the Software licenses and long term support agreements, as and if applicable, on behalf of Metrolinx, and any costs incurred by the Vendor in connection thereto shall be included in the Rates set out in the Articles of Agreement.

**5.0 Taxes**

- 5.1 The Total Contract Price and all amounts payable under the Contract shall be inclusive of all Taxes (except for HST) in effect as at the date of this Contract. Unless otherwise expressly specified in this Contract or otherwise required by Applicable Law, the Vendor shall be responsible for remittance of any and all Taxes due and payable in respect of the Work.
- 5.2 Any amount to be levied against Metrolinx in respect of the HST or any similar successor tax levied under the Excise Tax Act and applicable to the Work, is to be shown separately on all invoices for Work performed by the Vendor. The Vendor shall remit any HST paid or due to the Canada Revenue Agency in accordance with Applicable Laws, and shall, at the request of Metrolinx, provide evidence of payment of same.
- 5.3 In the event that Metrolinx is entitled to a rebate under the Retail Sales Tax Act (Ontario) or the Excise Tax Act in whole or in part, for Value Added Taxes paid under this Contract, the Vendor shall show on each invoice, and in the manner directed by Metrolinx, either the actual Value Added Taxes paid by the Vendor by category or the portion of the Vendor's fees eligible under Applicable Law for the rebate.
- 5.4 Certain payments to non-resident corporations or individuals may be subject to withholding taxes, under the Income Tax Act. Non-residents can apply in advance to Revenue Canada, Taxation, for a waiver or reduction of the withholding tax requirement. Unless Metrolinx is provided with a copy of the written information as a result of the waiver application to the Tax Services Office of Canada Customs and Revenue Agency, taxes will be withheld as determined under the Income Tax Act. The Vendor shall be responsible for investigating whether they are subject to the withholding of taxes under the Income Tax Act and obtaining the necessary waiver or reduction as needed.

**6.0 Invoicing and Payment Process**

- 6.1 Unless otherwise specified in the Articles of Agreement or in a Task Plan, the Vendor shall submit an invoice for payment for Work completed no less than ten



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(10) Business Days following the end of the month in respect of which the related Work were rendered. The invoice shall be in form and substance satisfactory to Metrolinx acting reasonably and shall set out with sufficient particularity the Work performed in the previous month and the total time spent by each category of Vendor Personnel multiplied by the applicable Rate.

- 6.2 The aggregate amount invoiced by the Vendor shall not exceed the Total Contract Price, unless such additional amount is agreed by the Parties pursuant to the change management process set out in Article 8 of General Conditions of the Contract.
- 6.3 Unless there is a Dispute with respect to the content of an invoice and subject to the other provisions of this Schedule B, Metrolinx shall make payment to the Vendor no later than thirty (30) Business Days following receipt of the invoice for payment from the Vendor, unless otherwise provided or permitted in the Contract. The Vendor shall accept any payments made by Metrolinx by way of Electronic Funds Transfer, and shall, if requested by Metrolinx, provide the account information required to complete an Electronic Funds Transfer.

**7.0 Statutory Holdback**

- 7.1 Subject to the provisions of the Construction Act, Metrolinx shall hold back, from each payment to the Vendor, ten percent (10%) of the amount of the payment or such greater amount as may be required under the Construction Act (the "Statutory Holdback"), and any Statutory Holdback shall only be released in accordance with the provisions of the Construction Act.

**8.0 Withholding of Payment**

- 8.1 Notwithstanding any other term in the Contract Documents, Metrolinx shall not be obligated to make payment to the Vendor if at the time such payment was otherwise due:
- (a) there is a Lien or other Encumbrance arising from the performance of the Work, whether valid or not and whether preserved or perfected, in relation to, or otherwise affecting, the Work or the Place of Work; or
  - (b) written notice of a Lien arising from the performance of the Work has been given to Metrolinx or an owner, mortgagee or other entity with an interest in the Work or a claim for Lien arising from the performance of the Work and otherwise affects the Work.



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**9.0 Substantial Performance**

- 9.1 When the Vendor considers the Contract to be substantially performed, as defined by the Construction Act, and prior to submission of the application for substantial performance, the Vendor shall prepare and submit to Metrolinx a comprehensive list of activities or service items to be completed or corrected and shall apply for a review of the list by Metrolinx. Failure to include an item on the list does not alter the responsibility of the Vendor to complete the item or the Work.
- 9.2 Within seven (7) Business Days of receipt of the Vendor's application for substantial performance, Metrolinx shall satisfy itself as to whether or not the Contract has been substantially performed as required by the Construction Act and the Contract Documents. Then:
- (a) if Metrolinx determines that the Contract has been substantially performed as required by the Construction Act, Metrolinx shall issue a certificate of substantial performance which shall state the date of substantial performance; or
  - (b) if Metrolinx determines that the Contract has not been substantially performed as required by the Construction Act, Metrolinx shall advise the Vendor in writing of the reasons for which such a certificate is not being issued.
- 9.3 Immediately following the issuance of a certificate of substantial performance, the Vendor, in consultation with Metrolinx, shall establish a reasonable date for expeditiously finishing the Work

**10.0 Release of Statutory Holdback Upon Substantial Performance**

- 10.1 After the issuance of the certificate of substantial performance in accordance with Section 9.0 of this Schedule B - Financial Terms and the Construction Act, the Vendor shall:
- (a) satisfy the requirements of the Construction Act with respect to publication of a copy of the certificate of substantial performance;
  - (b) submit an application for payment of the Statutory Holdback amount;
  - (c) submit documentary proof of compliance with Section 10.1(a) of this Schedule B - Financial Terms; and
  - (d) submit a sworn statement that all accounts for indebtedness which may have been incurred by the Vendor in connection with the performance of the



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Work and for which Metrolinx might in any way be held responsible have been paid in full, except for amounts properly retained as a holdback.

- 10.2 After receipt of an application for payment of the Statutory Holdback amount from the Vendor and the other documents required to be provided under this Contract, Metrolinx shall issue a certificate for payment for the Statutory Holdback amount.
- 10.3 Provided that the Vendor has satisfied the requirements of Section 10.1 of this Schedule B - Financial Terms, the Statutory Holdback amount authorized for payment under the certificate for payment of the Statutory Holdback amount is due and payable on the day following the expiration of the holdback period stipulated in the Construction Act.
- (a) Notwithstanding the foregoing, Metrolinx may retain out of the Statutory Holdback amount any sums required by law to satisfy any Liens against the Work or, if permitted by the Construction Act, such other third party monetary claims against the Vendor which are enforceable against Metrolinx or any other claims by Metrolinx against the Vendor.

**11.0 No Progressive Release of Holdback**

- 11.1 There will be no release of holdback prior to substantial performance of the Contract.

**12.0 Final Payment Certificate**

- 12.1 When the Vendor considers that the performance of the Work is completed as defined in the Construction Act, the Vendor shall submit an application for final payment.
- 12.2 Metrolinx shall review the record of the Work performed to verify the validity, or otherwise, of the application after the receipt of the Vendor's application for final payment. Metrolinx shall review the record of Work performed within ten (10) Business Days of receipt of the Vendor's application and shall issue, no later than seven (7) Business Days after reviewing the record of Work, a final payment certificate in the amount applied for or a regular certificate for payment in such other amount as Metrolinx determines to be properly due. If Metrolinx amends the application, Metrolinx shall promptly notify the Vendor in writing giving reasons for the amendment.
- 12.3 Subject to the provisions of this Contract and the Construction Act, Metrolinx shall make payment to the Vendor on account no later than thirty (30) days following the receipt of a final payment certificate issued by the Metrolinx pursuant to Section 12.2 of this Schedule B - Financial Terms, provided that:



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- (a) the Vendor has provided Metrolinx, in a form acceptable to Metrolinx, a sworn statement that all accounts for indebtedness which may have been incurred by the Vendor in connection with this Contract and for which Metrolinx might in any way be held responsible have been paid in full, except for amounts properly retained as a holdback;
- (b) the Vendor has provided the documents required to demonstrate compliance with applicable workers compensation legislation; and
- (c) the Vendor has satisfied all requirements set out in this Contract.

12.4 Subject to the same conditions as listed in Section 10.1 of this Schedule B - Financial Terms, Metrolinx shall make the final release of Statutory Holdback retained on payments made after the date of substantial performance, on the day following the expiration of the holdback period stipulated in the Construction Act.

**13.0 Cost of Changes**

13.1 Metrolinx may, at any time after the execution of the Contract, make changes to the Work of the Contract by written amendment to Contract.

13.2 The value of any such change shall occur by one, or a combination of, the following methods:

- (a) By estimate and acceptance of a lump sum;
- (b) By unit prices agreed upon; or
- (c) By cost and fix percentage of 10% for the Contractor's profit and overhead.

**14.0 Expenditure of Task Assignment Items**

14.1 Where the expenditure of a Task Assignment has been approved by Metrolinx, the value of completed or delivered Task Assignment Items may be claimed as part of the Contractor's monthly application for payment, in accordance with Section 6.0 of this Schedule B - Financial Terms. Task Assignment expenditures must not exceed the Task Assignment value noted in each respective Quotation approved by Metrolinx.

14.2 A Task Assignment value, approved by Metrolinx, is in no way a guarantee of monies and shall only be expended for the portion of the Task Assignment Items delivered and/or performed by the Vendor and accepted by Metrolinx.



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**15.0 Quotations - Task Assignment Process and Changes**

- 15.1 With respect to any Changes or Task Assignments (or any part thereof), the Contractor shall, upon request by Metrolinx (at its sole discretion), submit a quotation detailing the estimated cost of the applicable Change or Task Assignment (each a "Quotation"). Where Metrolinx has not provided the names of third parties from which quotations should be obtained, the Contractor shall have the right to choose which third parties shall provide quotations. Subject to any instruction to the contrary issued by Metrolinx pursuant to Section 8.5 of General Conditions of the Contract, where a Task Assignment includes work that the Contractor proposes would be most efficiently performed by the Contractor's own workforces, the Contractor shall include as one of the three (3) quotes the price proposal for having its own workforce perform the work.
- 15.2 Any and all costs incurred by the Contractor for providing a Quotation or obtaining quotations from third parties, shall be borne by the Contractor.
- 15.3 All Quotations shall be prepared on the Contractor's letterhead and in a format agreed to by Metrolinx and the Contractor. The Quotation shall at a minimum contain the following information:
- (a) a detailed description of the work required;
  - (b) Curriculum Vitae for the individual named for Site Superintendent role;
  - (c) required SubContractors and specialized service providers;
  - (d) any requirements for testing and/or reporting;
  - (e) detailed breakdown of costs;
  - (f) detailed work schedule which complies with completion date provided by Metrolinx (as required by Metrolinx);
  - (g) a completed Site Specific Work Plan Submittal (template provided under Attachments); and
  - (h) any other requirements/instructions.
- 15.4 Metrolinx reserves the right to accept or reject a Quotation, in whole or in part.
- 15.5 No individual Assignment shall have a value greater than two hundred and fifty thousand dollars (\$250,000.00).



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15.6 A Task Assignment exceeding two hundred and fifty thousand dollars (\$250,000) in value cannot be divided over multiple Quotations to bypass the requirements of Section 15.5 herein.

15.7 The Contractor shall not perform any Work under this Contract which would result in an increase to the Total Contract Price, unless an increase is so authorized by Metrolinx and effected by a written amendment to the Contract.

**16.0 Metrolinx Property**

16.1 All tangible property purchased and charged to Metrolinx' account is and shall be deemed and shall remain the property of Metrolinx.

**17.0 Payment Schedule and Advance Payment Security**

17.1 Not applicable

**18.0 Task Assignment Contract Security**

18.1 Within five (5) Business Days of receipt of Metrolinx acceptance of an individual Task Assignment valued at two hundred and fifty thousand dollars (\$250,000) in value, the Contractor shall provide Metrolinx with a Performance Bond and a Labour and Material Payment Bond each equal to fifty percent (50%) of the Task Assignment value. In lieu of a Performance Bond and Labour and Materials Payment Bond, the Contractor shall provide a Letter of Credit, Bank Draft or Certified Cheque equal to twenty-five percent (25%) of the Task Assignment value ("Contract Security"), in favour of Metrolinx. All signatures and seals (if applicable) shall be original.

18.2 The Letter of Credit, if used as Contract Security, shall be from a bank acceptable to Metrolinx and shall expressly state that it may be drawn on by Metrolinx at the bank's counter(s) in Toronto, Ontario, Canada upon the delivery of a certificate from the President and CEO of Metrolinx confirming that the Contractor has defaulted in the performance of its obligations under the Contract. No other documentary evidence is required to be provided by Metrolinx. The Letter of Credit shall state that Metrolinx is the named beneficiary and include the Contract name and number.

18.3 The Contractor shall maintain the Contract Security in good standing during the entire term of the Contract. The Contract Security shall remain in effect from the time of Contract Award until the expiry of all Option Years plus any Warranty period.



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**19.0 Bonus for Early Completion**

19.1 Not Applicable

**20.0 Liquidated Damages**

20.1 Liquidated Damages for Safety Incidents

- (a) The Vendor acknowledges and agrees that the Metrolinx will suffer harm in the event of any breach, contemplated breach, act or omission of the Vendor that does or can reasonably be expected to create a threat to the health, safety or security of any person or user at the Place of the Work including other members of the public (each, a “Safety Incident”). Whether a Safety Incident has occurred, and the categorization of it as Major Safety Incident or Minor Safety Incident, shall be determined in accordance with this provision by the Metrolinx in its sole discretion. If there is a Safety Incident, the Vendor shall pay to the Metrolinx, the following:
- (b) For Major Safety Incidents, the lump sum amount of Fifteen Thousand dollars (\$15,000), and a daily amount of Five Thousand dollars (\$5,000) for every day that the Major Safety Incident is not corrected or addressed by the Vendor to the satisfaction of the Metrolinx after being informed by the Metrolinx of the occurrence of a Major Safety Incident. Where the Metrolinx is required to take action or instruct the Vendor in order to avoid a Major Safety Incident, that occurrence shall be deemed to be a Major Safety Incident, and the lump sum and daily amounts shall accrue accordingly depending on the length of time that the Vendor takes to address the Major Safety Incident; or
- (c) For Minor Safety Incidents, the lump sum amount of Five Thousand dollars (\$5,000), and a daily amount of \$500 dollars (\$500) for every day that the Minor Safety Incident is not corrected by the Vendor to the satisfaction of the Metrolinx after being informed by the Metrolinx of the occurrence of a Minor Safety Incident.
- (d) For the purpose of this section:
  - (i) A Major Safety Incident is a material breach or threat to the health, safety or security of any person or user of the Place of Work, and may include, but is not limited to: work proceeding without an approved work plan, incident causing injury to a person, risk to public safety, or incident giving rise to a report to, or charge or stop work order by the Ministry of Labour.



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- (ii) A Minor Safety Incident is an incident giving rise to health, safety or security concerns, but not a Major Safety Event, and may include, but is not limited to: failure to notify the Metrolinx of a safety issue or incident, or a failure to wear personal protective equipment.
- (e) The liquidated damages for Safety Incidents is limited to direct administrative costs to the Metrolinx to respond and manage the Safety Incident. For greater certainty, nothing in this section shall limit the rights of Metrolinx to place the Vendor in default for any Safety Incident.
- (f) The Vendor acknowledges and agrees that any amounts payable pursuant to this Section 20.0 - Liquidated Damages shall not be construed as a penalty imposed on the Vendor by the Metrolinx. The Vendor agrees that it is, and shall be, estopped from alleging that any liquidated damages set out in this Section 20.0 are a penalty and not liquidated damages, or are otherwise unenforceable for any reason, including that such damages were not incurred. The Vendor acknowledges and agrees that all liquidated damages pursuant to Section 20.0 shall be payable whether or not the Metrolinx incurs or mitigates these damages, and that Metrolinx shall have no obligation to mitigate these damages.
- (g) The Metrolinx shall have the right to deduct the amount of any and all liquidated damages assessed against the Vendor under this Section 20.0 – Liquidated Damages from any amount due to the Vendor at any time.
- (h) Except as expressly provided herein, nothing in this Section 20.0 shall restrict, limit, prejudice or in any other way impair the rights or remedies of the Metrolinx under any other provision of the Contract.”
- (i) This Section 20.0 shall not limit the Metrolinx’s rights in respect of any other default of the Vendor, or any other express rights of the Metrolinx in the Contract Documents.

**21.0 Contract Security**

Not Applicable

**22.0 Substituting Forms of Statutory Holdback**

- 22.1 The Vendor may, at any time, submit an application in writing to Metrolinx requesting that all or any Statutory Holdback being retained by Metrolinx in the form of funds be replaced with one or more of the following forms of holdback: a letter of credit (in the form prescribed by the Construction Act), a demand-worded



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holdback repayment bond (in the form prescribed by the Construction Act) or any other form of holdback prescribed by the Construction Act.

- 22.2 If Metrolinx agrees to a request made by the Vendor under Section 22.1, Metrolinx shall notify the Vendor that it agrees to the Vendor's request and the Vendor shall then proceed to obtain and provide to Metrolinx the agreed upon substitute form(s) of holdback. Once the Vendor has provided the agreed upon substitute form(s) of holdback to Metrolinx and Metrolinx has satisfied itself that the substitute form(s) of holdback are in the appropriate form and are consistent with the form agreed upon by the Parties, Metrolinx shall release to the Vendor the Statutory Holdback funds retained.
- 22.3 Notwithstanding any other provision in the Contract, Metrolinx is under no obligation whatsoever to agree to any request made by the Vendor under Section 22.1. For greater certainty, Metrolinx has sole, absolute and unfettered discretion in determining whether or not to accept or reject a request made by the Vendor under Section 22.1.

END OF SECTION



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**1.0 Vendor Insurance Requirements**

1.1 The Vendor shall, at its own expense, obtain and maintain for the entire Term minimum insurance coverage as follows:

(a) Commercial General Liability

- (i) The policy shall provide a policy limit of not less than ten million dollars (\$10,000,000) per occurrence for all claims arising out of bodily injury (including death), personal injury, and damage to property of others. Such policy shall not contain any exclusion that conflict with the Work required to be performed under this Contract. The Vendor shall cause the interest of Metrolinx, and such other Person as Metrolinx may determine at its sole and absolute discretion, to be noted on the Vendor Policies hereof as “Additional Insured”. The policy shall contain a waiver of subrogation, cross liability and severability of interest.

(b) Automobile Liability Insurance

- (i) If required, the policy shall provide coverage for liability arising out of the use of owned, non-owned, leased or hired automobiles in connection with the performance of the Work. Coverage shall consist of a combined single limit of not less than five million dollars (\$5,000,000) per occurrence. Alternatively, for Work that do not require the use of owned, non-owned, leased or hired automobile, the Vendor shall provide a written confirmation within five (5) Business Days of contract award, stating same, in place of the insurance coverage.

(c) All Risks property Insurance

- (i) All Risks Property Insurance shall be in the joint names of the *Contractor*, the *Owner*, the *Consultant* and all *Subcontractors*. The insurance coverage shall not be less than the insurance required by IBC Forms 4042 and 4047, or their equivalent replacement. The insurance provided shall have limits of not less than the sum of the amount of the *Contract Price*, the applicable *Value Added Taxes*, and the full value of products provided by the *Owner* for incorporation into the *Work* as specified in the *Contract Documents*. The policy shall include a waiver of subrogation against the *Owner*.

(d) Contractor’s Equipment Insurance



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- (i) The policy covers construction machinery and equipment used by the *Contractor* for the performance of the *Work*, including boiler insurance on temporary boilers and pressure vessels. The policy shall be in a form acceptable to the *Owner* and shall not allow subrogation claims by the insurer against the *Owner*. Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance, the *Owner* agrees to waive the equipment insurance requirement.
- (e) Any other valid or collectible insurance available to Metrolinx shall not apply to any loss until the coverage and limits available under the insurance policies maintained by the Vendor in accordance with this Contract have been exhausted.

**1.2 Additional Coverage**

- (a) Without prejudice to any other provisions of this Contract (including Section 1.1 of this Schedule C - Insurance), the Vendor shall, at all relevant times and at its own expense, obtain and maintain, or cause to be obtained and maintained (during the Term plus thirty-six (36) months after termination or expiration of this Contract):
  - (i) those insurances that are reasonable for the performance of the type and scope of Work set out by this Contract (including, as applicable, insurance as would typically be required by prudent designers or consultants); and/or
  - (ii) those insurances that the Vendor is required to obtain and maintain, or cause to be obtained or maintained, by Applicable Law.

**1.3 Requirements for Insurance**

- (a) All of Vendor's policies of insurance, as required under this Contract (the "Vendor Policies"), shall be taken out with insurance companies licensed to transact business in the Province of Ontario with an AM Best rating of no less than A.
- (b) Any deductible or self-insured retention amounts are the responsibility of the Vendor. Notwithstanding the foregoing, such deductibles or self-insured retention must be consistent with standard commercial practice and acceptable to Metrolinx, acting reasonably.
- (c) All Vendor Policies shall be kept in full force and effect during the Term, including any requirements for the period following Contract Closeout.



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- (d) In the event that the Vendor fails to obtain and/or maintain in full force and effect any such insurance as aforementioned, then Metrolinx shall have the right as the Vendor's true and lawful attorney to do all things necessary for this purpose. The Vendor shall be responsible, and shall reimburse Metrolinx, all amounts paid by Metrolinx for insurance premiums and any and all costs incurred by Metrolinx in connection with this Contract. Without limitation, any premiums due on any insurance policy under this Schedule C - Insurance, but not paid by the Vendor may be paid directly to the insurer(s) or broker(s) by Metrolinx, which shall be entitled to deduct the amount of same along with its reasonable costs in so doing from any monies otherwise due to the Vendor by Metrolinx either under this Contract or otherwise.
- (e) All Vendor Policies shall be endorsed to provide Metrolinx with not less than thirty (30) days' advance written notice of cancellation.
- (f) Irrespective of the insurance requirements above, the insolvency, bankruptcy, or failure of any such insurance company providing insurance for the Vendor, or the failure of any such insurance company to pay claims that occur will not be held to waive any of the provisions hereof.

**1.4 Proof of Insurance**

- (a) The Vendor shall, prior to the commencement of the Work and thereafter upon request, provide to Metrolinx original signed certificates of insurance for the Vendor Policies, confirming that the required coverage has been placed and maintained. In addition, at least fifteen (15) days prior to the expiry date or replacement of any policy, the Vendor shall provide original signed certificates evidencing renewals or replacements of such policy to Metrolinx, without notice or request by Metrolinx.
- (b) The Vendor shall, upon request, provide evidence to Metrolinx that the premiums associated with the Vendor Policies have been paid; however, receipt by Metrolinx of the above information will in no way constitute confirmation by Metrolinx that the insurance complies with the requirements of this Contract. Responsibility for ensuring that the insurance coverage outlined in this Contract is in place rests solely with the Vendor.
- (c) The Vendor also agrees to provide Metrolinx with proof of errors and omissions insurance maintained by any Subvendor, where such Subvendor is under a professional obligation to maintain the same, and with proof of such insurance to be provided to Metrolinx no later than the execution of this Contract by the Vendor and to be in a form and with an insurer acceptable to Metrolinx.



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**1.5 Vendor's Liability Preserved**

- (a) The provisions of this Contract as they relate to insurance do not diminish, limit or otherwise affect the liability of the Vendor to Metrolinx under or in relation to any other provisions of this Contract.

**1.6 Certificates of Insurance shall include:**

- (a) A reference to the Project description and Contract number;
- (b) Additional insureds as follows:
  - (i) The Certificate of Commercial General Liability Insurance shall include the following as additional insureds:
    - (A) Metrolinx;
    - (B) Canadian National Railway Company;
    - (C) Canadian Pacific Railway Company;
    - (D) Bombardier Transportation Canada Inc.;
    - (E) Via Rail Canada Inc.;
    - (F) PNR Railworks Inc; and
    - (G) A & B Rail Services Lt.
- (c) Confirmation the policy includes a waiver of subrogation against Metrolinx as required by General Conditions of the Contract.
- (d) A provision requiring the insurer to give Metrolinx thirty (30) calendar days prior written notice of any changes to, or cancellation of, the required insurance policies.

**2.0 Workplace Safety & Insurance Board Protection**

- 2.1 With respect to the WSIB coverage as required under the Workplace Safety and Insurance Act (Ontario), the Vendor unconditionally guarantees to Metrolinx full compliance with the conditions, regulations and laws relating to workplace safety insurance by itself and by all Subvendors.
- 2.2 Without restricting the indemnity obligations of the Vendor in Article 12 of the General Conditions, unless the Vendor is WSIB exempt, the Vendor shall produce, at the commencement of this Contract, from time to time as may be



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**SCHEDULE C – INSURANCE**

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required by Metrolinx and prior to issuance of the Final Payment Certificate, a valid Workplace Safety and Insurance Clearance Certificate, issued by the WSIB, for the premium rate class, subclass or group appropriate to the Work.

- 2.3 If the Vendor is WSIB exempt, it shall provide evidence of Employer's Liability or equivalent, to the satisfaction of Metrolinx, in lieu of a Workplace Safety and Insurance Clearance Certificate.

END OF SECTION



**GENERAL CONDITIONS OF THE CONTRACT**  
**SCHEDULE D – DISPUTE RESOLUTION**

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**1.0 Bona fide efforts to resolve**

- 1.1 The Parties shall at all times during the Term make bona fide efforts to resolve any and all Disputes arising between them by amicable negotiations and to have all Disputes resolved at the lowest level of management before engaging the dispute resolution processes described in the balance of this Schedule D - Dispute Resolution.

**2.0 Continuance of the Work During Dispute**

- 2.1 Unless expressly directed otherwise by Metrolinx, the Vendor shall not stop or delay the performance of the Work, in whole or in part, on account of a Dispute between the Vendor and Metrolinx or between the Vendor and any other Person. Without limiting the generality of the foregoing, at all times during the course of a Dispute, the Vendor shall:
- (a) continue with the Work in a diligent manner and without delay;
  - (b) conform to Metrolinx' decisions and directions; and
  - (c) be governed by all applicable provisions of this Contract.
- 2.2 The Parties acknowledge and agree that the Vendor's compliance with this Section 2.0 shall not operate to waive any claim or contention that the Vendor may have in relation to any Dispute.

**3.0 Tiered-Dispute Resolution**

- 3.1 The Parties agree that any Dispute which cannot be resolved to the satisfaction of both Parties by direct discussions between staff members of the Parties, may be referred for negotiation between senior management of both Parties by delivery from one Party to the other Party of notice in writing requesting dispute resolution, which notice shall set out the Dispute in reasonably sufficient detail (a "Dispute Notice").

**4.0 Negotiation**

- 4.1 In the event a Party issues a Dispute Notice to the other Party, the Vice President, GO Capital Infrastructure at Metrolinx (or if that position no longer exists at the time the Dispute Notice is issued, the person performing an equivalent function) and an authorized representative of the Vendor, of equivalent seniority and duly appointed to represent the Vendor in this regard, shall meet and make a good faith effort, on a without prejudice basis, to resolve the Dispute as set out in the Dispute Notice in a prompt manner and, for the purpose of same, each Party shall provide its representative with full and timely disclosure of all relevant facts



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information and documents as may be reasonably required or may be reasonably requested by the other Party, on a without prejudice basis, to facilitate such negotiation.

- 4.2 Negotiations under this Section 4.0 shall be commenced within ten (10) Business Days of delivery of a Dispute Notice and shall, unless otherwise agreed by the Parties, be concluded within fifteen (15) Business Days of their commencement. In the event that a resolution satisfactory to all Parties is achieved through such negotiations, the Parties shall issue a joint statement detailing the manner in which the Dispute has been resolved.

**5.0 Mediation**

- 5.1 If a Dispute has not been resolved through high-level negotiation as contemplated in Section 4.0, either Party may refer the Dispute to be resolved through mediation.
- 5.2 The Parties shall mutually agree to the appointment of the mediator within thirty (30) Business Days, or within such other time as the Parties may agree, of any Party issuing a supplementary Dispute Notice requesting mediation.
- 5.3 If the Parties cannot agree on the appointment of a mediator, the appointment of a mediator shall be determined by the Ontario Superior Court of Justice following an application by either Party.
- 5.4 The mediator shall be independent of and at arm's length to the Parties and shall be a person who by training and experience has the qualifications and the mediation skills to mediate a Dispute.
- 5.5 Unless the Parties otherwise agree, the mediation shall proceed in accordance with the following procedures:
- (a) Each Party shall prepare a summary of the issues in dispute, with the Party's position with respect to those issues. The summary shall be delivered to the mediator and the other Parties, at least seven (7) Business Days before the first mediation conference.
  - (b) The goal of the mediation is to reach an agreed upon settlement and, therefore, all individuals with the appropriate authority to agree to the settlement terms and conditions shall be present at the mediation.
  - (c) A Party may be represented at the mediation by counsel or another representative at the sole cost of such Party.



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- (d) The mediator, the Parties and their counsel or representatives shall keep confidential all matters relating to the mediation, except where disclosure of a settlement agreement is necessary to implement or enforce that agreement and except as otherwise required by Applicable Law.
  - (e) In all respects, the mediation is deemed to be a "without prejudice" proceeding.
- 5.6 The costs of the mediator shall be apportioned equally between the Parties unless otherwise agreed under any settlement reached under this Section 5.0.
- 5.7 If the Parties achieve a resolution of the Dispute, the mediator shall confirm the resolution in writing, which will be signed by the Parties. If the Parties do not resolve the Dispute, the mediator shall provide a written confirmation that the Parties were unable to resolve the Dispute.
- 5.8 Both Parties acknowledge and agree that they may not refer a Dispute for resolution by arbitration under Section 6.0 herein prior to attempting to resolve such Dispute through mediation pursuant to this Section 5.0.

**6.0 Arbitration**

- 6.1 Any Party may, within ten (10) Business Days of the delivery of the mediator's confirmation that the Parties were unable to resolve their Dispute, issue a supplementary Dispute Notice requesting arbitration. Subject to Applicable Law, if such a supplementary Dispute Notice is issued, the Parties shall proceed to arbitration in the manner described below.
- 6.2 If the Parties agree on the arbitrator, the Parties shall jointly appoint the arbitrator as soon as possible and in any event within ten (10) Business Days of the submission of a Dispute to arbitration under this Section 6.0. If the Parties are unable to agree on an arbitrator, each Party shall appoint an arbitrator, and the two arbitrators so chosen shall select a third arbitrator acceptable to both of them within ten (10) Business Days of their selection.
- 6.3 The arbitrator(s) shall be independent of and at arm's length to the Parties and shall be a person who by training and experience has the qualifications and arbitration skills to arbitrate a Dispute.
- 6.4 The arbitration shall be conducted in accordance with the provisions of the Arbitration Act, except to the extent they are modified by the express provisions of this Schedule D - Dispute Resolution or unless the Parties otherwise agree.
- 6.5 If the issue in dispute is particularly time sensitive, the Parties shall, in good faith, take such reasonable steps as may be required to expedite the arbitration process



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in order that an award may be rendered as soon as practicable by the arbitrator(s), given the nature of the Dispute.

- 6.6 The arbitrator(s) has the jurisdiction to deal with all matters relating to a Dispute.
- 6.7 Unless otherwise agreed, the arbitration shall be conducted in the City of Toronto, Province of Ontario at the location determined from time to time by the arbitrators, but the arbitrators may meet in any other place the arbitrators considers necessary for consultation, to hear witnesses, experts or other parties, or for the inspection of documents, goods or other property.
- 6.8 In addition to the examination of the Parties by each other, the arbitrator(s) may examine, in the ordinary course, the Parties or either of them and the witnesses in the matter referred to the arbitrator(s), and the Parties and witnesses, if examined, shall be examined on oath or affirmation.
- 6.9 The language of the arbitration shall be English.
- 6.10 The arbitrator(s) shall, after full consideration of the issues in dispute, the relevant facts and Applicable Law, render a decision as soon as possible and, in any event, shall use all reasonable efforts to render a decision no later than thirty (30) Business Days after argument of the issue to the arbitrator(s), which decision shall be final and binding on the Parties and not subject to appeal or challenge, except such limited relief provided under Section 45(1) (appeal on a question of law, with leave) or Section 46 (setting aside award) of the Arbitration Act.
- 6.11 The costs of the arbitration are in the discretion of the arbitrator(s) who, in addition to any jurisdiction and authority under Applicable Law to award costs, has the jurisdiction and authority to make an order for costs on such basis as the arbitrator(s) consider appropriate in the circumstances. The submission to the arbitrator(s), and any award made in pursuance of it, may, at the instance of either of the Parties and without notice to the other of them, be made an Order of the Ontario Court (General Division), pursuant to the Arbitration Act and the Courts of Justice Act (Ontario).

END OF SECTION



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**SCHEDULE E – VENDOR PERSONNEL**

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**1.0 Vendor Personnel**

Not Applicable



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**1.0 Documents Required**

1.1 Maintain at the Place of Work, one (1) copy of following:

- (a) Contract Document;
- (b) Amendments to Contract/Change Orders;
- (c) other modifications to Contract;
- (d) Vendor's Occupational Health and Safety Policy, the program to implement the Occupational Health and Safety Policy and the site safety plan;
- (e) any other documentation required to be posted as per the OHSA and any subsequent regulations;
- (f) the completed and approved Site Specific Work Plan Submittal; and
- (g) any other documentation required to carry out the Work.

**2.0 Work Schedule**

2.1 Interim reviews of Work progress based on the schedule submitted by Vendor will be conducted. Update Vendor's schedule and cash flow chart when requested by Metrolinx.

**3.0 Location and Hours of Work**

3.1 Location(s) of Work

- (a) The Work shall be carried out at the following locations:
  - (i) Agincourt Station;
  - (ii) Ajax Station;
  - (iii) Allandale Waterfront Station;
  - (iv) Aurora Station;
  - (v) Barrie Crew Centre;
  - (vi) Barrie Layover;
  - (vii) Barrie South Station;



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- (viii)      Bloomington Station
- (ix)        Bowmanville Park & Ride;
- (x)         Bradford Station;
- (xi)        Cavan Park & Ride;
- (xii)       Centennial Station;
- (xiii)      Clarington North Park & Ride;
- (xiv)       Danforth Station;
- (xv)        East Gwillimbury Station;
- (xvi)       Eglinton Station;
- (xvii)      Finch Bus Terminal;
- (xviii)     Fortecon;
- (xix)       Guildwood Station;
- (xx)        Gormley Station
- (xxi)       Hwy 35 & 115 Park & Ride;
- (xxii)       Hwy 400 & 9 Park & Ride;
- (xxiii)      Hwy 400 & Major Mackenzie Park & Ride;
- (xxiv)       Hwy 404 & Aurora Rd. Park & Ride;
- (xxv)       Hwy 404 & Davis Dr. Park & Ride;
- (xxvi)       Hwy 404 & Queensville Park & Ride;
- (xxvii)      Hwy 404 & Woodbine Park & Ride;
- (xxviii)     HWY 407 & Brock Street;
- (xxix)       Kennedy Station;
- (xxx)       King City Station;
- (xxxi)       Langstaff Station;



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- (xxxii) Lincolnville Station;
- (xxxiii) Maple Station;
- (xxxiv) Markham Station;
- (xxxv) Middlefield;
- (xxxvi) Milliken Station;
- (xxxvii) Mount Joy Station;
- (xxxviii) Multiple Locations;
- (xxxix) Newcastle Park & Ride;
- (xl) Newmarket Bus Terminal;
- (xli) Newmarket Station;
- (xlii) Old Cummer Station;
- (xlili) Oriole Station;
- (xliv) Oshawa Bus Terminal;
- (xlv) Oshawa Station;
- (xlvi) Peterborough Bus Terminal;
- (xlvii) Peterborough South Park & Ride;
- (xlviii) Pickering Station;
- (xlix) Richmond Hill Station;
- (l) Rouge Hill Station;
- (li) Rutherford Station;
- (lii) Scarborough Station;
- (liii) Scarborough Town Centre Bus Terminal;
- (liv) Stouffville Layover;
- (lv) Stouffville Station;



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- (lvi) Trent University Bus Stop;
- (lvii) Unionville Station;
- (lviii) Whitby Crew Centre;
- (lix) Whitby Station; and
- (lx) York University Station

**3.2 Hours of Work**

- (a) The Vendor's hours of work for this Contract are 9:00 a.m. to 4:00 p.m., Monday to Friday, statutory holidays excluded.

**4.0 Subvendors and Suppliers**

Not Applicable

**5.0 Vendor's Use of Site**

- 5.1 Perform Work, and schedule deliveries, in a manner that will interfere as little as possible with Metrolinx's operations.

**6.0 Codes and Standards**

- 6.1 Perform Work in accordance with applicable acts administered by other authorities having jurisdiction.
- 6.2 Work to meet or exceed requirements of specified standards, codes and referenced documents.
- 6.3 Codes, specification standards, manuals and installation, application and maintenance instructions, referred to in the Contract shall be of latest published editions at date of Closing.

**7.0 Project Meetings**

- 7.1 Hold project meetings at times and locations approved by Metrolinx.
- 7.2 Designated parties shall take required action on decisions made at meeting. Metrolinx will record minutes of meetings and distribute to parties prior to next meeting.



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**8.0 Final Cleaning**

8.1 Products

- (a) Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

8.2 Cleaning

- (a) Ensure that the Place of Work is kept clean and tidy at all times throughout the term of the Contract. Remove all rubbish and debris promptly as it accumulates. Ensure that all sub-trades conform similarly.
- (b) Promptly remove from the Place of Work and dispose of surplus materials.
- (c) Do not accumulate scrap piles at any time. Fires will not be permitted at the Place of Work.
- (d) Remove dust and soil from all surfaces affected by Work by vacuuming, damp mopping, washing or scrubbing, as required.

**9.0 Systems Demonstration**

9.1 Prior to final inspection, demonstrate operation of each system to Metrolinx.

9.2 Instruct personnel in operation, adjustment, and maintenance of equipment and systems, using provided operation and maintenance data as basis for instruction.

**10.0 Operations and Maintenance Data**

10.1 On completion of project, submit to Metrolinx one (1) soft copy and four (4) hard copies of Operations Data and Maintenance Manual, made up as follows:

- (a) bind data in vinyl, hard covered, three ring, loose leaf binder for 215 x 280mm sized paper;
- (b) enclose title sheet, labelled "Operation Data and Maintenance Manual", project name, date and list of contents; and
- (c) organize contents into applicable sections of work. Mark each section by labelled tabs protected with celluloid covers fastened to hard paper dividing sheets.

10.2 Include following information plus data specified:



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- (a) description operation and maintenance instructions for equipment and systems, including a complete list of equipment and parts list. Indicate nameplate information such as make, size, capacity, serial number;
- (b) names, addresses and phone numbers of Subvendors and suppliers;
- (c) guarantees, warranties and bonds showing:
  - (i) name and address of projects;
  - (ii) guarantee commencement date (date of Final Certificate of Completion);
  - (iii) duration of guarantee;
  - (iv) clear indication of what is being guaranteed and what remedial action will be taken under guarantee; and
  - (v) signature and seal of Vendor; and
- (d) additional material used in project listed under various sections showing name of manufacturer and source supply.

10.3 Neatly type lists and notes. Use clear Drawings, diagrams or manufacturer's literature.

**11.0 Date-Related Compliance**

- 11.1 All materials, equipment, systems and components thereof used in connection with the provision of the Work, individually or in combination as the case may be, shall accurately and automatically process any and all date and date-related data including, but not limited to calculating, comparing and sequencing when used in accordance with the documentation provided by the Vendor.
- 11.2 Metrolinx may, at no additional cost to itself, require the Vendor to demonstrate date-related compliance as specified in Section 11.1 above and/or compliance techniques and test procedures the Vendor followed in order to comply with these requirements.

END OF SECTION



## **SCOPE OF WORK QUALITY CONTROL**

**Emergent External Work in the East Region  
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### **1.0 Inspection**

- 1.1 The materials furnished by the Vendor shall be inspected by Metrolinx at the time of delivery and at such other times as Metrolinx may elect.
- 1.2 Metrolinx shall have access to the work. If parts of the work are in preparation at locations other than the Place of the Work, access shall be given to such work whenever it is in progress.
- 1.3 Metrolinx may order any part of the work to be examined to ensure compliance with the Contract. If, upon examination such work is found not in accordance with the Contract, correct such work and pay the cost of examination and correction.
- 1.4 The review of the information covering materials and equipment by Metrolinx shall in no way release the Vendor from his responsibility for the proper design, installation and performance of any material, equipment or arrangement or from the liability to replace same should it prove defective or deficient.

### **2.0 Independent Inspection Agencies**

- 2.1 Independent Inspection/Testing Agencies may be engaged by Metrolinx for inspecting and/or testing portions of work.
- 2.2 Provide samples and/or assistance required for inspection and testing by the appointed agencies.
- 2.3 Employment of Inspection/Testing Agencies does not remove the responsibility to perform Work in accordance with the Contract.
- 2.4 If defects are revealed during inspection and/or testing, the appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defects and irregularities as advised by Metrolinx at no cost to Metrolinx. Pay costs for retesting and re-inspection.

### **3.0 Procedures**

- 3.1 Notify the appropriate agency and Metrolinx a minimum of two (2) Working Days in advance of the requirement for tests, in order that arrangements can be made with the testing company.
- 3.2 Submit samples and/or materials required for testing, as specifically requested in Scope of Work. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in the Work.



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- 3.3 Provide labour and equipment to obtain and handle samples and materials at the Place of Work.

**4.0 Rejected Work**

- 4.1 If, in the opinion of Metrolinx, it is not expedient to correct defective work, or work not performed in accordance with the Contract, Metrolinx may deduct from the Total Contract Price the difference in value between the work performed and that called for by the Contract, the amount of which shall be determined by Metrolinx.

**5.0 Reports**

- 5.1 Reports on materials testing as arranged by Metrolinx shall contain the following information:
- (a) Date and time of inspection or test.
  - (b) Weather conditions and ambient air temperatures during the inspection.
  - (c) Testing method employed by proper standard reference and specific paragraph or other detailed information as applicable.
  - (d) Inspection description and detailed and other relevant information.
  - (e) Test results in detail, complete with applicable graphs and other clarifying documents and information.
  - (f) Printed name and signature of person having conducted inspection or test, and name, title and signature of Supervisor having verified the report.
- 5.2 Inspection and Testing Agency shall provide a written report for each inspection and test made, three copies to Metrolinx; three copies to the Vendor direct, who shall forward one copy to the Subvendor, supplier or manufacturer concerned.

END OF SECTION



**SCOPE OF WORK**  
**RAILWAY SAFETY REQUIREMENTS**

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**1.0 Railway Safety, Orientation and Permits**

- 1.1 The Vendor shall ensure that all persons employed or hired by the Vendor who are granted access to **Metrolinx** right-of-way are trained and current in one of the following railway safety training courses:
- (a) GO-Safe Railway Orientation (available at [www.gotransitcontractor.com](http://www.gotransitcontractor.com))
  - (b) or Metrolinx approved Canadian Railway Operating Rules and GO Transit
  - (c) Track worker Safety Instructions; and
  - (d) Any other railway safety training as applicable to Metrolinx property.
- 1.2 The Vendor shall maintain an up-to-date list of all such trained employees on site and ensure all such trained employees wear the sticker, issued upon successful completion of the course on a readily visible location on their hardhats, or carry the wallet card issued upon successful completion of the course, at all times when within the railway right-of-way. Authority to commence construction will only be given when this requirement has been fulfilled.
- 1.3 The Vendor shall ensure that appropriate railway entry/access permits are completed and on site prior to starting Work in the railway corridor.

**2.0 Alcohol and Drug Abuse Prevention**

- 2.1 The following rules shall apply to all persons while at the Place of Work and/or on Metrolinx property while carrying out all aspects of the Work:
- (a) The use, possession, distribution and/or sale of illegal drugs or drug paraphernalia is prohibited;
  - (b) The use, possession, distribution and/or sale of any form of alcohol, including alcoholic beverages;
  - (c) Workers must know and understand the possible effects of drugs, medication or mood altering agents, including those prescribed by a doctor, which will adversely affect, in any way and to any extent, their ability to work safely;
  - (d) Individuals shall ensure that prescribed or over-the-counter medications are used responsibly and in accordance with the applicable instructions. Persons taking prescription drugs shall advise their supervisor if there is potential for performance to be negatively affected;



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- (e) No distribution, offering or sale of prescription medications is permitted; and
  - (f) Individuals must report for duty, free of the negative effects of alcohol and other drugs, including the effects of such use, and remain so during the entire period of duty.
- 2.2 Where a worker is suspected of being intoxicated, the following procedures must be followed:
  - (a) The worker will be escorted to a safe location away from the work area, and asked to remain there pending further action;
  - (b) The worker's supervision, worker health and safety representative (if applicable), union steward (if applicable) and the designated Metrolinx Contract representative will be requested to attend;
  - (c) The group present will determine an appropriate course of action and a means of transport to a suitable safe location;
  - (d) Where there are differences of opinion with respect to the worker's fitness for duty, the dispute will be resolved with a view to ensuring safety, and the worker will be transported home, or required to remain in a safe location until this can be arranged; and

The local police may be called if the worker was operating any motorized vehicle requiring a valid driver's license.
- 2.3 Metrolinx will maintain a position of zero tolerance to any violations of these rules. At the sole discretion of Metrolinx, rule contraventions may result in:
  - (a) Verbal and written reporting to the person's supervisor/employer;
  - (b) Issuance of a written warning, and recording of same;
  - (c) Reporting to the appropriate police department for investigation and subject to criminal prosecution;
  - (d) An order to leave the project site temporarily or permanently; or
  - (e) Remedies as may be specified in the Contract Documents.

**3.0 Track Protection**

- 3.1 Work within the Railway corridor will be subject to the limitations stipulated within Canadian Rail Operating Rules (CROR). Track Protection by means of



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**RAILWAY SAFETY REQUIREMENTS**

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flagging protection will be required in accordance with CROR and Metrolinx Track Worker Safety Instructions (TWSI).

- 3.2 Flag persons/flag persons in training will be furnished by **CN, CPR and A&B** at no cost to the Vendor, up to the date specified for the Total Performance of the Work. After this date, the Vendor will, at the sole discretion of Metrolinx be required to pay all additional flagging costs, which will be automatically deducted from the amounts due to the Vendor in the progress payments.
- 3.3 Installation of railway-approved temporary barriers, enclosures or platforms to separate off track equipment and workers from live track, eliminate equipment from entering the track clearance envelope or debris from falling to the track, will require a task specific risk assessment subject to approval by Metrolinx, and may reduce or eliminate the need for a flag person, or reduce the type of flagging protection required.
- 3.4 The Vendor will be responsible for ensuring that construction operations are carried out without interfering with the continued safe movement of rail traffic.
- 3.5 The Vendor shall ensure that a flag person is present at all times when work is executed within the Railway Corridor or within 10 meters of the nearest rail or above the track(s) where the work, in the opinion of Metrolinx, may be exposed to or interfere with the operation of trains. The Vendor shall arrange for a site meeting with Metrolinx no earlier than four weeks prior to flagging to confirm flagging protection requirements.
- 3.6 Equipment operators on track must be CROR/TWSI trained.
- 3.7 The Vendor shall submit the requests for flagging protection weekly with three (3) week forecast to ensure the most up-to-date information is being relayed for the scheduling of track protection. A minimum of 48 hours' notice shall be given for any cancellations of the scheduled or approved flagging protections.
- 3.8 Cancellation requested received less than 48hrs notice prior to scheduled start time shall result in costs incurred being applied to the Vendor.
- 3.9 The Vendor shall advise Metrolinx of work to be performed, using task specific method statements, in order to schedule flagging protection. Subject to Metrolinx approval of the method statement, the Vendor shall advise Metrolinx of the scheduled flagging times on the corridor at least three weeks in advance for Metrolinx's planning and coordination purposes. Metrolinx reserves the right to make adjustments to flagging as required.



## **SCOPE OF WORK RAILWAY SAFETY REQUIREMENTS**

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- 3.10 Ensure that a responsible person is present at all times to whom the Railway personnel will issue orders regarding work near the tracks. Comply immediately with such orders and instructions.
- 3.11 The colour red shall not be used for safety vests or survey markers on railway right-of-way in order to avoid conflict with Railway Operational Practice. Other highly visible colours such as orange are acceptable provided they comply with the CSA Class 2 requirements for outer garments. Dark coloured outer wear with high visibility striping is not acceptable for use within Metrolinx railway corridors.
- 3.12 At no time shall idling equipment be left unattended by the operator.
- 3.13 The Vendor shall ensure that both rails of the same track are never connected with any conductor of electricity such as steel measuring tapes or metal traction equipment.
- 3.14 All accidents/incidents that have the potential to impact worker safety, the safe operation of trains, or damage to railway property must be reported immediately to the railway flag person. The appropriate railway authority and the GO Transit Control Center shall be advised immediately of any violations of the Canadian Railway Operating Rules.

### **4.0 Protection of Infrastructure**

- 4.1 Ensure protection of the rails, ties and ballast from falling materials (i.e. trees, rocks, debris, etc.) by use of timber mats or equivalent material. Prevent excavated material from contaminating ballast and sub-ballast.
- 4.2 The Vendor shall restore any track structure that is disturbed during construction activities as follows:
- 4.3 the track shall be mechanically lined, tamped, surfaced, compacted and stabilized with the appropriate equipment to ensure that the track structure is safe for train traffic at a minimum speed of 30 mph prior to the end of the closure;
- 4.4 after the required tonnage has travelled over the affected area, the track shall be in such a state so as to allow for the authorized track speed as per GO Track Standards.

### **5.0 Restrictions on Construction Operations**

In order to ensure the continued safe movement of rail traffic, certain restrictions shall be imposed on the construction operations. Without in any way limiting the generality of the



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foregoing statement, the following are some of the limitations or restrictions that shall be imposed.

- 5.1 The Vendor shall acknowledge that the Works within the Rail Corridor will be carried out on or adjacent to operating railway tracks and that the productive hours of work are affected by the passage of trains and associated stoppages of work are required to ensure railway safety. The safe uninterrupted passage of trains shall take priority over the construction of the Works.
- 5.2 The Vendor shall comply fully with Metrolinx in planning, scheduling and control of the work within the Rail Corridor.
- 5.3 The Vendor shall acknowledge and agree to provide continued safe movement of rail traffic by following the restrictions that shall be imposed on the construction operations including the following limitations or restrictions included in the GO Track Standards.
- 5.4 All workers and equipment within ten (10) meters or thirty (30) feet from the nearest rail must stop working on the approach of a train and remain stopped until permission has been given to resume work by the flag person.
- 5.5 Do not work closer than four (4) meters or thirteen (13) feet from the nearest rail without the prior consent of Metrolinx and only during such times as there is track protection provided by the Railway.
- 5.6 The Vendor shall secure all scaffolding, formwork and other protective coverings to be used on the project in such a manner that they will not come loose by the movement of passing trains.
- 5.7 Prior to undertaking any work, the Vendor shall delineate the work outside of the Rail Corridor from work within the Rail Corridor with construction fences. The Vendor shall coordinate the exact location and placement of the fencing with Metrolinx.
- 5.8 In the event of an incident that may impact rail operations, the Vendor shall notify the flag person immediately for an assessment and action.

#### **6.0 Crossing Tracks**

- 6.1 Do not cross tracks of the Railway Company with scrapers, bulldozers, trucks, barrows or other mechanical equipment at grade nor place crossing planks except by authority of Metrolinx, at locations designated by him.
- 6.2 The Vendor shall not cross the track with any equipment or vehicles without prior approval from Metrolinx. If the Vendor's schedule of operations requires



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construction equipment to cross the track, the Vendor shall make a request to Metrolinx for a Temporary Construction Crossing.

- 6.3 Each rail of the track shall be protected by use of rubber mats or tires, before any crawler mounted equipment is allowed to cross the track affected.
- 6.4 Construction equipment shall not cross the track except at an approved Construction Crossing designated by the Metrolinx. Crossings shall only be used by equipment when flagging protection has been provided. Refer to RC-0506-02 TRK GO Transit Track Standards, Section 13.6 Construction/Temporary Crossings.
- 6.5 If necessary, the Vendor shall be responsible for constructing and maintaining the crossing, the manually operated rising barriers and the approaches to the crossing to a standard acceptable to GO Transit Track Standards. Refer to RC-0506-02 TRK GO Transit Track Standards, Section 13.6 Construction/Temporary Crossings
- 6.6 The Vendor shall install the temporary manually operated rising barriers, approved by Metrolinx, to prevent use of the crossings by unauthorized personnel and keep gates locked when crossings are not in use. Metrolinx reserves the right to open the locks and use the gates at any time in order to access Metrolinx Lands.
- 6.7 Upon completion of all construction requiring use of the temporary crossings, the Vendor shall remove the crossing planking, the manually operated rising barriers, and the approaches and restore the track ballast section in accordance with the GO Transit Track Standards.

#### **7.0 Site Material Storage**

- 7.1 Due to the area of the work and the possibility of vandalism, all materials must be physically removed from the site or placed in secure bins or areas on a daily basis. No loose material will be allowed on site.
- 7.2 The Vendor shall be held accountable for all damages to Metrolinx operations or property, railway operations or property, and all persons or their property, that is found to be a result of improper materials storage practices by the Vendor or their Subvendors.
- 7.3 The Vendor shall not store materials or equipment on the Rail Corridor. The Rail Corridor must remain clear for railway use at all times. Equipment shall not be positioned to block the railway access road, track area or any part of the Rail Corridor without prior Metrolinx approval.



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**END SECTION**



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**1.0 Fires**

- 1.1 Fire and burnings of rubbish at the Place of Work will not be permitted.

**2.0 Disposal of Wastes**

- 2.1 Do not bury rubbish and waste materials at the Place of Work.
- 2.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- 2.3 Except as indicated otherwise, surplus materials shall become the property of the Vendor and shall be removed from the premises promptly as they become surplus, at the cost of the Vendor.

**3.0 Drainage**

- 3.1 Where applicable, do not pump water containing suspended materials into waterways, sewer or drainage systems.
- 3.2 If Section 3.1 herein is applicable, provide pumping units of sufficient number to comply with the above requirements and keep a minimum of one (1) unit in operating condition as a spare at the Place of Work.

**4.0 Pollution Control**

- 4.1 Operations generating smoke, fumes, gases, dusts, vapours and odours shall be exhausted at source to the outdoor atmosphere or utilize smoke extraction devices in a manner approved by Metrolinx.
- 4.2 Take precautions necessary to keep dust, smoke, fumes, dirt and vibration to an acceptable level as determined by Metrolinx.
- 4.3 Prevent extraneous materials from contaminating the environment immediately to and beyond the application area, by providing temporary enclosures or other appropriate preventative measures.
- 4.4 Spill containment devices and spill kits shall be required at the Place of Work where there is the potential for any hazardous products to accumulate or enter the environment.

**5.0 Noise**

- 5.1 Prevent excessive noise which will be disturbing to the occupant of building. Machine tools which are set up in fixed locations shall be so located to minimize noise and suitable sound deflectors shall be used if directed by Metrolinx.



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- 5.2 Use air compressors and pneumatic hammers only with the expressed authorization of Metrolinx.
- 5.3 The Vendor shall take all measures reasonably necessary to protect workers from hazardous sound levels in compliance with the OHSA O.Reg 318/15:Noise

**6.0 Spills**

- 6.1 The Vendor shall provide Metrolinx with a written program for spills response and reporting. Copies of training records shall also be provided.
- 6.2 All spills shall immediately be reported to the GO Transit Communications Center, (416) 601-2174, or as directed by Metrolinx.

**7.0 Dust Control**

- 7.1 The Vendor shall take any and all steps necessary to prevent a dust nuisance from occurring as a result of performance of the Work. This may include the need for additional exhausting methods and air quality monitoring as determined by Metrolinx.
- 7.2 Where the Work requires the sawing or grinding of concrete, which produces silica, wet type blades and grinders shall be used together with sufficient water to prevent the occurrence of dust. Cost of all such preventative measures and clean-up of all residual contaminants shall be borne by the Vendor.

END OF SECTION



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### **1.0 Construction Safety Measures**

- 1.1 For the purposes of the Contract, the term “Constructor”, as defined in Ontario’s *Occupational Health and Safety Act* (OHSA), shall mean the entity that shall be responsible for ensuring that the provisions of the statutes, regulations and by-laws pertaining to the safe performance of the Work are to be observed. The “Constructor” shall submit the Notice of Project to the Ministry of Labour, if required by the Work as defined by the Construction Projects Regulation. The Vendor shall be listed as the Constructor and Metrolinx listed as Metrolinxowner.
- 1.2 The Vendor’s Site Supervisor shall be defined as and perform all the functions of the “Supervisor” of the “Constructor” for the “Project”, where these terms have the same meanings as defined in Section 1 of the OHSA. The "Supervisor" shall also be deemed to be the "Supervisor" designated by "Metrolinx" should Metrolinx also fit the definition of a "Constructor" under OHSA. The supervisor shall not be changed except for valid reason.
- 1.3 The Vendor’s Site Supervisor shall be present at the Place of Work during the performance of the Work. In the case of the Vendor’s Site Supervisor’s absence, the Vendor will name another person, in writing to Metrolinx, who is competent to assume these responsibilities as the Vendor’s Site Supervisor.

### **2.0 Project Responsibilities**

- 2.1 The Vendor and the Vendor’s representative shall ensure that:
  - (a) All measures and procedures prescribed by the most recent version of the following documents are carried out at the Place of Work;
    - (i) The *Occupational Health and Safety Act* and applicable Regulations made thereunder;
    - (ii) (b) The *Rail Safety Act* and applicable Regulations made thereunder;
    - (iii) (c) The *Environmental Protection Act* and applicable Regulations made thereunder;
    - (iv) (d) The *Smoke-Free Ontario Act* and Regulation;
    - (v) (e) Metrolinx’s Construction Safety Management Program (CSMP), Project Owner Stream; and
    - (vi) (f) Any other legislation, regulations and standards as applicable.



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- 2.2 The Vendor shall ensure that every employer and every worker performing work at the Place of Work shall comply with all measures and procedures prescribed by the latest versions of the following Acts, Regulations and Metrolinx documents referred to in Section 2.1 above.
- 2.3 The Vendor shall ensure that the health and safety of workers and the general public are protected in relation to the work performed on site. The Vendor shall comply with, or cause to be complied, all occupational health and safety legislation, including every employer and every worker performing Work at the Place of Work, who shall demonstrate a willingness to participate in occupational health and safety program(s).

### **3.0 Deliverables**

- 3.1 The Vendor shall, within five (5) Working Days of execution of the Contract, submit the following to Metrolinx for review:
  - (a) A copy of the Vendor's Occupational Health and Safety Policy and Program, which shall comply with all applicable legislation. Vendor
- 3.2 The Vendor shall, within five (5) Working Days of receipt of Metrolinx approval to proceed with a Task Assignment, submit the following to Metrolinx for its review:
  - (a) A copy of the Vendor's Site Specific Safety Plan Submittal that includes site-specific hazard and risk assessment plans that will effectively prevent and control incidents and/or accidents.
  - (b) Written confirmation that the Vendor has ensured all Vendor Personnel, at the Place of Work, have reviewed and familiarized themselves with the approved Site Specific Work Plan Submittal.
- 3.3 Work shall not commence at Place of Work until Metrolinx has received the above-referenced documents. The Vendor shall not be entitled to claim for any extension to the Contract Time or the Contract Price as a result of the Vendor's failure to submit an Occupational Health and Safety plan and program and a Site Specific Work Plan Submittal per Task Assignment, that are acceptable to Metrolinx.
- 3.4 The Vendor shall, within five (5) Working Days of the date of final execution of the Vendor Articles of Agreement, deliver to Metrolinx copies of all training records for Occupational Health and Safety related courses taken by a "competent person" as defined by the *Occupational Health and Safety Act*, and designated as the Vendor's Site Supervisor as per OHSA Section 25(2)(c). Relevant course subjects may, without limitation, include or be similar to the following:



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- (a) Certified Joint Health and Safety Committee Member Training;
- (b) Basics of Supervising;
- (c) Construction Health and Safety Representative;
- (d) Occupational Health and Safety legislation;
- (e) Due Diligence;
- (f) Accident Investigation and Reporting; and
- (g) Any other courses that relate directly to the *Occupational Health and Safety Act*.

3.5 The Vendor shall deliver to Metrolinx as required:

- (a) A copy of all weekly inspection reports made by the Vendor in compliance with the Constructor's responsibility under O.Reg.213/91, the Construction Projects Regulation.
- (b) A copy of all safety information pertaining to the Contract made and furnished by the Vendor's own "Safety Officer" or outside consultants/advisers engaged for the purpose of inspecting the workplace for occupational health and safety.
- (c) A copy of the Vendor's Emergency and Evacuation Plans for review by Metrolinx.
- (d) A copy of Access / Traffic Control Plans for review by Metrolinx.
- (e) A copy of the Vendor's risk assessment documents.
- (f) Where requested, copies of all injury and accident reports for occurrences on site. This shall include copies of all remedial measures taken to prevent recurrence.
- (g) Copies of all weekly safety talks shall be maintained on file for review by Metrolinx upon request.
- (h) Statistical information for the purpose of determining injury frequency and severity rates (hours worked, first-aid injuries, medical aid/reportable injuries, lost time injuries, restricted workday injuries, incident/accident and significant occurrence data), in a timely manner on a monthly basis or as required by Metrolinx.



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- (i) The immediate reporting to CMO of all instances that are defined in the *Occupational Health and Safety Act* as “Notices of Injuries” and “Occurrences” under Sections 51, 52 and 53 and any other incidents as prescribed by applicable Metrolinx Construction Safety documents.
- (j) Metrolinx reserves the right to require additional or amended deliverables pertaining to safety during the duration of the Work at no additional cost to Metrolinx.

### **4.0 Due Diligence**

- 4.1 The Vendor acknowledges that it has read and understands the measures and procedures relating to occupational health and safety as prescribed in Article 2 above. The Vendor acknowledges and understands its duties as therein set out and hereby expressly undertakes and agrees to comply with all such requirements and standards in their entirety and at the Vendor’s expense.
- 4.2 The Vendor further agrees to fully cooperate with all health and safety requirements, rules, regulations, standards and criteria set out in the Contract Documents, which agreement is in furtherance of the Vendor’s duties and responsibilities under occupational health and safety legislation.
- 4.3 The Vendor agrees that if, in the opinion of Metrolinx, the health and safety of a person or persons is endangered or the effective operation of the system put in place to ensure the health and safety of workers on the Place of Work is not being implemented, Metrolinx may take such action as it deems necessary and appropriate in the circumstances, including, without limitation, the following:
  - (a) Require the Vendor to correct the condition forthwith at no expense to Metrolinx;
  - (b) Require that the Place of Work be shut down in whole or in part until such time as the condition has been corrected. Metrolinx will not reimburse the Vendor for any costs caused by such a delay nor will Metrolinx extend the time to complete the Work of the Contract because of such a delay;
  - (c) Correct the problem and deduct the cost thereof from any payment then or thereafter due the Vendor; and/or
  - (d) Terminate the Contract in whole or in part.

### **5.0 Barricades**

- 5.1 Observe all necessary precautions and provide, erect and maintain suitable signs, barricades and lights to protect all persons from injury and all vehicles from



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damage during the progress of the work, in accordance with the Construction Safety Management Program (CSMP) to the approval of Metrolinx, or any authority having jurisdiction at this location.

5.2 Provide all means necessary to prevent the entrance of unauthorized personnel onto the work site and from using access roads.

5.3 Protect the work in conformity with the Contract.

### **6.0 Vehicle Traffic Protection**

6.1 Provide qualified signal persons to protect vehicular and pedestrian traffic during the operations, at any time when workers or equipment could endanger such traffic, all to the complete satisfaction of Metrolinx and any other authority having jurisdiction at this location.

6.2 Accept responsibility for any damage to vehicles and damage and injury to pedestrians or occupants of vehicles resulting from the operations or the operating of equipment by others. Provide adequate protection to the satisfaction of Metrolinx.

6.3 Wherever the Place of Work is intersected by public or private roads, provide convenient openings to pass and maintain all crossings in a condition so they can be used safely and without any just grounds for complaint during the progress of the work; all to the satisfaction of Metrolinx and respective Road Authority.

6.4 Shall submit any permits as requested by Metrolinx or Road Authority.

### **7.0 Hot Work Permit**

7.1 Where hot work will be performed within an existing operational facility or adjacent to one such that operations or passengers may be negatively affected, the Vendor shall not undertake any Hot Work or otherwise cause a source of ignition to be created at the Place of Work without being issued a Hot Work Permit by Metrolinx and ensuring all measures have been implemented to prevent a fire from starting.

### **8.0 Working at Heights**

8.1 The Vendor shall comply with the following instructions for scaffold installations:

(a) Obtain authorization from Metrolinx before erecting scaffolds on existing Metrolinx structures or new structures under construction.

(b) Scaffolds must be positioned so that minimum clearance for road or other traffic including operating construction equipment is always provided.



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- 8.2 All horizontal lifelines used for fall protection shall be designed and installed in accordance with the following CSA Standards:
  - (a) CAN/CSA Z259.13-04 Flexible horizontal lifeline systems
  - (b) CAN/CSA Z259.16-04 Design of active fall protection systems
- 8.3 The Vendor shall comply with the following instructions for fall protection system installations:
  - (a) Obtain written authorization from Metrolinx before suspending, attaching or erecting fall protection devices on existing Metrolinx structures or new Metrolinx structures under construction.
  - (b) Components attached to structures must be placed on neoprene pads to prevent damage to the structures as directed by Metrolinx.
  - (c) Fall protection systems shall be positioned so that minimum clearance for road and other traffic including operating construction equipment is always provided.
- 8.4 Rescue Equipment and Training
  - (a) Before considering the Fire Department (911) as a primary means for rescuing an employee, the Vendor shall:
    - (i) Ensure a complete risk assessment of the fall protection system, or confined space, has been carried out by a competent person; and
    - (ii) Ensure the risk assessment and rescue plan have been reviewed and signed off by the appropriate municipal authority indicating they have:
      - (A) An appropriate response time; and
      - (B) The necessary rescue equipment; and
      - (C) The specialized rescue training required.
    - (iii) Ensure all documentation has been submitted to Metrolinx, System Safety, for final review and approval prior to project start-up.
  - (b) If it has been determined that the Fire Department (911) cannot adequately respond to the emergency, and specialty rescue equipment and/or training is required, the Vendor shall ensure that:



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- (i) Specific rescue equipment for Confined Space Rescue or Fall Protection Rescue is on site as required and in readiness at all times; and
- (ii) A sufficient number of employees are fully qualified as “rescuers” and are on site in order to carry out an efficient and effective rescue of a co-worker.

### **9.0 Metrolinx Construction Safety – Project Owner Stream**

- 9.1 Metrolinx will issue an appropriate number of copies of its Construction Safety Management Program (CSMP) to the Vendor at the pre-construction meeting.
- 9.2 Vendors are responsible for familiarizing themselves and their employees with the contents of this manual, Project Owner Stream.
- 9.3 Vendors shall distribute copies of the CSMP to their subvendors and shall ensure that they, and their employees, are familiar with its content.
- 9.4 The requirements of the CSMP shall apply to the Work and the Place of the Work.

### **10.0 Site Safety Personnel**

- 10.1 In the event Metrolinx deems it necessary, because of the Work and/or Safety Performance, the Vendor shall assign to the Place of Work a full time “Safety Officer” to assist the Vendor’s representative in the discharging of safety responsibility on site, at no additional costs.
- 10.2 The Vendor shall ensure that the Safety Officer has the training, experience and credentials to ensure compliance to the *Occupational Health and Safety Act* at the Place of Work.

### **11.0 Site Security**

- 11.1 The Vendor shall ensure all personnel employed at the Place of Work, whether its own employees or a subvendor’s, wear an identification badge. At Metrolinx locations where access is restricted Metrolinx shall supply the identification badges. At all other locations it shall be the Vendor’s responsibility to provide the identification badges.
- 11.2 The Vendor shall maintain a daily site log of all persons granted access to the “Place of Work” under the control and custody of the Vendor.
- 11.3 The Vendor shall ensure that all required documentation is available upon request by Metrolinx. Metrolinx



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- 11.4 The Vendor shall not allow “Unauthorized” persons to access the “Place of Work”.

**12.0 Site Requirements**

- 12.1 For night work activities, the Vendor shall supply and maintain adequate temporary lighting and associated generators at the Site such that all the work in these areas can be carried out safely and in a workmanlike manner. The Vendor shall use quiet available generators to minimize noise levels. At no time shall the Vendor direct the lights in such a manner that will impede or deter the safe passage of rail traffic or affect any adjacent properties.

END OF SECTION



## **SCOPE OF WORK MATERIALS AND EQUIPMENT**

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### **1.0 General**

- 1.1 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
- 1.2 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.

### **2.0 Manufacturer's Instructions**

- 2.1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- 2.2 Notify Metrolinx in writing of any conflict between this Scope of Work and manufacturer's instructions. Metrolinx will designate which document is to be followed.

### **3.0 Fastenings**

- 3.1 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur. Prevent electrolytic action between dissimilar metals. Use non-corrosive fasteners, anchors and spacers for securing exterior work.
- 3.2 Space anchors within limits of load bearing or shears capacity and ensure that they provide positive permanent anchorage. Wood plugs are not acceptable.
- 3.3 Keep exposed fastenings to minimum, space evenly and lay out neatly.
- 3.4 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.
- 3.5 Do not use explosive actuated fastening devices.

### **4.0 Fastening Equipment**

- 4.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- 4.2 Use heavy hexagon heads, semi-finished unless otherwise specified.
- 4.3 Bolts may not project more than one diameter beyond nuts.
- 4.4 Use plain type washers on equipment, sheet metal and shaft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.



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**5.0 Delivery and Storage**

- 5.1 Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact.
- 5.2 Prevent damage, adulteration and soiling of material and equipment during delivery, handling and storage. Immediately remove rejected material and equipment from the Place of Work.
- 5.3 Store material and equipment in accordance with suppliers' instructions.
- 5.4 Touch-up damaged factory finished surfaces to the satisfaction of Metrolinx. Use primer or enamel to match original. Do not paint over name plates.

**6.0 Origin of Materials**

- 6.1 Materials, plant and equipment supplied for Work shall be as far as possible and unless otherwise specified, of Canadian manufacture.

**7.0 Ownership of Materials**

- 7.1 Unless otherwise specified, materials existing at the Place of Work at time of signing Contract shall remain the property of Metrolinx.
- 7.2 Equipment and materials delivered to the Place of Work to form part of Work shall be property of Metrolinx.
- 7.3 Vendor shall remove surplus or rejected materials from the Place of Work notified by Metrolinx as required by site conditions.

**8.0 Specified Material and Equipment**

- 8.1 Materials and equipment shall be as specified.

**9.0 Substitutions After Award of Contract**

- 9.1 Request for substitutions of specified materials and equipment other than alternatives accepted prior to Contract execution will not be considered unless request is accompanied by a written statement from Vendor giving reasons why specified item cannot or should not be used, evidence of quality of substitution and amount of change in Total Contract Price.
- 9.2 Written statement shall include full details, stating clearly name of manufacturer or supplier, together with a detailed description of substitutions, and stating reduction from or addition to contract price, if any for the use of alternative material or equipment.



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- 9.3 Metrolinx reserves right to accept or reject substitution(s) at its sole discretion and also to claim financial benefit of substitution if accepted. Rejection by Metrolinx of proposed alternative material or equipment is final and Metrolinx is not obligated to give any reason for rejection of a substitution(s).
- 9.4 Approved equipment substitutions must not exceed space requirements allocated on Drawings. Be responsible for additional cost resulting from acceptance of a substitute piece of equipment.
- 9.5 Substitutions shall not be considered accepted unless authorized in writing by Metrolinx.

END OF SECTION



**1. Protection to Public and Metrolinx Customers**

In addition to the general requirements of the Contract, the Contractor shall provide full protection to the Public and Metrolinx Customers when work is being carried out in pedestrian areas such as hallways. The protection shall be a minimum steel posts and PVC, orange in colour, safety fencing. Loosely placed plastic/rubber pylons and caution tape are not acceptable. Compliance with the requirement does not relieve the Contractor from the responsibility for the provision of protection and the adequacy of such protection.

A protected walkway area shall always be provided to the satisfaction of Metrolinx or its representative.

**2. Staging and Traffic Control**

- (a) The Contractor shall undertake the work in such a manner as to ensure the safe and orderly completion of the Contract.
- (b) The Contractor shall submit to Metrolinx or its representative, a detailed construction staging scheme to the detail adequate for approval. Metrolinx or its representative reserve the right to reject and or modify all or any part of the Contractor's staging scheme and Metrolinx or its representative's decision shall be final. No additional compensation will be allowed as a result of the Metrolinx or its representative's rejection/modification of the Contractor's proposed staging scheme.
- (c) The Contractor shall provide all barricades, delineators, temporary signage and any other measures necessary for pedestrian and vehicular traffic control.
- (e) Metrolinx supervisory staff and Metrolinx or its representative must be kept advised as to the Contractor's operations at all times.

**3. Ontario Provincial Standards [OPS]**

- (a) This contract makes use of, and in part refers to, Ontario Provincial Standards [OPS]. Copies of these specifications are not bound herein.

**4. Form of Tender**

- (a) The contractor shall provide labour, superintendence, plant, tools, appliances, equipment, materials, supplies and other accessories, services and facilities necessary to perform the work at GO Transit locations, in accordance with the specifications and cost involved for all these is to be incorporated in the pricing. The Contractor is also to incorporate cost of mobilization and demobilization into the Form of Tender. Metrolinx will not entertain claims for additional cost for mobilization and demobilization from the Contractor.



**1. GENERAL**

(a) **Protection**

- (i) Protect existing items designated to remain and material designated for salvage. In event of damage, immediately replace such items or make repairs to approval of Metrolinx or its representative and at no additional cost to Metrolinx.
- (ii) Elements of this section could be undertaken during cold weather conditions. Protect new and existing elements of the site, from freezing. Repairs or replacement of materials damaged by frost action or as a result of insufficient protection will be paid by the Contractor, at no additional cost to Metrolinx.

(b) **Regulatory Requirements**

- (i) Obtain and pay for necessary permits for work of this section. Give required notices.
- (ii) Comply with applicable requirements of the following:
  - (A) Ontario Building Code, latest edition.
  - (B) Canadian Construction Safety Code's, latest edition.
  - (C) Authorities having jurisdiction.
  - (D) Metrolinx Safety Guidelines for Contractors, Consultants and Project Coordinators.

**2. PRODUCTS**

(a) **Material**

- (i) Not Applicable.

**3. EXECUTION**

(a) **Preparation**

The Contractor shall:

- (i) Inspect the site and verify with the Contract Documents items designated for removal and items to be preserved.
- (ii) Locate all underground utilities in work areas.
- (iii) Construct construction access and set up proper fencing to cordon off construction area.



(b) **Removal**

The Contractor shall:

- (i) Obtain any required permits to perform any removals identified in the Drawings prior to commencement of the Work.
- (ii) Remove items as indicated on the Drawings.
- (iii) Dispose of items off-site which are indicated on the drawings as “remove”.
- (iv) Do not disturb adjacent items, including buried utilities, designated to remain in place.
- (v) Square up adjacent surfaces to remain in place by saw cutting or other approved method.
- (vi) Protect underlying granular materials where material has not been identified for removal.
- (vii) Remove foundation elements (pole bases, foundation walls, etc.) down to at least 0.5 m depth below final design grade, and store onsite poles and luminaires designated for reinstatement.
- (viii) Notify utility companies before starting demolition.
- (ix) Do not disrupt active or energized utilities traversing premises.
- (x) Make good any over demolition at no cost to Metrolinx.
- (xi) Remove topsoil and unsuitable material within area of proposed platform extension.
- (xii) Remove conduits to be abandoned.
- (xiii) To remove pavement marking use soda blast method.
- (xiv) Saw cut, Remove Curbs and dispose offsite.
- (xv) Remove and dispose of trees and hedges identified in the Drawings, including stumps and roots.
- (xvi) Hand-cut trees or hedges if removal by machines may cause damage to fences, telephone, power lines, or other above-ground obstructions as determined by Metrolinx or its representative.

(c) **Salvage**

The Contractor shall:

- (i) Carefully dismantle items containing materials directed or indicated for salvage. Stockpile salvaged materials at locations directed by Metrolinx or its representative or as indicated on the drawings.
- (ii) Where indicated salvaged lamp poles and luminaries shall be preserved and transported to a designated Metrolinx yard in the Greater Toronto area.



(d)     **Sealing**

The Contractor shall:

- (i)     Seal pipe and conduits to be abandoned.

(e)     **Disposal of Material**

The Contractor shall:

- (i)     Dispose of materials off site that are not designated for salvage or re-use in Work.
- (ii)    Undertake chemical testing for exporting purposes, as required, for all materials to be disposed of off-site. All costs associated with chemical testing for exporting purposes shall be paid for by the Contractor.
- (iii)   Stockpile excavated granular materials in designated areas and dispose of off-site only when deemed in excess.

(f)     **Backfill**

The Contractor shall:

- (i)     Backfill of excavated area up to subgrade as per drawings and in accordance with Section 02223 – Excavation, Trenching and Backfilling.

(g)     **Restoration**

The Contractor shall:

- (i)     Upon completion of the Work, remove debris, trim surfaces and leave work site clean.

(h)     **Measurement**

- (i)     The circumference of trees identified for removal will be measured at breast height to the nearest centimeter. The diameter will be calculated from the measured circumference of the tree to the nearest centimeter.
- (ii)    For the purpose of measurement, existing stumps will be considered as trees. The diameter of existing stumps less than breast height will be measured to the nearest centimeter on the top surface of the stump.
- (iii)   Removal of trees less than five (5) centimeters in diameter will be measured as clearing and grubbing.
- (iv)    Hedges will be measured to the nearest meter determined from horizontal measurements.

**END OF SECTION**



**1. GENERAL**

**(a) Reference Standards**

- (i) Carry out all grading and compaction in accordance with Ontario Provincial Standard Specification OPSS 206.

**(b) Inspection and Testing**

- (i) An inspection company will be appointed in accordance with Section 01400 – Quality Control to undertake all tests necessary as designated by Metrolinx or its representative. Co-operate with and assist the inspection company in the execution of their work.
- (ii) Provide a minimum of 24 hours notice to Metrolinx or its representative to allow for scheduling of inspection and testing

**2. PRODUCTS**

**(a) Material Source**

- (i) Be responsible for determination of location, suitability, and quantity of available material work required to crush, screen, wash or clean or otherwise process material and hauling of materials from source of job site.
- (ii) Supply Metrolinx or its representative, in writing, at least fourteen days before beginning operations, with a complete statement of origin, compensation, suitability and location of all deposits that it is intended to use for fill.

