METROLINX

Contract for
Engineering Services -
Office Expansion at Aberfoyle Bus Facility
RQQ-2017-BI-126
(PO No. 209989)

METROLINX
An agency of the Government of Ontario

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These Articles of Agreement are made as of the 9th, 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 –

REINDERS + RIEDER LTD., 64 Ontario Street North, Milton, Ontario, L9T 2T1

(hereinafter referred to as the "Vendor")

Vendor Contact Information

Mailing Address:	64 Ontario Street North Milton, ON L9T 2T1		
General Phone No.:	905-457-8852	General Facsimile No.	N/A
Contact Person, Name and Title:	Steve Law, Head of Engineering		
Contact Person Email Address:	stevel@reinders.ca	Phone No.	905-457-8852

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) Addendum No. 4, dated June 22, 2018;

(c) Addendum No. 3, dated June 18, 2018;

(d) Addendum No. 2, dated June 13, 2018;

(e) Addendum No. 1, dated June 8, 2018;

(f) Form of Request;

(g) the document attached hereto and entitled "Appendix "A" – General Conditions";

(h) the document attached hereto and entitled "Appendix "B" - Consultant's Scope of Services";

(i) the document attached hereto and entitled "Appendix "C" - Metrolinx Services";

(j) the document attached hereto and entitled "Appendix "D" – Documents";

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 Consultant 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 Consultant declares that no Conflict of Interest exists in accordance with the General Conditions of the Contract.

1.5 The Consultant agrees to be bound to each and every term, condition, article, covenant and obligation of the Contract.

2.0 Description of Work

2.1 The Vendor shall perform and complete with care, skill, diligence and efficiency the Work that is further described as follows:

(a) For the provision of Engineering Services – Office Expansion at Aberfoyle Bus Facility as set out and to be carried out in accordance with the "General Conditions of the Contract" and "Appendix "B" – Consultant's Scope of Services" of this Contract.

(b) The Work is to be provided to the satisfaction of Director of Bus Infrastructure, unless otherwise specified.

3.0 Vendor Key Personnel

3.1 The Consultant shall employ named individuals designated for Key Personnel roles for the duration of the Contract Term as specified in Schedule B – Consultant Personnel of General Conditions of the Contract to perform the Work of this Contract.

Roles	Name of Individual	Years of Experience	Required Duration
Project Manager	Steve Law	34	Entire Term of the Contract
Contract Administrator	Steve Law	34	Entire Term of the Contract
Civil Engineer	Yasar Ayub	24	Entire Term of the Contract
Electrical Engineer	Mary Etesami	23	Entire Term of the Contract
Mechanical Engineer	Milind Likhite	32	Entire Term of the Contract
Architect	Michael Ghaly	11	Entire Term of the Contract
Environmental Specialist	Michael Varty	15	Entire Term of the Contract
Landscape Architect	Bryn Barron	23	Entire Term of the Contract

4.0 Contract Price

4.1 Payment for services rendered and goods supplied in accordance with the terms and conditions of the Contract shall be based on the following:

(a) The Rates quoted shall be all inclusive costs associated with performance of the Services defined in the Consultant's Scope of Services attached as Appendix "B".

(b) Cash Allowances shall be used and expended solely for purposes specified and at the sole discretion of Metrolinx. The Consultant cannot proceed with any work to be paid for under Cash Allowance without the written approval of Metrolinx.

(c) The Rates quoted shall include all costs related to the Services including, but not limited to, Named Key Personnel identified, other technical positions, administrative positions, any Subconsultants and specialized service providers required to complete the Services, any and all disbursements, travel, inspection, equipment, tools, supplies, General Requirements (as per Appendix "B") and Management of the Services (as per Appendix "B") as required in this Request Document.

(d) No compensation will be due the Consultant for Stage Four, Stage Five or Stage Six of the Services should Metrolinx decide not to proceed with any of these Stages and/or not assign the provision of Services under Stage Four, Stage Five or Stage Six of the Contract.

(e) Stage Five - Consultant's Cost for Construction Inspection, Contract Administration, Field Administration and Engineering Services during Construction.

(i) Subject to Appendix "B" Consultant's Scope of Services, the Consultant shall be paid on the basis of the estimated Fixed Weekly Fee defined as the weekly rate at which the Consultant will invoice Metrolinx for Construction Contract Administration, Field Administration and Engineering Services During Construction for the Stipulated Period of Construction (SPC) as defined under Item No.'s D of the attached Excel spreadsheet.

(ii) The Consultant's designated Field Administrator shall be required "Full Time" at the "Place of Work" for one hundred percent (100%) of the construction time for this Project.

(iii) The Consultant agrees that the Fixed Weekly Fee will be the basis for compensation for any and all Construction Inspection, Contract Administration, Field Administration and Engineering Services During Construction to be provided under the Contract.

(iv) The Consultant's Fixed Weekly Fee shall include the costs for "Full Time" Construction Inspection, Contract Administration, Field Administration and Engineering Services during Construction, including the Consultant's designated representative, Subconsultants, specialized services providers, engineers, project managers, principals and administration staff as well as all associated expenses.

(v) The Consultant shall provide on a weekly basis:

One (1) full-time on Site Construction Inspection Teams which shall work a ten (10) hour shift for a combined seventy (70) hour work week, Monday to Sunday. The full-time Construction Administrator shall only be required to work a fifty (50) hour work week from Monday to Friday, and the part-time Consultant's Representative, shall only be required to work a twenty (20) hour work week from Monday to Friday.

4.2 Consultant's Rates

Item No.	Detailed Description	Unit	Quantity	Contract Unit Price "Rates"	Extended Total
A: Stage 2 - Preliminary Design Services					
A1	Preliminary Design Services - 100% Completion	Lump Sum	1	$29,300.00	$29,300.00
B: Stage 3 - Detailed Design Services and Preparation of Construction Documents					
B1	Detailed Design - 50% Completion	Lump Sum	1	$27,750.00	$27,750.00
B2	Detailed Design - 75% Completion	Lump Sum	1	$21,000.00	$21,000.00
B3	Detailed Design - 95% Completion	Lump Sum	1	$17,250.00	$17,250.00
B4	Preparation of Construction Tender Documents	Lump Sum	1	$9,000.00	$9,000.00
C: Stage 4 - Assistance with the Procurement and the Evaluation Process (Option to be exercised at the sole discretion of Metrolinx)					
C1	Assistance with Procurement and Evaluation Process	Lump Sum	1	$1,000.00	$1,000.00
D: Stage 5 - Construction Inspection, Contract Administration, Field Administration and Engineering Services During Construction (Option to be exercised solely at Metrolinx' discretion)					

D1	Construction Inspection, Contract Administration, Field Administration, and Engineering Services during Construction	Weeks	40	$3,700.00		$148,000.00
E: Stage 6 - Post Construction Services (Option to be excercised solely at Metrolinx's discretion)						
E1	Post Construction Services	Lump Sum	1	$2,500.00		$2,500.00
F: Cash Allowances						
F1	**Cash Allowance -** Testing and Inspecting	Lump Sum	1	$25,000.00	$	25,000.00
F2	**Cash Allowance -** Subsurface Utility Engineering	Lump Sum	1	$25,000.00	$	25,000.00
F3	**Cash Allowance -** Topographical and Legal Surveys	Lump Sum	1	$25,000.00	$	25,000.00
F4	**Cash Allowance -** Environmental, Geotechnical and Hydrological Investigations	Lump Sum	1	$50,000.00	$	50,000.00
F5	**Cash Allowance -** Services and Costs Related to External Agencies and Authorities	Lump Sum	1	$30,000.00	$	30,000.00
F6	**Cash Allowance -** Detailed Design of the Septic System, Preparation of Construction Tender Documents and Construction Services for Septic System Works	Lump Sum	1	$100,000.00	$	100,000.00
				ESTIMATED CONTRACT PRICE	**$**	**510,800.00**
				13% Harmonized Sales Tax (H.S.T.) Amount	$	66,404.00

5.0 Allowances

5.1 Cash Allowances

(a) Cash Allowances are subject to the General Conditions of the Contract.

(b) Descriptions of each Cash Allowance are listed above and amounts are specified in Section 4.2, Contract Price "Rates", above.

5.2 Contingency Allowances

(a) Contingency Allowances are subject to the General Conditions of the Contract.