**3. EXECUTION**

**(a) Grading**

- (i) Rough Grading
  - A) Examine sections and note where finished grading is specified and depth below finished elevations at which rough grading finished elevations are to be established.
  - B) Rough grade to required levels, profiles, and contours, and make ready to receive surface treatment subgradient. Make gradual natural changes in grade. Blend slopes into level areas.
  - C) Rough grade to the following minimum grades or as shown on the drawings:



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- I) 150mm below finish grade level for grassed areas
- II) To the granular level for paved areas
- (ii) Finishing
  - A) Follow rough grading by hand raking to produce a uniform grade to receive finish topping.
- (iii) Scarify to a minimum depth of 80 mm existing grades prior to placing of fill.
- (iv) Place fill materials in loose layers not exceeding 200 mm in depth and compact each layer to the specified compaction ratio placing subsequent layers.
- (v) Compact fill materials only when the moisture content is suitable for obtaining the specified density. When the moisture content is too low, apply water by means of an approved distributor. When the moisture content is too high, thoroughly mix the wet fill with dry materials or dry the fill material by blading, discing, or other approved method.
- (b) **Grading and Compaction**
  - (i) Do all necessary rough grading, excavating and filling to establish the sub-grade under all paved areas and landscape areas allowing sufficient depths for subsequent site construction and landscape work.
  - (ii) Excavate and fill all soft and unstable areas in sub-grade.
  - (iii) Establish sub-grade to lines and finished grades indicated on drawings and shape sub-grade in such a manner so as to permit drainage at all times.
  - (iv) Establish uniform slopes between points for which finish grades are indicated or between such points and existing grades. Round and smooth grades at top and toe of slopes and banks.
  - (v) Do not grade when soil is wet.
  - (vi) Do not obstruct flow in swales and provide for adequate surface run-off and drainage at all times.
  - (vii) Ensure that all swales are properly graded with adequate fall to allow drainage.
  - (viii) Arrange for inspection of all rough grading work before placing other materials on sub-grade.



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- (ix) Sub-grade established will clearly exhibit and express the land form character and balance and interrelationship delineated by Contract Documents. Proportional relationships (slope) will take precedence over specific elevations, in ascertaining the acceptability of grading and relationships of land form elements.
  - (x) Roll top of final sub-grade with smooth-wheeled roller. Remove debris, building materials, stones larger than 100mm.
  - (xi) Use equipment and methods for compaction approved by Metrolinx or its representative. Maintain materials at optimum moisture content to obtain required compaction.
  - (xii) Repair all damage to installed materials due to improper compaction methods and settlement of fill. Make good to approval by Metrolinx or its representative.
  - (xiii) Check drawings to determine sub-grade levels below finished grade elevations.
  - (xiv) For backfilling and compaction requirements, refer to Section 02223 – Excavating, Trenching and Backfilling.
  - (xv) All information from geotechnical investigations are guidelines only and the exact extent of each type of soil can only be determined after excavation.
- (c) **Surplus Material**
- (i) Remove surplus material from site in accordance with all applicable rules and regulations.
  - (ii) Remove from site all materials unsuitable for fill, grading or landscaping in accordance with all applicable rules, regulations and Section 02070 – Site Work, Demolition and Removal.

**END OF SECTION**



**1. GENERAL**

**(a) Description**

- (i) The Work shown on the Drawings, where provided, or as outlined by the Owner and as specified herein shall include but not be limited to the following:
  - (A) Excavation and backfill for installation of all underground services;
  - (B) Excavation of excess material for preparation of new retaining wall (incl. base) and pole bases (all types);
  - (C) Removal and disposal of excess material shall be completed in accordance with Section 02070 – Site Work, Demolition, and Removal.

**(b) Site Conditions**

- (i) Visit and examine the site and note all characteristics and features which may affect the work of this section. The information shown on the Drawings is provided for the guidance of the Contractor but shall in no way relieve him of the responsibility for determining the nature of the conditions of the site.

**(c) Shoring, Bracing & Underpinning**

- (i) Prevent movement or settlement. Safeguard and maintain integrity of adjacent structures, earth services, paving, curbs, landscaping and adjacent grades. Provide all bracing, shoring and underpinning required.
- (ii) To prevent failure, shore and brace excavation in accordance with Canadian Construction Safety Code latest edition, Occupational Health and Safety Act of Ontario, and applicable local regulations.
- (iii) Make good and pay for any damages and be liable for any injury resulting from inadequate shoring, bracing or underpinning.

**(d) Utility lines**

- (i) Known underground and surface utilities are indicated on the Drawings, where provided. Locations of utilities have been taken from available information and are assumed to be correct; however, no guarantee is given of completeness or accuracy.
- (ii) Before commencing excavation check locations of utilities and report any serious discrepancies to Metrolinx or its representative. Engage the services of local public utilities commission, hydro, telephone, gas and all other authorities to accurately determine location of any underground services.
- (iii) Before undertaking mass excavation, expose, support and protect any operating buried services, which are to be retained.
- (iv) Take care not to damage or displace encountered services, whether known or unknown.



- (v) When such services are encountered during the execution of work immediately notify Metrolinx or its representative and protect, brace and support active services. Where repairs to these services become necessary, use the following procedure:
    - (A) Known services: Repair at no expense to Metrolinx.
    - (B) Unknown services: To be undertaken via the use of a Change Order.
  - (vi) In case of damage to an essential service, notify Metrolinx or its representative immediately and repair the service under Metrolinx or its representative's direction, and to the approval of authorities having jurisdiction.
  - (vii) Inform Metrolinx or its representative of services encountered which require adjustment, relocation or abandonment and arrange for disconnection and capping of pipes.
  - (viii) Remove abandoned utility lines to distance of 2 metres from foundations. Cap or otherwise seal lines at cut-off points.
  - (ix) Record locations of maintained, re-routed and abandoned underground utility lines.
  - (x) Make good and pay for damage to existing utility lines resulting from Work.
- (e) **Protection**
- (i) Protect new and existing elements of the site, from freezing. Repairs or replacement of materials damaged by frost action or as a result of insufficient protection - will be paid by the Contractor, at no additional cost to the Owner.
  - (ii) Protect from damage all established sodding, fencing, trees, utilities, buried services, curbing, sidewalks, roadways, bench marks, reference points, and boundary markers on this or the adjoining properties.
  - (iii) Protect structures, utilities, sidewalk, pavements, and other facilities immediately adjacent to excavations, from damage caused by settlement, lateral movement, undermining, washout and other hazards.
  - (iv) Dig the trench to the alignment and depth required and only so far in advance of pipe laying as is safe.
  - (v) Take precautions to prevent collapse of excavations by the provision of shoring, cribbing, bracing, etc.
  - (vi) Protect the work of other divisions while undertaking the work of this section. Any damage shall be made good to the satisfaction of Metrolinx or its representative at no cost to Metrolinx.
  - (vii) Provide and maintain secure barricades and/or guardrails to all open excavations at all times.



- (viii) Post and operate warning lights to ensure safety of all persons.
- (ix) Effect approved measures to minimize dust as result of this work.
- (x) Stockpile excavated material where it will not interfere with site operation or drainage.

(f) **Removal of Water**

- (i) Provide and install pumps with adequate suction and discharge lines together with power to operate same to keep excavations free of water at all times. Retain pumping equipment at site and operate same as required by other trades to facilitate their operations. Take all necessary precautions to prevent cave-ins and flow of water into the excavation.

**2. PRODUCTS**

(a) **Materials - Excavating/Backfilling**

- (i) Granular "A" or 19 mm crusher run limestone: To meet specified requirements of Ministry of Transportation Ontario (MTO) Form 1010 for Granular "A" aggregate, gravel or crushed limestone.
- (ii) Granular "B" or 50mm crusher run limestone: To meet specified requirements of MTO Form 1010 for Granular "B" aggregate, gravel or crushed limestone.
- (iii) Clean Sand: Clean, washed, coarse sand free from clay, shale and organic matter.
- (iv) Selected Fill: Excavated or imported silty-clay soil, free from roots, topsoil and rocks larger than 75mm. Excavated and imported materials shall be approved by Metrolinx or its representative before being used as fill.

**3. EXECUTION**

(a) **Excavation**

- (i) Excavate to the extent, elevations and depth required for the completion of the work.
- (ii) Provide excavation as may be required for all trades and refer to appropriate sections or sub-trades for details of requirements.
- (iii) Bottoms of excavations are to be dry undisturbed soil, level and free from loose or organic matter. Remove soft, wet or unconsolidated ground, muskeg, quicksand, and organic material encountered in excavating. Fill void with well compacted clean dry fill of quality as herein specified. Where these conditions occur under or near footings, they shall be dealt with as directed by Metrolinx or its representative as part of the Contract.



- (iv) If removal of earth causes displacement of adjacent earth, the earth so disturbed shall be removed and replaced with approved concrete or granular fill, at no additional cost to Metrolinx.
- (v) Keep bottom of excavations clean and clear of loose materials. Keep excavations levelled and stepped at changes of levels except for excavations made for drainage purposes. These shall be sloped as required.
- (vi) If the excavations reveal seepage zones, springs or other unexpected sub-surface conditions which may necessitate revisions or additions to any drainage system, inform Metrolinx or its representative immediately so that remedial action can be taken.
- (b) **Stockpiling**
  - (i) Stockpile fill material in designated areas. Stockpile granular materials in such a manner as to prevent segregation.
  - (ii) Protect fill material from freezing or contamination.
- (c) **Backfilling**
  - (i) Do not commence backfilling until areas of work to be backfilled have been inspected and approved by Metrolinx or its representative.
  - (ii) Areas to be backfilled shall be free from debris, snow, ice, water or frozen ground. Backfill material shall not be frozen or contain ice, snow, or debris.
  - (iii) Prior to placing fill under slabs on grade, compact existing sub-grade to obtain same compaction as specified for fill. Remove "soft" material and fill with approved material.
  - (iv) Maintain proper moisture content in fill to ensure specified compaction density.
  - (v) Backfill trenches from the top of the pipe bedding to the underside of surface restoration with site selected excavated material. Use backfill material free of roots, organic material and stone larger than 150 mm. Place backfill material in lifts not exceeding 150 mm. Compact to 95 percent Standard Proctor Density. Compact backfill to 600 mm above top of pipe by hand operated mechanical tampers.
  - (vi) If Metrolinx or its representative decides that the site selected excavation material either wholly or partially, is not suitable for backfill, provide imported material of a type acceptable to Metrolinx or its representative. Compact to 95 percent Standard Proctor Density.
  - (vii) Backfill from the top of bedding to the underside of restoration with Granular 'B' placed in lifts not exceeding 150 mm and compact to 95 percent Standard Proctor Density in trenches under roadways, driveways and parking lots unless noted otherwise on the drawings.



- (viii) Place and compact fill materials in continuous horizontal layers not exceeding 150mm in loose depth. Use methods that prevent disturbing or damaging of buried services, foundation drainage system and waterproofing. Make good any damage caused by this section at no cost to Metrolinx.
- (ix) Compact fill to specified compaction density with a heavy vibrating roller. Compact fill where heavy roller equipment cannot approach with mechanical tampers to equivalent density.
- (x) Softened materials. Proof-roll sub-grade to detect soft spots.
- (d) **Engineered Fill and Compaction**
  - (i) The area should be stripped of all existing topsoil material and the underlying fill materials compacted. All soft spots should be sub-excavated. The exposed native subgrade shall be examined by Metrolinx or its representative prior to placement of fill.
  - (ii) Backfill material, used as engineered fill, should consist of inorganic soil with moisture content close to its optimum moisture content (within 2%), as determined by Standard Proctor Maximum Dry Density (SPMDD). The on-site materials, free of organics and debris and with a natural moisture content which is within two (2) percent of the optimum moisture content, can be used as engineered fill.
  - (iii) The backfill should be placed in 200 mm lifts, compacted to 100 percent SPMDD. Full time monitoring is required to verify the compaction requirements are met.
  - (iv) The fill should be placed, such that the specified fill geometry is achieved.
  - (v) If the surface of engineered fill will be exposed to frost and the engineered fill material consists of frost susceptible material, the engineered fill should be completed to at least 0.6 m above the proposed founding level, and another 0.6 m random fill should be placed. The fill must not be placed between the period of late November and early April, as it is difficult to ensure that the fill is free of frozen soils. If granular material/recycled concrete is used, the above precautionary measures are not necessary.
- (e) **Soil Inspection and Testing**
  - (i) Testing of material and compaction will be carried out by testing laboratory designated by Metrolinx or its representative.
- (f) **Surplus Materials**
  - (i) Dispose of surplus material not required or unsuitable for backfill, grading or landscaping, off site at no additional cost, in accordance with section 02070 – Site Work, Demolition and Removal.



(g) **Adjustment**

- (i) Correct and make good where settlement has occurred during the Warranty period of Metrolinx or its representative.
- (ii) Make up settlement of backfilling as soon as possible, so that regular traffic in and around work will not be inconvenienced.
- (iii) Fill depressions to restore the correct grade after a period adequate to reveal settlement has passed. Assume responsibility for making good any subsequent settlement of such fill. Make good paving, sodding, sidewalks, curbs and all other surfaces damaged by such settlement and subsequent restoration.

**END OF SECTION**



**1. GENERAL**

**(a) General requirement**

The contractor shall provide labour, superintendence, plant, tools, appliances, equipment, materials, supplies and other accessories, services and facilities necessary to perform the work at GO Transit locations, in accordance with the specifications and cost involved for all these is to be incorporated in the pricing.

**(b) Quality Assurance**

- (i) Plant requirements: Facilities for production and transportation of asphalt mixture shall conform to OPSS Form 310.
- (ii) Equipment Requirements: Self-powered mechanical pavers conforming to OPSS Form 310. Rollers conforming to OPSS Form 310.

**(c) Inspection**

- (i) Examine areas to receive the work of this section and do not proceed until unsatisfactory conditions are corrected.
- (ii) Notify Metrolinx or its representative at least forty-eight (48) hours prior to commencing Work.
- (iii) Do not commence Work until Metrolinx or its representative has inspected and approved surfaces to receive asphalt paving.

**(d) Condition of Surfaces**

- (i) Prior to delivery of mixture, base surface shall be dry and free of all loose and foreign material.

**(e) Temperature Requirements**

- (i) Prior to placing asphalt, air temperature at the base surface shall be a minimum of 7°C and rising.
- (ii) Temperature of mixture shall not be less than 118°C immediately after spreading prior to initial rolling.
- (iii) The asphalt cement shall be heated at the mixing plant only to the temperature required for satisfactory mixing and shall not exceed 162°C.
- (iv) The provision of winter paving shall be provided, which shall include cost of opening asphalt plant, maintaining asphalt temperature with propane heaters, torching of joints and all costs related to paving in the winter. No separate compensation will be forthcoming to the Contractor.

**(f) Protection**



- (i) Conduct work without damaging other work. If other work is damaged, it shall be corrected to the approval of Metrolinx or its representative without cost to Metrolinx.

**2. PRODUCTS**

(a) **Materials**

- (i) Asphalt cement: conform to OPSS Form 1101.
- (ii) Aggregates: conform to OPSS Form 1000 and 310.
- (iii) Emulsified Asphalt: SS-1 emulsion conforming to OPSS Form 1103.

(b) **Asphalt Platform Mixes**

- (i) Asphalt Binding Course: HL8 conforming to OPSS Form 310.
- (ii) Asphalt Surface Course: HL3A conforming to OPSS Form 310.

**3. EXECUTION**

(a) **Preparation**

- (i) Supply mix design for approval two weeks in advance.
- (ii) Give forty-eight (48) hours notice of each intention to pave.
- (iii) Clean surfaces of all loose and foreign materials.
- (iv) Paint cold contact surfaces with emulsified asphalt.
- (v) Paint tops of cast iron castings with an approved oil.

(b) **Installation**

- (i) Place asphalt paving in accordance with OPSS Form 310.
- (ii) Rolling shall continue until all roller marks are eliminated and no further compression is possible.
- (iii) Hand tamp the asphalt with vibrating compactors adjacent to buildings, manhole covers and concrete curbs.
- (iv) At the end of each Work Day, or prolonged stoppage of asphalt paving, joints shall be formed by laying the asphalt and rolling it against a horizontal edge board of the proper thickness, placed across the entire width of the pavement.
- (v) Finished asphalt surfaces shall be straight and true to established levels, free from cracks, undrained areas or depressions exceeding 3 mm as measured with a 3 m straight edge in any direction. Asphalt thickness specified shall be maintained as minimum at any point.
- (vi) Edges shall be neat and straight or properly curved as indicated, without broken, disintegrated or loose edges.



## ASPHALT PAVING

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- (vii) Groove seal new asphalt with existing with hot pour rubberized compound to OPSS 1212 in accordance with OPSS 920.
- (viii) Top coat of asphalt to have as few cold joints as possible.
- (ix) Asphalt surface to be treated with sealant as per Section 07900 – Sealants.
- (c) **Cleaning**
  - (i) Remove asphalt stains from adjacent finished surfaces.
- (d) **Asphalt Thickness**
  - (i) As noted on the drawings.
- (e) **Inspection and Testing**
  - (i) Refer to Section 01400 – Quality Control. Testing of material and compaction will be carried out by a testing laboratory engaged Metrolinx or its representative and will be paid through the Contractor's Cash Allowance.
- (f) **Defective Work**
  - (i) Correct irregularities which develop before completion of rolling by loosening surface mix and removing or adding material as required. If irregularities or defects remain after final compact, remove surface course promptly and lay new material to form true and even surface and compact immediately to specified density.
  - (ii) Repair areas showing checking, rippling, or segregation.
  - (iii) Adjust roller operation and screed settings on paver to prevent further defects such as rippling and checking of pavement.

**END OF SECTION**



## GRANULAR COURSES

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### 1. GENERAL

#### (a) Quality Control

- (i) Provide quality control in accordance with Section 01400 – Quality Control.
- (ii) Supply test certificates two weeks prior to use in accordance with the appropriate specification, for the following materials:
  - (A) Granular ‘A’, ‘B’ and ‘C’
  - (B) Crusher-run limestone and limestone screenings
- (iii) Where compaction of sub-grade, granular courses, granular base course and fill is called for, Metrolinx or its representative may order compaction tests by an independent testing company. Tests will be arranged for by Metrolinx or its representative and paid for through the Contractor’s Cash Allowance.
  - (A) Where tests show that the compaction does not meet the specified requirement, pay the costs for further compaction in a manner dictated by Metrolinx or its representative, and pay for further testing to establish proof of the specified compaction.
  - (B) For fill compaction, tests will be made at every 460 mm max. depth, after two 230 mm lifts have been placed. Granular courses will be tested at depths as directed by Metrolinx or its representative.
  - (C) Co-operate with Metrolinx or its representative and testing company by scheduling the placing and compaction of fill and granular courses so that tests can be progressively taken.
- (iv) Provide source of material for geotechnical testing two weeks prior to use.

#### (b) References

- (i) ASTM C 117-90 (latest edition), Test Method for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
- (ii) ASTM C 131-89 (latest edition), Test method for Resistance to Degradation of Small-Size Coarse aggregate by Abrasion and Impact in the Los Angeles Machine.
- (iii) ASTM C 136-92 (latest edition), Method for Sieve Analysis of Fine and Coarse Aggregates.
- (iv) ASTM D 698-91 (latest edition), Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup>) (600 kN-m/m<sup>3</sup>).
- (v) CAN/CGSB-8.1-88 (latest edition), Sieves Testing, Woven Wire, Inch Series.



## GRANULAR COURSES

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- (vi) CAN/CGSB-8.2-M88 (latest edition), Sieves Testing, Woven Wire, Metric.

### 2. **PRODUCTS**

#### (a) **General**

- (i) Conform to latest edition of reference standards.
- (ii) Where applicable comply with OPSS supplements as well as OPSS reference standard specifications.
- (iii) Granular Materials
  - (A) Granular 'A', 'B' and 'C' and crusher run limestone in accordance with OPSS 1010.

### 3. **EXECUTION**

#### (a) **Compaction On Subgrade Areas**

- (i) During construction of the underground utilities, compact trenches to subgrade elevations at 95 percent Standard Proctor Density.
- (ii) Compact subgrade and fill areas on road allowances to 95 percent Standard Proctor Density. The top one metre shall be compacted to 98 percent Standard Proctor Density.

#### (b) **Earth Borrow (Imported Selected Subgrade Material)**

- (i) As required supply imported select subgrade material from General Review Engineer.

#### (c) **Granular Courses**

- (i) Supply, weigh, place, grade and compact to 98 percent Standard Proctor Density, the Granular 'B' and Granular 'A' or crusher-run limestone courses to the depths indicated on the drawings. Granular 'B'/crusher-run limestone sub-base course will be inspected prior to placement of the Granular 'A'/crusher-run limestone course. Maintain optimum moisture content.
- (ii) Maintain grading tolerance for Granular 'B'/crusher-run limestone sub-base course to plus or minus 30 mm.
- (iii) Maintain grading tolerance for Granular 'A'/crusher-run limestone base course to plus or minus 6 mm.
- (iv) Unless otherwise directed by Metrolinx or its representative, do not place Granular 'A'/crusher-run limestone base course until after curbs and gutters are constructed. Place Granular 'A'/crusher-run limestone base course in the same construction season as the asphalt surface.
- (v) Crushed limestone or crushed stone may be used in lieu of Granular 'A' and 'B' if approved by Metrolinx or its representative.



## GRANULAR COURSES

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(d) **Proof Rolling**

- (i) For proof rolling use roller of 45400 kg gross mass with four pneumatic tires each carrying 11350 kg and inflated to 620 kPa. Four tires arranged abreast with centre to centre spacing of 915 mm maximum.
- (ii) Metrolinx or its representative may authorize use of other acceptable proof rolling equipment.
- (iii) Proof roll top of base upon completion of fine grading and compaction.
- (iv) Make sufficient passes with proof roller to subject every point on surface to three separate passes of loaded tire.
- (v) Where proof rolling reveals defective areas:
  - A) Remove base, sub-base and subgrade material to depth and extent directed by Metrolinx or its representative.

(e) **Delivery, Storage and Handling**

- (i) Deliver and stockpile aggregates in accordance with Section 02701 – Aggregates: General. Stockpile minimum 50% of total aggregate required prior to commencing work.
- (ii) Store cement in weather tight bins or silos that provide protection from dampness and easy access for inspection and identification of each.

**END OF SECTION**



## PAVEMENT MARKINGS

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### 1. GENERAL

#### (a) Related Work

- (i) Asphalt Paving Section 02513

#### (b) Delivery, Storage

- (i) Deliver materials and containers to the job site with protective wrapping.  
(ii) Do not remove protective wrapping until ready to install or installation complete, if applicable. Retain labels for quantities.  
(iii) Do not store materials on site in unprotected conditions.

#### (c) Alignment

- (i) Any questions relating to alignment, spacing and variations between site and drawings are to be clarified with Metrolinx or its representative.  
(ii) Common trade practice may not necessarily be to Metrolinx's standards: clarify with Metrolinx or its representative.

#### (d) Warranty

- (i) Paint shall be warranted as per manufacturer's guarantees.

### 2. PRODUCTS

#### (a) Materials

- (i) Conform to OPSS 1710, and obtain paint from one of the following suppliers:

	<u>Yellow Paint Code</u>	<u>White Paint Code</u>	
(A) Ennis Traffic Solutions	40-4314	40-4600	40-4605
(B) Sherwin Williams	640114641	800002172	800003006
(C) Sico Paints	618301	618111	618514

- (ii) Premarking Paint: compatible with (i) above.  
(iii) Supply Metrolinx or its representative with a paint sample prior to commencing Work and during the course of the Contract, as may be requested by Metrolinx.

#### (b) Equipment

- (i) Hand machines must be Kelly-Cresswell model Heavy Duty "C", complete with 22.75 litre tank, 25 M3/m (Minimum) compressor and an air curtain feature for a well-defined, clean edge, uniform spray or approved equal.



- (ii) Chalk, lines, barricades, cones and temporary directional signs: as required to layout and protect work. Signs shall state "Wet Paint Until: 'time or date'".
- (iii) Sweepers as required. Contractor is responsible for securing a paintable surface.

### 3. **EXECUTION**

#### (a) **Preparation**

- (i) Examine surfaces to be painted and do not proceed with application until such surfaces are acceptable for painting by Metrolinx or its representative.
- (ii) Remove existing marking by soda blasting, where necessary to the satisfaction of Metrolinx or its representative.
- (iii) All U-channel signage posts shall be set prior to pavement markings operation in locations determined by Metrolinx or its representative.
- (iv) Pre-cut Reflectorized Thermoplastic Pavement Marking Material shall be furnished and installed by the Contractor at the locations and with the proper dimensions as shown in the plans or as directed by Metrolinx or its representative at the appropriate time after the completion of the Plant-Mix asphalt surface. The surface shall be clean and free of all dust, silt, debris and, most importantly, chemical residue from de-icing materials. If de-icing material has been used on the road in the past, cleaning shall be carried out using pressure washing. Placement shall be in accordance with the Manufacturers recommendations and the installers shall possess an appropriate Certification from the Manufacturer.

#### (b) **Premarking**

- (i) Premarking is required where asphalt has not "cured" prior to paint application as required to meet the completion schedule.

#### (c) **Application**

- (i) All lines shall be 115 mm in width and to match the existing lines except as follows:
  - (A) areas within the parking lots from which vehicles are excluded: 230 mm;
  - (B) lines adjacent and parallel to parking lot cross lanes: 230 mm;
  - (C) stop blocks: 460 mm.
  - (D) platform warning strip: 300m
- (ii) Apply paint at the rate of one (1) litre per 2.42 square metres (115 mm x 21 m) to a clean, dry pavement surface, when temperature is above 10°C, unless otherwise approved in writing by Metrolinx or its representative.



## PAVEMENT MARKINGS

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- (iii) Apply one coat of paint to a dry film thickness of not less than 9 mils.
  - (iv) Ensure that too heavy a coat is not applied under pressure on fresh asphalt to prevent bleeding into pavement resulting in asphalt deterioration. Any such damage will be rectified at no cost to Metrolinx.
  - (v) Metrolinx or its representative will measure paint thickness by placing a metal strip on the road surface so that paint machine passes over it. Sample will then be tested for wet and dry film thicknesses.
  - (vi) Traffic paint stored and applied above 10°C required minimum thinning. No thinners other than Toluol shall be used for thinning traffic paint and then only with the consent of Metrolinx or its representative.
- (d) **Cleaning**
- (i) Removal of all spills or tracking or paint and all cleanup required as a result of Work on this Contract shall be at no cost to Metrolinx.
  - (ii) Any spills or tracking of paint by others due to lack of signs, barriers, or cones provided under this Contract, shall be removed by this Contractor at no cost to Metrolinx. Warning signs shall state "Wet Paint Until: 'time or date'".
  - (iii) Remove all debris upon completion.
  - (iv) After installation of line markings, all work will be inspected by Metrolinx or its representative progressively (Contractor's prior notification required).
- (e) **Applications of Reflector Zing Glass Beads (Platform)**
- (i) Apply glass beads immediately after paint application to ensure embedment in the paint.
  - (ii) Apply at the rate as specified in OPSS 532.

END OF SECTION



## STORM DRAINAGE

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### 1. GENERAL

#### a) General Requirements

- i) Conform to the requirements stated in the General Conditions, Supplementary General Conditions of this Specification and all addenda.

#### b) Related Work

- i) Excavating, Trenching and Backfilling Section 02223
- ii) Aggregates: General Section 02701

#### c) References

- i) ASTM C14M-90, Specification for concrete sewer, storm drain and culvert pipe.
- ii) ASTM C76M-90, Specification for reinforced concrete culvert, storm drain and sewer pipe
- iii) ASTM C443M-85a (1990), Specification for joints for circular concrete sewer and culvert pipe, using rubber gaskets.
- iv) CAN/CSA-A5-M88, Portland cement.
- v) CAN/CSA-A257, series M92, standards for concrete pipe.
- vi) CAN3-G401-M81, corrugated steel pipe products.

#### d) Material Certification

- i) Submit manufacturer's test data and certification at least 2 weeks prior to commencing Work.
- ii) Certification to be marked on pipe.

#### e) Scheduling of Work

- i) Schedule Work to minimize interruptions to existing services and to maintain existing flow during construction.

### 2. PRODUCTS



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a) Concrete Pipe

- i) Non-reinforced circular concrete pipe and fittings: to CAN/CSA-A257, ASTM C14M, class 3 designed for flexible rubber gasket joints to ASTM C443 M and CAN/CSA A257.
- ii) Reinforced circular concrete pipe and fittings: to CAN/CSA-A257, ASTM C76M, strength classification as indicated in the Contract Drawings, designed for flexible rubber gasket joints to ASTM C443M and CAN/CSA A257.
- iii) Manufactured tees for pipe to pipe connections.
- iv) Lifting holes:
  - (A) Pipe 900 mm and less diameter: no lift holes.
  - (B) Pipe greater than 900 mm diameter: lift holes not to exceed two in piece of pipe.
  - (C) Provide pre-fabricated plugs to effectively seal lift holes after installation of pipe.

b) Corrugated Steel Pipe

- i) Corrugated steel pipe and couplers: to CAN3-G401.
  - (A) Gaskets: to ASTM D1056.
  - (B) Thickness: 2.0 mm.

c) Pipe Bedding, Surround and Cover Materials

- i) Granular material to Section 02701 – Aggregates.
- ii) Granular A to Section 02315 – Excavating, Trenching and Backfilling.

d) Backfill Material

- i) Type 3 to Section 02315 – Excavating, Trenching and Backfilling.

e) Joint Mortar

- i) Portland cement: to CAN/CSA-A5, normal type 10.



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- ii) Mortar: one part Portland cement to two parts clean sharp sand mixed with minimum amount of water to obtain optimum consistency for use intended. Do not use additives.

f) Pipe Insulation

- i) Styrofoam HI40, extruded polystyrene foam by Dow Chemical, thickness as indicated on Drawings.

3. **EXECUTION**

a) Preparation

- i) Clean pipes and fittings of debris and water before installation, and remove defective materials from site.

b) Trenching

- i) Do trenching Work in accordance with Section 02315 – Excavating, Trenching and Backfilling.
- ii) Do not allow contents of any sewer or sewer connection to flow into trench.
- iii) Trench alignment and depth to approval of Metrolinx or its representative prior to placing bedding material and pipe.

c) Granular Bedding

- i) Place granular bedding material to details indicated in bedding detail OPSD 802.010 to OPSD 802.054, depending on type of soil and pipe. Use Class B bedding and place bedding in unfrozen condition.
- ii) Type of soil to be defined in the field as Type 1, 2, 3, or 4 as per Health and Safety Act and Regulations for Construction Projects.
- iii) Place granular bedding material in uniform layers not exceeding 150 mm compacted thickness.
- iv) Compact each layer full width of bed to at least 95% corrected maximum dry density.



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- v) Shape bed true to grade and to provide continuous, uniform bearing surface for pipe. Do not use blocks when bedding pipes.
  - vi) Shape transverse depressions as required to suit joints.
  - vii) Fill excavation below bottom of specified bedding adjacent to manholes or catch basins with compacted common backfill.
- d) Installation of Storm Drainage Pipes & Culverts
- i) Lay and join pipe in accordance with manufacturer's recommendations and to approval of Metrolinx or its representative.
  - ii) Handle pipe using methods approved by Metrolinx or its representative. Do not use chains or cables passed through rigid pipe bore so that weight of pipe bears upon pipe ends.
  - iii) Commence laying at outlet and proceed in upstream direction with socket ends of pipe facing upgrade.
  - iv) Do not exceed maximum joint deflection recommended by pipe manufacturer.
  - v) Do not allow water to flow through pipes during construction except as may be permitted by Metrolinx or its representative.
  - vi) Whenever Work is suspended, install removable watertight bulkhead at open end of last pipe laid to prevent entry of foreign materials.
  - vii) Joints
    - (A) Corrugated Steel Pipe
      - (I) Install gaskets as indicated.
      - (II) Match corrugations or indentations of coupler band with pipe sections before tightening.
      - (III) Tap coupler firmly while tightening, to take up slack and ensure snug fit.
      - (IV) Ensure bolts are inserted and tightened.
    - (B) Concrete Pipe
      - (I) Install gaskets as recommended by manufacturer.
      - (II) Support pipes with hand slings or crane as required to minimize lateral pressure on gasket and maintain concentricity until gasket is properly positioned.



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- (III) Align pipes before joining.
  - (IV) Maintain pipe joints free from mud, silt, gravel and other foreign material.
  - (V) Avoid displacing gasket or contaminating with dirt or other foreign material. Remove disturbed or dirty gaskets; clean, lubricate and replace before joining is attempted.
  - (VI) Complete each joint before laying next length of pipe.
  - (VII) Minimize joint deflection after joint has been made to avoid joint damage.
  - (VIII) Apply sufficient pressure in making joints to ensure that joint is complete as outlined in manufacturer's recommendations.
- viii) When any stoppage of Work occurs, restrain pipes as directed by Metrolinx or its representative, to prevent "creep" during down time.
- ix) Cut pipes as required for special inserts, fittings or closure pieces, as recommended by pipe manufacturer, without damaging pipe or its coating and to leave smooth end at right angles to axis of pipe.
- x) Make watertight connections to manholes and catch basins. Use shrinkage compensating grout when suitable gaskets are not available. Support connections as per OPSD 708.020.
- xi) Use prefabricated saddles or approved field connections for connecting pipes to existing sewer pipes. Joint to be structurally sound and watertight.
- xii) Temporarily plug open upstream ends of pipes with removable watertight concrete, steel or plastic bulkheads.
- e) Pipe Surround
- i) Place surround material in unfrozen condition.
  - ii) Upon completion of pipe laying, and after Metrolinx or its representative has inspected pipe joints, surround and cover pipes as indicated.
  - iii) Hand place surround material in uniform layers not exceeding 150 mm compacted thickness as indicated. Pipe surround material to extend 300 mm above crown of pipe.



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- iv) Place layers uniformly and simultaneously on each side of pipe.
  - v) Compact each layer from pipe invert to mid height of pipe to at least 95% corrected maximum dry density.
- f) Insulation
  - i) Insulate sewers as shown on the drawings.
- g) Backfill
  - i) Place backfill material in unfrozen condition.
  - ii) Place backfill material above pipe surround in uniform layers not exceeding 150 mm compacted thickness up to grades as indicated.
- h) Field Testing
  - i) Repair or replace pipe, pipe joint or bedding found defective.
  - ii) When directed by Metrolinx or its representative, draw tapered wooden plug with diameter of 50 mm less than nominal pipe diameter through sewer to ensure that pipe is free of obstruction.
  - iii) Remove foreign material from sewers and related appurtenances by flushing with water.
  - iv) Video inspect all sewers and laterals and repair leaks prior to top asphalt or landscaping. A copy of the videos shall be submitted to Metrolinx or its representative not later than three weeks prior to top asphalt.

END OF SECTION



## MANHOLES & CATCHBASINS

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### 1. GENERAL

#### a) General Requirements

- i) Conform to the requirements stated in the General Conditions, Supplementary General Conditions of this Specification and all addenda.

#### b) Related Work

- i) Excavating, Trenching and Backfilling Section 02223
- ii) Aggregates: General Section 02701
- iii) Storm Drainage Section 02630
- iv) Sub-Drains Section 02720

#### c) References

- i) ASTM A48-83 (1990), Specification for gray iron castings.
- ii) ASTM C139-73 (1989), Specification for concrete masonry units for construction of catch basins and manholes.
- iii) ASTM C478M-90, Specification for precast reinforced concrete manhole sections
- iv) CAN/CSA-A5-M88, Portland cement.
- v) CAN/CSA A8-M88, masonry cement.
- vi) CAN/CSA-A23.1-M90, concrete materials and methods for concrete construction.
- vii) CSA A82.56-M1976, aggregate for masonry mortar.
- viii) CAN3-A165 Series-M85, CSA standards on concrete masonry units.
- ix) CAN/CSA-G30.18-M92, billet steel bars for concrete reinforcement.
- x) CAN/CSA-G164-M92, hot dip galvanizing of irregularly shaped articles.



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### 2. PRODUCTS

#### a) Materials

- i) Precast manhole units: to ASTM C478M, circular or oval. Top sections eccentric cone or flat slab top type with opening offset for vertical ladder installation. Monolithic bases to be approved by Metrolinx or its representative and set on concrete slabs cast in place.
  - (A) 1200 mm diameter manhole and catch basin manhole as per OPSD 701.010 and OPSD 701.030.
  - (B) 1500 mm diameter manhole and catch basin manhole as per OPSD 701.011 and OPSD 701.040.
  - (C) 1800 mm diameter manhole and catch basin manhole as per OPSD 701.012 and OPSD 701.050.
  - (D) 2400 mm diameter manhole and catch basin manhole as per OPSD 701.013 and OPSD 701.060.
- ii) Precast catch basin and ditch inlets: to ASTM C478M.
  - (A) Catch basin as per OPSD 705.010.
  - (B) Double catch basin as per OPSD 705.020.
  - (C) Ditch inlet as per OPSD 705.030.
- iii) Joints: to be made watertight using rubber rings or cement mortar.
- iv) Mortar:
  - (A) Aggregate: to CSA A82.56.
  - (B) Cement: to CAN/CSA-A8.
- v) Ladder rungs: to CAN/CSA-G30.18, No. 25M billet steel deformed bars, hot dipped galvanized to CAN/CSA G164 rungs to be safety pattern (drop step type).
- vi) Adjusting rings: to ASTM C478M.
- vii) Concrete brick: to CAN3-A165 Series.
- viii) Frames, gratings, covers to dimensions as indicated and following requirements:



## MANHOLES & CATCHBASINS

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- (A) Metal gratings and covers to bear evenly on frames. A frame with grating or cover to constitute one unit. Assemble and mark unit components before shipment.
  - (B) Gray iron castings: to ASTM A48, strength class 30B.
  - (C) Castings: coated with two applications of asphalt varnish.
  - (D) Manhole frames and covers: heavy duty municipal type for road service. Cover cast without perforations and complete with two 25 mm square lifting holes, as per OPSD 401.01, Type 'A' unless otherwise specified.
  - (E) Catchbasin frame and cover: as per OPSD 400.01.
- 
- ix) Granular bedding and backfill: Granular A: to OPSD 1010 and section 02701 – Aggregates: General and to Section 02315 – Excavating, Trenching and Backfilling.
  - x) Unshrinkable fill: to Section 02315 – Excavating, Trenching and Backfilling.

### 3. **EXECUTION**

#### a) **Excavation and Backfill**

- i) Excavate and backfill in accordance with Section 02223 – Excavating, Trenching and Backfilling.
- ii) Obtain approval of Metrolinx or its representative before installing manholes or catch basins.

#### b) **Installation**

- i) Construct units in accordance with details indicated, plumb and true to alignment and grade.
- ii) Complete units as pipe laying progresses. Maximum of three units behind point of pipe laying will be allowed.
- iii) Dewater excavation free of standing water or as directed by Metrolinx or its representative and remove soft and foreign material before placing concrete base.



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- iv) Set precast concrete base on 150 mm minimum of granular bedding compacted to 100% Corrected Maximum Dry Density.
- v) Precast units.
  - (A) Set bottom section of precast unit in bed of cement mortar and bond to concrete slab or base. Make each successive joint watertight with rubber ring gaskets, cement mortar, or combination thereof.
  - (B) Clean surplus mortar and joint compounds from interior surface of unit as Work progresses.
  - (C) Plug lifting holes with precast concrete plugs set in cement mortar or mastic compound.
- vi) For sewers:
  - (A) Place stub outlets and bulkheads at elevations and in positions indicated.
  - (B) Bench to provide a smooth U-shaped channel as per OPSD 701.021.
  - (C) Support sewers at connection to catchbasins and manholes as per OPSD 708.020.
- vii) Connect catchbasin leads to storm sewer as per OPSD 708.01.
- viii) Compact granular backfill to 95% Corrected Maximum Dry Density.
- ix) Place frame and cover on top section to elevation as indicated. If adjustment required use concrete ring.
- x) Clean units of debris and foreign materials. Remove fins and sharp projections. Prevent debris from entering system.
- c) Inlet Control Device Installation
  - i) Install inlet control device in the outlet pipe of the manhole as noted on the Drawing.
- d) Sub-drain Installation
  - i) Install sub-drain to Section 02720 – Subdrain Installation.



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- ii) Sub-drains to extend 6.0 m in four different directions from each catch basin and catch basin manhole located within the parking and bus loop areas.
- e) Leakage Test
  - i) Visual inspection of leakage will be carried out. If any leakage is observed, correct leakage as directed by Metrolinx or its representative at no additional cost to Metrolinx.

END OF SECTION



1. **GENERAL**

(a) **Related Work**

- (i) Excavation, Trenching, and Backfilling Section 02223

(b) **Protection**

- (i) Protect existing items designated to remain and material designated for salvage. In event of damage, immediately replace such items or make repairs to approval of Metrolinx or its representative at no additional cost to Metrolinx.

(c) **Delivery, Storage and Handling**

(i) Delivery

- (A) Replace Products found to be defective in manufacture or damaged in handling after delivery including the supplying of Products and the labour required for the replacement of installed Products found to be defective.

(ii) Handling

- (A) Load and unload Products so as to avoid shock or damage.

(iii) Storage

- (A) Place Products in safe storage. Keep interiors of pipes, and fittings clean.

2. **PRODUCTS**

(a) **Products**

Conform to latest edition of reference standards.

(i) Polyvinyl Chloride Sewer Pipe.

- (A) PVC gravity-flow sewer pipe - ASTM D3034.

- (B) Pipe Diameter and Class – as shown on the drawings and in Section 00300 – Form of Tender



- (C) Joints – 'Ring-Tite', 'Fluid-Tite' or approved equivalent.
- (D) Rubber rings used to seal the joints of the pipe – ASTM D1869.

### 3. **EXECUTION**

#### (a) **Line and Grade**

- (i) Supply, erect and maintain batter boards and site rails to ensure accurate line and grade of pipes. Always have at least three batter boards in use, placed not more than 15 m apart. Obtain Metrolinx or its representative's acceptance for alternative methods.
- (ii) Provide and utilize laser-type instrument to control line and grade for sewers with a grade of 0.70 percent or less.

#### (b) **Bedding**

- (i) Sewer bedding – Class “B” bedding unless otherwise specified on the drawings.
- (ii) Granular material as per municipal standards or as specified on the drawings.
- (iii) Compact Granular Bedding Material to 95 percent Standard Proctor Density.
- (iv) Compact material around the pipe with hand tampers properly shaped to ensure full compaction below the haunches. Do not use mechanical tampers over the top of pipe where cover is less than 300 mm.

#### (c) **Connections to Existing Facilities**

- (i) Connect sewers to existing manholes, catchbasins and other facilities as shown on the drawings or as directed by Metrolinx or its representative.
- (ii) Obtain permission from Metrolinx or its representative and the authority responsible for the existing facilities prior to making connections.
- (iii) Connect to existing service pipes using suitable external rubber fittings fastened with mechanical stainless steel clamps.

#### (d) **Pipe Laying**

- (i) Lay, joint and test pipes and fittings in accordance with the manufacturer's



## SEWERS AND APPURTENANCES

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instructions and in the manner hereinafter specified.

- (ii) Lower pipe carefully into the trench. Before lowering and while suspended, inspect the pipes for defects. Remove foreign material from inside of the pipe.
- (iii) Use temporary watertight bulkheads to prevent the flow of trench water, storm water, silt and sand within the pipe.
- (iv) Mortar joints for storm sewers – Cover lower portion of bell with mortar, place next length of pipe such that the inner surfaces of the abutting sections are flush, fill remainder of joint with mortar, place bead of mortar around the joint to form 45-degree bevel from the outer circumferences of the bell to the adjoining spigot section. Thoroughly wet surfaces to receive mortar, prevent water from running through sewer until mortar is set.
- (v) Do not deviate from line and grade except where changes in direction or the laying of pipes along a curve are limited by the pipe manufacturers tolerance for joints.
- (vi) Take all necessary precautions against flotation.
- (vii) In water-bearing fine sand and sandy silt, pipes must be provided with leak-proof joints or must be wrapped with a waterproof membrane or suitable fabric filter.
- (viii) Where storm sewers intersect, backfill the trench of the lower pipe with 20 MPa concrete up to the grade of the higher pipe. Fill the lower trench from wall to wall for a length along the trench not less than 600 mm greater than the nominal dia. of the higher pipe. Place the concrete by forming with boards across the trench at the time of laying the lower pipe.

(e) **Cleaning and Inspection of Storm Sewers**

- (i) Flush and clean sewers, manholes and catchbasins prior to acceptance.
- (ii) Inspect manholes for defects and signs of leakage. Repair visible leaks or faults as acceptable to or as directed by Metrolinx or its representative.
- (iii) The alignment of sewers between manholes may be tested for each section between manholes as the pipe is laid. Metrolinx or its representative may order a strong light to be shone through the pipe from manhole to manhole. If less than one-half of the full diameter of the pipe at the light source is visible from the far end, re-align the pipes.



- (iv) Provide a video inspection of all storm sewers installed to Metrolinx or its representative. The cost of the video inspection to be included in the cost of the sewer installation.

**END OF SECTION**



**1. GENERAL**

(a) **References**

- (i) ASTM D4791-89 or latest edition, Test Method for Flat or Elongated Particles in Coarse Aggregate.

(b) **Samples**

- (i) Submit samples in accordance with Section 01300 – Product Data.
- (ii) Allow continual sampling by Metrolinx or its representative during production.
- (iii) Provide Metrolinx or its representative with access to source of material for sampling at least two (2) weeks prior to commencing production.
- (iv) Install sampling facilities at discharge end of production conveyor, to allow Metrolinx or its representative to obtain representative samples of items being produced. Stop conveyor belt when requested by Metrolinx or its representative to permit full cross section sampling.

**2. PRODUCTS**

(a) **Materials**

- (i) Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.
- (ii) Flat and elongated particles of coarse aggregate: to ASTM D4791.
  - (A) Greatest dimension to exceed five times least dimension.
- (iii) Fine aggregates satisfying requirements of applicable section to be one, or blend of following.
  - (A) Natural sand.
  - (B) Manufactured sand.
  - (C) Screenings produced in crushing of quarried rock, boulders or gravel.
- (iv) Coarse aggregates satisfying requirements of applicable section to be one of or blend of the following:
  - (A) Crushed rock.
  - (B) Gravel and crushed gravel composed of naturally formed particles of stone.

(b) **Source Quality Control**



- (i) Inform Metrolinx or its representative of proposed source of aggregates and provide access for sampling at least two (2) weeks prior to commencing production.
- (ii) If, in opinion of Metrolinx or its representative, materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.
- (iii) Advise Metrolinx or its representative two (2) weeks in advance of proposed change of material source.
- (iv) Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

**3. EXECUTION**

**(a) Preparation**

- (i) Aggregate source preparation
  - (A) Prior to excavating materials for aggregate production, clear and grub area to be worked, and strip unsuitable surface materials. Dispose of cleared, grubbed and unsuitable materials as directed by Metrolinx or its representative.
  - (B) Where clearing is required, leave screen of trees between cleared area and roadways as directed.
  - (C) Clear, grub and strip area ahead of quarrying or excavating operation sufficient to prevent contamination of aggregate by deleterious materials.
  - (D) When excavation is completed, dress sides of excavation to nominal 1.5:1 slope, and provide drains or ditches as required to prevent surface standing water.
  - (E) Trim off and dress slopes of waste material piles and leave site in neat condition.
- (ii) Processing
  - (A) Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
  - (B) Blend aggregates, if required, to obtain gradation requirements, percentage of crushed particles, or particle shapes, as specified. Use methods and equipment approved by Metrolinx or its representative.
  - (C) Wash aggregates, if required to meet specifications. Use only equipment approved by Metrolinx or its representative.



**AGGREGATES: GENERAL**

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- (D) When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate.
- (iii) Handling
  - (A) Handle and transport aggregates to avoid segregation, contamination and degradation.
- (iv) Stockpiling
  - (A) Stockpile aggregates on site in locations as indicated unless directed otherwise by Metrolinx or its representative. Do not stockpile on completed pavement surfaces.
  - (B) Stockpile aggregates in sufficient quantities to meet Project schedules.
  - (C) Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.
  - (D) Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into work.
  - (E) Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.
  - (F) Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Metrolinx or its representative within forty-eight (48) hours of rejection.
  - (G) Stockpile materials in uniform layers of thickness as follows:
    - (I) Max. 1.5 m for coarse aggregate and base course materials.
    - (II) Max. 1.5 m for fine aggregate and sub-base materials.
    - (III) Max. 1.5 m for other materials.
  - (H) Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.
  - (I) Do not cone piles or spill material over edges of piles.
  - (J) Do not use conveying stackers.
  - (K) During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.



(b) **Cleaning**

- (i) Leave aggregate stockpile site in tidy, well drained conditions, free of standing surface water.
- (ii) Leave any unused aggregates in neat compact stockpiles as directed by Metrolinx or its representative.

**END OF SECTION**



## SUBDRAIN INSTALLATION

VARIOUS LOCATIONS  
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### 1. GENERAL

#### (a) Definitions

- (i) Common excavation: Materials of whatever nature, and partially cemented materials which can be ripped and excavated with heavy construction equipment.
- (ii) Waste excavation: Material unsuitable for use in the Work or surplus to requirements.
- (iii) Subdrains which are to be installed with the existing asphalt in-place shall include saw-cutting the existing asphalt to a neat edge before asphalt restoration is undertaken.

#### (b) Protection

- (i) Existing Buried Utilities:
  - (A) Size, depth and location of existing utilities as indicated on available plans are for guidance only; completeness and accuracy are not guaranteed.
  - (B) Prior to commencing any excavation work, notify Metrolinx, its representative and utility authorities; establish location and state of use of buried services. Clearly mark such locations to prevent disturbance during work.
  - (C) Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities encountered.
  - (D) Obtain direction of Metrolinx, its representative and/or utility before moving or otherwise disturbing utility.
- (ii) Existing Surface Features:
  - (A) Protect existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks and paving located within right-of-way or adjoining properties from damage while work is in progress and repair damage resulting from work.
  - (B) Where excavation necessitates root or branch cutting of trees, do so only as approved by Metrolinx or its representative.
- (iii) Maintain unobstructed access to fire and police appurtenances, telephone, electric, water, sewer, gas and other public utilities and private properties.
- (iv) Protect open excavation against flooding and damage from surface water run-off.



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### 2. **PRODUCTS**

#### (a) **Materials**

- (i) Subdrain pipe shall be 150 mm nominal diameter perforated plastic pipe, such as BIG "O" or an approved equivalent.
- (ii) Granular backfill shall be granular base course as per Section 02540 – Granular Courses.
- (iii) Granular drainage material around the subdrain shall be a graded washed aggregate meeting OPSS HL 8 asphalt aggregate gradation specifications.
- (iv) Filter fabric to be wrapped around the granular drainage material and subdrain shall be Terrafix 270R, or an approved equivalent.

### 3. **EXECUTION**

#### (a) **Site Preparation**

- (i) Remove trees, shrubs, vegetation, fences and other obstructions, ice and snow, from surfaces to be excavated within limits indicated.

#### (b) **Dewatering**

- (i) Keep excavations dry while work is in progress.
- (ii) Dispose of water in a manner not detrimental to public health, environment, public and private property, or any portion of Work completed or under construction.

#### (c) **Excavation**

- (i) Excavate to lines, grades, elevations and dimensions indicated on the drawings otherwise sub drain shall drain to a natural outlet.
- (ii) Saw-cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.
- (iii) Notify Metrolinx or its representative when soil at proposed elevation of trench bottom appears unsuitable for foundation installation.
- (iv) Remove unsuitable material from trench bottom to extent and depth directed by Metrolinx or its representative.
- (v) Unless otherwise authorized by Metrolinx or its representative in writing, do not excavate more than 30 m of trench in advance of installation operations and do not leave open more than 15 m at end of day's operation.
- (vi) Stockpile suitable excavated materials required for trench backfill in approved location.
- (vii) Dispose of surplus and unsuitable excavated material off site.
- (viii) Do not obstruct flow of surface drainage or natural water courses.



## SUBDRAIN INSTALLATION

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(d) **Trench Bottom Preparation**

- (i) Where required due to removal of unsuitable material or unauthorized over-excavation, bring bottom of excavation to design grade with approved material.

(e) **Backfilling**

- (i) Use approved common or granular base course backfill material as indicated or directed by Metrolinx or its representative. All underground installations in pavement areas shall be backfilled with granular materials.
- (ii) Backfilling around installations:
  - (A) Place material by hand under, around and over installations until 300 mm of cover is provided. Dumping material directly on installations will not be permitted.
  - (B) Do not place backfill in freezing weather without written permission of Metrolinx or its representative.
- (iii) Place backfill material in uniform layers not exceeding 150 mm in thickness up to subgrade elevation or top of trench. Compact each layer before placing succeeding layer.
- (iv) Compact common backfill materials:
  - (A) In non-pavement areas, to a density at least equal to density of adjacent, undisturbed soil (approximately 90 percent Standard Proctor Maximum Dry Density).
- (v) Beneath driveways, compact granular backfill material to a minimum 100 percent of Standard Proctor Maximum Dry Density.
- (vi) Compact using approved mechanical tamping devices, or by hand tamping to achieve specified compaction.

(f) **Restoration**

- (i) Clean and reinstate areas affected by work as directed by Metrolinx or its representative.
- (ii) The granular trench backfill shall be placed to allow the specified asphalt thicknesses as noted on the drawings.

**END OF SECTION**



**1. General**

- (a) Section Includes:
  - (i) Furnish all labour, new materials and equipment necessary to construct new chainlink fences as indicated on drawing and specified herein
  - (ii) Securely connect new chain link fence with existing chain link fence to ensure the fence is continuous without any gaps. To be done in accordance with the manufacturers specifications.
  - (iii) Unless specified otherwise refer to contract drawings for fence construction.
  - (iv) All removed material shall be disposed of offsite.
- (b) Delivery, Storage and Handling
  - (i) Deliver materials to site in order to accommodate construction schedule and station traffic. Store on site in such a manner that no disruption to the existing parking lot is created.

**2. Chain Link Fence**

- (a) Products
  - (i) Materials
    - (A) Construction: galvanized steel chain link fence, the work shall be done matching existing fencing.
    - (B) Line posts: to be 60.3 mm outside diameter, standard Continuous Weld Schedule 40 pipe, galvanized steel finish. Length longer than height of fabric, as per OPSD - 900.01.
    - (C) Terminal Posts: end, corner and straining posts to be 88.9 mm outside diameter, standard Continuous Weld Schedule 40 pipe, galvanized steel finish.
    - (D) Line post tops: to be galvanized steel finish pressed steel to accommodate 42.9 mm outside diameter top rail in horizontal position.
    - (E) Top rail: to be 42.9 mm outside diameter, galvanized pipe galvanized steel finish, plain ends, random lengths, standard Continuous Weld Schedule 40 pipe.
    - (F) Couplings: to be galvanized with galvanized steel finish, outside



## CHAIN LINK FENCE

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sleeve type, steel pipe, 180 mm minimum length use to join the top rail.

- (G) Braces: to be 42.9 mm outside diameter, galvanized pipe, with galvanized steel finish, plain ends, random lengths, standard Continuous Weld Schedule 40 pipe. End and gate posts to have one brace. Corner and straining posts to have two braces.
- (H) Fittings: to be hot dipped galvanized with galvanized steel finish, pressed steel, aluminum or non-metallic mouldings of sufficient strength to ensure the integrity of the fence.
- (I) Bar bands and stretcher bars: to be suitable sized, galvanized steel
- (J) Tension wire: to be number 6 gauge, single strand 610 g/m<sup>2</sup> electro-galvanized wire.

### (b) Execution

#### (i) Installation

- (A) Set terminal posts at each change in direction of fence and at each termination.
- (B) Set posts level, plumb, and true in the center of each footing. Fill holes in retaining wall completely with concrete/grout flush up to finished grade and leave to set. Set gate centre rest flush with finished grade.
- (C) Place horizontal brace spaced midway between top rail and bottom of fence and extend from terminal post to first adjacent line post.
- (D) Fasten post caps and extension arms securely to corner, line posts.
- (E) Place fence fabric on the side of the outside of the posts.
- (F) Stretch bottom tension wire tight and securely fasten to corner and gate posts with tension bar bands. Securely fasten fabric to corner and gate posts using tension (stretcher) bars with bar bands spaced 300 o.c.
- (G) Securely fasten fabric top, brace and bottom rails with tie wires at 450 o.c. (On Centre) and to line posts with tie wires at 300 o.c. (On Centre).
- (H) All abraded and damaged galvanized surfaces shall be cleaned and repainted. Damaged areas shall be thoroughly wire brushed and all loose and cracked coating removed, after which the cleaned area shall be painted with two coats of paint.
- (I) Remove all surplus materials, tools and rubble and dispose off the site.

### 3. Wood Fence

#### (a) Products

##### (i) Materials



- (A) All materials, components, and workmanship to conform to Ontario Building Code current edition and local by-laws.
- (B) All wood to be pressure treated spruce-pine-fir or select western cedar.
- (C) All members shall be free of wane and knots shall be well-distributed throughout the installation.
- (D) Panel members shall be select knotty (NLGA 204A).
- (E) Posts shall be select structural post and timber (NGLA 131A).
- (F) All wood to bear grading stamp of C.L.S. certified agency.
- (G) Moisture content of wood shall not exceed 19% at the time of construction.
- (H) Bottom skirt boards to be treated with C.C.A. preservative to a retention of 4.0 Kg/C.m
- (I) Clear stain for wood fence shall consist of a base of blended resins and oils in a water suspension with suspended solids which are not less than 21% and not greater than 31% by volume, and volatile organic compounds which are not in excess of 350 g/L in accordance with ASTM-2369.
- (J) Stain application: two coats on clean dry wood at a temperature of 5-21°C.
- (K) Nails shall be galvanized ardox conforming to CSA standards.
- (L) Lag screws and bolts shall be galvanized and shall conform to ASTM A307.
- (M) All galvanizing to be hot dipped in accordance with CSA standard G164.
- (N) Concrete to have a minimum compressive strength of 30MPa @ 28 days with 5-7% air entrainment.

**END OF SECTION**



1. **GENERAL**

(a) **Description**

- (i) This section specifies the preparation of existing topsoil, installation of topsoil, sod, and grass seed mix. It also includes the maintenance of sod and seeded areas.

(b) **Quality Assurance**

- (i) Sod: nursery grown.
- (ii) Fertilizer: packed in standard bags clearly indicating weight, analysis and source of supply.
- (iii) Seed: Certified Canada No. 1 under the Seed Act.
- (iv) Obtain approval of sod and plant material at source.
- (v) Notify Metrolinx or its representative of source material at least seven (7) days in advance of shipment. No work under this section is to proceed without approval of Metrolinx or its representative.
- (vi) Acceptance of sod and plant material at its source does not prevent rejection on site prior to or after laying and planting.

(c) **Delivery, Storage and Handling**

- (i) Freshly cut sod and deliver to the site within twenty-four (24) hours of cutting.
- (ii) Cover sod during delivery and storage and prevent drying.
- (iii) Keep sod moist and cool until installation.
- (iv) Protect fertilizers and seed in storage from deterioration.

2. **PRODUCTS**

(a) **Material**

- (i) Sod: No. 2 Bluegrass Fescue cultured turf grass sod grown from a seed mixture of Kentucky Bluegrass (*Poa pratensis*) and Creeping Red Fescue (*Fescue rubra*) containing not less than 40% Creeping Red Fescue seed by weight. At time of sale, the turf shall not contain more than 2% of other strains or species of grasses or clovers and not more than two (2) broadleaf weeds and/or 10 other weeds per 50 square meters and it shall be of sufficient density that no surface soil is visible when sod is mowed to a height of 40 mm. Prior to cutting, sod shall be mowed to a minimum of 30 mm and a maximum of 60 mm. Cut sod in pieces approximately 1 square meter in area with the soil portion having a minimum of 20 mm and a maximum of 25 mm thickness.
- (ii) Grass Seed: standard mixture to produce sod as specified, with nurse crop as required.
- (iii) Fertilizer: 0-20-10 commercial fertilizer.



3. **EXECUTION**

(a) **Preparation**

- (i) Scarify subgrade to a depth of 75 mm.
- (ii) Remove stones larger than 75 mm and all roots, branches and debris.

(b) **Installation of Topsoil**

- (i) Place and spread topsoil over subgrade.
- (ii) Compacted thickness of topsoil shall not be less than 100 mm minimum.
- (iii) Roll smooth and even and grade to drain freely.
- (iv) Ensure soil is free of lumps and voids and firm underfoot.
- (v) Do not spread topsoil until Metrolinx or its representative has inspected and approved sub-grade.

(c) **Installation of Sod**

- (i) Lay sod with tight butt joints. Do not leave any open joints or overlap adjacent pieces of sod.
- (ii) Ensure finished sod surface is flush with adjoining grass areas, pavement or top surface of curbs.
- (iii) Immediately after installation, water the sod with sufficient quantity of water to penetrate the sod and the top 50 mm of the underlying topsoil.
- (iv) When sod has dried sufficiently to prevent damage, roll all sodded areas to ensure a good bond between sod and topsoil using a 50 kg roller.
- (v) Protect all newly sodded areas with warning signs.
- (vi) Place wire mesh on top of topsoil of slopes steeper than 3:1. Secure mesh in place with 600 mm long wooden pegs at maximum intervals of 1000 mm. Cover mesh lightly with topsoil.
- (vii) Lay sod sections at right angles to slopes and secure with 300 mm long wooden pegs. Place pegs 0.2 m<sup>2</sup> to prevent shifting of sod and drive pegs flush with top of sod soil.

(d) **Sod Maintenance**

- (i) Maintenance shall consist of bi-weekly watering, weed control and cutting to establish a uniform, lush, green lawn of the specified grasses.

(e) **Delivery and Storage of Sod**

- (i) Schedule deliveries in order to keep storage at job site to minimum.
- (ii) Deliver, unload and store sod on pallets.
- (iii) Deliver sod to site within twenty-four (24) hours of being lifted and lay sod within thirty-six (36) hours of being lifted.
- (iv) Do not deliver small, irregular or broken pieces of sod.



## SODDING

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- (v) During wet weather allow sod to dry sufficiently to prevent tearing during lifting and handling.
- (vi) During dry weather protect sod from drying and water sod as necessary to ensure its vitality and prevent dropping of soil in handling. Dry sod will be rejected.

(f) **Scheduling**

- (i) Schedule delivery and placing of topsoil and sod to coincide.

(g) **Replacements**

- (i) During warranty period, remove from site any sod material that has died or failed to grow satisfactorily as determined by Metrolinx or its representative.
- (ii) Extend warranty on replacement sod material for a period equal to the original warranty period.
- (iii) Continue such replacement and warranty until sod material is acceptable.

**END OF SECTION**



**1. GENERAL**

(a) **Source of Topsoil**

- (i) Advise Metrolinx or its representative of sources of topsoil to be utilized seven (7) days in advance of starting work.
- (ii) Contractor is responsible for soil analysis and requirements for amendments to supply topsoil as specified.

**2. PRODUCT**

(a) **Topsoil**

- (i) Topsoil for sodded areas: mixture of mineral particulates, microorganisms and organic matter which provides suitable medium for supporting intended plant growth.
  - (A) Soil texture based on The Canadian System of Soil Classification, to consist of 20% to 70% sand and contains 2 to 10% organic matter by weight.
- (ii) Fertility: major soil nutrients present in following ratios:
  - (A) Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil.
  - (B) Phosphorus (P): 10 to 20 micrograms of available P per gram of topsoil.
  - (C) Potassium (K): 80 to 120 micrograms of potash per gram of topsoil.
  - (D) Calcium, magnesium, sulfur and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.
- (iii) Ph value: 6.5 to 7.5.
- (iv) Contain no toxic elements or growth inhibiting materials.
- (v) Free from:
  - (A) Debris and stones over 50mm diameter.
  - (B) Course vegetative material, 10mm diameter and 100mm length, occupying more than 2% of soil volume.
- (vi) Consistence: friable when moist.

**3. EXECUTION**

(a) **Stripping of Topsoil**

- (i) Do not handle topsoil while in wet or frozen condition or in any manner in



which soil structure is adversely affected.

- (ii) Commence topsoil stripping of areas as indicated and as directed by Metrolinx or its representative after area has been cleared of brush, weeds and grasses and removed from site.
- (iii) Strip topsoil to depths as required for new construction and as directed by Metrolinx or its representative. Avoid mixing topsoil with subsoil.
- (iv) Stockpile in locations as directed by Metrolinx or its representative. Stockpile height not to exceed 2m.
- (v) Dispose of unused topsoil as directed by Metrolinx or its representative.
- (vi) Protect stockpile from contamination and compaction.
- (vii) Topsoil removed from area surrounding the watercourse (10.0m wide strip), to be stockpiled in a separate location from remainder of topsoil and replaced along the recontoured banks of the stream channel.

(b) **Preparation of Existing Grade**

- (i) Verify that grades are correct. If discrepancies occur, notify Metrolinx or its representative and do not commence work until instructed by Metrolinx or its representative.
- (ii) Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.
- (iii) Remove debris, roots, branches, stones in excess of 50mm diameter and other deleterious materials. Remove soil contaminated with calcium chloride, toxic materials and petroleum products. Remove debris which protrudes more than 75mm above surface. Dispose of removed material off site.

(c) **Placing and Spreading of Topsoil / Planting Soil**

- (i) Obtain topsoil from temporary stockpiles established by the Contractor on site or from off site source as needed to complete the work. Use only topsoil approved by Metrolinx or its representative.
- (ii) Place topsoil after Metrolinx or its representative has accepted subgrade.
- (iii) Spread topsoil in uniform layers not exceeding 150mm, over unfrozen subgrade free of standing water.
- (iv) For sodded areas keep topsoil 15mm below finished grade.



- (v) Spread topsoil to following minimum depths after settlement and 80% compaction:
  - (A) 100mm for sodded areas.
  - (B) 100mm for hydro seeded areas.
  - (C) 300mm for continuous shrub/ground cover beds.
- (vi) Manually spread topsoil/planting soil around trees, shrubs and obstacles.
- (d) **Finish Grading**
  - (i) Grade to eliminate rough spots and low areas and ensure positive drainage. Prepare loose friable bed by means of cultivation and subsequent raking.
  - (ii) Consolidate topsoil to required bulk density using equipment approved by Metrolinx or its representative. Leave surfaces smooth, uniform and firm against deep footprinting.
- (e) **Acceptance**
  - (i) Metrolinx or its representative will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading. Approval of topsoil material is subject to soil testing and analysis.
- (f) **Surplus Material**
  - (i) Disposal of surplus material in accordance with Section 02210 - Site Grading.

**END OF SECTION**



**1. GENERAL**

**(a) Site Determinants**

- (i) Prior to commencing work, the Contractor shall:
  - (A) familiarize himself with the plans, details, and specifications of this project.
  - (B) visit the site to ascertain and take account of existing conditions and any deviations from the plans in work by others.
  - (C) finalize all design alternatives in consultation with the landscape architect.
- (ii) Prior to excavating, the Contractor shall verify the location of all underground utilities. In the event of a conflict between a proposed tree location and an underground service, the exact location of the tree shall be determined on site by Metrolinx or its representative.
- (iii) The Contractor shall, at his own expense, repair any damage to existing utilities, structures, facilities, etc. done in the performance of his work.

**2. PRODUCTS**

**(a) Soft Landscaping**

- (i) All plants shall be installed true to specified names, sizes, grades, etc. and shall conform to the standards of the Canadian Nursery Landscape Association (CNLA).
- (ii) All plants shall be nursery grown.
- (iii) In the event of a discrepancy in plant quantity between the planting plan and the plant list, the planting plan shall govern.
- (iv) The Contractor shall make plants available for inspection by Metrolinx or its representative prior to installation. Material not conforming to the specifications shall be replaced at the expense of the Contractor.
- (v) Plant substitutions must be approved in writing by Metrolinx or its representative prior to delivery of the material on site.
- (vi) Metrolinx or its representative may, upon completion of the work and notwithstanding prior approval at source, reject plant material not conforming to the specifications.

**3. EXECUTION**

**(a) Soft Landscaping**

- (i) The Contractor shall use standard industry methods for planting trees. Trees shall be turned to give the best appearance; they shall also be guyed and staked immediately after planting and as detailed on the drawings.



**(b) Bed Preparation**

- (i) The Contractor shall backfill tree pits and planting beds to specified depths with either pre-mixed topsoil (VIZ., "TRIPLE-MIX") or a mixture comprised of:
  - (A) 6 parts sandy loam
  - (B) 1 part finely pulverized Canadian peat moss
  - (C) 1 part well-rotted farm manure, with "AGRIFORM" 20-10-5 tablets (or approved equal) added according to the manufacturer's specifications
- (ii) The Contractor shall backfill tree pits and planting.
- (iii) The Contractor shall construct tree pits and shrub beds with soil saucers, mulch, and subsurface drainage as detailed
- (iv) The Contractor shall construct shrub beds in continuous forms, the shape of which shall be approved by Metrolinx or its representative. On slopes, shrub beds shall be fashioned to allow for proper drainage

**(c) Levelling the Interlocking Pavement Stone**

- (v) The Contractor shall remove and stockpile to reuse the existing stone pavers. In case of contamination, the Contractor shall obtain Metrolinx or its representative's approval to excavate the area.
- (vi) The Contractor shall use limestone screenings and coarse sand for the sub-base and polymeric sand for the joints to inhibit weed growth.
- (vii) The final product shall match the existing pavement.

**(d) Maintenance**

- (i) The Contractor shall maintain all landscaped areas for a period of four (4) growing months from the date of Substantial Performance of the work.
- (ii) Maintenance shall include:
  - (A) proper irrigation to ensure optimum growth of trees, shrubs, and sod
  - (B) grass mowing to maintain an approximate height of 50mm
  - (C) the cultivation and weeding of tree pits and planting beds
  - (D) insect and disease control
- (iii) At the end of the specified maintenance period, provided all plant material is alive and in a healthy growing condition, Metrolinx will assume the responsibility of maintaining the landscape work.

**(e) Final Acceptance**

- (i) All Work shall be inspected at the end of the warranty period by Metrolinx or its representative. Any deficiencies shall be rectified by the Contractor



to the satisfaction of Metrolinx or its representative. Metrolinx or its representative will then issue a final acceptance certificate.

(f) **Warranty**

- (i) All plant material shall be warranted as per Section 00513 - Supplementary General Conditions. Plants that expire or otherwise fail to thrive during the warranty period shall be replaced at the expense of the Contractor.

**END OF SECTION**



## CONCRETE FORMWORK

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### 1. GENERAL

#### (a) Work Installed but Furnished by Others

- (i) Inserts, anchor bolts, miscellaneous frames, weather bards, holes, sleeves and other items that are supplied under the work of other sections are to be installed as part of this section.

#### (b) Design Criteria

- (i) Be responsible for the structural design of formwork and its construction, including shoring and bracing, to ensure its stability and to support safely and resist loads imposed by weight of forms and wet concrete, wind, fluid pressure of concrete, equipment and workmen.

#### (c) Requirements of Regulatory Agencies

- (i) Construct formwork to conform to requirements of jurisdictional authorities; and the Safety Code for the Construction Industry (latest revisions) and Regulations for Construction Projects.

#### (d) Allowable Tolerances

- (i) Construct framework to maintain tolerances in conformance with requirements of CAN/CSA-S269.3 M90, Formwork.

#### (e) Reference Materials (the latest edition shall apply)

- (i) ACI 347-78, Recommended Practice for Concrete Formwork.
- (ii) ASTM D1751-71, Specification for Performed Expansion Joint Fillers for Concrete Paving and Structural Construction.
- (iii) CSA Standard CAN/CSA-A23.1-94, Concrete Materials and Methods of Concrete Construction
- (iv) CSA Standard 0121-M1978, Douglas Fir Plywood.
- (v) CAN/CSA-086.1-M89, Engineering Design in Wood (Limit States Design)
- (vi) CSA S269.1-1975, Falsework for Construction Purposes
- (vii) CAN/CSA-S269.3-M92, Concrete Formwork

#### (f) Product Delivery, Storage and Handling

- (i) Handle and store formwork to prevent damage affecting function or appearance of concrete surfaces exposed to view.

### 2. PRODUCTS (where a standard is specified, the latest edition shall apply)

#### (a) Materials

- (i) Forms:
  - (A) Use only new materials for formwork.
  - (B) Form Boards: matched pine or spruce, dressed on three sides, in uniform widths.



## CONCRETE FORMWORK

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- (C) Plywood Form Panels: To meet specified requirements of CSA Standard 0121, Concrete Form Grade for plywood.
  - (D) Overlaid Plywood Form Panels: For use where specified in Formwork Schedule: To meet specified requirements of CSA Standard 0121, Concrete Form Grade, with one face overlaid with resin impregnated surface and treated with chemical release coating, to quality standard of Crown Z44 by Crown Zellerbach or Evans 107 Concrete Form Panel by Evans Products Company Limited or Sylvacote Plygard in McMillan Bloedel Building Materials or approved equal.
- (ii) Form Ties:
- (A) At Non-Architectural Concrete Surfaces: Snap-off type with plugs to ensure that tie break off at approximately 20 mm below face of concrete.
  - (B) Form Release Agent: Non-staining, non-grain raising; suitable for type of formwork on which used; having no adverse affect on paint, adhesives, or other treatments which are specified for application to concrete; and containing no non-dying ingredients such as mineral oil.
  - (C) Joint Tape: Non-staining, water impermeable, self-release, as approved by Metrolinx or its representative.
  - (D) Waterstops: "Durajoint" by Sternson, hot fused joints, or approved equal. Sizes as indicated on the drawings.

### 3. EXECUTION

#### (a) Earth Forms

- (i) Where soil conditions are suitable, earth forms for footings may be used when approved by Metrolinx or its representative.
- (ii) Cooperate with excavator to ensure proper excavation.
- (iii) Trim sides of excavation vertical and smooth. Completely remove trimmings.
- (iv) Install wood forms where earth form sides have collapsed.

#### (b) Formwork Construction

- (i) Verify lines, levels & column centres before proceeding. Design, construction, and remove formwork, framing, supports and bracing to conform to requirements specified in CAN3-A23.1 and ACI-347, provide finished concrete surfaces within specified tolerances and under supervision of a competent foreman at all times.
- (ii) Provide wedges or jacks as a positive means of adjusting shores and struts and to take up all settlement during concrete placing operations. Brace shores securely against lateral deflections.



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- (iii) On completion of forms for each contemplated pour, notify Metrolinx or its representative that he may inspect them in advance of placing of concrete. Do not place concrete in forms without Metrolinx or its representative's approval.
  - (iv) Form construction joints and expansion joints and install waterstops where required, as indicated on drawings and as approved by Metrolinx or its representative.
  - (v) Build into formwork, inserts, anchor bolts, recesses for base plates, miscellaneous frames, weather bars, holes, sleeves, and items otherwise specified as supplied and located under the work of other sections. Embed no wood in concrete for purposes of anchorage.
  - (vi) Chamfer external corners where exposed to view.
  - (vii) Coat formwork with form release agent before reinforcement, anchors or other accessories are placed, unless soaking with water during hot weather is approved by Metrolinx or its representative. Do not coat plywood forms precoated with a chemical release agent.
  - (viii) Metal forms shall be used only as approved by Metrolinx or its representative.
  - (ix) Reuse of Forms: Reuse forms that can be repaired to original condition only. Remove nails, clean and repair surfaces and re-apply specified form coating of reused forms.
  - (x) Clean out or flush out, or both, forms to remove foreign matter, ice and snow.
  - (xi) Holes through concrete: unless otherwise noted on drawings, where sleeves or pipes pass through slabs and walls they shall:
    - (A) Not displace reinforcement
    - (B) Be PVC, cast iron or galvanized steel pipe not more than 50 mm inside diameter, and spaces not less than three diameters on centre.
- (c) **Removal of Formwork**
- (i) Be responsible for the safety of the structure, both before and after removal of the forms, until concrete members have acquired sufficient strength to support safely their weight and any load on them. The results of suitable control tests may be used as evidence that concrete has attained sufficient strength.
  - (ii) Forms may be removed after concrete has reached 75% of specified 28-day strength. If conditions demand, Metrolinx or its representative may extend the waiting period as necessary.
  - (iii) Strip formwork for columns, walls, beam sides where weight of concrete is not supported only when no damage will result from the stripping.



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- (iv) Take care in removing plywood forms. Do not jerk them loose or use metal pinch bards, but use wood wedges and gradually force the panels loose. Leave plywood forms in place as long as possible and until other adjacent formwork is stripped to permit maximum shrinkage away from concrete and to protect concrete surfaces. Take particular care to prevent damage to external corners of concrete.

(d) **Adjustment**

- (i) Replacement of Defective Work:
  - (A) Movement and displacement of formwork during construction, variations in excess of specified tolerances, and marked and disfigured surfaces that cannot be repaired by specified methods will be considered defective work performed by this section.
  - (B) Reconstruct defective formwork and replace concrete and reinforcement placed in defective formwork at no additional cost to Metrolinx.

**END OF SECTION**



**1. GENERAL**

**(a) Description**

- (i) The work includes, but is not limited to, the following:
  - (A) Supply and installation of concrete curbs (include all types) concrete toe walls and reinforced shelter slabs
  - (B) Supply and installation of tile curb and handrail curb for mini platform.

**(b) Reference Standards (the latest edition shall apply)**

The following reference standards shall govern the work of this section except where they are in conflict with requirements imposed by authorities having jurisdiction or by this specification in which case the latter shall govern.

- (i) CSA Standard CAN/CSA-A23.1-M90, Concrete Materials and Methods of Concrete Construction.
- (ii) CSA Standard CAN/CSA-A23.2-M90, Methods of Test for Concrete.

**(c) Quality Assurance**

- (i) Allowable Tolerances: Tolerances for formed concrete surfaces and thickness of slabs are specified in Section 03100 – Concrete Formwork. Finish slabs and other horizontal surfaces to Class B tolerances as defined in CAN3-A23.1. Top of slab shall be within 10mm of required elevation.
- (ii) Sample of Slab Finishing:
- (iii) Source Quality Control:
  - (A) Concrete mix design and sampling, inspection and testing of work of this section, for both source quality control and field quality control specified elsewhere in this section, will be performed by an inspection and testing company appointed by the Consultant.
  - (B) The inspection and testing company shall be certified under CSA A283-1980, Qualification Code for Concrete Inspection Laboratories, for Category 1 Certification.
  - (C) Payment for additional testing including testing of the structure and its performance, and load testing required by changes of materials or mix design requested by the Contractor, and failure of completed work to meet specified requirements and testing, shall be made at the Contractor's own cost.

**(d) Project Records**

- (i) Concrete Pour Records: Record the time, date, delivery slip serial number, and location in the structure of each concrete pour, and identify the related test cylinders. Keep these records at the site until Project is completed.
- (ii) Delivery Records: File duplicate copies of concrete delivery slips on which shall be recorded: supplier, serial number of slip, date truck number,



Contractor, Project, concrete class, volume in load, and time of first mixing of aggregate, cement and water.

(e) **Environmental Conditions**

- (i) In addition to Cold Weather and Hot Weather Requirements of CAN3-A23.1, the following shall apply to work of this section:
  - (A) Ensure by protection and/or heat that temperature of concrete at surfaces maintained not less than 21 °C for three days after placing, not less than 10 °C for the next two days and above freezing for the next two days. Do not permit alternate freezing and thawing during the period of fourteen days after placing.
  - (B) Ensure that protection and heating maintains the concrete continuously moist during the curing period. Vent combustion type heaters to the atmosphere or exterior to protection enclosures.
  - (C) Do not place concrete when it is raining. Should rain commence during placing, cover freshly placed concrete.
  - (D) Do not place concrete on a sub-base that has a temperature differential greater than 15 °C from that of the concrete mix.

2. **PRODUCTS (where a standard is specified, the latest edition shall apply)**

(a) **Materials – Specific:**

- (i) Concrete slab for new platform shelters to OPSS 1350 and the following:

Class of Concrete	32 MPa at 28 days
Course Aggregate	19.0 mm nominal maximum size
Air Content	6% +/- 1.5%
- (ii) Refer to Section 04220 Concrete Curb for concrete handrail curb, t-curb, barrier curb and gutter curb

(b) **Materials – General:**

- (i) Portland Cement: Type 10, Normal to CAN/CSA-A5-M89.
- (ii) Water: to CAN/CSA-A23.1-M90.
- (iii) Coarse Aggregates: to CAN/CSA-A23.1-M90. Coarse aggregate to be normal density.
- (iv) Admixtures:
  - (A) Chemical admixtures: to CAN3-A266.2-M78. Metrolinx or its representative to approve accelerating or set retarding admixtures during cold and hot weather placing.
  - (B) Air entraining admixture: to CAN3-A226.1-M78
  - (C) Superplasticizing admixtures: to CAN3-A226.6-M85



- (D) Water reducing admixtures: to ASTM C-494
- (E) Curing-sealing Compound:
  - (I) Membrane curling-sealing compound formulated from chlorinated rubber resins: to meet specified requirements of ASTM C309, Standard Specification for Liquid Membrane-forming Compounds for Curing Concrete, type -1.
  - (II) Florseal by Sternson Construction Products Ltd. Or approved equivalent.
- (F) Liquid Grout:
  - (I) Sand/cement grout: cement type 10SM to CAN/CSA-A5-M89 and CAN/CSA-A363-M88. Maximum water to cementing material ratio 0.5 and silica fume 6% minimum by mass of cement. Sand to be masonry (brick) sand.
    - .1 Compressive strength 32 MPa minimum.
    - .2 Where Necessary Antiwashout Admixture: to manufacturers written instructions.
    - .3 PS-802 by Master Builders Technologies Ltd. Or approved equivalent.
    - .3 Superplasticizing admixtures: to CAN3-A226.6-M85
- (G) Sealant:
  - (I) Two-part polysulphide sealant: For use with non-bituminous joint filler.
  - (II) Duoflex N.S. by Sternson Construction Products Ltd. or approved equivalent.

**(c) Concrete Mixes**

- (i) Ready mix, with twenty-eight (28) day compressive strength as required by exposure classifications indicated on the drawings.
  - (A) Design the normal density concrete mix in conformance to CAN/CSA-A23.1-M90, Clause 14, Table 11, (Alternative 1) and Tables 7, 8 and 10.
  - (B) Class C-2 for pavements, sidewalks, curbs, gutters and roadway decks.
  - (C) Design the concrete mix with the minimum slump necessary for good placing and finishing. In no case, should the concrete be provided on site with a slump exceeding 60mm including maximum tolerance.
  - (D) Note: Ready mix company technician to incorporate (Dose) superplasticizer on site for the Contractor. Adjust mix dosage to



provide for concrete workability suitable to concrete finisher. In no case, should the superplasticized concrete on site have a slump exceeding 100mm including maximum tolerance.

- (E) Coarse Aggregate: Normal-density coarse aggregate shall consist of crushed stone, gravel or a combination of these materials. Nominal size of coarse aggregate to be 20 mm to meet requirements of CAN/CSA-A23.1-M90, Clause 5.
- (F) Chemical Admixtures: Incorporate a water-reducing admixture, type WN, in all concrete. Ensure that total air content does not exceed top of ranges indicated in CAN/CSA-A23.1-M90, Clause 14, Table 10.
- (G) Air Entraining Agent: Incorporate an air-entraining agent in addition to chemical admixture in concrete of C and F Class exposure, in accordance with CAN/CSA-A23.1-M90, Clause 14, Table 10.
- (H) Submit evidence, and material samples if requested, acceptable to the inspection and testing company to verify that the proposed concrete mix design will produce specified quality of concrete.
- (I) Adjust the concrete mix proportions as necessary to maintain the quality of the concrete, to the satisfaction of Metrolinx or its representative, without additional cost to Metrolinx.
- (J) Do not change concrete mixes without prior approval of the Consultant. Should change in material source be proposed, new mix design to be approved by Metrolinx or its representative.
- (K) Do not use calcium chloride in any concrete mix.
- (L) Include poly fiber reinforcement for both the tactile and handrail curb at mini platform.

### **3. EXECUTION**

#### **(a) Examination**

- (i) Ensure that concrete subgrade conforms to specification requirements for subgrade preparation before placing concrete.
- (ii) Ensure that surfaces on which concrete is to be placed are free of frost, organic growth and water before placing. Where necessary hydroblast the surface to clear the surface of contaminants.
- (iii) Ensure that reinforcement, control joints, inserts and all other built-in work are in place and secured.

#### **(b) Pouring Concrete**

- (i) Notify Metrolinx or its representative at least forty-eight (48) hours before commencing to place concrete of intention to proceed with placing: regardless of any requirement of reference standards to inspect all of the work prior to placing concrete, field review of construction will be in accordance with the Rational Sampling Procedure.



- (ii) Pumping of concrete is permitted only after approval of equipment and mix.
  - (iii) Ensure reinforcement and inserts are not disturbed during concrete placement.
  - (iv) Prior to placement of concrete obtain Metrolinx or its representative's approval of proposed method for protection of concrete during placing and curing.
  - (v) Do not place load upon new concrete until authorized by Metrolinx or its representative.
- (c) **Inserts**
- (i) Set sleeves, anchors, inserts, sub frames, miscellaneous metal fabrications and similar items furnished under the work of other sections, which are indicated on the drawings and on shop drawings of other trades, and as required for proper completion of the Project.
    - (A) Do not eliminate or displace reinforcement to accommodate hardware. If insert cannot be located as specified, obtain approval for all modifications from Metrolinx or its representative before placing concrete.
- (d) **Finishing Concrete**
- (i) Finish concrete in accordance with CAN/CSA-A23.1-M90
    - (A) Screed surfaces to an even level or sloped surface to elevations indicated on the drawings or required for specified finishes.
  - (ii) Formed Surfaces: Treat formed surfaces to meet specified requirements of CAN/CSA-A23.1-M90, Clauses 24.1 and 24.2 and as additionally specified herein.

**Note:** When determined by Metrolinx or its representative that surface defects such as air voids, honeycombs, rock pockets and other similar defects mar the concrete surface appearance, the Contractor will provide a "Sack-Rubbed Finish": as specified in CAN/CSA-A23.1-M90, Clause 24.3.4.
  - (iii) Curbing Edging:
    - (A) Finish external corners of curbs rounded and smooth.
- (e) **Curing and Sealing**
- (i) Concrete Slabs:
    - (A) Cure with a sealing and curing compound all finished horizontal concrete surface in accordance with Section 07900 – Sealants.
    - (B) Use a sealing and curing compound which will leave the surface with a uniform appearance and with a minimum of discolouration after drying. Check that the curing compound will be compatible with the architectural finishes or adhesives for architectural



finishes. Apply the compound in accordance with its manufacturer's instructions.

- (C) Cure horizontal concrete surfaces to which a curing and sealing compound can not be applied, by covering with 0.102mm thick polyethylene sheets. Lap and seal all edges. Maintain in place for a total of seven (7) days minimum.
- (D) Comply with "Hot and Cold Weather Concreting" requirements of CAN/CSA-A23.1-M90.

(f) **Caulking**

- (i) Prepare sides of joints, and prime if required, as recommended by sealant manufacturer to ensure adhesion of sealant.
- (ii) Caulk:
  - (A) Joints not exposed to view in slabs with hot poured asphalt or polysulphide sealant. Joints exposed to view in slabs with polysulphide sealant.
  - (B) Ensure that preformed joint filler is compatible with sealant.

(g) **Field Quality Control**

- (i) The inspection and testing company shall perform sampling, inspection and testing of concrete work at the site.

(h) **Defective Work**

- (i) Replace or modify concrete that is out of place, or does not conform to lines, detail or grade as directed by Metrolinx or its representative.
- (ii) Replace or repair defectively placed or finished concrete as directed by Metrolinx or its representative.
- (iii) Testing and replacement of Deficient Concrete in Place:
  - (A) The Contractor shall pay for additional testing and related expenses if the concrete has proven to be deficient.
  - (B) The Contractor shall replace or strengthen deficient concrete work as directed by Metrolinx or its representative, and pay for all testing and related expenses for replaced work until approved by Metrolinx or its representative.

(i) **Cleaning**

- (i) Clear away from the construction site excess and waste materials and debris resulting from work of this section. Leave the site in a condition acceptable to Metrolinx or its representative.

END OF SECTION



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### 1. GENERAL

#### a) General Requirements

- i) The Contractor shall provide labour, superintendence, plant, tools, appliances, equipment, materials, supplies and other accessories, services and facilities necessary to perform concrete repairs to the GO Transit locations, in accordance with the Specifications.

#### b) Related Work

- i) Not Applicable

#### c) References

- i) ASTM D698-78, Test Methods for Moisture Density Relations of Soils and Soil Aggregate Mixtures using 2.49 kg Hammer and 304.8 mm Drop.
- ii) Concrete - OPSS.MUNI 1350

#### d) Scope of Work

- i) To provide concrete repairs as follows:
  - (A) Removal of all interlocking concrete pavers in areas as indicated, including the disposal off site of all debris in accordance with all applicable legislation.
  - (B) Saw cutting and/or removal of all damaged concrete or asphalt match points, including the disposal off site of all debris in accordance with all applicable legislation.
  - (C) The supply and installation of a new concrete sidewalk with a broom finish unless otherwise indicated.
  - (D) All repairs to be formed in a reasonably straight line with dimensions, (depth, width, etc.), to be consistent with the surrounding area and a professional look once completed.
  - (E) Expansion joints should be saw cut as required to match the existing pattern where applicable.
  - (F) Diamond grind irregularities such as faulting and roughness in concrete areas identified for repair to match adjacent surfaces as required.



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- (G) The clean up and protection of the area after Work stops daily. This may involve the placing of pylons or caution tape to protect the areas in question, until suitable to be walked or driven on.

e) Site Conditions

- i) Concrete is to be placed in areas that have been properly prepared and are free of loose material.
- ii) Follow manufacturer's recommendations regarding additional installation information (hot weather-drying conditions, or cold weather installation).

f) Regulations, Codes and Standards

- i) The Contractor shall perform all services in accordance with all applicable federal, provincial and municipal laws and regulations.
- ii) All servicing and repairs shall be in accordance with the Manufacturers' Recommended Procedures (MRP).

g) Equipment

- i) The Contractor shall provide any/all necessary equipment required to perform the repairs.
- ii) All equipment used on Metrolinx's property must be in satisfactory working condition, and in full compliance with all applicable safety legislation. All electrical cords, plugs, switches, etc. must be free from defects and in satisfactory condition. The Contractor is responsible for compensation to Metrolinx for any damages caused on Metrolinx's property, or to any of Metrolinx's assets, due to faulty equipment or due to negligence on the Contractor's behalf.

h) Safety and Protection of Metrolinx Assets

- i) The Contractor must ensure that the premises are left in a clean, dry and safe condition, and shall be responsible for the removal and disposal of unwanted materials. Any excess liquid or debris left on the ground as a result of any activity conducted by the Contractor, must be cleaned by the Contractor's services personnel as it occurs.
- ii) Disposal and use of all materials shall be according to all applicable standards and guidelines as issued by jurisdictional authorities. The



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Contractor must meet Ministry of Environment Regulations and all other applicable regulations for disposal of waste.

iii) **Maintain Flow of Traffic**

- (A) Particular effort must be applied to the maintenance of pedestrian, and vehicular traffic flow during GO Transit's standard operating times.
- (B) The Contractor must provide for the safe movement of pedestrian, rail and bus traffic at all times.
- (C) Any activity which has potential for interference with such traffic flow, shall first be approved by Metrolinx.
- (D) The Contractor is to provide temporary barriers for safe and efficient control of pedestrian and vehicular flow.

i) **Training/Qualification**

i) **Training**

- (A) Contractor's employees must all be trained on relevant safety issues and must be fully competent on all equipment used for the purposes of the Work.

j) **Qualifications**

- i) The Contractor must only utilize fully qualified and responsible individuals on Metrolinx's property.

2. **PRODUCTS**

a) **Materials**

- i) Concrete: 28-day compression strength to be 35 MPa. Concrete mix to be in conformance to CSA A23.1 and to be Class 1. Salt resistant.
- ii) Water: Clean potable, free from deleterious elements and free from salts that can cause efflorescence.
- iii) Curing Compound: as recommended by the manufacturer.

3. **EXECUTION**



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- a) General
  - i) The Work shall be carried out in such order as to permit the completion of the whole within the stipulated time and as closely as possible in conformity with the agreed upon schedule (continuous Work schedule).
  - ii) Locations and areas of repair are shown on the Drawings. The actual locations and extent of repairs will be determined by Metrolinx or its representative during the layout of the repair area.
- b) Site Preparation
  - i) Any damage caused by the Contractor in the performance of the Work must be repaired at their own cost by qualified personnel approved by Metrolinx or its representative.
  - ii) Protect underlying granular materials.
  - iii) Level and compact any underlying granular materials that may be disturbed during the removal of the interlocking pavers
- c) Finishing
  - i) Level surface of concrete repair using a float or screed.
  - ii) Apply final finish when concrete has begun to stiffen. Forms to be removed immediately after concrete has set.
- d) Curing
  - i) Protect fresh concrete from premature evaporation. Cure finished repair concrete in accordance with concrete manufacturer's recommendations.
- e) Quality Assurance
  - i) Perform sampling, inspection and testing in accordance with the procedures specified in CSA A23.2, methods of test for concrete, and to include:
    - (A) Making standard slump tests.
    - (B) Obtaining three standard specimens for strength tests from each 75 cu.m. of concrete, or fraction thereof, of each mix design of concrete placed in any one day. Ensure that test cylinders are stored within an enclosure.



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- (C) Making compression tests of each set of three samples, one at 7 days and two at 28 days.
  - (D) Verification of air content of air-entrained standard weight concrete, making one test for each 12 cu.m. of concrete placed.
  - (E) Verification that trial concrete mix meets requirements.
  - (F) Inspect application of sealers and quantities used.
- 
- ii) Protect the work area and keep all traffic, including workmen's vehicles, off the new surface until at least 36 hours of curing has occurred, or according to the manufacturer's directions.
  - iii) Subsequent to the repair operation, Metrolinx or its representative will inspect the Work to determine if the completed Work contains any deficiencies.
  - iv) The areas containing unacceptable defects shall be repaired as directed by Metrolinx or its representative.
  - v) Remedial Work for defects described herein shall be carried out at no cost to Metrolinx.

END OF SECTION



**1. GENERAL**

**(a) Description**

- (i) The work covered by this section includes construction of a modular concrete Segmental Retaining Wall (“SRW”) including drainage system and geosynthetic reinforcement as shown in the Contract Documents and as described by this specification. The work included in this section consists of, but is not limited, to the following:
  - (A) Design of an SRW system.
  - (B) Review of the site conditions with respect to suitability of the SRW Design.
  - (C) Inspection of all construction operations and materials related to the SRW.
  - (D) Excavation and foundation soil preparation.
  - (E) Furnishing and placement of the levelling base.
  - (F) Furnishing and placement of the drainage system.
  - (G) Furnishing and placement of geotextile filter.
  - (H) Furnishing and placement of SRW units.
  - (I) Furnishing and placement of geosynthetic reinforcement.
  - (J) Furnishing, placement, and compaction of reinforced, drainage, and retained fills.
  - (K) Furnishing of final grading.

**(b) Related Work**

- |       |                                       |               |
|-------|---------------------------------------|---------------|
| (i)   | Site Grading                          | Section 02210 |
| (ii)  | Excavation, Trenching and Backfilling | Section 02223 |
| (iii) | Aggregates: General                   | Section 02701 |
| (iv)  | Subdrain Installation                 | Section 02720 |

**(c) Reference Standards**

- (i) Segmental Retaining Wall Design
  - (A) Design Manual for Segmental Retaining Walls, National Concrete Masonry Association, Second Edition which will be referred to as the “NCMA Design Manual”
- (ii) Segmental Retaining Wall Units
  - (A) ASTM C140-06, “Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units”



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- (B) ASTM C1262-05a, "Standard Test Method for Evaluating the Freeze-Thaw Durability of Manufactured Concrete Masonry Units and Related Concrete Units"
  - (C) ASTM C1372-2006e1, "Standard Specification for Dry-Cast Segmental Retaining Wall Units"
  - (D) ASTM D6638-06, "Test Method for Determining Connection Strength Between Geosynthetic Reinforcement and Segmental Concrete Units (Modular Concrete Blocks)"
  - (E) ASTM D6916-06c, "Standard Test Method for Determining the Shear Strength Between Segmental Concrete Units (Modular Concrete Blocks)"
  - (iii) Geotextile Filter
    - (A) ASTM D4491-99a (2004) e1, "Standard Test Methods for Water Permeability of Geotextiles by Permittivity"
    - (B) ASTM D4751-04, "Standard Test Method for Determining Apparent Opening Size of a Geotextile"
    - (C) ASTM D5261-92(2003), "Standard Test Method for Measuring Mass per Unit Area of Geotextiles"
  - (iv) Geosynthetic Reinforcement
    - (A) ASTM D5262-06, "Standard Test Method for Evaluating the Unconfined Tension Creep Rupture Behavior of Geosynthetics"
    - (B) ASTM D6637-01, "Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method"
    - (C) ASTM D6706-01, "Standard Test Method for Measuring Geosynthetic Pullout Resistance in Soil"
  - (v) Soils
    - (A) ASTM D422-63(2002) e1, "Standard Test Method for Particle-Size Analysis of Soils"
    - (B) ASTM D698-00ae1, "Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>))"
    - (C) ASTM D2487-06 "Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)"
    - (D) ASTM D4318-05, "Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils"
    - (E) ASTM D4972-01, "Standard Test Method for pH of Soils"
  - (vi) Drainage Pipe



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- (A) ASTM D3034-06, "Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings"
  - (B) ASTM F405-05, "Standard Specification for Corrugated Polyethylene (PE) Pipe and Fittings"
  - (vii) Where specifications and reference documents conflict, the Owner or Consultant shall make the final determination of applicable document.
  - (d) **Delivery, Material Handling, and Storage**
    - (i) The Contractor shall check all materials delivered to the site to ensure that the materials specified in the Contract Documents have been received and are in good condition.
    - (ii) 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, handling, or other causes.
  - (e) **The Design and Construction**

The Design and Construction of the Segmental Retaining Wall (SRW) shall be undertaken by the following three entities:

    - (i) The term Installer shall refer to the Contractor or Subcontractor that will construct the SRW. The Installer must have the necessary experience and understanding of SRWs for the Project and have successfully completed projects of similar scope and size.
    - (ii) The term General Review Engineer shall mean the Professional Engineer, licensed to practice in the Province of Ontario or professional engineering firm that has a comprehensive understanding of the design and construction of SRWs. The General Review Engineer may retain the services of other professionals to augment their own capabilities, skills, and knowledge. The General Review Engineer is retained by the Installer to provide the following services:
      - (A) Inform the Designer in writing that they will be acting as the General Review Engineer for the construction of the SRW.
      - (B) Evaluate the site conditions to ensure the parameters used in the SRW Design are appropriate. SRW Design parameters that have assumed values must be verified to be accurate for the site.
      - (C) Determine if the SRW Design requires additional analysis, with respect to compound stability and global stability.
      - (D) Testing and acceptance of all materials used to construct the SRW.
      - (E) Inspection of the methods used to construct the SRW.



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- (F) Determine if the wall is constructed in general conformance with the Contract Documents.
- (iii) The term Designer shall mean the Professional Engineer, licensed to practice in the Province of Ontario or professional engineering firm that is experienced in the design of SRWs and is responsible for generating a sealed SRW Design based on information that is provided to the Designer, created in accordance with Section 3 (a) herein. The Designer may retain the services of other professionals to augment their own capabilities, skills, and knowledge.
- (f) **Submittals**
- (i) The Contractor shall submit the following documents to Metrolinx or its representative:
- (A) Installer Qualifications – The installer must be able to demonstrate that their field construction supervisor has the necessary experience for the installation of the SRW by providing documentation showing that they have successfully completed projects of similar scope and size.
- (B) Identification of Designer including qualifications and details of registrations that may be required to provide the SRW Design.
- (C) The SRW Design which must include elevation drawings, section drawings, detail drawings, and supporting documentation completed for the installation of the SRW, in accordance with the design requirements outlined in section 3 (a) herein of this specification. The SRW Design will include specific details and assumptions regarding the site geotechnical conditions, groundwater, grading, loading, SRW geometry, and any other details pertinent to the SRW Design, based on the information provided to the Designer. The Designer shall seal the SRW Design. The SRW Design shall be reviewed and accepted by all reviewers identified in Section 3 (b) herein prior to construction. Typical section drawings or preliminary designs are not acceptable as the SRW Design.
- (D) Identification of General Review Engineer and letter committing to the General Review of the SRW in accordance with this specification and local construction standards.
- (ii) The Installer shall submit the following SRW Design Documents prior to the construction of the SRW:
- (A) The SRW Design Documents which must include elevation drawings, section drawings, detail drawings, and supporting documentation to be used for the construction of the SRW. The General Review Engineer must review the SRW Design to ensure



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the assumptions are appropriate and the SRW Design is compatible with the site conditions. The General Review Engineer may either authorize the SRW Design to be used as the SRW Design Documents or the General Review Engineer may issue sealed SRW Design Documents based on the SRW Design. Typical section drawings, non-site specific or unauthorized SRW Designs are not acceptable as SRW Design Documents.

- (B) Materials Submittal – Manufacturer’s certifications, identifying the materials to be used in the SRW construction, showing they meet the requirements of this specification and the SRW Design Documents.
- (C) Copies of all permits, bonds, or authorizations that will be required during the construction of the SRW.
- (iii) The installer shall submit the following SRW Design Documents at the end of the SRW construction:
  - (A) A copy of the Letter of General Review from the General Review Engineer.
  - (B) Copies of all addenda to the SRW Design Documents indicating all deviations from the SRW Design Documents.

## 2. MATERIALS

### (a) Definitions

- (i) Segmental Retaining Wall (“SRW”) is the entire retaining wall structure(s) including: SRW Units, Coping, Drainage Pipe, Geotextile Filter, Geosynthetic Reinforcement and Drainage, Reinforced, Retained, and Base Fills. A Segmental Retaining wall structure can be classified as a:
  - (A) Conventional SRW – SRW Units stacked on a Levelling Base with a Drainage system behind.
  - (B) Multi-Depth SRW – SRW Units of different depths with larger units at the bottom, and smaller units at the top, stacked on a Levelling Base with a Drainage system behind.
  - (C) Reinforced SRW – SRW Units stacked on a Levelling Base with a Drainage system, Reinforced Fill including Geosynthetic Reinforcement located behind.
  - (D) Crib SRW – SRW Units stacked parallel and perpendicular to the SRW direction forming bin like structures, built on a Levelling Base with a Drainage system behind.
- (ii) Segmental Retaining Wall Units are modular, solid, dry-cast concrete blocks, designed specifically for the task of earth retention, that form the external facia of an SRW system.



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- (iii) Coping Units are the last course of concrete units used to finish the top of the SRW. Coping Units are also referred to as cap units.
- (iv) Levelling Base is the compacted granular soil, or if specified in the Contract Documents, an unreinforced concrete footing, placed beneath the first course of SRW units.
- (v) Drainage Fill is a free-draining aggregate with high permeability placed directly behind the modular concrete units. This will include a Drainage Pipe and may be separated from other Fill with a suitable Geotextile Filter.
- (vi) Reinforced Fill is placed directly behind the Drainage Fill, placed in layers and compacted, that will include horizontal layers of Geosynthetic Reinforcement.
- (vii) Retained Fill is the soil placed between the Reinforced Fill and the Retained Soil in Reinforced SRWs or between the Drainage Fill and Retained Soil in Conventional SRWs.
- (viii) Retained Soil in cut situations is the undisturbed native soil embankment. In soil fill situations this will be the compacted engineered site fill.
- (ix) Foundation Soil is the undisturbed native soil or engineered fill beneath the SRW structure.
- (x) Drainage Pipe is a perforated pipe used to carry water, collected from within the SRW, to outlets, to prevent pore water pressures from building up within the SRW and specifically behind the SRW Units.
- (xi) Geotextile Filter is a permeable planar polymer structure that will allow the passage of water from one soil medium to another while preventing the migration of fine particles that might clog the downstream fill. Selection of a Geotextile Filter is based on the characteristics of the different soils used in and surrounding the SRW.
- (xii) Geosynthetic Reinforcement is an open planar polymer structure having tensile strength and durability properties that are suitable for soil reinforcement applications. Geogrid is a commonly used type of Geosynthetic Reinforcement.
- (xiii) All values stated in metric units shall be considered as accurate. Values in parenthesis stated in imperial units are the nominal equivalents.

**(b) Approved Products**

- (i) All approved products will be identified in the SRW Design Documents. No substitutions will be allowed unless approved in writing by both the Designer and General Review Engineer.
- (ii) The SRW units will be specified in the SRW Design Documents which shall include the manufacturer's name, product name, dimensions, colour, and finish. Additionally, the SRW units must:



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- (A) Meet the minimum standard as defined by ASTM C1372 for:
    - (I) Strength
    - (II) Absorption
    - (III) Freeze-Thaw durability
    - (IV) Permissible variation in dimensions
    - (V) Finish and Appearance
  - (B) Meet the physical properties listed below as tested using ASTM C140:
    - (I) Dimensional tolerance shall be +/- 3 mm (1/8 in.) for height, width, and length.
    - (II) The minimum 28-day compressive strength of 35 MPa (5000 psi).
    - (III) The maximum moisture absorption shall be 1.0 kN/cubic m (6.5 lbs/cubic ft).
  - (C) Use an integral shear key connection that shall be offset to create, as specified in the SRW Design Documents, either:
    - (I) A minimum batter as stated in the SRW Design Documents, or
    - (II) A near vertical alignment. Special construction procedures are required for vertical SRWs. See Section 3 (d) (iv) herein.
  - (D) Required, summary test data shall be provided with the SRW Design and shall include:
    - (I) SRW Unit shear strength as per ASTM D6916
    - (II) SRW Unit – Geosynthetic Reinforcement connection strength as per ASTM D6638
- (iii) Reinforced Fill
- (A) If the SRW Units by themselves provide sufficient stability, the Designer may choose to omit the Reinforced Fill
  - (B) The Reinforced Fill shall be specified in the SRW Design Documents as “select imported fill” or “select on-site fill” and have the following properties identified:
    - (I) Unified Soil Classification System designation as per ASTM D2487
    - (II) % passing #200 sieve
    - (III) Effective friction angle (direct shear or triaxial test)



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- (IV) Minimum compacted density
  - (C) Additional information may be required which could include:
    - (I) Soil gradation curve (ASTM D422)
    - (II) Liquid limit, plastic limit, and plasticity index (ASTM D4318)
    - (III) Soil pH (ASTM D4972)
    - (IV) Permeability coefficient "Q"
  - (D) The Reinforced Fill shall ideally be:
    - (I) "easily compacted, non-frost susceptible, free-draining, well-graded, gravel-sand mixture (GW) with less than 8% passing the #200 sieve size"
    - (II) The Designer may choose to use a lesser quality, fine-grained material for the Reinforced Fill, however special inspection and construction procedures must be used and the following criteria must be met:
      - a) % passing #200 sieve cannot exceed 35%.
      - b) Liquid limit <40 and a plasticity index <10 as measured per ASTM D 4318.
      - c) pH in the range of 3 to 9 as measured per ASTM D4972
  - (iv) Levelling Base
    - (A) The levelling base material shall be non-frost susceptible, well-graded, compacted angular gravel-sand mixture (GW as per ASTM D2487).
    - (B) Additional information may be required which could include:
      - (I) Effective friction angle (direct shear or triaxial)
      - (II) Soil gradation curve (ASTM D422)
      - (III) Soil pH (ASTM D4972)
      - (IV) Permeability coefficient "Q"
      - (V) Potential for consolidation
    - (C) Alternately, the SRW Design Documents may specify the levelling base shall be an unreinforced concrete footing with specified dimensions.
  - (v) Drainage Fill
    - (A) If the Reinforced Fill has adequate drainage characteristics, the Designer may choose to omit the Drainage Fill.



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- (B) The Drainage Fill shall be a free-draining angular, gravel material of uniform particle size smaller than 25 mm (1 inch) and greater than 6mm (1/4 inch). If shown in the SRW Design Documents, the Drainage Fill shall be separated from the Reinforced Fill or Retained Fill by a specified Geotextile Filter.
- (C) Additional information may be required which could include:
  - (I) Effective friction angle (direct shear or triaxial)
  - (II) Soil gradation curve (ASTM D422)
  - (III) Soil pH (ASTM D4972)
  - (IV) Permeability coefficient "Q"
  - (V) Potential for consolidation
- (vi) Drainage Pipe
  - (A) The Drainage Pipe shall be specified in the SRW Design Documents and shall either be a perforated corrugated polyethylene or perforated PVC pipe, with a minimum diameter of 100 mm (4 inches), protected by a Geotextile Filter to prevent the migration of soil particles into the Drainage Pipe.
- (vii) Geotextile Filter
  - (A) If the gradation of adjacent soils permits, the Designer may choose to omit the Geotextile Filter.
  - (B) The Geotextile Filter shall be specified in the SRW Design Documents and shall include the manufacturer's name and product name.
  - (C) If required, summary test data shall be provided with the SRW Design and shall include:
    - (I) Apparent opening size "AOS" (ASTM D4751)
    - (II) Unit weight (ASTM D5261)
    - (III) Coefficient of permeability (ASTM D4491)

Note: There are many different types of Geotextile Filters. Geotextile Filters made from similar materials, using a similar method of manufacture will have similar performance characteristics. Some common examples are non-woven needle-punched, woven slit film or monofilament.

Although selection of the appropriate geotextile is specific to site soil conditions, a commonly used geotextile for filtration is a non-woven needle-punched geotextile that will have an Apparent Opening Size ranging between 0.149 and 0.212 mm (U.S. Sieve Sizes #100 to #70) and a minimum unit weight of 135 grams per



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square metre (5.0 oz per square yard). The coefficient of permeability will typically range between 0.1 and 0.3 cm/second.

(viii) Geosynthetic Reinforcement

- (A) If the SRW Units by themselves provide sufficient stability, the Designer may choose to omit the Geosynthetic Reinforcement.
- (B) The Geosynthetic Reinforcement shall be specified in the SRW Design Documents and shall include the manufacturer's name, product name, and Long Term Design Strength ("LTDS") as calculated according to section 3(a)(i)(E).
- (C) If required, summary test data shall be provided with the SRW Design and shall include:
  - (I) Tensile strength (ASTM D6637)
  - (II) Creep potential reduction factor (ASTM D5262)
  - (III) Installation damage reduction factor
  - (IV) Durability reduction factor (chemical and biological)
  - (V) Soil pullout resistance (ASTM D6706)
  - (VI) Connection strength (ASTM D6638)
  - (VII) Coefficient of interaction "ci"
  - (VIII) Coefficient of interaction "cds"

(ix) Concrete Adhesive

- (A) If the Coping Unit by itself provides sufficient stability, the Designer may choose to omit the Coping Adhesive.
- (B) The adhesive is used to permanently secure the coping unit to the top course of the SRW. The adhesive must provide sufficient strength and remain flexible for the expected life of the SRW.

### 3. EXECUTION

(a) **Segmental Retaining Wall Design**

(i) Design Standard

- (A) The Designer is responsible for providing an SRW Design based on the proposed site development documents and shall consider the external stability, internal stability, and local stability of the SRW system. The design life of the structure shall be 75 years.
- (B) The Designer shall create the SRW Design in accordance with recommendations of the NCMA Design Manual. The following is a



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summary of the minimum factors of safety for the various modes of failure evaluated in the proposed design.

	Mode of Failure	Minimum Value
<b>External</b>	Base Sliding	1.5
	Overturning	2.0
	Bearing Capacity	2.0
<b>Internal</b>	Tensile Overstress	1.0
	Pullout	1.5
	Internal Sliding	1.5
<b>Local</b>	Facing Shear	1.5
	Connection	1.5
	Unreinforced Overturning	1.5

- (C) If required, an alternate design method may be used and must be identified in the SRW Design. The alternate design method must be comprehensive and adequately evaluate all possible modes of failure.
- (D) The lateral earth pressure which the SRW must resist is calculated using the Coulomb equation which will include the effect of a sloping surface above the SRW. This defines a theoretical critical linear slip failure plane external to the SRW structure and another internal to the SRW structure. Additionally, the SRW must have the room to move forward so that it may fully develop an active lateral earth pressure.
- (E) The SRW's design height, "H", at a given section, shall be measured from the top of the Levelling Base to the top of the SRW where ground surface intercepts the SRW facia.
- (F) The Designer is not responsible for analyzing the global stability of the SRW structure for circular slip failure and multi-part slip failure planes that are completely external or partially external (referred to as compound failure mechanisms) to the SRW structure. See Section 3 (b) (ii) (B) herein for additional information.

(ii) Design Assumptions

- (A) An SRW Design will typically assume the following and shall be noted on the SRW Design drawings:
  - (I) The foundation soils will produce acceptable total and differential settlement given the applied load of the SRW.



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- (II) The maximum groundwater elevation is at least  $\frac{2}{3} \times H$  (height) below the base of the SRW.
  - (III) There will be no hydrostatic pressure within or behind the SRW.
  - (IV) The surrounding structures will not exert any additional loading on the SRW (i.e. an adjacent structural foundation is at or below proposed Levelling Base or outside of a theoretical zone of influence as determined by the General Review Engineer).
  - (V) There are no structures (utilities such as gas/water mains, storm sewers, electrical/communications cables, etc.) to be placed within or below the Reinforced Fill during or after construction.
- (iii) Design Parameters
- (A) Site Parameters
- (I) The length, height, and overall elevations of the SRW Design must be derived from the provided site grading plan, elevation details, cross-section details, and station information.
  - (II) Surcharges, anticipated usage and slopes above, as well as slopes below, all sections of the SRW must be indicated on the site grading plan.
  - (III) The minimum SRW embedment shall be the greater of:
    - i. The height of an SRW unit, or
    - ii. The minimum embedment required based on the slope below the SRW.

Slope Below SRW	Minimum Embedment
No Slope	H/10
3 : 1 (18.4 deg)	H/10
2 : 1 (26.5 deg)	H/7

- iii. The Designer or General Review Engineer may determine it is necessary to increase embedment due to erosion potential or global stability requirements.
- (B) Site Soil Parameters



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- (I) All site soil parameters used in the design shall be stated in the SRW Design. This should include soil classification (ASTM D2487), effective friction angle, compacted density, and cohesion.
  - (II) Site-specific soil parameters obtained from Stouffville geotechnical investigations shall be used in the design calculations. If Stouffville geotechnical investigation is not available or does not provide specific parameters for the SRW, assumed soil parameters may be used and the SRW Design shall state the assumed values and that assumed soil parameters have been used.
  - (III) If select on-site soils are to be used as SRW fill materials, additional testing of the re-compacted soil will be required for the design calculations. Soil parameters for the select on-site fill shall be used in the design calculations. If fill parameters are not available, assumed fill parameters may be used and the Design drawings shall state the assumed values and that assumed fill parameters have been used.
- (C) Product Design Parameters
- (I) All relevant Product Design Parameters for materials incorporated in the SRW shall be obtained from the supplier or manufacturer and used in the design calculations. All values used shall be obtained from testing conducted in accordance with the Reference Standards identified in Section 1 (c) herein. If product test results are not available, assumed parameters may be used and the Design drawings shall state the assumed values and that assumed product design parameters have been used.
- (b) **Segmental Retaining Wall Design Review**
- (i) This section states the minimum review process that is required prior to construction of an SRW. Other parties such as municipalities, architects, developers, owners, and other Designers should review the SRW Design prior to acceptance to ensure specific requirements of each party are met.
  - (ii) The General Review Engineer shall:
    - (A) Review the SRW Design to ensure:
      - (I) The design assumptions are not contrary to the conditions on the site.
      - (II) The site geometric parameters used in the SRW Design are appropriate for the site.



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- (III) The site soil parameters used in the SRW Design are appropriate for the soil conditions on the site.
  - (IV) The foundation soils will not require special treatment to control total and differential settlement.
  - (V) The fill parameters used in the SRW Design are appropriate for the materials to be used in the construction of the SRW.
  - (VI) The SRW Design complies with local building and health and safety regulations.
- (B) The General Review Engineer shall ensure the global stability of the SRW structure including circular slip failure and multi-part slip failure planes that are completely external or partially external (also called compound failure mechanisms) to the SRW structure is adequately investigated.
- (C) The General Review Engineer must contact the Designer to address any outstanding issues, questions, or concerns regarding the SRW Design and resolve these issues prior to issuing SRW Design Documents or authorize the SRW Design to be used as SRW Design Documents.
- (iii) The Consultant must be provided with a copy of the SRW Design so they may review it for general compatibility with the site.
- (A) Review should including the following specific elements:
- (I) All surface drainage must direct water away from the SRW including slopes and paved surfaces.
  - (II) The SRW drainage system delivers outflow to approved locations.
  - (III) All site services must be located outside of SRW construction area.
  - (IV) The SRW structure or excavation limits must not cross over property boundaries.
  - (V) All structures located near the SRW must be shown in the SRW Design Documents.
  - (VI) Anticipated use above wall during and after construction must be as shown in the SRW Design Documents.
- (B) The Contractor must inform Metrolinx or its representative and contact the Designer to address any outstanding issues, questions, or concerns regarding the SRW Design and resolve these issues prior to the General Review Engineer issuing SRW Design Documents or authorising the SRW Design to be used as SRW Design Documents.



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- (iv) The Consultant must be provided with a copy of the SRW Design so they may review it for general compatibility with the site.
    - (A) The review should include the following specific elements:
      - (I) Ensure plant and tree species to be placed above the SRW are suited to the environment created by the SRW.
      - (II) Limit irrigation near SRW structure.
      - (III) Grading above and below the SRW structure.
      - (IV) It may be necessary to incorporate a root barrier (as required by others) to prevent the migration of tree roots into the drainage layer.
      - (V) Larger plants and trees must be kept outside of the Reinforced Fill to ensure
        - d) The Geosynthetic Reinforcement is not damaged by excavation for the root ball
        - e) The SRW is not subjected to any additional load from plants or trees.
    - (B) The Contractor must inform Metrolinx or its representative and contact the Designer to address any outstanding issues, questions, or concerns regarding the SRW Design and resolve these issues prior to the General Review Engineer issuing SRW Design Documents or authorising the SRW Design to be used as SRW Design Documents.
  - (v) After the review of the SRW Design is completed by all associated parties and all issues are resolved by revisions to the SRW Design, the General Review Engineer will issue sealed SRW Design Documents based on the SRW Design or authorize the SRW Design to be used as the SRW Design Documents.
- (c) **Inspection**
- (i) Testing and inspection services shall be performed by trained and experienced technicians currently qualified for the work to be performed.
  - (ii) Metrolinx may engage a testing and inspection agency for their own quality assurance, but this does not replace the General Review Engineer's inspection function described below.
  - (iii) General Review Engineer's Inspection
    - (A) The General Review Engineer shall ensure that the site conditions are in general conformance with those stated in the SRW Design.
    - (B) The General Review Engineer shall ensure that the SRW is constructed in accordance with the SRW Design Documents.



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- (C) The General Review Engineer shall inform the Designer in writing if conditions on site differ in any way or at any time from the SRW Design Documents. The Designer is to be consulted with regard to all discrepancies between the SRW Design Documents and actual site conditions to determine how the differences affect the SRW Design. Changes in conditions on site may include, but are not limited to:
- (I) Seepage from the excavation, or
  - (II) Higher than assumed groundwater elevations,
  - (III) Soil conditions, both in situ and/or engineered,
  - (IV) Surface drainage control on the site require measures greater than those specified,
  - (V) Site required SRW geometry (heights, alignment, lengths, etc.),
  - (VI) Structures exist not shown in the SRW Design Documents that apply load to, interfere with, or are influenced by the SRW (catch basins, light standards, buildings, fences, etc.),
  - (VII) Loading conditions (i.e. roadways or pathways closer to back of SRW than originally assumed),
  - (VIII) Slopes above or below the SRW that are steeper.
  - (IX) General Review of Construction Procedures:
    - (I) The General Review of Construction must be carried out in accordance with the guidelines set out by the governing professional engineering body, licensed to practice in the Province of Ontario. The purpose of the general review is to ensure, through periodic visits on a rational sampling basis, whether the work is in general conformity with the SRW Design Documents.
    - (II) Prior to construction the General Review Engineer should identify critical stages in the construction of the SRW at which the General Review Engineer must be present to observe and inspect the work. The General Review Engineer must be given sufficient notice prior to these events to ensure they will be on site.
    - (III) During construction the General Review Engineer should verify and continually monitor the following:
      - a) Ensure materials and fill are of the type and strength specified and they are placed as specified in the SRW Design Documents.



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- b) Identify loose or unsuitable foundation or retained soils and subsequent removal and replacement of these areas.
- c) Ensure the other structural elements of the SRW – including geosynthetic reinforcements and SRW blocks – are being installed in accordance with the SRW Design Documents.
- d) Ensure the SRW and associated excavation remains outside of the loading influence of other adjacent structures, unless they have been specifically accounted for in the SRW Design and shown in the SRW Design Documents.
- e) Ensure stability of excavations and conformance with applicable regulations.
- f) Ensure groundwater conditions and/or other water sources have been identified and compared with the assumptions made in the design. Additional water sources noted on site such as seepage from the cut embankment must be identified and the Designer notified if these are not noted in the SRW Design Documents.
- g) Ensure that surface water runoff and/or other sources of water are being controlled during construction and directed away from the SRW to a functioning drain.
- h) Ensure that all fill materials are adequately protected from the elements and frozen materials or materials that do not meet the moisture content requirements stated in the SRW Design Documents are not used in the construction of the SRW.

### **Special Inspection Procedures – Fine-grained Reinforced and Retained Fills**

1. If a material with more than 8% fine content is used as a Fill, the SRW Design Documents must include additional drainage features to ensure there is no hydrostatic or seepage force in the SRW.
2. Additional monitoring and testing will be required to ensure the fine-grained fill material meets the requirements of the SRW Design Documents.
3. Compaction of fine-grained soils is more difficult than compacting coarse-grained soil. Water content, compactive force, and equipment utilised will significantly affect the compaction results. Consult with the Installer to ensure that acceptable construction procedures are



utilised.

- (IV) The General Review Engineer shall submit written reports of inspections and material testing to Metrolinx or its representative and the Installer on a weekly basis (or more frequently) as agreed upon with the Installer. Such reports shall include description of the work observed, deficiencies noted in construction, and corrective action taken to resolve such deficiencies. Reports must make specific reference to the location, type, and results of all tests taken on the installation of the SRW.
- (V) At the completion of construction, the General Review Engineer shall provide a Letter of General Review to the Installer stating the completed SRW had been installed in general conformity with the SRW Design Documents.

(iv) Quality Assurance Program

- (A) The Installer is responsible to ensure the SRW is constructed in accordance with the SRW Design Documents. The Installer must be qualified in the construction of SRWs, knowledgeable of acceptable methods of construction, and have thoroughly reviewed and understood the SRW Design Documents.
- (B) The Installer shall keep a construction journal to document the construction of the SRW as part of a thorough quality control program. The General Review Engineer shall be provided with copies of the construction journal throughout the construction process.
- (C) The Installer's field construction supervisor shall have demonstrated experience and be qualified to direct all work related to the SRW construction.
- (D) The Installer must notify the General Review Engineer of critical stages in the construction of the SRW in order that they may be present to observe and inspect the work. The General Review Engineer must be notified reasonably well in advance of the scheduled date(s) for construction.

(v) Construction Tolerances

- (A) Installation of SRW facia shall be within all the following acceptable tolerances:

Vertical Control	+/- 1.25 inches over a 10 ft distance
Horizontal Control	Straight lines: +/- 1.25 inches over a 10 ft distance



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Rotation of the SRW face	Maximum 2.0 degrees from established SRW plan batter or +/-10.0% from total established horizontal setback
Bulging	+/- 1.25 inch over a 10 ft distance

(d) **Construction**

(i) Site Preparation

- (A) Comply with all current Federal, Provincial, and local regulations for execution of the work, including local building codes and excavation regulations. Provide excavation support as required to maintain stability of the area during excavation and SRW construction and to protect existing structures, utilities, landscape features, property, or improvements.
- (B) Prior to grading or excavation of the site, confirm the location of the SRW and all underground features, including utility locations within the area of construction. Ensure surrounding structures are protected from effects of SRW excavation.
- (C) Coordinate installation of underground utilities with SRW installation.
- (D) Control surface water drainage and prevent inundation of the SRW construction area during the construction process.
- (E) The Foundation Soil shall be excavated or filled as required to the grades and dimensions shown in the SRW Design Documents.
- (F) The Foundation Soil shall be proof rolled and examined by the General Review Engineer to ensure that it meets the minimum strength requirements specified in the SRW Design Documents. If unacceptable Foundation Soil is encountered, the General Review Engineer should contact the Designer to discuss options and determine the most appropriate course of action.
- (G) In cut situations, the native soil shall be excavated to the lines and grades shown in the SRW Design Documents and removed from the site or stockpiled for reuse as Reinforced or Retained Fill as identified in the SRW Design Documents. Care should be taken not to contaminate or overly saturate the stockpiled fill material.

(ii) Installing Drainage System

- (A) If specified in the SRW Design Documents, the approved Geotextile Filter shall be set against the back of the first SRW Unit, over the prepared foundation soil extending towards the back of the excavation, up the excavation face and eventually over the top of the Drainage Fill to the back of the SRW Units near the top of the wall or as shown in the



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SRW Design Documents. Geotextile overlaps shall be a minimum of 300 mm (1 ft.) and shall be shingled down the face of the excavation in order to prevent the migration of particles from one fill type to another.

- (B) The Drainage Pipe shall be placed as shown in the SRW Design Documents, in accordance with the overall drainage plan for the site. The main collection drain pipe shall be a minimum of 100mm (4 inches) in diameter. The pipe shall be laid to ensure gravity flow of water from the Reinforced Fill. Connect drainage collection pipe at a storm sewer catch basin or daylight along slope at an elevation lower than lowest point of pipe within Reinforced Fill mass, every 15m (50 feet) maximum.
- (C) If other sources of water are discovered during excavation or anticipated, other drainage measures/systems such as chimney or blanket drains may be required. The General Review Engineer should contact the Designer to discuss options and determine the most appropriate course of action and notify Metrolinx or its representative on the site and obtain approval for the chosen course of action.

(iii) Levelling Base or Spread Footing Placement

- (A) The Levelling Base shall be the specified material placed in the location to the dimensions shown in the SRW Design Documents.

(iv) Installation of Segmental Retaining Wall Units

- (A) The bottom row of SRW Units shall be placed on the Levelling Base as shown in the SRW Design Documents. The units shall be placed in the middle of the Levelling Base. Care shall be taken to ensure that the SRW Units are aligned properly, levelled from side to side and front to back, and are in complete contact with the Levelling Base.
- (B) The SRW Units above the bottom course shall be placed to interconnect the shear key and then pushed forward, creating the specified batter of the SRW face.
- (C) The SRW Units shall be swept clean before placing additional courses to ensure that no dirt, concrete, or other foreign materials become lodged between successive lifts of the SRW Units.
- (D) Successive courses shall be placed to create a running bond pattern with the edge of all units being approximately aligned with the middle of the unit in the course below it. Cut SRW Units may need to be placed to ensure the vertical line between adjacent SRW Units remains within the middle third of the SRW Unit below.
- (E) A maximum of three courses of SRW units can be placed above the level of the Reinforced Fill at any time.



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- (F) The installer shall check the level of SRW Units with each lift to ensure that no gaps are formed between successive lifts that may affect the performance of the SRW.
- (G) Care shall be taken to ensure that the SRW Units and Geosynthetic Reinforcement, where applicable, are not damaged during handling and placement.
- (H) No heavy equipment, for compaction, fill placement or other, shall be allowed within 1 m. (3 ft.) of the back of the SRW Units.
- (I)

### **Special Construction Procedures – Near Vertical Installation**

1. Vertical alignment is achieved by rotating every second course 180 degrees so the back of the SRW Unit is at the face of the wall.
2. SRW units with a split rock finish will require the back of the unit to be split off to achieve the same face appearance as the normally installed units.
3. A slight negative batter (as specified in the SRW Design Documents) must be constructed into the gravel base when aligning the blocks vertically to account for minor forward movement of the SRW during and following construction.

### **Special Construction Procedures – Multi-depth SRW Systems**

1. Multi-depth SRW systems utilise SRW units of identical face dimensions and varying depths to create a stable structure.
2. Place SRW Units as specified in the SRW Design Documents. SRW Units with the greatest depth are placed at the bottom of the SRW with shorter SRW Units being placed above.

### **Special Construction Procedures – Crib SRW Systems**

1. Crib SRW systems utilise a tie-back unit, installed perpendicular to the wall face that “tie” the facing at the front of the SRW to dead-men at the back of the SRW structure and create a stable structure. Both the facing and dead-men are the standard SRW units. When assembled the SRW Units create a interlocked “bin”-like structure
2. Place SRW Units (facing and dead-men) and Tie-back Units as indicated in the SRW Design Documents.
3. Tie-back units may be connected into each other to create longer tie-back



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elements.

4. Place specified gravel fill within the crib structure and compact as directed in the SRW Design Documents. Placement of SRW Units must be done in conjunction with the placement of fill, at each course, to ensure that all fill is compacted below and between the tie-back units.

(v) Drainage Fill

- (A) Drainage Fill may not be required as indicated in the SRW Design Documents.
- (B) The Drainage Fill will be placed behind the SRW Units with a minimum width of 300 mm (1 ft.) and separated from other soils using the specified Geotextile Filter.
- (C) Drainage Fill shall be placed behind the SRW facing in maximum lifts of 150 mm (6 inches) and compacted to a minimum density of 95% Standard Proctor.

(vi) Reinforced Fill

- (A) Reinforced Fill may not be required as indicated in the SRW Design Documents.
- (B) Reinforced Fill shall be placed behind the SRW Units or Drainage Fill with a maximum lift thickness of 150 mm (6 inches) and compacted to a minimum density of 95% Standard Proctor Maximum Dry Density (ASTM D698) at a moisture content from 2% below to 2% above optimum.
- (C) The Reinforced Fill shall be placed and compacted level with the top of the SRW Units at the specified Geosynthetic Reinforcement elevations to ensure no voids exist under the Geosynthetic Reinforcement as it extends out over the Reinforced Fill.
- (D) Care shall be taken to ensure that the Geosynthetic Reinforcement lays flat and taut during placement of the Reinforced Fill. This is best achieved by placing the Reinforced Fill on top of the Geosynthetic Reinforcement near the SRW facia and spreading toward the back of the Reinforced Fill.
- (E) At the end of each Working Day's operation, slope the last lift of Reinforced Fill away from the SRW facing to rapidly direct runoff away from the SRW facia. Do not allow surface runoff from adjacent areas to enter the SRW construction area.

**Special Construction Procedures – Fine-grained Reinforced Fill**

1. If a material with more than 8% fine content is used as the Reinforced Fill, the SRW Design Documents must include Drainage Fill and will probably



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include a Geosynthetic Filter separating the Drainage and Reinforced Fill.

2. Compaction of fine-grained soils is more difficult than compacting coarse-grained soil. Water content, compactive force, and equipment utilised will significantly affect the compaction results. Consult with the General Review Engineer regarding acceptable construction procedures.

### (vii) Geosynthetic Reinforcement

- (A) Geosynthetic Reinforcement may not be required as indicated in the SRW Design Documents.
- (B) Verify type and primary strength direction of the Geosynthetic Reinforcement.
- (C) Cut Geosynthetic Reinforcement in sheets to the length shown in the SRW Design Documents.
- (D) Geosynthetic Reinforcement sheets shall be placed horizontally with the primary strength direction perpendicular to the SRW face, at the elevations shown in the SRW Design Documents. The sheets are to be placed adjacent to one another, without overlapping and without gaps between them.
- (E) Sweep the top of the SRW Units to ensure the SRW Units are clean and free of debris.
- (F) The Geosynthetic Reinforcement shall be placed over the compacted Reinforced Fill and the SRW Units with the outside edge extending over the shear key of the SRW Unit to within 25 mm (1 in.) of the front facing unit.
- (G) The next course of SRW Units shall be carefully placed on top of the lower course to ensure that no pieces of concrete are chipped off and become lodged between courses and the Geosynthetic Reinforcement is in complete contact with the top and bottom surfaces of the successive SRW courses.
- (H) With the Geosynthetic Reinforcement secured in place, the Geosynthetic Reinforcement shall be pulled taut away from the back the SRW Units during placement of Reinforced Fill. Alternatively, suitable anchoring pins or staples can be used to ensure that there are no wrinkles or slackness prior to placement of the Reinforced Fill. The Geosynthetic Reinforcement shall lay flat when pulled back perpendicular to the back of the SRW facia.
- (I) No construction equipment shall be allowed to operate directly on top of the Geosynthetic Reinforcement until a minimum thickness of 150 mm (6 inches) of fill has been placed. Equipment may drive on Reinforced Fill at slow speeds and should exercise care not to stop



suddenly or make sharp turns. No heavy equipment shall be allowed within 1 m. (3 ft.) of the back of the SRW Units.

(viii) Retained Fill

(A) Retained Fill may not be required as indicated in the SRW Design Documents.

(B) Retained Fill shall be placed and compacted behind the Reinforced Fill or Drainage Fill in Conventional SRW applications, in maximum lift thickness of 150 mm (6 inches).

**Special Construction Procedures – Fine-grained Retained Fill**

1. Compaction of fine-grained soils is more difficult than compacting coarse-grained soil. Water content, compactive force, soil temperature, and equipment utilised will significantly affect the compaction results. Consult with the General Review Engineer regarding acceptable construction procedures.

(ix) Continuing Wall Construction

(A) Repeat section 3 (d) (iv) through to 3 (d) (viii) herein until the grades indicated in the SRW Design Documents are achieved.

(x) Secure Coping

(A) The Coping Adhesive may not be required as indicated in the SRW Design Documents.

(B) Coping units shall be secured to the top of the SRW with two 10 mm (3/8 inch) beads of Concrete Adhesive positioned 50mm (2 inches) in front and behind the tongue of the last course of SRW units.

(xi) Finishing SRW

(A) Finish grading above the SRW to direct surface runoff water away from the SRW. A swale system must be used above the SRW if the grade slopes toward the back of the wall. Construct the swale with the materials and to the dimensions specified in the SRW Design Documents. Final grading must be established immediately to ensure the Reinforced Fill is protected from water infiltration.

(B) Upon completion of the SRW, additional structures (fences, handrails, vehicular guardrails, buildings, pools/ponds, etc.) or changes to grading/loading (increased height, slopes, parking areas, changes in proximity to water flow, etc.), other than those shown in the SRW Design Documents, can not be installed/implemented without the review and consent of the General Review Engineer who will have to consult the Designer and obtain approval of the consultant.

(C) If the Installer is not responsible for the final landscaping and grading above or around the SRW, the Contractor must ensure the firm who is



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responsible for the final landscaping and grading understands the SRW's limitations with respect to allowable depth of topsoil, excavation behind the SRW for planting, offset for heavy equipment, and allowable surcharge. This also extends to firms who will be responsible for installations such as handrails, fences, and signs that will apply additional loads to the SRW and will impact the SRW's performance.

**END OF SECTION**



**1. GENERAL****(a) Scope of Work**

- (i) To install concrete block masonry platform curb, mortar and accessories as indicated on drawings and specified herein.

**(b) Related Work Specified Elsewhere**

Sealants

Section 07900

**(c) References**

The following standards and criteria to serve as guidelines for materials and execution of all masonry work covered by this section:

- (i) CAN3-S304.1-94: Masonry Design for Buildings
- (ii) CAN3-A371-M84: Masonry Construction for Buildings
- (iii) CAN3-A165 Series-94: CSA Standards on Concrete Masonry Units
- (iv) CSA A179-M1976: Mortar and Grout for Unit Masonry
- (v) CSA A82.56-M1976: Aggregate for Masonry Mortar
- (vi) CAN3-A370-M84: Connectors for Masonry

**(d) Delivery, Storage and Handling**

- (i) Co-ordinate with Metrolinx and its representative the storage location of materials so as not to interfere with GO Transit Operations and safe and unhindered access for the public.
- (ii) Masonry units, sand and accessories to be delivered to site in dry condition and stored on wooden platforms. Cover entirely with weatherproof covering during inclement weather or when masonry work is not in progress. Keep sand dry and free from inclusion of foreign matter.
- (iii) Avoid overloading structure and do not concentrate stored masonry material on floors and/or roof structure.
- (iv) Cement, admix and other packaged materials to be delivered in original, unbroken and undamaged packages with manufacturer's labels intact. Store in weathertight sheds until required.
- (v) Handling and storage of material to be in such a manner that the material at the time of incorporation into the building shall be unharmed by weather or physical damage. Any units stained or chipped or materials affected by inadequate storage shall not be incorporated into the work and be replaced at no cost to Owner.



(e) **Project Conditions**

- (i) During the winter months, maintain all masonry materials free from the accumulations of ice and frost, at other times from deterioration due to inclemency.
- (ii) At temperature above -5 °C and below 5 °C, provide adequate equipment for heating mortar materials. Water temperature not to exceed 60 °C. Mortar temperature shall be maintained between 10 °C and 32 °C. Masonry units shall be generally dry and free from ice but need not be heated.
- (iii) At temperatures below -5 °C, the masonry units shall be protected and heated to a temperature between 10 °C and 38 °C to remove frost and moisture.
- (iv) Maintain air temperature at 5 °C on both sides of all completed masonry work for a period of 72 hours by enclosure, artificial smokeless heaters or other approved methods.
- (v) Do not use scorched sand, salt, antifreezes, or air entraining agents for masonry work.
- (vi) Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings.
- (vii) Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place. Do not impose loads from roof structural elements or other construction for seven days or until so advised acceptable by Metrolinx or its representative.

(f) **Co-Ordination**

- (i) Co-ordinate and co-operate with all other trades on the Project to locate and build all chases, slots and reglets. Build-in all frames, sleeves, anchor, bolts, electrical items and mechanical items as required to eliminate cutting of masonry surfaces after completion of the work, and in order to produce a first-class job. All cutting of ground face and split face masonry units shall be as per manufacturers written instructions.

(g) **Cold Weather Construction**

- (i) General  
Protect, mix and install only clean, dry and unfrozen material made from unfrozen components conforming to “Recommended and Guide Specifications for Cold Weather Masonry Construction” available from the



Ontario Masonry Contractors Association.

- (ii) Frozen material or frozen masonry work shall constitute grounds for rejection and shall be replaced to the satisfaction of Metrolinx or its representative.

## **2. PRODUCTS**

### **(a) Materials**

- (i) Portland Cement: CAN3 A5M (10)
- (ii) Masonry Cement: CAN3 A8M (H) from single order, one supplier
- (iii) Aggregates: CSA A82.56M as amended
- (iv) Hydrated Lime: CSA A82.43M
- (v) Water: Potable, clean and free of deleterious soluble content.
- (vi) Reinforcing Steel: CSA G30.12M, Grade 400, deformed.
- (vii) Damp-Proofing Course and Flashing Materials: Blueskin AG, supplied by Bakor Ltd., PVC "40" by Lexsuco Canada Ltd., or other approved equal.
- (viii) Masonry Cleaning Solution: "Sure Klean 600" by ProSoCo, Kansas City, Kansas, or other approved equal.
- (ix) Masonry Reinforcement: As specified on structural drawings and otherwise HD ladur type to suit block width at alternate horizontal joints, Blok-Lok or approved equal.

### **(b) Mortar:**

- (i) Mortar for use at tunnel level: CSA A179M, Type S: 1 part Portland cement to 0.5 parts hydrated lime to  $4 \pm 0.5$  parts sand, by volume (Exterior use); or 0.5 parts Portland cement, 1-part masonry cement to  $4 \pm 0.5$  parts sand, by volume (Interior use only).

## **3. EXECUTION**

### **(a) Examination:**

- (i) Do not commence operations without examining existing related works for any conflict with work done under this division. Obtain approved shop drawings of affected trades for material built-in to or abutting masonry work.

### **(b) Preparation:**

- (i) Establish line levels, reference grades and coursing and protect from disturbances.
- (ii) Prepare and coordinate for building-in of all items whether supplied and



installed by others or provided or installed under this section, including number, location and type of cavity wall ties and lateral or tie down anchors.

(c) **Mixing Mortar:**

- (i) Mix in watertight, mechanical mixers. Measure ingredients accurately by volume. Place approximately 75% of water required in the mixer, add half the volume of sand, add cement, then remainder of sand. Add water as required for plasticity. Operate mixer at least five (5) minutes or until all materials are homogeneously blended, then dump. Clean mixer after each batch. Comply with Section 04100 Segmental Retaining Wall.
- (ii) Mix quantities of mortar which can be used up within one hour. Work mortar over constantly with hoe and shovel until used up. Do not re-temper or use in any way, any mortar that has set.

(d) **Installation:**

(i) General:

- (A) Lay all masonry true to line, straight and plumb to the tolerances specified. Lay masonry from face side. Check regularly with graduated rod, minimum 1500mm spirit levels or electronic laser devices.
- (B) Cut masonry accurately to fit snugly around pipes, conduit and ducts. Fill solidly and finish neatly all spaces around such work. Coordinate timing and installation with affected trades to avoid cutting and patching.
- (C) Adjust running bond back from openings 450mm to present uniform appearance with a minimum of cut units and a predominance of visually large stretchers. Minimum unit length to be half-stretcher, half-block.
- (D) Average mortar joints per CSA or 10 to 11mm to suit coursing.
- (E) Generally, all finished mortar joints are to be tooled slightly convex unless noted otherwise.
- (F) Unless otherwise advised, do not wet masonry units prior to installation.
- (G) All work shall be executed by skilled mechanics under the supervision of an experienced foreman responsible for adherence to the specifications and who shall ensure all masonry and built-ins are plumbed, true, aligned horizontally and vertically, rigid and secure. Plane tolerance: maximum 5mm in any 3m direction.



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- (H) Cull and batch clay masonry units readied for lay-up from a minimum of three separate pallets of delivered material and distribute varying textured and toned units to ensure a homogenous blending and reduce streaks and patches of separately fired units.
- (I) Ensure lateral support at the top of all masonry walls at 18 times the thickness of the partition and maximum 400 from vertical discontinuities or as per the referenced CSA standard, whichever is the more stringent. Use dovetail anchors in galvanized built in slot where interior non-loadbearing partitions meet exterior loadbearing partitions typically.
- (J) Provide temporary bracing and support for all incomplete work to safely resist all wind, incident or applied loads until work is cured, secured and set into the final structure and in general in compliance with Industrial Health and Safety Act, RSO.

### (ii) Laying Concrete Masonry:

- (A) Lay blocks in running bond unless otherwise indicated on the drawings.
- (B) Lay solid units with full head and bed joints.
- (C) Lay first course of all block walls in a full mortar bed. Concrete fill all voids to engage reinforcing rods purpose-embedded in foundation.
- (D) Saw cut all but full blocks, notably at built in frames and fitments. Use end units to frame all vertical opening edges. Defective, snapped or broken units will be rejected.
- (E) For exposed plain and decorative blocks: tooled smooth concave joints.

### (iii) Damp-Proof Course/Flashing:

- (A) Install damp-proof course and flashing as detailed and as follows:
- (B) Flash over heads of openings in exterior masonry walls extending to the top edge of steel lintels or up to at least one block course, whichever is greater.
- (C) Extend all flashings to the exterior face of the wall and to within 13 mm of the interior face of wall. Flashings shall be to the full width of lintels plus 150 mm at either end, and lapped a minimum of 200 mm all joints. Seal laps with adhesive.



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- (D) Lay first concrete block of all walls typically on damp-proof coursing, consisting of Glaskraft brand or approved equivalent, 110lb./ream, scrimmed laminated 2 ply creped asphalt kraft.

(iv) Other Requirements:

- (A) Do not tap or shift units after mortar has taken initial set.
- (B) Extend masonry partitions to underside of structural members above and secure thereto by approved method as noted in structural drawings.
- (C) Co-operate and coordinate with other trades in the setting of buried conduits, plumbing, piping, anchor bolts, lintels, recesses, inserts, etc.

(v) Placing:

- (A) Installation of curbs shall take place only during track closures and/or working hours on the track affected, as specified elsewhere.
- (B) The length of open excavation for the installation of curbs and sub-drains shall not exceed 6.0m (20 feet) at any time.
- (C) Installation operations may be suspended by Metrolinx or its representative at any time, especially during excessively hot period or when rail temperature exceeds 32°C (90°F).
- (D) All curbs must be fully installed, including placement of track ballast and backfill, prior to the end of the track closure.
- (E) Excavate as required to accommodate placement as shown on the contract drawings.
- (F) Place sub-drainage, as specified.
- (G) Place concrete platform curbs on Granular sub-base material compacted to 100% SPMDD.
- (H) Fine grade granular base to ensure that platform curb units sit flat and parallel to top of rail.
- (I) Backfill behind concrete units with Granular A material compacted to 100% SPMDD.

(e) **Protection:**

- (i) Protect the tops of all unfinished walls with weatherproof coverings at the end of each Working Day, or upon stoppage of the work for any reason.



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- (ii) Provide temporary support and bracing to all walls during construction to prevent damage due to wind load.
  - (iii) Protect outside corners of finished masonry work with non-staining material until Project is substantially performed and final clean-up is undertaken.
- (f) **Cleaning Masonry:**
- (i) Surplus mortar shall be removed immediately from floors, walls and other locations.
  - (ii) At completion of pointing, remove all rubbish and surplus material and brush and clean all masonry with water and stiff fibre brush.
  - (iii) If further cleaning of masonry surfaces is required, follow recommendations of masonry manufacturer and cleaning solution manufacturer, treat a sample area of masonry for Metrolinx or its representative's approval before proceeding with cleaning of all surfaces.
- (g) **Clean-Up:**
- (i) Throughout operations, keep the site clean and free of unnecessary debris. Upon completion of masonry work, and before final acceptance, remove all falsework, rubbish and temporary buildings associated with masonry work. Do not leave brick or block cut offs in areas to be backfilled.

**END OF SECTION**



**1. GENERAL**

(a) **Scope of Work**

- (i) Install concrete block masonry platform curb, mortar and accessories as indicated on drawings and specified herein.

(b) **Related Work Specified Elsewhere**

Sealants	Section 07900
Excavating, Trenching and Backfilling	Section 02223
Unit Masonry	Section 04200

(c) **References**

The following standards and criteria to serve as guidelines for materials and execution of all masonry work covered by this section:

- |        |   |   |
|--------|---|---|
| (i)    | CAN3-S304.1-94:   | Masonry Design for Buildings            |
| (ii)   | CAN3-A371-M84:  | Masonry Construction for Buildings      |
| (iii)  | CAN3-A165 Series-94:                                      | CSA Standards on Concrete Masonry Units |
| (iv)   | CSA A179-M1976:   | Mortar and Grout for Unit Masonry       |
| (v)    | CSA A82.56-M1976:   | Aggregate for Masonry Mortar            |
| (vi)   | CAN3-A370-M84:  | Connectors for Masonry                  |
| (vii)  | CSA CAN3-A23.4-05   | Precast Concrete                        |
| (viii) | GO Transit Engineering Design Drawing SK-01, SK-02. SK-03 |   |

**2. PRODUCTS**

(a) **Allowable Tolerances**

- (i) Tolerance of precast elements to CAN3-A23.4, Section 10
- (ii) Length of precast elements not to vary from design length by more than plus or minus 5mm
- (iii) Cross sectional dimensions of precast elements not to vary from design dimension by more than plus or minus 3mm
- (iv) Deviations from straight line not to exceed 3mm in 3m.
- (v) Precast elements not to vary by more than plus or minus 5mm from true overall cross sectional shape as measured by difference in diagonal dimensions.

(b) **Source Quality Control -N/A**

(c) **Concrete Material - N/A**

(d) **Concrete Mix -N/A**

(e) **Formwork – N/A**



**3.     EXECUTION**

- (a)     **Fabrication – N/A**
- (b)     **Placing of Reinforcing Steel – N/A**
- (c)     **Forms –N/A**
- (d)     **Deposing of Concrete – N/A**
- (e)     **Curing – N/A**
- (f)     **Placing**
  - (i)     Installation of curbs shall take place only during track closures and/or working hours on the track affected, as specified elsewhere.
  - (ii)    The length of open excavation for the installation of curbs and sub-drains shall not exceed 6.0m (20 feet) at any time.
  - (iii)   Installation operations may be suspended by Metrolinx or its representative at any time, especially during excessively hot period or when rail temperature exceeds 32°C (90°F).
  - (iv)    All curbs must be fully installed, including placement of track ballast and backfill, prior to the end of the track closure.
  - (v)     Excavate as required to accommodate placement as shown on the contract drawings.
  - (vi)    Place sub-drainage, as specified.
  - (vii)   Place concrete platform curbs on Granular sub-base material compacted to 100% SPMDD.
  - (viii)   Fine grade granular base to ensure that platform curb units sit flat and parallel to top of rail.
  - (ix)    Backfill behind concrete units with Granular A material compacted to 100% SPMDD.

**END OF SECTION**



## METAL FABRICATION

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### 1. GENERAL

#### (a) General

- (i) Comply with the Contract Documents which include, but not necessarily limited to, the Supplementary General Conditions, the General Requirements, Specifications, Drawings and all Addenda and any Change Orders.
- (ii) The work of this section covers all labour, materials and equipment required to execute the surface preparations, supply and installation of detectable warning surfaces to all concrete stair surfaces, interior structure stairs and exterior platform stairs.

### 2. SHOP DRAWINGS

Submit shop drawings in accordance with Section 01300 – Product Data, bearing the stamp of a qualified professional engineer registered in the province of Ontario.

### 3. DESCRIPTION

Supply and installation of stainless steel HSS bollards.

### 4. PRODUCT

#### (a) Materials

- (i) Stainless steel: to ASTM A167-77, Type 304, exposed surfaces to have No. 4 polished finish.
- (ii) Shop coat primer: to CGSB 1-GP-40M.
- (iii) Zinc primer: zinc rich, ready mix to CGSB 1 - GP-1 81 M + Amdt-Mar-78.
- (iv) Grout: non-shrink, non-metallic, flowable, 24-hour, 15 MPa, pull-out strength 7.9 MPa

#### (b) Shop Painting

- (i) Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
- (ii) Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7°C.



## METAL FABRICATION

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(c) **Bollards**

- (i) 152 mm HSS stainless steel pipe bollard, filled with concrete and set in concrete foundation. Pipe to be 2600 mm long.

**5. EXECUTION**

Install bollards as indicated on drawings.

**END OF SECTION**



# SEALANTS

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## 1. **GENERAL**

### (a) **References (latest edition apply)**

- (i) ACI 504R-77 “Guide to Joint Sealants for Concrete Structures”.

### (b) **Submittals**

#### (i) Samples:

- (A) Duplicate of samples of sealant and primer materials to be used
- (B) Cure samples under conditions anticipated at the site during application

#### (ii) Product Data:

- (A) Submit Product data in accordance with Section 01300 – Product Data.
- (B) Provide printed product literature describing type, composition and recommendations or directions for surface preparation, product preparation and product installation.

### (c) **Quality Assurance**

#### (i) Qualifications:

- (A) Execute work, by fully trained applicators in strict accordance with the printed directions of material manufacturers.

#### (ii) Mock-Up:

- (A) Construct mock-up to show location, size, shape and depth of joint(s) complete with back-up material, primer and sealant. Mock-up may be part of finished work.
- (B) Allow 24 hours for inspection of mock-up by Metrolinx or its representative before proceeding with sealant work.

### (d) **Delivery, Storage and Handling**

- (i) Deliver Products in manufacturer’s original unopened containers with manufacturer’s labels and seals intact. Labels to identify manufacturer’s name, brand name, date of manufacture, grade and type, application directions and expiry date or shelf life.
- (ii) Handle and store products in accordance with manufacturer’s printed directions. Arrange for suitable storage areas. Store flammable products in safe containers to eliminate fire hazards.
- (iii) Protect adjacent exposed finished surfaces from damage, by masking or other means, prior to performing work. Remove protection when no longer



## SEALANTS

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required and clean adjacent, exposed surfaces of any compound deposited upon such surfaces.

### 2. PRODUCTS

#### (a) Materials

##### (i) Sealant – Concrete Joints

(A) Two-component, polyurethane-based elastomeric, chemical cured, non-sag per CAN/CGSB 19.24-M90 and meeting the requirements of TT-S-00227E Sikaflex-2c NS/SL or approved equal.

##### (ii) Sealant – Concrete & Asphalt Surfaces

(A) Single-component, silane-based and meeting the requirements of WEATHER WORKERTM S-40 (J-29) or approved equal.

##### (iii) Primer

(A) As per sealant manufacturer's recommendations, where required.

#### (b) Accessories

(i) Primers: of types as recommended by material manufacturers for various substrates, to provide adhesion and to prevent staining of adjacent surfaces for all conditions encountered.

(ii) Joint backing: round, solid section, skinned surfaced, soft polyethylene foam gasket stock, compatible with primers and sealant materials, outsized 30 to 50%, Shore A hardness of 20, tensile strength 140 to 200 kPa. back-up material skin shall be of proper consistency so as not to bond to compound.

(iii) Bond breaker: of types recommended by material manufacturers to prevent bonding of compound to backing surface of recess, for all conditions encountered on site.

(iv) Cleaning agents: as recommended by material manufacturer, which will not harm substrates and adjacent finished surfaces.

#### (c) Mixing

(i) Follow manufacturer's instructions on mixing, shelf and pot life.

### 3. EXECUTION

#### (a) Preparation



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- (i) Prepare joints to receive sealants to manufacturer's instructions and verify suitability. Failure of sealants in the future, due to claimed unsuitability of joint, will not be valid. Installation of sealants is considered as evidence that joint is suitable to receive compound.
- (ii) Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed by Contractor to ensure compatibility of materials. Remove coatings as required.
- (iii) Clean recesses to receive sealant, to be free of dirt, dust, loose material, oil, grease, form release agents and other substances detrimental to compound's performance. Remove lacquer or other protective coatings from metal surfaces, without damaging metal finish, using oil-free solvents. Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sand blasting. Apply masking tape to metal surfaces adjacent to recesses to prevent smearing or staining of such metal surfaces.
- (iv) Depth of joint sealant shall not be less than 6 mm in vertical and overhead applications and shall not be less than 13 mm in horizontal joints exposed to traffic.
- (v) Recess to be dry when compounds are installed. Where depth of recess for sealants is at proper depth, apply bond-preventative material to back surface of recess. Prime sides of recesses, in accordance with compound manufacturer's recommendations, to develop proper mechanical adhesion, to negate latent moisture and to prevent staining of adjacent finished surfaces of compound to recess surfaces.

(b) **Installation**

- (i) Do not install products when ambient air temperature is less than 5°C, when recesses are wet or damp, or when conditions do not satisfy manufacturer's recommendations.
- (ii) Use materials as received from manufacturer's, without additives or adulterations. Use one manufacturer's product for each kind of product specified.
- (iii) Install sealant immediately after adjoining work is in a condition to receive such work. Apply sealant in continuous beads using gun with proper size nozzle. Use sufficient pressure to fill voids and joints solid without smearing adjacent surfaces regardless of variation of joint widths, and to proper depth as prepared.
- (iv) Sealant compounds must have full uniform contact with, and adhesion to, side surfaces of recess. Superficial pointing with skin bead is not acceptable. Form surface of sealant with full bead, smooth, free from ridges, wrinkles,



## SEALANTS

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sags, air pockets, embedded impurities, dirt stains or other defacements and be uniform in colour.

- (v) Finish face of compound in recesses smooth and even. At recesses in angular surfaces, finish compound with a flat face, flush with face of material at each side. At recesses in flush surfaces, finish compound with concave face, flush with face of material at each side.
- (vi) Cure sealants in accordance with sealant manufacturer's instructions. Do not cover up sealants until proper curing has taken place.

(c) **Adjusting and Cleaning**

- (i) Remove any compounds not complying with requirements specified herein. Prepare recesses again and install new compounds to provide finish work complying with requirements specified, at no cost to Metrolinx.
- (ii) Clean surfaces adjacent to joints, remove sealant smears or other soiling resulting from application of sealants. At metal surfaces, remove masking tape and other residue. Exercise care in cleaning and removal operations, not to mar or damage finishes on materials adjacent to joints. Repair or replace marred surfaces or damaged materials, at no cost to Metrolinx.

**END OF SECTION**



## DETECTABLE WARNING SURFACES

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### **1. GENERAL**

#### **(a) General**

- (i) Comply with the Contract Documents which include, but not necessarily limited to, the Supplementary General Conditions, the General Requirements, Specifications, Drawings and all Addenda and any Change Orders.
- (ii) The work of this section covers all labour, materials and equipment required to execute the surface preparations, supply and installation of detectable warning surfaces to all concrete stair surfaces, interior structure stairs and exterior platform stairs.

### **2. SHOP DRAWINGS**

Submit shop drawings in accordance with Section 01300 – Product Data, bearing the stamp of a qualified professional engineer registered in the province of Ontario.