6.0 Harmonized Sales Tax

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

7.0 Project Schedule

7.1 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:

Milestone	**Date**
a. **Stage Two –** Commencement of Preliminary Design Services	January 28, 2019
b. **Stage Two –** Completion of Preliminary Design Services	March 14, 2019
c. **Stage Three** – Detailed Design Services and Preparation of Construction Documents	
(i) Completion of Detailed Design – 50%	April 11, 2019
(ii) Completion of Detailed Design – 75%	May 15, 2019
(iii) Completion of Detailed Design – 95%	June 27, 2019
(iv) Completion of Construction Tender Documents	July 29, 2019
d. **Stage Four** – Commencement of Assistance with the Procurement and the Evaluation Process (Option to be exercised at the sole discretion of Metrolinx)	November 2019
e. **Stage Four** – Completion of Assistance with the Procurement and the Evaluation Process (Option to be exercised at the sole discretion of Metrolinx)	December 2019
f. **Stage Five -** Commencement of Construction Inspection, Contract Administration, Field Administration and Engineering Services During Construction	March 2020

Milestone	Date
(Option to be exercised solely at Metrolinx' discretion)	
g. **Stage Five -** Completion of Construction Inspection, Contract Administration, Field Administration and Engineering Services During Construction (Option to be exercised solely at Metrolinx' discretion)	October 2020
h. **Stage Six** – Commencement of Post Construction Services (Option to be exercised at the sole discretion of Metrolinx)	October 2020

8.0 Limitation of Expenditure

8.1 It is understood that the Contract is based on reimbursement for actual Services requested by Metrolinx and performed by the Consultant, to the satisfaction of Metrolinx.

8.2 Metrolinx does not guarantee any minimum or maximum of work.

9.0 Assignment

9.1 The Consultant 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.

10.0 Invoicing Instructions

10.1 Invoices are to be submitted in duplicate, quoting Contract/File No. RQQ-2017-BI-126, and Contractor's HST Registration No. to the following address:

METROLINX
20 Bay St., Suite 600
Toronto, ON M5J 2W3
Attn.: Accounts Payable

11.0 Contract Price

11.1 Subject to the General conditions of the Contract and in consideration for the service performed, Metrolinx shall pay the Consultant based upon the following:

(a) The Total Contract Price is established as follow:

(i) Total Contract Price $510,800.00

(ii) H.S.T AMOUNT (13%).....$ 66,404.00

(iii) Consultant's H.S.T Number: R897839072

REINDERS + RIEDER LTD.

Per: _____

Name: STEVE LAW
Title: HEAD OF ENGINEERING / PRINCIPAL

Per: _____

Name:
Title:

I/We have authority to bind the Corporation

METROLINX

Per: _____

Name:
Title:

Per: _____

Name: Mike Newman
Title: Manager
Procurement - Operations
& Administration

I/We have authority to bind the Corporation

IN WITNESS WHEREOF, the above signed have executed this agreement, this 16 day of JANUARY 2019.

Addendum No. 4

METROLINX

Date: June 22, 2018

Tender No. RQQ-2017-BI-126
RQQ-2017-BI-126 Engineering Services for Aberfoyle Bus Facility – Office Expansion

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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 ATTACHMENTS

1.1 **CONTRACT PRICES** has been revised to include Cash Allowance. Changes are highlighted in yellow and are as follows:

(a) **ADDED** Line Item F6 – Cash Allowance - F6 – Cash Allowance – Detailed Design of the Septic System, Preparation of Construction Tender Documents, and Construction Services for Septic System Works. ($100,000 Cash Allowance)

(b) Refer to attached file entitled "Addendum 4 – Attachment 1 – Contract Prices.pdf".

2.0 CLARIFICATIONS

2.1 Refer to the attached file entitled "Addendum 4 Clarifications – RQQ-2017-BI-126.pdf", for responses to Bidder enquiries.

Sincerely,

Josie Canzona
Procurement Officer
Procurement Services, Metrolinx
Direct Dial: 416-202-5645
Email: Josie.Canzona@metrolinx.com

METROLINX

REFERENCE NO.	RQQ-2017-BI-126 Engineering Services for Aberfoyle Bus Facility – Office Expansion
DATE:	June 22, 2018 **Addendum No. 4**

(Full Legal Name of Company or Individual)

Q #	Reference Document Section (i.e. Instructions, Attachments, etc.)	Page # of Section (i.e. Page 1 of 5)	Insert Section # (i.e. Section 1.1.1(a)	Question	Response
1	Appendix B	116	Section 2 (b) (ii)	Confirm extent of work at this stage is an assessment of the existing septic system and a formal report outlining the remediation measures.	Correct. For the base scope of work for this contract, the winning proponent will complete the necessary investigations to assess the existing septic system, and provide a report with their recommendations for remediation.
2	Appendix B	116	Section 2 (b) (iii) D.	Confirm detailed design of the existing septic system upgrades will be carried out under a cash allowance as discussed at the pre-bid meeting. See Q5.	Correct. Based on the results of the assessment and recommendations from the Scope of Work identified in Question #1 above, a detail design of the septic system upgrades will be carried

					out through a Cash Allowance, if required.
3	Appendix B,	137	Section 8, (e) (viii)	Confirm if back-up power and distribution system are required for the addition.	Yes, UPS back-up power is required for the addition.
4	Appendix B	138	Section 8, (e) (x)	Confirm if an arc flash analysis and report are required for this assignment. If so, what is the extent of the arc flash study?	An arc flash analysis and report is not required for this assignment.
5	Attachment #1			Contract Prices: Please identify a cash allowance for the septic system detailed design based on the report recommendations and geotechnical testing required.	F6 – Cash Allowance – Detailed Design of the Septic System, Preparation of Construction Tender Documents, and Construction Services for Septic System Works. ($100,000 Cash Allowance) The Geotechnical Investigations are part of the base Scope of Work, and will be covered under Cash Allowance F4.

Addendum No. 3

METROLINX

Date: June 18, 2018

Tender No. RQQ-2017-BI-126
RQQ-2017-BI-126 Engineering Services for Aberfoyle Bus Facility – Office Expansion

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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 DRAWINGS

1.1 **ADDED** Mark Up Drawing No. A-002, Sheet 14/92, Aberfoyle Bus Facility Expansion and Parking Lot Rehabilitation Floor Plan.

Sincerely,

Josie Canzona
Procurement Officer
Procurement Services, Metrolinx
Direct Dial: 416-202-5645
Email: Josie.Canzona@metrolinx.com

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH / CONSTRUCTION NORTH

Proposed location for relocated Compressor

Relocate compress to forklift room. Decommission underground storage tank. Expand washroom facilities, and provide a document

Convert to one large office space, with room for table for meetings

Provide a wellness center, and larger locker room facility.

Expand space the same width as the existing lunch room (approximately 3.5m)

EXISTING BUILDING

ADDITION

FFE. 325.00

FORKLIFT ROOM 05

BUS WASH EQUIP. RM. 04

VACUUM RM 03

SERVICE LANE 02

BUS STORAGE GARAGE 01

EXISTING BUS STORAGE GARAGE 06

EXISTING OFFICE AREA 07

STAIR, JAN. RM., WWR, MWR, FLUID RM., CORRIDOR, VEST., ELECT. RM., COMM RM., OFFICE, STORAGE, LOCKERS, CHANGE RM, LUNCH RM.

LEGEND:

00	ROOM NUMBER
00	DOOR NUMBER
W1	WINDOW TYPE
WT1	WALL ASSEMBLY TYPE
DCP	DOOR CONTROL PANEL
TL	TRAFFIC LIGHT
DO	DOOR OPENING
RO	ROUGH OPENING
VDGL	VEHICLE DETECTION GROUND LOOP
GL	GRID LINE

REFER TO G-001 FOR WALL TYPES

FOR EXIST./NEW PRECAST PANEL LOCATIONS REFER TO ELEVATIONS A004

FLOOR PLAN 1 / A002

SCALE: 1:125

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		3	16/06/30	RECORD			
		2	15/05/15	CCN-07			
		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: D.V. 13/09/15	DESIGNED BY: A.K. 13/09/01
CHECKED BY: L.B. 14/03/07	APPROVED BY: R.K. 14/03/07
SCALE: 1:125	FULL SIZE ONLY

Disclaimer:

This drawing includes contractor's information which has not been verified by the architect/engineer as to its completeness and accuracy. The architect/engineer does not certify or guarantee the completeness and accuracy of this drawing.

IBI GROUP
100-175 Galaxy Boulevard
Toronto ON M9W 0C9 Canada
tel 416 679 1930 fax 416 675 4620
ibigroup.com

This drawing has been prepared solely for the use of GO A Division of Metrolinx and there are no representations of any kind made by IBI Group to any party with whom IBI Group has not entered into a contract

A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

FLOOR PLAN

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-002	0	14/92

Addendum No. 2

METROLINX

Date: June 13, 2018

Tender No. RQQ-2017-BI-126
RQQ-2017-BI-126 Engineering Services for Aberfoyle Bus Facility – Office Expansion

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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

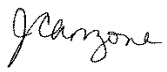
1.1 The Tender Document has been revised and sections affected are noted below. The revised Tender Document is attached in the file entitled "Addendum No. 2 - Revised Tender RQQ-2017-BI-126" which supersedes all previous Tender Document versions.
[159 Pages Attached – Changes are highlighted in yellow and are as follows:

Section Affected:	Revisions
General Conditions	➢ Refer to Section Schedule B – Consultant Personnel, Environmental Specialist, Qualifications and Experience.