### **3. DESCRIPTION**

- (a) Detectable warning surfaces shall be provided:
  - (i) At each landing incorporating an entrance into a stair system;
  - (ii) Where the regular pattern of a stairway is broken; and
  - (iii) Where the run of a landing not having a continuous handrail is greater than 2100mm.
- (b) The detectable warning surface shall:
  - (i) Be composed of truncated domes:
    - (A) With height of 5 - 6mm (0.20 to 0.24 in.);
    - (B) With a base diameter of 22-25mm (0.87 to 0.98 in.); and
    - (C) Be organized in a regular pattern with spacing of 55-63mm (2.17 to 2.48 in.) on centre.
  - (ii) Be slip-resistant;
  - (iii) Contrast visually with adjoining surface;
  - (iv) Extend the full width of the stair;
  - (v) Have a depth of 920mm (36 in.), commencing one tread depth from the edge of the stair;



**DETECTABLE WARNING SURFACES**

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- (vi) Not be more than 3mm (1/8 in.) above or below surrounding surface; and
- (vii) The cane-detectable warning on this surface shall be colour and texture contrasted with the adjacent surfaces. Raised ridges shall be placed perpendicular to the direction of travel.

**END OF SECTION**



## BOLLARDS

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### 1. GENERAL

#### (a) General Requirements

- (i) Comply with the Contract Documents which include, but not necessarily limited to, the Instructions to Tenderers, the Specimen Contract Documents, the Specifications, Drawings and all Addenda and any Change Orders.

#### (b) Description

Work in this section includes all labour, materials and equipment required to supply and place bollards, as indicated on the drawings. Work includes but is not limited to the following:

- (A) Excavation and removal from site.
- (B) Supply and place bollards.
- (C) Supply and place concrete foundations.

#### (c) Related Work

- (i) Excavation, Trenching and Backfilling Section 02223

#### (d) Inspection

- (i) Examine areas of receive the work of this section and don't proceed until unsatisfactory condition are corrected.
- (ii) Notify the consultant at least 24 hours prior to commencing work.
- (iii) Don't commence work until Metrolinx or its representative has inspected and approved surfaces to receive bollards.

### 2. PRODUCTS

#### (a) Materials

- (i) Bollards shall be approved by Metrolinx or its representative prior to the installation.

### 3. EXECUTION

#### (a) Installation

- (i) Bollards are set to be set in concrete foundation 500mm dia. X .457m deep.
- (ii) Bollards shall be straight and true after installation.

END OF SECTION



**1. GENERAL**

(a) **Section Includes:**

- (i) For signage work in accordance with the Contract Documents including the following work:
  - (A) The design, manufacturing, supply and installation of pylon, display cases, and blade signs
  - (B) The supply and installation of posts and delineator tubes for all other site, parking lot and traffic control signage.

(b) **References**

- (i) CAN/CSA-G164/M, Hot dip Galvanizing of Irregularly Shaped Articles.
- (ii) CSA W59-M, Welded Steel Construction
- (iii) CSA W59.2-M, Welded Aluminum Construction.
- (iv) GO Signage Standards Manual, latest edition.

(c) **Submittals**

- (i) Submit detailed shop drawings for all structural design, electrical design, materials and graphic elements in accordance with Section 01300 – Product Data.

**2. PRODUCTS**

(a) **Acceptable Suppliers**

- (i) Saiffee Neon Signs  
8635 Keele Street  
Unit 3  
Concord, Ontario  
L4K 3N5
- (ii) Meteor Sign  
3615 Weston Road, Unit 7  
North York, Ontario M9L 1V8  
Tel: (416) 746-7498
- (iii) Daytech Mfg. Ltd.  
675 Petrolia Road  
Toronto, Ontario M3J 2N6



## SIGNAGE

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Tel: (416) 675-1195

- (iv) Steel Art Signs  
37 Esna Park Drive  
Markham, Ontario L3R 1C9  
Tel: (905) 474-1678
- (v) WSI Signs Systems  
29 McEwan Drive  
Bolton, Ontario L7E 1H4  
Tel: (905) 857-8044
- (vi) Or approved equivalent

(b) **Materials**

- (i) Pylon Station Identification Signs/Display Cases/Platform Signs: N/A
- (ii) Transit Information Board: N/A
- (iii) Metal Posts: Metal sign posts for parking lot signs shall consist of either:
  - (A) A single 3 metre long galvanized 50 KSI steel U channel post including associated hardware and 2.65A ID, unsplit yellow HDPEUV stabilized post marker tubes as detailed on the contract drawings.
  - (B) Two pieces consisting of a 3 metre long galvanized 50 KSI steel U channel post and a 1.5 metre 50 KSI steel U channel post including associated hardware and 2.65A ID, unsplit yellow HDPEUV stabilized post marker tubes as detailed on the contract drawings.
- (i) Yellow Sleeve: Highly visible yellow HDPE UV stabilized plastic. Inside diameter to be 70mm by 2.13m long and 2mm wall thickness.

### 3. **EXECUTION**

(a) **Installation**

- (i) All sign installations shall be in conformance with the most recent version of the “Manual of Uniform Traffic Control Device”, as published for the Ministry of Transportation in the Province of Ontario or as specified herein and on the drawings.
- (ii) All existing signs in conflict with the proposed work of this contract shall



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be removed under this item and salvaged for re-use where possible. Any signs damaged during the work shall be replaced where required at the Contractor's expense. All sign posts and mounting hardware from removals shall be salvaged for re-use where possible.

- (iii) An inventory of existing signs, poles and hardware in conflict with the proposed work shall be conducted by Metrolinx or its representative and the Contractor prior to the removal of any signs.
- (iv) The Contractor shall be responsible for ensuring clearance to all underground services and utilities prior to commencement of the work.
- (v) The Contractor shall be responsible for all coordination with Division 16 prior to commencement of the work.
- (vi) For the installation of sign posts and delineator tubes for all signs other than the Station Identification Signs, pylon sign and blade sign, the Contractor is to perform the following:
  - (A) Core drill a minimum 75 mm diameter hole deep enough to clear the thickness of asphalt or concrete at each post location identified on the contract drawings, where applied.
  - (B) Drive post into underlying base to a depth determined by the type of post used, being careful not to damage top of flange post. Ensure post alignment is correct to properly display sign heads.
  - (C) A Type I post, required where only one sign shall be installed on the post, shall be driven into the ground to a depth of 600mm.
  - (D) A Type II Assembly is required when two or more signs will be installed on a post. The base post shall be driven into the ground to a depth of 900mm and the sign post shall be bolted through the base post using three electro galvanized hex bolts, washers and nuts. The posts shall overlap by 635 mm. Hex bolts shall be separated by a distance of 250mm. The minimum height requirements for the sign post for either configuration is 2135 mm from the ground to the bottom of the sign.
  - (E) Fill each hole flush to adjacent surface with compacted hot or cold mix asphalt in the parking lot interior areas.
  - (F) Place yellow delineator tube over post immediately after erection of post.
- (vii) Installation of all other signs on municipal roads shall be in accordance with the requirements set out in OPSS 543, Kings Highway Guide Signing Policy Manual, Manual For Uniform Traffic Control Devices and any local Municipal guidelines unless noted otherwise.
- (viii) Supply and install bases and all associated electrical work for pylon, blade style signs, display cases and platform signs.



## SIGNAGE

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- (ix) The pylon style signs, display cases, blade style and platform signs shall be installed in accordance with the requirements on the drawings.
- (b) **Cleaning**
  - (i) Leave sign faces and glazing clean.
  - (ii) Remove metal fillings and debris from interior of sign boxes.
  - (iii) Touch up any damaged finishes.

**END OF SECTION**



1. **General**

(a) **Scope of Work**

- (i) Provide all labour, materials, equipment and services to complete the Work under the electrical section as specified herein and as required.
- (ii) The Work includes miscellaneous materials, matters and items necessary for the reliable functioning of the systems but which may not be specified.
- (iii) Furnish all required labour and materials, machinery, scaffolding, tools, implements, or other appliances together with all proper and required facilities for moving and transporting same, so that the Contract and all Work to be done under it can and will be done satisfactorily, continuously, and expeditiously, to completion, in all respects, to the satisfaction of the Metrolinx or its representative.
- (iv) Provide secondary electrical distribution as required. Provide conduit and wiring for all receptacles, lighting, signage, equipment, etc., as required.
- (v) Provide all power and control wiring to building services mechanical systems.
- (vi) Supply and install power distribution system as required.
- (vii) Provide conduit and wiring for all Work, as required on the Drawings and/or Specifications.
- (viii) Supply and install new underground conduit complete with pull wire as required for power to the lighting, and any other feature requiring power. A pull wire is to be available on all conduits even after wires are pulled.

(b) **Codes and Standards**

- (i) Do the complete installation in accordance with latest editions of the Ontario Building Code, Ontario Electrical Safety Code, C.S.A., U.L.C., N.F.P.A., O.S.H.A. or other codes as required.
- (ii) Comply with O.E.S.C. electrical bulletins in force at time of bid submission. While not identified and specified by number in this section, they are to be considered as forming part of related standards.
- (iii) Abbreviations for electrical terms are as per C.S.A. Z85.

(a) **Contract Drawings**

- (i) The Drawings for the electrical work are diagrammatic performance drawings, intended to convey the scope of Work and indicate the general



arrangement and approximate location of apparatus and fixtures, and the approximate sizes and locations of equipment and outlets. The Drawings do not intend to show architectural, mechanical or structural details.

- (ii) Do not scale or measure Drawings, but obtain information regarding accurate dimensions, from the dimensions shown on the architectural drawings, or by site measurements. Follow the electrical drawings for laying out the Work.
- (iii) Refer to the Drawings to become familiar with all existing and new conditions affecting the Work, and verify suitable spaces exist, in which the equipment will be installed.
- (iv) Make, at no additional cost, any changes or additions to materials and equipment necessary to accommodate structural conditions (offsets around beams, columns, etc.)
- (v) Alter at no additional cost, the location of materials and/or equipment as directed, provided that the changes are made before installation, and do not necessitate additional materials.
- (vi) Verify that the spaces in which the equipment is to be installed is sufficient and install all equipment to maintain head room and clearances, to conserve space, comply with codes, and to ensure adequate space for future servicing.
- (vii) Confirm at the site, the exact location of equipment, outlets and fixtures and the location of outlets for equipment supplied by other Contractors before installation.

(b) Cutting and Patching

- (i) Inform other Contractors in sufficient time with regard to required openings. Contractor shall carry out and pay for all cutting and patching in conformance with requirements of division 1.
- (ii) Be responsible for all sleeves or openings required for this Work.
- (iii) Cutting of holes and related patching, where required for electrical installations, provided by division 16.
- (iv) Reinstate paved area to Metrolinx or its representative's requirements.

(b) Finishes

- (i) All shop finished metal equipment and enclosure surfaces, must be prepared by removal of rust and scale from the raw metal, degreasing, cleaning, application of rust resistant primer inside and outside, and at



least two coats of finish enamel paint. Use factory standard colours unless otherwise specified.

- (ii) Maintain existing colour scheme for various systems throughout the building.
  - (iii) Clean, prime and paint exposed hangers, racks, fasteners, to prevent rusting. Colour to be Black 20-J-5.
  - (iv) Paint exterior surfaces of indoor electrical equipment to manufacturer's standard.
  - (v) Clean and touch-up to Metrolinx or its representative's approval, surfaces of shop-finished equipment that is scratched or marred during shipment or installation, so as to match original paint.
  - (vi) Leave one (1) litre paint of each colour used with Metrolinx or its representative in the form of liquid or spray, to allow for future touch-up of damaged area.
- (c) Harmonic Content
- (i) Ensure that all electrical equipment supplied under this Section, for this project, has an individual harmonic content of less than 5%, unless otherwise specified.
- (d) Identification
- (i) Identify all electrical, and communication equipment and wiring.
  - (ii) Wording on nameplates and labels to be approved by Metrolinx or its representative and shall be in English.
  - (iii) For extensions to existing installation, colour codes must match those in use.
  - (iv) Use nameplates for:
    - (A) Panel boards, indicating designation, voltage, phase, number of wires and location of feed.
    - (B) Connect switches and contactors, indicating item controlled and voltage.
    - (C) Terminals cabinet, indicating system and voltage.
    - (D) Nameplates shall be lamicoid, 3mm thick, with a face colour to match the colour of the equipment on which it is mounted, and a contrasting white core.



## ELECTRICAL GENERAL CONDITIONS

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### Nameplates:

Size 1	12 x 50 mm	1 line 3 mm
Size 2	12 x 75 mm	1 line 6 mm
Size 3	12 x 75 mm	2 lines 3 mm
Size 4	200 x 100 mm	1 line 6 mm
Size 5	20 x 100 mm	2 lines 3 mm
Size 6	25 x 100 mm	1 line 12 mm
Size 7	25 x 100 mm	2 lines 6 mm
Size 8	50 x 200 mm	3 lines 12 mm

- (E) Nameplates shall be mechanically attached to equipment.
- (F) Labels shall be of the mylar/cloth self-adhesive type, black lettering on white background, for power and security conduits and cables and located at each end of the run and at junction and pull boxes.
- (G) Use coloured paint dabs on the inside of outlet box, pull box, and panel cover as it is installed. In ceiling space provide colour to outside of boxes also.
- (H) Paint colour code shall be as follows;

Blue	Intercom and Public Address
Black	Monitoring System
Grey	120 / 208 V
Purple	Telephone System
Yellow	347 / 600 V
Orange	Security Alarm System
- (I) Use plastic self adhesive tape to identify incoming source lines.
- (II) Tape colour code shall be as follows;

Red	Phase A
Black	Phase B
Blue	Phase C
White	Neutral
Green	Ground
- (I) Complete all panel board directories with neat, type written list of circuit numbers and item controlled.
- (J) For direct buried cables and duct runs under paved or grassed areas, identify location with concrete markers, flush with grade on 60m centres, and at changes in direction.

(e) Inserts, Hangers and Sleeves

- (i) Provide hangers, inserts, sleeves and supports as required.
- (ii) Inserts are to be of lead shield type.
- (iii) Hangers must not be welded to structural steel members and burning of holes in structural steel is prohibited.



- (iv) Sleeves are to be of a type suitable for the applications and to be sealed and made watertight. Sleeves through concrete shall be schedule 40 steel pipe, sized for free passage of conduit, and installed flush with underside of concrete slab and extend 100 mm above finished floor unless otherwise shown.
  - (v) Be responsible for the installation of sleeves in accordance with the construction schedule.
- (f) Intent
  - (i) The intent is to provide Metrolinx a complete system and while no attempt has been made to detail or list each individual part required, include all parts and furnish all labour reasonably implied by these documents in order to deliver to Metrolinx the complete systems ready for operation.
  - (ii) Where differences occur the maximum condition shall govern.
  - (iii) Any miscellaneous items hardware, devices, wiring, etc., not specially described, but required for the operation of the system, shall be provided and included as part of the bid.
- (g) Materials and Equipment
  - (i) All materials and equipment shall be new, C.S.A. certified, and manufactured to the Standards specified.
  - (ii) Where there is no alternative to supplying equipment which is not C.S.A. certified, obtain special approval for the local Inspection Department.
- (h) Mounting Heights
  - (i) Mounting height of equipment is from finished floor to centre line of equipment unless specified or indicated otherwise.
  - (ii) If mounting height of equipment is not indicated, verify with Metrolinx or its representative before proceeding with installation.
  - (iii) Local switches: 1000 mm
  - (iv) Receptacles: 300mm or 150mm above counter height where so identified.
  - (v) Panel boards: 2000 mm to top
- (i) Operation and Maintenance Manuals



- (i) Include a complete list of electrical equipment supplied and installed under this Contract.
- (ii) Include all name tag information, such as make, type, size, capacity and serial number.
- (iii) Manual shall also include:
  - (A) Equipment Shop Drawings
  - (B) Operating Instruction for each system
  - (C) Control diagrams
  - (D) Wiring diagrams
  - (E) Guarantees
  - (F) Test Reports
- (j) Metrolinx's Equipment
  - (i) Where specified, install all equipment provided by Metrolinx or its representative.
  - (ii) Receive, store and install equipment, and accept full responsibility for its correct operation.
- (k) Metrolinx's Instruction and Trial Usage
  - (i) Instruct Metrolinx operating personnel in the start-up, operation, care and maintenance of all the equipment. All equipment to be tested and operational before instruction. Provide sheets for signatures of Metrolinx operating staff present at each instruction period.
  - (ii) Arrange and pay for the service of the manufacturer's factory service technician to supervise the start-up of his equipment installation and to check, adjust, balance, and calibrate components.
  - (iii) Provide these services for such period and for as many visits as necessary to ensure that Metrolinx operating staff are conversant with all aspects of its care and operation.
  - (iv) Metrolinx operating staff must be permitted to operate the systems for a reasonable period of time prior to completion of the Contract.
  - (v) This use shall not be misconstrued as acceptance of the equipment.
- (l) Permits and Fees
  - (i) Submit to the local electrical inspection department, local utility and telephone supply authorities, the necessary number of electrical Specifications for examination, special inspection and/or approval, prior to the commencement of the Work, and pay all costs, associated fees, and



any excess cable charges. If required prepare any additional documents required by the authority.

- (ii) Before tender, become fully acquainted with the by-laws of any local or other authority having jurisdiction. Work in accordance with the Specifications meets the latest regulations of Canadian Electrical Code, Ontario Electrical Safety Code and latest applicable municipal, provincial and federal codes and regulations. The code, regulation, statute, by-law or the Specification having most stringent requirements applies.
- (iii) Carry out all changes and alterations required by the authorized inspector of any authority having jurisdiction without delay to the progress of the Work and without extra cost.
- (iv) Provide warning signs as specified and to meet requirements of the authorities having jurisdiction and Metrolinx.
- (v) Upon completion of the Contract, issue to Metrolinx or its representative a formal certification of completion of Work before final payment for Work may be considered due.
- (vi) ESA inspection is required for any electrical work. The Contractor is to incorporate the cost of ESA inspection(s) into the Form of Tender. ESA inspection(s) will be completed during construction at no additional cost to Metrolinx.

(m) Protection

- (i) Protect exposed live equipment during construction for personnel safety.
- (ii) Shield and mark live parts 'LIVE 600 VOLTS', or with appropriate voltage in English.
- (iii) The electrical Subcontractor's qualified superintendent, shall be present for all concrete pours in order to witness and accept responsibility for protection of equipment.

(n) Sealing

- (i) Where cables or conduits pass through floors, walls or roof, provide internal and external sealing thereto.
- (ii) Retain the service of a specialty sealant Subcontractor for the Work required.



- (iii) For non-fire rated locations, sealant shall be silicone that meets requirements of CGSB 19-GP-23, for the size of the joint required, and the types of materials being bonded.
- (iv) For fire rated locations, the fire stop shall meet the requirements of ULC with regards to the type of assembly and the fire separation.
- (v) Comply with manufacturer's installation instructions for all sealant applications.
- (vi) Refer to Section 07920 – Sealants for precise methods and instructions.
- (o) Shop Drawings
  - (i) Submit shop drawings in accordance with Section 01300 – Product Data.
  - (ii) Where applicable include wiring, single line and schematic design Drawings, and diagrams showing interconnections with the Work of other Contractors.
  - (iii) Shop Drawings must apply to the equipment under consideration. Advertising literature and comprehensive data sheets are not acceptable. The Drawings must contain the actual dimensions of unit and dimensioned location and size of all connections, model, range, capacity, voltage, etc., of all accessories listed in the specifications, and/or being provided, and the operating points of the proposed equipment.
- (p) Cleaning
  - (i) Clean all Work in accordance with Section 01710 – Cleaning.
  - (ii) Before energizing any systems, inspect and clean the inside of panel boards, motor control centres and cabinets to ensure that they are completely free from dust and debris.
  - (iii) Remove all debris, surplus material and all tools.
- (q) Temporary Service
  - (i) Temporary electrical service shall be provided, as required.
  - (ii) Temporary service shall include building lighting for Metrolinx.
  - (iii) Provide extension cords, extension lighting and equipment required for the Work of this trade. The cost of this Work shall be included in the bid price.



(r) Voltage Ratings

(i) Operating voltages shall be as indicated in C.S.A. C235.

(A) Motors, electric heating, control and distribution devices and equipment must operate satisfactorily at 60 Hz, and within the operating limits established by the above code, without damage to the equipment.

(B) Motors supplied by all Sections up to and including 375W (1/2hp) shall be 120V, 1ph, and 562W (3/4hp) and larger shall be 208V, 1ph unless otherwise specified.

(ii) Warning Signs

(A) Provide warning signs as specified to meet requirements of department of labour safety inspection, inspection department, authorities having jurisdiction and Metrolinx.

(B) Use decal signs in English as required by the Authorities.

(s) Product Delivery, Storage and Handling

(i) Storage of materials, equipment and fixtures

(ii) At all times keep Metrolinx's property in clean and tidy condition and properly store and stack all materials neatly upon the site so as not to litter the premises.

(iii) Store packaged materials and equipment in original undamaged condition with manufacturer's labels and seals intact or properly crated where such applies. Prevent damage to materials during handling and storage. Keep storage area dry and secure from pilfering.

(iv) Be responsible for the maintenance and operation of all equipment supplied. All equipment installed will be the full responsibility of this Contractor until accepted by Metrolinx or its representative. Protect all equipment to prevent its misuse since all damage will be the Contractors' responsibility.

2. Products

(a) Materials

Standards of materials and Equipment:

(i) Items on subsequent divisions of these specifications are listed with the names of specific manufacturers. The price submitted for this Contract shall be based on the use of materials and equipment specified.



- (ii) Any equipment submitted must not exceed space requirements.
- (iii) All of the materials required for the performance of the Work shall be new and the best of their respective kind and of a uniform pattern throughout the Work.
- (iv) All equipment and material shall be CSA approved.

**3. Execution**

**(a) Preparation**

- (i) Co-ordination
  - (A) Start Work and proceed as soon as possible after the Contract has been let and in accordance with the construction schedule.
  - (B) All items to be built-in, including all anchors and bolts shall be supplied as and when required by the trades concerned, together with templates of measurements or both.
  - (C) Co-operate with other trades whose Work attached to, or is affected by the Work of this Contract, to ensure a satisfactory installation and to avoid delays in the completion of all the Work concerned.

**(b) Installation of External Conduits**

- (i) Excavating and Backfilling
  - (A) Excavating and backfilling for electrical Work where required for electrical installations, provided by division 16.
- (ii) Trench Excavation
  - (A) Excavate to alignment and grade required for placing of underground services. Brace and dewater trench so that workmen can Work safely and efficiently in accordance with safety and excavator's protection acts.
  - (B) Provide hand digging in locations where machine is not accessible.
- (iii) Bedding
  - (A) Prepare bottom of trench by removing unsuitable material, debris and other irregularities which may interfere with a proper installation. Compact loose or disturbed areas to ensure continuous



support of conduit or cable. Cover bottom of trench with sand to a depth of 76mm (3") minimum. All conduits or cables must be inspected and approved by Metrolinx or its representative and local hydro authority prior to covering.

(B) After laying conduits place compacted sand to a level of 200mm minimum around the conduit. Fill and compact both sides of the conduit to ensure position of the conduit is not disturbed in the process, and uniform support around the conduit is produced.

(C) Place treated wood planks as required.

(iv) Backfilling

(A) Do not commence backfilling until Work is to be covered has been inspected by Metrolinx or its representative.

(B) Eliminate boulders larger than 203mm (8") in their greatest dimension from backfill placed over the conduit or cable.

(C) Backfill with acceptable granular materials.

(D) Indiscriminate bulldozing of backfill into excavations is not acceptable. Re-excavate and re-backfill excavations where backfilling was carried out contrary to the specifications.

(E) Backfill structures uniformly on all sides so that unbalanced loading does not occur.

(F) Complete backfilling to required grades making due allowances for finish grades. Maintain surface drainage. Do not leave depressions which collect water and reduce effective compaction attained. Restore settlement or backfill area by filling with appropriate approved material to required grade.

(v) Placing and Compaction

(A) Employ only approved compaction equipment suitable type for type of material being placed, degree of compaction required and working space available.

(B) Make good of existing disturbed surfaces, etc., inside and outside the building where required for electrical installation, provided by division 16.

END OF SECTION



1. **GENERAL**

a) **Description**

- i) Section 16100 – Basic Materials and Methods applies to and governs the Work of all sections of Division 16.
- ii) The Work described in this section consists of the supply and installation of basic materials, for the purpose of establishing the quality standards that form the basis of the electrical design.
- iii) Related Work Specified Elsewhere.
  - (A) Electrical General Conditions Section 16010

b) **Quality Assurance**

- i) Conform to the latest editions of the following rules and regulations regarding the material and workmanship:
  - (A) CSA - Canadian Standard Association
  - (B) EEMAC - Electrical and Electronic Manufacturers Association of Canada
  - (C) CEC - Canadian Electrical Code (CSA C22.1)
  - (D) OHESC - Ontario Hydro Electrical Safety Code
  - (E) OPSS - Ontario Provincial Standard Specifications
  - (F) OPSD - Ontario Provincial Standard Drawings
  - (G) Enersource Mississauga Requirements and Standards
- ii) Work Force
  - (A) Make available a foreman to supervise the electrical installation on this job, who is experienced in handling jobs of this type and magnitude. Prior to appointing this foreman, his qualifications shall be submitted to Metrolinx or its representative for review and approval. It is imperative that this foreman cooperate fully with other trades, and his services shall be available at all times on the site as soon as construction commences until such time as the Contract has been completed to the satisfaction of Metrolinx or its representative.
- iii) Reference Standards
  - (A) Ontario Provincial Standards Drawings
  - (B) Ontario Provincial Standard Specifications.
- iv) Submittals
  - (A) In accordance with Section 1300 – Product data, provide all submittals.



- (B) Submit a completed list of proposed basic materials, including manufacturer's name, Product identification data as well as technical characteristics.
- (C) Submit a detailed outline of proposed test procedure on all electrical equipment to Metrolinx or its representative for approval.

2. **PRODUCTS**

a) **Materials**

- i) Regulatory Requirements.
- ii) Ensure that all equipment and materials supplied under this section are new and are Canadian Standard Association (CSA) approved.

b) **Conduits, Raceways and Fittings**

- i) Underground Raceways
  - (A) Underground raceways shall be rigid PVC or PVC embedded in concrete. Provide factory elbows/bends, couplings.
  - (B) PVC embedded in concrete shall be used in heavy traffic areas, e.g., bus loops.

c) **Cable Clamps and Connectors**

- i) Provide Burndy, type "TH" cable clamps, or approved equal.
- ii) Provide Thomas and Betts compression connectors or wing - guard edged screw connectors shall be used.

d) **Wires and Cables**

- i) All wiring shall be copper with 600-volt insulation of chemically cross-linked thermosetting polyethylene material suitable for 90 °C operation, RW90.
- ii) Conductors shall be stranded.
- iii) Conductor sizes shall be as indicated on the Drawings.
- iv) All cables and wiring shall be colour coded as follows:
  - (A) volt, 1 phase, 3 wire - black, red phases and white neutral.
  - (B) volt, 3 phase, 4 wire - red, black, blue phases and white neutral.



## BASIC MATERIALS AND METHODS

VARIOUS LOCATIONS  
EMERGENT EXTERIOR WORKS  
CONTRACT NO. IT-2018-1w-247

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e) Wire and Cable Connectors

- i) Provide Burndy "Hylug" type connectors, or approved equal, unless otherwise supplied at the equipment, for connecting of power conductors.
- ii) Provide Thomas & Betts "Sta-Kon" locking spade type connectors, or approved equal, for connecting control conductors where screw type terminals are used.

f) Cable and Wire Markers

- i) Provide Electrovert "Uni-Label" type, or approved equal, cable markers at each end of cable termination with cable number identification as shown on cable schedules.
- ii) Provide Thomas & Betts E-Z Code EDP cloth markers or approved equal, wire markers at both ends of conductor with wire identification as shown on the Drawings.

g) Supporting Devices

- i) Provide all incidental accessories, mounting hardware and miscellaneous materials required for a complete electrical system installation.
- ii) Provide preformed channels and fittings for mounting of local panels, switches, starters, contactors, etc.
- iii) Ensure that all cut pieces of material have a prime coat of zinc-rich paint before installation.

h) Handholes

- i) Handholes shall be OPSD Standards, precast concrete, 450mm dia. complete with frames and bolt down covers. Covers and frames shall be designed for the expected load from cars, buses, etc.
- ii) Existing Outdoor Cabinet and Foundation
- iii) Modify and provide all necessary equipment to complete the proposed lighting system on all the existing outdoor enclosure, electrical panel, timer, meter base, contactors, wireway, switch and fusible and non-fusible disconnect switches.

i) Staging of Light Relocation

- i) The Contractor shall maintain the existing lighting until new and relocated lighting are fully operational. Leave and maintain the relocated lights and



relocated them in staging so that the number of relocated lights shall be completed within one working day before 4:00 p.m.

j) Temporary Lighting

- i) Temporary lighting shall be provided when relocated lights cannot be operated within the same day. The contractor shall provide this temporary lighting at their own cost. The temporary lighting system shall be approved by Metrolinx or its representative prior to installation.

3. **EXECUTION**

a) Conduits

- i) The locations of conduits as shown on the Drawings are diagrammatic. Minor deviations in routing to avoid interferences may be allowed subject to the approval of Metrolinx or its representative.
- ii) Install conduit as a complete system without wires. Continue conduit from fitting to fitting and fasten securely to place. Clean and seal conduit system until wiring is installed.
- iii) Cut all conduits square and ream to remove sharp edges and burrs. Fit conduits closely and tightly in couplings and make watertight. Ensure that threads are clean and sharp to provide a low resistance ground path.
- iv) Coat threads with appropriate compound to improve conductivity of joints and to prevent seizing of joints.
- v) Field bends in PVC conduit are not allowed. Use factory bends and elbows.
- vi) Provide spacers every 1.5 m for all underground conduit. Lay conduit in straight lines and ensure sand completely envelopes conduit.
- vii) Refer to Section 02223 – Excavation, Trenching, and Backfilling for excavating and backfilling requirements.
- viii) Provide adapters for joining conduits of different materials.
- ix) Slope underground conduits to provide drainage.

b) Wires and Cables

- i) Do not pull the wires before the entire conduit system is completed, snaked and cleaned. Ensure that one rope remains in each conduit after wires are pulled.



- ii) Run power conductors full length without splices or taps from origin to destination, unless specifically called for on the Drawings.
- iii) Identify each cable and wire at both ends with proper cable and wire number as shown on the Drawings and cable schedules in all control panels, control devices, distribution panels, pull and junction boxes, etc., using approved cable and wire markers.
- iv) Use suitable non-hardening cable lubricants, where required, which do not contain any materials such as oil, grease or other compounds injurious to rubber, PVC or polyethylene.
- v) Do not make joints in raceways or handholes.
- vi) Install conduits to manufacturer's recommendations.
- c) Handholes
  - i) Install handholes flush with finished grade.
- d) Field Quality Control
  - i) Test all Work done under this section. Remedy and make good any defects disclosed by such tests and test the Work again.
  - ii) Test in accordance with approved procedure.
  - iii) Test each power conductor for continuity and grounds. Immediately following this test, connect conductor to its permanent terminal.
- e) Cleaning
  - i) Clean all equipment and blow out all dirt with compressed air.

END OF SECTION



1. **PRODUCTS**

(a) **Material**

- (i) Rigid PVC ducts for direct burial: with expanded flange ends, with minimum wall thickness at any point of 3.0 mm.
- (ii) Rigid PVC split ducts.
- (iii) Rigid PVC couplings, reducers, bell end fittings, plugs, caps, adaptors as required to make complete installation.
- (iv) Rigid PVC 90° and 45° bends as required.
- (v) Rigid PVC 5° angle couplings as required.
- (vi) Expansion joints as required.

(b) **Solvent Weld Compound**

- (i) Solvent weld compound for PVC duct joints.

(c) **Cable Pulling Equipment**

- (i) 5 mm stranded nylon pull rope tensile strength 5 kN.

(d) **Marker Tape**

- (i) Marker tape, red colour, with words "Caution Buried Electrical Cable" or similar wording, size as shown on the Drawings.

2. **EXECUTION**

(a) **Installation**

- (i) Install duct in accordance with manufacturer's instructions.
- (ii) Clean inside of ducts before laying.
- (iii) Ensure full, even support every 1.5 m throughout duct length.
- (iv) Slope ducts with 1 to 400 minimum slope.
- (v) Place protective wood planks in trench over ducts. Planks to be 38 mm thick, treated with preservatives.



- (vi) During construction, cap ends of ducts to prevent entrance of foreign materials.
- (vii) Pull through each duct steel or wooden mandrel not less than 300 mm long and of diameter 6 mm less than internal diameter of duct, followed by stiff bristle brush to remove sand, earth and other foreign matter. Pull stiff bristle brush through each duct immediately before pulling in cables.
- (viii) In each duct install pull rope continuous throughout each duct run with 3 m spare rope at each end. Leave a new pull rope after each wire is pulled through conduit.
- (ix) Install marker tape as indicated on Drawings.

END OF SECTION



1. **GENERAL**

(a) **References**

Canadian Standards Association (CSA)

- (i) CAN/CSA C22.2 No.1 8-92, Outlet Boxes, Conduit Boxes, and Fittings.
- (ii) CSA C22.2 No.45-M1981(R1992), Rigid Metal Conduit.
- (iii) CSA C22.2 No.56-1977(R1977), Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
- (iv) CSA C22.2 No.83-M1985(R1992), Electrical Metallic Tubing.
- (v) CSA C22.2 No.211.2-M1984(R1992), Rigid PVC (Unplasticized) Conduit.

2. **PRODUCTS**

(a) **Conduits**

- (i) Rigid metal conduit: to CSA C22.2 No.45, aluminum threaded.
- (ii) Epoxy coated conduit: to CSA C22.2 No.45, with zinc coating and corrosion resistant epoxy finish inside and outside.
- (iii) Electrical metallic tubing (EMT) with couplings: to CSA C22.2 No.83.
- (iv) Rigid PVC conduit: to CSA C22.2 No.211.2.
- (v) Flexible metal conduit: to CSA C22.2 No.56, aluminum and liquid-tight flexible metal.

(b) **Conduit Fastenings**

- (i) One-hole steel straps to secure surface conduits 50 mm (2") and smaller. Two-hole steel straps for conduits larger than 50 mm (2").
- (ii) Beam clamps to secure conduits to exposed steel work.
- (iii) Channel type supports for two or more conduits at 1.5 m (5'0") oc.
- (iv) Threaded rods, 6 mm (1/4") dia., to support suspended channels.



(c) Conduit Fittings

- (i) EMT fittings shall be watertight connectors and couplings. Set screw fittings are not acceptable.
- (ii) Flexible metal conduit fittings shall be screw-in type.
- (iii) Liquid type flexible metal conduit fittings shall be sealtite type.
- (iv) PVC fittings shall be PVC type complete with PVC adaptors at all boxes.
- (v) Rigid conduit and mineral insulated conduit fittings shall be threaded type.
- (vi) Coating: same as conduit.
- (vii) Factory "ells" where 90° bends are required for 25 mm (1") and larger conduits.
- (viii) Where bushings are noted to be provided they must be "screwed" type fastened to a conduit connector. Push-fit or glued in place bushings will NOT be accepted.

(d) Fish Cord

- (i) Nylon twine, 5mm, 5kN.

(e) Installation

- (i) Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
- (ii) Conceal conduits except in mechanical/ electrical service rooms and in unfinished areas.
- (iii) Use rigid galvanized steel conduit except where specified otherwise.
- (iv) Use EMT conduit in electrical and communication rooms. All other areas must use rigid galvanized steel conduit as noted in this specification.
- (v) Use epoxy or PVC coated rigid galvanized steel conduit in all exposed public areas and where exposed conduit is to be installed outdoors, in all tunnels and underground piping enclosure.
- (vi) Use Rigid PVC conduit underground.
- (vii) Use flexible metal conduit for connection to motors in dry areas, connection to fixtures.



- (viii) Use liquid tight flexible metal conduit for connection to motors or vibrating equipment in damp, wet or corrosive locations.
- (ix) Minimum conduit size for branch circuits shall be 19 mm (3/4").
- (x) Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- (xi) Mechanically bend steel conduit over 25 mm (1") diameter.
- (xii) Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- (xiii) Install fish cord in empty conduits.
- (xiv) Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.
- (xv) Dry conduits out before installing wire.
- (f) Surface Conduits
  - (i) Run parallel or perpendicular to building lines.
  - (ii) Locate conduits behind infrared or gas fired heaters with 1.5 m (5') clearance.
  - (iii) Run conduits in flanged portion of structural steel.
  - (iv) Group conduits wherever possible on suspended or surface channels.
  - (v) Do not pass conduits through structural members except as indicated.
  - (vi) Do not locate conduits less than 75 mm (3 ") parallel to steam or hot water lines with minimum of 25 mm (1") at crossovers.
  - (vii) Do not fasten surface conduit larger than 25 mm (<1") to roof deck. Provide standoffs or supports as manufactured by Caddy or use unistrut trapeze fastened to structure.
- (g) Conduits in Cast-In-Place Slabs on Grade
  - (i) Run conduits 25 mm (1") and larger below slab and encased in 75 mm (3") sand envelope

END OF SECTION



**1. GENERAL**

**(a) Scope of Work**

- (i) All existing posts and signs be removed for re-paving or site work.
- (ii) The Contractor to provide and install new sign posts, yellow sleeve, sign faces and all required hardware.
- (iii) The Contractor is responsible for locating services in the area where posts are to be installed.
- (iv) All signs shall be installed facing the correct direction for their intended purposes. Metrolinx reserves the right to instruct the Contractor to have the sign reinstalled at the Contractor's own cost should it not be the case.

**2. PRODUCTS**

- (i) Signs are to be supplied by the Contractor.
- (ii) Sign post consists of 3m U-channel post driven into the ground approximately 500 - 600 millimetres.
- (iii) For Metrolinx signs yellow sleeve must meet requirements stated in GO Signage Catalogue and Design Requirements Manuals (DRM) which the Contractor shall familiarize himself/herself with.

**3. EXECUTION**

The Contractor is to perform the following activities:

- (i) Core drill a minimum 76 mm diameter hole through asphalt at each post location as identified on plan, excess material to be removed offsite.
- (ii) Drive 3 m U-Channel into hole approximately 500 - 600 mm, deep being careful not to damage top flange of post. Or set post in the hole at plumb position and pour ready mix concrete and fill to finish grade where required. Concrete to be 30Mpa or approved equivalent.
- (iii) Place yellow plastic sleeve over post immediately after erection of post. Sleeve to slide to base of granulars inside core drilled hole.
- (iv) Install all signage including all required stainless steel hardware.

**END OF SECTION**





Name of Vendor:		Vendor Project Manager:	
Street:	City:	Province/State:	Postal/ZIP Code:
Original Contract Date	Contract No. IT-2018-1w-247	Project No. 153206	
Contract Name:	Emergent External Works at Various East Region Locations		
Category of Work:	Construction Services		
Division:	Station Construction and Commissioning	Branch:	East
Project Coordinator:			

Scale	0: Unacceptable - Does not meet any requirements of the key performance indicator	Applied Weight	Score
	1: Poor - Meets few of the requirements of the key performance indicator		
	2: Fair - Meets some of the requirements of the key performance indicator		
	3: Satisfactory - Meets most of the requirements of the key performance indicator		
	4: Good - Meets all of the requirements of the key performance indicator		
	5: Excellent - Exceeds the requirements of the key performance indicator		

Contract Performance Rating	0%
Corporate Performance Rating (0% to 100%)	100%
Vendor Performance Rating (90% Contract Performance Rating and 10% Corporate Performance Rating)	10%

Information regarding the Metrolinx Vendor Performance Management System and how a Vendor Performance Rating is calculated can be found in the Metrolinx "Vendor Relationship Management Procedures and Guidelines v1.1 dated November 7, 2016", or most current version, accessed through the following link:  
[http://www.metrolinx.com/tenders/en/VendorRelationshipManagement\\_Guidelines.pdf](http://www.metrolinx.com/tenders/en/VendorRelationshipManagement_Guidelines.pdf).





METROLINX

# **METROLINX CAPITAL PROJECTS GROUP (CPG) CONSTRUCTION SAFETY MANAGEMENT PROGRAM (CSMP)**





## DOCUMENT CONTROL

<b>Title:</b>	<b>Construction Safety Management Program (CSMP)</b>
<b>Document number:</b>	<b>CSMP-05</b>
<b>Reviewed by:</b>	<b>Eric Hopkins, Senior Manager, CMO</b>

<b>Revision No.</b>	<b>Date</b>	<b>Author</b>	<b>Revision Description</b>
1.0 (Initial)	November 17, 2009	Resource Environmental Associated Limited (REA)	--
2.0	March 1, 2011	David Swanson	--
3.0	February 1, 2012	David Swanson	--
4.0	May 1, 2014	David Swanson	--
5.0	May 2017	Ana Derksen	See Appendix 34 for details



## EXECUTIVE SUMMARY

Metrolinx recognizes that contracted construction work places the organization in the capacity of a "Project Owner" as defined in Ontario's Occupational Health and Safety Act ("Act"). Furthermore, the overlap of multiple contracted construction works, other contracted services, and/or the Corporation's workforce, identifies Metrolinx as the "Constructor" under the Act.

As a result, this Construction Safety Management Program ("CSMP" or "Program") has been developed to meet Metrolinx's legal responsibilities as either the "Project Owner" or "Constructor" to ensure contractor compliance, and protect the health and safety of all persons on the Metrolinx Property. The CSMP provides a framework for the application of consistent practices across Metrolinx's corridors and infrastructure groups. The CSMP is owned and administered by the Construction Management Office ("CMO") enacted by the Vice President of Capital Project Groups ("CPG") and approved by the President and CEO of Metrolinx.

This Program applies to all persons performing construction and maintenance work on Metrolinx Property within CPG delineated areas but does not apply to rail operating personnel, passengers, the public nor emergency services personnel (fire, police and ambulance).

The goal of this Program is to promote the achievement of a high degree of safety, diligent compliance with health and safety statutes and construction-related Regulations and best practices for safety applicable to construction projects.



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## SECTION A : PURPOSE FOR THIS PROGRAM

This CPG Construction Safety Management Program has been developed to:

- identify safety assurance actions to be carried out by Metrolinx as a Project Owner or Constructor during ongoing construction project activities;
- to promote and ensure safe conditions and compliance in respect of activities carried out by contractors, consultants and Metrolinx personnel on the project site;
- explain how to perform the required safety assurance actions; and
- provide forms and checklists to assist in carrying out, and creating a documented record of those actions.

The goal of this Program is to promote the achievement of a high degree of safety, diligent compliance for safety with health and safety statutes and construction-related regulations, and best practices for safety applicable to construction projects.

## SECTION B : SCOPE AND APPLICATION

This Program applies to all activities carried out by Contractors, Consultants or Metrolinx personnel on Metrolinx Property during the course of ongoing CPG construction projects, whether the work involves directly working on a construction project or work carried out involving access to a construction project in a project zone, as well as activities conducted by a Third Party within the Metrolinx Property (Constructor Stream only), and visitors where authorized.

While this Program is intended to protect the public and visitors with appropriate measures, all other persons that enter into the Metrolinx Property and do not access as part of the construction project or maintenance activity in a project zone, or do not perform construction, consulting or maintenance activities are excluded from this Program. These persons include the public, customers, passengers, train operating crews, track inspectors and emergency personnel (such as fire, police and ambulance).

## SECTION C : DEFINITIONS

### Definitions in the Occupational Health and Safety Act and Regulations

A term used in this manual which is defined by the Ontario Occupational Health and Safety Act or regulation made under, has the same meaning herein as in the Act or regulation, unless a different specific definition is provided under Section 3.0(b).

### Specific Definitions

Accident	is defined as an undesired event that results in death, injury or damage to property or process.
Adjacent Work	means any construction, maintenance or other work occurring outside of the Metrolinx Property that may impact the health or safety of persons in the Metrolinx Property.
Asbestos Containing Material (ACM)	is a material containing 0.5 per cent or more asbestos by dry weight.
Authorized Person	means a person who has: <ul style="list-style-type: none"><li>• completed CMO Contractor Orientation Training,</li><li>• been issued and is in possession of a valid personal identification card and hard hat sticker, and</li><li>• been granted access to the project site by CMO.</li></ul>



Blue Flag / Tag / Signal	refers to a system of safety standards that ensure maintenance activities on/or about rail equipment can be performed safely.
CN	means the "Canadian National Railway".
Competent Person	has the same meaning as in the Ontario Occupational Health and Safety Act, that being: a person who, <ul style="list-style-type: none"> <li>• is qualified because of knowledge, training and experience to organize the work and its performance;</li> <li>• is familiar with this Act and the regulations that apply to the work; and</li> <li>• has knowledge of any potential or actual danger to health or safety in the workplace.</li> </ul>
Construction	means the common usage of the term in its broadest sense, and includes the meaning of the term as it appears in the Ontario Occupational Health and Safety Act, that being: <i>erection, alteration, repair, dismantling, demolition, structural maintenance, painting, land clearing, earth moving, grading, excavating, trenching, digging, boring, drilling, blasting, or concreting, the installation of any machinery or plant, and any work or undertaking in connection with a Project but does not include any work or undertaking underground in a mine.</i>  The terms "Construction" and "Project" need to be read together. Where an activity within the definition of "Construction" is being performed on an object within "Project" the matter is a construction project.
Construction Incident Responder (CIR)	means a CMO member responsible to respond to the incident notice.
Construction Management Office (CMO)	Construction Management Office (CMO) which includes, the Senior Manager, Managers, Contract Administrators, Senior Supervisors, Supervisors, the Office Administrator, and the Construction Management Team. CMO is primarily involved in carrying out the role of "Owner" and/or "Constructor" for Metrolinx on CPG construction projects. CMO ensures that safety is paramount.
Construction Management Team	includes the following parties: <ul style="list-style-type: none"> <li>• CMO personnel;</li> <li>• "Consultants" as defined herein;</li> <li>• "Project Delivery Team" as defined herein;</li> <li>• "Project Lead" as defined herein;</li> <li>• "Flagmen" as defined herein (as it relates to the safe movement of Rail Equipment only).</li> </ul>
Construction Supervisor (CS)	means an employee from the CMO who has a supervisory responsibility for a project or contract, or his / her designate.
Consultant	is an individual, person or entity, engaged under contract by Metrolinx to provide professional engineering services to Metrolinx on a project basis.
Contract Authority	is CMO or CPG, as defined herein.
Contractor	is an individual, person or entity, engaged under contract by Metrolinx, or a third party, to provide Construction or Maintenance services within Metrolinx Property. A Contractor can include a General Contractor or Project Company.
CP	means "Canadian Pacific Railway".



Capital Projects Group (CPG)	means the business group tasked with providing infrastructure to Metrolinx, and includes the term Capital Infrastructure.
CROR	means "Canadian Railway Operating Rules".
Critical Injury	as defined by Regulation 834, s.1, Occupational Health and Safety Act.
CSMP	means the "Construction Safety Management Program".
Designate	is a person appointed by a CMO employee to perform a function on his / her behalf.
Designated Employee in Charge	is defined as a contractor's competent supervisor or site superintendent. In reference to track protection, the Employee in Charge is the assigned Flag Person for the site.
Designated Substances	means any substances subject to regulation under the Ontario Occupational Health and Safety Act.
Flag Person	referred to as "Flag Person" in this manual, means a railway employee qualified in the Canadian Rail Operating Rules, who provides protection for the safe movement of trains.
General Contractor	is the individual, person or entity, engaged under contract by Metrolinx to provide Construction services within Metrolinx Property who is solely responsible for performing the work it is contracted to perform and is identified as the "Contractor" in the contract.
Metrolinx Property	see "Property" definition.
GO or GO Transit	is a Division of Metrolinx and usage of the name GO or GO Transit on any document or sign is deemed to be a reference to Metrolinx and a document or sign is not invalid or ineffective by reason only that it uses such name.
GO Transit Control Centre (GTCC)	is the central communications hub for rail, customer contact and bus operations.
GO Transit Safety Officers	are Sworn Peace Officers with certain police powers who patrol the GO system.
GO Railway Corridors (GRC)	means any Metrolinx- owned Rail Corridor and corridors in which Metrolinx operates. GRC does not include Facilities, Stations, and Layover Yards.
Incident	is defined as an unforeseen event or occurrence, which may not result in death, injury, or damage to property or process, and includes near-misses and accidents.
Joint Health and Safety Committee (JHSC)	means the Joint Health and Safety Committee of the Contractor.
Job Safety Briefing	means the required briefing provided by the Contractor or an authorized person (CMO personnel where required) for the purpose of accessing Metrolinx Construction Projects. Focus is placed on site-specific hazards and methods of track protection.
Layover Yard	is the yard where trains are stored for a defined period of time, where maintenance and cleaning activities may be performed.
Loss	is described in terms of injury, damage to property or disruption to work or service.
Maintenance	means the common usage of the term in its broadest sense, and for purposes of this procedure includes cleaning, repair or servicing of any installed equipment, device, utility service, building system, or facility.
Manager, Construction Management	means the Metrolinx Manager or Senior Manager responsible for the Construction Management Office.
Manual	see "Program" definition.



Metrolinx	is an agency of the Government of Ontario and includes GO Transit, Presto and UP Express.
Ministry of Labour (MoL)	means the Provincial group that administers and enforces the requirements of the Occupational Health and Safety Act and regulations.
Ministry of Environment and Climate Change (MOECC)	means the Provincial group that administers enforces the requirements of the Environmental Protection Act and regulations as well as other related statutes.
Near Miss	is an event or circumstance (close call) that has the potential to cause serious injury, property damage or unexpected death but did not occur due to chance, corrective action and or timely intervention.
Passengers and Public	means individuals that are not working or associated with construction or maintenance projects but may be impacted by said activities.
Program	means the "Construction Safety Management Program".
PDT or Project Delivery Team	includes Senior Managers, Managers, Project Managers and Project Coordinators.
Project	<p>means the common usage of the term and includes the meaning of the term as it appears in the Ontario Occupational Health and Safety Act, that being a Construction Project, whether public or private, including:</p> <ul style="list-style-type: none"> <li>○ the Construction of a building, bridge, structure, industrial establishment, mining plant, shaft, tunnel, caisson, trench, excavation, highway, railway, street, runway, parking lot, cofferdam, conduit, sewer, water main, service connection, telegraph, telephone or electrical cable, pipe line, duct or well, or any combination thereof;</li> <li>○ the moving of a building or structure; and</li> <li>○ any work or undertaking, or any lands or appurtenances used in connection with Construction.</li> </ul> <p>The terms "Construction" and "Project" need to be read together. Where an activity within the definition of "Construction" is being performed on an object within "Project" the matter is a construction project.</p>
Project Lead	means, in relation to a specific project or contract, the Construction Management Team person or designate with primary responsibility for managing that project or contract.
Project Manager	includes, but is not limited to, Metrolinx Project Managers and Project Coordinators or contracted individuals who have primary responsibility for the work and services in relation to a specific project or contract.
Project Site	is synonymous with the geographic boundaries of a specific project's limits within the USRC, GRC, WRMF, ERMF or Metrolinx Property as determined by the CMO.
Project Zone	means a specific area (zone-delimited) within the Project Site, having boundaries defined by CMO, which is the primary area of operations for that General Contractor.
Property	also referred to as "Metrolinx Property" in this manual, means real estate, owned or leased, including but not limited to the USRC, GRC, train and bus facilities, train and bus stations and parking lots.
Property Damage	physical damage to property on Construction Site or as a result of Construction
Railway Company	has the same meaning as in the Federal Railway Safety Act.



RCI or Railway Corridor Infrastructure	manages and maintains the GO owned rail corridor infrastructure.
Rail Equipment	means a machine that is constructed for movement on lines of railway, whether or not the machine is capable of independent motion or a vehicle that is constructed for movement both on and off lines of railway while the adaptations of that vehicle for movement on lines of railway are in use.
Red Flag	is a safety system that controls the entry of rail movements onto a specific track(s) to allow various activities to be performed safely.
Risk Assessment	means the process of identifying the hazard(s), actual / potential for harm and controls associated with a defined task. The purpose is to reduce the risk of injury, illness or damage to persons, equipment, machinery and/or infrastructure.
ROW	means the rail Right-of-Way.
Safety Standard	is defined as the most stringent applicable provision of a statute, regulation, procedure, or requirement pertaining to work place health and safety, whether provincial, federal or Metrolinx policy.
Senior Construction Supervisor	holds supervisory responsibility over the several Construction Supervisors.
Significant Non-Compliance	means non-compliance with a Safety Standard including, but not limited to: <ul style="list-style-type: none"> <li>• lock-out and tag-out</li> <li>• isolation of high pressure systems</li> <li>• confined space entry</li> <li>• live electrical work</li> <li>• work requiring fall protection</li> <li>• designated substances abatement</li> <li>• Right-of-Way protection</li> <li>• trenching and excavation</li> <li>• utility locates</li> <li>• vehicle operations</li> </ul>
SOC	means "Station Operations Central".
SOE	means "Station Operations East".
SOW	means "Station Operations West".
Sub-contractor	has the same meaning as "Contractor".
Supervisor	is defined as a person with supervisory authority in relation to work carried out on Metrolinx projects, and includes, but is not limited to Senior Construction Supervisors, Construction Supervisors, Project Leads, Station Operations Supervisors, Metrolinx Managers and Directors, and any other person with supervisory authority over activities performed on Metrolinx project sites.
TSSA	means the Technical Standards Safety Authority.
Third Party	means any person performing work on, above, or adjacent to Metrolinx Property that does not have a legal contract for work with Metrolinx or any of Metrolinx Contractors, Constructor Stream only.
TOP	means "Track Occupancy Permit".
Track Protection	is a prescribed form of "Positive Protection" required to allow work in the vicinity of live tracks.
Track Supervisor	means a member of a Rail Maintenance Facility whose task is track maintenance as well as track protection when necessary.
Railways	means The Toronto Terminals Railway Company Limited, CN, CP, and VIA among others.



USRC	means the "Union Station Rail Corridor", the rail corridor located approximately between Strachan Avenue and the Don River.
Site Visitors' Permit	one-time authorization for a visitor to be on site without CMO Contractor Orientation training, subject to the permit restrictions.
Visitor	means any person that: <ul style="list-style-type: none"> <li>o that does not have a legal contract for work with Metrolinx or any of Metrolinx's contractors,</li> <li>o is not regularly employed in the project zone and who is performing only visual inspection work, and/or</li> <li>o is not involved in the physical execution of the project work.</li> </ul>
Work Operation	includes any Construction Project, Operations or Maintenance activity.
Work Plan	detailed description of a contractor's proposed work activities which addresses relevant OHS concerns. CMO uses work plans to promote safe work practices, coordinate overlapping work and arrange for appropriate track protection.
Worksite	means one of multiple work areas within a Project Zone under the control of a General Contractor for that Project Zone. A Worksite can be further defined by the presence of the General Contractor's personnel carrying out work.
Written Safety Ticket	document issued by CMO specifying contraventions with the CSMP, OHS legislation or unsafe practices.
WRMF	means the "Willowbrook Rail Maintenance Facility".
Yard Safety Watch	is a system of safety standards that utilizes a designated Track Supervisor to monitor movements around the facility while work is being performed without prohibiting rail operations.
Zone	is defined as a specific area (zone-delimited) within the USRC, GRC, WRMF or Metrolinx Property, which is the primary area of operations for that General Contractor.



## SECTION D : METROLINX HEALTH AND SAFETY POLICIES FOR PROJECTS

### D 1.0 CMO Health and Safety Policy

There is no higher value or priority than safety. Metrolinx recognizes that all employees have the right to work in a safe and healthy workplace; this includes the safety of contractors, consultants, visitors and the public during the course of construction projects and maintenance activities. Metrolinx and its employees are committed to preventing occupational illness and injuries to employees, contractors, consultants, visitors and to carrying out all owner, employer and constructor obligations in relation to construction projects and maintenance activities.

Metrolinx and Capital Projects Group (CPG) Senior Management are committed to providing the appropriate standards, policies, and procedures that are timely and relevant. These standards, policies and procedures will be communicated to achieve our goal of controlling potential hazards that may result in property damage, accidents, and occupational illness and injury.

Metrolinx supports its commitment by complying with, and ensuring the compliance of, all relevant Occupational Health and Safety (OHS) legislation and construction-related Regulations and managing good industry practices for health and safety.

Metrolinx procures construction and maintenance work using the most appropriate method available: design-build (DB), design-bid-build (DBB), design-build-finance (DBF), etc. The resultant procurement model positions Metrolinx to occupy one of three roles based on the contractual relationships, corporate involvement in executing the work, and the work environment:

- Owner Only, whereby Metrolinx does not meet the definition of a “Constructor”, does not manage or arrange track protection, and the work is not performed within our operational environment;
- Project Owner, whereby Metrolinx manages or provides track protection or the work is performed within our operational environment;
- Constructor, whereby Metrolinx meets the definition under Ontario’s Occupational Health and Safety Act.

The Metrolinx Construction Management Office (CMO) functions to support and protect CPG’s OHS liabilities as a Project Owner or Constructor. CMO will manage its responsibilities during these types of work by adhering to the following objectives:

- Implementing the Construction Safety Management Program (CSMP) on CPG projects where Metrolinx occupies the role of Project Owner or Constructor;
- Identifying and controlling hazards during construction projects and maintenance activities through the Construction Safety Management Program and training as prescribed by the CMO;
- Committing to work with employees to develop and implement comprehensive project safe work practices to protect health and safety and establish compliance by Metrolinx and all contractors;
- Committing to continuous improvement in OHS based on industry best practice; and
- Conducting contractor audits and reviews and setting health and safety standards for contractor competency.

Metrolinx will review this policy statement annually to confirm that the Construction Safety Management Program not only meets the requirement of legislation, but also the changing expectations of our employees, contractors, consultants, stakeholders, passengers and the general public. We will consistently improve our awareness, identification, competency, and performance in respect to health and safety governance and oversight.



John Jensen,  
President & Chief Executive Officer  
Metrolinx

May 2017



# Health & Safety Policy

Metrolinx, as an employer is dedicated to the health, safety and well-being of all its employees and is committed to conducting its operations in a safe manner in order to prevent injuries, illnesses, and damages. We will take whatever steps reasonable to protect our workers from workplace violence and harassment from all sources.

Metrolinx strives to fully comply with all health and safety legislation. Where reasonable, Metrolinx will strive to exceed legislated requirements by adopting the best practices available to protect Metrolinx employees and to promote a positive health and safety culture. Metrolinx will work towards continuous improvement on its health and safety program.

In recognition and support of the corporate goals, management ensures that employees work safely and that safe work conditions are maintained by implementation of personal injury and occupational disease prevention methods; training and competent supervision. Management will be held accountable for the health and safety of those individuals under their supervision and those workplaces under their charge. Management will ensure that all workers and supervisors have the appropriate information and instruction to protect them from violence and harassment in the workplace.

Every employee must protect his or her own health, safety and well-being, and that of any person in the workplace, by following occupational health and safety legislation, as well as Metrolinx policies and procedures. Employees must receive adequate training in their specific work tasks and must report all unsafe and unhealthy conditions to management.

Contractors and sub-contractors employed by the Corporation have a responsibility for the health, safety and well-being of all workers and, when working for the Corporation, must follow the requirements of the Occupational Health & Safety Act and the Corporation's safety programs, policies, practices, procedures and departmental requirements, where applicable.

It is in the best interest of all parties to consider health and safety in every activity. Commitment to health and safety is integral to Metrolinx, and is reflected at all levels within the organization.



Bruce McCuaig,  
President & Chief Executive Officer  
Metrolinx

January  
2017

January  
2016

January  
2015

January  
2014





### D 3.0 Metrolinx's CMO Construction OHS Policy

#### Metrolinx as "Employer"

Metrolinx has obligations to ensure the occupational health and safety of our own employees when working on our construction sites. In addition, Metrolinx could have duties under the Occupational Health and Safety Act as "employer" when contracting for the services of workers to perform work on a construction project or to perform maintenance activities or other tasks. Comprehensive obligations as "employer" exist, including ensuring that all employers comply with all applicable requirements of the Occupational Health and Safety Act and Regulations, ensuring competent supervision, ensuring training, instruction and supervision.

#### Metrolinx as a "Project Owner"

As "project owner" Metrolinx has duties under the Occupational Health and Safety Act to determine, before beginning a project, whether any designated substances (defined under the OHSA and Regulations) are present at the project site and prepare a list of all designated substances present, and provide the list to prospective general contractors and prospective contractors before entering into a binding contract with the general contractor or contractor.

As public entity, Metrolinx also takes on the obligation to protect our passengers and corporate image to the extent practicable by selecting and auditing contractors for compliance with regulatory requirements and best practices.

Where construction projects can be isolated from other project or maintenance work, General Contractors can be given full control of the site (with the exception of rail operations) and where passenger safety / Corporate image will not be jeopardized, CMO's role will be that of a Project Owner.

#### Metrolinx as "Constructor"

Where there are overlaps in construction projects initiated by Metrolinx within a defined project zone or maintenance work overlapping construction projects, Metrolinx's obligations will be that of a Constructor as defined under the Ontario Occupational Health and Safety Act.

As "Constructor", Metrolinx has duties under the Occupational Health and Safety Act to: (1) ensure that all employers and all persons on the Project site comply with all applicable requirements of the Occupational Health and Safety Act and regulations; and (2) protect the health and safety of all persons on the Project site.

In addition, if there is a need for Metrolinx to manage the work as a result of public interactions that may cause injury or illness, CMO's role will be that of a Constructor.



## **SECTION E : PROJECT OWNER OR CONSTRUCTOR : DECISION LOGIC**

Ontario's Occupational Health and Safety Act provides OHS roles and responsibilities for various workplace parties in a variety of industries. For the purposes of this Program, the Act and Construction Projects Regulation are the primary statutes that dictate this management system.

Section D 3.0, Metrolinx's CMO Construction OHS Policy, outlines in general how Metrolinx could be identified as the Project Owner and/or Constructor. Where Metrolinx is solely a Project Owner, the majority of the construction-related safety liabilities are held with the General Contractor. Where Metrolinx is the Constructor, the Corporation establishes control over the project site and accepts the associated liabilities.

The checklist in Appendix 1 provides further guidance in determining the Corporation's statutory duty and, if desired, actions that could mitigate Constructor status.



## SECTION F : DESCRIPTION OF HEALTH AND SAFETY MANAGEMENT PROCESSES FOR PROJECTS

To protect the health and safety and ensure compliance on Metrolinx Projects, Metrolinx has established the two Program Streams containing the following management processes. The extent to which each process is executed depends on the legal and contractual role of the Corporation and the need to directly ensure a safe work site.

The table below outlines, in general, the processes that apply to Metrolinx when in the role of Project Owner or Constructor. Each Program Stream has been colour coded for ease of reference throughout this document.

Table 1 : Construction Safety Management Processes

	Program Streams	
	Project Owner	Constructor
CPG Project Planning and Procurement	X	X
Health and Safety Terms and Conditions of Contracts	X	X
Health and Safety Competencies for Contractors	X	X
OHS Risk Assessments	X	X
Project Safety Kick-off Meeting	X	X
Project Emergency Planning	X	X
CPG Construction Coordination		X
CMO Constructor Coordination Meetings	X	X
GO-Safe Railway Orientation Training	X	X
CMO Contractor Orientation Training		X
Access Control Methods	X	X
Work Plan Review	(X, if necessary)	X
Track Protection	X	X
Hazardous Operations and Work Permits		X
Health and Safety Inspections		X
Health and Safety Observations and Audits	X	
Project Site Safety Rules and Procedures		X
Health and Safety Enforcement	X	X
Internal Incident Reporting	X	X
External Incident Reporting		X
Incident and Accident Investigations	(X, if necessary)	X
Contractor Monthly OHS Performance Reporting	X	X
CPG Construction Safety Performance Reporting	X	X
Program Audit	X	X
Program Review	X	X



#### F 1.0 CPG Project Planning and Procurement (Internal)

CMO will participate in procurement strategy meetings with the Project Delivery Teams ("PDT") to understand the scope of the work, the anticipated execution of the work and the potential impacts on our passengers and our Corporate image. CMO will contribute to the determination of the appropriate Program Stream (Project Owner or Constructor) to address and minimize corporate liabilities.

#### F 2.0 Health and Safety Terms and Conditions of Contracts (Internal)

Contractor Health and Safety obligations in accordance with the appropriate Program Stream will be described in contract documents. When necessary, CMO will also update contract language to reflect changes in the applicable OHS legislation.

#### F 3.0 Health and Safety Competencies for Contractor Personnel (All Streams)

CMO requires the primary Contractor at each project to supply a competent supervisor who will meet the requirements of the Constructor's supervisor.

#### F 4.0 OHS Risk Assessment (Internal)

CMO will endeavour to identify and evaluate actual and potential risks to health and safety associated with proposed contracts and projects either as stand-alone projects or within the overall ongoing Metrolinx construction projects and maintenance activities.

Risk Assessments will identify health and safety risks to workers, Contractors, Consultants, passengers, visitors and the public, and will identify any designated substances to comply with Owner obligations by Metrolinx for the purposes of inclusion into the contract language or notification to other contractors in the area.

#### F 5.0 Project Safety Kick-off Meeting (All Streams)

CMO shall attend project kick-off meetings with the PDT and Contractor(s) to communicate and review CPG's OHS Program Stream requirements for the work.

#### F 6.0 Project Emergency Planning (All Streams)

All projects are required to establish an emergency plan, prepared by the General Contractor.

CMO will review the emergency plan to ensure, where applicable, the plan aligns with rail operations and any affected operational facilities (i.e. stations) or neighbouring groups (i.e. Municipalities, property owners, etc.).

**Constructor:** In addition, where Metrolinx is the Constructor, CMO will ensure overall coordination of each contractor's emergency plans on the project site.

#### F 7.0 CPG Construction Coordination (Internal)

CMO will regularly review the potential interactions between CPG and RC-Maintenance projects across the network, where applicable.



#### F 8.0 CMO Constructor Coordination Meetings (Constructor Program Stream Only)

**Constructor:** Meetings held between CMO and Contractors will be used to coordinate projects on the Metrolinx Property. Project Health and Safety issues will be reviewed at regular project planning and progress meetings.

#### F 9.0 GO-SAFE Railway Orientation Training (All Streams)

All persons working within the rail right-of-way ("ROW") are required to have successfully completed GO-SAFE Railway Orientation Training online at [www.gotransitcontractor.com](http://www.gotransitcontractor.com) prior to commencing work. This is also a mandatory prerequisite to taking the CMO Contractor Orientation Training.

#### F 10.0 CMO Contractor Orientation Training (Constructor Program Stream Only)

**Constructor:** All persons working in the Metrolinx Property during the course of ongoing Metrolinx construction projects and maintenance activities, which are carrying out the activities or accessing a Metrolinx-Constructor project site must complete CMO Contractor Orientation Training before being granted access to the Metrolinx Project Site.

#### F 11.0 Access Control Methods (All Streams)

A variety of methods and protocols will be used to prevent unauthorized access to the Project Site, including: designation, demarcation and protection of entry / exit points, access routes and project zones; selective use of physical access controls; Contractor check-in and check-out procedures; railway ROW protection procedures (as applicable); issuance of ID cards; methods to readily identify and deal with non-authorized persons; and delivery vehicle access procedures; and visitor access restrictions.

**Project Owner:** Where Metrolinx is the Project Owner, the General Contractor will be required to ensure that only authorized personnel are allowed on site.

**Constructor:** Where Metrolinx is the Constructor, a protocol to allow for visitor access will be established.

#### F 12.0 Work Plans (All Streams)

When work will be de/mobilized and/or travelling through public areas, will have a direct effect on the public, or is outside the contractor's enclosed project area, the Contractor will be required to submit Work Plans for review and authorization by the CMO. Work Plans must provide sufficient detail regarding job hazard analysis and mitigation, public protection, worker protection, task duration, and any other information relevant to the successful completion of the Work.

**Constructor:** In addition, for projects where Metrolinx is the Constructor, Work Plans for high-risk tasks and where tasks will overlap with operations and/or other contracted work will be required for review prior to commencement.

All Work Plans must, at a minimum, meet the requirements of the OHSA.

#### F 13.0 Track Protection (All Streams)

Track Protection, or "flagging", is required where work will be performed within the ROW. Metrolinx PDTs are required to plan and request flagging in advance through CMO to ensure the safe passage of rail traffic (and thus the safety of workers) through areas under construction.



#### F 14.0 Hazardous Operations and Work Permits (Constructor Program Stream Only)

**Constructor:** Designated high hazard work activities cannot be performed on a Metrolinx Project Site until the Work Plan is reviewed and approved by the CMO, as evidenced by issuance of a Hazardous Work Permit.

#### F 15.0 Health and Safety Monitoring (All Streams)

**Project Owner:** CMO will conduct periodic health and safety observations and audits, at a frequency relevant to the Contractor's health and safety performance. CMO will monitor for overall compliance with construction-related Regulations, and with rules, programs and best practices. Reports will be issued to the PDT to facilitate communication to the General Contractor's supervisory staff.

**Constructor:** Regular health and safety inspections will be performed by the CMO and Contractors to identify and rectify deficiencies, and monitor worker compliance with construction-related Regulations, and with rules, programs and best practices.

#### F 16.0 Project Site Safety Rules and Procedures (Constructor Program Stream Only)

**Constructor:** The CMO will establish and communicate site safety rules and procedures that must be obeyed by all persons and Contractors during the course of ongoing Metrolinx construction projects and maintenance activities in a project zone. Notwithstanding, individual contractors are expected to establish complementary rules and procedures, where appropriate, for their work areas.

#### F 17.0 Health and Safety Enforcement (All Streams)

Compliance with regulatory requirements and the CSMP are necessary to maintain a healthy and safe work environment. As such, CMO will monitor projects for compliance and where necessary, issue verbal or written warnings and/or infractions to individuals and/or assist the PDT / Contract Administrator with non-compliance reports.

#### F 18.0 Internal and External Incident Reporting (All Streams)

All persons are obliged to immediately notify CMO, and follow-up with a written investigation report within 48 hours:

- prescribed health, safety or environmental incidents, including those that are reportable to the Ministry of Labour, Technical Standards & Safety Authority, and Ministry of Environment and Climate Change,
- any incident that could affect rail or bus operations, and
- any incident involving a member of the public.

**Constructor:** In addition, for projects where Metrolinx is the Constructor, the Contractor shall also immediately notify CMO of any other prescribed exposure or spill incidents and significant near miss incidents. For all incidents, a complete investigation report shall be submitted within 48 hours of occurrence. Metrolinx will provide external incident reporting to regulatory bodies where required.



#### F 19.0 Incident and Accident Investigation (All Streams)

**Project Owner:** The CMO may participate in investigations of any incident causing, or had the potential to cause, significant harm or loss to persons, property or equipment, for the purpose of identifying ways and means of reducing future risks.

**Constructor:** The CMO will investigate any incident causing, or with potential to cause significant harm or loss to persons, property or equipment, for the purpose of identifying ways and means of reducing risks.

#### F 20.0 Health and Safety Performance Reporting (All Streams)

**Project Owner:** Health and safety performance will be measured through the submission of the Contractor's monthly safety-reports and analyzed to promote continuous improvement.

**Constructor:** Contractor health and safety performance will be measured through inspection activities and incident reporting, and will be analyzed and used to promote continuous improvement.

#### F 21.0 Program Review

Metrolinx will review audit findings and periodically review CMO program operations and results, with the goal of identifying and implementing opportunities for improvement.

#### F 22.0 Program Audit

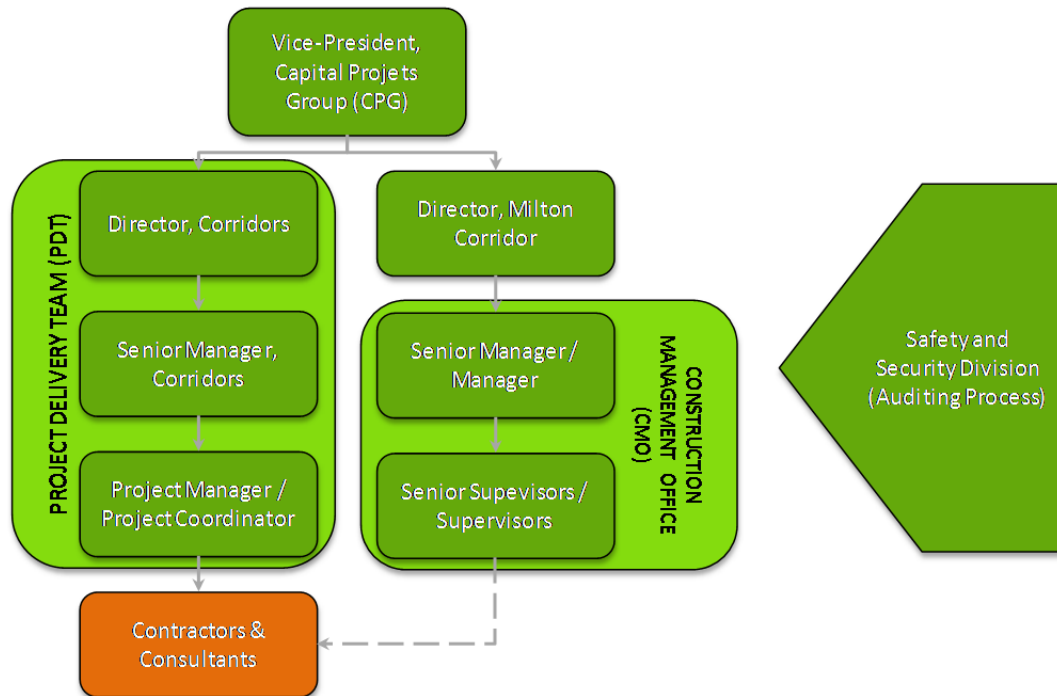
Internal and external audits will be conducted to evaluate implementation and impacts of the management processes listed above, alternating every other year.



## SECTION G : FUNCTIONAL ROLES AND RESPONSIBILITIES

### G 1.0 Organizational Reporting Hierarchy

The diagram below illustrates the organizational reporting hierarchy for CPG project safety management.



### G 2.0 Functional Roles and Responsibilities

#### G.2.1 Project Delivery Team

- G.2.1.1 Engage CMO at the onset of project planning to determine Metrolinx's role in construction activities.
- G.2.1.2 Collaborate with CMO during the development of contracts to ensure appropriate OHS language is included.
- G.2.1.3 Collaborate with CMO in completing an OHS risk assessment prior to tendering and on-going during a project as required.
- G.2.1.4 Complete and include a Designated Substance Report in tender documents where applicable.
- G.2.1.5 Attend the project kick-off meeting.
- G.2.1.6 Ensure that Contractors develop and submit a Project Emergency Plan.
- G.2.1.7 Attend the CPG Construction Coordination meetings.
- G.2.1.8 Attend the Constructor Coordination meetings.
- G.2.1.9 Complete required railway and CMO training programs.
- G.2.1.10 Ensure that Contractors define and gain approval for access points and routes associated with the Project.
- G.2.1.11 Ensure that Work Plans are submitted in advance of work for review and coordination, as applicable.



- G.2.1.12 Ensure that Track Protection is requested only where applicable Work Plans have been successfully reviewed.
- G.2.1.13 Review and action (as required) OHS deficiencies as reported by CMO.
- G.2.1.14 Ensure that Contractors submit Monthly OHS Performance Reports.
- G.2.1.15 Provide feedback for Contractor's Vendor Performance Reports.
- G.2.2 Construction Management Office
  - G.2.2.1 Participate in project planning to determine Metrolinx's role in construction activities.
  - G.2.2.2 Ensure that risk assessments are completed.
  - G.2.2.3 Review and revise health and safety terms and conditions, as appropriate, in response to regulatory changes and/or changes in Metrolinx management practices.
  - G.2.2.4 Ensure that a site specific overall emergency plan is developed and implemented.
  - G.2.2.5 Ensure that each General Contractor prepares an emergency plan and copies are forwarded to Metrolinx Rail Operations and Railways or Bus Operations, as applicable.
  - G.2.2.6 Collaborate with Metrolinx internal stakeholders (GO Rail Corridors, Metrolinx Personnel, and GO Rail Operations / Bus Infrastructure and Bus Operations) and ensure that Contractors are aware of designated entry / exit points and access routes for their projects.
  - G.2.2.7 Provide quarterly OHS performance reports to the PDT.
  - G.2.2.8 Where Metrolinx is the Project Owner,
    - Conduct OHS observations on a periodic basis and provide reports to the PDT.
    - Conduct audits of the Contractor's program on a periodic basis and provide reports to the PDT.
  - G.2.2.9 Where Metrolinx is the Constructor,
    - Ensure that a Notice of Project is filed with the Ministry of Labour, as applicable. Further, ensure that other required notices for Asbestos Removal, Window Cleaning, Trenching Operations, and Tunnels, Shafts, Caissons and Cofferdams are also filed with the Ministry as applicable.
    - Notify Contractors of any designated substances present at the Metrolinx projects or in a project zone.
    - Provide and ensure delivery of orientation training.
    - Audit Contractor's delivery of CMO Contractor Orientation Training.
    - Receive and file Contractor Orientation Training records.
    - Ensure the installation of requisite access control signage.
    - Apprise Contractors of the contact / check-in procedures for delivery vehicles.



- Review and ensure Work Plans comply with the CSMP and do not pose an unreasonable risk to operations or the public.
  - Issue work permits, where required and safe to do so.
  - Conduct a comprehensive health and safety inspection at each project site no less than once per week.
  - Chair constructor coordination meetings.
  - Ensure that all accidents and incidents are investigated and corrective actions have been taken. Copies of accident and incident reports are to be forwarded to the PDT and Rail/Bus Operations.
  - Be watchful for unescorted non-authorized persons and escort them off the property or request assistance from Metrolinx Safety and Security or the police to do so.
  - Receive and approve requests for visitor access, where determined to be appropriate and safe to grant visitor access.
  - Review and process requests for Third Party access to the Metrolinx Property (Constructor Stream only).
  - Facilitate track protection for Third Party projects, where applicable.
- G.2.3 All Contractors, Consultants, and Third Party Personnel within a Metrolinx Constructor project or affecting a Metrolinx project
- G.2.3.1 Appoint a competent supervisor.
- G.2.3.2 Comply with all their company's health and safety procedures in addition to CMO requirements.
- G.2.3.3 Enforce compliance with health and safety requirements in respect of all persons within the Contractor's project zone.
- G.2.3.4 Develop an emergency plan for the General Contractor's project and location of operations, taking into consideration emergency exits and if necessary adopt existing site procedures.
- G.2.3.5 Post in accessible place documents prescribed by OHSA and regulations.
- G.2.3.6 Conduct and/or communicate information from the Job Safety Briefing to workers and document, as necessary.
- G.2.3.7 Assess and control hazards within the assigned project zone on a frequent basis to provide a safe working environment.
- G.2.3.8 Provide CMO Contractor Orientation Training where such responsibility has been delegated by the CMO.
- G.2.3.9 Ensure that all personnel on site successfully complete railway and/or CMO training as required.
- G.2.3.10 Provide PPE for all site personnel.
- G.2.3.11 Comply with check-in and sign-in procedures.
- G.2.3.12 Be watchful for unescorted non-authorized persons and escort them off the property or request assistance from CMO, Metrolinx Safety and Security, or the police to do so.



- G.2.3.13 Select representatives for the Joint Health and Safety Committee.
- G.2.3.14 Deliver Safety Tool Box talks on a regular basis.
- G.2.3.15 Follow the instructions of the Flag Person at all times, as applicable.
- G.2.3.16 Within the ROW, provide 24 hour advance notice of deliveries (48 hours if additional assistance is required, i.e. crane delivery, trailers, etc.).
- G.2.3.17 Maintain equipment in good operating condition.
- G.2.3.18 Report incidents, as prescribed in this Program.
- G.2.3.19 Provide information about the work as requested/required by the CMO or contract documents (i.e. Work Plans).
- G.2.4 Safety and Security Division
  - G.2.4.1 Provide support to CMO as necessary.
  - G.2.4.2 Conduct a comprehensive audit of the Program in accordance with Section FF.



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## **SECTION J : HEALTH AND SAFETY COMPETENCIES FOR CONTRACTOR PERSONNEL (All Streams)**

- J 1.0 The primary Contractor at the project shall submit to CMO a completed *Declaration of Competent Supervision* form (see Appendix 3) prior to the start of work, when supervisory staff change and at least once every 12 months.
- J 2.0 The primary Contractor's competent supervisor, or an alternate competent supervisor (with submission of declaration), shall be present and on site during the performance of any work performed by the Contractor or sub-trade.
- J 3.0 The primary Contractor's competent supervisor shall perform all the functions of a Constructor's Supervisor, including but not limited to a documented weekly inspection of all machinery, equipment, buildings, means of access and egress and any other matter that may adversely affect health and safety.
- J 4.0 In the case where a sub-trade does not have five or more workers on site and does not provide a competent supervisor for that particular work, the General Contractor or hiring Contractor's competent supervisor shall be recognized as the supervisor for that work.
- J 5.0 All workers are expected to have received health and safety instruction and training in accordance with the Contractor's internal policies and procedures, legislated requirements and best practices. CMO reserves the right to request proof of training.



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## **SECTION L : PROJECT SAFETY KICK-OFF MEETING (All Streams)**

- L 1.0 Prior to the commencement of project-related work, the Consultant or General Contractor shall attend a safety kick-off meeting with the PDT and CMO. The intent of this meeting is to proactively and clearly communicate CPG's OHS management system requirements for a safe construction site.
- L 2.0 The items contained in Appendix 5 shall be reviewed and discussed, and documentation (as applicable) collected prior to site work.
- L 3.0 CMO shall chair the OHS items and,
  - Record discussions and decisions relating to OHS.
  - Approve minutes.
  - Distribute minutes within 48 hours of conclusion of the meeting to all attendees.
  - Maintain minutes in the project file.



## **SECTION M : PROJECT EMERGENCY PLANNING (All Streams)**

### **M 1.0 Requirement for Approved Emergency Plans for All Metrolinx Contracts**

- M.1.1 An emergency plan meeting the requirements of M 4.0 herein must be prepared by the General Contractor, reviewed, and supported by CMO prior to the commencement of work under any Metrolinx contract.

### **M 2.0 Hazard / Risk Analysis as the Basis for Emergency Planning**

- M.2.1 Effective emergency planning is based upon an analysis of hazards and risks. Therefore, there must be some degree of informal or formal emergency scenario assessment as the basis for development of emergency plans.
- M.2.2 The General Contractor is responsible for ensuring that potential emergency scenarios and associated hazards and risks are identified in the course of emergency plan development.

### **M 3.0 Structure of Emergency Plans for CPG Projects**

- M.3.1 For all CPG projects, there shall be:
  - M.3.1.1 An emergency plan developed by each General Contractor, for that General Contractor's respective scope of work and locations of operations.
  - M.3.1.2 Where there are multiple Contractors in adjacent or overlapping areas, CMO shall ensure that:
    - there is consistency amongst all of the General Contractors' emergency plans,
    - the need of local facility / stakeholder requirements are sufficiently addressed,
    - major emergency scenarios that would have significant potential impacts on the affected project areas, rail operations, the public, adjacent properties, and / or Metrolinx assets are sufficiently addressed, and
    - an overall emergency plan is developed and communicated to the affected project GCs including facilities' personnel where applicable.

### **M 4.0 Plan Content Requirements**

- M.4.1 All emergency plans shall address the following requirements, to a degree that CMO deems adequate for the needs and circumstances of the project:
  - M.4.1.1 Description of the Potential Emergency Scenarios Considered in Plan
  - M.4.1.2 Development and Conclusions Regarding Likelihood / Risk of Occurrence
  - M.4.1.3 Means of Communicating an On-Site Emergency
  - M.4.1.4 Means of Communicating an Off-Site Emergency
  - M.4.1.5 Initial Emergency Response Actions – On-Site Emergencies
  - M.4.1.6 Initial Emergency Response Actions – Off-Site Emergencies
  - M.4.1.7 Evacuation from Project Area
  - M.4.1.8 Evacuation from Metrolinx Property
  - M.4.1.9 Specific Provisions for Identifying and Addressing the following (Originating in or Outside the Project Area):
    - Medical Incident or Physical Injury



- Fire or Explosion
- Security Threat
- Structural Collapse (specify types envisioned)
- Vehicle Accident
- Train Accident
- Falling Object
- Chemical Spill
- Inclement Weather
- Seismic Event
- Natural Gas Leak
- Flooding
- Responsibility for Coordination of Emergency Response
- On-Site Equipment and Resources Provided for Emergency Response
- Off-Site Support Services and Facilities Information
- Procedures for Communications with Government Authorities, the Media, Passengers, and the Public
- Emergency Contact List
- Relevant Maps and Drawings
- How Plan Information is communicated to Persons Who Need to Know
- Procedure for Emergency Drills
- Any other Emergency Scenario which will not be covered by the plan.

M 5.0 Minimum components of an Emergency Evacuation Plan:

M.5.1 Emergency contact names and numbers (Emergency Response Coordinators)

M.5.2 The responsibilities of all parties and stakeholders involved.

M.5.3 Method of “sounding the evacuation alarm”

M.5.4 Location address, map and evacuation routes, directions, access points.

M.5.5 Location and signage for assembly areas.

M.5.6 Procedures for head counts.

M.5.7 Communication protocols

M.5.8 Defined means and procedures for educating site staff on process of evacuation.

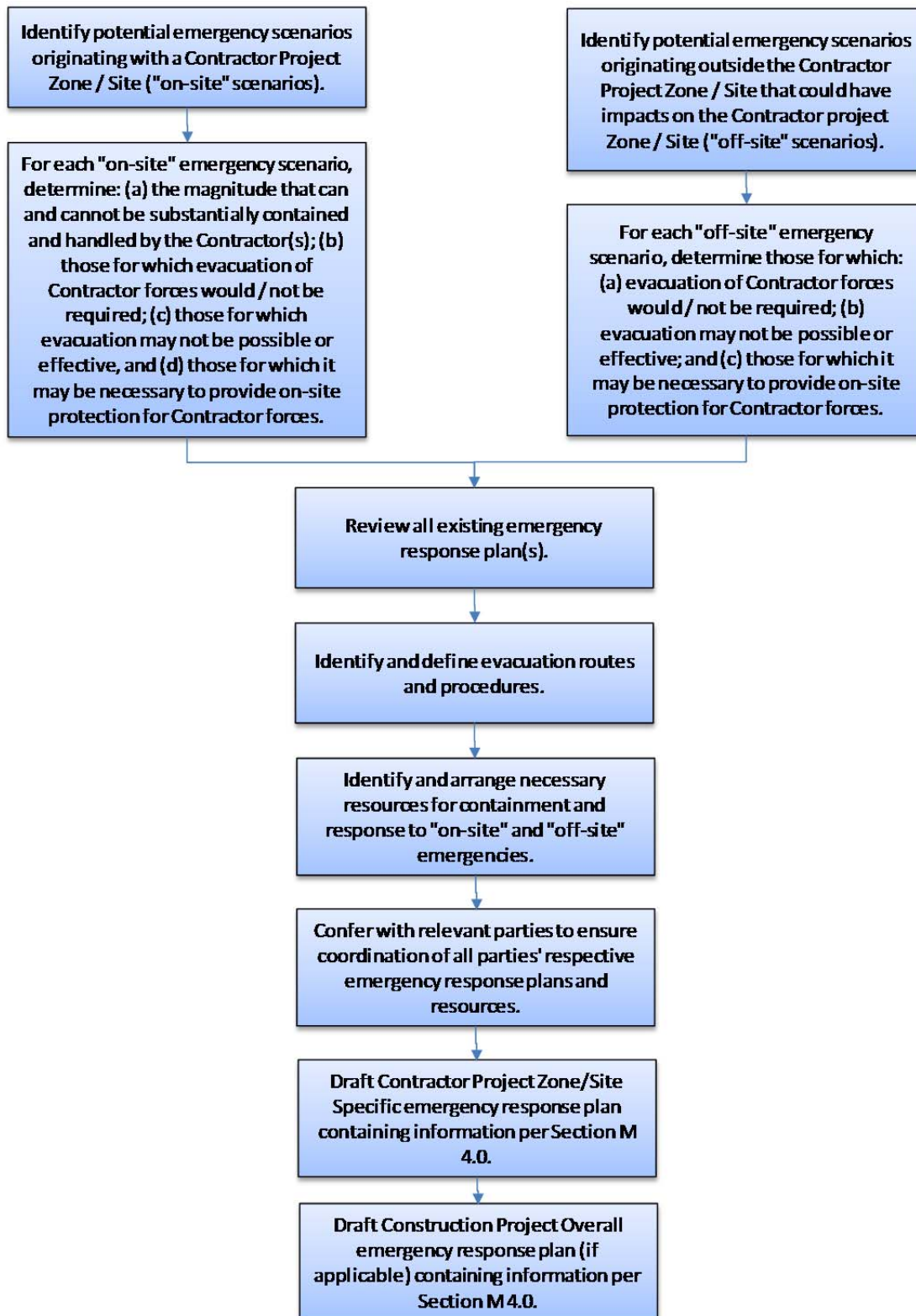
M 6.0 An Emergency Evacuation Plan Checklist is provided in Appendix 6.

M 7.0 Emergency Plan Development Process

The following flow chart illustrates the Emergency Plan Development Process.



## EMERGENCY PLAN DEVELOPMENT PROCESS





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## **SECTION O : CMO CONSTRUCTOR COORDINATION MEETINGS (Constructor Program Stream Only)**

### **O 1.0 CMO Constructor Coordination Meetings**

- O.1.1 CMO shall establish and chair Constructor Coordination Meetings for each Corridor.
- O.1.2 Constructor Coordination meetings shall be held at least monthly but the frequency may be increased as necessary.
- O.1.3 The Constructor Coordination Meetings are to:
  - O.1.3.1 address overlaps of contractors within one or more constructor areas,
  - O.1.3.2 identify upcoming or current situations where other activities may overlap with constructor areas, and
  - O.1.3.3 identify upcoming or current situations where other activities may overlap with owner areas.
- O.1.4 OHS shall be the first agenda item of all constructor coordination meetings. Items for potential discussion in respect of OHS include:
  - O.1.4.1 Review of significant or common non-compliance inspection findings and deficiency correction.
  - O.1.4.2 Hazards and risks of upcoming operations.
  - O.1.4.3 Review of trends associated with Contractor's monthly OHS submissions.
  - O.1.4.4 Reminders of necessary elements of CSMP as appropriate.
  - O.1.4.5 Government enforcement agency site visits.
- O.1.5 Attendance at these meeting shall include CMO, PDT and a knowledgeable representative from each project to speak to site activities. This knowledgeable person may be the PDT, General Contractor, Sub-contractor or Consultant.
  - O.1.5.1 Knowledgeable representatives shall attend the meetings at least two weeks in advance of any site work and throughout the duration of the work.
  - O.1.5.2 Knowledgeable representatives shall be prepared to communicate the following information, at a minimum:
    - schedule of impact work
    - boundaries of impact work
    - access paths
    - equipment / processes employed

### **O 2.0 Minuting Requirements**

- O.2.1 Discussions and decisions relating to Health and Safety will be minuted by CMO.
- O.2.2 Minutes shall be approved by the meeting chair.
- O.2.3 Minutes shall be distributed within 48 hours of conclusion of the meeting.
- O.2.4 Minutes shall be maintained in the project file.
- O.2.5 A Constructor Coordination Meeting Form is provided in Appendix 7.





## **SECTION P : GO-SAFE RAILWAY ORIENTATION TRAINING (All Streams)**

- P 1.0 No person, including Contractors, Consultants, inspectors, supervisors, representatives from architectural or engineering firms, or others shall be permitted to work within the ROW without first successfully completing the on-line GO-SAFE Railway Orientation Training program.
- P 2.0 The GO-SAFE Railway Orientation is accessed at [www.gotransitcontractor.com](http://www.gotransitcontractor.com) and is under the control of GO Transit's Rail Corridor Group.



## SECTION Q : CMO CONTRACTOR ORIENTATION (Constructor Program Stream Only on ROW)

### Q 1.0 Mandatory Requirements for Access to CPG Constructor Project Sites

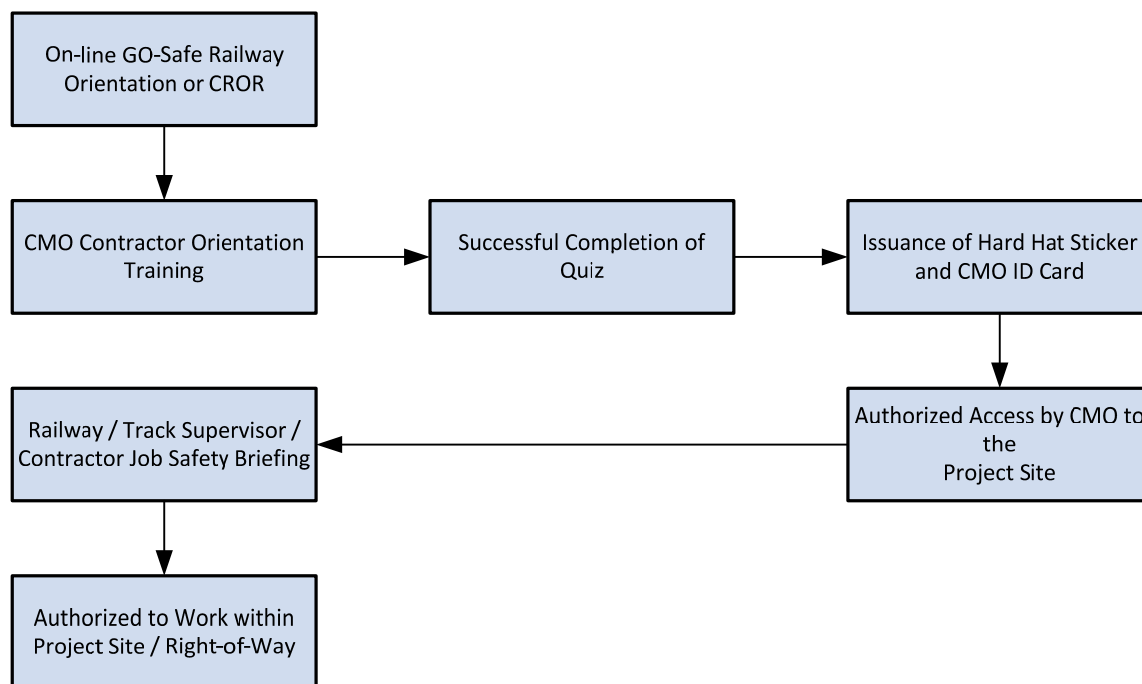
Q.1.1 Within or adjacent to the ROW, no person, including Contractors, Consultants, inspectors, supervisors, representatives from architectural or engineering firms, or others (excluding Visitors as defined in this Program and as permitted access under Section S of this Program), shall be permitted access to Metrolinx Constructor project sites without first successfully completing:

Q.1.1.1 the on-line GO-Safe Railway Orientation;

Q.1.1.2 the CMO Contractor Orientation Training Program; and

Q.1.1.3 the Job Safety Briefing from the Railway, Track Supervisor (rail yards) or Contractor.

Q.1.2 Completion of the on-line GO-Safe Railway Orientation is a pre-requisite for the CMO Contractor Orientation Training, which in turn is a pre-requisite for the Flag Person's / Track Supervisor's / Contractor's Job Safety Briefing, as illustrated in the following flow-chart:





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## **SECTION S : ACCESS CONTROL METHODS (All Streams)**

### **S 1.0 Designation of Entry / Exit Points, Access Routes and Physical Barriers**

S.1.1 For all contracts during ongoing construction projects and maintenance activities on Metrolinx Property, the following must be defined in advance of work operation commencement:

- points of entry / exit from public or private roadways;
- pathways / access routes between the public roadway way entry / exit points, and the local project work zone;
- points of entry / exit to the local project work zone;
- pathways / access routes to be used by the Contractor for movement about Metrolinx Property;
- the manner by which access routes will be demarcated;
- the manner by which the local Project Zone(s) will be demarcated;
- whether the local project zones will require physical access controls, such as fencing, hoarding or similar barriers, and gates.

### **S 2.0 Demarcation and Communication of Entry / Exit Point, Access Routes and Gates**

S.2.1 Points of entry / exit to local project zones must be demarcated by signage in the format shown in Appendix 13.

S.2.2 Points of entry / exit for project personnel or equipment from public or private roadways to Metrolinx property should be demarcated in accordance with the guidance in Appendix 13.

S.2.3 All points of entry / exit and access routes should be marked on drawings (as applicable), and specified in contract documents (if appropriate).

S.2.4 The Project Lead must ensure that all Contractors are aware of the designated entry / exit points and access routes.

S.2.5 The Project Lead shall determine whether Metrolinx and/or its Contractors shall supply and install requisite signage.

### **S 3.0 Physical Access Controls**

S.3.1 If physical access controls are deemed necessary for the local Project Zone(s), the determination of the specific controls should be made in accordance with the guidance in Appendix 14.

S.3.2 Where gates are employed to prevent public access, the gates must be closed and locked from the non-project zone side at all times except when opened to permit access by authorized persons.

### **S 4.0 Contractor and other Persons Check-in and Sign-in Upon Arrival In or Adjacent to ROW**

S.4.1 Every shift where required, the Contractor shall contact the Flag Person upon arrival and follow the Flag Person's instructions relating to job activities. Contractors and other persons will sign-off with the Flag Person after receiving the Job Safety Briefing who may check for completion of pre-requisite training.

S.4.2 Every day, each Contractor shall require each of its on-site workers and any other persons accessing their work area to complete a sign-in and sign-out record, identifying the worker's first and last name, the worker's CMO ID card number (if



applicable), the time signed-in, and the time signed-out. These records shall be produced as requested..

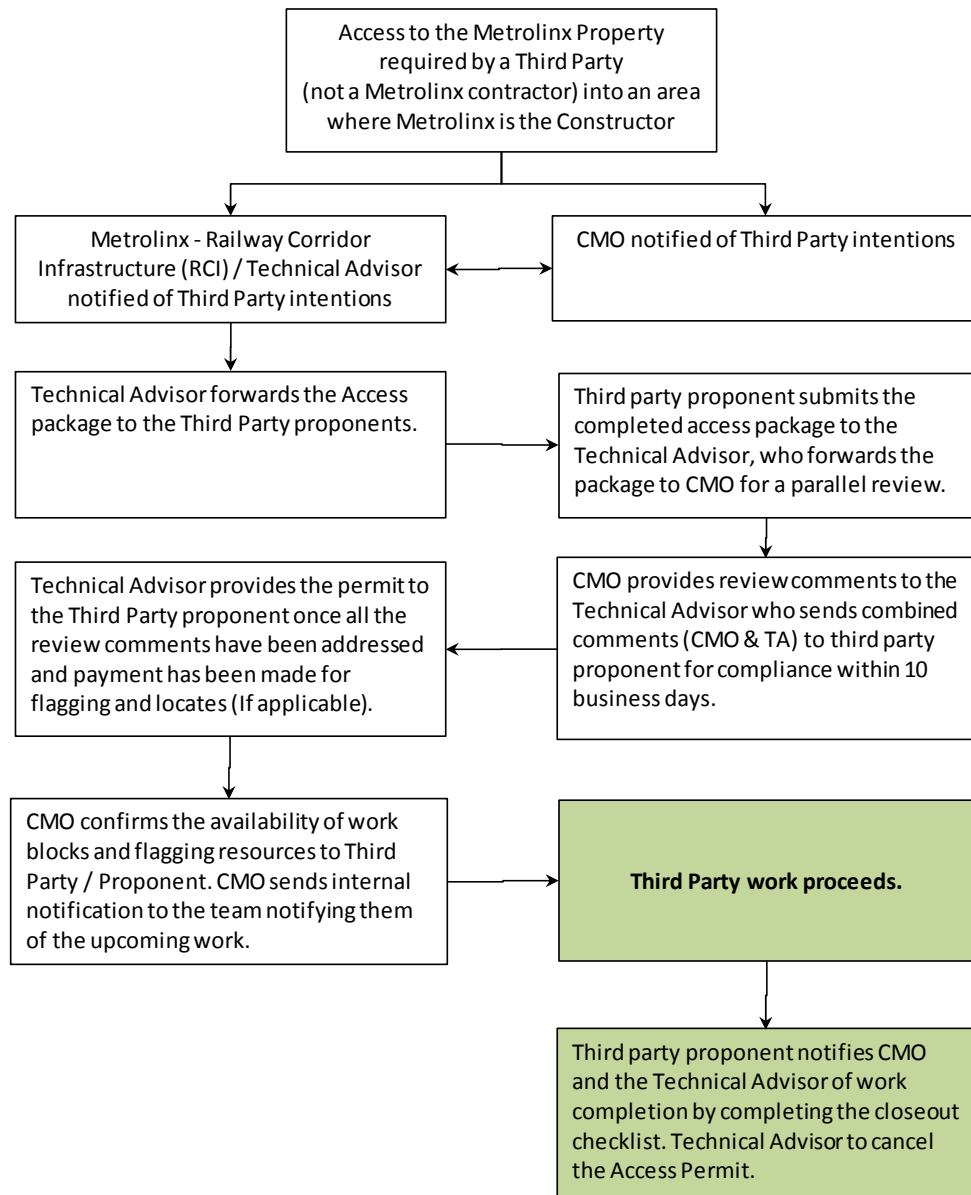
#### S 5.0 Third Party Access

- S.5.1 Third Party personnel attending during ongoing construction projects and performing work or maintenance activities on, above or adjacent to areas where Metrolinx is the Constructor must obtain permission to access the Metrolinx Property and abide by all administrative Constructor requirements as outlined in this Program.
- S.5.2 Metrolinx's Technical Advisor shall review all third party applications and protect the interest of Metrolinx for all Third party works within/adjacent to a railway corridor.
- S.5.3 The Technical Advisor shall review the request and shall determine whether a legal agreement is required before granting access.
- S.5.4 Third Party proponents shall complete and forward an Access package to the Technical Advisor.
- S.5.5 CMO and the Technical Advisor shall review the document in parallel and provide comments to the proponent within 10 business days. CMO shall comment on impacts to operations or construction, required training requirements and OHS concerns.
- S.5.6 Only upon the satisfaction of the Technical Advisor and CMO, will the Third Party be granted access and permission to perform their work as proposed in their Work Plan and only when the work can be coordinated with existing work adjacent, above or below the area.
- S.5.7 In accordance with the Permit, Third Party personnel must, on a daily basis; call into the CMO Emergency Line prior to starting work and at the end of the day when they have completed their work.
- S.5.8 Upon completion of the work, the Third Party must notify CMO, who will cancel the CMO Access Notification Permit.

This process is detailed in the following flow chart.



## THIRD PARTY ACCESS PROCESS



### S 6.0 Identifiers for Authorized Personnel

S.6.1 The only persons authorized to access the Project Site or Zone within the ROW are persons who have successfully completed GO Safe Railway Orientation training.

S.6.2 The only persons authorized to access the Project Site or Zone where Metrolinx is the Constructor are:

- persons who have completed CMO Contractor Orientation Training and have proper identification including both a CMO hard hat sticker and ID card, or
- a Visitor who is accompanied at all times by a person described above and who has authority and control over said Visitor.



- S 7.0 Visitor Access Protocol where Metrolinx is Constructor
- S.7.1 Visitor Access must be approved by CMO via the Site Visitor Permit ("SVP") found in Appendix 16.
- S.7.2 CMO will consider if access by the Visitor is necessary and appropriate, whether safety requirements can be met during the visit, what specific construction-related PPE and if any other measures are required. If approved, a Site Visitor Permit ("SVP") may be issued.
- S.7.3 An SVP may only be issued once per Visitor per Project Zone. Successful completion of the CMO Orientation is required prior to any subsequent visits.
- S.7.4 Visitors must comply with the Rules stipulated on the Permit.
- S.7.5 NOTE: Drivers of delivery vehicles within the ROW are exempt from the protocol above as long as they remain in their cabs or stay at their vehicle while on the Project.
- S 8.0 CMO Identification (ID) Cards
- S.8.1 CMO ID cards remain property of Metrolinx and must be surrendered on demand and upon the completion of the recipient's work on the Metrolinx project.
- S.8.2 Contractors are responsible for ensuring that their personnel surrender their CMO ID cards when required to do so, and for the return of cards to CMO.
- S 9.0 Dealing with Unescorted Non-Authorized Personnel
- S.9.1 It is a responsibility of all authorized personnel to:
- Be watchful for the presence of unescorted non-authorized persons.
  - Verbally communicate with non-authorized persons to query their business on site, and advise that they are not allowed to be present without an escort,
  - Escort co-operative persons out of the project zone, or arrange for a supervisor do so.
- S.9.2 If an unescorted non-authorized person refuses to leave the project zone or property, call for assistance from Transit Safety at 1-877-297-0642 or report the incident to the police at 911. The Willowbrook Rail Maintenance Facility has an additional advisory requirement at (416) 253-1303 x 4311. Note the physical characteristics that can be used by security personnel to identify the individual (i.e. hair color, hair length, identifying clothing, etc.).
- S 10.0 Compliance with Railway ROW or Track Protection Procedure
- S.10.1 The Project Lead shall ensure that Contractors are apprised of railway ROW protection procedures applicable to the project zone.
- S.10.2 Prior to commencement of work, the Flag Person or Track Supervisor (rail yards) providing railway ROW or track protection for the Contractor shall brief all of the Contractor workers on railway ROW or track protection procedures.
- S.10.3 All Contractor personnel must follow instructions of the Flag Person or Track Supervisor (rail yards) at all times.
- S 11.0 Delivery Vehicles where Metrolinx is the Constructor
- S.11.1 At commencement of work operations, the Contractor shall apprise the Project Lead or designate of general plans with respect to deliveries to site.
- S.11.2 The Contractor shall give 24 hours advance notice of deliveries to the Project Lead (deliveries for the General Contractor or its sub-contractors) for standard deliveries



such as materials or tools. The contractor should give 48 hours advance notice of deliveries for items which require additional assistance; such as cranes, trailers etc. so access can be arranged through a Flag Person, Track Supervisor (within a rail yard) and a qualified representative of the contractor. The contractor may also be subject to contractual requirements on notice.

- S.11.3 The Project Lead shall apprise the General Contractor of contact / check-in procedures for delivery vehicles.
- S.11.4 The Contractor shall apprise its sub-contractors of contact / check-in procedures for delivery vehicles.
- S.11.5 Where warranted, instructional signage for delivery vehicles should be posted at points of entry / exit to the Project site, and entry / exit to the receiving / laydown area, and / or project zone.
- S.11.6 At all times while in rail environment, delivery vehicles must be under the direction of a Flagmen, Track Supervisor (yards), and a qualified representative of the Contractor.
- S.11.7 The Flagmen is responsible for instructing the delivery vehicles' operators to ensure that they comply with railway ROW and/or track protection requirements.
- S.11.8 The representative of the Contractor is responsible for ensuring the delivery vehicle complies with Site Safety Rules and Procedures relating to vehicular traffic and signal persons.

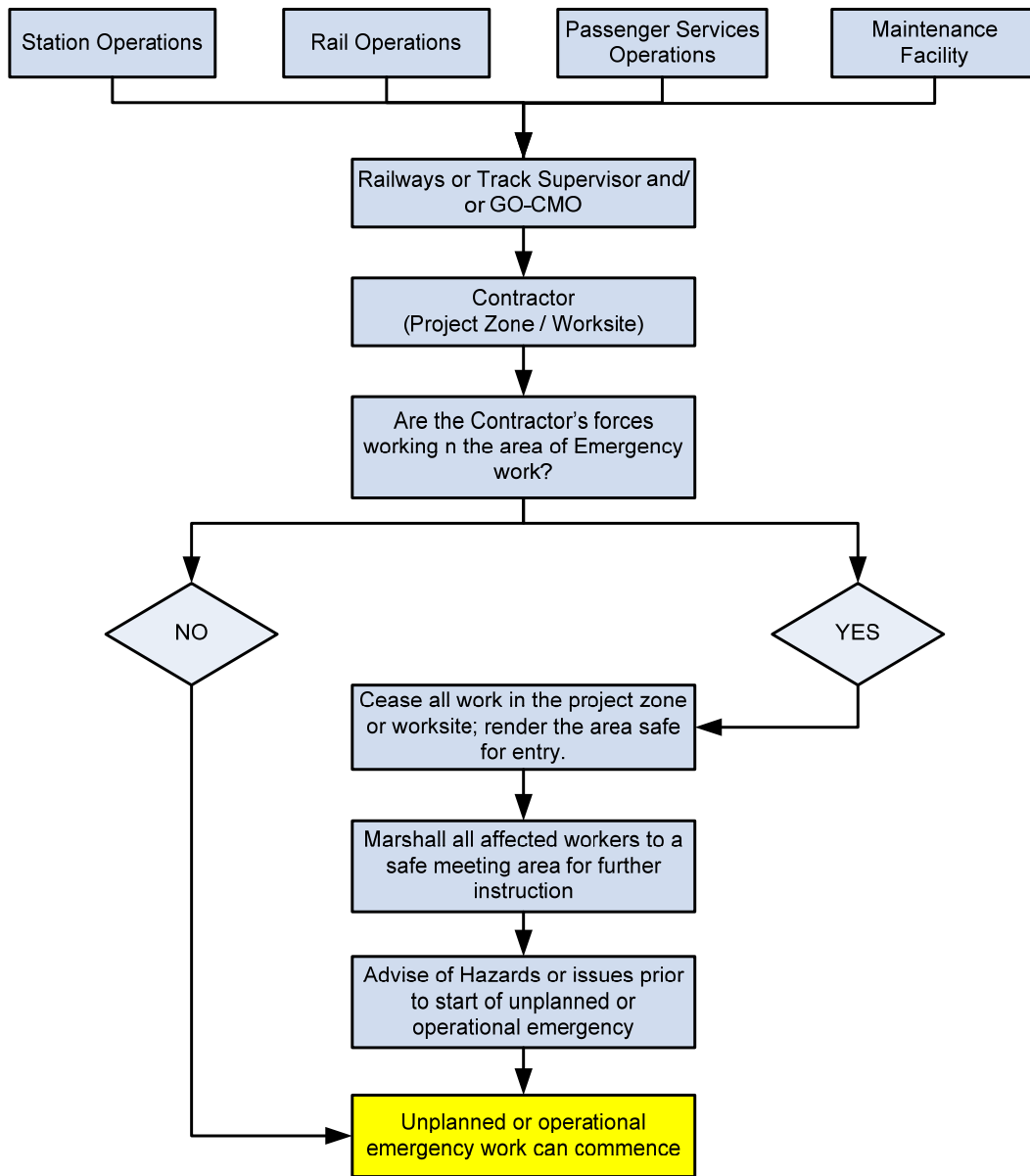
#### S 12.0 Unplanned Maintenance or Operational Emergencies Within the ROW

- S.12.1 In the event of a situation where access to a Contractor's project zone is required in order to permit the continuous movement of rail traffic, the Flag Person or Track Supervisor (in rail yards) and/or CMO has priority and will advise the Contractor.
- S.12.2 Unplanned maintenance or operational emergencies may be initiated by any of the following groups:
  - Railways
  - Rail Operations
  - Station Operations Central
  - Passenger Services Operations

The process is detailed in the following flowchart:



## UNPLANNED MAINTENANCE OR OPERATION EMERGENCIES





## SECTION T : WORK PLAN REVIEW (All Streams)

- T 1.0 Where Metrolinx is the Project Owner, when work will be de/mobilized and/or travelling through unprotected public areas, may have a direct adverse effect on the public or is outside of the Contractor's enclosed project area, the Contractor will be required to submit a Work Plan to CMO for review and authorization to work.
- T.1.1 Work Plans must provide sufficient detail regarding public protection, task duration and any other information relevant to the successful completion of the work.
- T.1.2 The content of the Work Plan shall include the elements included in Appendix 17A.
- T 2.0 The following requirements pertain to where Metrolinx is the Constructor:
- T.2.1 Site Specific Work Plans
- T.2.1.1 Contractors are required to submit Work Plans in accordance with the following:
- Individual Site Specific Work Plans are required for each task or activity to be performed on site. Each Site Specific Work Plan shall be submitted a minimum of 15 business days in advance of planned work start date using CMO Site Specific Work Plan template. Work Plans shall include approved CMO - Work Permit(s) as attachment(s), if applicable.
  - Contractors may also submit their own corporate work plan so long as they include, as a minimum, the information required by this Section. Any alternatively formatted document must be approved by CMO.
  - The Contractor shall submit the Work Plan to the PDT, who in turn will distribute it to the stakeholders (including CMO) for review. Contractors shall allow five to 10 business days for the PDT to issue comments from stakeholders. In the event that the Contractor's Work Plan is rejected, a revised work plan shall be submitted addressing the reasons for rejection of the plan.
  - The Contractor has the responsibility to coordinate individual work plans by their sub-contractors prior to submission to the PDT / CMO. Work Plans that include individual work plans as attachments with no coordination between them, will be rejected.
- T.2.2 Scope
- T.2.2.1 All site tasks or activities, whether intrusive or non-intrusive, shall be properly planned to ensure safe, efficient and timely completion of the work.
- T.2.2.2 The Work Plan shall address the resources, methodology, permits, potential risks and associated control measures, and timing of a task to ensure that once the task commences it can proceed without delay.
- T.2.2.3 Work must be planned to be completed within the allotted time, in a safe manner, and to so as not disrupt Metrolinx's operations.
- T.2.2.4 The Work Plan shall be sufficiently descriptive to meet the needs of a multi-user intended audience as follows:
- CMO- The contractor shall ensure that each Work Plan will comply with all safety standards (OHSA, CMO CSMP, and related Codes and Regulations), whilst maintaining operational service.
  - Stakeholders- Rail Operations, Station Operations, Rail Corridors, VIA Rail, CN, and CP are some of the stakeholders that must be taken into consideration



when developing a Work Plan. In order to maintain operational services, the Work Plan must have a backup plan, in case the task can exceed the time scheduled to complete and thus impact operations.

- The Contractor shall be the holder of the site copy of the Work Plan. As such, the Plan shall fully define the work to be undertaken; the processes, the systems, equipment and methodologies to be employed in the execution of the Work; the safety arrangements including Site and Track Protection; and the emergency and contingency measures in the event of accident or incident occurrence.
- Site Staff- The Contractor's site staff shall be coordinated and directed by competent supervisors. They shall be briefed on the content of the Plan and shall be able to reference the Plan in the event of accident or incident occurrence.
- Flagging Personnel- Flagmen will ensure the safe movement of rail traffic at the site, in accordance with the Work Plan. Flagmen will discuss execution of the Work Plans with the Contractor but shall retain ultimate authority for rail protection issues and will exercise such authority as required. The Plan shall contain sufficient detail to enable such staff to properly protect the work
- Public- Work Plans shall ensure the Public and Passengers will be protected from any hazards due to constructions and that the site will be clean and safe when available to public, if applicable.

T.2.2.5 Where portions of the Work Plan will be identical in scope, execution and method, it shall be permissible to produce Generic Plans with Site Specific Addenda. Such Plans shall be restricted to those activities that can be clearly demonstrated to be identical.

T.2.2.6 CMO shall retain the right to reject the use of Generic Plans, where the work is deemed to be inconsistent across locations. Should the Generic Plan be rejected, the Contractor shall provide, prior to the start of any work, a Plan specific to the location.

T.2.2.7 Where Generic Plans are accepted, Site Specific Addenda shall be provided for each specific Work location documenting the site specific details.

#### T.2.3 Content

T.2.3.1 The Work Plan content shall include the elements included in Appendix 17A.

T.2.3.2 Where items are not applicable to the Work Plan, Contractor shall designate with "N/A". Do not leave blank. If the Contractor decides to submit their own Work Plan document, all items listed in this section must be part of the alternate document. CMO reserves the right to reject a Work Plan that does not show sufficient information or if it is not presented orderly and neat.

T.2.3.3 The Contractor is responsible for ensuring all information in the Work Plan is complete and accurate. CMO Work Plan template provides the minimum expectation of quality from the Contractor

#### T.2.4 Execution

T.2.4.1 Briefings- All staff shall be briefed regarding the nature of the work and contents of the Work Plan prior to entry to a Work location. This includes all Contractor personnel as well as any third party, including Owner or Flagging company staff. The Contractor's site supervisor shall be responsible for such



briefings. All parties shall sign the relevant section of the Work Plan to indicate that they have been briefed on the content. The Contractor shall, through questioning, confirm the understanding of all parties of the content of the Work Plan. The Work Plan briefing may be combined with the Flag Person briefing given prior to commencement of work on each shift.

T.2.4.2 No work shall proceed unless the Contractor has received acceptance of the Plan from the Project Lead.

T.2.4.3 All work shall be executed in accordance with the accepted plan.

T.2.4.4 Any variation required in the construction methodology shall require the Work to be suspended, re-planned, rescheduled and undertaken in accordance with the revised Work Plan. Such changes shall be subject to re-submittal of the Plan for Owner acceptance.

T.2.4.5 The Contractor shall not put public safety at risk or disrupt service; if work has to be stopped or left incomplete, contractor must make the site safe and clean prior to release back to public / stakeholders.

T.2.4.6 Changes of a minor nature shall be permitted to be implemented at the Contractor, CMO PDT and Flag Person's discretion.

T.2.4.7 In the event of a complaint being made, whether safety related or not, the Contractor shall investigate and correct immediately and inform the Project Lead or call CMO Emergency line to inform the incident. The Project Lead will direct the Contractor regarding further action, including resumption or postponement of the Work.

T.2.4.8 In the event that a breach of safety occurs, the Contractor shall instruct all parties to retreat to a designated safe location and re-brief them regarding safety procedures and the Work Plan. Further breaches shall result in the expulsion of the offending party from the Site as detailed in Section 22 (c) "Rules and Discipline".

T.2.4.9 In the event of an accident or incident all work shall be suspended, unaffected equipment, tools and plant shall be removed to a designated safe position and all parties shall retreat to a designated safe position as directed by the Contractor and/or Flag Person. The Contractor shall implement the Emergency Measures and Contingency Arrangements section of the Plan and notify the CMO immediately that the situation has arisen.

#### T.2.5 Post Execution


T.2.5.1 The Contractor shall provide a written report of all safety breaches, accidents, incidents, staff refusals to work (Right to Refuse Unsafe Work) and complaints encountered during the Work to the CMO for acceptance. The report shall provide details of all such occurrences along with relevant Contractor investigation and recommendations.

T.2.5.2 The Contractor shall ensure that all lessons learned are included in updated revisions of active and subsequent Work Plans.

#### T.2.6 Site Walk Work Plans

T.2.6.1 A Site Walk Work Plan is required in order to understand where work will be performed outside of the delineated space of a Contractor's construction site, advise and /or avoid overlap of work, and arrange for suitable track protection.



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- T.2.6.2 A Site Walk Work Plan is intended for site visits where no tool-in-hand work is performed with the exception of survey work performed on foot.
  - T.2.6.3 A Site Walk Work Plan is not required for activities within the delineated space of a Contractor or General Contractor's site.
  - T.2.6.4 The submission, review and execution of a Site Walk Work Plan is identical to that of a Site Specific Work Plan.
  - T.2.6.5 The Site Walk Work Plan template is provided in Appendix 17B.
  - T.2.7 Speciality Guidelines for Traffic Control Work Plans can be found in Appendix 18.



## SECTION U : TRACK PROTECTION (All Streams)

### U 1.0 General

- U.1.1 Track Protection, or “flagging”, is the process by which railway qualified individuals provide services designed to ensure the safe passage of rail traffic through areas under construction. These individuals, trained under the Canadian Rail Operating Rules (CROR), coordinate track protection using either track occupancy permits (TOPs) or “Rule 42”. Track protection is an essential and mandatory requirement for any construction work occurring on or adjacent to a rail corridor.


### U 2.0 Requirements

- U.2.1 Contractors working on projects involving track protection may not enter areas exposed to rail traffic without the permission of the flagging provider.
- U.2.2 Track protection personnel (or “flag persons”) will obtain any necessary track closures or protection through communication with the host railway’s dispatcher. Only once this protection is established, and contractor personnel are properly briefed, may construction activities commence.
- U.2.3 If there are any significant changes in the current protection situation the track protection personnel may reconvene contractor staff to advise on the new information.

### U 3.0 Requesting Track Protection

- U.3.1 Metrolinx PDTs must extrapolate their planned work out to ensure the proper track protection and work blocks can be established. The week before the track protection is required, the consultants or Metrolinx PDTs must verify their forecasts proposed in their original request.
- U.3.2 Track protection is requested by completing the latest version of the “Flagging Request Form” and submitting the document to the appropriate email address noted below.
  - U.3.2.1 Note: Metrolinx will not correspond directly with contractors and will only accept requests from Metrolinx employees or approved project consultants.
  - U.3.2.2 Requests for track protection where Metrolinx is the Owner are to be emailed to [flaggingrequests@gotransit.com](mailto:flaggingrequests@gotransit.com). Work Plans may be required in the cases where work is performed outside of the delineated zone(s), where the public may be endangered and/or where rail operations may be affected.
- U.3.3 Metrolinx PDTs or approved project consultants must ensure all fields are populated appropriately, including project billing codes for later invoicing. Project locations, corridor mileage, requested duration of protection, and a summary of planned activities are to be included in the request.
- U.3.4 Confirmation of flagging protection is provided the Friday prior to the week of the request.
- U.3.5 Track protection requests may be cancelled in advance of the work based on the following timetables:
  - U.3.5.1 For flagging on Metrolinx property, short notice cancellation charges will incur against your project if a minimum of 24-hour notice is not provided.
  - U.3.5.2 For flagging on CN property, flagging charges will incur against your project if cancellations are not made by the end of Thursday prior to the week of the request.



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- U.3.6 Contractors shall share their planned activities with the site flag persons. This sharing of information helps the track protection provider better appreciate, and accommodate, the contractor's intended daily Work Plans.



## **SECTION V : HAZARDOUS OPERATIONS AND WORK PERMITS (Constructor Program Stream Only)**

### **V 1.0 Activities Requiring Work Permits**

V.1.1 Performance of certain work activities / hazardous operations on the Project site is prohibited unless a Work Permit is first issued by CMO.

V.1.2 Work permits are required for any of the following activities:

V.1.2.1 Hot Work (Appendix 19A)

V.1.2.2 Work on Electrical Equipment (Live or Not) rated at 120V or higher (Appendix 19B)

V.1.2.3 Shut-Down of HVAC Equipment, Electric Power, Fire Sensors, Fire Alarms, Fire Suppression Systems, or Elevators (Appendix 19C)

V.1.2.4 Trenching or Excavation (greater than 4' in depth) (Appendix 19D)

- In addition to the CMO Hazardous Work Permit and Notice of Project, CMO is responsible for notifying the Ministry of Labour of trenching activities as Constructor.

V.1.2.5 Confined Space Entry (Appendix 19E)

V.1.2.6 Work Requiring Use of Fall Protection (Appendix 19F)

V.1.2.7 Crane or Hoist Operation (except for those attached to cars to repair rail) (Appendix 19G)

V.1.2.8 Tunnels, Shafts, Caissons and Cofferdams (Appendix 19H)

V.1.2.9 Any Work Involving Contact with, Removal of, or Disturbance of Any Designated Substances. (Appendix 19I)

- In addition to the CMO Hazardous Work Permit and Notice of Project, CMO is responsible for notifying the Ministry of Labour of Type 2 and Type 3 asbestos abatement activities as Constructor.

### **V 2.0 Designated Substances**

V.2.1 A Designated Substance is defined by the Ontario Health and Safety Act as a chemical, biological, or physical agent or combination thereof, prescribed as a designated substance to which the exposure of a worker is prohibited, regulated, restricted, or controlled. At the present time, the following 11 substances have been designated:

- Acrylonitrile
- Arsenic
- Asbestos
- Benzene
- Coke oven emission
- Ethylene oxide
- Isocyanates
- Lead
- Mercury
- Silica
- Vinyl chloride

V.2.2 There are however, four Designated Substances that are commonly encountered on a construction project site which are Asbestos, Lead, Mercury and Silica.



- V.2.3 Although O. Reg. 490/09 Designated Substances does not apply to construction projects, every Constructor, Owner, and Contractor are obligated to take every precaution necessary to protect the health and safety of every worker who is exposed to a designated substance. O. Reg. 490/09 also does not apply to asbestos on construction and demolition projects. Instead O. Reg. 278/05 Asbestos on Construction Projects and in Building and Repair Operations comes into effect and must be followed by every Contractor while working on any Metrolinx construction project.
- V.2.4 Contractors must follow the Ministry of Labour's Guidelines for Lead on Construction Projects, Guidelines for Silica on Construction Projects, and Guidelines for Asbestos on Construction Projects and in Building and Repair Operations while working on any Metrolinx construction project.
- V.2.5 Prior to any work commencing on a Metrolinx project the Contractor must first obtain the results from the Owners Report or Designated Substance Survey (DSS) to confirm no designated substances are present.
- V.2.6 If a designated substance is identified to be present in the Owner's report the Contractor must follow the procedures listed below:
- V.2.6.1 If the designated substance identified is Asbestos, the Contractor must follow O. Reg. 278/05 Asbestos on Construction Projects and in Building and Repair Operations. If the substance identified is Silica, or Lead based the Contractor must follow the Ministry of Labours applicable guideline for the substance.
- V.2.6.2 For any other designated substances found to be present, the Contractor must consult with an Occupational Hygiene Service to review the levels of designated substances found, and formulate a plan to protect the workers who will be exposed to the substance based on the levels found. This information must be submitted to the CMO Project Lead in the form of a Work Plan to be reviewed prior to any work or abatement commencing or worker exposure taking place.
- V.2.6.3 No work or abatement in an area that has a Designated Substance will take place without prior issuance of a Hazardous Operations Work Permit issued by CMO.
- V.2.6.4 The Hazardous Operations Work Permit will be issued upon review of the Contractors submitted Work Plan and Designated Substances Checklist. See Appendix 19I.
- V.2.6.5 If work on a project has already commenced under the pretences no designated substances are present, and a substance is potentially identified, the Contractor must immediately stop work, remove workers from the area, and notify CMO immediately. A material assessment must be conducted and the findings disclosed to the Contractor. If a designated substance is present, the Contractor will then follow the above procedures.
- V 3.0 Authority for Work Permit Issuance, and Delegation of Authority
- V.3.1 CMO is the only person authorized to issue a work permit for hazardous operations.
- V.3.2 CMO may delegate in writing his / her authority to issue work permits for the following hazardous operations only:
- Hot Work
  - Confined Space Entry



- Work Requiring Use of Fall Protection;
- V.3.3 to one or more of the following persons:
- Railway representative
  - A Contractor's representative
  - Another member of the CMO
- V.3.4 Prior to delegating work permit authority to a Contractor's representative, the Project Lead must:
- V.3.4.1 Thoroughly review the appropriate work permit procedures and forms with the Contractor's representative.
- V.3.4.2 Be satisfied beyond doubt that the Contractor's representative can competently and reliably administer the permit process.
- V.3.4.3 Ensure that the Contractor has obtained any pre-requisite permits.
- V.3.5 Communication of Requirements to Contractors
- V.3.5.1 Work requiring issuance of work permits and the permit issuance procedure shall be communicated to Contractors prior to commencement of the work.
- V.3.6 Procedure for Issuing Work Permits - Hazardous Operations
- V.3.6.1 The Contractor shall contact the Project Lead in advance of performing any planned or unplanned work for which a Work Permit is required. Contractors are expected to exercise good judgment to determine the appropriate lead time for the request, giving consideration to on-site work schedules and sequencing, and the anticipated time required for Permit issuance.
- V.3.6.2 Work Permits will be required for activities in public area, or where that activity may affect the public. A formal written Work Plan must be submitted to the Project Lead for review and consideration. The Work Plan must contain an outline of the proposed work, identify hazardous activities and conditions associated with the work, outline the means to avoid the identified hazards, indicate methods for dealing with accidents, injuries or damage during the work, and establish the start and completion times for the work. It should include, but may not be limited to: relevant drawings, details and MSDS, and copies of any other required permits or forms of authority related to the proposed work.
- V.3.6.3 Upon receipt of a Work Plan, the Project Lead must review the proposed work activity, confirm site conditions, establish the start and completion times for the work, assess potential impacts of the work on adjacent operations and sites, and determine whether all conditions necessary for issuance of the work permit have been met. The Project Lead must conduct inquiries and make observations to the extent necessary to be satisfied that the work can be performed safely.
- V.3.6.4 Once the Project Lead is confident that all conditions for the work permit have been met, he / she shall complete the appropriate permit for the work activity, get the permit countersigned by the Contractor(s), and issue it.
- V.3.6.5 Once issued, the Contractor may commence the work at the time indicated on the permit.



V.3.6.6 The permit expires at the time indicated thereupon.

V.3.6.7 Upon completion of the work, the permit shall be returned by the Contractor to the Project Lead or designate.

V.3.6.8 This CMO work permit procedure supersedes any work permit procedure of the Contractor. If the Contractor has a work permit procedure for the activity in question, the Contractor is expected to execute its own procedure in parallel.

V 4.0 Work Permit Hazardous Operations Forms

V.4.1 Work permits are to be issued in the forms shown in Appendix 19, as appropriate.

V 5.0 Record Keeping

V.5.1 Expired work permits are to be retained as part of the CMO project file.



## **SECTION W : HEALTH AND SAFETY INSPECTIONS (Constructor Program Stream Only)**

### **W 1.0 Responsibility for Inspection**

W.1.1 Project Leads shall ensure that a comprehensive health and safety inspection is performed at each of their project zones at which there are Metrolinx construction projects or maintenance activities. Inspections shall take into account all work activities performed at the time of inspection, to the extent practicable, and be performed not less often than once every week.

W.1.2 The Project Lead or designate shall make such inspections.

### **W 2.0 Inspection Frequency**

W.2.1 The Project Lead shall establish an inspection frequency schedule for every project or project zone, giving consideration to:

W.2.1.1 The level of activity on the project site

W.2.1.2 The degree of perceived risk associated with work activities

W.2.1.3 Contractor Health and Safety performance on the project

W.2.1.4 Issues identified through pre-project Contractor Health and Safety evaluations

W.2.1.5 Potential risks to rail operations, adjacent facilities, or the public

W.2.2 Taking into account all of these factors, and the need to monitor and ensure safety by all workers and contractors, inspection and monitoring may be required hourly, continuously, daily or weekly.

### **W 3.0 Inspection Scope**

W.3.1 The inspection is intended to be an objective assessment of the extent to which specific site conditions, equipment, facilities, operations and work activities comply with specific Health and Safety construction-related regulatory requirements, best practices and CMO Health and Safety requirements.

W.3.2 Each inspection should assess all of the compliance requirements shown in the inspection form in Appendix 20, to the extent practicable at the time of inspection.

W.3.3 Where actual or potential deficiencies are identified, these must be described and documented (in writing and / or photos) to a degree sufficient to allow other parties to identify and address the deficiency.

### **W 4.0 Advance Notice to Persons on Site**

W.4.1 Inspections should typically be performed on an unannounced basis. The possibility of inspection occurring at any time is intended to motivate personnel on site to maintain a high level of safety compliance at all times. There should not be advance notification given to persons on site unless necessary for purposes of scheduling, coordination or safety.

### **W 5.0 Inspection Procedure**

W.5.1 Assemble all necessary personal protective equipment, inspection record forms, a flashlight, and a camera.

W.5.2 Upon arrival at a project zone or a work operation, announce your presence to the General Contractor's senior on-site representative, and the on-site Flag Person.



- W.5.3 Tour the project zone or work operation with the Contractor's senior on-site representative if possible and make thorough observations to assess compliance with the requirements listed in the inspection checklist.
- W.5.4 Record observations.
- W.5.5 Ascertain the status of resolution for any deficiencies identified in prior inspections.
- W.5.6 If any identified deficiencies are judged to constitute an immediate and serious threat to health or safety, pursue one or more of the following courses of action, as appropriate:
- W.5.6.1 order the parties involved to disengage from the hazard or stop the associated activities,
  - W.5.6.2 remain on-site, as warranted, until the situation is resolved,
  - W.5.6.3 personally intervene to correct the deficiency,
  - W.5.6.4 instruct persons on site to correct the deficiency,
  - W.5.6.5 report the deficiency to persons at the site with authority and capacity to remedy the deficiency,
  - W.5.6.6 notify the Project Lead or designate and the Project Manager/Coordinator.
- W.5.7 Upon completion, review key findings with the senior on-site representative of the Contractor. Notify the senior on-site representative of your departure.
- W 6.0 Formal Reporting of Inspection Findings
- W.6.1 Inspection findings are to be entered into the Health and Safety inspection database within 24 hours of completion of inspection.
- W.6.2 Inspection reports generated by CMO Health and Safety inspection database are to be issued in hard copy or electronic format to the Project Lead, senior representative of the General Contractor at the site, and any other appropriate parties, within 24 hours of completion of inspection.
- W 7.0 Notification of Corrective Action
- W.7.1 Persons identified in an inspection report as having responsibility for corrective action must apprise the party performing the inspection of the completion of corrective actions as soon as practicable thereafter.
- W 8.0 Escalation of Unresolved Deficiencies
- W.8.1 Where deficiencies are not corrected with sufficient timeliness, the Project Lead may escalate the matter in accordance with procedures for addressing contract non-compliance.
- W 9.0 Inspection Performance Indices
- W.9.1 Health and safety performance shall be measured, summarized, tracked and reported for all CPG construction projects. The indices that will be measured, summarized, tracked and reported for each project are as follows:
- number of Contractor supervisor inspections
  - number of CMO inspections
  - percentage of inspection observations constituting "significant non-compliance"
  - percentage of inspection observations constituting non-compliance
  - percentage of repeat deficiencies over the cycle of inspections



- number of health and safety incident(s)

W.9.2 CMO shall produce performance reports to the PDT on a regular basis or more often as requested.



## **SECTION X : HEALTH AND SAFETY OBSERVATIONS AND AUDITS (Project Owner Program Stream Only)**

### **X 1.0 Responsibility for Observations and Audits**

X.1.1 Senior Construction Supervisors shall ensure that OHS observations and audits are regularly performed on each project site.

X.1.2 The SCS or assigned CS shall make such observations or audits.

### **X 2.0 Frequency**

X.2.1 CMO shall establish an observation frequency that gives consideration to:

X.2.1.1 the level of activity on the project site,

X.2.1.2 the degree of perceived risk associated with the work activities,

X.2.1.3 Contractor's OHS performance on the project,

X.2.1.4 issues identified through pre-project Contractor Health and Safety evaluations, and

X.2.1.5 potential risks to rail or bus operations, adjacent facilities, and/or the public.

X.2.2 Observations shall be made no less than every two weeks but may be increased in response to the considerations above and/or an increase in incident reports.

X.2.3 Audits shall be made every six months but may be increased in response to the considerations above and/or an increase in incident reports.

### **X 3.0 Scope of Observations and Audits**

X.3.1 Observations and audits are intended to be an objective assessment of the extent to which specific site conditions, equipment, facilities, operations and work activities comply with specific OHS construction-related regulatory requirements, best practices and contractual requirements.

X.3.2 Observations are informal observations of the activities performed at the project site while audits are a formal assessment of legislative and contractual compliance.

X.3.3 Each observation should assess the compliance requirements shown in the form in Appendix 21, to the extent practicable at the time of the observation.

X.3.4 Each audit shall assess the compliance requirements shown in the form in Appendix 22.

X.3.5 Where actual or potential deficiencies are identified, these must be described and documented (in writing and / or photos) to a degree sufficient to allow other parties to identify and address the deficiency.

### **X 4.0 Advance Notice to Persons on Site**

X.4.1 Observations should typically be performed on an unannounced basis. The possibility of observation occurring at any time is intended to motivate personnel on site to maintain a high level of safety compliance at all times. There should not be advance notification given to persons on site unless necessary for purposes of scheduling, coordination or safety.

X.4.2 Audits may be pre-arranged to ensure that required documentation is assembled for review.



## X 5.0 Procedure

- X.5.1 Assemble all necessary personal protective equipment, observation record forms, a flashlight, and a camera.
- X.5.2 Upon arrival at a project area, announce your presence to the General Contractor's senior on-site representative, and the on-site Flag Person.
- X.5.3 Tour the project area with the Contractor's senior on-site representative if possible and make thorough observations to assess compliance with the requirements listed in the checklist.
- X.5.4 Record observations.
- X.5.5 If any identified deficiencies are judged to constitute an immediate and serious threat to health or safety, pursue one or more of the following courses of action, as appropriate:
  - order the parties involved to disengage from the hazard or stop the associated activities,
  - remain on-site, as warranted, until the situation is resolved,
  - personally intervene to correct the deficiency,
  - instruct persons on site to correct the deficiency,
  - report the deficiency to persons at the site with authority and capacity to remedy the deficiency,
  - notify the PDT.
- X.5.6 Upon completion, review key findings with the PDT and notify the senior on-site representative of your departure.

## X 6.0 Formal Reporting of Observations and Audits

- X.6.1 Findings are to be entered into the CAT database within 48 hours of completion.
- X.6.2 Reports generated by the CAT database are to be issued in hard copy or electronic format to the PDT within 48 hours of completion of inspection.
- X.6.3 Observational deficiencies, other than those of significant non-compliance or an immediate / serious threat to OHS, are the sole responsibility of the Contractor to correct.
- X.6.4 Audit deficiencies are to be communicated to the PDT and GC. The GC shall respond back with corrective measures and a timeframe for implementation.

## X 7.0 Performance Indices

- X.7.1 Audit findings shall include performance indices for observations and audits. The indices that will be measured, summarized, tracked and reported for each project are as follows:
  - number of Contractor supervisor inspections
  - number of CMO observations
  - percentage of observations constituting "significant non-compliance"
  - percentage of observations constituting non-compliance
  - percentage of repeat deficiencies over the cycle of audits



**SECTION Y : PROJECT SITE SAFETY RULES AND PROCEDURES (Constructor Program Stream Only)**

- Y 1.0 Appendix 23 contains project site safety rules and procedures applicable to project sites where Metrolinx is deemed the Constructor. All persons on the site are required to comply with these rules.



## **SECTION Z : HEALTH AND SAFETY ENFORCEMENT (All Streams)**

- Z 1.0 Where Metrolinx is the Project Owner, CMO shall assist the PDT and Contract Administrator in determining and enforcing compliance with the contract terms regarding OHS matters.
- Z 2.0 The following requirements pertain to where Metrolinx is the Constructor:
  - Z.2.1 Verbal or written warnings and written infractions may be issued by a CMO Construction Supervisor in the case of non-compliance with this Program or requirements of other applicable regulatory bodies such as the MOL, MOECC, TSSA, CROR, etc.
    - Z.2.1.1 A Verbal Warning is reported in field notes, but no formal written warning is issued. The goal is to promote worker education and correction on unacceptable behaviours and actions
    - Z.2.1.2 A Written Warning is a check box option on the CMO Safety Ticket. The goal is to promote worker education and correction of unacceptable behaviours and action. Only one (1) warning shall be issued per Employee.
    - Z.2.1.3 A Written Infraction is for repeat offenders and/or violations to the CSMP, OHSa and CROR. Actions that pose an immediate threat to the health and safety of an Employee shall be subject to the issuance of a written infraction, without warning.
    - Z.2.1.4 A Written Warning and/or Infraction shall be given to the Employee within 48 hours of CMO's notification of the incident. A meeting shall be set up with the Employee, Employer and CMO to discuss the CMO Safety Ticket and next steps.
  - Z.2.2 Three (3) written infractions for one Employee will result in the immediate and permanent removal from Metrolinx property.
  - Z.2.3 Furthermore, an infraction that requires the involvement of or notification to outside regulatory agencies (i.e. MOL, MOECC, TSSA, etc.) or a severe infraction (i.e. fighting, horseplay, personal or sexual harassment, or the use of drugs and/or alcohol) may also result in the immediate and permanent removal from Metrolinx property.
  - Z.2.4 A sample CMO Safety Ticket is shown in Appendix 24A. When issued, one copy of this Ticket will be provided as reference to each of the following: the Employee, their Employer, the CMO, and the project file.
  - Z.2.5 Contractor Employees are provided the opportunity for due process if and when they feel an infraction was unjustly issued. The following procedure is to take place once CMO has been advised of the Employee's intention to appeal and shall be completed within 15 business days:
    - Step 1 - The affected Employee shall complete Part 1 of the Infraction Appeal Form within five (5) business days of issuance of the Written Safety Infraction. A copy of the Appeal Form is provided in Appendix 24B.
    - Step 2 - The Infraction Appeal Form shall be submitted to the CMO Manager along with a copy of the Written Safety Infraction. If the CMO Manager is unable to complete the procedure within the 15 day period s/he can assign a SCS to perform Steps 3-7.
    - Step 3 - The CMO Manager will initiate an internal review with the S/CS involved in the Infraction to discuss details such as the severity and type of the infraction, whether it is regulatory, procedural or policy based, and the history of the Employee's compliance with safety.



Step 4 - The CMO Manager shall convene an Infraction Appeal Hearing with the Employer representative(s), Employee and CMO S/CS.

Step 5 - The CMO Manager shall announce the outcome of the Appeal Hearing by means of an email.

- a) Infraction stands - If CMO strongly believes that there is sufficient evidence for the infraction to stand, the decision and reasoning shall be noted per the Appeal Closeout in the Infraction Appeal Form (Part 2 of the Form).
- b) Infraction retracted - Where there is insufficient evidence and proof to support the infraction, the decision and reasoning for retracting the infraction shall be noted in the Appeal Closeout in the Infraction Appeal Form (Part 2 of the Form).

Step 6 - Corrective measures: If the infraction stands further corrective measures may be implemented. These measures shall be stated in the Infraction Appeal Form (Part 2 of the Form).



## SECTION AA : INTERNAL INCIDENT REPORTING (All Streams)

AA 1.0 Incidents Reportable to CMO by Employees, Contractors and Third Party personnel, and Reportable by Metrolinx to External Agencies

AA.1.1 The following table identifies incidents that must be reported to CMO by its employees, Contractors and Third Party Personnel, and those that must be reported by CMO to external agencies.

Table 2 – Internal Incident Reporting Summary				
Type of Incident		Affected Persons / Group	Reporting to CMO	
			Immediately via Emergency Line	Forward Investigation Report within two days
Non-Critical Injuries or Occupational Illnesses	First Aid Only	Contractor and Third Party Employees		
		Visitors		
	Lost Time or Health Care	Contractor and Third Party Employees	Constructor Stream Only	
		Visitors		
	Modified Work >7 Days, No Lost Time or Health Care	Contractor and Third Party Employees		
Hazardous Agent Potential Overexposure Incident		Contractor and Third Party Employees	Constructor Stream Only	
		Visitors		
Critical Injury or Death		Any Person	All Streams	
Disabling injury or medical aid as a results of a workplace violence incident			All Streams	Constructor Stream  (Project Owner Stream to be forwarded within five days)
Premature or unexpected explosion				
Fire causing significant damage				
Flood or inrush of water that causes significant damage or could have caused drowning				
Structural failure of any equipment, machine, device, article or thing				
Cave-in or subsidence of soils at an excavation				
A worker falling a vertical distance of three metres or more				
A worker falling and having the fall arrested by a fall arrest system other than a fall restricting system				
A worker becoming unconscious for any reason				
Accidental contact by a worker or by a worker's tool or equipment with energized electrical equipment, installations or conductors				
Accidental contact by a crane, similar hoisting device, backhoe, power shovel or other vehicle or equipment or its load with an energized electrical conductor rated at more than 750 volts				
Structural failure of all or part of falsework designed by, or required by Regulation to be designed by, a professional engineers				
Structural failure of a principal supporting member, including a column, beam, wall or truss, of a structure				
Failure of all or part of the structural supports of a scaffold				
Structural failure of all or part of an earth- or water-retaining structure, including a failure of the temporary or permanent supports for a shaft, tunnel, caisson, cofferdam or trench				
Failure of a wall of an excavation or of similar earthwork with respect to which a professional engineer has given a written opinion that the stability of the wall is such that no worker will be endangered by it				
Overturning or the structural failure of all or part of a crane or similar hoisting device.				
Elevator Incidents	Causing Death or Hospitalization of Any Person			All Streams



	Involving Fires, Minor Injuries, Failure of a Critical or Safety Component		Constructor Stream Only
Carbon Monoxide Overexposure Incidents			Constructor Stream Only
Propane Incidents	Causing Fire, Explosion, Assistance from any Emergency Services, Media Attention or Injury		Constructor Stream Only
	Accidental Release, Abnormal Venting, Spills		Constructor Stream Only
Natural Gas Pipeline Incidents	Strikes Causing Evacuation, Injuries or Media Attention	All Streams	
	Other Strikes		Constructor Stream Only
Explosions - TSSA Regulated Systems	Causing Injury, Damage to Equipment or a Fire		Constructor Stream Only
Fires - TSSA Regulated Systems	Causing Any Lost Time or Health Care Injury		Constructor Stream Only
"Spills" to the Natural Environment	All "Spills" Except as Noted Below		Constructor Stream Only
	Petroleum Product Spills <100 Litres of EHS Significance, or >100 Litres (whether fitting the definition of "spill" or not)		
	Petroleum Product Escape from Containment to the Natural Environment or Inside a Building		
Electrical Incidents			Constructor Stream Only
Incidents Involving Systems Under Operating Engineer's Regulation	Causing Accident, Injury or Death	All Streams	
	Causing Serious Injury, Death, or Property Damage	All Streams	
"Near Miss" Incident		Constructor Stream Only	
<b>KEY:</b>			
WSIB = Ontario Workplace Safety and Insurance Board			
MOL = Ontario Ministry of Labour			
MOECC = Ontario Ministry of Environment and Climate Change			
SAC = Spills Action Centre			
TSSA = Technical Standards and Safety Authority			
ESA = Electrical Safety Authority			

## AA 2.0 Procedures for Contractor and Third Party Reporting to CMO

AA.2.1 In accordance with Table 2 above, immediately after the stipulated occurrence notify the CMO, by telephone via the Emergency line. Formal written incident report expected within 48 hours of occurrence.

AA.2.2 CMO will request delivery of specific information, where necessary for purposes of CMO reporting to external agencies, and / or for incident investigation purposes.

AA.2.3 In addition to the reportable incidents listed in Table 2, any incidents (including near-misses) caused by Adjacent Projects shall be reported to CMO and the Ministry of Labour. CMO, the Contractor, and/or Third Party shall retain written record of such notifications.

AA 3.0 Reporting forms are included in this Program as Appendices 25 to 28. The forms meet or exceed the external agencies' requirements for information collection and must be submitted to CMO for any accident, incident, or near-miss. The form shall be reviewed by the Project



Lead to ensure accuracy and completeness. A Contractor's corporate incident form may be an acceptable alternative assuming it meets CMO standards. CMO may elect to undertake its own independent investigation and generate an independent report.

AA 4.0 Procedure for Metrolinx Employee Reporting to a Supervisor

AA.4.1 Immediately after the occurrence notify CMO, by telephone, or by e-mail.

AA.4.2 CMO will request delivery of specific information where necessary for purposes of Metrolinx reporting to external agencies, and / or for incident investigation purposes.

AA 5.0 In the case of a reportable spill, include notification System Safety's Environmental Representative (Emily Cosbourn) and the CPG Environmental Program Representative (Don Forbes).



## SECTION BB : EXTERNAL INCIDENT REPORTING (Constructor Program Stream Only)

BB 1.0 The following table identifies the forms utilized for reporting incidents to external agencies, and references Appendices providing additional information with respect to information to be reported.

Table 3 - External Reporting Summary					
Type of Incident		Affected Persons / Group	CMO Reports Externally		
			To Whom?	When?	How?
Non-Critical Injuries or Occupational Illnesses	First Aid Only	Contractor and Third Party Employees			
		Visitors			
	Lost Time or Health Care	Contractor and Third Party Employees			
		Visitors			
	Modified Work >7 Days, No Lost Time or Health Care	Contractor and Third Party Employees			
Hazardous Agent Potential Overexposure Incident		Contractor and Third Party Employees			
		Visitors			
Critical Injury or Death		Any Person	MOL, Police, Coroner	Immediately	Telephone
				Within 48 hours	Report per Appendix 26
Disabling injury or medical aid as a results of a workplace violence incident					
Premature or unexpected explosion			MOL for Constructor projects	Within 2 days	Report per Appendix 26
Fire causing significant damage					
Flood or inrush of water that causes significant damage or could have caused drowning					
Structural failure of any equipment, machine, device, article or thing					
Cave-in or subsidence of soils at an excavation					
A worker falling a vertical distance of three metres or more					
A worker falling and having the fall arrested by a fall arrest system other than a fall restricting system					
A worker becoming unconscious for any reason			MOL for Constructor projects	Within 14 Days	Professional Engineer's Report
Accidental contact by a worker or by a worker's tool or equipment with energized electrical equipment, installations or conductors					
Accidental contact by a crane, similar hoisting device, backhoe, power shovel or other vehicle or equipment or its load with an energized electrical conductor rated at more than 750 volts					
Structural failure of all or part of falsework designed by, or required by Regulation to be designed by, a professional engineers					
Structural failure of a principal supporting member, including a column, beam, wall or truss, of a structure					
Failure of all or part of the structural supports of a scaffold					
Structural failure of all or part of an earth- or water-retaining structure, including a failure of the temporary or permanent supports for a shaft, tunnel, caisson, cofferdam or trench					
Failure of a wall of an excavation or of similar earthwork with respect to which a professional engineer has given a written opinion that the stability of the wall is such that no worker will be endangered by it					
Overturning or the structural failure of all or part of a crane or similar hoisting device.					
Elevator Incidents	Causing Death or Hospitalization of Any Person		TSSA (if Mx	Immediately	Telephone



	Involving Fires, Minor Injuries, Failure of a Critical or Safety Component	owns elevator)	Within 24 hours	Telephone
			Within 8 days	Report per Appendix 27
Carbon Monoxide Overexposure Incidents		TSSA, if *criteria are met	Within 24 hours	Telephone
Propane Incidents	Causing Fire, Explosion, Assistance from any Emergency Services, Media Attention or Injury	SAC	Immediately	Telephone
	Accidental Release, Abnormal Venting, Spills	TSSA	Within 14 days via email	Not prescribed
Natural Gas Pipeline Incidents	Strikes Causing Evacuation, Injuries or Media Attention	SAC (if Mx owns line, eg. SCD, or is Constructor for project)	Immediately	Telephone
	Other Strikes	TSSA (if Mx owns line, eg. SCD, or is Constructor for project)	Within 14 days	Not prescribed
Explosions - TSSA Regulated Systems	Causing Injury, Damage to Equipment or a Fire	TSSA	Within 4 Days	Report per Appendix 27
Fires - TSSA Regulated Systems	Causing Any Lost Time or Health Care Injury	TSSA	Within 4 Days	Telephone
"Spills" to the Natural Environment	All "Spills" Except as Noted Below	CPG-EPA, SAC, Local Municipality	Immediately	Telephone
	Petroleum Product Spills <100 Litres of EHS Significance, or >100 Litres (whether fitting the definition of "spill" or not)	CPG-EPA, SAC, Local Municipality		
	Petroleum Product Escape from Containment to the Natural Environment or Inside a Building	SAC, Local Municipality	"Within a Reasonable Time"	
Electrical Incidents		ESA, MOL	Within 48 Hours	Telephone
Incidents Involving Systems Under Operating Engineer's Regulation	Causing Accident, Injury or Death	TSSA	Within 8 Hours	Telephone
	Causing Serious Injury, Death, or Property Damage	TSSA	Within 48 Hours	Report per Appendix 27
"Near Miss" Incident		-	-	-
<b>KEY:</b> WSIB = Ontario Workplace Safety and Insurance Board MOL = Ontario Ministry of Labour MOECC = Ontario Ministry of Environment and Climate Change SAC = Spills Action Centre TSSA = Technical Standards and Safety Authority ESA = Electrical Safety Authority				

BB 2.0 In the case of a reportable incident, CMO shall make all necessary notifications to the Ministry of Labour as defined under sections 51 through 53 of the OHSA. Template forms for this notification can be found in Appendix 26.



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## **SECTION DD : CONTRACTOR MONTHLY OHS PERFORMANCE REPORTING (All Streams)**

DD 1.0 Health and Safety performance shall be measured, summarized, tracked, and reported for all CPG construction projects.

DD 2.0 At the beginning of each month, Contractors shall submit to CMO a completed monthly report as contained in Appendix 30.

DD 3.0 CMO shall retain, consolidate and analyze monthly reports in order to:

- quantify incident trends for the specific construction project,
- formulate corrective actions to be taken by the Project Owner / Constructor to improve safety at the particular construction project (as required),
- identify incidents that may require additional follow up by the Owner / Constructor for the particular construction project, and
- calculate performance indices for each construction project for comparison across CPG projects.



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## **SECTION FF : PROGRAM AUDIT**

### **FF 1.0 Responsibility and Frequency for Audit**

- FF.1.1 Metrolinx's Safety and Security Division shall ensure that a comprehensive audit of this Program is performed in accordance with the Safety Management System review cycle.
- FF.1.2 Metrolinx's Safety and Security Division must make arrangements for such audits, and / or perform them personally.

### **FF 2.0 Audit Scope**

- FF.2.1 The audit is intended to assess the implementation and impacts of all the health and safety management processes contained herein.
- FF.2.2 An audit may cover one or any number of the health and safety management processes, and any given number of projects and timeframes.
- FF.2.3 Metrolinx's Safety and Security Division shall determine the specific scope for any given audit.
- FF.2.4 Safety management processes will be assessed to determine:
  - Compliance with the Program; and
  - Areas of improvement where inadequacies or deficiencies are identified.

### **FF 3.0 Formal Reporting of Audit Findings**

- FF.3.1 Based on the review, Metrolinx's Safety and Security Division will list the deficiencies and gaps identified in Appendix 32, and will propose improvements.
- FF.3.2 Metrolinx's Safety and Security Division will meet with the Senior Manager, CMO, to review the findings of the audit report and discuss recommendations and appropriate controls.
- FF.3.3 Once recommendations are identified, Metrolinx's Safety and Security Division and the Senior Manager, CMO, will assign personnel to complete the corrective actions within a specified timeframe.



## **SECTION GG : PROGRAM REVIEW**

GG 1.0 CMO will review the efficiency and effectiveness of Program operations annually and make Program revisions and enhancements as warranted.