2.0 CLARIFICATIONS

2.1 Refer to the attached file entitled "Addendum No. 2 Clarifications – RQQ-2017-BI-126.pdf", for responses to Bidder enquiries.

Sincerely,



Josie Canzona
Procurement Officer
Procurement Services, Metrolinx
Direct Dial: 416-202-5645
Email: Josie.Canzona@metrolinx.com

METROLINX

REFERENCE NO.	RQQ-2017-BI-126 Engineering Services for Aberfoyle Bus Facility – Office Expansion
DATE:	**Addendum No. 2**

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	Request for Submission Requirements	26-159	4.3.1 (e)	Are additional reference project sheets required for Key personnel, similar to what is required for Corporate in 4.3.1(d)?	Refer to Section 9.3 in Request for Submission Requirements.
2	Schedule B	90 thru 95-159	1 & 2	Can one person hold more than one role in the following categories: 1.1 Managers /1.2-Technical Specialist / 2. Support Staff.	Yes, one person can hold more than one role. Refer to Schedule B - Consultant Personnel of Appendix A - General Conditions for the required Key Personnel qualifications pertaining to each role.
3	Schedule B	96-159	3	Do you require additional CV's in the format outlined on page 96 of 159 over and above what is submitted in Attachment 3 – Key Personnel's format	For Key Team Personnel, refer to Section 4.3.1 (e)(ii) – Key Personnel in Request for Submission Requirements. For Support Staff, refer to Article 3 – Schedule B – Consultant Personnel.
4	Rate Category: Technical Specialists	93 of 159	Schedule B – Section 1.2	Please revise the Qualifications for the Environmental Specialist. Currently it states: Member of the Ontario Association of Architects (OAA).	Refer to revised Schedule B - Section 1.2.

Addendum No. 1

METROLINX

Date: June 8, 2018

Tender No. RQQ-2017-BI-126
RQQ-2017-BI-126 Engineering Services for Aberfoyle Bus Facility – Office Expansion

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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 CLARIFICATIONS

1.1 Refer to the attached file entitled "Addendum No 1 Clarifications.pdf", for responses to Bidder enquiries.

Sincerely,

Josie Canzona
Procurement Officer
Procurement Services, Metrolinx
Direct Dial: 416-202-5645
Email: josie.canzona@metrolinx.com

METROLINX

REFERENCE NO.	RQQ-2017-BI-126 Engineering Services for Aberfoyle Bus Facility – Office Expansion
DATE:	**June 8, 2018** **Addendum No. 1**

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	Form of Request	34 of 159	Section 6.0	Please provide the Form of Request as a separate document, so that we can fill the form and insert it in the proper order with the Technical Submission.	Refer to Section 3.1.5(f) – Submission Instructions. (Page 9 of 159) "The Submission shall be submitted on the original Request Document Forms as issued by Metrolinx through the MERX website and except for designated sections where the Proponent is to enter information, the Request Document and Request Document Forms shall not be altered in any way including, but not limited to, write-ins, strike-outs of the pre-printed provisions or any other conditional or qualifying statements."
2	Schedule B – Consultant Personnel	90 of 159	Schedule B	1. Please provide Schedule B as separate document, so that we can fill the form and include it in our Technical Submission. 2. Please advise in which section of the Technical Submission should we include Schedule B? (For example, in Technical Submission Section 1, after the Form of Request).	Refer to Section 3.1.5(f) – Submission Instructions. (Page 9 of 159) "The Submission shall be submitted on the original Request Document Forms as issued by Metrolinx through the MERX website and except for designated sections where the Proponent is to enter information, the Request Document and Request Document Forms shall not be altered in any way including, but not limited to, write-ins, strike-outs of the pre-printed provisions or any other conditional or qualifying statements. "

6.0 Form of Request

The following Form of Request is to be included as the first section within the Proponent's Technical Submission. The Form of Request must be remitted by the E-Bid Authorized Signer. The Form of Request shall not be retyped, and entries shall be made directly on the form provided by Metrolinx.

****

Request Number: **RQQ-2017-BI-126**

Request Description: **Engineering Services – Office Expansion at Aberfoyle Bus Facility**

6.1 Proponent Submission Checklist

The following checklist provides the Proponent with a consolidated listing of the requirements for the Submission. Proponents should review the checklist prior to Submission to ensure compliance.

Requirement	**Confirmation (left click with your mouse in the box to select)**
The Submission has been remitted by the E-Bid Authorized Signer.	☒
Contact information for the individual responsible for the Submission has been included in the Form of Request.	☒
The Proponent understands the requirements for Electronic Bid Submission and will comply with this Submission requirement.	☒
The Proponent's Technical Submission has been prepared in accordance with the Instructions to Proponents (i.e. mandatory formats, templates and requirements) as outlined in the Request Documents.	☒
The Proponent's Price Submission has been completed in full and has been included as a separate attachment in the Submission.	☒
The Proponent has read through all the Request Documents including any Addenda that have been issued and these have all been considered in the Proponent's Submission.	☒
The Proponent has reviewed the mandatory criteria and acknowledges that it meets all mandatory requirements in order for their Submission to be considered further.	☒
The Proponent has reviewed the RQQ Timetable and understands all the dates and timelines associated with the RQQ Process.	☒

Requirement	**Confirmation (left click with your mouse in the box to select)**
The Proponent has attended the Mandatory Site / Information Meeting.	☒
The Proponent has not included any qualifying statements in its Submission.	☒
If a Joint Venture, attach a copy of the Joint Venture agreement electing the Participant-in-Charge.	☐

6.2 Contact Information

6.2.1 Proponent's registered legal business name (or individual) and any other name under which it carries on business:

Reinders + Rieder 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.

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

Click here to enter text.

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

Steve Law
Head of Engineering

64 Ontario Street North
Milton, ON L9T 2T1
905-457-1618 x 1308
stevel@reinders.ca
905-457-8852

6.2.4 Name of the person who is primarily responsible for the Submission:

Steve Law

6.3 Proponent Acknowledgments

6.3.1 In consideration of the mutual premises and agreements contained herein and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the undersigned Proponent hereby offers to Metrolinx to furnish all necessary labour, superintendence, plant, tools, appliances, equipment, supplies and other accessories, services and facilities necessary to perform the following services:

TO PROVIDE ENGINEERING SERVICES FOR THE PROVISION OF: ENGINEERING SERVICES FOR OFFICE EXPANSION AT ABERFOYLE BUS FACILITY AS SET OUT IN THE CONSULTANT'S SCOPE OF SERVICES, ATTACHED AS APPENDIX "B".

6.3.2 The Proponent hereby undertakes to perform the Services in strict accordance with the full intent of the terms, conditions and requirements set forth in the following documents which form the Request Documents:

ANY ADDENDA ISSUED HERETO
INSTRUCTIONS TO PROPONENTS
REQUEST SUBMISSION REQUIREMENTS
REQUEST EVALUATION CRITERIA AND SELECTION PROCESS
FORM OF REQUEST
ATTACHMENT #1 – CONTRACT PRICES
ATTACHMENT #2 – CORPORATE REFERENCES
ATTACHMENT #3 – KEY PERSONNEL CURRICULUM VITAE AND REFERENCES
APPENDIX "A" - GENERAL CONDITIONS
APPENDIX "B" - CONSULTANT'S SCOPE OF SERVICES
APPENDIX "C" – METROLINX'S SERVICES
APPENDIX "D" - DOCUMENTS

6.3.3 The Proponent acknowledges receipt of any and all Addenda issued hereto and that their Submission has been developed in consideration of the Addenda.

6.3.4 The Proponent's Submission is hereby submitted on the full understanding that it is an irrevocable offer by the Proponent for a period of one hundred and twenty (120) calendar days from the Closing. The Proponent hereby covenants that it shall perform and execute the Services, in accordance with the Contract Prices quoted herein if it is notified in writing by Metrolinx within the one hundred and twenty (120) calendar day period that it is the successful Proponent.

6.3.5 The Proponent acknowledges that it meets all mandatory requirements in order for their Submission to be considered further. Failure of a Proponent to meet all of the mandatory requirements shall result in the Proponent's Submission to be deemed non-compliant and shall not be considered further.

6.3.6 The Proponent acknowledges that their Submission should be in the correct format using the appropriate Request Document Forms and instructions as provided herein. Failure to comply may result in the Proponent being found non-responsive and disqualified at the sole discretion of Metrolinx.

6.3.7 The Proponent acknowledges that by way of the E-Bid Authorized Signer remitting a Submission, the Proponent is agreeing to be bound to each and every term, condition, article and obligation of the Request Document and any resultant Contract.

6.3.8 The Proponent acknowledges that consistent with Section 3.1.9 of Instructions to Proponents, failure by the Proponent, whose Submission was accepted by Metrolinx, to execute and deliver the Contract with the required Insurance Certificates and Workplace Safety and Insurance Clearance Certificate shall result in the cancellation of the Contract award.

6.4 Requirements

6.4.1 The Proponent shall provide labour, superintendence, plant, tools, appliances, equipment, supplies and other accessories, services and facilities necessary to provide engineering services for the completion of a preliminary design, detailed design, preparation of tender documents; construction inspection and field administration, engineering services during construction; testing and commissioning; post project closeout and management of the services for RQQ-2017-BI-126 - Engineering Services – Office Expansion at Aberfoyle Bus Facility, in accordance with the Consultant's Scope of Services, attached as APPENDIX "B" (the "Services").

6.4.2 The Services are to be provided to the satisfaction of the Director of Bus Infrastructure, unless otherwise specified.

6.5 Consultant Personnel (Schedule B Template)

The Consultant Personnel roles shall be filled using Schedule B Template in accordance with the Contract Documents and in accordance with the requirements in respect of qualifications, experience and minimum years of experience as contained in Schedule B – Consultant Personnel of Appendix "A" - General Conditions.

6.6 Conflict of Interest

6.6.1 If the box below is left blank, the Proponent will be deemed to declare that (a) there was no Conflict of Interest in preparing its Submission; and (b) there is no foreseeable Conflict of Interest in performing the contractual obligations contemplated in the Request Document.

Otherwise, if the statement below applies, check ("X") the box.

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

(b) If the Proponent declares an actual or potential Conflict of Interest by marking the box above, the Proponent must set out below details of the actual or potential Conflict of Interest:

_____

_____

_____

_____

6.6.2 The following individuals, as employees, advisers, or in any other capacity;

(a) participated in the preparation of our Submission (whether as employees, advisors, or in any other capacity); and

(b) were employees, advisors 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 Individual's Participation in the Preparation of the Submission: Click here to enter text.

6.6.3 (Repeat above for each identified individual)

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

6.7 Harmonized Sales Tax

In accordance with Section 11.1(k) of Appendix "A" – General Conditions, the Consultant represents, warrants and covenants to Metrolinx that the Consultant is and shall remain duly registered for the purposes of Part IX of the Excise Tax Act and that the Consultant's registration number is:___R897839072_____. A non-resident Proponent 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. Failure to comply with this requirement may result in the Contract being declared VOID.

6.8 Project Schedule

Milestone	**Date**
a. **Stage Two –** Commencement of Preliminary Design Services	August 1, 2018
b. **Stage Two –** Completion of Preliminary Design Services	September 15, 2018
c. **Stage Three** – Detailed Design Services and Preparation of Construction Documents	
(i) Completion of Detailed Design – 50%	October 15, 2018
(ii) Completion of Detailed Design – 75%	November 15, 2018
(iii) Completion of Detailed Design – 95%	December 31, 2018
(iv) Completion of Construction Tender Documents	January 30, 2018
d. **Stage Four** – Commencement of Assistance with the Procurement and the Evaluation Process (Option to be exercised at the sole discretion of Metrolinx)	May 2018
e. **Stage Four** – Completion of Assistance with the Procurement and the Evaluation Process (Option to be exercised at the sole discretion of Metrolinx)	June 2018
f. **Stage Five -** Commencement of Construction Inspection, Contract Administration, Field Administration and Engineering Services During Construction (Option to be exercised solely at Metrolinx' discretion)	September 2018
g. **Stage Five -** Completion of Construction Inspection, Contract Administration, Field Administration and Engineering Services During Construction (Option to be exercised solely at Metrolinx' discretion)	April 2019

Milestone	Date
h. **Stage Six** – Commencement of Post Construction Services (Option to be exercised at the sole discretion of Metrolinx)	April 2019

7.0 Attachment # 1 – Contract Prices

7.1 Contract Prices

7.1.1 The Contract Prices ("Rates") are hereby submitted on the full understanding that they form part of the Consultant's Submission and as such constitute an irrevocable offer by the Consultant for a period of one hundred and twenty (120) calendar days from the Closing and the Consultant hereby covenants that it shall perform and execute the Services in accordance with the Rates quoted herein if it is notified, in writing, by Metrolinx within one hundred and twenty (120) calendar days that it is the successful Consultant.

7.1.2 Payment for services rendered and goods supplied in accordance with the terms and conditions of the Contract shall be based on the following:

(a) The Rates quoted shall be all inclusive costs associated with performance of the Services defined in the Consultant's Scope of Services attached as Appendix "B".

(b) Cash Allowances shall be used and expended solely for purposes specified and at the sole discretion of Metrolinx. The Consultant cannot proceed with any work to be paid for under Cash Allowance without the written approval of Metrolinx.

(c) The Rates quoted shall include all costs related to the Services including, but not limited to, Named Key Personnel identified, other technical positions, administrative positions, any Subconsultants and specialized service providers required to complete the Services, any and all disbursements, travel, inspection, equipment, tools, supplies, General Requirements (as per Appendix "B") and Management of the Services (as per Appendix "B") as required in this Request Document.

(d) No compensation will be due the Consultant for Stage Four, Stage Five or Stage Six of the Services should Metrolinx decide not to proceed with any of these Stages and/or not assign the provision of Services under Stage Four, Stage Five or Stage Six of the Contract.

(e) Stage Five - Consultant's Cost For Construction Inspection, Contract Administration, Field Administration and Engineering Services During Construction.

(i) Subject to Appendix "B" Consultant's Scope of Services, the Consultant shall be paid on the basis of the estimated Fixed Weekly Fee defined as the weekly rate at which the Consultant will invoice Metrolinx for Construction Contract Administration, Field Administration and

Engineering Services During Construction for the Stipulated Period of Construction (SPC) as defined under Item No.'s D of the attached Excel spreadsheet.

(ii) The Consultant's designated Field Administrator shall be required "Full Time" at the "Place of Work" for one hundred percent (100%) of the construction time for this Project.

(iii) The Consultant agrees that the Fixed Weekly Fee will be the basis for compensation for any and all Construction Inspection, Contract Administration, Field Administration and Engineering Services During Construction to be provided under the Contract.

(iv) The Consultant's Fixed Weekly Fee shall include the costs for "Full Time" Construction Inspection, Contract Administration, Field Administration and Engineering Services during Construction, including the Consultant's designated representative, Subconsultants, specialized services providers, engineers, project managers, principals and administration staff as well as all associated expenses.

(v) The Consultant shall provide on a weekly basis:

One (1) full-time on Site Construction Inspection Teams which shall work a ten (10) hour shift for a combined seventy (70) hour work week, Monday to Sunday. The full-time Construction Administrator shall only be required to work a fifty (50) hour work week from Monday to Friday, and the part-time Consultant's Representative, shall only be required to work a twenty (20) hour work week from Monday to Friday.

7.2 Completion of Pricing Schedules

7.2.1 Proponents shall fully complete the Excel file entitled Attachment # 1 – Contract Prices and insert a Unit Price into each space provided under the Contract Unit Price column.

7.2.2 Attachment #1 – Contract Prices, must be returned as a separate file preferably in Excel format and may not be retyped or recreated. Failure to follow the submission instructions or format requirements may result in the Submission being found non-responsive and disqualified.

7.2.3 It is Metrolinx preference that Proponents submit the pricing using the appended Excel file format to facilitate the Metrolinx pricing evaluation process.

7.2.4 The Attachment #1 – Contract Prices is numbered, under the "Item No." column to correspond with the following Phases, Stages and Steps of the Services:

(a) Stage 2 – Preliminary Design Services;

(b) Stage 3 – Detailed Design Services and Preparation of Construction Documents;

(c) Stage 4 – Assistance with the Procurement and the Evaluation Process (Option to be exercised at the sole discretion of Metrolinx);

(d) Stage 5 – Construction Inspection, Contract Administration, Field Administration and Engineering Services During Construction (Option to be exercised at the sole discretion of Metrolinx); and

(e) Stage 6 – Post Construction Services (Option to be exercised at the sole discretion of Metrolinx).

7.2.5 If a "0" is entered in any of the spaces where price information is to be provided, it shall be interpreted as meaning the Contractor shall provide the specified service to Metrolinx at no charge.

7.2.6 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-responsive and disqualified consistent with the provisions of the Instructions to Proponents.

Appendix "A" – General Conditions

List of Contents

The following documents hereby form part of and are appended to the Request Document as Appendix "A" – General Conditions.