## CONSTRUCTION STREAM DECISION LOGIC CHECKLIST

CONSTRUCTION ACTIVITY CHECKLIST	
Occupational Health and Safety (OHS) liabilities and responsibilities on construction projects are dictated by Ontario's Occupational Health and Safety Act (OHSA). In the case of Metrolinx construction projects, the Corporation's actions will maintain Owner only liabilities or introduce Contractor liabilities	
This checklist is provided by Metrolinx' Construction Management Office (CMO) to assist in determining the corporation's liabilities before or during execution of a construction project.	
<b>DEFINITIONS:</b>	
"Construction" includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, land clearing, earth moving, grading, excavating, trenching, digging, boring, drilling, blasting, or concreting, the installation of any machinery or plant, and any work or undertaking in connection with a project. [OHSA]	
"Construction Project" means a construction project as defined by the OHS Act and represents the engagement of one contractor by Metrolinx. Subcontractors hired by the contractor (or GC) are not included in this definition.	
"Engagement" with a contractor can be in the form of a contract, PO or a standing order.	
"Project" means a construction project, whether public or private, including:	
(a) the construction of a building, bridge, structure, industrial establishment, mining plant, shaft, tunnel, caisson, trench, excavation, highway, railway, street, runway, parking lot, cofferdam, conduit, sewer, watermain, service connection, telegraph, telephone or electrical cable, pipe line, duct or well, or any combination thereof,	
(b) the moving of a building or structure, and	
(c) any work or undertaking, or any lands or appurtenances used in connection with construction. [OHSA]	
"Metrolinx" includes any person within any department of Metrolinx or its Operating Divisions.	
<b>INSTRUCTIONS:</b>	
Complete Sections 1, 2 and 3 to determine whether Metrolinx is a Constructor or Owner for the Project.	
<b>SECTION 1 - PROJECT INFORMATION</b>	
Project Name:	Director:
Project Number:	Project Manager:
Corridor:	Project Coordinator:
Location (Facility, Municipal Address / Intersection / Mileage):	
<b>SECTION 2 - CONTROL</b>	
<p>"Control" over the execution of a construction project provides the opportunity to accomplish any of the following:</p> <ul style="list-style-type: none"> <li>✓ Overlapping projects and contractors if weather, supply and/or other delays compress sequential work schedules</li> <li>✓ Scheduling multiple contractors engaged directly by Mx to work without time or space restrictions and potentially advancing the construction on schedule</li> <li>✓ Enabling GO / Mx employees (i.e. SOC maintenance, etc.) to work on the project at the same time and not have to wait for the GC to complete their work</li> <li>✓ Commissioning equipment by GO / Mx employees before the GC completes their work</li> <li>✓ Greater assurance in the quality of the work through Mx review of work plans</li> <li>✓ Greater assurance in the safety of the workers, passengers and public during the execution of the project</li> </ul>	
<p>DO YOU WANT "CONTROL"?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes</p>	
<p><b>METROLINX TAKES ON CONSTRUCTOR ROLE</b></p> <p>Metrolinx will be the Constructor and CPG will need to fulfil the legal requirements.</p> <p>Coordination between PDT and CMO must be established prior to tendering contracts to ensure that due diligence and safety requirements will be met.</p>	



SECTION 3 - CONTRACTS AND SITE ACTIVITIES		
Will Metrolinx be training workers on site safety requirements?	<input type="checkbox"/> No <input type="checkbox"/> Yes	contractually require GC to provide training and Mx will be an owner only, receiving updates from the GC.
Will Metrolinx need to provide site safety orientation / training because of activities beyond the control of the contractor?	<input type="checkbox"/> No <input type="checkbox"/> Yes	arrange the other work such that it does not impact or overlap with the project in question.
Will Metrolinx be directly engaging with more than one contractor to perform construction work in the project zone?	<input type="checkbox"/> No <input type="checkbox"/> Yes	contractually require GC to hire the individual contractors. If specific contractor is required, provide at least two to choose from. Mx will be an owner only, receiving updates from the GC.
Will Metrolinx be enforcing safety requirements onto workers?	<input type="checkbox"/> No <input type="checkbox"/> Yes	enforce contractual safety requirements through the General Contractor's site supervisor only (i.e. not to workers) and Mx will be an owner only, receiving updates from the GC.
Will Metrolinx employees / departments be performing part of the physical labour to complete the project?	<input type="checkbox"/> No <input type="checkbox"/> Yes	contractually require the GC to organize the work. If Mx forces are required, access to site only allowed after GC has completed their scope of work (not occupancy or demobilization).
Will Metrolinx be supervising the work?	<input type="checkbox"/> No <input type="checkbox"/> Yes	contractually require the GC to perform this function and Mx will be an owner only, receiving updates from the GC.
Will Metrolinx be providing direction with regards to how to perform the work?	<input type="checkbox"/> No <input type="checkbox"/> Yes	contractually require the GC to perform this function and Mx will be an owner only, receiving updates from the GC.
Will Metrolinx be coordinating, scheduling and/or arranging the work progress?	<input type="checkbox"/> No <input type="checkbox"/> Yes	contractually require the GC to perform this function and Mx will be an owner only, receiving updates from the GC.
Will Metrolinx be filling the Notice of Project?	<input type="checkbox"/> No <input type="checkbox"/> Yes	contractually require the GC to perform this function, fulfil the legal requirements of the Contractor, and Mx will be an owner only, receiving a copy from the GC.
Could the work boundaries of this Construction Project overlap in geography with another Construction Project or contract for work?	<input type="checkbox"/> No <input type="checkbox"/> Yes	physically separate Projects, document the separation plan and ensure that it is maintained throughout the duration of the Projects.
Will this Construction Project use the same entrance as another Construction Project / contractor for work / operations to access their respective project zones?	<input type="checkbox"/> No <input type="checkbox"/> Yes	create a separate entrance for each Project, document the separation plan and ensure that it is maintained throughout the Project.
Will contractors need to enter into / through another project to access their work area(s)?	<input type="checkbox"/> No <input type="checkbox"/> Yes	create a separate entrance for each Project, document the separation plan and ensure that it is maintained throughout the Project.



Will Metrolinx be assisting the contractor in obtaining approvals, permits, licenses, etc.?	<input type="checkbox"/> No <input type="checkbox"/> Yes	contractually require the GC to perform this function and Mx will be an owner only, receiving updates from the GC.
Will Metrolinx require the General Contractor to hire a specific sub-contractor?	<input type="checkbox"/> No <input type="checkbox"/> Yes	contractually require GC to organize the work. If specific contractor is required, provide at least two to choose from. Mx will be an owner only, receiving updates from the GC.
Will Metrolinx be leading / contributing / conducting accident investigations?	<input type="checkbox"/> No <input type="checkbox"/> Yes	contractually require the GC to provide accident investigation reports to Mx within a specified timeframe.
Will Metrolinx be dictating the work hours?	<input type="checkbox"/> No <input type="checkbox"/> Yes	limit dictation to work hours for the sole purpose of ensuring that train operations do not endanger contractors in the ROW. Scheduling for coordination of projects or maintenance works will likely identify Mx as undertaking part of the (project) work.
Will Metrolinx be determining which pieces of equipment can/not be brought onto site?	<input type="checkbox"/> No <input type="checkbox"/> Yes	limit instructions regarding allowable equipment or machinery on site based on site conditions (i.e. height, weight, width, etc.). Specifying equipment on a consistent basis will lead to Mx being identified as the Constructor.
Will Metrolinx be providing Metrolinx equipment for the contractor's use?	<input type="checkbox"/> No <input type="checkbox"/> Yes	limit equipment provision to specialized rail equipment that would not be available to contractors. In these cases, Mx should be confident that the contractor's equipment operator(s) are qualified to use the machinery and maintenance is the responsibility of the contractor. Providing common equipment owned by Metrolinx (i.e. scaffold, scissor lift, ladders, etc.) will likely lead Mx to appear to undertake part of the work.
Will Metrolinx be using CCDC-2 without deleting section 3.2.2.2?	<input type="checkbox"/> No <input type="checkbox"/> Yes	delete CCDC section 3.2.2.2. This section identifies Mx as the Constructor. Unless determined in writing otherwise, contractors will assume that Mx is taking on the Constructor responsibilities and liabilities.
Will the nearest contractor (by space) or next scheduled contractor (by time) overlap with the Project as a result of delays?	<input type="checkbox"/> No <input type="checkbox"/> Yes	arrange or delay projects to avoid overlaps and/or physically separate the two projects.
<p><b>if No to all, then</b></p> <p><b>METROLINX IS THE OWNER (only)</b></p> <p>Based on the assessment above, Metrolinx will be the Owner. Provisions of the contract must be maintained through the General Contractor / Consultant. Metrolinx employees must avoid any of the controlling activities described in Section 2 or risk being identified as the Constructor.</p>		
Assessment by: _____		Assessment Date: _____
Signature: _____		Metrolinx is the <input type="checkbox"/> Constructor <input type="checkbox"/> Owner for this Project



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## COMPETENT SUPERVISOR DECLARATION

Declaration of Competent Supervisor(s)			
Metrolinx Project Name:			
Metrolinx Project No.			
Corridor / Subdivision / Limits of Work :			
Municipal Address / Intersection(s) :			
Metrolinx Project Manager:			
Metrolinx Project Coord.:			
Anticipated Start Date:		Anticipated End Date:	
Name of General Contractor:			
Name of Submitter:		Date of Submission:	
Signature of Submitter:			
<p>I, _____(Name), designate and attest that the following individuals are appointed as Supervisors for the aforementioned project. These individuals meet the requirements of a Competent Person as defined under Ontario's Occupational Health and Safety Act. Namely, a person who:</p> <p>(a) is qualified because of knowledge, training and experience to organize the work and its performance,</p> <p>(b) is familiar with [the Act] and the regulations that apply to the work, and</p> <p>(c) has knowledge of any potential or actual danger to the health or safety in the workplace.</p>			
Proposed Competent Supervisor(s) for the Work			
Name, Company		<b>Is Metrolinx the Constructor for this Project?</b> If yes, for each named supervisor, attach evidence of competency which may include but it not limited to the following: <ul style="list-style-type: none"> <li><input type="checkbox"/> Training Records, such as Worker Health and Safety Awareness, Supervisor Health and Safety Awareness, Joint Health and Safety Committee Certification, Accident Investigation and Reporting, Standard First Aid, etc.</li> <li><input type="checkbox"/> OHS Certifications or Designations</li> </ul>	
Name, Company			
Name, Company			
Name, Company			
Name, Company			



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## PROJECT KICK OFF CHECKLIST

## CMO as Constructor Checklist

## CMO Project Start Up Checklist

Project Name	Date
Project Number	
General Contractor	
Contract Number	

Item	Reference	Prior to Start of Work	As required through project	Upon item completion	Date Received	Revisions Required	Reason for Revision / Comments
<b>REGULATORY DOCUMENTS</b>							
MoL Notice of Project (Form 0175) <i>For CMO Projects, MoL to file NOP</i>	O.Reg.213/91, s.6	(X)					
MoL Registration of Employer (Form 1000) <i>Required for all contractors and sub contractors</i>	O.Reg.213/91, s.5	X	X				
WSIB Clearance Certificate (90 validity)	WSIA, s.141.2	X	X				
Permit To Take Water (PTTW)	OWRA, s.34	(X)					
>50,000 L per day							
Street Occupancy Permit (if required)	TMC, §743-18	(X)					
Sidewalk Occupancy Permit (if required)	TMC, §743-42 ?	(X)					
Tree Removal Permit, with Arborists Report (if required)	TMC, §813-7	(X)					
<b>TRAINING DOCUMENTS</b>							
GO-Safe Rail & CMO Orientation	CSMP	X	X				
<i>Mandatory for all site personnel</i>							
WHMIS Training	Contract	X	X				
<i>Mandatory for all site personnel</i>							
Proof of Qualification for Site Safety Representative		X					
Proof of Qualifications for Competent Supervisor(s) <i>Complete list below of submittals</i>	Act, s.27(2)(c) O.Reg.213/91, s.14	X					
Basic OHS Awareness Training	O.Reg.297/13, s.2	X					
Joint Health and Safety Committee Certification	Act, s.9(12)	(X)					
Occupational Health and Safety Act	Act, s.27(2)(i)	(X)					
Accident Investigation and Reporting	N/A	(X)					
Standard First Aid	N/A	(X)					
Other(s):		(X)					
Proof for Qualified First Aid Personnel On Site	BRQ 1990 - Reg.1101, s.8-10	X					
Explosive Actuated Equipment Training (if required)	O.Reg.213/91, s.117	(X)					
Signaller Training (if required)	O.Reg.213/91, s.106	(X)					



Item	Item	Notes	Date Received	Revisions Required	Reason for Revision / Comments
1.00	SITE-SPECIFIC CONTRACTOR POLICIES & PROCEDURES				
1.01	Occupational Health and Safety Policy				
1.02	Environmental Policy				
1.03	Workplace Violence Policy				
1.04	Workplace Harassment Policy				
1.05	Declaration of Competent Site Supervisor(s)				
1.06	Safe Work Procedures				
1.07	Contractor accident/incident forms - blank copy				
2.00	SITE-SPECIFIC INFORMATION				
2.01	Emergency Contact List				
2.02	Joint Health and Safety Committee List				
2.03	Worker Trades Committee List				
2.04	Emergency Response Procedures				
2.05	Designated Substance Survey (if applicable)	Asbestos, lead, Mercury Silica may be applicable to Mx projects.			
2.06	Proposed Equipment List				
2.07	Material Data Safety Sheets				
2.08	Service Maintenance Records for Equipment				
2.09	Engineered Scaffolding drawings (if required)				
2.10	Engineered Fall Arrest drawings (if required)				
3.00	CSMP SUBMITTALS				
3.01	Project Health and Safety Risk Assessment				
3.02	CMO Hot Work Permit				
3.03	CMO Electrical Work Permit				
3.04	CMO Shut Down Permit				
3.05	CMO Trenching / Excavating Permit	(1) Utility Locates (30 day validity) required for all contractors and sub-contractors - gas, power, communications (2) MoL Trench Notice (Form 0070) may be required			
3.06	CMO Confined Space Permit	Confined Space Training required [O.Reg.632/05, s.9.1]			
3.07	CMO Work at Height Permit	(1) Work at Height Training required [O.Reg.213/91, s.26.2(1)] (2) Elevated Work Platform Training may be required [O.Reg.213/91, s.147]			
3.08	CMO Crane / Hoist Permit	Crane / Hoisting Training required [O.Reg.213/91, s.150]			
3.09	CMO Tunnel / Shaft / Caisson / Cofferdam Permit	MoL Notification (Form 0077) required [O.Reg.213/91, s.245]			
3.10	CMO Designated Substance Permit	MoL Notification for Asbestos Removal Work (0072) may be required [O.Reg.278/05, s.11]			
3.11	Traffic Control Plan				
3.12	Emergency & Incident Response Procedure				
3.13	Spill Reporting Procedure				
3.14	CMO Site Visitor Permit	Only valid for "visitors"			
3.15	Emergency Evacuation Plan				
3.16	Work Plans				



4.00	HAZARD PLANS				
4.01	Hazardous Materials Handling Plan				
4.02	Hazardous Materials Disposal Plan				
4.03	Fall Protection Plan				
4.04	Spill Control Plan				
4.05	Sediment and Erosion Control Plan				
4.06	Traffic Protection Plan				
4.07	Dust Control Plan				
4.08	Waste Disposal Plan				
4.09	Site Layout Plan, including: Trailer Location Job Board Location				
	First Aid Station Location				
	Rescue Equipment Location				
	Emergency Vehicle Route				
	Evacuation Route				
	Muster point (and alternate)				
	Vehicle Parking Lot				
	Contractor Laydown Areas / Storage				
	Debris Storage				
	Lighting Plan				
	Proposed Refuelling Location				
	Public Access Through Site (if required)				
	Retention Ponds (if required)				
	Perimeter Security				
4.10	Tunnel / Shaft Safety Plan				
	Access Methodology for workers				
	Evacuation procedures				
	Dewatering procedures				
	Tunnel monitoring equipment locations				
	Topside protection				
	Tie off points (engineered)				
	Lighting Plan				
	Tunnel / Shaft personnel extraction plan				
	Check in / Check out procedures				
5.00	PROJECT SCHEDULE				
5.01	Work Schedule - at least two-week look ahead				

Legend			
X	Mandatory	OHS	Occupational Health and Safety Act (Ontario)
(X)	As applicable	OWRA	Ontario Water Resources Act
Contract	Contract Documents	RRO 1990 - Reg.1101	First Aid Regulation
CSMP	Mx-Construction Safety Management Program	TMC	City of Toronto Municipal Code
O.Reg.213/91	Construction Projects Regulation	WSIA	Workplace Safety and Insurance Act
O.Reg.297/13	Occupational Health and Safety Awareness and Training		
O.Reg.632/05	Confined Space Regulation		



## CMO as Owner Checklist

[illegible]



**EMERGENCY EVACUATION PLAN - MINIMUM REQUIREMENTS CHECKLIST**

The following checklist is provided for CMO and Contractors to ensure that the Emergency Evacuation Plan meets the requirements of the CSMP.

- ☐ Does the plan contain the necessary project and contact information? For example:
  - Metrolinx Project Name
  - Metrolinx Project No.
  - Corridor
  - Subdivision / Limits of Work
  - Address, map, evacuation routes, directions and access points
  - Names and Phone Numbers of:
    - Metrolinx Project Manager / Project Coordinator
    - Primary and Secondary Emergency Response Coordinators (ERCs)
    - Primary and Secondary Area or Shift Assistants
    - Primary and Secondary Monitors
    - Primary and Secondary Searchers
- ☐ Does the plan:
  - address all types of situations and hazards which may arise at the site?
  - cover everyone who may be present at the site (guests, visitors, suppliers, etc.)?
  - allow for quick and safe evacuation when needed?
  - clearly identify routes to safe assembly areas?
  - consider special assistance for hearing, vision or mobility-impaired employees / workers
  - include a process to account for employees / workers?
- ☐ Is there a schematic / plan that illustrate the location of fire protection equipment, first aid, emergency exits and assembly points?
  - If yes, is it required to be posted in the key locations throughout the site?
- ☐ Is there a communication mechanism, i.e. siren, horn, bell, alarm for alerting staff of emergency?
  - If yes, is it required to be regularly tested to ensure its effectiveness?
  - Does the plan contain the responsibilities of all parties and stakeholders involved?
  - Does the plan contain a method to sound the evacuation alarm?
- ☐ Does the plan contain details on the location and requirement for signage of assembly areas?
- ☐ Does the plan contain communication protocols?
- ☐ Does the plan contain a defined means and procedures for educating site staff on the process of evacuation?
- ☐ Does the plan state a method to ensure that all persons on site are trained on the plan?
- ☐ Is the evacuation plan required to be clearly and prominently displayed at the site, where practicable?
- ☐ Has a site specific emergency evacuation protocol been reviewed and accepted by CMO?



**CONSTRUCTOR COORDINATION MEETING FORM****General Information**

Contractor: \_\_\_\_\_ Date: \_\_\_\_\_  
 Superintendent: \_\_\_\_\_ Current Work Force: \_\_\_\_\_  
 Project: \_\_\_\_\_  
 Schedule - Please attach the following: ☐ Two week look-ahead ☐ One month look-ahead

**The Work - (i.e. Primary tasks that may affect other Contractors)**

Activity	Location	Duration (Days)

**Coordination: - Concerns with Contractor overlap?****Required Permits:**

- |  |   |                                   |
|--|---|-----------------------------------|
| <input type="checkbox"/> General Access  | <input type="checkbox"/> Trenching & Excavation | <input type="checkbox"/> Hot Work |
| <input type="checkbox"/> Work requiring Use of Fall Protection                         | <input type="checkbox"/> Use of Explosives      | <input type="checkbox"/> Signals  |
| <input type="checkbox"/> Work on Electrical Equipment (live or not)<br>Space Entry     | <input type="checkbox"/> Crane & Hoisting       | <input type="checkbox"/> Confined |
| <input type="checkbox"/> Designated Substances (Contact with, Disturbance, or Removal) | <input type="checkbox"/> Tunneling              |                                   |

**Proposed Flagging Requirements:**

Date	Duration (Days)	Location of Activity	Work Hours

\* Working within Metrolinx Project sites requires completion of the CMO Contractor Orientation Training



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PROJECT POINT OF ENTRY - SAMPLE SIGNAGE

Entry to Metrolinx Project Zone of  
[ABC CONTRACTOR]  
Metrolinx [XYZ] Project

Contractor Main Entrance to Metrolinx Property  
Metrolinx [XYZ] Project  
Maximum Speed 15km/hr  
Check-in Upon Arrival



## GUIDELINES FOR USE OF SIGNAGE, DEMARCATION AND PHYSICAL BARRIERS

### Project Zone Demarcation

Project zone demarcation and use of physical barriers is intended to:

- identify the project boundaries and prevent access from unauthorized persons,
- contain hazards within the project zone, and thereby reduce risk of harm to persons, equipment and facilities adjacent to the project zone.

It is important that the demarcation method and any physical barriers not create a hazard for persons or equipment in the vicinity.

The following table provides guidance on the use of various types of demarcation devices and physical barriers for project zones and access routes.

Project Zone Demarcation Requirements		
Demarcation Devices and Physical Barriers	Situation	
	Project Zone is Adjacent to Vehicular or Pedestrian Public Access Areas	Adjacent to Other Projects
Solid hoarding	Mandatory when work operations could cause discharge of hazardous flying objects	Mandatory when work operations could cause discharge of hazardous flying objects
Chain link fence	Recommended where solid hoarding is not necessary or impractical	Recommended
Portable fence or barrier	Acceptable for high risk temporary work operations	Optional
Signposts with tape or ribbon	Acceptable for low risk temporary work operations	Required where no other physical barriers are used
Signposts	Mandatory	Mandatory
Traffic cones	Mandatory where no other traffic demarcations are used	Mandatory where no other traffic demarcations are used
Traffic barriers	Mandatory where vehicle operations could endanger the public	If deemed necessary

Solid hoarding should be made of solid plywood that is free from hazards. The hoarding should be permanently affixed in place and should not come loose under normal operating or weather conditions.

A chain link fence shall also be permanently affixed in place and not come loose under normal operating or weather conditions.

Portable fences or barriers and signposts shall be clearly visible and, while in use, should be able to withstand normal operating or weather conditions. If the fence or barrier is required to be removed while work operations continue within the project zone, an alternative demarcation device must be utilized.

Traffic barriers are required where vehicular movement may cause harm to individuals or rail operations. Barriers shall be clearly visible and be able to withstand the impact of mobile equipment.



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## SITE VISITOR PERMIT

Metrolinx requires that all persons entering Project sites have completed CMO Orientation training. A Visitor may enter the property provided that this Site Visitor Permit is completed and approved by the Construction Management Office ("CMO").	
<b>"Visitor" means any person that:</b> <b>(a) does not have a legal contract for work with Metrolinx or any of Metrolinx's contractors,</b> <b>(b) is not regularly employed in the project zone and who is performing only visual inspections / work, or</b> <b>(c) does not have a direct role in the execution of the project work.</b>	
<b>NOTE:</b> 1. An SVP is valid for 48 consecutive hours. 2. An SVP may only be issued once per Visitor per Work Zone. Successful completion of the CMO Orientation is required prior to any subsequent visits. 3. Visitors must be accompanied at all times by the named "Authorized Person" who has <u>authority and control over the Visitor</u> for the purposes of their safety, and who is <u>trained and authorized to access</u> the named Metrolinx Project Zone. 4. Visitors must comply with the Rules stipulated below.	
<b>SECTION 1 - REQUEST, to be completed by the MX or GC Requestor who shall identify and endorse the named "Authorized Person" below.</b>	
SVP Requested by:	Date:
Name of Authorized Person:	CMO ID No.
Company of Authorized Person:	
Name of Visitor:	Company of Visitor:
Requested Access Date:	Work Zone / Project Name:
Description of Visitor's Activity:	
<b>SECTION 2 - ACKNOWLEDGEMENT, to be verbally reviewed by CMO with the Visitor and Authorized Person prior to issuance.</b>	
The Visitor identified above has been authorized to access the identified Work Location and will comply with the following Rules: 1) The following personal protective equipment (PPE) must be worn at all times while on the Project: a) Class 1 CSA safety glasses with side shields b) Class 2 orange-coloured high visibility safety vest c) CSA approved hard hat d) CSA Green Patch safety boots (6" or 8" high, no safety shoes) 2) The named Visitor will be accompanied at all times by the named Authorized Person who has authority and control over the Visitor for the purposes of their safety. 3) The named Visitor will take part in the Flag Person's job briefing while in the rail environment. 4) A copy of this Permit must be carried by the Visitor at all times while on site and shown upon request. <b>REMEMBER:</b> • Be aware of your surroundings at all times - Remain ALERT. • Trains and railway equipment may pass on any track, at any time, and in any direction. • Always follow the Flag Person's directions. • Stay with your Authorized Person.	
Signature of Visitor:	Signature of Authorized Person:
<b>SECTION 3 - CONFIRMATION, to be completed by CMO</b>	
CMO Construction Supervisor: (print name)	CMO Construction Supervisor: (signature)
Permit Valid From: (YY/MM/DD, Time)	
<b>THIS PERMIT EXPIRES 48 HOURS FROM THE DATE / TIME NOTED ABOVE.</b>	



## WORK PLAN TEMPLATES

## Site Specific Work Plan Submittal Template

CONTRACTOR / CONSULTANT or PROJECT DELIVERY TEAM TO COMPLETE						
General Contractor / Consultant:						
Mx Project Number:		Mx Project Name:				
Mx Project Manager:		Mx Project Coordinator:				
Work Plan Name:						
Revision.	Submitted Date	WORK PLAN REVIEW TRACKING				
		Received Date	Received By	Status	Comments	Returned
0						
1						
2						

STAKEHOLDER DISTRIBUTION				
Check box if review by Stakeholder is required		Distributed To (Name)	Distributed Date	Feedback Received Date
<input type="checkbox"/>	Project Delivery Team			
<input type="checkbox"/>	CMO			
<input type="checkbox"/>	GO Operations			
<input type="checkbox"/>	GO Station			
<input type="checkbox"/>	Rail Corridors			
<input type="checkbox"/>	Transit Safety			
<input type="checkbox"/>	Track COE			
<input type="checkbox"/>	Other:			
<input type="checkbox"/>	Other:			
<input type="checkbox"/>	Other:			



## Part A - General Information

A.1 - Project Information	
Contractor/Consultant	Contractor
Location	Description of exact location of work
Task Objective	Description of work to be performed (by this work plan)
Contractor's Contact Information	Main Site Superintendent or H&S Rep on-site
Date to Commence Work	Click here to select or enter a date
Date to Complete Work	Click here to select or enter a date
Hours of Work / Shift	Ex. night shift 1900-0400
A.2 - Schedule	
<p><i>Provide a schedule breakdown in the available space below or as an attachment to this work plan with reference made in Part F</i></p> <p><i>Note: The time scale of the schedule should correspond to the level of complexity of work ie. Hourly, Days, Weeks</i></p>	



**Part B - Scope of Work / Detailed Work Methodology / Equipment and Tools**

**NOTE: It is important that this section be as detailed as possible and be broken down into as many tasks necessary in the methodology which best represents ALL the steps to completing the scope of work. Any reference to procedures, documents, drawings should accompany this work plan as attachments and be clearly referenced in section F**

**B.1 - Scope of Work**

*Describe the location(s) of the work, including staging areas and access paths. Include detailed sketches illustrating these areas. Provide details/sketches in the available space below or as an attachment to this work plan with reference made in Part F*

**B.2 - Detailed Work Methodology**

*Provide a detailed breakdown of all work tasks associated with the scope of work from mobilization to demobilization.*

**NOTE: Delete the italicized examples. Add rows to suit number of activities/tasks.**

<b>Task No.</b>	<b>Activity/Task</b>	<b>Task Details</b>	<b>Location</b>	<b>Duration</b>
01	Mobilization	Scissor lifts will be delivered onto site by Stephenson's rental through Bremner Gate during non-rush daytime hours. They will be stored on Platform 3 by stairwell XX until ready for use. Lifts will be parked parallel to the tracks, wheels chocked and protected with collapsible barricades, safety cones and or caution tape	Bremner Gate, west crossing, Platform 3	Estimated 60 minutes to cross tracks
02	Install cabling above Platform 6/7	Scissor lifts will be used to install cabling along the entire length of Platform 6/7 starting from West to East at night. Cables will be tied with zip ties to the existing steel structure to keep the lines from sagging.	Platform 6/7	Estimated 2 days



**B.3 - Equipment and Tools**

Based on the Work Methodology in B.2, specify the equipment and tools required to complete each task.

**NOTE:** Delete the italicized examples. Add rows to suit number of activities/tasks. Equipment shall be listed in association to each task.

Task No.	Equipment and/or Tools
01	<i>Delivery truck, wheel chocks, barricades, safety cones, caution tape</i>
02	<i>Scissor lift, fall protection harness and lanyard, zip ties, various hand tools ie. pliers</i>

**B.4 - Required CMO Permits**

Check off all activities for which CMO work permits are required. **NOTE:** Append updated training records where applicable

	Activities	Regulatory Reference/ Additional Info
<input type="checkbox"/>	Hot Work	O. Reg. 632/05, s.2
<input type="checkbox"/>	Work Requiring Fall Protection	O. Reg. 297/13 <b>Note:</b> Provide <i>site specific</i> fall rescue plan
<input type="checkbox"/>	Confined Space Entry	O. Reg. 632/05 Proof of Confined Space Training required <b>Note:</b> Provide <i>site specific</i> CSE rescue plan
<input type="checkbox"/>	Trenching or Excavation	(1) Proof of Utility Locates (30 day validity) required for all contractors and subcontractors (1) Proof of MoL Trench Notice (Form 0070) may be required
<input type="checkbox"/>	Crane or Hoist Operations	O. Reg. 213/91, s.150 Proof of Crane / Hoisting Training required
<input type="checkbox"/>	Tunnels , Shafts, Caissons or Cofferdam	O. Reg. 213/91, s.245 Proof of MoL Notification (Form 0077) required
<input type="checkbox"/>	Designated Substances	O. Reg. 278/05, s.11 Proof of MoL Notification for Asbestos Removal Work (0072) may be required
<input type="checkbox"/>	Site Visitor	Any visitor(s) access must be approved by CMO via the Site Visitor Permit.
<input type="checkbox"/>	Shut Down (HVAC, electric power, fire alarm & sensors, fire suppression)	Permit required for all operations affecting building occupants and fire safety
<input type="checkbox"/>	Electrical Work (live or not)	Permit required for work on or around equipment (live or not).



## Part C -Risk Assessment (RA) and Site Safety

**NOTE: This section does not apply IF the contractor / consultant already maintains a company policy / procedure for RA development. Please follow and include the company's policy / procedure in Part F along with a completed RA based on company policy / procedures for ALL of the tasks identified in the methodology in Part B.2.**

## C.1 - Instructions for Completing the RA Summary table in Section C.2:

Based on the Work Methodology stated in Part B.2, populate the table in Section C.2 following the instruction below:

- (1) Identify the health, safety and/or environmental hazards associated with each task,
- (2) Evaluate the initial frequency and severity for each hazard using the Tables below,
- (3) Identify the initial risk rating for each task,
- (4) Identify the controls to be implemented to eliminate or reduce the identified risk(s) associated with each task,
- (5) Re-evaluate the controlled frequency and severity for each hazard, then
- (6) Identify the final risk rating for each task
- (7) RA Sign-off in section C.3

Hazard Frequency					
The frequency can be determined from historical data, if it is available, or it may be estimated based on any reasonable information or statistical analysis available or based on the best judgement of any individual, group or subject matter expert(s).	Description	Level	Definition		
	Frequent	A	Occurs daily or weekly, experiences continually or ≥1/10.		
	Probable	B	Occurs monthly, will likely experience frequently or ≤1/100.		
	Occasional	C	Occurs annually, will experience on an occasional basis or ≤1/1000.		
	Remote	D	Unlikely, but may occur during the life of the system or ≥ 1/1,000,000.		
	Improbable	E	Unlikely to occur or ≤1/1,000,000.		
Hazard Severity					
<p>When determining the severity of a hazard, one should select the most likely outcome of the event. The severity category should be based on what “usually” happens or would happen. Note that the definitions of each are <b>NOT</b> just related to worker injury. They also may include:</p> <p><b>“loss of system”</b> - impact to bus or train operation; unable to repair equipment or inspect etc.</p> <p><b>“environmental damage”</b> - which may be damage to the natural environment (e.g. spills, damage to vegetation) and/or the built environment (e.g. damage to buildings or stations).</p>	Description	Category	Definition		
	Catastrophic	1	Death, system loss or severe environmental damage		
	Critical	2	Severe injury, severe occupational illness, major system or environmental damage		
	Marginal	3	Minor injury, minor occupational illness, minor system or environmental damage		
	Negligible	4	Less than minor injury, occupational illness, or less than minor system or environmental damage		
Risk Rating					
<p>Once the frequency and severity have been determined, the Risk Rating can be determined from the Risk Rating table.</p> <p>The result is a Number / Letter designation and a colour designation.</p>		1 - Catastrophic	2 - Critical	3 - Marginal	4 - Negligible
	A - Frequent	1A	2A	3A	4A
	B - Probable	1B	2B	3B	4B
	C - Occasional	1C	2C	3C	4C
	D - Remote	1D	2D	3D	4D
	E - Improbable	1E	2E	3E	4E



C.2. - Risk Assessment Summary									
Task No.	Activity/Task	Hazards	(Initial) Uncontrolled Rating			Control Measure* / Comment	(Final) Controlled Rating		
			Frequency	Severity	Risk		Frequency	Severity	Risk
01	Mobilization	<ul style="list-style-type: none"> <li>- Hit by train movement</li> <li>- Lift uncharged and cannot be walked across or gets stuck on track</li> <li>- Truck or lifts hit signals or other infrastructure</li> </ul>	C	1	1C	<ul style="list-style-type: none"> <li>- Ensure flagging is provided to cross tracks</li> <li>- Drive delivery truck across to Platform 3</li> <li>- Ensure power source is available on Platform 3 for charging</li> <li>- Arrange for spotter to walk in front of truck</li> </ul>	D	3	3D
02	Install cable above Platform 6/7	<ul style="list-style-type: none"> <li>- Hit by train movement</li> <li>- Interactions with passengers</li> <li>- Fall from height</li> <li>- Scissor lift falls into trackbed</li> <li>- Electric shock</li> <li>- Pollute trackbed with zip ties</li> </ul>	C	1	1C	<ul style="list-style-type: none"> <li>- Ensure TOPs for tracks 3 and 4</li> <li>- Barricade work area; caution tape vertical elements</li> <li>- Provide fall arrest equipment and training to workers; CMO Work at Height Permit</li> <li>- Ensure spotter on ground when navigating around narrow platform locations</li> <li>- Lock out electrical source; ensure electrician on crew; CMO Electrical Permit</li> </ul>	D	3	3D
			A	3	3A		D	3	3D
			B	2	2B		D	3	3D
			B	2	2B		D	3	3D
			B	2	2B		D	3	3D
			A	3	3A		C	3	3D
C.3 - Risk Assessment Sign-off									
NOTE: The development of this RA shall be produced by individuals with knowledge, experience and understanding of the work and associated hazards. This would include but not limited to the General Contractor, H&S Representatives, Sub-contractors etc. The names of the individuals who have contributed to the RA shall be listed below.									
RA developed by (Name / Title):						Signature:			
*NOTE:									
1. The following hazardous operations require permits from the CMO before commencing: Hot Work, Electrical, Shut-Downs, Trenching / Excavating, Confined Space, Work at Height, Crane / Hoist Operation, Tunnels / Shafts / Caissons / Cofferdams and Designated Substance Work. Please refer to the CSMP for definitions.									
2. Where Work Permits, training or P-Eng stamped drawings are identified as controls, provide documentation as an addendum or attachment and list in Section F.									



**C.4 – Track Protection, Worksite Protection**

Based on the Work Methodology in B.2, identify the location(s) and type of track protection required – Safety Watch, Work Block, Signal Maintainer, Gate Keeper, etc.

NOTE: Track protection requests are submitted by the PDT prior to work commencing in accordance with this Work Plan. Work cannot proceed without pre-arranged track protection when working within the Right of Way.

**C.5 – Site-Specific Emergency Measures and Contingency Arrangements**

Describe the site-specific emergency procedure / measures and contingency arrangements in the case of accident, incident, or delay that may affect public and operations. Back-up plans must be provided in case of delay that may affect public or operations. Provide details/sketches in the available space below or as an attachment to this work plan with reference made in Part F

**C.6 – Emergency Rescue Plans**

Provide detailed rescue procedures in the event of fall from **working at heights** (O. Reg. 213/91); in the event where a worker needs to be extracted from a **confined space** (O. Reg. 632/05) and; where **trench work** is deeper than 2.4 meters (O. Reg. 213/91). Provide details/sketches in the available space below or as an attachment to this work plan with reference made in Part F



**Part D – Personnel and Roles**

<b>D.1 General Contractor Staff</b>		
<i>All persons on site must hold valid CMO Orientation training. List all staff member names, position and contact number.</i>		
<b>Name, CMO #</b>	<b>Role</b>	<b>Emergency Contact Number</b>
	<b>Site Supervisor</b>	
	<b>Health and Safety Representative</b>	
	<b>Project Manager</b>	
	<b>Project Coordinator</b>	
<b>D.2 – Subcontractor Staff</b>		
<i>List of subcontractors and their workers anticipated to be working on the task and their related contact information. Note: The primary Contractor's competent supervisor, or an alternate competent supervisor (with submission of declaration), shall be present and on site during the performance of any work performed by the Contractor or sub-trade.</i>		
<b>Company Name</b>	<b>Name, Role, CMO #</b>	<b>Contact Number</b>
<b>D.3 – 3<sup>rd</sup> Party</b>		
<i>List of other personnel that will be required to assist with the completion of this work (i.e. Flagging company (TTR/A&amp;B, PNR), GO Community Relations, Construction Management Office (CMO)).</i>		



D.4 - Emergency Contacts	
Name	Phone Number
CMO Emergency	416-601-3611
Police / Fire / Ambulance	911
Ministry of Labour Office (Closest Location)	
Ministry of Environment (Closest Location)	
Nearest Hospital <a href="#">Click here to name of Hospital.</a>	
Go Transit Safety & Security	1-877-297-0642
GO Information	416-869-3200
GO Transit Control Centre (GTCC)	416-601-2147 (Rail)    416-638-6776 (Bus)
CN Railway	1-800-465-9239
CN Police	1-800-661-3963
CP Police/Railway	1-800-716-9132
<a href="#">Click here to enter additional Emergency Contact.</a>	
<a href="#">Click here to enter additional Emergency Contact.</a>	



## Part E - Stakeholder Considerations

Construction work on Metrolinx / GO Property can impact services, operations and the public. The Contractor / consultant shall ensure that their work will not impact services, operations and put public safety at risk. In relation to the tasks, all mitigating measures to eliminate or reduce operational and public impacts shall be described here. The Contractor / consultant shall allocate enough time to clean up site after completion of work, to make site safe for operations and the public.

**Note: The Contractor / Consultant is expected to complete this section in advance, with as much detail as possible. Additional detail may be required to address feedback/concerns from initial stakeholder review of the work plan and shall be added here in subsequent revisions to the work plan.**

<b>E.1 - Service and Operational Impact</b>
<b>E.2 - Immediate Public Impact</b>
<b>E.3 - Public and Railway Corridor Roadway Impacts</b>
Describe any traffic control or road closures that are required for the work. Provide details/sketches in the available space below or as an attachment to this work plan with reference made in Part F ie. Traffic plans, Road closure/occupancy permits.
<b>E.4 - Surrounding Community Impacts</b>
Describe any impact the work can impose on the community in the surrounding area (such as noise, dust, traffic control). Inform if special signage for the operation will be posted where and which kind, who will provide the signage, etc. Direct all communications with the public through Metrolinx / GO's Offices.



**Part F - Addendums and Attachments**

F.1 - List of Documentation		
<i>List all additional documents submitted with this Work Plan submission such as, but not limited to:</i>		
<ul style="list-style-type: none"><li>• Detailed Schedule</li><li>• Traffic Plans/Permits</li><li>• Rescue Plan(s)</li><li>• Risk Assessment (RA), RA policy/procedure</li></ul>	<ul style="list-style-type: none"><li>• Safe Work Procedures</li><li>• Equipment Specifications</li><li>• Site Specific Emergency Plan(s)</li></ul>	<ul style="list-style-type: none"><li>• Site Sketches</li><li>• Training Records</li><li>• Competent Supervisor Declaration</li></ul>



**Part G - Worker Sign-Off**

*Contractor must ensure that a briefing containing the main elements of this Work Plan (including safety and emergency measures) take place on site prior to the work commencing. The Work Plan briefing can be combined with the daily shift briefing (performed by the Flagman or Contractor's Site Supervisor). Workers involved in task to sign-off on Work Plan prior to commencing work in Part G*

By signing I acknowledge that this Work Plan was reviewed with me prior to starting the task.

Name	Company	CMO #	Signature



### Site Walk Work Plan Submittal Template

<i>Site Walk Work Plans (SWWP's) are to be submitted at least 48 hrs in advance to allow for the necessary CMO review. Site walks requiring track protection are subject to Flag Person availability.</i>					
This Site Walk Work Plan has been reviewed for accuracy of the content by the following designated site walk lead					
Designated Site Walk Lead Name:			Phone:		
Company Name:					
Proposed Date:		Corridor / Mileage	Address:		
Mx Project Number:		Mx Project Name:			
Revision	Submitted Date	CMO TO COMPLETE			
		Received Date	Received By	Status	Comments
1					
SWWP Supported for Track Protection					

#### Part A - Scope of Site Walk

<i>Describe the location(s) of the site walk including the intended access points to the Railway Corridor. Include detailed sketches/maps illustrating the access, locations/routes for the site walk.</i>

#### Part B - Track Protection Method

<i>Any persons within the Right of Way are required to have track protection in the form of Safety Watch, TOP or Rule42.</i>

#### Part C - Site Safety and Emergency Measures

<i>Describe the site-specific safety and emergency procedure / measures in case of an emergency ie. Medical or other. Ensure to outline the provision of first aid kits, identify the registered civic addresses of nearest access point(s) and a map to nearest hospital.</i>



## Part D - Emergency Contacts

Name	Phone Number
CMO Emergency	416-601-3611
Police / Fire / Ambulance	911
Nearest Hospital (Include Map) <a href="#">Click here to name of Hospital.</a>	
GO Transit Safety & Security	1-877-297-0642
GO Information	416-869-3200
GO Transit Control Centre (GTCC)	416-601-2147 (Rail)    416-638-6776 (Bus)
CN Railway	1-800-465-9239
CN Police	1-800-661-3963
CP Police/Railway	1-800-716-9132

## Part E - Site Walk Briefing and Attendee Sign-Off

Please pre-populate name of attendees, company and CMO ID #. Attendees are to sign after designated site walk lead provides briefing.

*The Contractor / Consultant must ensure that a briefing including the review of these site walk details (including any safety and emergency measures) takes place on site prior to the site walk commencing.*

By signing I acknowledge that this Site Walk Work Plan was reviewed with me immediately prior to starting the site walk.

[illegible]



## TRAFFIC CONTROL WORK PLAN

### **GENERAL**

This Appendix includes requirements for the preparation and submission of Traffic Control Work Plans when project requires Road Closures and Traffic Control for Site Access/Egress.

Contractors are required to submit the Traffic Control Plans in accordance with this Section, and the following:

- a. Traffic Control Plans and Permits are required each time the Project will require a road closure or when site access/egress requires Traffic Control;
- b. Traffic Control Plans to be submitted to CMO must include City of Toronto (or other location) approvals (Permits);
- c. The Contractor has the responsibility to integrate any individual, yet overlapping, Traffic Control Plans, as applicable;
- d. Devices such as signs, cones, and barricades shall be used in accordance with the Ontario Traffic Manual Book 7;
- e. The Contractor may be required to have Personnel - Qualified Traffic Control Person(s) or Police Officer(s) (Paid Duty Officer) to direct traffic, as applicable.
- f. Contractors may submit their Traffic Control Plan as per CMO's Traffic Control Work Plan Template (Attached at the end of this Appendix) as a minimum. Contractors may use their own form but all items described in this Section shall be covered.

### **SCOPE**

The Traffic Control Plan shall include the methodology, permits, potential risks and associated control measures, personnel (when applicable), and schedule.

In the case of road closures the Traffic Control Work Plan shall include the dates when the road would be closed and the date it will be released to the public. Also, the Contractor shall include the detour or diversion route, when applicable. When detour or diversion route, contractor shall inform whether a paid duty officer will be available to direct traffic, and where (s) he will be positioned.

In the case of traffic control for vehicles and equipment flow between site and public roadways, the Traffic Control Work Plan shall include the period of time for the traffic control and the hours it will be working.

The Traffic Control Work Plan shall follow the requirements of the Ontario Traffic Manual Book 7.

### **CONTENTS**

The Traffic Control Work Plan content shall include:

- 1) Cover sheet including project name, revision number, date of submission and status (accepted/rejected).
- 2) Contractor information, including project supervisor and traffic control supervisor's contact numbers;
- 3) Exact location the plan covers (ex. street number, street name, main intersection, etc);
- 4) Traffic control persons list and schedule of work (if applicable);
- 5) Provisions for paid duty officers (if applicable);
- 6) Description of the work activity (removal of debris / hauling spoils / etc.), including changes of activity as project progresses;
- 7) Traffic control methodology that should consider:
  - a) Road alignment: winding, straight, hilly, banked, etc.;



- b) Road type: divided, undivided, number of lanes, etc.;
  - c) Sight distance: signs, trees, buildings and other obstructions;
  - d) Approaches: hills, curves, intersections, accesses, etc.;
  - e) Site length, regulated speed, and traffic volumes (<1000, 1000-7000, >7000);
  - f) Type of traffic: local, commercial emergency, bus, etc.;
  - g) Shoulders: type, width, capacity;
  - h) Surrounding land use: commercial, industrial, residential, rail, etc.; If residential areas: driveways, school buses, schools, etc.;
  - i) Site hazards: rock falls, paths, runaway lanes, steep hills, equipment, etc.;
  - j) Weather conditions: clear, icy, wet, foggy, if applicable;
  - k) Work on roadway, work off roadway, work on shoulder, where applicable;
  - l) Site access/egress, equipment access;
  - m) Emergency vehicle access.
  - n) Instructional/warning static signage (warning, rail safety, "wait for Flag Person instruction", No Access beyond without escort, etc)
- 8) Proposed schedule (commencement and completion) and hours of work (day/night), including traffic control during off hours, when required;
- 9) Traffic Plan Diagram including:
- a) Sketches detailing streets of the area;
  - b) Types and location of traffic control devices;
  - c) Traffic control persons or paid duty officers, where applicable;
  - d) Spacing of devices, moving signs, turning/removing signs, where applicable;
  - e) Advanced warning area, transition area, work area, termination area, where applicable;
  - f) Delineation of traffic during off hours;
- 10) Addendums, including:
- a) Permits;
  - b) Training records, qualification of traffic control persons, when applicable;

The Contractor is responsible for ensuring all information in the Work Plan is complete and accurate. CMO Traffic Control Form shows the minimum expectation of quality from the Contractor.

## **EXECUTION**

Contractor is responsible for executing the Road Closure or Site access/egress as per approved Traffic Control Plan. Any changes to the plan have to be re-submitted to CMO for approval.



**TRAFFIC CONTROL WORK PLAN TEMPLATE**

TITLE OF ACTIVITY

PROJECT:

CONTRACTOR:

Version (or revision) #:	Submitted (Date):	Revised (Date):	Status:	Comments
01				
02				
03				

**PART A - General Information**

Project:	Project name and ID #	
Contractor:	Contractor	
Location:	Description of exact location of work	
Task Objective:	Description of work to be performed (by this work plan)	
Contractor's Contact Information:	Site Superintendent or H&S Rep on site	
Date to commence and complete the work:	Dd/mm/yy to dd/mm/yy	
Hours of work / shift	Ex. Night shift 1900-0400	
Traffic Control Persons / Paid Duty Officers		
Name		Hours of work



**PART B - Scope of Work**

B.1 - Work methodology / Scope of work should include:

- ☐ Road alignment: winding, straight, hilly, banked, etc.;
- ☐ Road type: divided, undivided, number of lanes, etc.;
- ☐ Sight distance: signs, trees, buildings and other obstructions;
- ☐ Approaches: hills, curves, intersections, accesses, etc.;
- ☐ Site length, regulated speed, and traffic volumes (<1000, 1000-7000, >7000);
- ☐ Type of traffic: local, tourist, commercial emergency, bus, etc.;
- ☐ Shoulders: type, width, strength;
- ☐ Surrounding land use: commercial, industrial, residential, etc.; If residential areas: driveways, school buses, schools, etc.;
- ☐ Site hazards: rock falls, paths, runaway lanes, steep hills, equipment, etc.;
- ☐ Weather conditions: clear, icy, wet, foggy, if applicable;
- ☐ Work on roadway, work off roadway, work on shoulder, where applicable;
- ☐ Site access/egress, equipment access;
- ☐ Emergency vehicle access.

B.2 - Proposed schedule to include:

- ☐ Commencement and completion of work, road closure or required site access/egress control;
- ☐ Hours of work (day/night);
- ☐ Traffic control during off hours, if applicable.

B.3 - Scope of work/methodology shall be developed in accordance with the Ontario Traffic Manual Book 7.

**PART C - Traffic Plan Diagram**

Sketch / Diagram including:

- ☐ C.1 - Sketches detailing streets of the area;
- ☐ C.2 - Types and location of traffic control devices;
- ☐ C.3 - Traffic Control Persons or Paid Duty Officers, where applicable;
- ☐ C.4 - Spacing of devices, moving signs, turning/removing signs, where applicable;
  - o C.5 - Advanced warning area, transition area, work area, termination area, where applicable;
  - o C.6 - Delineation of traffic during off hours.

**PART D - Attachments**

- ☐ D.1 - Permits;
- ☐ D.2 - Training records, qualification of Traffic Control Persons, when applicable.



**WORK PERMIT FOR HAZARDOUS OPERATIONS**

Permit No.: \_\_\_\_\_

Contract Company Name: \_\_\_\_\_

Date of Issue: \_\_\_\_\_

This permit is valid: From \_\_\_\_\_ h \_\_\_\_\_ To \_\_\_\_\_ h \_\_\_\_\_  
 (Time)(DD / MM / YYYY) (Time) (DD / MM / YYYY)

I have noted all provisions and will adhere to all standards and regulations so imposed. The workers who will perform this work are competent and all appropriate PPE is present and will be used or worn at all times

\_\_\_\_\_  
 Name of Contractor's Competent Person or OHS Representative (Please print)

\_\_\_\_\_  
 (Signature)

\_\_\_\_\_  
 (Date)

\_\_\_\_\_  
 Name of CMO Construction Supervisor (Please print)

\_\_\_\_\_  
 (Signature)

\_\_\_\_\_  
 (Date)

The provisions of the following specific work operation permits were reviewed by CMO with the Contractor and are authorized by this permit.

**CMO : Check all Permits that apply (below) and add the corresponding check list.**

**Contractor : Initial on each Permit page to show acknowledgement.**

- Hot Work
- Work on Electrical Equipment (Live or Not)
- Shut-down of HVAC Equipment, Electric Power, Fire Sensors, Fire Alarms, Fire Suppression Systems or Elevators
- Trenching or Excavation
- Confined Space Entry
- Work Requiring Use of Fall Protection
- Crane or Hoist Operations
- Tunnels, Shafts, Caissons, and Cofferdams
- Designated Substances



## HOT WORK PERMIT CHECKLIST

This permit checklist is applicable to all operations involving heat, such as: arc / gas welding, cutting, torches, brazing, gas heating, blow-lamps and similar appliances, and abrasive grinding and cutting.

Details of Task:
What type of open flame or other equipment will be used?
Where are the exact locations where the tasks will be done:
Other Comments:

- ☐ Are Contractors trained and competent in the safe operation of their equipment and the safe use of the process?
- ☐ Have written safe work and emergency procedures been developed to deal with specific hazards and control measures required for the Hot Work site?
- ☐ Have safe work and emergency procedures been reviewed with all Contractors?
- ☐ Have proper handling and storage procedures for compressed gas cylinders been reviewed?
- ☐ Has the Hot Work area been inspected to ensure all necessary precautions have been taken to prevent accidental fires and explosion?
- ☐ Has the public or the public way been protected?
- ☐ Have warning signs / barriers been installed to warn nearby workers and/or the general public?
- ☐ Has the No Smoking Policy been reviewed?
  
- ☐ Has a dedicated fire watch been stationed near the Hot Work area?
- ☐ Is an adequate number of approved fire extinguishers provided?
- ☐ Is every worker who may be required to use a fire extinguisher trained in its use?
  
- ☐ Have all equipment been inspected for visible damage and possible hazards?
- ☐ Have all flammable materials and/or other hazardous conditions in Hot Work areas been noted?
- ☐ Have lines and/or containers that held a combustible material been purged and inerted prior to Hot Work operations?
- ☐ Have all combustibles been either removed or otherwise made safe for a distance of 11 meters (35 feet) from the Hot Work area?
- ☐ Have positive means been taken to confine heat, sparks, and slag to protect immovable fire hazards?
- ☐ Have fireproof tarpaulins been used to protect equipment or materials within range of sparks or spatter (If applicable)?
  
- ☐ Have fire alarm and suppression systems been adequately isolated and/or covered up in the Hot Work Area?
- ☐ Has local exhaust ventilation been provided where there accumulation of dust / emissions may result from Hot Work operations?
- ☐ Have wall and floor openings been protected?
- ☐ Are receptacles for electrode stubs provided and being used?
- ☐ Has the area where electric welding is carried on been kept free of electrode stubs and metal scraps?



**ELECTRICAL EQUIPMENT PERMIT CHECKLIST**

Work on live electrical equipment is prohibited except for testing or calibrating. This permit is applicable for work on or around equipment (live or not) rated at 120V or greater

Details of Task, including a description of the circuit and equipment involved.
Where are the exact location(s) where the tasks will be done:
Other Comments:

**NOTE: A written Work Plan is required if an object will encroach high voltage equipment closer than the limits specified in s.188 of the Construction Projects Regulations.**

**CONDITIONS OF THIS PERMIT:**

Qualifications	Only a certified electrician shall be permitted to connect / maintain / modify electrical equipment and installations.
Exposure to Energized Electrical Parts	Only authorized persons may enter a room or other enclosure containing exposed energized electrical parts.
Distance from Conductor	No object shall be brought closer to energized overhead electrical conductor than distance specified.
Board	Temporary switch and panel board must comply with the CSMP.
Transmission / Distribution Systems	Except where required, electrical work on/near electrical transmission / distribution systems shall be completed in accordance with the EUSA document.
Storage / Use	Equipment/materials that conduct electricity are not to be stored or used close to energized electrical equipment/installations/conductors that they can make electrical contact.
Conductive clothing	Conductive articles of jewellery and clothing (e.g. rings, necklaces) shall not be worn when working with live electrical equipment.
Gloves	Workers must be trained in proper use, care, & storage of rubber gloves & leather protectors.
Gloves	Every 3 months / 6 months, rubber gloves rated for voltages >5000V AC shall be tested & certified to ensure they can withstand the voltages for which they are rated?

**ADDITIONAL INSPECTION / AUDIT ELEMENTS (For Contractor and CMO use):**

Protection from Shocks and Burns	Has the Employer has established and implemented written measures and procedures to ensure workers are protected from electrical shocks and burns?
Power Supply Lockout	Before work begins, has the power supply to electrical equipment / installation / conductor has been disconnected, locked out of service, and tagged?
Stored Energy	Has hazardous stored electrical energy been adequately discharged / contained before work begins and kept discharged / contained while the work continues?
Tagging	Are tags made of non-conducting material, has been installed so as not to become energized, placed in conspicuous location, & secured to prevent its inadvertent removal?
Verification	Has the worker verified compliance with lockout / tagging / energy discharge procedures before beginning work?
Communication	Are there provisions for workers to communicate purpose and status of disconnection, lockout, tagging, discharging, and containment?
Enclosures / Rooms with Exposed Energized Electrical Parts	Has the entrance to room/other enclosure containing exposed energized electrical parts has been marked by warning signs stating that entry by unauthorized persons is prohibited?
	Have non-conductive barricades have been used to limit employee access to work areas containing live electrical parts?
	If signs and barricades do not provide sufficient warning and protection from electrical hazards, has an Attendant been stationed to warn and protect employees?



	Competent Worker	If electrical equipment / installation / conductor is rated at nominal voltage $\geq 300V$ , has an adequately equipped competent worker who can perform rescue operations been stationed?
	Protection	Are the tools, devices and equipment for working <del>on</del> near energized exposed parts of electrical equipment / installations / conductors designed, tested, maintained, and used to protect the worker?
	Electrical Shock and Burn	Has the worker used mats, shields or other protective equipment adequate to protect themselves from electrical shocks and burns?
	Extension Cords	Do electrical extension cords have a grounding conductor and two or more other conductors?
	Casing	Do cord-connected electrical equipment / tools have a casing that is adequately grounded?
	Polarization	Are all cord connections to electrical equipment/tools polarized?
	Portable Tool	Are portable electrical tools used outdoors/in wet location plugged into a receptacle protected by ground fault circuit interrupter of Class A type?
	Defective Equipment and Tools	Are defective electrical equipment and tools that may pose a hazard disconnected, removed from service, and tagged as being defective?
	Installation and Use	Are electrical equipment, installations, conductors and insulating materials suitable for their use and installed, modified and operated to not pose a hazard to workers?
	Use for Other Purpose	Are electrical equipment, installations and conductors that are not used as originally designed removed / left and grounded / locked out and tagged out?
	Work Near Overhead Electrical Conductor	Is a competent worker designated as signaller stationed so s/he is in full view of operator and has clear view of the electrical conductor and of the vehicle / equipment?
	Personal Protective Equipment (PPE)	Long-sleeved shirt and long pants made of cotton or other untreated natural fiber (i.e. flame resistant)
		Non-conductive safety glasses or safety goggles
		Non-conductive hard hat
		Heavy-duty leather work shoes or boots
		Workers who may be exposed to electrical shock / burn while performing work shall use rubber gloves adequate to protect him / her against shocks and burns. Gloves shall be sufficiently tested and certified:
		Rubber gloves shall be worn with adequate leather protectors and not worn inside out.
		Leather protectors shall be visually inspected for damage and adequacy immediately before each use.



### SHUT-DOWN OF HVAC EQUIPMENT, ELECTRIC POWER, FIRE SENSORS, FIRE ALARMS, FIRE SUPPRESSION SYSTEMS OR ELEVATORS PERMIT CHECKLIST

This permit is applicable to all operations taking place on the above mentioned equipment that may affect building occupants and fire safety.

Details of task, including the exact building systems to be affected:
Where are the exact locations where the tasks will be done:
Other Comments:

- ☐ Are any of the other permits under this Program required as part of the work:
  - ☐ Hot Work Permit
  - ☐ Work on Electrical Equipment (Live or Not)
  - ☐ Trenching or Excavation Permit
  - ☐ Confined Space Entry Permit
  - ☐ Work Requiring the Use of Fall Protection Permit
  - ☐ Crane or Hoist Operation Permit
  - ☐ Tunneling Permit
  - ☐ Designated Substances
  - ☐ Traffic Control
- ☐ Have building occupants been notified of the work and a point of contact?
- ☐ Has the building security / alarm monitoring centre been notified of the work?
- ☐ Where warranted, are signs / barriers / notices posted in the work area to protect occupants?
- ☐ Where warranted, has the area to be worked on been isolated from the remainder of the system?
- ☐ After the system is restored, test the system to ensure proper functioning.

#### NOTE:

**WHEREVER PRACTICAL THE TIME FOR THIS WORK WILL TAKE PLACE DURING NON-OPERATIONAL PERIODS.**



### TRENCHING OR EXCAVATING PERMIT CHECKLIST

This permit is applicable to all work activities involving:

- a "ground disturbance", as explained below, or
- "excavations" or "trenches", as defined by the Ontario Occupational Health and Safety Act, at a depth greater than four (4) feet below grade.

Activities that disturb the ground (soil or concrete) include, but are not limited to the following:

- hand digging
- mechanical excavation
- trenching / ploughing
- driving of fence posts, bars, rods, pins, anchors or pilings
- saw cutting
- land levelling / grading
- boring / drilling / pushing / auguring
- tunnelling

For all "ground disturbances" the individual responsible for the work must have read and understood the following document: **RAIL CORRIDORS STANDARD PRACTICES - Procedural Guidelines for Locates and Excavation - (RC-0502-01)**.

Description of work, specific excavation location and method of excavation:

Where are the exact locations where the work will be done:

Will an excavation support system be required? ☐ YES ☐ NO

If YES, refer to applicable regulations and describe below:

Other Comments:

For all ground disturbances on Metrolinx Property:

- ☐ Acknowledgement of the review and understanding of RAIL CORRIDORS STANDARD PRACTICES - Procedural Guidelines for Locates and Excavation - (RC-0502-01)
- ☐ Railway specific locates must be completed prior to work commencing and be available on site while the ground disturbance activity is taking place
- ☐ A review of all railway locates must be performed with the designated equipment operator prior to excavation and a valid copy of the locates maintained in the cab or in possession of the operator at all times
- ☐ A railway Signal Maintainer is required for all ground disturbances within 2 m of any buried railway infrastructure
- ☐ Only hand digging, hydro vacuuming or dry vacuuming is permitted to expose utilities unless other means have been approved by the railway

For all excavations:

- ☐ Locates: The employer who is responsible for the excavation must request the owner of the service to locate and mark the service, ie ON1CALL and Railway. (Note: Locates are only valid for 30 days)
- ☐ Other gas, electrical and other services in the area must be located, marked and service shut off (if it may pose a hazard)



- ☐ If a service poses a hazard and cannot be shut off, the owner of the service will supervise the uncovering of the service during the excavation.
- ☐ Pipes, conduits and cables for gas, electrical and other services in an excavation shall be supported to prevent their failure or breakage.
- ☐ The Contractor shall take precautions to prevent damage to adjacent buildings as specified by a professional engineer, if the stability of the buildings is affected.
- ☐ No unauthorized person shall enter or be permitted to enter an excavation or trench.
- ☐ Where a worker will enter into an excavation,
  - keep it reasonably free of water
  - provide a clear work space of at least 450mm between the excavation wall and formwork / masonry / wall
- ☐ No equipment or material shall be placed within one meter of the edge of the excavation.
- ☐ Equipment around the excavations shall not be operated in a manner to negatively affect its stability.
- ☐ Excavations left open shall be protected with barriers and while in the vicinity of vehicular traffic shall be protected by road plates of sufficient load bearing capacity

Support Systems in Excavations more than 1.2 meters deep:

- ☐ The walls of the excavation shall be supported in accordance with sections 234 to 242 of the Construction Projects Regulation.
- ☐ A ladder, in the protected area, must be used for access and egress in a supported excavation.
- ☐ Where a Professional Engineer determines that the walls of an excavation (not trench) in Type 4 soil does not require support, a copy of the Engineer's opinion shall be provided to CMO and the Engineer (or competent designate) shall inspect the excavation as frequently as specified. CMO shall be provided copies of these inspections.
- ☐ Copies of design drawings and specifications for a prefabricated, hydraulic or an engineered support system shall be provided to CMO for record keeping.
- ☐ Employer to complete "Notice of Trench Work" from MOL website as prescribed.

Fall Protection: Excavations greater than 2.4 meters deep:

- ☐ Protect the unsloped edges with an appropriate barrier at least 1.1 meters in height
- ☐ Topside workers must be protected from falls by the appropriate barriers or some form of fall protection

A trench is defined as an excavation (see above) where the greatest measured depth exceeds the shortest measured width. For all trenches:

- ☐ Work shall not be performed in a trench unless another worker is working above ground in close proximity.
- ☐ Where a worker will enter a trench deeper than 1.2 meters, the Contractor shall submit a Notice of Trench to the MoL and provide a copy to CMO.



**CONFINED SPACE ENTRY PERMIT CHECKLIST**

Note: This permit is applicable to all operations taking place in Confined Spaces, as defined by the Ontario Occupational Health and Safety Act.

Location and Description of Confined Space:
Purpose of Entry:

- ☐ Has the Contractor identified the requirement to conduct Confined Space work to the CMO in a timely manner?
- ☐ Has the Contractor submitted the following documents to CMO for review?
  - ☐ Confined Space Program.
  - ☐ Confined Space Hazard Assessment and Management Plan.
  - ☐ Confined Space Entry / Work Plan.
  - ☐ Confined Space Entry Permit.
  - ☐ Confined Space Site Specific Rescue Plan.
- ☐ Copy of the Contractor's training Certificates of all employees' current in Confined Space Entry.
- ☐ Has the Contractor ensured that all feasible precautions and required safeguards are met to prevent exposure to toxic gases, oxygen deficiency, flammable atmosphere, and accidents related to entering Confined Spaces?
- ☐ All personnel shall review and understand the applicable confined space documents.
- ☐ A qualified attendant shall be stationed outside the Confined Space to monitor the safety of and provide assistance to the Entrant.
- ☐ The Attendant shall reviewed the HMP and complete the following tasks (if applicable):
  - ☐ Hazards: review the potential hazards listed in the HMP
  - ☐ Lockouts: complete appropriate isolation requirements for the space and test, ensuring a 'Zero Energy Status' is attained.
  - ☐ Floor Management: allocate space for the storage of tools, materials, and refuse and have a clear access to the entry point
  - ☐ Close off area and post warning signage
  - ☐ Barriers: set up vehicle, pedestrian or object barriers
  - ☐ Testing: conduct pre-entry testing (readings for oxygen, toxic gas levels, etc.)
  - ☐ Ventilation: set up and operate required ventilation equipment
  - ☐ Retrieval: establish Emergency Response Plan
- ☐ The Attendant shall be certified in first aid and cardiopulmonary resuscitation.
- ☐ Is there an acceptable retrieval plan with equipment available?
- ☐ Has an individual been appointed to call for assistance in an emergency?
- ☐ Has the individual been provided a suitable means of communications, necessary phone numbers and constant access to a telephone?
- ☐ Has a communication system been established prior to and maintained entry into the Confined Space? (Check all that apply)
  - ☐ Visual contact
  - ☐ Voice
  - ☐ Signalling
  - ☐ Radio communication
  - ☐ Other
- ☐ Attendant(s) and Entrant(s) shall don all protective equipment required by the HMP.



- ☐ The Attendant shall remain within five (5) feet of the entry point all times while anyone is inside the space.
- ☐ The Attendant shall keep a Work Log and make a record at least three (3) times per hour?
- ☐ Testing with calibrated instruments (e.g. gas monitor) shall be performed during the entry.
- ☐ The Attendant shall control the movement of the Entrant to ensure the lifeline does not become entangled or caught.
  
- ☐ If access ladders are removed from the confined space, they must remain within 5 feet of the entrance.
- ☐ If confined space has been both unoccupied and unattended (within the last 20 minutes), tests must be performed before a worker enters or re-enters.
  
- ☐ If work is expected to run more than one shift, are spare batteries for the monitor or another monitor available to the workers?
  
- ☐ Once all work has been completed:
  - o Remove all equipment and check it against original inventory.
  - o The attendant will ensure that all personnel have vacated the Confined Space.
  - o Remove air monitoring / ventilation (if used) equipment and shut down.
  - o Close and secure the entry point.
  - o Clean around each entry point.
  - o Remove all lockouts and restore equipment to operation.
  - o All equipment requiring repair or cleaning shall be isolated and packed away.
  - o All equipment used in the Project shall be cleaned and returned to its proper storage location.



Metrolinx Project Name:					
Date:		Valid Time:		Permit Number:	
Contractor:		Contractor Supervisor:		Contact Number:	
Location and Description of Confined Space:					
Purpose of Entry:					
Hazards (Review the confined space; ✓ any hazard potentially or actually present for that specific confined space.)					
Acceleration	Energy Waves	Light Extremes	Reactive Materials		
Biological Material	Engulfment/Entrapment	Moving Parts/Equipment	Sensitizers		
Blocked Pathways	Falling	Muscular Skeletal Stress	Sharps		
Clutter	Flammable/Explosive Materials	Noise	State of Mind		
Combustible Loading	Gravity	Oxidizer	Structural Failure		
Conflict/Choices	Flying Particles/Liquid	Panic	Synergy		
Corrosives	Lack of Oxygen	Poisons/Toxins	Temperature Extremes		
Electrical Current	Lapse of Consciousness	Pressure	Vehicle Traffic		
			Other:		
Pre-Entry Readings (If more than one location is required attach a list and sketch of locations)					
Gas Detector Operator:	Unit ID Info:	Date of Calibration:	Time & Date of Reading:		
Location:	% O2:	% LEL:	CO2:	H2S:	Other:

Hazard Management Requirements (Put a ✓ in the box for task completed or N/A in the box if the task is not necessary)			
Lockout Switches & Valves		Entrant to Attendant Communications	
Blanking / Blocking of Pipes		Personal Protective Equipment	
Depressurization of Pipes		Chemical Protective Clothing	
Vehicle Barricades		Entrant Respiratory Protection	
Pedestrian Barricades		Retrieval System w/ Rescuer PPE	
Ventilation		First Aid & Packaging Equipment	
Purging		Chocking of Mechanical/Moving Parts	
Special Work Precautions		Lighting	
Hot Work / High Temperature / Other:		Refreshing / Clean-up / Decontamination System	
Rescue Information			
Attendant:(name)	Retrieval System type:(tripod/davit-arm)		Air Quality Monitoring:(names)
Rescue Personnel:(names)	Type of Emergency Assistance: (ie. rescue team)		Contact Method:(ie phone #)



I certify that I have completed the Confined Space Entry Permit and am satisfied with all the information listed above. I acknowledge that all personal have been briefed of the work being performed in the Confined Space, and will perform the work in accordance to the Confined Space Work Plan, Provincial Confined Space Guidelines O.Reg 632/05, and the Construction Safety Management Program.

---

(Contractor)

---

(Print Name)

---

(Date)

Entrant Permit Review Acknowledgement			
The Confined Space Permit for this job has been reviewed with me and I will undertake to follow the			
Entrant Name	Signature	Entrant Name	Signature

A copy of this permit is to be kept with the Attendant at all times.



**CSMP APPENDIX 19E : CONFINED SPACE PERMIT CHECKLIST**

Confined Space Entry LOG Location:    Attendant:        Date:    /        /

Entrants:

Name	Lock On	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Lock Off

Atmospheric Testing Results:

Location	Time (24 Hour)	O2% (19.5 - 23)	LEL% (< 5)	CO2 (< 25 ppm)	H2S (<10 ppm)	Results (Pass)		Initial s	Location	Time (24 Hour)	O2% (19.5 - 23)	LEL% (< 5)	CO2 (< 25 ppm)	H2S (<10 ppm)	Results (Pass)		Initial s
						Y	N										



<b>Project Information</b>			
Metrolinx Project Name:			Date:
Constructor:	CMO Construction Supervisor Name:		Contact Number:
<b>Contractor Information - A section must be filled out for each Contractor entering the Confined Space.</b>			
Contractor 1:		Contractor Supervisor 1:	Contact Number:
Project Area:	Description of Work:		# in Crew
Contractor 2:		Contractor Supervisor 2:	Contact Number:
Project Area:	Description of Work:		# in Crew
Contractor 3:		Contractor Supervisor 3:	Contact Number:
Project Area:	Description of Work:		# in Crew
Contractor 4:		Contractor Supervisor 4:	Contact Number:
Project Area:	Description of Work:		# in Crew

<b>CMO Work Permits - Place check mark (if applicable) or N/A (if non-applicable) for the work being performed in the Confined Space, to confirm Permit has been issued.</b>				
Permit Type	Contractor #1	Contractor #2	Contractor #3	Contractor #4
Hazardous Operations				
Confined Space Entry				
Work on Electrical Equipment				
Shut-Down of HVAC Equipment, Electric Power, Fire Sensors, Fire Alarms, Fire Suppression System or Elevators				
Work Requiring Use of Fall Protection				
Crane or Hoist Operations				
Tunneling				



Employer Confined Space Pre-Entry Checklist - Place check mark for activity completed or N/A if non-applicable.			
Activity	Contractor #1	Contractor #2	Contractor #3
Hazard Assessment			
Hazard Management Plan			
Attendant Duties			
Rescue Plan			
Barriers			
Lockout			
Gas Detection			
Ventilation			
Lighting			
Communication			
Equipment Inspection			
Designated Substances			
Other: (eg. PPE)			

I acknowledge that all personal working in this designated Confined Space, have been briefed of the work being performed, understand other Contractor's duties, and will perform the work in accordance to their respective Confined Space Work Plan, Provincial Confined Space Guidelines (O. Reg. 632/05), and the Construction Safety Management Program.

\_\_\_\_\_  
CMO Construction Supervisor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature Contractor #1

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature Contractor #2

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature Contractor #3

\_\_\_\_\_  
Date

\_\_\_\_\_  
Distribution: 1. CMO; 2. All Employers

\_\_\_\_\_



**WORK REQUIRING THE USE OF FALL PROTECTION PERMIT CHECKLIST**

Note: Fall protection equipment is required in all situations where:

- a worker is at risk of falling a distance of 2.4 meters (approx. eight feet) or greater;
- a worker is using an elevating device or ladder at a height of 2.4 meters or greater.
- a worker may fall into operating machinery, water or another liquid, opening on a work surface and into or onto a hazardous substance or object

Description of tasks:
Where are the exact locations where the tasks will be done:
What fall protection devices will be used? (Check all that apply) <ul style="list-style-type: none"> <li><input type="checkbox"/> Guardrails installed at the fall edge</li> <li><input type="checkbox"/> Travel restraint system (suitable only where the fall can be prevented by stopping access to a fall edge)</li> <li><input type="checkbox"/> Fall restricting system</li> <li><input type="checkbox"/> Fall arrest system</li> <li><input type="checkbox"/> Safety net</li> <li><input type="checkbox"/> Bump line</li> </ul>
Other Comments:

- ☐ Minimum Clearance: Are fall protection systems positioned so that minimum clearance for railway, road and other traffic is always provided, unless authorized by the CMO for set periods of time?
- ☐ Training: Have all employees requiring fall protection been trained in accordance with the MoL's Work at Height requirements? Evidence of training must be submitted to CMO prior to the start of work.
- ☐ Rescue Plan: In circumstances where a person may require rescue as a result of an arrested fall, has the supervisor ensured that the rescue plan is appropriate for the work situation? NOTE: Each new rescue plan made under this permit must be submitted to CMO prior to the start of work.
- ☐ Has the supervisor ensured that all communication, equipment, and personnel requirements of the plan are in place prior to commencement of work?
- ☐ Inspection: All components of a fall protection system shall be inspected by a competent person prior to its first use on-site and by the worker daily thereafter.
- ☐ Pads: Have components attached to structures been placed on neoprene pads to prevent damage to the structures?
- ☐ Mechanical Components: Have mechanical components of all fall protection systems been inspected by a competent person?
- ☐ Has the contractor given adequate oral and written instructions by a competent person on the use of fall protection equipment to all workers who may use fall protection?
- ☐ Defective Components: Have all defective fall protection device components been identified and removed from service and the Metrolinx Project Site.
- ☐ If the method of protection is other than fall arrest system and bump line, has the system been designed by a professional engineer in accordance with good engineering practice?
- ☐ Has the plan been submitted to CMO for review?



**CRANE OR HOIST OPERATIONS PERMIT CHECKLIST**

This permit does not apply to a crane or hoist attached to cars to repair rail.

Description of tasks: [include type of hoisting – Mobile, Tower, Other (Derricks, etc)]:									
Where are the exact locations where the tasks will be done:									
<p><u>Note:</u> Hoisting devices that operated closer than nine metres (30 feet) from the nearest rail of any track OR has the potential to foul track as a result of operation or in the event of a collapse require the Flag Person's or Track Supervisor's (for rail yards) authorization. Railway traffic protection is also required as specified by CMO.</p> <p><u>Note:</u> A backhoe with a hook attached to the bucket will be considered a hoisting device if used for hoisting.</p> <p>Will a hoisting device be operated within nine (9) metres of a rail or track? <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Will a hoisting device be operated within 20 metres of other cranes? <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If YES to any of the above, has the appropriate authorization been obtained from:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">CMO?</td> <td style="width: 30%;">YES</td> <td style="width: 30%;">NO</td> </tr> <tr> <td>The Railways?</td> <td>YES</td> <td>NO</td> </tr> <tr> <td>The City?</td> <td>YES</td> <td>NO</td> </tr> </table>	CMO?	YES	NO	The Railways?	YES	NO	The City?	YES	NO
CMO?	YES	NO							
The Railways?	YES	NO							
The City?	YES	NO							
Other Comments:									

- ☐ Notification: Before beginning a hoisting operation, has the Contractor given notice to a Ministry of Labour inspector nearest to the project?
- ☐ Is the high mast hoisting operation within a flight corridor? If so, has Nav Canada been notified?
- ☐ Certification: Is the operator of a crane/similar hoisting device Ontario certified?
- ☐ Training: Does the operator of a crane or similar hoisting device have written proof of their training for safe operation?
- ☐ Load Capacity: No crane or similar hoisting device is subjected to a load greater than its rated capacity as determined by its manufacturer or P. Eng in accordance with the CSA standards.
- ☐ Load Rating Plate: Every crane or similar hoisting device shall have affixed to it a load rating plate that the operator can read and it contains information to determine the load.
- ☐ Record: A permanent record of all inspections/tests/repairs/modifications and maintenance of the crane/hoisting device shall be kept and a logbook of the records is available with the crane.
- ☐ Certificates: Has the Contractor provided certificates of conformity and inspection, signed and sealed by a P. Eng. and issued within the previous year, for all hoisting equipment?
- ☐ Drawings: Has the Contractor provided a drawing, signed and sealed by a P. Eng., illustrating the use of cranes and other hoisting devices?
- ☐ Crane: The installation & dismantling of a crane shall be supervised by a competent worker as per the manufacturer's instructions in such a manner not to endanger any person/property.



- ☐ Visual Inspection: A competent worker shall visually inspect the crane's structural elements, rigging equipment and controls for defects prior to the start of every shift and as required during the shift?
- ☐ Structures: When cranes and hoists are used on structures, is the capacity of the structure sufficient to safely resist the various load configurations during all phases of construction, including assembly, use and dismantling?
- ☐ Drawing: Does the drawing of the structure in question include the following:
  - ☐ The value of forces transmitted to the structure?
  - ☐ Details of elements required to transmit those forces to the structure?
  - ☐ Work procedures to be followed?
  - ☐ The seal and signature of a professional engineer?
- ☐ Outriggers: Have the position(s) of the crane(s) and location of outriggers relative to the existing structures been indicated?
- ☐ Personnel Hoisting:
  - ☐ Is the platform equipped with more than one means of support?
  - ☐ Is the platform equipped with anchor points for a worker's fall arrest system?
  - ☐ Is the platform equipped with a guardrail as per OSHA?
  - ☐ Does the platform have a "maximum load rating" plate installed in a conspicuous manner?
  - ☐ Is the Crane equipped with fail-safe mechanisms that will prevent the platform from free-falling in the event of power/system failure or release of operating controls?
  - ☐ Is it ensured that the crane will not be hoisting materials, at the same time it is hoisting personnel?
- ☐ Does the Crane's hoist line have hooks with self-closing safety catches at the point where the platform is suspended?
- ☐ Is it confirmed that the Crane has a limit switch set that prevents the platform from exceeding manufacturer's specified height?
- ☐ Minimum Clearances: Crane operators shall ensure that the crane body, boom or loads attached to the crane are parked parallel to the tracks to maintain adequate minimum clearances.
- ☐ Loads: Loads shall be grounded while trains are passing to avoid swinging motion.
- ☐ Documentation: Has a written program, safe work procedures and training records for all lifts done near power lines have been provided and reviewed?
- ☐ Power Lines: Has the power been de-energized or protected and minimum clearances maintained for both equipment and load?
- ☐ Visibility: The operator shall use a qualified signaler at all times.
- ☐ Communication:
  - ☐ Hand signals or radio instructions for crane or hoist operation shall be given by a competent trained signaler.
  - ☐ All moves shall be well communicated and coordinated with other employees on the work site.
  - ☐ The operator and signaler shall ensure that other employees are clear of the area of crane operation before lifting or moving material.
- ☐ Load: Cranes or hoists shall be operated so that it or part of its load does not pass over a worker and workers stay clear of overhead loads.
- ☐ All lift zones will be identified with appropriate signage.
- ☐ Suspended Load: Crane or hoist controls shall never be left unattended with a load suspended.



- ☐ Unattended Vehicle: When leaving the crane or hoist unattended, the operator shall ensure that controls are left in "off" position and brakes are applied?
- ☐ Uncontrolled Motion: Guide ropes/tag lines shall be used to prevent motion on all lifts.
- ☐ Workers: No worker shall be lifted, positioned or transported by a crane or hoist unless it is engineered.
- ☐ Cables, slings and rigging shall be steel wire rope of the type, size, grade and construction recommended by manufacturer of the crane or similar hoisting device.
- ☐ All cables used by the crane or similar hoisting device shall be visually inspected by a competent worker at least once a week and record their condition in a log book while crane is in use



**TUNNEL, SHAFTS, CAISSONS AND COFFERDAM PERMIT CHECKLIST**

This permit applies to all operations taking place in Tunnels, Shafts, Caissons and Cofferdams as defined by the Ontario Occupational Health and Safety Act.