Item No.	Description	Respective Sections
13.1	Appendix "A" – General Conditions	Section 1 to Section 18.15
13.2	Schedule A – Definitions	"A" to "V"
13.3	Schedule B – Consultant Personnel	Section 1 to Section 2
13.4	Schedule C – Financial Terms	Section 1 to Section 17
13.5	Schedule D – Insurance	Section 1 to Section 1.8
13.6	Schedule E – Dispute Resolution	Section 1 to Section 6(k)

General Conditions

1. INTERPRETATION

1.1 Definitions

Capitalized terms used in this Contract shall have the respective meanings ascribed thereto in Schedule A – Definitions.

1.2 Time of the Essence

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

1.3 Currency

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

1.4 Units of Measure

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

All communication between Metrolinx and the Consultant and between the Consultant and each of the Subconsultants with regard to the Services 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 Consultant shall perform the Services in accordance with the terms of this Contract, including in compliance with Applicable Laws.

(b) 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.

(c) 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.

(d) Where used in this Contract, "including" means including without limitation, and the terms "include", "includes", and "included" have similar meanings.

(e) 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.

(f) 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

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:

Schedule A -	Definitions
Schedule B -	Consultant Personnel
Schedule C -	Financial Terms
Schedule D -	Insurance
Schedule E -	Dispute Resolution

2. PERFORMANCE

2.1 Term of the Contract

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 in accordance with its terms (the "Term").

2.2 Performance of the Services

(a) The Consultant shall carry out and complete those services set forth in Appendix "B" – Consultant's Scope of Services (the "**Services**") to the satisfaction of Metrolinx in accordance with all the terms of this Contract.

(b) The Consultant shall supply the Services diligently and continuously in accordance with the scheduling requirements set out in the Project Schedule. Without limiting the generality of the foregoing, the Consultant shall perform the Services 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 Consultant.

(c) The Consultant acknowledges and agrees that each of the Consultant's Personnel shall be available to perform the Services in accordance with the required duration specified in Schedule B – Consultant Personnel. The Consultant 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 Services and availability and number of the Consultant's Personnel. Without limiting the generality of the foregoing, Metrolinx may from time to time, on prior written notice to the Consultant twenty (20) Business Days', unilaterally extend or reduce the required duration with respect to the availability of any of the Consultant's Personnel or direct the Consultant to increase the number of Consultant's Personnel available. Metrolinx and the Consultant shall meet on a quarterly basis to discuss the progress of the Services and the anticipated scheduling needs with respect to the Consultant's Personnel.

(d) Metrolinx may, from time to time, in its sole discretion, but is not required to, direct the Consultant to cause specific Consultant Personnel to perform certain tasks or activities that form part of the Services in accordance with the scheduling requirements provided by Metrolinx. Any such instructions shall be provided by Metrolinx in writing to the Consultant no less than five (5) Business Days before the specified tasks or activities are required to be performed by the Consultant Personnel.

(e) The Consultant shall provide, at the sole cost and expense of the Consultant, 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 Services and to undertake, perform and complete its undertakings, obligations and responsibilities provided for in this Contract.

(f) The Services shall be provided in a professional, timely and economical manner according to the Required Standard of Care. Without limitation, the Consultant shall ensure that the Services are conducted in a manner that will maintain good relations with the general public and property owners.

(g) The Consultant shall comply with and conform to all Applicable Laws, applicable to the Services to be provided by, and the responsibilities and obligations of, the Consultant under this Contract.

(h) The Consultant shall not alter any part of a Joint Venture except with the prior written consent of Metrolinx in its sole discretion.

2.3 Subconsultants

(a) No subconsulting by the Consultant shall relieve the Consultant of any responsibility for the full performance of all obligations of the Consultant under this Contract. Notwithstanding the approval of any Subconsultants by Metrolinx, the Consultant shall be fully responsible for every Subconsultant's activities, works, services and acts or omissions.

(b) The Consultant shall be solely responsible for the payment of any Subconsultants.

(c) The Consultant shall co-ordinate the services of all Subconsultants employed, engaged or retained by the Consultant with Metrolinx and, without limiting the generality of any other provision of this Contract, the Consultant shall be liable to Metrolinx for costs or damages arising from errors or omissions of such Subconsultants or any of them. It shall be the Consultant's responsibility to control and review the Services of its own forces and of all its Subconsultants and to ascertain that all Services are performed in accordance with this Contract, all governing regulations and the Required Standard of Care.

(d) The Consultant warrants and represents that it and any of its permitted Subconsultants and the respective workforce of each are fully qualified to perform the Services and perform this Contract and hold all requisite licenses, rights and other authorizations required by Applicable Laws.

(e) The Consultant 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 Consultant shall ensure that all workers and persons employed by them or under their control or employed by or under the control of its Subconsultants comply with the terms of this Contract and, in particular without limiting the foregoing, the responsibilities of the Consultant with respect to matters concerning safety, compliance with the Applicable Laws and the conduct of the Services.

(f) The Consultant shall be an independent contractor with respect to the Services to be provided under this Contract and nothing contained in this Contract shall be construed as constituting a joint venture or partnership between the Consultant and Metrolinx. Neither the Consultant nor its

Subconsultants shall be deemed to be employees, agents, servants or representatives of Metrolinx in the performance of the Services hereunder.

(g) The Consultant shall not remove or change any Subconsultants, or materially reduce the responsibilities of any Subconsultants in relation to the provision of the Services except with the prior written consent of Metrolinx in its sole discretion. The proposed replacement Subconsultant shall possess the requisite Domain Expertise and similar qualifications, experience and ability as the outgoing Subconsultant.

2.4 Consultant Personnel

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

(b) The Consultant shall provide effective and efficient inspection to ensure that the quality of workmanship meets the requirements of the Contract.

(c) The Consultant shall ensure that the Consultant Personnel assigned to perform the Services 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 Consultant has been made aware of same.

2.5 Third Party Work

(a) The Consultant shall reasonably cooperate with Metrolinx and any Third Party and shall co-ordinate the Services with any and all Third Party Work. Without limiting the generality of the foregoing, the Consultant 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 Consultant 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 Consultant shall participate with Metrolinx employees and any applicable Third Parties in reviewing their respective schedules and cause designated Consultant 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 Services depends upon Third Party Work, the Consultant shall promptly inspect such Third Party Work and provide written notice to Metrolinx of any delays or defects in such Third Party Work that render such Third Party Work unavailable or unsuitable for integration with the Services.

(e) Claims, disputes and other matters in question between the Consultant and Third Parties shall be dealt with in accordance with Schedule E – Dispute Resolution, provided that the Third Party has reciprocal obligations. The Consultant 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 Consultant 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 Contractors 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 Consultant

acknowledges and agrees that the safety of all trains, passengers, operating and maintenance personnel, goods and other transported cargos, as well as the Consultant Personnel and the public in general will take precedence over all actions or non-actions of the Consultant, whether mandated or not by any other terms and conditions of this Contract.

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

2.7 Key Personnel

(a) Schedule B – Consultant Personnel sets out the names and titles of the Consultant Personnel who will be involved in a material way in, and who are critical to, the performance of the Services (the "**Key Personnel**"). All Key Personnel will possess the requisite Domain Expertise.

(b) The Consultant shall not, for the duration of the Term, require or request any Key Personnel to be involved in any other project on behalf of the Consultant or any Subconsultant if, in the opinion of Metrolinx acting reasonably, such involvement would have a material adverse effect on the Services. The Consultant will not remove any Key Personnel from the provision of the Services, or materially reduce the responsibilities of any Key Personnel in relation to the provision of the Services except with the prior written consent of Metrolinx (which consent shall not be unreasonably withheld).

(c) Notwithstanding Section 2.7(a) but subject to Section 2.7(d), if at any time the Consultant, for reasons beyond its reasonable control, is unable to provide the services of any Key Personnel, the Consultant shall provide a replacement person who possesses similar qualifications, experience and ability and possesses the requisite Domain Expertise; provided, however, that the Consultant shall first provide written notice to Metrolinx of the requirement to replace or substitute that person. For the purposes of this clause, only the following reasons will be considered beyond the reasonable control of the Consultant; death; sickness; maternity and parental leave; compassionate care leave; retirement; resignation; dismissal for cause; or termination of an agreement for default. The notice shall identify: the person being replaced; their role and responsibility in the performance of the Services; the reason why it is necessary to replace that person; and the replacement person's name, *curriculum vitae* in the form set out in Schedule B - Consultant Personnel; and the replacement person's available start date. Metrolinx in its sole and absolute discretion may choose to interview the proposed replacement person in Toronto. The nominated replacement person must be acceptable to Metrolinx. If the replacement person is acceptable to Metrolinx, Metrolinx shall give the

Consultant written permission to make the replacement or substitution. In the event the nominated person is not acceptable to Metrolinx, acting reasonably, Metrolinx shall inform the Consultant in writing why that person is not acceptable and the Consultant shall nominate an alternate person pursuant to the process identified in this Section 2.7(c).

(d) If Metrolinx determines in its sole discretion that it is in the best interests of Metrolinx that any Key Personnel be replaced, either permanently or temporarily, Metrolinx shall notify the Consultant, and, within thirty (30) days of receipt by the Consultant of such notice, the Consultant shall provide Metrolinx with relevant information on the proposed replacement, including the replacement person's name, rates, and *curriculum vitae* in the form set out in Schedule B – Consultant Personnel and the replacement person's available start date. Metrolinx in its sole and absolute discretion may choose to interview the proposed replacement person in Toronto. If the replacement person is acceptable to Metrolinx, Metrolinx shall give the Consultant written permission to make the replacement or substitution. In the event the nominated person is not acceptable to Metrolinx, acting reasonably, Metrolinx shall inform the Consultant in writing why that person is not acceptable and the Consultant shall nominate an alternate person pursuant to the process identified in Section 2.7(d). The Rates for the proposed replacement shall not exceed the approved Rate of the person being replaced.

2.8 Consultant's Representative

The Consultant shall assign a Consultant's Representative who will direct the provision of the Services. During the Term, the Consultant's Representative will maintain ongoing contact with Metrolinx to ensure that issues are dealt with in an efficient, effective and timely manner. The Consultant'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 Consultant's obligations under this Contract.

2.9 Metrolinx Responsibilities

(a) Metrolinx shall:

(i) designate an individual to act as its representative (the "**Metrolinx Representative**") who will transmit instructions to, and receive information from the Consultant;

(ii) provide access to and where necessary, make available copies of existing plans, reports, studies, information and correspondence relevant to the Services;

(iii) use commercially reasonable efforts to ensure that all agreements between Metrolinx and external agencies relevant to the

Consultant's provision of the Services are executed in a timely manner;

(iv) provide the Consultant with contact names of the individual(s) who will be representing the railways, regions, municipalities, government agencies or other jurisdictional bodies; and

(v) arrange for necessary services from the applicable railways such as design approvals, inspection and flagging.

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 Services. 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 Consultant shall provide and perform the Services 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. Consultant must have at least one bilingual staff or interpreter on hand able to answer questions and discuss technical drawings/documents in French. As applicable, the Consultant 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 Task Release Process for Services

(a) Upon request of the Metrolinx Representative, the Consultant shall prepare a work plan (the "**Task Plan**"), clearly defining the work required by a specified Service (the "**Task**"), and setting out the following:

(i) description of the work required by the Task, and Task deliverables;

(ii) projected milestones and schedule for completion of the Task;

(iii) resources required for the completion of the Task;

(iv) calculation of fees;

(v) proposed list of staff for the Task; and

(vi) any other information or documents as required by the Metrolinx Representative.

(b) The Consultant shall not proceed with the Task unless approved pursuant to Section 2.11(a) in the form of a "**Task Release**" and only to the upset limit or fixed price as indicated therein notwithstanding the total upset limit price established by the Contract.

(c) The Consultant shall proceed with the Task and the fee will be established for each Task as agreed upon by the Parties using the rates identified in the Articles of Agreement.

(d) The upset limit or fixed fee for each Task shall be in Canadian funds, not subject to adjustment unless agreed otherwise in writing, and shall be inclusive of all applicable costs.

(e) Prior to finalizing each Task Plan, Metrolinx and the Consultant will establish either an upset limit on the fee if the Task is to be completed on a Time and Expense basis or a Fixed Fee basis:

(i) Time and Expense: The fee shall be calculated on the basis of the work actually performed for a Task based on the rates provided by the Consultant for Consultant Personnel.

(ii) Fixed Price: The fee shall be calculated for the completion of a Task based on the rates provided by the Consultant for Consultant Personnel. The Consultant shall submit an itemized cost breakdown of the various parts of the Task with its work plan, which together shall aggregate the total price for that Task.

(f) Metrolinx reserves the right to withhold payment for any Services performed by the Consultant or its Subconsultants prior to the issuance of an authorized Task Release or outside the scope of a Task Plan approved by a Task Release.

2.12 Consultant Work Performance Rating

(a) Metrolinx shall during the Term of this Contract, maintain a record of the Consultant's performance pursuant to this Contract. This information shall

be used to complete a "Contract Performance Appraisal" report, a copy of which will be forwarded to the Consultant upon the termination or expiration of the Contract. Interim Contract Performance Appraisal reports may be issued, as deemed appropriate by the Metrolinx Representative, at any time during the Term of the Contract. A copy of the Contract Performance Appraisal template can be found under Appendix "D" – Documents.

(b) The prior history of the Consultant in performing work for Metrolinx, including the Consultant's performance pursuant to this Contract, will be considered in the evaluation of future submissions from the Consultant for Metrolinx procurement processes.

(c) Metrolinx reserves the right, during any procurement process, to reject any submission by the Consultant due to unsatisfactory performance history with Metrolinx.

(d) Non-compliance with Contract requirements will be identified to the Consultant.

(e) The information contained in the Contract Performance Appraisal reports may be provided to other ministries and agencies and such performance reviews may be relied upon by other ministries and agencies to reject the Consultant's submissions on any procurement processes.

3. HEALTH AND SAFETY

3.1 Occupational Health & Safety Act ("OHSA")

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

(b) The Consultant shall report to Metrolinx any non-compliance by a Subconsultant in the performance of the Services with the regulations under the OHSA if and when brought to the attention of the Consultant.

(c) The Consultant 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 Consultant's performance of the Services to be suspended; or

(ii) this Contract to be cancelled by Metrolinx.

(d) The Consultant will be under an obligation to cease the Services, 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 Services or affected part thereof shall not resume until any such violation has been rectified.

(e) The Consultant shall be responsible for any delay caused by the Consultant in the progress of the Services as a result of any violation of provincial or municipal health and safety requirements by the Consultant, it being understood that such delay shall be not be a Force Majeure for the purposes of extending the time for performance of the Services or entitling the Consultant to additional compensation, and the Consultant shall take all necessary steps to avoid delay in the final completion of the Services 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 Consultant for the Services, either instead of or jointly with the Consultant.

3.2 Safety Requirements

(a) Safety of Persons at or near the Place of Work and the public is of paramount concern to Metrolinx. In the performance of the Services, the Consultant 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 Consultant specifically covenants and agrees that:

(i) it shall comply with best industry practice 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 Consultant 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 Consultant 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 Consultant Personnel comply, in all regards with the Consultant'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 Consultant 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 Consultant Personnel have been properly trained and are knowledgeable with respect to these policies and procedures.

3.3 Railway Safety

(a) If applicable, the Consultant acknowledges and agrees that:

(i) access to the rail corridors by the Consultant and any Consultant Personnel, shall at all times be subject to the direction of Metrolinx and/or the Maintenance Provider 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 railways shall be referred to Metrolinx which shall in its discretion decide all such questions, matters and disputes.

(b) The Consultant shall perform the Services, and shall ensure that all Consultant Personnel perform the Services, 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 Services are the subject of an audit or inspection by any Governmental Authority, the Consultant 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

(iv) 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 Consultant; and

(v) take all steps necessary to rectify, in consultation with and as directed by Metrolinx, any issues identified by Transport Canada.

3.4 Workers' Rights

The Consultant shall at all times pay or cause to be paid any assessments or compensation required to be paid by the Consultant or its Subconsultants 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 Consultant. The Consultant shall comply with all regulations and laws relating to workers' compensation.

4. FINANCIAL TERMS

4.1 Financial Terms

All financial and payment terms applicable to this Contract and the Services are set out in Schedule C – Financial Terms.

5. CONSTRUCTION LIEN ACT

5.1 Construction Lien Act

(a) Metrolinx shall retain an amount equal to the amount required to be held back Pursuant to the Construction Lien Act from each sum otherwise payable to the Consultant 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 the applicable period for preservation of liens under the Construction Lien Act, and provided that no liens are preserved by persons supplying services or materials to the Consultant.

(c) Notwithstanding any provision of this Contract,

(i) no sum shall be payable by Metrolinx to the Consultant pursuant to this Contract if, at the time such sum would otherwise be payable, there is outstanding and unsatisfied any claim for lien which has been preserved pursuant to the Construction Lien Act by any person for goods and/or services provided directly or indirectly to the Consultant to enable performance of any part(s) of the Services or Metrolinx has received a notice of lien; and

(ii) where any sum which would otherwise be payable by Metrolinx to the Consultant is not so payable because a claim for lien has been preserved pursuant to the Construction Lien Act, or Metrolinx has received notice of a lien, such sum shall be payable to the

Consultant only at such time when all liens which may be claimed against that sum have expired or been satisfied, discharged or vacated by an order made pursuant to a payment into court in accordance with the Construction Lien Act.