Details of Task:
Where are the exact locations where the tasks will be done:
Other Comments:

- ☐ **Land Requirements:** The tunnel or shaft has been started where there is sufficient space available?
- ☐ **Notice:** Has the employer, who will be constructing a tunnel, shaft, caisson or cofferdam, filed a notice with a Ministry of Labour Director before beginning work? (Note: Only the primary employer i.e. General Contractor needs to submit).
- ☐ **Precautions:**
  - o Before work has begun, have gas, electrical & other services in the area been accurately located & marked & service has been shut off if it may pose a hazard?
  - o Has the employer who is responsible for the work requested the owner of the service to locate and mark the service?
  - o If a service poses a hazard and cannot be shut off, has the owner of the service been requested to supervise the uncovering of the service during the excavation?
  - o Pipes, conduits and cables for gas, electrical and other services in a tunnel or shaft must be supported to prevent their failure or breakage.
  - o The Constructor shall take precautions to prevent damage to adjacent buildings as specified by a professional engineer, if the stability of the building is affected.
- ☐ **Working Alone:** A worker shall not enter a shaft, tunnel, caisson or cofferdam unless a qualified worker is working above ground at the entrance.
- ☐ **Entry:** No worker shall enter a well or augured caisson where the excavation is deeper than 1.2 metres unless the prescribed requirements have been met.
- ☐ **Fire Protection:** Have notices describing how to sound a fire alarm have been posted in conspicuous places on a Project?
- ☐ **Fire Extinguisher:** A means of extinguishing fire shall be provided at the following prescribed locations:
  - o The top and bottom of every shaft?
  - o At each panel board for electricity, on each electric-powered locomotive and at each battery charging station, if a Project consists of or includes a tunnel?
  - o Within 30 metres of each work face of a tunnel and of each location where a fire hazard exists?
- ☐ **Fire Suppression:** A fire suppression system shall be provided for equipment that contains flammable hydraulic fluids, while the equipment is underground.
- ☐ **Fire Line:** If the diameter of a tunnel will be equal to or greater than 1.5 metres when it is completed, a standpipe, fireline and a hose shall be provided in the tunnel.
- ☐ **Specifications:** Every standpipe, fire line and hose in a tunnel shall meet the requirements as specified.
- ☐ **Flammable Liquids:** Flammable liquids / gases have shall not be brought underground except as permitted.



- ☐ Storage:
  - o A flammable liquid or gas shall be stored as far as practicable from a shaft.
  - o A flammable liquid or gas shall be stored in a place from which it is impossible for spilled liquid to flow underground.
- ☐ Oil:
  - o Lubricating oil shall be stored in a suitable building or storage tank located in a place from which spilled liquid cannot run toward any shaft or tunnel.
  - o Oil used in hydraulic-powered equipment underground shall be of the type that is not readily flammable and does not readily support combustion.
  - o Combustible Equipment: No combustible equipment, including welding cable and air-hoses may be stored underground unless the equipment is required for immediate use?
- ☐ Cable: No electrical cable/gas hose shall be taken underground unless it has an armoured casing made of a readily non-flammable material and is marked to indicate it has the casing?
- ☐ Rubbish: Combustible rubbish, used or decayed timber, scrap wood or paper shall not accumulate and be promptly removed.
- ☐ Facilities:
  - o Has a heated room been provided for the use of underground workers?
  - o Have the wet clothes of workers have been dried using sanitary means in a change room on the project?
  - o Have adequate cleaning and washing facilities been provided to workers and maintained in a sanitary condition?
- ☐ First Aid:
  - o Has the supervisor in charge of a project appointed at least one trained worker to be available to give first aid at a shaft or tunnel?
  - o A first aid kit and a wire-basket type stretcher shall be kept at the above-ground entrance to every tunnel, shaft or cofferdam.
- ☐ Rescue:
  - o Has the employer established written emergency procedures for the rescue of underground workers which is practiced and followed?
  - o Have signed copies of the emergency procedures have been posted on the Project?
  - o Have at least four (4) rescue workers been trained by a competent worker within 30 days before tunnelling operations begin and have been retrained every 30 days?
- ☐ Inspection: Before a Project begins, has the supervisor of the construction of a tunnel designated a rescue worker who will inspect, test and record all rescue equipment every 30 days?
- ☐ Breathing Units:
  - o Each rescue worker shall be provided with a breathing apparatus that has met the prescribed requirements and training has been provided to operate it. It will be kept in close proximity to the means of access to an underground workplace.
- ☐ Self-Rescuer
  - o All workers shall have a suitable self-rescue respirator for their exclusive use and be kept in the vicinity of the worker.
  - o Each worker shall be trained in the proper use of the self-rescuer.
- ☐ Telephone / Communications:
  - o At a project that is to be over 14 day's duration, has a telephone connected to a public telephone system been installed or has a radio telephone available?



- Has a public / radio telephone been installed or arranged nearby, for communication with police / fire department / ambulance services?
- Has a telephone system been installed at a tunnel if work at the face of the tunnel is >23 metres from the top of the service shaft or the opening into the tunnel?
- Are telephones located in the supervisor's office, at the top and bottom of the service shaft, at other access to the service shaft and at 30 m intervals in every work area?
- Has a notice been posted by each telephone indicating how to call other phones in the system, emergency signals and stating that a worker must respond to emergency signals?
- Has a telephone system been installed in such a way that conversations can carry on between any two telephones and voice circuits are separate from signalling circuits?
- During the construction of a shaft, has an effective means of communicating between the lowest point of the shaft and the surface has been provided?
- Does a completed service shaft more than 6 metres deep have a means, other than a telephone, of exchanging distinct and definite signals between the top and bottom of the shaft?
- ☐ Conveyance: If a person is about to be conveyed by a hoist in a shaft, prescribed procedures are followed and the prescribed signals are used.
- ☐ Notice: Prescribed signals will be posted at each hoisting device.
- ☐ Electrical Circuits: Electrical circuits of  $\geq 100$  V shall be in an insulated cable consisting of  $\geq 2$  conductors and a grounding conductor.
- ☐ Electrical Equipment: Electrical pumps and tools shall be grounded / double-insulated.
- ☐ Light:
  - Are area(s) of a tunnel/shaft electrically illuminated if natural light is not adequate?
  - Have flashlights been provided for each worker?
  - Emergency Lighting: If electric lighting is used in a tunnel or shaft, an emergency lighting system shall be installed and tested frequently as prescribed.
- ☐ Shaft: Every shaft shall be large enough that its walls can be adequately shored and has clear space for work to be done.
- ☐ Dimensions: In a service shaft that is more than 6 metres deep or that serves a tunnel more than 15 metres long, the minimum inside dimension and cross-sectional area shall conform as specified.
- ☐ Support:
  - The walls of a shaft shall be supported by shoring & bracing to prevent their collapse.
  - If a shaft is cut in sound rock, rock bolts or wire mesh shall be used where required by a P.Eng.
- ☐ Shoring: The shoring and bracing for a shaft that is more than 1.2 m deep shall be constructed according to a P.Eng's design and it can withstand all loads likely to be applied to them.
- ☐ Design: Do the design drawings for the shoring & bracing show the size & specifications of all materials used?



- ☐ **Barrier:** An adequate barrier, at least 1.1 metres high shall be provided around the top of an uncovered shaft and meet the following requirements:
  - Barrier has been kept free of protruding nails and splinters?
  - Gate in the barrier shall be kept closed and latched?
  - Ground adjacent to the barrier slopes away from the barrier?
- ☐ **Shaft:**
  - For a square/rectangular shaft <6 metres deep with walls not more than 3.6 metres wide, the walls shall be fully sheathed with planks & supported by wales & struts as specified.
  - A shaft shall be kept clear of ice & loose objects.
  - A shaft shall be kept free of water when a worker is required to be in the shaft.
  - A shaft shall have a means of access & egress for its full length.
- ☐ **Stairway:** A stairway, ladder/ladder way for a shaft >6m deep shall meet the requirements regarding landings/rest platforms, sheathed compartment, width of landings, & passage of workers.
- ☐ **Conveyance:** Every conveyance located in a service shaft >6m deep shall be separated from a stairway, ladder or ladderway in the shaft by a lining of solid planks.
- ☐ **Tunnel:**
  - A tunnel shall have enough clear space for the movement of workers.
  - Tunnels shall meet the specified requirements regarding the diameter/width/height & clear space on its sides.
- ☐ **Platforms:**
  - A circular/elliptical tunnel shall have safety platforms at 60m intervals along it.
  - A platform constructed above the tunnel invert shall be long enough for a crew to stand on.
- ☐ **Supports:**
  - The sides & roof of a tunnel shall be supported by timbers set on ribs/beams/by an equivalent system of lining.
  - The requirements for the permanent lining & supports shall be met.
- ☐ **Inspection:**
  - The Constructor shall keep available design drawings for the primary supports at a project for inspection.
  - Design drawings for primary supports shall be signed & sealed by the P. Eng. who prepared them.
- ☐ **Water:** The tunnel shall be kept reasonably free of water when a worker is required to be in the tunnel.
- ☐ **Compressor:** The inlet to an air compressor shall be located in such a position that fumes are not drawn in with the air to be compressed.
- ☐ **Compressed Air:** A valve connected to a vessel used for storing compressed air shall satisfy the prescribed conditions:
  - Shall be connected at the lowest point to permit the discharge of the compressed air; and
  - Shall be opened at least once a shift for the purpose of ejecting oil, water and other matter from the vessel.



- ☐ Pumping:
  - A project shall have pumping equipment of sufficient capacity and adequate source of energy to handle the pumping requirements.
  - Are spare equipment & energy source are available?
- ☐ IC Engine: No internal combustion engine shall be used in a tunnel on a project without the prior written consent of a Director (MOL)?
- ☐ Fresh Air: Has an adequate supply of fresh air been provided and circulated throughout an underground work place?
- ☐ Tests: Has an underground work place been tested for toxic gases / fumes / dust?
- ☐ Mechanical Ventilation:
  - Has the mechanical ventilation has been tested?
  - Has mechanical ventilation been provided in a shaft in which an internal combustion engine or other device which emits a noxious gas or fume operates?



**TUNNEL & SHAFT ENTRY PERMIT**

This Shaft Entry Permit must be completed prior to entry into a space that has been identified as a Shaft. This document is only valid for the date of issue

Project:	Site Supervisor:
----------	------------------

**SECTION A - Designated Top Person**

Name:	Location Monitored:
Sign off:	Supervisor Sign off:

Note: All personal must be trained and instructed on how to use the Air Monitoring device and orientated on the shaft rescue plan prior to entry of shaft

**SECTION B - Scope of Work**

Location:				
Entry Date:			Start Time:	
Duration of Work:			End Time:	
Description of Work:				
Equipment Required:				
Pre-job Safety Assessment COMPLETE?			YES	NO
Personal Protective Equipment (PPE) Required				
Type	Yes	No	Inspected By	
Hard Hat				
Safety Boots				
Safety Vest				
Hearing Protection				
Safety Harness				
Lanyard/Rope				
Safety Glasses				
Safety Gloves				
Respirator				



Other(Please List)			

**SECTION C - Equipment to be used in the Shaft**

Equipment	Quantity	Location	Inspected By	Date
Fire Extinguisher				
First Aid Kit				
<b>RESCUE TEAM</b>				
Was the rescue team notified of entry into the shaft?			YES	NO
Has the contact method been established			YES	NO
Rescue contact number or radio channel				
Rescue procedures must be reviewed with the workers entering the shaft and the attendant prior to entering the space. Refer to the coordination document, and the rescue plan.				

**SECTION D - AIR MONITORING RESULTS - PRIOR TO ENTRY**

Time of Reading	ATMOSPHERIC READINGS				Taken By
	Oxygen (19.5-23%)	LEL	H2S	CO	
At minimum the air quality in the shaft must be monitored each time the workers are required to re-enter the space.					

**SECTION E - Additional Air Monitoring Results**

Time of Reading	ATMOSPHERIC READINGS				Taken By
	Oxygen (19.5-23%)	LEL	H2S	CO	





A Division of Metrolinx

# SECTION F - Tunnel & Shaft Entry Log

ATTENDANT:

LOCATION:

DATE:

Entrants:

NAMES	LOCK ON	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	LOCK OUT
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		
21																		



**TUNNEL HANDOVER INSPECTION ACCESS REQUIREMENTS**

LOCATION:		
DATE:		COMMENTS
	Training	
	Record of WHMIS training valid within the last 12 months	
	Fall Protection training record	
	Training record for Self Rescuers (must be Dragger Oxy K Plus or Plus)	
	At least one person must be trained in first aid	
	Training records of rescue team	
	Equipment	
	Full PPE (high visibility vest, six-inch green patch steel toed boots, hard hat, safety glasses)	
	A CSA approved safety harness	
	All entrants must have self-rescuer training and their own individual self- rescue unit, on their person or accessible to them while in tunnel this must be inspected prior to entry. (Dragger Oxy K Plus S)	
	Hard hat lights (in addition to the lighting to be put in tunnel)	
	Each entrant may wear a rain suit (recommended)	
	CSA Rubber Boots (recommended)	
	Means of communication (ie. Radios)	
	Air Monitor (for the group)	
	Requirements	
	Shaft and Tunnel Regulations must be followed	
	A hazard assessment must be done prior to entry.	
	Each entrant must log in and out of tunnel and the group must do a pre-entry air monitoring and wear a multi-gas air monitor while in the tunnel.	
	The "top man" or "attendant" will fill out an entry permit with CMO and a Coordination Document if multiple employers enter.	
	A "top man" or attendant must be stationed and remain at the top of the shaft to communicate with the entry team, and to facilitate and assist with rescue if required (as long as assisting does not interfere with attendant duties)	
	Water must be pumped if it is impeding safe access so the tunnel is "reasonably free" of water.	
	Adequate lighting must be available	
	Flashlights must be available at the top and bottom of shaft.	
	Requirements (continue)	



	A first aid kit must be kept at the top of the shaft and in the tunnel. (minimum two kits total)	
	There must be a method of continuous communication with the top man and the tunnel entrants.(radios or tunneling phone)	
	Class 4A40BC fire extinguishers (minimum) must be available at the top and bottom of each shaft and 30 meters from each work face of the tunnel.	
	Extinguishers must have been inspected within the past week, and have a tag to indicate the date of inspection.	
	Pre entry air monitoring must be conducted and recorded.	
	Air monitoring must be continuously conducted hourly and recorded on the Tunnel and Shaft Entry Permit.	
	The Tunnel must be adequately ventilated.	
	<b>Rescue</b>	
	A minimum of a 4 person trained rescue team with all equipment including with self-contained breathing apparatus (SCBA) rated at a minimum of 1.5 hours, must be on site, as well as one top man or attendant.	
	Provide the rescue plan and all entrants must sign off on it.	
	There must be a crane, davit arm or other means of retrieval of downed entrants for rescue.	
	Submit to CMO a written rescue plan.	
	<b>Notifications</b>	
	CMO must be notified (minimum of 24 hours' notice).	
	CMO entry permit must be completed.	
	<b>Coordination</b>	
	All work in the wet shaft leading to the tunnel must be stopped, if that work impedes rescue in the area. (Including dry shaft, CSO etc).	
	<b>Other Items</b>	



## TUNNEL AND SHAFT WEEKLY INSPECTION

Date:	Inspected by:
Project:	Number of workers in tunnel/shaft:
Time entered shaft:	Time exited shaft:

Items for Review	Yes	No	n/a
Notice: Has the employer, who will be constructing a tunnel, shaft, caisson or cofferdam, filed a notice with a Ministry of Labour Director before beginning work? Ref #			
Locates complete and up to date? Valid for 30 days only.			
Is a top man always provided when workers are in the tunnel or shaft?			
Entry system: is there a sign in/out or tag in / out system in effect and being used?			
Fire Protection: Have notices describing how to sound a fire alarm have been posted in a conspicuous places on a Project?			
Fire Extinguishers: Fire extinguishers shall be provided at the following prescribed locations:			
*The top and bottom of every shaft?			
*At each panel board for electricity, on each electric-powered locomotive, and at each battery charging station.			
*Within 30 metres of each work face of a tunnel, and at each location where a fire hazard exists?			
*Have all fire extinguishers in the tunnel been inspected by a competent person weekly and logged?			
Fire Suppression: A fire suppression system shall be provided for equipment that contains flammable hydraulic fluids, while the equipment is underground.			
Fire extinguishers: Flammable liquids / gases shall not be brought underground except as permitted.			
Fire Protection for a tunnel with a diameter equal or greater than 1.5 meters when it's completed:			
* A standpipe, a fire line and a hose shall be provided in the tunnel			
* Every standpipe in the tunnel shall be made of metal pipe that has at least a 51 millimeters inside diameter			
* Local fire department shall have a connection for their use outside the tunnel or shaft; connection shall be clear and ready access at all times			
* A Siamese connection shall be provided on the fire line at the surface of the shaft			



Storage:			
*A flammable liquid or gas shall be stored as far as practicable from a shaft.			
*A flammable liquid or gas shall be stored in a place from which it is impossible for spilled liquid to flow underground.			
Oil:			
Lubricating oil shall be stored in a suitable building or storage tank located in a place from which spilled liquid cannot run toward any shaft or tunnel.			
Oil used in hydraulic-powered equipment underground shall be of the type that is not readily flammable and does not readily support combustion.			
MSDS submitted for oils and lubricants?			
Combustible Equipment: No combustible equipment, including welding cable and air-hoses, may be stored underground, unless the equipment is required for immediate use.			
Cable: No electrical cable or gas hose shall be taken underground unless it has an armored casing made of a readily non-flammable material and is marked to indicate it has the casing.			
Rubbish: Combustible rubbish, used or decayed timber, scrap wood or paper shall not accumulate, and must be promptly removed.			
Facilities:			
*Has a heated room been provided for the use of underground workers?			
*Have the wet clothes of workers been dried using sanitary means in a change room on the project?			
*Have adequate cleaning and washing facilities been provided to workers, and maintained in a sanitary condition?			
First Aid:			
*Has the supervisor in charge of a project appointed at least one trained worker to be available to give first aid at a shaft or tunnel?			
*A first aid kit and a wire-basket type stretcher shall be kept at the above-ground entrance to every tunnel, shaft or cofferdam.			
Rescue:			
*Has the employer established written Emergency Procedures for the rescue of underground workers, which is practiced and followed?			
*Have signed copies of the Emergency Procedures been posted on the Project?			
*Have at least four (4) rescue workers been trained by a competent worker within 30 days before tunneling operations began, and have been retrained every 30 days?			
Inspection: Before a Project begins, has the supervisor of the construction of a tunnel designated a rescue worker, who will inspect, test and record all rescue equipment every 30 days?			



Breathing Units:			
*Each rescue worker shall be provided with a breathing apparatus that has met the prescribed requirements, and will be provided training to operate it. It will be kept in close proximity to the means of access to an underground workplace.			
Self-Rescuer			
*All workers or persons entering tunnel, shall have a suitable self-rescue respirator for their exclusive use, and be kept in the vicinity of the worker.			
*Each worker shall be trained in the proper use of the self-rescuer			
*All types of self-rescuers must be the same make and model.			
Telephone / Communications:			
*At a project that is to be over 14 days duration, has a telephone connected to a public telephone system been installed, or a radio telephone is available?			
*Has a public / radio telephone been installed or arranged nearby, for communication with police / fire department / ambulance services?			
*Has a telephone system been installed at a tunnel if work at the face of the tunnel is >23 metres from the top of the service shaft or the opening into the tunnel?			
*Are telephones located in the supervisor's office, at the top and bottom of the service shaft, at other access to the service shaft, and at 30 m intervals in every work area?			
*Has a notice been posted by each telephone indicating how to call other phones in the system, emergency signals, and states that a worker must respond to emergency signals?			
*Has a telephone system been installed in such a way that conversations can carry on between any two telephones, and voice circuits are separate from signaling circuits?			
*During the construction of a shaft, has an effective means of communicating between the lowest point of the shaft and the surface has been provided?			
*Does a completed service shaft more than 6 metres deep have a means, other than a telephone, of exchanging distinct and definite signals between the top and bottom of the shaft?			
Conveyance: If a person is about to be conveyed by a hoist in a shaft, prescribed procedures are followed and the prescribed signals are used. (MOL notified- Ref # CW 120001)			
Notice: Prescribed signals will be posted at each hoisting device.			
Electrical Circuits: Electrical circuits of = 100 V shall be in an insulated cable consisting of = 2 conductors and a grounding conductor.			
Electrical Equipment: Electrical pumps and tools shall be grounded / double-insulated.			
Light:			
*Are area(s) of a tunnel / shaft electrically illuminated if natural light is not adequate?			
*Have flashlights been provided for each worker?			



Emergency Lighting: If electric lighting is used in a tunnel or shaft, an emergency lighting system shall be installed, and tested frequently as prescribed.			
Shaft: Every shaft shall be large enough that its walls can be adequately shored, and has clear space for work to be done.			
Support:			
*The walls of a shaft shall be supported by shoring & bracing to prevent their collapse.			
*If a shaft is cut in sound rock, rock bolts or wire mesh shall be used where required by a P.Eng.			
Shoring: The shoring and bracing for a shaft that is more than 1.2 m deep shall be constructed according to a P.Eng's design, and it can withstand all loads likely to be applied to them.			
Barrier: An adequate barrier, shall be provided around the top of an uncovered shaft, and meet the following requirements:			
*Barrier has been kept free of protruding nails and splinters?			
*Gate in the barrier shall be kept closed and latched?			
*Ground adjacent to the barrier slopes away from the barrier?			
Shaft:			
Items for Review	Yes	No	n/a
*A shaft shall be kept clear of ice & loose objects.			
*A shaft shall be kept free of excess water when a worker is required to be in the shaft.			
*A shaft shall have a means of access & egress for its full length.			
Stairway: A stairway, ladder, or man-way for a shaft >6m deep shall meet the requirements regarding landings / rest platforms, sheathed compartment, width of landings, & passage of workers.			
Tunnel:			
*A tunnel shall have enough clear space for the movement of workers.			
*Tunnels shall meet the specified requirements regarding the diameter / width / height & clear space on its sides.			



Supports:			
*The sides & roof of a tunnel shall be supported by timbers set on ribs / beams by an equivalent system of lining.			
*The requirements for the permanent lining & supports shall be met.			
Inspection:			
*The Constructor shall keep available design drawings for the primary supports at a project for inspection.			
*Design drawings for primary supports shall be signed & sealed by the P. Eng. who prepared them.			
Compressor: The inlet to an air compressor shall be located in such a position that fumes are not drawn in with the air to be compressed.			
Compressed Air: A valve connected to a vessel used for storing compressed air shall satisfy the prescribed conditions:			
*Shall be connected, at the lowest point, to permit the discharge of the compressed air; and			
*Shall be opened at least once a shift, for the purpose of ejecting oil, water, and other matter from the vessel.			
Pumping:			
*A project shall have pumping equipment of sufficient capacity, and have an adequate source of energy to handle the pumping requirements.			
*Are spare equipment & energy source available?			
Items for Review	Yes	No	n/a
IC Engine: No internal combustion engine shall be used in a tunnel on a project without the prior written consent of a Director (MOL)?			
Fresh Air: Has an adequate supply of fresh air been provided, and circulated throughout an underground work place?			
Tests: Has an underground work place been tested for toxic gases / fumes / dust?			
Mechanical Ventilation:			
*Has the mechanical ventilation has been tested?			
*Has mechanical ventilation been provided in a shaft, in which an internal combustion engine, or other device which emits a noxious gas or fume operates?			



Notes:

Contractor Name & Signature:

Date:

CMO Name &Signature:

Date:



**DESIGNATED SUBSTANCES PERMIT CHECKLIST**

This permit is applicable to all Designated Substances work as defined by the Ontario Occupational Health and Safety Act, O. Reg. 490/09 Designated Substances, and O. Reg. 278/05 Asbestos on Construction Projects and in Buildings and Repair Operations.

- ☐ Has the Contractor obtained the Owner's Report or Designated Substance Survey (DSS)?
- ☐ Has the Contractor provided reports to other prospective Contractors, so that measures can be taken to protect the workers?
- ☐ Has the Contractor taken all reasonable precautions to protect the health and safety of the workers who will be exposed to the substance?
- ☐ Has the Contractor ensured that the equipment, materials and protective equipment have been maintained and are in good condition?
- ☐ Has the Contractor appointed a competent person that shall perform tests and observations necessary for the detection of a hazardous condition on the project?
- ☐ Is the Contractor familiar with O. Reg. 278/05 Asbestos on Construction Projects and in Building and Repair Operations and prepared to follow if applicable?
- ☐ Is the Contractor familiar with the Ministry of Labour's Guidelines for Silica and Lead and prepared to follow if applicable?
- ☐ Has the Contractor reviewed all the Material Safety Data Sheets from their suppliers to check if the material contains a Designated Substance? It will be listed in the Hazardous Ingredients section of the MSDS Sheet.
- ☐ Has the Contractor ensured that workers have been properly informed and trained about the nature of the potential hazard and possible health effects, personal protective equipment, methods of safe handling and storage, proper use of control equipment and training in emergency procedures and hygiene practices?
- ☐ Has the Contractor developed and submitted a written Work Plan which includes safe handling procedures for the substance, waste collection and disposal methods, personal protective equipment, dispensing, clean-up, storage, hygiene practices and a procedure for handling an emergency such as a fire or spill etc. involving the hazardous designated substance?
- ☐ While working on a project, does the Contractor have contingencies and procedures in place, to safeguard workers and other Contractors if a Designated Substance is suspected and or detected to be present that has not yet been identified in the walkthrough, Owners Report or Designated Substance Survey?
- ☐ Does the Contractor acknowledge that if a Designated Substance is suspected or detected that has not yet been identified in the walkthrough, Owners Report or Designated Substance Survey; the Contractor must stop work immediately, implement measures to safeguard the workers and other Contractors, and notify CMO immediately upon discovery of the Designated Substance.
- ☐ Have all the workers who have been provided with a respirator been trained and instructed in the care and use of the equipment?
- ☐ Has the contractor carried out an assessment of the exposure or likelihood of exposure of a worker to a designated substance in the workplace and recorded it in writing?



## PROJECT OCCUPATIONAL HEALTH AND SAFETY INSPECTION FORM

Project Name, Project Number		Project Area		
CMO Construction Supervisor		Inspection Date and Time		
Contractor's Representative (Name), Company		Contractor's Representative Contact Number		
No.	Items for Review	Reviewed (Y, N, N/A)	Rating (0 to 2)	Observations, Comments, & Corrective Action(s) Contractors must notify the CMO of corrective action plans within 72-hours of receiving this report
<b>1</b>	<b>Notice of Project and Registration Forms</b>			
1.1	Notice of Project is posted on site for review			
1.2	Form 1000 for each company on site available for review			
<b>2</b>	<b>Other Safety Board Postings and Documentation</b>			
2.1	Occupational Health and Safety Act			
2.2	General Contractor's OHS Policy			
2.3	General Contractor's workplace violence and workplace harassment policy			
2.4	Name, trade, and employer of HS Reps or Joint Health and Safety Committee (JHSC) members			
2.5	JHSC meeting minutes			
2.6	WSIB "In Case of Injury" poster, Form 82			
2.7	MOL "Health and Safety at Work: Prevention Starts Here" poster			
2.8	General Contractor's name, address and telephone no.			
2.9	Address and telephone no. of nearest MOL office			
2.10	MOL field orders and reports			
2.11	Notice of compliance with MOL orders			
2.12	General Contractor's emergency response procedures			
2.13	Site layout showing evacuation route in case of an emergency			
2.14	General Contractor's daily job briefing and hazard analysis records			
2.15	General Contractor's incident/accident reports (provided to CMO in a timely manner)			
2.16	Training records (ie. basic occupational health and safety awareness, fall protection, WHMIS)			
2.17	General Contractor's health and safety daily / weekly inspection reports			
2.18	CMO OHS inspection reports			
<b>3</b>	<b>CMO Hazardous Operations Work Permits</b>			
3.1	Hot Work			
3.2	Work on Electrical Equipment (Live or Not) over 120V			
3.3	Shut-down of HVAC Equipment, Electrical Power, Fire Sensors, Fire Alarms, Fire Suppression Systems, or Elevators			
3.4	Trenching or Excavation			
3.5	Confined Space Entry			
3.6	Work Requiring Use of Fall Protection			



Project Name, Project Number		Project Area		
CMO Construction Supervisor		Inspection Date and Time		
Contractor's Representative (Name), Company		Contractor's Representative Contact Number		
No.	Items for Review	Reviewed (Y, N, N/A)	Rating (0 to 2)	Observations, Comments, & Corrective Action(s) Contractors must notify the CMO of corrective action plans within 72-hours of receiving this report
3.7	Crane or Hoist Operations			
3.8	Tunnels, Shafts, Caissons, and Cofferdams			
3.9	Designated Substances			
<b>4</b>	<b>Safety and Emergency</b>			
4.1	General Contractor's safety tool box talks			
4.2	Arrangements for provision of first aid (kits, personnel, stretcher)			
4.3	First aid kits inspected by qualified personnel at every three months			
4.4	General Contractor has procedures for chemical spills			
4.5	Spill kits available on site and inspected by qualified personnel as required			
4.6	Contractor's MSDS' on site and available for review			
4.7	Emergency evacuation procedures posted / workers familiar and acknowledge understanding of procedure			
<b>5</b>	<b>Site Security and Access Control Measures</b>			
5.1	CMO ID cards with site personnel			
5.2	General Contractor's daily briefing sign-in sheets			
5.3	Contractor controlled security for work areas			
5.4	Use of enclosing fences, barricades, hoarding, locking hardware			
5.5	Signage regarding access / hazard			
5.6	Use of designated access points only			
<b>6</b>	<b>Rail Safety Practices</b>			
6.1	Track protection methods (ie. TOP, Rule 842, Safety Watch)			
6.2	Flag Person's briefing			
6.3	Flag Person's instructions followed (ie. fouling of tracks, radio procedures, crossing tracks)			
6.4	Maintaining safe distances between equipment			
6.5	No distractions (i.e. cell phone use, horseplay)			
6.6	Safe work methods around rails			
<b>7</b>	<b>Personal Protective Equipment Use</b>			
7.1	Headgear			
7.2	Footwear			
7.3	Eyewear			
7.4	High visibility apparel			
7.5	Other protection where warranted			
<b>8</b>	<b>Guardrails</b>			
8.1	Installed where required			



Project Name, Project Number		Project Area		
CMO Construction Supervisor		Inspection Date and Time		
Contractor's Representative (Name), Company		Contractor's Representative Contact Number		
No.	Items for Review	Reviewed (Y, N, N/A)	Rating (0 to 2)	Observations, Comments, & Corrective Action(s) Contractors must notify the CMO of corrective action plans within 72-hours of receiving this report
8.2	Installed in accordance to applicable regulations			
<b>9</b>	<b>Travel Restraint / Fall Restricting / Fall Arrest / Safety Net Systems</b>			
9.1	Designed by a Professional Engineer			
9.2	Written rescue procedures			
9.3	Harness worn properly and in good condition			
9.4	Fixed supports			
9.5	Other system components			
9.6	Workers are tied off correctly			
<b>10</b>	<b>Hygiene</b>			
10.1	Reasonable supply of potable drinking water to be readily accessible for the use of worker			
10.2	Adequate number of toilet facilities			
10.3	Toilet facilities are frequently serviced, cleaned and sanitized			
<b>11</b>	<b>Temporary Structures</b>			
11.1	Temporary partitions placed properly and secured			
11.2	Temporary enclosures structurally sound and secured			
11.3	Temporary stairways installed where needed and structurally sound			
11.4	Overhead protection installed where needed and structurally sound			
<b>12</b>	<b>Material Storage</b>			
12.1	Away from electrical conductors			
12.2	Does not endanger workers/public			
12.3	Proper compressed gas storage			
12.4	Combustible materials and chemicals properly stored and separated			
<b>13</b>	<b>Fire System / Fire Prevention</b>			
13.1	No open fire / flame devices, when handling flammable / combustible material			
13.2	No accumulation of debris			
13.3	No flammable use / storage in building			
13.4	Volatile waste stored properly			
13.5	Ventilation during use of flammables			
13.6	Spark-proof equipment during use of flammables			
13.7	Use fire-resistant coverings			
13.8	Paints stored and mixed in ventilated area			
13.9	Appropriate danger and warning signage for flammables posted			
13.10	Building exits maintained, unobstructed / alternate route provided			



Project Name, Project Number		Project Area		
CMO Construction Supervisor		Inspection Date and Time		
Contractor's Representative (Name), Company		Contractor's Representative Contact Number		
No.	Items for Review	Reviewed (Y, N, N/A)	Rating (0 to 2)	Observations, Comments, & Corrective Action(s) Contractors must notify the CMO of corrective action plans within 72-hours of receiving this report
13.11	Clear emergency exit paths			
13.12	Fire department access unobstructed			
<b>14</b>	<b>Fire Extinguishers</b>			
14.1	Provided in sufficient number and locations			
14.2	Correct type (ULC labeled)			
14.3	Monthly and annual inspection tags/records			
<b>15</b>	<b>Site Conditions</b>			
15.1	Good housekeeping			
15.2	Access roads in good condition			
15.3	Ventilation			
15.4	Temporary lighting for work areas, access, and evacuation			
15.5	Hazardous protrusions removed, cut off, or protected (ie. rebar, nail, formwork tie)			
15.6	Use of appropriate waste removal methods			
15.7	No hazardous accumulation of wastes			
15.8	No burning / burying of wastes			
15.9	Waste / debris containers provided			
<b>16</b>	<b>Ladders</b>			
16.1	Conformance with regulations and applicable policies			
16.2	In good condition and used correctly			
16.3	When used regularly as an access between levels of a structure secured at the top and bottom			
<b>17</b>	<b>Formwork and Falsework</b>			
17.1	Designing by a Professional Engineer			
17.2	Inspection prior to pouring			
<b>18</b>	<b>Welding and Cutting</b>			
18.1	Proper procedures followed			
18.2	Cylinders, piping's and fitting protected against damage			
18.3	Signage to protect other workers			
<b>19</b>	<b>Tools / Equipment (General)</b>			
19.1	Safely maintained and used appropriately			
19.2	Parts not modified, extended, repaired, or replaced causing reduction of safety factor to tool/equipment - Exposed moving parts are guarded adequately			
19.3	Inspected by a competent person			
19.4	Operator's manual at project site (greater than 10 horsepower)			
19.5	Operated by qualified personnel			



Project Name, Project Number		Project Area		
CMO Construction Supervisor		Inspection Date and Time		
Contractor's Representative (Name), Company		Contractor's Representative Contact Number		
No.	Items for Review	Reviewed (Y, N, N/A)	Rating (0 to 2)	Observations, Comments, & Corrective Action(s) Contractors must notify the CMO of corrective action plans within 72-hours of receiving this report
19.6	Signaler utilized if required, signaler has received written and oral training, written instruction is on site			
19.7	Dump trucks equipped with automatic audible alarm			
19.8	Proper storage and removal of explosive loads for explosive actuated fastening tools			
<b>20</b>	<b>Scaffolds and Elevated Work Platforms</b>			
20.1	Conformance with regulations and applicable policies			
20.2	Engineering design and verification where required			
20.3	Pre-use inspections / tag-out while assembling			
20.4	Shall not have any unguarded openings			
20.5	Used appropriately			
<b>21</b>	<b>Cranes, Hoisting and Rigging</b>			
21.1	Operated by a qualified operator			
21.2	Record of equipment inspection			
21.3	Written hoist emergency rescue procedures			
21.4	Load restricted from moving over workers			
21.5	Proper use and blocking of outriggers			
21.6	Cables / slings are in conformance with regulations and manufacturer's specifications			
<b>22</b>	<b>Electrical Safety</b>			
22.1	Electrical work carried out by qualified personnel			
22.2	Equipment operations in safe proximity to power lines			
22.3	Extension cords in good condition and not modified			
22.4	Use of proper decommissioning practices			
<b>23</b>	<b>Excavations</b>			
23.1	Sloped in accordance with soil type or supported by a support system			
23.2	Support system designed by professional engineer			
23.3	Valid locates with excavating equipment			
23.4	Safe access in to / out of excavation or trench			
23.5	Equipment, soil, and construction material at least one meter away from upper edge of walls of excavation			
<b>24</b>	<b>Confined Spaces</b>			
24.1	Contractor's confined space program developed and maintained in accordance to applicable regulations.			
24.2	Contractor's confined space training on file			
24.3	Entry permit at confined space location and readily available to every person who enters or performs related work with respect to the confined space			
24.4	Attendant stationed outside and near the entrance to the confined space			



Project Name, Project Number		Project Area		
CMO Construction Supervisor		Inspection Date and Time		
Contractor's Representative (Name), Company		Contractor's Representative Contact Number		
No.	Items for Review	Reviewed (Y, N, N/A)	Rating (0 to 2)	Observations, Comments, & Corrective Action(s) Contractors must notify the CMO of corrective action plans within 72-hours of receiving this report
24.5	Attendant familiar with rescue plan			
24.6	Attendant trained in First Aid and CPR			
24.7	Attendant in constant communication with entrant(s) inside the confined space			
24.8	On-site rescue equipment in good / serviceable condition			
24.9	Copy of complete entry permit provided to CMO			
<b>25</b>	<b>Dust Suppression</b>			
25.1	Use of appropriate means to suppress dust			
25.2	Use of HEPA vacuum where required			
<b>26</b>	<b>Traffic Control</b>			
26.1	Traffic protection plan developed by the contractor in accordance with OTC Book 7			
26.2	Traffic control devices are in accordance with the traffic protection plan and OTC Book 7			
26.3	Traffic control persons are not directing more than one lane at a time			
26.4	Traffic control persons are competent person, written instruction provided and program is kept on site			
26.5	Traffic control person is positioned such that his / her health and safety are not compromised			
<b>27</b>	<b>Public Protection</b>			
27.1	Public roads and walkways cleared and maintained			
27.2	Separation and signage of work areas			
Notes / Comments:				



**CSMP APPENDIX 20 :OHS INSPECTION FORM**

Project Name, Project Number		Project Area		
CMO Construction Supervisor		Inspection Date and Time		
Contractor's Representative (Name), Company		Contractor's Representative Contact Number		
<b>No.</b>	<b>Items for Review</b>	<b>Reviewed (Y, N, N/A)</b>	<b>Rating (0 to 2)</b>	<b>Observations, Comments, &amp; Corrective Action(s) Contractors must notify the CMO of corrective action plans within 72-hours of receiving this report</b>
Signature of CMO Inspector		Signature of Contractor's Representative		

**Key to symbols:**

REVIEWED: Y - Item Reviewed; N - Item Not Reviewed During Inspection; N/A - Item Not Performed During Inspection

RATING: 0 - Item Not in Compliance; 1 - Item Needs Improvement ; 2 - Item Satisfactory



**OHS OBSERVATION FORM**

Project Name, Project Number	Temperature and Weather Conditions
CMO Construction Supervisor	Observation Date and Time
Contractor's Representative (Name), Company	Contractor's Representative Contact Number
<b>Work Progress Observed</b>	
<b>Safety Observation(s) with Regulation and/or Contract References</b>	
<b>Environmental Observation</b>	
<b>Railway Protection (if applicable - Flag Person, Flagging company, Concerns)</b>	



Project Name, Project Number	Temperature and Weather Conditions
CMO Construction Supervisor	Observation Date and Time
Contractor's Representative (Name), Company	Contractor's Representative Contact Number
<b>Progress Photos</b>	



## CONTRACTOR OHS AUDIT

CPG Project Name:		General Contractor:	
CPG Project Address / Location:			
CPG Contract Number:		GC Site Superintendent:	
CPG Project Number:			
Timeframe Examined:		Auditor:	
Audit Date:		File No:	
	Have all Site Supervisors completed a Competent Supervisor Declaration?		
	Has a Site-Specific Emergency Plan been established / updated and is relevant to the current work activities?		
	Is the Site-Specific Emergency Plan posted in a conspicuous location on site?		
	Have all workers been provided Site Orientation prior to starting work? (Review a random selection of names based on the sign-in sheet for the day.)		
	Have Risk Assessments been performed satisfactorily for major scopes of work potentially impacting Operations, Stations, Passengers and/or the Public?		
	Have the Site Supervisors performed and recorded weekly OHS inspections?		
	Has the JHSC been meeting and are the minutes posted in a conspicuous location on site?		
	Have concerns raised by the JHSC been investigated / addressed / resolved?		
	Are weekly safety talks posted in a conspicuous location on site?		
	Have monthly OHS reports been issued to CMO?		
	Are training records available and adequate for personnel performing high-risk activities on site? (Select known high-risk activities that have occurred on site.)		
	Are MSDS for controlled substances available on site?		
	Have incidents undergone a root cause analysis and corrective measures implemented? (Select from the reported incidents from the past two Contractor OHS Performance Reports.)		
	Has the GC needed to infract / discipline workers on site? Review any that have occurred in the past six months.		



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## 1.0 General Safety Rules

- 1.1 All persons including Contractors, Consultants, Architects, Engineers and potential visitors must check-in with the person in charge of the Metrolinx project site or a project zone as appropriate, and obtain authorization to enter the project or project zone.
- 1.2 No persons are permitted unescorted access to Metrolinx project sites or work zones unless they:
  - have completed CMO Contractor Orientation Training, and
  - are wearing a CSA approved hard hat, safety glasses, safety footwear, safety vest, and carrying a CMO ID Card
- 1.3 No person is permitted to enter a rail ROW unless briefed and protected by a Flag Person or is CROR qualified.
- 1.4 All visitors (see definition of visitor, present for less than 48 hours) must be escorted at all times by an authorized person and Flag Person when required.
- 1.5 No person under age 16 is permitted on site under any circumstances.
- 1.6 Site safety instructions and rules must be obeyed at all times.
- 1.7 Use designated entrances, exits and access routes.
- 1.8 Do not cross tape barriers without permission of the on-site supervisor.
- 1.9 Smoking is only permitted in approved designated areas of the Property.
- 1.10 Eating is permitted only in designated areas.
- 1.11 Any unsafe act, work condition, incident or injury must be reported immediately to the Contractor's representative and CMO.
- 1.12 Maximum vehicle speed on designated access routes is 15 km/hour. Maximum speed outside of designated access routes is 10 km/hour or such other safe speed as directed by a supervisor.
- 1.13 Rule contravention may lead to injury, disciplinary action, and eviction from the project site, arrest, or prosecution.
- 1.14 During times of extreme weather or working conditions such as extreme heat or cold, vibration, noise, UV exposure the Contractor shall provide the necessary protection.

## 2.0 Postings

- 2.1 In addition to other items that may be specified in the contract documents the following items must be posted in the General Contractor's job site trailer, or in the absence of a job site trailer, on a weather protected document box mounted on a post at the entry to the project zone:
  - General Site Safety Rules (Appendix 23 of this manual).



- The Ontario Occupational Health and Safety Act and all construction-related regulations including the Construction Projects Regulations
- The “In Case of Injury” notice published by the Ontario Workplace Safety and Insurance Board.
- Emergency contact numbers
- Contractor’s Emergency Plan
- Emergency exits and map to nearest hospital
- MOL reports, as applicable.

### **3.0 Rule Enforcement and Discipline**

- 3.1 All persons granted access to Metrolinx project sites or project zones must obey all CMO health and safety rules, instructions and procedures.
- 3.2 At the sole discretion of CMO, a rule contraventions may result in:
- verbal corrective instruction;
  - informal or formal reporting to the person’s supervisor / employer;
  - addition of a hole-punch to the person’s CMO ID Card;
  - issuance of a written warning, and recording of same ;
  - progressive disciplinary action;
  - an order to leave the project site temporarily or permanently;
  - reporting to the Ontario Ministry of Labour, Ontario Ministry of Environment and / or Technical Standards and Safety Authority; criminal or civil prosecution; or
  - remedies as may be specified in the contract documents.
- 3.3 Any person observed three times by CMO to have contravened health and safety rules, instructions or procedures, will be required to leave Metrolinx Property and shall not be permitted to return.
- 3.4 Any Person found to be in “non-compliance” for an incident reportable to an external agency (i.e. MOL, TSSA, MOECC, etc.) after an investigation by CMO will be removed from Metrolinx Property and not permitted to return.



#### **4.0 Daily Job Briefings on Metrolinx Projects**

- 4.1 Job briefings are critical to conducting work in a safe manner. Conducted at the construction site, a job briefing is an effective way of communicating directly with the work crews, through interactive discussions, a mutual understanding of the activity scope, the particular and impending hazards associated with the job, method of track protection, and mitigation to enable the safe completion of work.
- 4.2 A job briefing must be conducted prior to commencing any work on Metrolinx property. A subsequent briefing may also be required if site conditions, circumstances or the method of track protection is changed, extended or about to be released. The Employees in Charge (Contractor and Flag Person) of a work group shall hold a job briefing session for all persons engaged in the activity. Both employees and non-employees must be included.
  - 4.2.1 The Contractor shall discuss the daily work activities, hazards associated with the work to be performed and safe work procedures, and planned site deliveries.
  - 4.2.2 The Flag Person shall discuss the planned protection, rules, and track procedures as it relates to the work activities to be performed.
- 4.3 The job briefing session shall cover all relevant issues with respect to the task being performed and necessary safety precautions that must be taken, including, but not limited to the following:
  - 4.3.1 Designation of the Employee in Charge
  - 4.3.2 Method of on-track protection being used and the limits of authority
  - 4.3.3 Track(s) that may be fouled
  - 4.3.4 Operational control of movements on adjacent tracks, if applicable
  - 4.3.5 Procedure to arrange for protection on adjacent tracks, if necessary
  - 4.3.6 Means of providing a warning when Safety Watch is used
  - 4.3.7 Designated place of safety where workers will clear for trains or track units
  - 4.3.8 Designated work zones around track units
  - 4.3.9 Safe working and travelling distances between track units
  - 4.3.10 Emergency and Evacuation procedures
  - 4.3.11 Description of day's construction activities
  - 4.3.12 Updates on expected deliveries onto the ROW
  - 4.3.13 Status of Locates
  - 4.3.14 Planned deliveries.



- 4.4 Workers must be attentive and must not interrupt the Employees in Charge delivering the job briefing.
- 4.5 Workers may ask for clarification on track protection discussed during the briefing; the Flag Person may also seek further information on work activities in reference to planned track protection.
- 4.6 Upon conclusion of the job briefing, all employees shall sign the briefing sheet to confirm understanding. Job briefing information shall be kept in writing, in prescribed job briefing books, for ready reference by each employee.
- 4.7 Workers or visitors accessing the site after the morning briefing MUST receive a trackside job briefing from the Flag Person and sign-in prior to accessing the site.
- 4.8 Workers or visitors accessing the site must comply with the instructions of the trackside job briefing.

## **5.0 Equipment and Tool Inspection**

- 5.1 Operators of mobile equipment, cranes/hoisting and other mechanical equipment must inspect and document the inspection of their equipment prior to each use. This record must be maintained on the equipment for review.
- 5.2 Ensure the operator's manual, which includes instructions for safe operation and maintenance records, is kept with each machine.
- 5.3 All small tools and equipment must be inspected by the user prior to use each day to ensure safe conditions.
- 5.4 Ensure that the power source is of the correct voltage/amperage for the power tools or equipment being used.
- 5.5 All equipment or tools with blades, rotating gears, belts or other moving parts shall be equipped with adequate guards. These guards shall only be removed when the machine or tool is de-energized and being serviced by qualified persons.
- 5.6 Turn in striking tools when they begin to chip, crack or mushroom.
- 5.7 Turn in repair tools with defective handles.
- 5.8 Modifications and repairs must NOT result in a reduction of the safety factor of the serviced tool or equipment.
- 5.9 Equipment and tools should only be inspected by qualified and competent persons.
- 5.10 Consult your supervisor when in doubt about the condition or proper use of any equipment or tool.
- 5.11 Contractors are not permitted to use tools or equipment owned by Metrolinx.



**6.0 Protection of Rail Equipment**

- 6.1 Work activities conducted in close proximity to rail equipment shall undergo an assessment to determine the likelihood of damaging said equipment.
- 6.2 The assessment shall consider the impact of flying objects, heat, sparks, emissions, stability of the ground, noise and potential chemical spills.
- 6.3 Where work activities may affect rail equipment, arrangements shall be made with the Construction Supervisor to move the equipment or appropriate protection shall be used such as:
  - 6.3.1 Positive Track Protection
  - 6.3.2 Barriers
  - 6.3.3 Warning signs
  - 6.3.4 Protective blankets
  - 6.3.5 Spill barriers
- 6.4 All safety rules for Right-of-Way protection and directions of the Flag Person must be strictly adhered to.

**7.0 Protection of Track and Signal Equipment**

- 7.1 Work on existing signalling equipment shall only be conducted by a designated railway employee.
- 7.2 Ensure that no railway plant, signal, structure, equipment or property of any kind is tampered with, modified or removed.
- 7.3 Vehicles working within 9 m (30 ft) of the nearest live rail must come to a complete stop and power down the vehicle when a train is on approach. The vehicle must remain in this state until the train has passed and movement is only allowed when a Flag Person permits.
- 7.4 Do not step or walk on the running rail, frog, switches or guardrails. Do not tamper with or operate a track switch, derail or electric lock.
- 7.5 No tools or materials are to be left unattended close to the track at any time.
- 7.6 To maintain proper operation of the signal system, both rails of a track shall not be touched, at the same time, with metallic objects (i.e. chains, measuring tape, bars, loader bucket, etc.).
- 7.7 No track shall be fouled at any time except for a specific and approved task, for a limited time and under protection of the Flag Person.
- 7.8 Where there is the possibility of debris falling on the track, provide appropriate track protection to prevent possible damage to rail, ties and ballast.
- 7.9 Prevent excavated material from fouling ballast and sub-ballast.



7.10 Obtain pre-authorization from Metrolinx to store equipment or materials on the railway ROW and / or on Metrolinx property. Such storage shall in no way impede railway operations.

7.11 In addition to the above rules, ALL safety rules for the ROW must be adhered to.

## **8.0 Guardrails**

8.1 Guardrails must be provided around the perimeter of all working and walking surfaces, platforms and roofs where a worker may fall 2.4 metres (approx. 8 feet).

8.2 Guardrails must consist of a top rail, intermediate rail and toe-board. Alternative designs must be approved by a professional engineer.

8.3 If guardrails are removed temporarily for the purpose of doing work, fall prevention or protection systems must be used by workers, warning signage must be posted, and "bump lines" must be used to restrict access.

## **9.0 Barriers**

9.1 Where there is risk of a worker falling 2.4 metres (approx. 8 feet) into an excavation, a barrier at least 1.1 metres (approx. 3'7") high must be provided.

## **10.0 Floor Coverings**

10.1 Where guardrails cannot be installed around floor openings, the opening must be

10.1.1 Covered with securely fastened coverings capable of supporting all loads to which they may be subjected, and

10.1.2 marked by "DANGER" signage.

10.2 If mobile equipment will drive over temporary floor coverings, the structural capacity of the cover must be certified by a professional engineer.

## **11.0 Barrier Tape**

11.1 Red "DANGER (or HAZARD)" and Yellow "CAUTION" Barrier Tape shall be used to demarcate an area of the project zone where special warning is temporarily required.

11.2 Barrier tape will not be placed across in service track.

11.3 Barrier tape shall only be removed by the individual who installed it, or when authorized by the Project Lead.

11.4 Where caution tape is used appropriate warning signage is required.

## **12.0 Overhead Protection**

12.1 Overhead protection shall be implemented for any location where an overhead hazard could endanger persons below.

12.2 Overhead protection options include the following:



- 12.2.1 Erection of a physical canopy.
- 12.2.2 Demarcation of the hazard zone and prevention of access.
- 12.2.3 Erection of netting (if appropriate for the hazard in question).
- 12.2.4 Warning signage.

### **13.0 Safe Access / Egress - Elevated or Below Grade Openings**

- 13.1 Ladders, stair scaffolding, stairs, ramps or runways must be provided to allow safe access to and egress from work areas that are above or below ground.
- 13.2 Access / egress devices must be maintained in a safe condition.
- 13.3 Ensure that an adequate means of egress has been provided from a work area to allow the evacuation of workers during an emergency.
- 13.4 An opening used for access or egress to a workplace must be provided with an overhead protection structure, or access restricting barricades, if work is being performed above the access / egress opening or when the public or workers are exposed to the risk of falling objects.

### **14.0 Prohibition Against Blocking Means of Access or Egress**

- 14.1 Ensure that fire exits are not blocked, locked or otherwise rendered inaccessible.
- 14.2 Keep traffic and employees' access routes clean and clear of any obstructions. Access routes with openings, construction material, excavated material or equipment must be barricaded and / or marked with appropriate and approved signage.
- 14.3 Never block or restrict access / egress openings or pathways without an alternate access/egress and prior notification and approval of Metrolinx.

### **15.0 Safety Practices for Work on Roofs**

- 15.1 Before working on roofs, assess the potential hazards and safety conditions:
  - 15.1.1 slippery surfaces due to snow or ice
  - 15.1.2 uneven or sloped surfaces
  - 15.1.3 high winds
  - 15.1.4 state of guardrails or parapet walls
  - 15.1.5 presence and condition of roof anchors
- 15.2 Where work is to be performed within 2 meters of the edge of a roof that has no guardrail or equivalent protection one of the following fall protection methods will be used: travel restraint equipment affixed to permanent or temporary roof anchors
- 15.3 fall arrest equipment affixed to permanent or temporary roof anchors



- 15.4 fall protection netting installed at the edge of the roof
- 15.5 Before attaching a lifeline to a permanent roof anchor you must review on-site roof anchor inspection records to ensure that the roof anchor has been inspected within the past 12 month period and was verified as being safe.

## **16.0 Ladders**

- 16.1 Set ladders only on firm, level surfaces.
- 16.2 Use mud sill boards if the surface is soft or rough.
- 16.3 Inspect ladders for defects before use:
  - 16.3.1 weakened, broken, bent or missing steps
  - 16.3.2 broken or bent side rails
  - 16.3.3 broken, damaged or missing non-slip bases
- 16.4 Defective ladders must not be used. Report the defective ladder to your supervisor immediately, and tag and tie the rungs to prevent use.
- 16.5 Where a ladder is used to complete a task, a fall arrest system must be used where a worker may fall 2.4 metres (approx. 8 feet) or more from the ladder.
- 16.6 Always maintain three-point contact when climbing a ladder (e.g. two feet and one hand or one foot and two hands) and ensure the body is kept between the side rails.
- 16.7 Always face the ladder while ascending and descending, and take one step at a time while keeping body as close to the ladder as possible.
- 16.8 Top and bottom landing areas must be kept clear of debris and materials.
- 16.9 Ensure that the base of a ladder in a public area is protected by barricades and / or signage to alert people to possible hazards. When the above measures are not practicable, ensure that an employee is posted to act as safety watch.
- 16.10 Employees shall not use or work on ladders unless authorized to do so and trained on the types of ladder to use, the methods for its use, and requirements for inspection and maintenance.
- 16.11 Ladders shall not be occupied by more than one employee at a time.
- 16.12 Never slide down or jump from a ladder.
- 16.13 Never attempt to move or re-position a ladder while it is occupied.
- 16.14 Ladders should not be erected on boxes, carts, tables, scaffold platforms, elevated work platforms or on vehicles.
- 16.15 Ladders should not be used horizontally as substitutes for scaffold planks, ramps, runways or other service for which they have not been designed.



- 16.16 Position the base of a straight ladder at a distance of one quarter to one third of its length from the wall.
- 16.17 Access ladders must be secured at the top and bottom to prevent movement.
- 16.18 Access ladders must be long enough for the top to extend at least 1 metre (approx. 3 feet) above the working surface or roof-line.
- 16.19 Ladders shall not be spliced together to increase height.
- 16.20 The top sleeve of an extension ladder shall not be used independently as a standalone ladder.
- 16.21 A step-ladder must be fully spread with its spreaders locked when in use.
- 16.22 Employees shall not stand on the top two steps of a ladder or extend their body beyond the edge of the ladder for any purpose. Ladders must be moved as required to perform work.
- 16.23 Tools and material shall not be carried in hands while on the ladder, and secure grip on side rails must be maintained.

## **17.0 Ramps**

- 17.1 Ramps shall be at least 0.5 metres wide and securely fastened in place.
- 17.2 The angle of a ramp must not exceed a slope of 1 in 3.
- 17.3 Cross-cleats must be nailed to the ramp and spaced at regular intervals.
- 17.4 Guardrails must be installed on both sides of a ramp where a worker may fall 2.4 metres (approx. 8 feet).
- 17.5 The top and bottom of a ramp must be kept clear of debris and materials.

## **18.0 Scaffolding**

- 18.1 The following restrictions apply for scaffold installations:
  - 18.1.1 Obtain authorization from CMO before erecting scaffolds on a Metrolinx structure or near a railway track,
  - 18.1.2 The scaffolding shall not interfere with the safe operation of railway traffic unless authorized by the Flag Person, and CMO for set periods of time, and
  - 18.1.3 Scaffolds must be positioned so that minimum clearance for road or other traffic is always provided.
- 18.2 Scaffolds must be erected and dismantled by trained, knowledgeable and competent persons.
- 18.3 Scaffolds must be erected, used and maintained in a reasonably plumb condition.
- 18.4 Scaffolds must be inspected on a daily basis by a competent person.



- 18.5 Ensure that scaffolding does not sustain any impact, overloading or other event that could cause the load capacity specified in the plans to be exceeded.
- 18.6 Scaffolding must be fully equipped with guardrails and all openings must be protected. Guardrails must be designed so as to resist the loads applied and prescribed by law.
- 18.7 While erecting scaffolding at a height of 2.4 metres (approx. 8 feet) or higher on a scaffold not equipped with railings, a worker must wear fall arrest equipment.
- 18.8 Control access to scaffolds at all times so as to prevent trespassing and vandalism.
- 18.9 Scaffold planks or platforms must be of good quality with rough sawn surfaces, and free of defects or damage such as loose knots, splits or wood rot.
- 18.10 Scaffolds must be erected with all braces, pins, screw jacks, base plates, wheels and other fittings installed as required by the manufacturer.
- 18.11 Work platforms (including benches) must be at least 460 millimetres (18 inches) wide.
- 18.12 Scaffolds will be fully-decked across their width.
- 18.13 Scaffold planks must be securely fastened to prevent them from sliding.
- 18.14 Ensure the surface of the scaffold platform is free of materials such as ice, snow, oil, grease and other slippery materials.
- 18.15 Remove tools and materials from scaffolds before leaving the job.
- 18.16 A ladder must be provided for access or egress to the work platform.
- 18.17 Where a scaffolds exceeds three (3) times the least lateral dimension it must be secured against tipping
- 18.18 Where scaffolds cannot be tied into a building, adequately secured guy lines must be used to provide stability.

## **19.0 Engineered Scaffolding**

- 19.1 Where required, a registered Professional Engineer experienced in construction scaffolding designs the scaffolding.
- 19.2 Provide CMO with a preliminary general arrangement scheme with the following information:
  - 19.2.1 Location and spacing of support members;
  - 19.2.2 Detailed description of installation procedures including type of equipment and location of equipment used;
  - 19.2.3 Theoretical capacity of the scaffolding, i.e. permanent loads (dead loads), permitted additional loads (live loads, wind loads, snow loads, etc.) and permitted loads for cantilevered sections;
  - 19.2.4 Safety factors of different components (slings, shackles, etc.) used in the design;



19.2.5 Written procedures for use, inspection and removal;

19.2.6 Any other details requested by the Engineer;

19.3 All calculations, construction details, shop drawings and erection, assembly and construction methods must be established by or under the direction of the Engineer and must bear the Engineer's seal and signature.

## **20.0 Scaffolds on Wheels or Castors**

20.1 All castors or wheels must be provided with a functioning braking device.

20.2 Brakes on the castors must be engaged when working on the scaffold.

20.3 Ensure surface is firm and level prior to moving scaffold.

20.4 No worker shall mount scaffold unless the brakes are applied.

20.5 Where a rolling scaffold is being moved, no person is permitted on the scaffold.

20.6 A scaffold mounted on castors or wheels shall be equipped with outriggers to prevent its overturning if the height of the scaffold platform exceeds three times the least lateral dimension of the scaffold

20.6.1 measured at the base of the scaffold, or

20.6.2 if outriggers are used, measured between the outriggers.

## **21.0 Bracing / Securing**

21.1 Use appropriate bracing / securing techniques to prevent any part of the structure under construction, temporarily / permanently installed components or equipment in use, from overturning or collapsing.

21.2 Braces or supports should only be removed progressively when components or structural members no longer pose the danger of overturning or collapsing.

21.3 Structural steel must be erected in accordance with the design drawings and must be temporarily guyed / secured. The guy cable must not be capable of movement or slippage and should have the connections either bolted down or connected to a welded fitting at the base of the column. This should be as approved by a professional engineer or based on good engineering practice.

## **22.0 Housekeeping**

22.1 Obtain pre-authorization from CMO to store equipment or materials on the railway ROW. Such storage shall in no way impede railway operations or block ROW sight-lines.

22.2 Stockpiles fill, and soils shall be piled following the provincial standards best practices and in such a manner as to protect access routes and sight-lines.



- 22.3 Keep traffic and employees' access routes (aisles, walkways, etc.) clean and clear of any obstructions. Access routes with openings, construction material, excavated material or equipment must be barricaded and / or marked with appropriate and approved signage.
- 22.4 Check your work area at the start of your shift for safety hazards. Remove them or report them to your supervisor, and keep the work area free of hazards during your shift.
- 22.5 Equipment, tools and materials that are not being used must be stored properly and locked up where necessary.
- 22.6 Waste materials and debris must be placed in appropriate containers as they are produced, and removed from the work area on a daily basis.
- 22.7 Do not use Metrolinx waste containers to dispose site garbage. Contractors are to provide for their own debris/litter control and removal.
- 22.8 Persons are responsible for maintaining and cleaning their respective work areas and materials on a daily basis.
- 22.9 Pop cans, coffee cups and other garbage must be put into appropriate waste containers.
- 22.10 Do not throw refuse or objects on floors, out of a window or onto the tracks.
- 22.11 Remove or cover projecting nails (e.g. pieces of lumber) and other sharp metal objects.
- 22.12 Protruding objects such as reinforcing steel (rebar) must be capped or bent over to prevent injury.
- 22.13 Clean up spilled grease or oil promptly and thoroughly and fill out a spills report.
- 22.14 Use drip pans properly when pouring lubricants.
- 22.15 Place oily rags in covered metal containers.
- 22.16 Keep hoses, chains, cables, electrical cords or other trip hazards off the floor where people walk.
- 22.17 No tools or materials are to be left unattended close to the track at any time.
- 22.18 No track shall be fouled at any time except for a specific and approved task, for a limited time and under protection of the Flag Person, or a Track Supervisor in a rail yard.
- 22.19 Take necessary steps that may be required for dust nuisance resulting from construction activities.
- 22.20 Where there is the possibility of debris falling on the track, provide appropriate track protection to prevent possible damage to rail, ties and ballast.
- 22.21 Prevent excavated material from fouling ballast and sub-ballast.



## **23.0 Treatment of Ice and Snow**

- 23.1 No party shall engage in snow or ice removal within the ROW without permission of the Project Lead or the operating Railway.
- 23.2 Use of torches for snow or ice removal is classified as hot work and requires a hot work permit.
- 23.3 Accumulations of ice or snow which create slip hazards on access routes and/or work areas must be cleared / treated as soon as practicable.
- 23.4 Exercise caution when walking during inclement weather conditions.
- 23.5 If any slippery conditions observed at the work place present risk of injury, advise the supervisor.

## **24.0 Air Quality**

- 24.1 Use of internal combustion engines (e.g. gas, diesel, propane powered, etc.) is prohibited in an excavation, tunnel, shaft, building, or other enclosed structure unless:
  - 24.1.1 exhaust gases are discharged directly outside, or
  - 24.1.2 there is adequate natural or mechanical ventilation to ensure that exhaust gases will not accumulate, and
  - 24.1.3 concentrations of carbon monoxide are continuously monitored wherever personnel are present.
- 24.2 If equipment, work activities or materials used may impair air quality, ensure that adequate natural or mechanical ventilation is provided.
- 24.3 Ensure adequate ventilation when any of the following work is carried out
  - 24.3.1 The use of fuel-powered mobile equipment in or adjacent to the work zone
  - 24.3.2 Use of gas-powered cement trowel machines and concrete saws
  - 24.3.3 Use of propane-powered elevating work platforms
  - 24.3.4 Use of propane heaters
  - 24.3.5 Use of portable electrical generators
  - 24.3.6 Welding
  - 24.3.7 Applying sealers to floors
  - 24.3.8 Painting
  - 24.3.9 Application of spray-on fireproofing material
  - 24.3.10 Application of urethane foam insulation



- 24.4 Always place the pump and power unit of air compressors or generators outdoors and away from air intakes so that engine exhaust is not drawn indoors when the work is being done. Run only the high pressure airlines or extension cords indoors.
- 24.5 Where possible, cut concrete using wet processes and wet down the worksite during demolition work to reduce dust.
- 24.6 Where practicable, enclose and schedule work that produces airborne contaminants to evenings or weekends.
- 24.7 Ensure that dusts generated in indoor environments by work activities are regularly HEPA vacuumed.
- 24.8 In circumstances where there is any uncertainty as to the adequacy of air quality control measures, contact CMO immediately.

## **25.0 Fire Prevention and Protection**

- 25.1 Report leaking pipes or any defects in operating equipment which could cause a fire immediately to your supervisor.
- 25.2 Do not smoke, carry non-safety matches or butane gas lighters around paint booths, fuel storage tanks, or other areas where flammable gases or vapours are likely to exist or accumulate.
- 25.3 Supply, at each work site, a sufficient number of 20 lbs type ABC regulation fire extinguishers, or other type of fire extinguisher as required, to provide reasonable protection as dictated by the nature of the work and the Fire Code.
- 25.4 Know the location of each fire extinguisher in your work area.
- 25.5 Fire extinguishers must be inspected before the start of each job, and the inspection card must be marked monthly.
- 25.6 Access to fire extinguishing equipment must never be obstructed.
- 25.7 Fire extinguishers must be recharged when indicated on the pressure gauge, or after any use.
- 25.8 Report to the supervisor any fire extinguisher or fire suppression equipment that has been discharged, not inspected, or otherwise used, to ensure it is serviced and returned to service.
- 25.9 All workers must be trained in the proper use of the different types of fire extinguishers on-site:
  - 25.9.1 "A" for wood, paper and rubbish fires, use water or soda acid extinguisher. Do not use this extinguisher on electrical fires, because fluid conduct electricity;
  - 25.9.2 "B" for grease, oil, tar, gasoline, paint, propane and ethers use this chemical extinguishers; and
  - 25.9.3 "C" for electrical equipment such as motors, controls, wirings or fire caused by live electrical current.



- 25.10 Learn the emergency evacuation procedures (location of emergency exits, fire alarms, how to contact the local fire authority, etc.) contained in the Project Emergency Plan.
- 25.11 Carry out fire drills as directed by CMO.
- 25.12 Ensure that fire exits, extinguishers and other emergency equipment are not blocked, locked or otherwise rendered inaccessible.
- 25.13 Fire doors must never be locked, blocked or tied open.
- 25.14 Provide a dedicated safety watch (e.g. for Hot Work operations) to prevent fires along the ROW as directed by CMO.
- 25.15 Fires on or near the ROW must be immediately reported to the CMO along with the exact location and approximate size of the fire. Notify the local fire authorities or emergency organization.
- 25.16 Grass or weeds will not be burned on the ROW.
- 25.17 In case of fire,
  - 25.17.1 remain calm;
  - 25.17.2 Immediately:
  - 25.17.3 pull the fire alarm if available;
  - 25.17.4 Call the Fire Department (911);
  - 25.17.5 Notify the CMO;
  - 25.17.6 Advise the assigned Flag Person if a fire should occur in the ROW.
  - 25.17.7 shut down all equipment, if warranted;
  - 25.17.8 fight the fire with the proper equipment necessary for evacuation only, if feasible; and
  - 25.17.9 evacuate the area immediately;
  - 25.17.10 do not fight the fire except to assist in evacuating people
- 25.18 If a fire is small enough to be extinguished by a fire extinguisher and it is safe to do so, use the available fire extinguisher to put out the fire. Only those with proper training in the use of fire extinguishers may attempt to put out the small fire.

## **26.0 Compressed Gas Cylinders**

- 26.1 Handle compressed gases with extreme caution.
- 26.2 Compressed gas cylinders may only be transported or hoisted on site where a suitable rack and cylinders are secured from movement, is used.



- 26.3 All cylinders must have the appropriate WHMIS labels. Ensure the availability of Material Safety Data Sheets.
- 26.4 Only competent, authorized workers are to handle compressed gas cylinders
- 26.5 Use, store and transport all compressed gas cylinders adequately secured in an upright position.
- 26.6 Appropriate storage cages or racks must be made available in a safe location away from work areas, passing vehicles and falling objects, anywhere from 1.5 to 15 metres (approx. 5 to 50 feet) from the outside of a building, based on the aggregate capacity of the expanded gas (see Ontario Fire Code for details).
- 26.7 The area with the gas cylinders will be enclosed by suitable isolation methods in order to protect the public. The isolation method must be approved by CMO.
- 26.8 Appropriate warning signage will be posted.
- 26.9 After using a compressed gas cylinder, ensure the valve has been closed.
- 26.10 Cylinder valves must also be covered with their appropriate screw-on caps.
- 26.11 Upon discovery of a compressed gas leak from a cylinder, hose, valve or other connection, discontinue use, close valve, remove from work area (if safe). Leave the area and notify a supervisor without delay. The supervisor is to immediately call CMO.
- 26.12 Under no circumstances is a leaking compressed gas cylinder to be used. They are to be removed from Metrolinx Property immediately.
- 26.13 Cylinders shall be tested with soapy water by a trained and qualified person.
- 26.14 Empty containers of compressed gases will be stored separately from full or partial containers.
- 26.15 Flammable cylinders and materials must be stored separately from oxygen cylinders.
- 26.16 Only one day's supply or less of compressed gas is to be used indoors, at any time.
- 26.17 Welding / cutting torches, hoses, regulators and flash-back arrestors must be inspected prior to each use.
- 26.18 All required safety regulations concerning the proper handling and storage of all cylinders will apply and be confirmed before a hot work permit is issued by CMO.

## **27.0 Propane**

- 27.1 Store propane cylinders in a well ventilated area, away from heat with adequate warning signage.
- 27.2 Keep sources of ignition a minimum of 3 metres (approx. 10 feet) from propane cylinders.
- 27.3 An approved portable fire extinguisher must be readily available.



- 27.4 Only competent, authorized persons with a TSSA-compliant record of training may handle / connect compressed gas cylinders.
- 27.5 Always handle compressed gas cylinders and their contents with extreme caution.
- 27.6 After using a compressed gas cylinder, ensure the valve has been closed.
- 27.7 Only approved hoses and fittings should be used.
- 27.8 Inspect hoses before use to ensure that they are in good condition.
- 27.9 Hoses shall be removed, capped and secured for transportation, unless they are stored in a secure cabinet.
- 27.10 Store all propane cylinders in an upright position, adequately secured in an approved, identified storage crib.
- 27.11 Empty propane cylinders should be stored separately from full or partially full containers.
- 27.12 Upon discovery of a propane leak from a cylinder, hose, valve or other connection, discontinue use, close valve if possible and safe to do so, warn others,. Leave the area and notify your supervisor immediately. The supervisor is to immediately call CMO.

## **28.0 Flammable and Combustible Materials**

- 28.1 Flammable liquids must be stored in CSA, UL, or FM approved containers with flash arresting caps in place.
- 28.2 All containers in which flammable / combustible materials are stored must have the appropriate WHMIS labels. Ensure the availability of Material Safety Data Sheets (MSDS's).
- 28.3 Flammable or combustible materials must be stored or situated away from open flames or high heat sources in areas with proper ventilation.
- 28.4 Flammable materials must be stored outside in an isolated or fenced area at least 15 metres (approx. 50 feet) from the outside of the building, with appropriate warning signs posted.
- 28.5 Approved and sufficient fire extinguishing equipment must be readily available in areas where flammable / combustible materials are used and stored.
- 28.6 There shall be no smoking, use of open flames or ignition sources where flammable materials are stored or handled.
- 28.7 Flammable liquids / substances shall not be disposed of in sewer systems, drains or garbage containers used for general disposal.
- 28.8 Extreme care shall be taken during fuelling procedures:
  - 28.8.1 Engines and other sources of ignition should be shut off;
  - 28.8.2 All refueling will be done outside buildings;



- 28.8.3 Metal contact (ground / bonding cable) must be maintained between containers while transferring flammable liquids;
- 28.8.4 Approved safety containers shall be used to store and transport flammable liquids;
- 28.8.5 Pressurized air shall not be used to pump or move fuel; and
- 28.8.6 Care should be taken to prevent dropping or subjecting containers to other extreme forces.
- 28.9 No burning, cutting, welding or heating shall be done where the presence of flammable materials may create a possible hazard.
- 28.10 Space heaters used in offices and any fuel-fired heating device (e.g. stove, temporary furnace) must be kept clear of all combustible materials.

## **29.0 Hazardous Materials**

- 29.1 Metrolinx shall provide information on any known or suspected Designated Substances to prospective bidders in the tender documents.
- 29.2 The Contractor shall ensure compliance with WHMIS regulations and shall provide Metrolinx with valid Material Safety Data Sheets (MSDS; not more than 3 years old) for all WHMIS controlled substances the Contractor will introduce to the work site five (5) days prior to starting work.
- 29.3 Metrolinx reserves the right to request that the Contractor substitute products with less hazardous ones, or may ban the use of certain products all together.
- 29.4 Controlled products must be stored in areas designated by Metrolinx in a manner prescribed by the MSDS.
- 29.5 Material Safety Data Sheets (MSDS) must be present and readily accessible to persons using the material.
- 29.6 All persons must have WHMIS training.
- 29.7 All controlled products must be handled and used in accordance with instructions provided on the Material Safety Data Sheets and container labels.
- 29.8 Immediately report any spills or discharges of hazardous materials to the spills response staff and CMO.

## **30.0 General Material Storage**

- 30.1 CMO must be given 24 hours' notice of all deliveries. Contractors receiving deliveries must ensure that the vehicle is escorted by a Flag Person, a Metrolinx authorized person (within a yard), and a qualified representative of the Contractor.
- 30.2 For all deliveries Contractors must ensure appropriate signaling, traffic control and precautions against contact with electrical conductors.



- 30.3 All materials are to be stored in an organized manner. Storage locations outside a Contractor's Project Zone, the location will be designated and approved by CMO (in coordination with CMO and if applicable, with the Maintenance Facilities' Supervisors).
- 30.4 Any materials or waste stored within the ROW must bear a legible sign identifying the project number, Metrolinx Project Manager and contact number, Contractor's Site Supervisor and contact number, and date anticipated to be removed.
- 30.5 Equipment parked within the ROW similarly must bear a legible sign identifying the project number, Metrolinx Project Manager and contact number and Contractor's Site Supervisor and contact number.
- 30.6 Waste material and debris must be placed in appropriate containers as they are produced, and removed from the work area on a daily basis.
- 30.7 Waste temporarily stored on site must be:
  - 30.7.1 monitored at least weekly for signs of leakage, loss or damage;
  - 30.7.2 set back from direct drainage pathways to storm water catch basins;
  - 30.7.3 stored securely, preferably within a locked room or controlled enclosure separating waste from public areas; or at a minimum away from public areas / access routes, within sightlines of GO personnel (by camera or direct view).
- 30.8 Store materials in a manner such that they will not tip, collapse, and fall or protrude from a load in a dangerous manner.
- 30.9 Care must be taken while unloading / unpacking trucks, railcars and crates.
- 30.10 Never store materials at locations where they will obstruct tracks, roadways, work areas, doorways, entrances, exits or aisles.
- 30.11 Materials must not be stored within 2 metres (6.5 feet) from the edge of a roof, floor, excavation or other opening through which the materials could fall.
- 30.12 Materials must be adequately secured in place to prevent movement in strong winds or other inclement weather conditions.
- 30.13 The load bearing capacity of a roof or floor must be adequate for any stored materials.
- 30.14 Any combustible, corrosive or toxic substance should be stored in a suitable container with appropriate warning signage.
- 30.15 Materials that may conduct electricity must be stored at a safe distance from energized electrical equipment, installations and conductors to prevent electrical contact.

### **31.0 Personal Protective Equipment (PPE)**

- 31.1 Protective Footwear
  - 31.1.1 CSA Green Patch safety footwear must be worn at all times.
  - 31.1.2 Protective footwear shall be a minimum of 6" high, 1/2" minimum heel size, fully-laced and tied to the top.



31.1.3 Protective footwear must be inspected prior to use to ensure it is free of holes, tears and other defects.

## 31.2 Protective Eyewear

31.2.1 Protective eyewear must be worn at all times.

31.2.2 Protective eyewear shall be, at a minimum, Class 1 CSA spectacles or safety lenses / frames with fixed side shields.

31.2.3 Protective eyewear shall satisfy the MSDS PPE requirements of any substance in use.

## 31.3 Workwear Requirements

31.3.1 High visibility safety vests must be worn at all times on a project site. The vest shall be manufactured to CSA Z96-02 High Visibility Apparel, Class 2 (or higher) in fluorescent orange only during daylight hours. The colour red is strictly prohibited.

31.3.2 Long pants must be worn on project sites. Shorts are not permitted.

31.3.3 Sleeveless shirts are not permitted to be worn on project sites; minimum of 4" sleeves are required.

31.3.4 Clothing of non-synthetic materials shall be worn whenever there is a hazard of sparks or fire, and as required by the work.

31.3.5 Loose clothing and jewelry that may become entangled or caught in machinery, on equipment or contact energized electrical devices are not permitted.

31.3.6 Where chemical hazards exist, adequate skin protection shall be worn.

31.3.7 Clothes or gloves saturated with oil, grease or other flammables shall be replaced immediately.

31.3.8 Gloves must not be worn when close to moving machinery, if there is a possibility of gloves becoming caught and the hand being drawn into moving parts.

## 31.4 Hard Hats

31.4.1 A Class E, Type II CSA-approved hard hat must be worn at all times on project sites.

31.4.2 Hard hats must be worn as per the manufacturer's instructions.

## 32.0 PPE Free Zones

32.1 Within each project site the Constructor or the Contractor, given the Project Lead's approval, may establish area(s) on the property where PPE need not be worn, this area shall be designed a "PPE Free Zone"

32.2 This zone may be established to provide the contractor break spaces or to allow access between parking areas and site trailers or offices where PPE may be stored.