6. RIGHT OF OWNERSHIP AND USE

6.1 Ownership of Metrolinx IP

(a) Unless otherwise expressly agreed, Metrolinx is and will be the exclusive owner of, and shall retain all right, title and interest (including Intellectual Property Rights) in and to all of the following Intellectual Property (collectively, the "**Metrolinx IP**"):

(i) all Metrolinx Materials;

(ii) all Deliverables;

(iii) all reports and other information created, generated, output or displayed by the Deliverables or as a result of the performance of receipt of the Services; and

(iv) all modifications or enhancements made to the items listed in Sections 6.1(a)(i) to (iii) hereof.

(b) All right, title and interest, including all Intellectual Property Rights, in Metrolinx IP will vest in Metrolinx, following creation.

(c) The Consultant will acquire no rights to any Metrolinx IP other than the licence rights expressly granted in Section 6.3.

(d) The Consultant:

(i) hereby assigns and transfers to Metrolinx; and

(ii) agrees (to the extent required in the future) to assign and transfer to Metrolinx, as and when created, all right, title and interest, including Intellectual Property Rights, throughout the world in and to all Metrolinx IP (to the extent any right, title, interest or Intellectual Property Right in Metrolinx IP does not automatically and immediately vest in Metrolinx).

(e) The Consultant shall cause all Consultant Personnel to waive for the benefit of Metrolinx and its respective successors, assigns, licensees and contractors, their respective 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 Metrolinx IP.

6.2 Ownership of Consultant Background IP

(a) The Consultant is and will be the exclusive owner of, and shall retain all right, title and interest (including Intellectual Property Rights) in and to all Consultant Background IP.

(b) Metrolinx will acquire no rights to the Consultant Background IP other than the licence rights expressly granted in Section 6.4, or otherwise under or in respect of this Contract.

6.3 Grant of Licences by Metrolinx to Consultant

(a) Metrolinx grants to the Consultant, during the Term, a non-exclusive, non-transferable, royalty-free right and licence to:

(i) access, use, copy, support, maintain and, to the extent reasonably necessary to provide the Services, modify, the Metrolinx IP solely for the purposes of fulfilling the Consultant's obligations under this Contract;

(ii) sublicense the Metrolinx IP to Subconsultants solely to the extent necessary to enable such Subconsultants to fulfill the Consultant's obligations under this Contract.

(b) Any exercise by the Consultant of the rights granted pursuant to Section 6.3(a) shall be subject to the terms and conditions of this Contract, including always the Consultant's obligations with respect to Confidential Information set out in Article 10.

(c) If the Consultant desires to use the Metrolinx IP other than as permitted under clause (a) hereof, such use must be set out in a separate license agreement (such licence to require the approval of Metrolinx, which may be withheld at Metrolinx' discretion).

6.4 Grant of Licences by the Consultant to Metrolinx

(a) The Consultant grants to Metrolinx a perpetual, irrevocable, fully paid-up, royalty-free, worldwide, non-exclusive right and licence to access, use, copy, support, maintain, modify, sublicense, assign, distribute or otherwise exploit any Consultant Background IP that is integrated with, embedded in, forms part of or is otherwise required to access, use, copy, support, maintain, modify, sublicense, assign, distribute or otherwise exploit any Metrolinx IP; provided, however, that the foregoing licence does not permit Metrolinx to use the Consultant Background IP in its standalone form or for any purpose other than as part of or in conjunction with the Metrolinx IP it is associated with.

(b) If the Consultant integrates with or embeds in any Deliverables any Intellectual Property provided by a third party vendor, subcontractor,

independent contractor, Subconsultant or other person, the Consultant shall obtain for Metrolinx the same license rights for Metrolinx in respect of such Third Party IP as set forth in Section 6.4(a) hereof.

7. INSURANCE

7.1 Insurance Requirements

(a) The Consultant 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 D – 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 Services.

(b) Statutory Holdback

(i) Metrolinx in its sole discretion shall determine whether the services required by a Task are subject to the Construction Lien Act.

(ii) If the services required by a Task are subject to the Construction Lien Act, Metrolinx shall hold back, from each payment to the Consultant, ten percent (10%) of the amount of the payment or such greater amount as may be required under the Construction Lien Act (the "Statutory Holdback"), and any Statutory Holdback shall only be released in accordance with the provisions of the Construction Lien Act.

(iii) For greater clarity, release of the Statutory Holdback under Section 7(b) may include payment where a subcontract is certified complete in accordance with Section 25 of the Construction Lien Act, subject to any other conditions required by Metrolinx in its sole discretion. Notwithstanding any other term in the Contract, Metrolinx reserves the right to recover such payment(s) if the Consultant fails to comply with the required conditions.

8. CHANGES AND CASH ALLOWANCES

8.1 Changes Requested by Metrolinx

Metrolinx may, in writing, request changes or alterations to the Services, or request additional services from the Consultant (any of the foregoing, "Changes"). Subject to this Article 8, the Consultant 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 Consultant

The Consultant shall promptly notify Metrolinx in writing if the Consultant 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:

(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 Consultant shall respond to Metrolinx' Change request in writing within ten (10) Business Days.

(c) Where a Change is initiated by the Consultant pursuant to Section 8.2, the Consultant 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 Consultant 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 Services, then either Party may refer the issue to dispute resolution in accordance with Article 16.

8.4 Cash Allowance Items and Task Assignment Process

(a) The Consultant shall include all Cash Allowance Items in the Project Schedule and perform all Services related thereto within the Project Schedule. Where applicable, the Project Schedule shall take into account the time required to facilitate the Task Assignment Process described in this Section, including the time required to obtain Quotations pursuant to Section 14 of Schedule C – Financial Terms.

(b) Cash Allowance Items shall be administered and authorized as follows (the "Task Assignment Process"):

(i) The Metrolinx Representative shall submit to the Consultant a request to proceed with a Cash Allowance Item.

(ii) Upon receipt of such request from Metrolinx, the Consultant shall, in respect of the identified Cash Allowance Item, provide to Metrolinx a response setting out:

(A) the estimated hours of Services and expected completion date;

(B) subject to Section 8.5, the Consultant Personnel, suppliers, Subconsultants or specialized services providers which the Consultant proposes to perform the Services; and

(C) any requirements for testing and reporting.

(iii) As and if required, the Parties shall meet to review the requirements for the Cash Allowance Item.

(iv) Subsequent to the review meeting, and based on the results of the review meeting, the Consultant shall make its own determination of the Consultant's work effort and fee cost to provide the Consultant's scope of services for the task.

(c) No amounts shall be payable in respect of any Cash Allowance Items unless and until Metrolinx has approved such expenditure in writing, and shall be subject to Schedule C – Financial Terms.

(d) Upon the approval by Metrolinx of any Cash Allowance Item, the Consultant shall be responsible for the completion thereof in accordance with the terms and conditions set out in this Contract. For greater certainty, the Consultant's responsibilities for Cash Allowance Items approved by Metrolinx pursuant to this Section are the same as for all other Services.

8.5 Performance of Changes and Cash Allowance Items

(a) Metrolinx shall determine by whom and for what amounts the items included in each Change or Cash Allowance Item will be performed.

(b) Metrolinx shall have the right, exercisable at its sole discretion, to require the Consultant to use a third party to perform or provide any Cash Allowance Items or any Services related to a Change. Metrolinx may exercise this right generally, by requiring the Consultant to provide the Services through a third party selected by the Consultant**,** or by requiring the Consultant to utilize a third party identified by Metrolinx.

(c) The Consultant shall obtain prior approval of Metrolinx before entering into a subcontract, amending an existing subcontract or performing own forces work included in a Change or Cash Allowance.

9. 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 Consultant to increase the number of Consultant Personnel upon twenty (20) days' notice.

(b) Unless otherwise agreed to in writing by Metrolinx, such additional Consultant Personnel shall be available to report for work 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 Consultant Personnel shall be as set out in the Articles of Agreement.

10. CONFIDENTIAL INFORMATION AND FIPPA

10.1 Restrictions on Use of Confidential Information

The Consultant shall keep all Metrolinx Confidential Information confidential. Without limiting the generality of the foregoing, the Consultant shall:

(a) not disclose, reveal, publish, or disseminate any Metrolinx Confidential Information to anyone, except as permitted pursuant to this Contract;

(b) shall use Metrolinx Confidential Information only in connection with this Contract and the performance of the Services;

(c) shall take all reasonable steps required to prevent any unauthorized reproduction, use, disclosure, publication, or dissemination of the Metrolinx Confidential Information;

(d) shall not copy, reproduce in any form or store the Metrolinx Confidential Information in a retrieval system or database, without the prior written consent of Metrolinx; and

(e) shall immediately notify Metrolinx in the event that it becomes aware of any unauthorized disclosure of Metrolinx Confidential Information.