- 32.3 The Contractor shall ensure that any such zone is completely clear of construction operations and/or unsafe conditions and that these areas are protected and adequately isolated from the Work.
- 32.4 The entry and egress point of a PPE Free Zone must be properly signed to ensure all workers are aware of the requirements to replace PPE prior to entering the active work zone.
- 32.5 Full PPE is required to be worn at all times outside of these areas while on the construction site.

### **33.0 Hygiene**

#### **33.1 Drinking Water/ Facilities**

- 33.1.1 Potable drinking water from a sanitary source should be easily accessible for workers.
- 33.1.2 Constructor will ensure facilities are provided or arranged for workers prior to the commencement of work and are located within:
  - 33.1.3 180 meters horizontally of the work area and 9 metres vertically of the level of work area.
  - 33.1.4 For work being done in tunnels, facilities should be within 180metres from the entrance
  - 33.1.5 Separate sanitary and well-maintained facilities for men and women (unless facility is meant to be used by one person at a time) are to be provided and appropriate signage posted

#### **33.2 Chemical/ Biological Exposures**

- 33.2.1 Contractors are responsible for protecting workers from exposure via handling, storage, processing or use of hazardous biological or chemical agent
- 33.2.2 Contractor is responsible for employing or consulting a person knowledgeable in assessing chemical/ biological exposures if an exposure is suspected or there are health concerns from workers
- 33.2.3 Exposure to a particular chemical or biological agent should not exceed the TWA, STEL or C limits set out in the Ontario Table and if it's not in the Ontario Table, then exposure should not exceed the TWA, STEL or C limits set in the ACGIH table
- 33.2.4 If there is a hazard risk, contractor must ensure hierarchy of controls is implemented:
  - 1. Elimination/ Substitution: if possible, try to eliminate the hazard or find a substitute way of doing the activity to minimize exposure
  - 2. Engineering controls: local exhaust ventilation, modified machinery/equipment, fume hoods, and if that's not feasible, then implement
  - 3. Administrative controls (i.e. job rotation, shift duration, training, signage, etc.) and if there is still risk of exposure, then provide



4. Personal Protective Equipment (i.e. hard hats, safety goggles, safety shoes, respirators, vests, overalls, gloves, etc.)

33.2.5 In some cases, all three controls (engineering, administrative and PPE) need to be implemented

### 33.3 Welding Fumes/ Gases:

33.3.1 Sources of welding fumes: heating of the base metal, surface coatings, electrode and fluxes. Sources of welding gases: heating electrode coverings and fluxes, heating solvents, and reactions by UV radiation.

33.3.2 Possible health effects: short-term effects can include eye, nose and throat irritation, "metal fume fever" and long-term exposure can result in damage to bones, fluid build-up in lungs, bronchitis, damage to nervous system, risk of suffocation, unconsciousness, nasal and lung cancer.

### 33.4 General Dust

33.4.1 Sources of dust: grinding, chipping, excavating, trenching, pouring dry cement, cutting concrete/wood or other

33.4.2 Possible health effects: allergic reactions (inhaling dust for days or months) or fibrosis and cancer (inhaling dust for many years)

### 33.5 Carbon Monoxide

33.5.1 Sources of carbon monoxide: operating or being in the proximity engines powered by gasoline, propane or diesel (i.e. fuel-fired heaters, certain welding processes, cement mixers, lift trucks, portable gasoline generators, scissor lifts, gas-powered saws, Trowel machines etc.)

33.5.2 Possible Health effects: loss of consciousness, neurotoxicity and at high concentrations, death

### 33.6 Equipment Diesel Exhaust

33.6.1 Sources: operating or being in the proximity diesel-powered trucks, bulldozers and tractors

33.6.2 Possible Health effects: coughing, headaches, nausea, dizziness, ear, nose and throat irritation, cancer

### 33.7 Silica

33.7.1 Sources of silica: sandblasting concrete, concrete grinding, cutting and drilling concrete, sanding drywall

33.7.2 Possible Health Effects: silicosis, tuberculosis, lung cancer



### 33.8 Lead

33.8.1 Sources of lead: removing lead-based paint, renovating, demolishing and doing other work on structures or material containing lead

33.8.2 Possible health effects: acute lead poisoning, chronic poisoning, damage to body systems (blood, kidneys, nervous system, gastrointestinal system, reproductive system, bones and teeth).

### 33.9 Asbestos

33.9.1 Sources of asbestos: removing building and pipe insulation, grinding asbestos-containing cement

33.9.2 Possible health effects: asbestosis, reduced respiratory function and death, lung cancer, mesothelioma

### 33.10 Noise

33.10.1 Sound level measurements done in the workplace to determine if there is a noise hazard must be done without incorporating the use of hearing protection.

33.10.2 Employer must make sure that workers are not exposed to a sound level greater than an equivalent sound exposure level of 85 dBA.

33.10.3 Visible signage should be posted at the entrance of any area where sound level exceeds 85 dBA

33.10.4 Hearing protection should be worn:

1. Where worker's exposure to noise exceeds 85 dBA.
2. In the vicinity of any high noise construction activities, hearing protection is not required for protection against noise associated with passing trains.

33.10.5 Workers required to wear hearing protection must be trained and given information regarding the use, limitations, proper fitting, inspection and maintenance of the device.

## 34.0 Fall Protection

34.1 Fall protection is required in all situations where:

34.1.1 a worker is at risk of falling a distance of 2.4 meters (approx. 8 feet) or greater;

34.1.2 a worker is using an elevating device or ladder at a height of 2.4 meters or greater.

34.2 Work requiring fall protection cannot be commenced without issuance of a work permit.

34.3 Acceptable fall protection approaches are as follows:

34.3.1 Guardrails installed at the fall edge



34.3.2 Where guardrails cannot be installed the following applies,

- Travel restraint system (suitable only where the fall can be prevented by stopping access to a fall edge).
- Fall restricting system
- Fall arrest harness, lanyard and lifeline attached to an anchor point.
- Fall arresting netting installed at the fall edge.

34.4 All employees requiring fall protection shall be adequately trained on the fall protection equipment, systems, specific safe usage procedures, its maintenance and inspection and rescue procedures.

34.5 Records of training will be available to the CMO.

34.6 A written rescue plan is required in circumstances where a person may require rescue as a result of an arrested fall. The supervisor of the workers using the fall arrest equipment is responsible for ensuring that the rescue plan is appropriate for the work situation and that all communication, equipment, and personnel requirements of the plan are in place prior to commencement of the work.

34.7 All components of a fall prevention system must be inspected by a competent person prior to its first use on site and by the worker daily thereafter. If any component is found to be defective, it must be removed from service.

34.8 Mechanical components of all fall protection systems must be inspected according to the manufacturer's recommendations and CSA standards.

### **35.0 Hearing Protection**

35.1 Hearing protection should be worn:

35.1.1 In the vicinity of any high noise construction activities.

35.1.2 Hearing protection is not required for protection against noise associated with passing trains.

### **36.0 Respiratory Protection**

36.1 The Contractor shall identify all areas / tasks where there is a potential hazard of exposure to airborne contaminants (e.g. gas, vapour, dust, and fume) and provide workers with an adequate number of NIOSH-approved respirators.

36.2 Respiratory protection must be used in the following work operations:

36.2.1 Dry concrete cutting or coring

36.2.2 All asbestos work operations

36.2.3 All mould abatement work operations



36.2.4 All lead paint abatement operations

36.2.5 Application of urethane insulating foam

36.2.6 Welding of painted surfaces

36.2.7 High volume spray coating / spray painting

36.3 Workers required to wear respirators must be fit-tested and trained in the selection, fitting, use, maintenance and limitations of respirators.

### 37.0 Confined Space Entry

37.1 CMO's Construction Safety Management Program's Confined Space procedures are based on Provincial Confined Space Guidelines, O. Reg. 632/05, to which all Employers, Contractors, Third Parties, and Federally regulated Corporations shall abide by while working on Metrolinx Property, or employed on any Metrolinx Project.

37.2 The table below maybe used to aid in determining if the work area is a Confined Space as per O. Reg. 632/05:

Is it designed and constructed for continuous human occupancy?	Might an atmospheric hazard occur?	Is it a confined space?
Yes	Yes	No
Yes	No	No
No	Yes	Yes
No	No	No

37.3 No work shall be undertaken in a Confined Space without prior issuance of a Hazardous Operations Work Permit issued by CMO. It is the Contractors responsibility to identify upcoming Confined Space Work to the CMO Project Lead in a timely manner.

37.4 Prior to the Contractor commencing Confined Space Entry/work, the Contractor must first submit for review the following documents to CMO Project Lead:

37.4.1 Contractor's Confined Space Program.

37.4.2 Contractor's Confined Space Hazard Assessment and Management Plan.

37.4.3 Contractor's Confined Space Entry/Work Plan.

37.4.4 Contractor's Confined Space Site Specific Rescue Plan.

37.4.5 Contractor's Confined Space Entry Permit.

37.4.6 Copy of the Contractor's Training Certificates for all employee's current in Confined Space Entry/Work.

37.5 Upon CMO review of the above submissions, the Contractor will complete and submit a CMO Confined Space Checklist to the CMO Project Lead, applying for a Hazardous Operations Work Permit for Confined Space Entry / Work. When the CMO Project Lead has reviewed the



Confined Space Checklist, a Hazardous Operations Work Permit will be issued to the Contractor.

- 37.6 CMO Project Lead will supply the Lead Contractor with a Confined Space Co-ordination Document, if multiple Contractors are occupying / working in the same Confined Space, and a Co-ordination Document is applicable.
- 37.7 Upon completion of the Contractors Confined Space work, the Contractor must submit to the CMO Project Lead, a copy of the Contractors Completed Confined Space Entry Permit.
- 37.8 The following CMO Confined Space Documents may be found in the following Appendices:
  - 37.8.1 CMO Confined Space Entry Permit - Appendix 19E
  - 37.8.2 CMO Confined Space Co-ordination Document - Appendix 19E
  - 37.8.3 CMO Confined Space Checklist - Appendix 19E
- 37.9 The Contractor may use the CMO Confined Space Entry Permit, or their own Confined Space Entry Permit, if the document conforms to O. Reg. 632/05, Provincial Guidelines for Confined Space.

### **38.0 Equipment and Machinery Operation - General Requirements**

- 38.1 It is the responsibility of the Contractor to ensure that all vehicles, equipment, and tools are in a safe condition to operate. If, in the opinion of the Project Lead, any of the Contractor's equipment is unsafe for use, the Contractor shall remove such equipment from Metrolinx property.
- 38.2 The Contractor must ensure that the operators of all equipment are properly trained and competent in the safe operation of the equipment. Training records shall be made available to CMO upon request.
- 38.3 Pre-operational checks must be conducted and documented daily before use.
- 38.4 Do not operate defective equipment or machinery. Report the hazard immediately to your supervisor.
- 38.5 Shut off any unattended vehicle, equipment or tools, and properly secure the equipment against movement.
- 38.6 Where equipment has an enclosed cab, padlock the cab access doors.
- 38.7 Ensure the operator's manual, which includes instructions for safe operation, is kept with each machine.
- 38.8 Maintenance records will be kept with Equipment and Machinery.
- 38.9 All equipment or tools with blades, rotating gears, belts or other moving parts shall be equipped with adequate guards. These guards shall only be removed when the machine or tool is being serviced by qualified persons.



**39.0 Hoisting Equipment**

- 39.1 No operator shall leave unattended the controls of a crane or other hoisting device with its load raised.
- 39.2 Where a worker will use a platform bucket, load, hook, sling or other similar device as a workplace and it will be supported and moved by a boom of a crane or similar hoisting device, the contractor shall give notice with engineered design drawings to the CMO and the Ministry of Labour inspector nearest to the project.
- 39.3 Hoisting devices are NOT permitted to be operated closer than 10 meters (30 feet) from the nearest rail of any track without the Flag Person's, or a Track Supervisor's (in a rail yard) authorization and with railway traffic protection as specified by the CMO.
- 39.4 The Contractor shall have certificates of conformity and inspection, signed and sealed by a professional engineer and issued within the previous year, for all hoisting equipment.
- 39.5 A professional engineer or a competent worker designated by a professional shall visually inspect (for defects) the structural elements and components of a tower crane after it is erected (and before it is used), then no greater than every twelve (12) months after the initial inspection.
- 39.6 The Contractor shall provide a drawing, signed and sealed by a professional engineer, illustrating the use of cranes, winches and other lifting devices.
- 39.7 When cranes and hoists are used on Metrolinx structures, ensure that the capacity of the structure is sufficient to safely resist the various load configurations during all phases of construction, including assembly, use and dismantling. The drawing shall include the following:
- 39.7.1 The value of forces transmitted to the structure
  - 39.7.2 Details of elements required to transmit those forces to the structure
  - 39.7.3 Work procedures to be followed
  - 39.7.4 The seal and signature of a professional engineer
- 39.8 A tower crane's supporting foundation/shoring and bracing shall be designed, reviewed and stamped by a P. Eng. (Ontario) in accordance with the crane manufacturer's specifications and shall be constructed/installed in accordance with the design.
- 39.9 Indicate the position(s) of crane(s) and location of outriggers relative to the existing structures. Outriggers/stabilizing device shall be extended to meet load capacity chart requirements and shall rest on blocking that will support the crane/hoisting device (including the specified load) without failure - which would ultimately affect its stability.
- 39.10 Lift capacity shall be clearly indicated on all equipment, by means of a legible load rating plate.
- 39.11 The criteria for hoisting Persons/Equipment shall be in accordance with O. Reg. 213/91 s. 153.
- 39.12 Ensure that the maximum loads the structures can support are not exceeded.



- 39.13 Determine the weights of loads to be lifted. Where weights are unknown or cannot be exactly determined by weighing loads, a professional engineer shall determine the weights through calculations.
- 39.14 Keep a permanent record of inspections, tests, repairs and modifications for all hoisting devices used at the work site. A logbook of the records shall be kept with the equipment at all times.
- 39.15 The Contractor shall make available to the Constructor all copies of the documents.
- 39.16 Inspections / testing of structural elements, rigging equipment and controls must be conducted by a qualified, competent person prior to the start of every shift and as required during the shift.
- 39.17 Do not use a defective tower crane, mobile crane, or hoist. Report any defect immediately to your supervisor. All defects shall be repaired in accordance with the instructions of the crane manufacturer or professional engineer. Upon completion of the repairs, a professional engineer shall inspect the crane to ensure all defects are corrected. The inspection shall be documented in a written report and that afore-mentioned report shall remain on the project site while the crane is erected.
- 39.18 Only Ontario certified and authorized persons are permitted to operate cranes and hoists on Metrolinx Property.
- 39.19 Crane operators shall ensure that the crane body, boom or loads attached to the crane are parked parallel to the tracks to maintain adequate minimum clearances.
- 39.20 Loads must be grounded while trains are passing to avoid swinging motion.
- 39.21 Written safe work procedures for all lifts to be done in the proximity of power lines must be provided to the Office of System Safety two (2) weeks prior to the work being undertaken. Minimum items to be included in the work procedures: type of crane, loads, drawing showing swing/load radius in relation to tracks/structures.
- 39.22 All power lines will be considered to be 'live' and high voltage, unless otherwise explicitly indicated by the local utility provider.
- 39.23 When operating cranes or hoists around power lines, ensure that the power is de-energized or that the minimum clearances are maintained for both equipment and load.
- 39.24 A qualified signal person must be used at all times when operating hoisting equipment.
- 39.25 All moves must be well communicated and coordinated with other employees at the job site. No lift or movement of material shall take place until the operator has assured that other employees are clear of the area of crane operation. This shall be identified in the Contractors written hoisting procedures/work plan.
- 39.26 All lift zones should be clearly demarked to prevent workers from entering the lift zone. Stand to one side, using ropes or tag lines to guide the load, if necessary. This shall be identified in the Contractors written hoisting procedures/work plan.



- 39.27 Hand signals or verbal instructions for the operation of cranes and hoists shall be given by a competent trained signaler. Operators must act only on the signals or instructions of this authorized employee.
- 39.28 Emergency signals to stop movements may be given by anyone and must be obeyed immediately.
- 39.29 Test controls on each new piece of equipment before loading. All cranes and hoists have different operating characteristics.
- 39.30 Tower Crane setting & testing limits shall be in accordance with O. Reg. 213/91, s. 160 to s. 161.
- 39.31 Test controls in "off" position and apply brakes, whenever you leave the crane.
- 39.32 The boom of a tower crane may slew freely (when unattended/unloaded) except when:
  - 39.32.1 the boom has a potential to collide with another crane/structure/object, or
  - 39.32.2 slewing freely is in contradiction to the manufacturer's procedures.
- 39.33 Crane or hoist controls shall never be left unattended with a load suspended.
- 39.34 Any serious violations of safety procedures for cranes or hoists may result in an immediate work stoppage.

#### **40.0 Elevating Work Platforms**

- 40.1 Workers shall not use elevating work platforms unless trained and authorized to do so.
- 40.2 Elevating work platforms must have on-board:
  - 40.2.1 a pre-job inspection certificate and sticker signed by a competent maintenance person
  - 40.2.2 a letter bearing the seal of a professional engineer stating the equipment is in compliance with applicable legislation and CAN/CSA standards
  - 40.2.3 a permanent record of all inspections, test, repairs, modifications and maintenance performed
  - 40.2.4 a maintenance and inspection record tag attached to the platform which includes date, signature, name and maintenance information
  - 40.2.5 an operator's manual kept with the platform
  - 40.2.6 the operator's pre-use inspection checklist
- 40.3 Inspect any platforms for damage and hazardous conditions prior to use. Notify immediate supervisor without delay of any noted or suspected hazards.
- 40.4 Ensure that all materials used in the construction of platforms is adequate and suitable:
  - 40.4.1 Never use knotty or split wood, pitted or bent metal or used fasteners



- 40.4.2 Never paint platforms which may conceal cracks or other damage.
- 40.5 Repairs to platforms shall be done only by qualified and authorized persons.
- 40.6 Never attempt to reposition a platform while it is occupied.
- 40.7 Ensure that the base of a platform is protected by barricades and/or signs to alert people to possible hazards. When the above measures are not practicable, ensure that an employee is posted to act as safety watch.
- 40.8 Ensure that platforms are equipped with a securing system to prevent the base from moving unexpectedly.
- 40.9 Platforms must be fully equipped with railings and all openings must be protected. Railings must be designed so as to support the loads applied and prescribed by law.
- 40.10 Ensure surface is firm and level prior to moving platform.
- 40.11 Ensure that the platform does not sustain any impact, overloading or other event that could cause the load capacity specified to be exceeded.
- 40.12 Platforms must be operated in accordance with the manufacturer's instructions.

#### **41.0 Mobile Equipment Operation**

- 41.1 Company vehicles and other mobile equipment are to be parked only in areas designated by on-site signage, or the Project Lead.
- 41.2 Only competent, trained and authorized persons are to use vehicles, fork lift trucks, elevated work platforms or other powered equipment or machinery, while on-site.
- 41.3 Proof of training or licensing for vehicle operation must be maintained with the operator at all times.
- 41.4 Operator's manuals and inspection log books must be attached to / inside any mobile equipment used.
- 41.5 Review load capacities of driving surfaces within buildings before driving a truck onto the surface or handling loads.
- 41.6 Observe overhead clearance limits.
- 41.7 Avoid striking stationary objects, such as sprinkler heads, columns, walls, signal equipment, rails, light and CCTV standards, etc.
- 41.8 They must be prepared and able to stop at all railway at-grade crossings, and shall stop when necessary.
- 41.9 If the view of an operator of mobile equipment is obstructed, or where working near a roadway, electrical conductor or public/ pedestrian way, the operator shall be assisted by a competent, trained signal person.



- 41.10 Where mobile equipment operates near other vehicular traffic, barriers, signs, and/or signalers shall be used to warn traffic and demarcate the travel pathway.

#### **42.0 Tunneling**

- 42.1 No tunneling shall commence without prior issuance of a hazardous operations work permit by CMO.
- 42.2 For access in to a shaft or tunnel, the contractor must use either a tag in and tag out system, or the Shaft and Tunnel Entry Permit found in Appendix 16
- 42.3 In the event there is a requirement for a tunnelling inspection to take place for completion and handover after the tunneling Contractor has demobilized from site and no rescue is available, the Tunnel Handover Inspection Requirements found in Appendix 16 must be followed.
- 42.4 The Tunnel Weekly Inspection found in Appendix 16 must be completed by the Project Lead on a weekly basis when shaft and tunnel construction commences.

#### **43.0 Excavation and Trenching**

- 43.1 No excavation or trenching shall commence without prior issuance of a work permit by CMO.

#### **44.0 Use of Explosives**

- 44.1 Where explosives may be used all legislative requirements will be met with subject to approval from CMO.
- 44.2 No Contractor shall bring explosives onto a Metrolinx project site without CMO approval.

#### **45.0 Welding, Cutting and Grinding**

- 45.1 A CMO Hot Work Permit is required if welding, cutting or grinding will occur within 11 meters (35 feet) of a building or potential hazard such as a fuel storage tank.

#### **46.0 Energized Equipment**

- 46.1 No work may be performed on energized equipment without authorization via a CMO hazardous operations work permit.
- 46.2 Access to electrical rooms and their contents is restricted to authorized persons and must be appropriately marked with warning signage. Report any areas where signage is missing.
- 46.3 Live electrical panels must be appropriately identified with signage. Report to CMO the discovery of any unlabeled electrical panel.
- 46.4 Consider all electrical lines to be live until you know otherwise by actual testing.
- 46.5 Electrical panels and disconnects must not to be covered or hidden by articles of clothing, materials or machinery.
- 46.6 A switch and panel board controlling a service entrance, service feeder or branch circuit shall:
- 46.6.1 Be securely mounted and have a cover ,



- 46.6.2 Be located in an area where water will not accumulate,
- 46.6.3 Be readily accessible to workers,
- 46.6.4 Have the front of the panel board kept clear of obstructions, and
- 46.6.5 Have a switch that is not locked in an energized position and housed in an enclosure provided with a locking device.
- 46.7 Cords shall have a grounding conductor and a least two (2) other grounding conductors, and when used outdoors or in wet conditions be equipped with a ground fault circuit interrupter (GFCI).
- 46.8 Report defective electrical equipment or any loose, unprotected wires/cables to your supervisor.
- 46.9 Overhead conductors must be identified with the appropriate "DANGER" signage.
- 46.10 Elevating work platforms must not be moved closer than 15 metres (50 feet) to overhead power lines, unless the device is equipped for live electrical line work and the workers on that platform are qualified for such work.
- 46.11 Tools, ladders, scaffolding and other equipment / materials which may conduct electricity must be stored or used at a safe distance from energized electrical equipment, installations and conductors to prevent electrical contact.

#### **47.0 Working Close to Energized High Voltage Equipment and Conductors**

- 47.1 All workers, tools, equipment or materials must maintain the following minimum applicable distances away from exposed, energized high voltage electrical equipment and conductors:
  - 47.1.1 Over 750 V to 150 kV: 3 metres
  - 47.1.2 Over 150 kV to 250 kV: 4.5 metres
  - 47.1.3 Over 250 kV: 6 metres
- 47.2 If these minimum distances cannot be maintained because of the circumstances of work, the Contractor must establish and communicate to its workers a safety plan documenting measures and procedures to ensure no workers, tools or equipment come into contact with the energized equipment and conductors.
- 47.3 This plan should include provisions for signage warning workers of the potential electrical hazard.
- 47.4 A designated spotter is also required when workers, tools or equipment or materials may come into contact with the potential electrical hazard.
- 47.5 Permanent, legible warning "DANGER - HIGH VOLTAGE" signs should be placed in a conspicuous location:
  - 47.5.1 At electrical equipment vaults, electrical equipment rooms, areas, or enclosures;



- 47.5.2 On all high-voltage conduits and cables at points of access to conductors;
- 47.5.3 On all cable trays containing high-voltage conductors with the maximum spacing of warning notices not to exceed 10 metres; and
- 47.5.4 On exposed portions of all high-voltage cables at a spacing not to exceed 10 metres.

#### **48.0 Safety of the General Public and Building Occupants**

- 48.1 Metrolinx provides commuter services and therefore protection of the general public and building occupants is paramount.
- 48.2 Every person on a Metrolinx project site has a personal responsibility to ensure that their work:
  - 48.2.1 does not endanger the general public or building occupants, and
  - 48.2.2 creates as little inconvenience as possible
- 48.3 Where necessary for protection of the public or occupants, the following measures should be used:
  - 48.3.1 use of appropriate warning signage
  - 48.3.2 installation of fencing or hoarding in accordance with Appendix 20 and at least six feet in height
  - 48.3.3 designation and use of construction access routes and parking areas
  - 48.3.4 traffic control lights, pylons or signal persons
- 48.4 Any incidents causing actual or potential injury to the general public or building occupants or actual or potential damage to their property shall be immediately reported to CMO.

#### **49.0 Warning Signage**

- 49.1 For construction projects, appropriate signage will be provided by the Contractor for the project to warn the public as well as the workers.

#### **50.0 Access and Parking**

- 50.1 Proposed site traffic and parking plans will be prepared by the General Contractor for its project, for review and approval by the CMO. The plan will be developed to minimize the impact of vehicle parking on the operations of the existing building, facilities, or corridors including bus and fire routes and to ensure at all times the safety of occupants and the public.
- 50.2 There is not sufficient parking on Metrolinx project sites or property for all persons of all Contractors working on Metrolinx Projects. Contractors are responsible for making necessary transportation and parking provisions for their personnel.
- 50.3 No parking of personnel vehicles is permitted on Metrolinx Property without approval of the CMO.



- 50.4 All Contractors are responsible for communicating requirements of their site traffic plan to their workers, sub-contractors, suppliers and visitors.
- 50.5 All construction persons must use designated construction access routes and parking areas.
- 50.6 Driveways, laneways, walkways or emergency vehicle routes must not be blocked or restricted at any time by construction vehicles, machinery, equipment or materials.
- 50.7 Overnight parking of equipment or vehicles must only be done with the permission of the CMO.
- 50.8 No vehicle is to be left without applied brakes/blocking, or unlocked, or with keys in place.
- 50.9** Construction equipment such as zoom booms, scissors lifts, bulldozers, forklifts, etc. must have all moveable parts kept in their lowered positions when left unattended.

#### **51.0 Traffic Control and Equipment on Public Ways**

- 51.1 Signal persons, barricades or signage must be utilized on public or private ways where necessary to protect workers, the general public, occupants and vehicles.
- 51.2 Signal persons must be trained and provided with written instructions by their supervisor.
- 51.3 Signal persons must wear tear-away fluorescent vests at all times.
- 51.4 Under no circumstances can work activities, stored materials, or vehicles prevent prompt emergency service vehicle access to the work site or nearby buildings. Where alternate routes or detours are necessary these must be clearly marked and not significantly increase travel time.
- 51.5 Equipment to be used on public or private ways must be barricaded where practical and equipped with amber lights that are flashing at all times.
- 51.6 Where roadwork is underway or has been performed, appropriate barricades and flashing light standards must be installed to prevent hazards to traffic or pedestrians.
- 51.7 Good housekeeping practices must be followed, at all times, to prevent, general public or occupant contact with waste, scrap or other unsafe conditions on public or private ways.

#### **52.0 Personal Conduct**

- 52.1 Use of inappropriate or profane language by workers will not be tolerated in or around Metrolinx construction sites.
- 52.2 All persons must be familiar with and follow all health and safety rules applicable to the workplace.
- 52.3 All persons must co-operate with government inspectors, site health and safety personnel, worker health and safety representatives, supervisors.
- 52.4 All persons are required to participate in all toolbox safety talks held by supervisors.
- 52.5 Always wear the personal protective equipment required for the site and the task.



- 52.6 Exercise sound judgment to protect yourself and others. If it does not look or feel safe, don't do the task. Report your concern to your supervisor
- 52.7 Read and follow all posted notices and warnings.
- 52.8 Portable / personal radios / audio devices (i.e. MP3 players, iPods) are not permitted on work sites.
- 52.9 Rings, jewelry and loose clothing must not be worn during work activities.
- 52.10 Smoking is permitted in designated areas only. Deposit butts in approved containers.
- 52.11 If you are not familiar with the use of any equipment, machinery, or tools, ask your supervisor for assistance.
- 52.12 Do not disturb fellow workers while they are setting up or operating any equipment or machinery.
- 52.13 A clean work area is also a safe work area. Always keep work areas and access ways clean and free of spills, scrap, debris, and congestion.

### **53.0 Substance Abuse**

- 53.1 The following rules shall apply to all persons while on Metrolinx Property and the ROW:
  - 53.1.1 No use, possession, distribution or sale of illegal drugs or drug paraphernalia.
  - 53.1.2 No use, possession, distribution or sale of beverage alcohol or any form of alcohol.
  - 53.1.3 Responsible use of prescribed and over-the-counter medications. Persons taking prescription drugs shall advise their supervisor if there is potential for performance to be negatively affected.
  - 53.1.4 No distribution, offering or sale of prescription medications.
  - 53.1.5 Report for duty and remain during the entire period of duty free of the negative effects of alcohol and other drugs, including the after effects of such use.
- 53.2 Where a worker is suspected of being intoxicated the following procedures must be followed:
  - 53.2.1 The worker will be escorted to a safe location away from the work area, and asked to remain there pending further action.
  - 53.2.2 The worker's supervisor, worker health and safety representative, and union steward will be requested to attend, if available.
  - 53.2.3 The group present will determine an appropriate course of action and a means of transport to a suitable safe location.
  - 53.2.4 Where there are differences of opinion with respect to the worker's fitness for duty, the dispute will be resolved with a view to ensuring safety, and the worker will be transported home, or required to remain in a safe location until this can be arranged.



53.3 Violation of this procedure will result in enforcement and discipline in accordance with Section 22.0(c) of this manual.

#### **54.0 Visitors**

54.1 No visitors are allowed on Metrolinx Projects unless they are accompanied at all times by a qualified person.

54.2 The qualified person accepts responsibility for the visitor.

54.3 Visitors to a rail environment must check-in with the Flag Person (or a Facility Supervisor in a yard) and receive and sign off on a Safety Briefing prior to entering into Metrolinx Projects and sign-in/sign-out of project zones.

54.4 Visitors must obey the qualified person at all times.

54.5 Visitors must not perform work unless authorized by CMO.

#### **55.0 Illumination**

55.1 All project areas where a worker may be present and means of access / egress for these areas shall be adequately lit.

55.2 Any light bulb used in a temporary lighting system must be enclosed in a mechanical protection device.

55.3 Electrical lighting shall be provided to work areas in which natural light may not sufficient (e.g. tunnels, shafts). Flashlights will be provided and used by workers as required.

55.4 Emergency lighting systems should be inspected at least once a month to ensure that exits, corridors and principal routes providing access to exits are illuminated in the event of loss of power.

#### **56.0 Cell Phone and Radio Use**

56.1 Personal use of cellular telephones and similar devices within the USRC and GRC ROW is prohibited.

56.2 Cellular telephone and radios must not be used while crossing track or operating vehicles.

56.3 Work-related use of cellular telephones and radios within the USRC and GRC ROW shall be kept to a minimum, and shall be carried out in a way so as to minimize distraction of personnel.

56.4 Radio use for Contractors is limited to the use of channels as specified by the Railways. Radio rules include the following:

56.4.1 Unnecessary, unidentifiable or personal information shall not be transmitted over the radio.

56.4.2 Indecent language shall not be transmitted over the radio.



**57.0 Track Protection**

- 57.1 All persons shall observe the following general rules when working on or around track:
- 57.1.1 Permission must be granted by a Flag Person or Track Supervisor (within a rail yard).
  - 57.1.2 Walk clear of tracks when duties permit, keeping a lookout in both directions for approaching traffic.
  - 57.1.3 Walk between rails only when proper rail protection has been received.
  - 57.1.4 Cross tracks as near to a 90 degree angle as possible.
  - 57.1.5 Walk straight across tracks when possible to do so, and not less than 25 feet from standing equipment.
  - 57.1.6 Sitting on track or any part of track structure is prohibited.
  - 57.1.7 Crossing over, under or between rolling stock is prohibited.
  - 57.1.8 Leaning against standing rail equipment or rolling stock is prohibited.
  - 57.1.9 Waste products and refuse must not be disposed along the ROW or in yards.
  - 57.1.10 Where work is to be performed less than 8 m (25 ft.) from the nearest rail, or where otherwise deemed necessary by the CMO, a Flag Person, or Track Supervisor (within a rail yard) must be on site.
  - 57.1.11 Always obey the Flag Person's, or Track Supervisor's (within a rail yard) directives.
  - 57.1.12 Do not unnecessarily interfere with the movement of trains.
  - 57.1.13 Always be on the alert for moving rail equipment. All parties involved in the Work must always expect train, engine, car or track unit movement on any track, at any time, and in either direction.
  - 57.1.14 Look in both directions before stepping over or crossing tracks and / or passing obstructions limiting clear line of sight.
  - 57.1.15 Do not sit on, lie under, or cross between cars except as required in the performance of your duties and only when equipment has been protected against movement and authorized by the Flag Person or Track Supervisor (within a rail yard).
  - 57.1.16 Vehicles shall not exceed 15 km/h (9 mph) on ROW. More restrictive speed limits may be imposed.
  - 57.1.17 Lifting devices are NOT permitted to be operated closer than 10m (30 ft.) from the nearest rail of any track without Flag Person authorization and with railway traffic protection as specified by the Railway on the ROW, and the Track Supervisor's authorization within a rail yard.



**58.0 Smoking**

- 58.1 All areas on Metrolinx Property are considered non-smoking except for the designated areas.
- 58.2 Designated areas shall be proposed by the Contractor and approved by the CMO.

**59.0 Utility Locates**

- 59.1 The Contractor shall:
- 59.1.1 Be responsible for determining the exact location of all utilities, including all costs associated with permit fees, daylighting, radar or any other means as may be required to perform the utility locates.
  - 59.1.2 Serve proper advance notice to CMO, as applicable, and the appropriate utility company(s) or agency(s), for the purpose of utility locates.
  - 59.1.3 Request clarification from the utility service provide where there is any doubt with regards to the validity or accuracy of any locate marks.
  - 59.1.4 Provide a locate report to CMO, and the Railway, or arrange for an examination of stakeouts by either party.
  - 59.1.5 Not allow any excavation or other work that could impact the existing utilities or services to be undertaken before approval is granted by the CMO.
  - 59.1.6 Be in possession of written authorization from the relevant Railway and an issued CMO work permit prior to allowing any tool to break the ground surface.

**60.0 Protection of Rail Equipment and Train Clearance Envelopes**

- 60.1 Work activities conducted in close proximity to rail equipment and railway infrastructure shall undergo an assessment to determine the likelihood of damaging or / and interfering with rail equipment and rail operation.
- 60.2 Appendix 34 details relevant train operating envelopes.
- 60.3 Affected parties, i.e. construction / maintenance staff, are expected to observe one of two minimum train clearance envelopes, depending where the work takes place:
- 60.3.1 All Railway Corridors outside of the Union Station Depot. The envelope shown in Figure 2 of Appendix 33 details clearance constraints and includes:
    - static rolling stock outline, i.e. dimensional characteristics of rail locomotives, rail cars / coaches;
    - dynamic / kinematic rolling stock outline, i.e. rail equipment swaying and cornering while moving;
    - oversized / dimensional loading of freight trains;
    - track infrastructure variation, i.e. track tolerances and super elevations;



- railway operating and maintenance staff traveling on the side of a rail car.

60.3.2 Within the Union Station Depot only. The envelope down in Figure 4 of Appendix 34 details clearance constraints. In addition to the points previous detailed in item (A) above, this envelope experiences additional constraints and includes:

- Train shed roof structure and roof supporting column;
- Passenger platforms and platform enclosures, i.e. shelters, stair enclosures, and maintenance storage sheds;
- Passenger space requirements for access to, and egress from, the rail platform and trains.

60.3.3 CMO approval is required before hoarding or equipment can be setup in proximity to the operating tracks. Information is provided to assist with the creation of work plans. Having these dimensional clearance does not provide permission to work freely outside the boundaries of these envelopes.

## 61.0 Zero Energy


61.1 During the installation, repair or commissioning of machinery or equipment, all hazardous forms of energy must be locked, blocked or released as necessary to eliminate the risk of damage or injury.

61.2 In addition to the lock-out requirements of the Electrical Equipment Hazardous Work Permit, other forms of energy that may need to be controlled include:

- 61.2.1 Hydraulic
- 61.2.2 Pneumatic
- 61.2.3 Gravitational
- 61.2.4 Steam
- 61.2.5 Heat
- 61.2.6 Natural Gas
- 61.2.7 Chemical



## SAFETY TICKET AND APPEAL FORM

	<b>METROLINX</b> <small>An agency of the Government of Ontario</small>	<b>CMO SAFETY TICKET</b>	No: _____
<b>THIS SAFETY TICKET MAY BE AN INFRACTION OR WARNING.</b>			
<b>WARNING</b>		<input type="checkbox"/>	<b>INFRACTION</b>
CMO ID #: _____		INFRACTION #: _____	
TO: _____			
EMPLOYED BY: _____			
PROJECT: _____			
ONLY ONE (1) WRITTEN WARNING PER EMPLOYEE. THREE (3) WRITTEN INFRACTIONS WILL RESULT IN THE IMMEDIATE/PERMANENT REMOVAL FROM SITE/METROLINX PROPERTY			
DETAILS OF INCIDENT LEADING TO WRITTEN WARNING/INFRACTION	<div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div>		
CORRECTIVE MEASURE	<div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div> <div style="border-bottom: 1px solid black; height: 15px; margin-bottom: 2px;"></div>		
DATE: _____ TIME: _____ <div style="text-align: center; margin-left: 100px;">mm/dd/year</div>			
Issued by METROLINX:			
_____ PRINT NAME			
_____ SIGNATURE			
COPIES EMPLOYEE/ EMPLOYER/ CMO/ METROLINX PROJECT FILE			



**INFRACTION APPEAL FORM**

This form must be submitted within **five (5) business days** of Written Safety Infraction issuance date. Please submit this form along with a copy of the infraction to the CMO. The CMO will arrange an Appeal Hearing Meeting to discuss the infraction and the reason for the appeal. This process is to be completed within **fifteen (15) business days**.

**PART 1 - INFRACTION APPEAL**

Employee Name:	General Contractor (if a sub, include Employer's name also):	
Contact Information(Phone Number & Email):	Infraction Date:	Infraction Number:
Project Name & Location:		
Reason for infraction Appeal:		
<b>FOR CMO USE</b>		
Appeal Hearing Meeting Date:		

**PART 2 - APPEAL CLOSEOUT (To be completed by CMO)**

Construction Supervisor:	Senior Construction Supervisor:
Manager:	Other Attendee(s):
Meeting Notes & Outcome:	
<b>Infraction Retracted</b> <input type="checkbox"/> Date:	<b>Infraction Stands</b> <input type="checkbox"/> Date:
Employee Signature:	Employer Representative Signature:
CMO Signature:	

**COPIES TO: CMO Project File, Administration File, Employee, Employer**

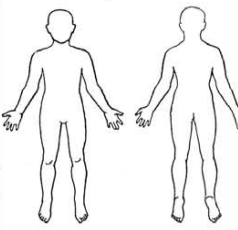


## CMO INCIDENT / ACCIDENT / NEAR MISS REPORT



A Division of Metrolinx


**Construction Incident Report**

A Division of MetroLink		CMO Control #    201__ - ____	
<b>INCIDENT TYPE:</b> <input type="checkbox"/> Property Damage <input type="checkbox"/> Operational Impact <input type="checkbox"/> Environmental <input type="checkbox"/> Other:			
<b>ACCIDENT TYPE:</b> <input type="checkbox"/> Untreated Injury <input type="checkbox"/> First Aid <input type="checkbox"/> Medical Aid <input type="checkbox"/> Lost Time Injury <input type="checkbox"/> Fatality			
<b>LOCATION, DATE &amp; TIME OF EVENT</b>			
Project Location & Zone		Date of incident (YYYY/MM/DD)	Time (24HR)
Contract Name & Number			
Contractor Name		Supervisor Name	
<b>WORKER INFORMATION</b>			
Last Name	First Name		Initial
Mailing Address	City/Town		Province
Phone Number (       )	Trade	Shift Start Time	
CMO ID #	Position	Shift End Time	
<b>EVENT DESCRIPTION - Describe sequence of events leading to occurrence</b>			
<b>CMO Supervisor on Scene:</b>			
Name and Contact Information of Witness(es):			
<b>ATTACHMENTS:</b> <input type="checkbox"/> Witness Statement <input type="checkbox"/> Photos <input type="checkbox"/> Drawing / Sketch <input type="checkbox"/> Other (specify):			
<b>INJURY DETAILS</b>			
<b>Area of Injury</b> <input type="checkbox"/> LEFT SIDE <input type="checkbox"/> RIGHT SIDE		<b>Injury Type</b>	<b>Circle Injured Area</b>  
<input type="checkbox"/> Head <input type="checkbox"/> Shoulder or <input type="checkbox"/> Chest <input type="checkbox"/> Eye <input type="checkbox"/> upper arm <input type="checkbox"/> Groin <input type="checkbox"/> Neck <input type="checkbox"/> Elbow / forearm <input type="checkbox"/> Knee <input type="checkbox"/> Face <input type="checkbox"/> Upper back <input type="checkbox"/> Hip or thigh <input type="checkbox"/> Finger <input type="checkbox"/> Lower back <input type="checkbox"/> Leg <input type="checkbox"/> Hand <input type="checkbox"/> Abdomen <input type="checkbox"/> Ankle or foot		<input type="checkbox"/> Cut / scratch <input type="checkbox"/> Fracture <input type="checkbox"/> Sprain / strain <input type="checkbox"/> Concussion <input type="checkbox"/> Bruise <input type="checkbox"/> Dislocation <input type="checkbox"/> Puncture <input type="checkbox"/> Allergic reaction <input type="checkbox"/> Foreign body <input type="checkbox"/> Loss of consciousness <input type="checkbox"/> Burn <input type="checkbox"/> Other	
<b>INJURY TREATMENT</b>			
Name(s) of First Aider(s)			
Name & Address of Attending Physician		Phone Number	



**Construction Incident Report (continued)**

EVENT TYPE & CAUSE - Select the category that best describes the event			
<input type="checkbox"/> Impact / struck by <input type="checkbox"/> Noise exposure <input type="checkbox"/> Cold exposure <input type="checkbox"/> Heat exposure <input type="checkbox"/> Radiation exposure <input type="checkbox"/> Chemical exposure <input type="checkbox"/> Water-related hazard	<input type="checkbox"/> Sharp object contact <input type="checkbox"/> Harmful substance / particle <input type="checkbox"/> Overexertion <input type="checkbox"/> Strain <input type="checkbox"/> Structural failure <input type="checkbox"/> Electrical contact / flash (                      Volts)	<input type="checkbox"/> Explosion <input type="checkbox"/> Weld flash <input type="checkbox"/> Fire <input type="checkbox"/> Fall <input type="checkbox"/> Slip / Trip <input type="checkbox"/> Fall from height (                      m / ft)	<input type="checkbox"/> Caught in / under / between <input type="checkbox"/> Vehicle incident <input type="checkbox"/> Spill <input type="checkbox"/> Other:
EVENT DETAILS - Select category that best describes activity at time of event			
<input type="checkbox"/> Hot work <input type="checkbox"/> Confined space <input type="checkbox"/> Trenching / excavating <input type="checkbox"/> Handling chemicals <input type="checkbox"/> Material handling	<input type="checkbox"/> Operating equipment / tools <input type="checkbox"/> Rainy conditions <input type="checkbox"/> Snow / ice <input type="checkbox"/> Windy conditions <input type="checkbox"/> Dusty environment	<input type="checkbox"/> Working with / near electricity <input type="checkbox"/> Inadequate visibility / lighting <input type="checkbox"/> Inadequate housekeeping <input type="checkbox"/> Inadequate ventilation <input type="checkbox"/> Animals, plants, insects	<input type="checkbox"/> Working at height <input type="checkbox"/> Driving <input type="checkbox"/> Other:
EVENT CAUSES AND / OR FACTORS - Select factors that may have contributed to the event or N/A <input type="checkbox"/>			
<input type="checkbox"/> Equipment / tool malfunction <input type="checkbox"/> Hazard not identified <input type="checkbox"/> Health / pre-existing condition <input type="checkbox"/> Misjudgement <input type="checkbox"/> Miscommunication	<input type="checkbox"/> Physical barrier inadequate <input type="checkbox"/> Physical barrier failure <input type="checkbox"/> Procedures not clear <input type="checkbox"/> Procedures not followed <input type="checkbox"/> Procedures not available	<input type="checkbox"/> Incorrect procedures used <input type="checkbox"/> Failure to wear proper PPE <input type="checkbox"/> Inadequate PPE <input type="checkbox"/> PPE not available <input type="checkbox"/> Job planning	<input type="checkbox"/> Inattention <input type="checkbox"/> Lack of skills / training <input type="checkbox"/> Lack of experience / knowledge <input type="checkbox"/> Lack of supervision <input type="checkbox"/> Other:
Describe the causes leading to the Incident			
CORRECTIVE MEASURES (Actions taken to prevent recurrence)			
<input type="checkbox"/> Communication change <input type="checkbox"/> Develop procedure <input type="checkbox"/> Planning / scheduling	<input type="checkbox"/> Training / retraining <input type="checkbox"/> Repair / replace <input type="checkbox"/> Equipment / hardware	<input type="checkbox"/> Workplace changes <input type="checkbox"/> Awareness <input type="checkbox"/> Provide PPE	<input type="checkbox"/> Other:
Describe corrective and preventative measures taken as a result of the Incident			
<b>Notified:</b> <input type="checkbox"/> MOL <input type="checkbox"/> Railway <input type="checkbox"/> GTCC <input type="checkbox"/> Stn. Ops. <input type="checkbox"/> MOE <input type="checkbox"/> Other:		Time (24HR)	Date (YYYY/MM/DD)
Prepared By (Name and Signature)		Title	Date (YYYY/MM/DD)
Signature of Injured Employee (If applicable)			Date (YYYY/MM/DD)

DISTRIBUTION: CMO Project File / CMO Construction Supervisor / CI Project Coordinator / Contractor



APPENDIX INTENTIONALLY LEFT BLANK



APPENDIX INTENTIONALLY LEFT BLANK



## PROCEDURES FOR CONTAINING AND GUIDANCE FOR REPORTING PROJECT SPILLS

### Applicable Regulations

In addition to compliance with OHS legislation as stipulated in the CSMP, the requirements of the following statutes must also be met:

- Environmental Protection Act, RSO 1990, c E.19
- Classification and Exemption of Spills and Reporting of Discharges, O. Reg. 675/98
- Liquid Fuels, O. Reg. 217/01
- Ontario Fire Code, Ontario Regulation, O. Reg. 388/97
- Transportation of Dangerous Goods (TDG) Act and Regulations

### Storage and Handling

- For all projects, chemical storage locations and configurations on in-service GO Transit Operations property must be approved by Operations.
- For projects where Metrolinx is the Constructor, storage and handling requirements are stipulated in Appendix 23.

### Storage and Handling

1. Upon discovery of a spill, the first worker at the scene shall notify appropriate spills response staff immediately, including the owner of the construction site, Contractor Supervisors, and the CMO Emergency Line (416 601 3611) upon discovery of a spill. The Contractor Supervisor must also notify Site Operations Contacts, as identified, of all spills as soon as reasonably practicable.
2. Assess the amount and type of material involved. If the spill or leak is within the control of the worker:
  - a. Call Supervisor for spill clean-up support.
  - b. Don appropriate personal protective equipment (PPE). Refer to the Material Safety Data Sheet (MSDS) requirements. (Note: MSDS must be readily available for all products used on-site by the Contractor and associated sub-contractors.)
  - c. If safe to do so, stop the source of the spill or leak as quickly as possible.
  - d. Protect nearby drains, catch basins and pathways to the natural environment. Use any appropriate spill response equipment on-hand or in the vicinity of the spilled material.
  - e. Identify any people that may be at risk as result of the spilled material. Warn those in the area of potential hazards and determine appropriate control area that must be maintained until the spill has been contained.
  - f. If the spilled material is a known flammable or combustible, remove all sources of ignition to reduce risk of explosion or fire.
  - g. Make certain the area is well ventilated.
3. If the spill is beyond the control of the first worker at the scene, he/she should immediately:
  - a. Alert other workers in the area of the emergency.
  - b. Put on appropriate PPE.
  - c. Call Supervisor to obtain spill control/clean-up support.
  - d. Isolate the area and do not allow anyone to enter until the area is declared safe by experienced personnel.



4. Following the clean-up of a spill:
  - a. Place soaked material in a sealed drum or plastic collection container, as appropriate based on material.
  - b. Label all waste collection containers with the name of the product, waste classification number, date of collection, and contact number of Contractor representative.
  - c. Arrange for immediate collection of spent clean-up materials with licensed waste hauler. This may require coordination with Operations Site Contact to use the site's Generator Number or generation of emergency number through the Hazardous Waste Information Network.
  - d. If temporary storage of waste material is required, place collection containers in a location mutually agreed upon by CMO and the Operations Site Contact.
  - e. Spill kits and other spill clean-up supplies are to be replenished in a timely manner.
5. Potential environmental impacts resulting from a spill or leak are to be investigated as well as any necessary remediation completed. The Operations Site Contact must be consulted with respect to any remediation efforts.
6. The Contractor's supervisor or safety representative will document the spill on an Incident Report Form. The CMO will complete a similar report (see Section 12 below). These reports shall be provided to the Operations Site Contact upon request.
7. Appropriate Notifications must be made forthwith to the Ministry of the Environment and Climate Change SPILLS ACTION CENTRE (SAC 1-800-268-6060) in addition the Municipality in which the spill occurred.
8. Should a spill result in any negative physical effect on a worker:
  - a. Arrange for any required medical attention.
  - b. Consult the MSDS for proper first aid procedures and implement.
  - c. Implement WSIB reporting procedures, as required.
9. General spill awareness training is required as part of the site orientation for all employees working on a jobsite. Spills specific training is required of those designated for spill response. A Contractor may not bring any chemical or material to site that workers are not trained to clean-up if a spill should occur.
10. Contractors must include environmental inspections as part of their routine inspection program to identify actual spills or situations on-site that might reasonably be expected to result in a spill.
11. A CMO "Construction Spills Report" must be completed by the Project Lead. A copy of that report form is shown on the following two pages.



## Construction Spills Report

CMO Control #		
<b>LOCATION, DATE &amp; TIME OF EVENT</b>		
Project Location & Zone	Date of incident (YYYY/MM/DD)	Time of Incident (00:00)
General Contractor Name & Number	Supervisor Name	
Contractor Name & Number responsible for Spill	Supervisor Name	
Contractor Name & Number Conducting Clean-up	Supervisor Name	
<b>EVENT DESCRIPTION</b> - Describe sequence of events leading to occurrence		
Name of Product/Chemical	Amount	<input type="checkbox"/> MSDS Attached
<b>SPILL ACTION CENTRE (SAC) 1 800 268 6060</b>		
Date/Time CMO Notified	Date/Time SAC Notified	Date/Time Municipality Notified
Containment/Disposal		
Waste Generator Number	Product Destination	
Corrective Action		
<input type="checkbox"/> Communication change <input type="checkbox"/> Develop procedure	<input type="checkbox"/> Training/retraining <input type="checkbox"/> Repair/replace <input type="checkbox"/> Equipment/hardware	<input type="checkbox"/> Workplace changes <input type="checkbox"/> Awareness <input type="checkbox"/> Other:
<b>CORRECTIVE ACTIONS IMPLEMENTED</b> - Describe corrective and preventative measures taken as a result of the event		
<b>Actions Taken:</b>		
Prepared By (Name and Signature)	Title	Date (YYYY/MM/DD)
Signature of Contractor		Date (YYYY/MM/DD)



## Construction Spills Report

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## CONTRACTOR MONTHLY OHS PERFORMANCE REPORTS

CPG Project Contractor Monthly Performance Report			
CPG Project Name:		General Contractor:	
CPG Project Address / Location:		GC Site Superintendent:	
CPG Contract Number:			
CPG Project Number:			
Report Period (date range):		No. GC Health and Safety	
Report Date:		Inspections to Reports Collected:	
		<b>General Contractor</b>	<b>Sub-Contractor(s)</b>
Total # of Hours Worked for Report Period:			
Total # of Incidents for Report Period	Near Miss (no damage to property or persons)		
	Damage to Metrolinx property, infrastructure, adjacent property and/or mobile equipment		
	First Aid (as defined by WSIA)		
	Medical Aid / Health Care (as defined by WSIA)		
	Fatality		
	Other Critical Injury (as defined by OHSA)		



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**CONSTRUCTION PROJECT SAFETY MANAGEMENT SYSTEM AUDIT CRITERIA**

Project / Work Operation Examined:			
Timeframe Examined:		Auditor:	
Audit Date:		File No:	
1.	Contractor Health and Safety Evaluations		
	Are all Contractors working on Metrolinx Project on the "Metrolinx List of Contractors with Acceptable Health and Safety Programs"?		
	Are Contractor submissions evaluated in accordance with the Criteria for Evaluation and Scoring?		
	Are completed Health and Safety Prequalification Review Reports placed on the Contractor's vendor file?		
2.	Pre-Project Health and Safety Risk Assessment		
	Are pre-project hazard assessments performed for all projects for which the total value contracts let by Metrolinx exceeds \$100,000 performed?		
	Is input from persons having appropriate knowledge of the work and associated hazards and Health and Safety requirements used?		
	Are the results of the hazard assessment documented?		
	Are the results provided to Contractors, bidders, or other parties?		
3.	Project Emergency Planning		
	Are emergency plans prepared, reviewed, and approved by the Project Lead prior to the commencement of any work on a Metrolinx project site?		
	Is a risk assessment performed prior to developing an emergency plan?		
	For the USRC project, is there:		
	An emergency plan, developed by each General Contractor, for that General Contractor's respective scope of work and locations of operations?		
	An overall emergency plan that address major emergency scenarios developed by Metrolinx?		
	Has the Manager, Construction Management, USRC Construction developed and implemented the USRC overall emergency plan?		
	Do emergency plans addresses the following requirements:		
	Description of the Potential Emergency Scenarios Considered in Plan Development, and Conclusions Regarding Likelihood / Risk of Occurrence		
	Identification of the Emergency Scenarios the Plan is Designed to Address		
	Identification of the Emergency Scenarios the Plan is Not Designed to Address		
	Communicating an On-Site Emergency		
	Communicating an Off-Site Emergency		
	Initial Emergency Response Actions - On-Site Emergencies		
	Initial Emergency Response Actions - Off-Site Emergencies		
	Generic Evacuation Procedure		



	Specific Provisions for Addressing the Following Emergencies (as applicable)
	Medical Incident
	Fire or Explosion
	Security Threat
	Structural collapse
	Vehicle Accident
	Train Accident
	Falling Object
	Chemical Spill
	Inclement Weather
	Seismic Event
	Natural gas leak
	Flooding
	Responsibility for Coordination of Emergency Response
	On-Site Equipment and Resources Provided for Emergency Response
	Off-Site Support Services and Facilities Information
	Procedures for Communications with Government Authorities, the
	Media, Passengers, and the Public
	Emergency Contact List
	Relevant Maps and Drawings
	How Plan Information is Communicated to Persons Who Need to Know
	Procedure for Emergency Drills
4.	Contractor Orientation
	Has everyone with access to a Metrolinx project site completed the CMO Contractor Orientation Program?
	Do attendees receive a copy of the Metrolinx CMO Pocket Safety Guide?
	Is orientation delivered by one of: <ul style="list-style-type: none"> <li>• The Project Lead</li> <li>• The Metrolinx Contractor Orientation Instructor</li> <li>• A Member of the Metrolinx CMO</li> <li>• A Supervisor of the Contractor</li> </ul>
	If a Contractor's representative delivers orientation, has the Project Lead ensured that: <ul style="list-style-type: none"> <li>• They completed orientation themselves?</li> <li>• They have the adequate literary and communication skills?</li> <li>• They have passed the Instructor's Level Quiz?</li> <li>• A written record of delegation exists?</li> </ul>
	Has an audit of the Contractor been performed once every 5 sessions?
	Does the audit verify the following? <ul style="list-style-type: none"> <li>• accurately completed attendance records,</li> </ul>



	<ul style="list-style-type: none"> <li>provided instruction covering all requisite material,</li> <li>marked quizzes upon completion</li> <li>reviewed all wrong answers, identified correct answers, and explained reasons for same</li> <li>issued hard hat stickers and ID cards</li> </ul>
	Is a record of the audit prepared?
	Is attendance recorded at orientation?
	Are quizzes administered?
	Are records of the above transmitted to Metrolinx CMO?
5.	Access Control Methods and Procedures
	<p>Are the following defined for all projects?</p> <ul style="list-style-type: none"> <li>points of entry / exit from public or private roadways to the Metrolinx property,</li> <li>pathways / access routes between the public roadway way entry / exit points</li> <li>and the local project work zone on Metrolinx property,</li> <li>points of entry / exit to the local project work zone,</li> <li>pathways / access routes to be used by the Contractor for movement about the Metrolinx property,</li> <li>the manner by which access routes will be demarcated,</li> <li>the manner by which the local project work zone(s) will be demarcated,</li> <li>whether the local project zones will require physical access controls, such as fencing, hoarding or similar barriers, and gates.</li> </ul>
	Are points of entry / exit to local project zones demarcated by signage?
	Are points of entry / exit for project personnel or equipment from public or private roadways to the Metrolinx property demarcated?
	Are all points of entry / exit and access routes marked on drawings?
	Is instructional signage for delivery vehicles posted at points of entry / exit to the Metrolinx property, and entry / exit to the receiving / laydown area, and / or project zone (where warranted)?
	Are delivery vehicles escorted at all times while on site by an authorized person?
6.	Work Permits
	Are work permits only issued by the Project Lead (or his/her delegate)?
	Are work permits retained?
7.	Health and Safety Inspections
	Is a comprehensive health and safety inspection performed at each of the project sites at least once every week?
	Are inspections and deficiencies documented?
	Are key findings reviewed with the senior representative of the General Contractor on site?
	Are inspection findings entered into the Health and Safety inspection database within 24 hours of completion of inspection?
	Are inspection reports issued to the Project Lead, senior representative of the General Contractor at the site, and any other appropriate parties, within 24 hours of completion of inspection?
8.	Health and Safety Terms and Conditions
	Are Health and Safety terms and conditions incorporated into agreements with all Contractors working on Metrolinx projects?



	Does the Manager, Construction Management, USRC Construction periodically review and revise Health and Safety terms and conditions, as appropriate in response to regulatory changes, and / or changes in Metrolinx project management practices?
9.	USRC Constructor Coordination Meetings
	Is Health and Safety on the agenda of all monthly and weekly project meetings?
	Are the following items covered during the meetings? <ul style="list-style-type: none"> <li>• Inspection findings and deficiency correction.</li> <li>• Hazards and risks of upcoming operations</li> <li>• Discussion of incidents and necessary actions to reduce risk of re-occurrence.</li> <li>• Government enforcement agency site visits</li> </ul>
	Are health and safety requirements and potential hazards of the work reviewed by the Project Lead with the Contractor(s) at kick-off meetings?
	Are meetings held no less frequent than monthly?
	Are minutes of these meetings provided to the CMO Construction Safety Team?
10.	Internal and External Incident Reporting
	Are lost time or health care incidents reported to CMO?
	Are critical injuries reported to CMO?
	Are critical injuries reported to the Ministry of Labour and other authorities (ie police)?
	Are Hazardous Agent Potential Overexposure Incidents reported to CMO?
	Are premature or unexpected explosions, fire, flood, structural failure, cave in or subsidence of soils at an excavation, falling at heights, accidental contact by a by a tool or equipment with energized electrical equipment, structural failure of falsework or a principle supporting member, failure of a scaffold, failure of a soil/water retaining structure, and the failure of a crane or hoisting device reported to CMO and the Ministry of Labour?
	Are other incidents as described in 14(a)(i) of the Construction Safety Management Program reported?
11.	Incident Investigation
	Are all accidents and serious incidents investigated in accordance with the System Safety Program Plan Manual?
12.	Health and Safety Performance Reporting
	Is Health and Safety performance measured, summarized, tracked, and reported for all Metrolinx projects having a budget in excess of \$500,000, and / or lasting 4 weeks or longer?
	Are the following Health and Safety performance indices measured, summarized, tracked and reported for a project: <ul style="list-style-type: none"> <li>• Percentage of inspection observations constituting "significant non-compliance".</li> <li>• Percentage of inspection observations constituting non-compliance.</li> <li>• Percentage of repeat deficiencies over the cycle of inspections.</li> <li>• Number of Health and Safety incidents.</li> </ul>
	Is the format for the Health and Safety performance reports in accordance with section 18(c) of the CMO Construction Safety Management Program Manual?



	Does the CMO Construction Safety Team produce performance reports and provide them to the Project Lead?
	Are performance reports prepared and issued every four weeks, unless the Project Lead requests more frequent reporting?
13.	Health and Safety Competencies of Project Leads
	Are all CMO Construction Supervisors trained in accordance with the training matrix outlined in section 19.0 of the Construction Safety Program Manual?
	Are all Metrolinx Trades and Labourers trained in accordance with the training matrix outlined in section 19.0 of the Construction Safety Program Manual?
	Are all Metrolinx Project Managers trained in accordance with the training matrix outlined in section 19.0 of the Construction Safety Program Manual?
	Are all Coordinators and Metrolinx Superintendents trained in accordance with the training matrix outlined in section 19 of the Construction Safety Management Program Manual?
14.	Program Audit
	Is a comprehensive health and safety audit is performed at least annually?
	Does the Office of System Safety make arrangements for such audits, and / or perform them personally?
	Does the audit assess the implementation and impacts of all the health and safety management processes contained in the Construction Safety Program Manual?
	Does the audit cover one or any number of the health and safety management processes, and any given number of projects and timeframes?
	Does the Office of System Safety determine the specific scope for any given audit?
	Are safety management processes assessed to determine compliance with the Program and areas of improvement where inadequacies or deficiencies are identified?
	Does the Office of System Safety list the deficiencies and gaps identified?
	Does the Office of System Safety meet with the Manager, Construction Management to review the findings of the audit report and discuss recommendations and appropriate controls?
	Are persons assigned to complete the corrective actions (including modifications to the Construction Safety Management Program Manual) within a specified timeframe?
	Are audit reports issued in hard copy or electronic format to each person responsible for implementing the corrective action within 24 hours?
15.	Program Review
	Does Metrolinx Capital Infrastructure Senior Management review the efficiency and effectiveness of Program operations annually and make Program revisions and enhancements as warranted?



## TRAIN ENVELOPES AND OPERATING CLEARANCE

### Purpose

The purpose of this Appendix is to introduce two standard train clearance envelopes for establishing safe construction work zones around different railway right-of-way (ROW) operating environments.

### Maintaining Train Envelopes

Train clearance envelopes have been developed to protect the safe movement of railway equipment.

Figures 1 illustrates the train clearance safety zones, where the “Black Zone” is a minimum space requirement of a passing train. Each zone has specific operational restrictions defined by the Canadian Rail Operating Rules (CROR). Figure 2 details the specific dimensions of the freight train clearance envelope.

These clearances have been developed to account for railway operating constraints that include:

- static rolling stock outline, i.e. dimensional characteristics of rail locomotives, rail cars and coaches;
- dynamic / kinematic rolling stock outline, i.e. rail equipment swaying and cornering while moving;
- oversized / dimensional loading of freight trains;
- track infrastructure variation, i.e. track tolerances and super elevations;
- railway operating and maintenance staff traveling on the side of a rail car.

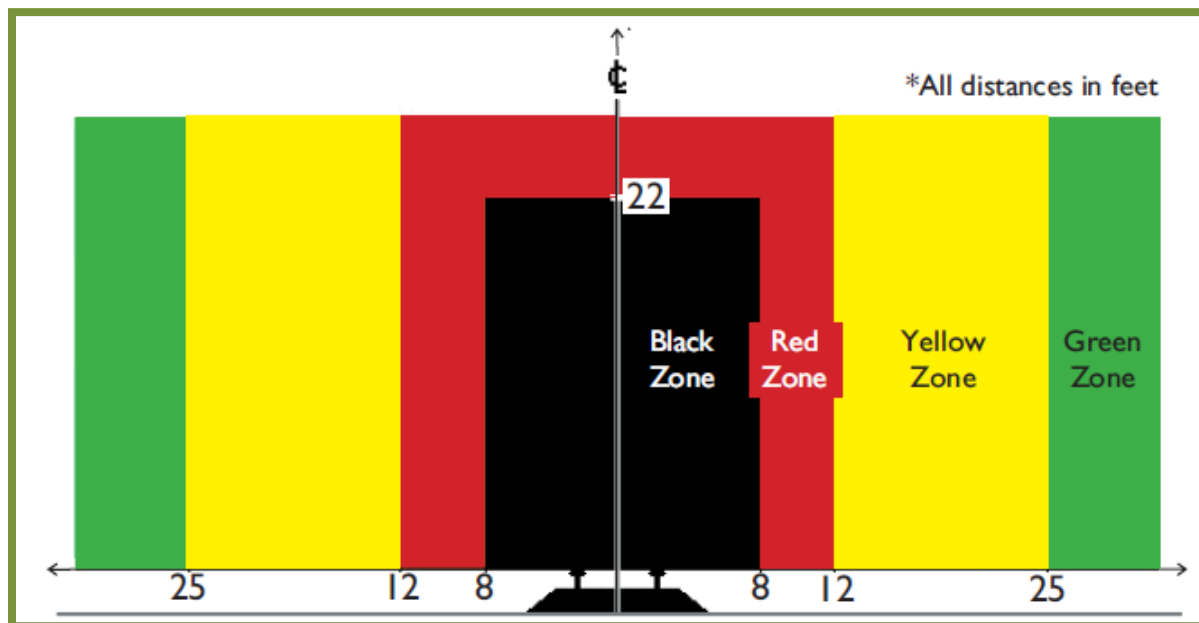


Figure 1: Train safety zone on railway corridors (exception: Union Station Train Shed Depot)



**Restrictions on typical railway tracks - freight train (CN, CP)**

In general any potential obstructions to railway operations, i.e. contractors' equipment, material must be kept a minimum of 5 m (15feet) from the nearest rail unless a railway staff (CROR qualified Foreman) has an adequate protection.

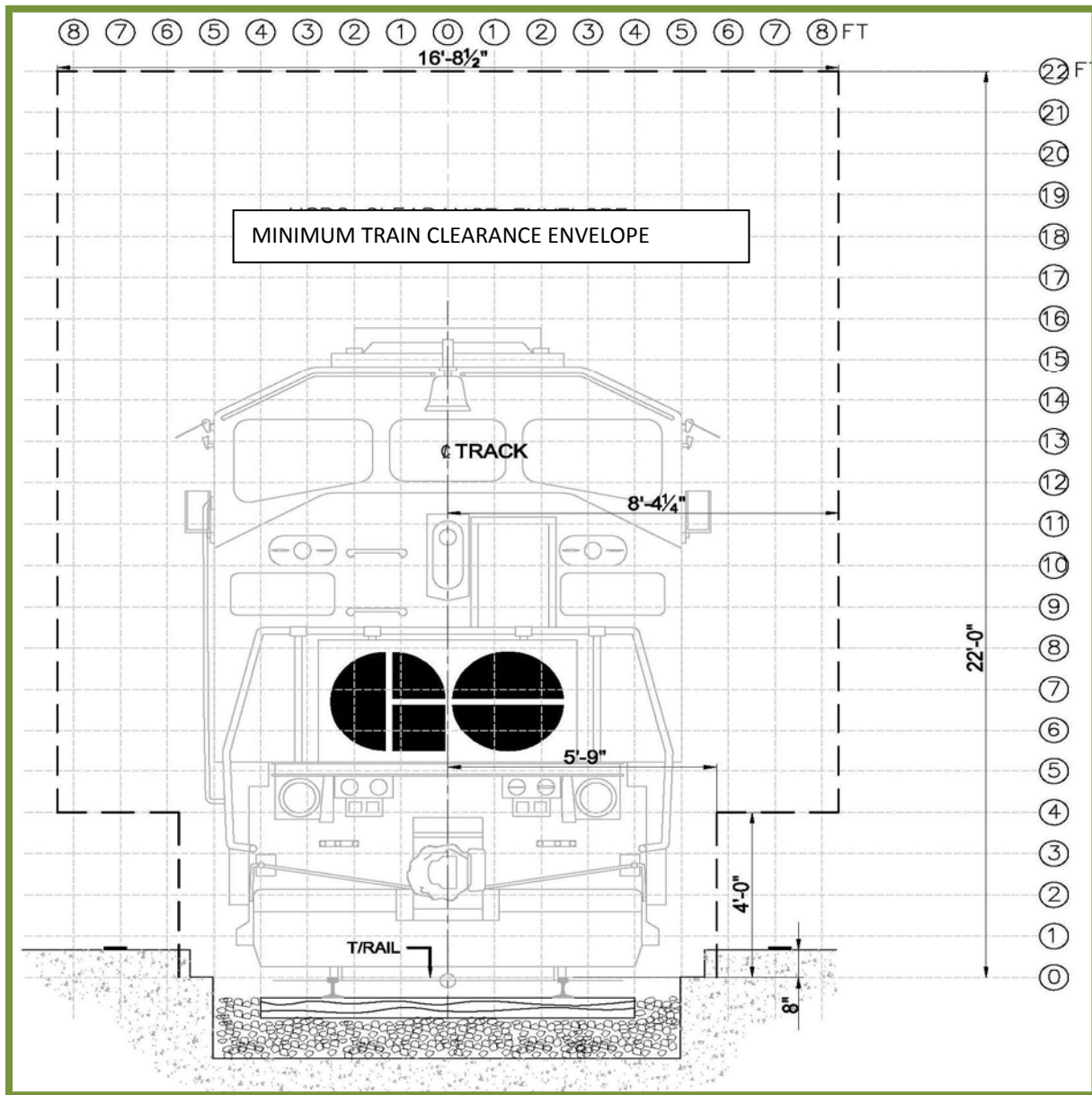


Figure 2: Minimum freight train clearance envelope on all railway corridors  
(Exception: Union Station Train Shed Depot)



Figure 3 details the additional dimensional restrictions of rail traffic within the Union Station Train Shed Depot. The station structure permits only passenger train service and high-rail equipment. The larger freight envelope conflicts with the building infrastructure. The railway constraints mentioned in previous section are subject to additional clearance restrictions due to:

- Train shed roof structure and roof supporting columns;
- Passenger platforms and platform structures, i.e. shelters, stair enclosures, and maintenance storage sheds;
- Passenger space requirements for access to, and egress from, the rail platform and trains.

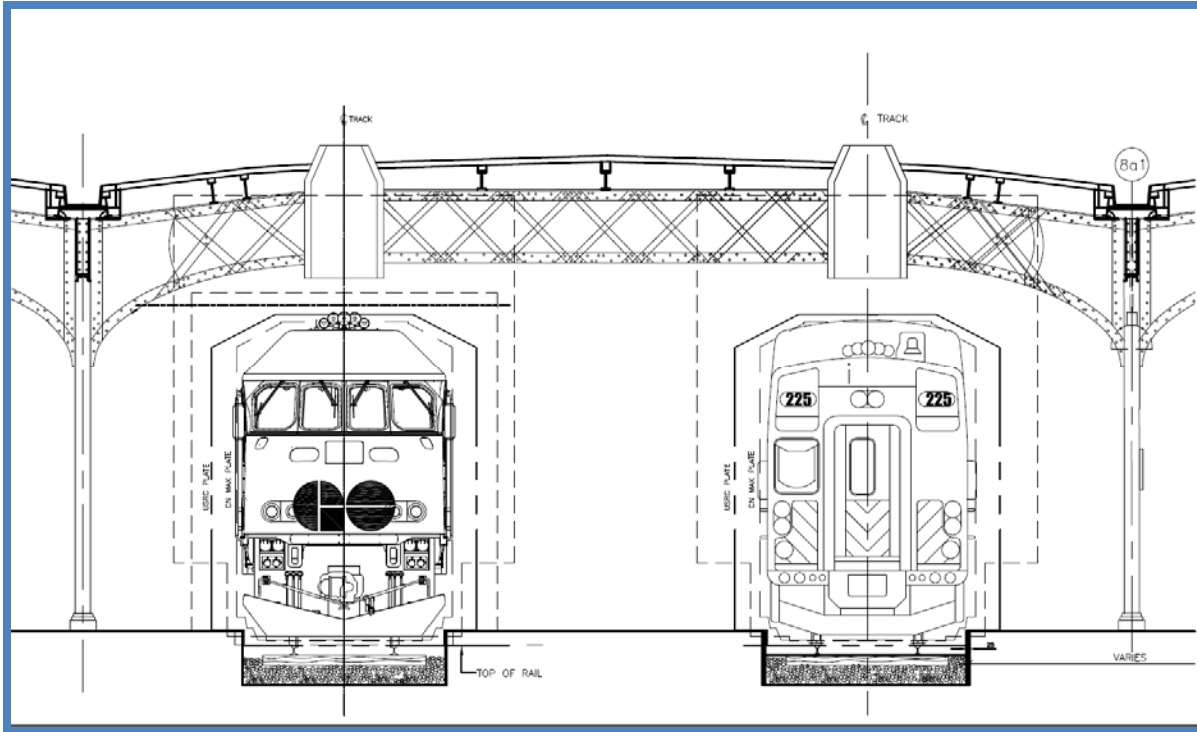


Figure 3: Train envelopes and the Union Station Train Shed Depot



### Restrictions at Union Station Train Shed Depot

Because of these restrictions a separate and governing clearance envelope has been developed for the Union Station Train Shed Depot and those dimensions are detailed in Figure 4.

In general any potential obstructions to railway operations, i.e. contractors' equipment, material must be kept a minimum of 8 feet from the center line of the track (~6 feet from the nearest rail ) unless a railway staff (CROR qualified Foreman) has approved the location / orientation or use of an adequate protection.

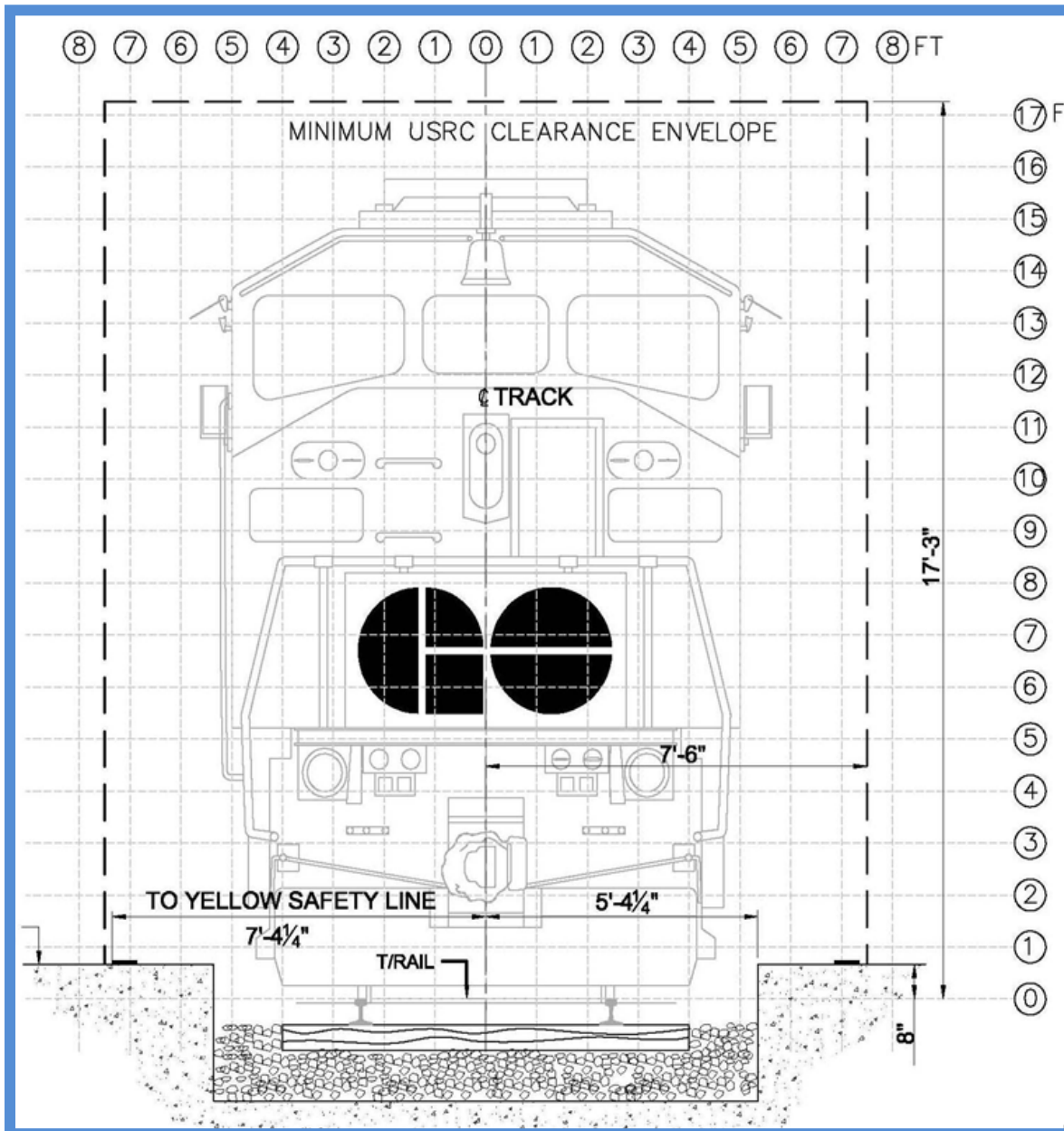


Figure 4: Minimum train clearance envelope within the Union Station Train Depot



## DOCUMENT CONTROL - VERSION UPDATE

### Revision 5 Updates:

- Update to various texts and titles (eg. GO Transit to Metrolinx, MOE to MOECC, new Metrolinx logo, etc.)
- Introduction of Project Owner management stream and expansion of the Program to all CPG construction projects
- Updated and expanded definitions section
- Revised roles and responsibilities section
- Clarification and updates to Site Visitor Permit
- Updated Third Party process and forms
- Updated CMO Contractor Orientation documents
- Introduction of Site Walk Work Permit
- Updated Site Specific Work Plans
- Expanded Health and Safety Enforcement section
- Updated Project Rules to include isolation of hazardous energy, control of exposure to noise and airborne substances, and temporary storage of equipment and materials.
- Updated rail requirements to reflect GO Transit's Track Worker Safety Instructions
- Updated Work Plan Review section
- Updated Work Permits sections
- Updated Construction Spills Reporting section