10.2 Permitted Disclosure

Notwithstanding the obligations set out in Section 10.1, the Consultant may disclose Metrolinx' Confidential Information to those of its Subconsultants and Consultant's Personnel who need to know such Confidential Information in connection with this Contract, provided that such Subconsultant or Consultant'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 Metrolinx Confidential Information which:

(i) becomes generally available to the public through no fault of the Consultant;

(ii) prior to receipt from Metrolinx, was known to the Consultant 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 Consultant;

(iii) was independently developed by the Consultant prior to receipt from Metrolinx, as documented by written records possessed by the Consultant; or

(iv) becomes available to the Consultant on a non-confidential basis from a source other than Metrolinx that is not under other obligations of confidence.

(b) If the Consultant becomes compelled to disclose any Metrolinx Confidential Information pursuant to Applicable Law, the Consultant 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 Consultant 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 Lien Act.

10.4 Damages

The Consultant 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 Consultant 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.

10.5 Return or Destruction of Confidential Information

(a) At the request of Metrolinx and subject to Section 10.5(b) and Section 10.6, the Consultant agrees to:

(i) promptly return all Metrolinx Confidential Information to Metrolinx; or

(ii) promptly destroy the Metrolinx Confidential Information 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 Consultant certifying such destruction.

(b) Notwithstanding the foregoing, the Consultant shall have no obligation to return or destroy:

(i) Metrolinx Confidential Information that is captured and retained within the Consultant'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 Consultant or the Consultant Personnel.

10.6 FIPPA and Freedom of Information

The Consultant acknowledges that Metrolinx is a provincial crown agency subject to FIPPA, and acknowledges and agrees as follows:

(a) All FIPPA Records (as defined below) are subject to, and the collection, use, storage and treatment thereof is governed by FIPPA. The Consultant agrees to keep all FIPPA Records secure and available, in accordance with the requirements of FIPPA.

(b) Section 10.5 shall apply to all FIPPA Records, which shall be returned and/or destroyed in accordance with that section.

(c) In the event of a conflict between the requirements of this Contract and the requirements of FIPPA, the requirements of FIPPA shall take precedence.

(d) 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 Consultant and the Consultant 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 Consultant 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 Agreement and subject to the Consultant'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 (including, without limitation, the requirements with respect to affected persons set out in Section 28 thereof).

(e) For the purposes of this section, "FIPPA Records" means all information, data, records and materials, however recorded, in the custody or control of Metrolinx, including Confidential Information and Personal Information (as defined in FIPPA). For the purposes of this definition, documents held by the Consultant in connection with this Contract are considered to be in the control of Metrolinx.

10.7 Consultant Compliance

(a) The Consultant shall advise its representatives and all Subconsultants 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 representatives with the terms of this Article 10. In addition to any other liabilities of the Consultant pursuant to this Contract or otherwise at law or in equity, the Consultant shall be liable for all claims arising from any non-compliance with this Article 10 by the Consultant, Consultant Personnel, Subconsultant and their respective personnel.

(b) The Consultant warrants that each representative or Subconsultant provided or engaged by the Consultant to provide the services pursuant to this Contract is under a written obligation to the Consultant requiring such person to comply with the terms of this Article 10.

10.8 Publicity

Neither Party may make any disclosure to any other person or any public announcement or press release regarding this Contract or any relationship between the Consultant and Metrolinx, without the other Party's prior written consent.

11. REPRESENTATIONS, WARRANTIES AND COVENANTS

11.1 Representations, Warranties and Covenants of the Consultant

The Consultant 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:

(a) the Consultant is validly existing under the laws of the location of its head office and the Consultant has all necessary power, authority and capacity to enter into this Contract and to perform its obligations hereunder;

(b) the entering into of this Contract by the Consultant and the performance of its obligations hereunder has been authorized by all necessary corporate action;

(c) 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:

(i) 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 Consultant, the by-laws or resolutions of the Consultant or any agreement or instrument to which the Consultant is a party or by which it is bound, or

(ii) require the Consultant 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;

(d) this Contract constitutes a legally valid and binding obligation of the Consultant 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;

(e) the Consultant has carefully reviewed the whole of this Contract, including all of the Contract Documents, and all other documents made available to the Consultant by Metrolinx, and, to the Consultant's knowledge, nothing contained herein or therein inhibits or prevents the Consultant from performing the Services in accordance with the Required Standard of Care so as to achieve and satisfy the requirements of this Contract;

(f) the Consultant has engaged and shall engage only Subconsultants and Consultant Personnel that are qualified and competent to perform the portions of the Services they are responsible for and possess the requisite Domain Expertise;

(g) the Consultant 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;

(h) the Consultant is not aware of any legal action instituted, threatened or pending against the Consultant that could have a material adverse effect on its ability to perform its obligations under this Contract;

(i) the Consultant 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;

(j) the Consultant 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

(k) the Consultant represents, warrants and covenants to Metrolinx that the Consultant is and shall remain duly registered for the purposes of Part IX of the Excise Tax Act and that the Consultant's registration number is: _____.

11.2 Continuing Effect of Representations, Warranties and Covenants

The Consultant 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. INDEMNITY

12.1 Indemnification

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

successors 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 Consultant of any covenant, obligation or agreement of the Consultant contained in this Contract, including any warranty (express or implied);

(ii) any negligent acts, errors or omissions or wilful misconduct by or on behalf of the Consultant relating to the Services to be provided under this Contract;

(iii) any acts performed or omitted to be performed by or on behalf of the Consultant beyond the authority of the Consultant hereby conferred;

(iv) any inaccuracy in or breach of any of the representations or warranties of the Consultant contained in this Contract;

(v) any preserved or perfected lien under the Construction Lien Act filed or made on account of the Services performed hereunder, provided that the liens herein referenced are not the direct result of the default in payment by Metrolinx to the Consultant of amounts properly due under this Contract. The Consultant 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 Consultant of written notice from Metrolinx. If the Consultant 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 Consultant 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 Consultant or any Subconsultant, including:

(A) any resulting expenses incurred by Metrolinx as a result of stoppage of the Services on account of failure by the Consultant 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 Consultant's failure to fulfil its obligations as described in Section 3.1; and/or

(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 Services or any matter provided to Metrolinx or performed by the Consultant, or anyone else for whom at law it is responsible.

(b) The Consultant 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 Consultant is obligated to indemnify the Indemnified Parties pursuant to this Article 12, provided that the indemnity obligations of the Consultant 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 Consultant under this Contract pending the final determination or settlement of such claim, action, suit, execution or demand. In the event,

(i) the Consultant is, becomes, or is deemed to be bankrupt or an insolvent person pursuant to the *Bankruptcy and Insolvency Act* (Canada);

(ii) the Consultant 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 Consultant'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 Consultant 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 Consultant to or for the benefit of Metrolinx.

13. LIMITATION OF LIABILITY

13.1 General Intent

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 12.1(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 12.1(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 two times the Estimated Total Contract Price.

(c) The limitations of liability set forth in Sections 13.2(a) 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) Metrolinx shall have a duty to mitigate damages for which the Consultant is responsible.

14. TERMINATION

14.1 Termination for Cause by Metrolinx

Metrolinx may, by ten (10) days' written notice to the Consultant, suspend or terminate the whole or any part of the provision of the Services or this Contract for cause in the event that the Consultant is in breach of any of its obligations under this Contract, and thereupon:

(a) Metrolinx may appoint officials of Metrolinx or any other person or persons in the place and stead of the Consultant to perform the Services or any portion thereof;

(b) the Consultant shall immediately discontinue the Services 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 Services;

(c) nothing contained herein shall limit the rights of Metrolinx to recover damages from the Consultant arising from the failure of the Consultant to perform the Services satisfactorily in accordance with the terms of this Contract.

14.2 Termination for Convenience by Metrolinx

Metrolinx may, by thirty (30) days' written notice to the Consultant, terminate this Contract for convenience, and thereupon Metrolinx shall be liable for payment to the Consultant for those monies attributable to the part of the Services 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. 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:

(i) shortages or delays relating to supplies or services; or

(ii) on the part of the Consultant, lack of financing or inability to perform because of the financial condition of the Consultant.

(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 Consultant 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

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

16. DISPUTE RESOLUTION

All Disputes shall be resolved in accordance with, and the Parties shall comply with, Schedule E – Dispute Resolution.

17. SET OFF

Metrolinx shall have the right to satisfy any amount from time to time owing by it to the Consultant under the Contract by way of a set-off against any amount from time to time owing by the Consultant to Metrolinx, including but not limited to any amount owing to Metrolinx pursuant to the Consultant's indemnification of Metrolinx in this Contract.

18. GENERAL

18.1 Entire Agreement

This Contract constitutes the entire agreement between the Parties regarding the Services and supersedes any prior understandings, negotiations, representations or agreements, whether written or verbal.

18.2 Governing Law and Jurisdiction

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

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 Consultant notwithstanding expiration or termination of this Contract for any reason whatsoever or completion of the Services as contemplated hereunder.

18.4 Enurement

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

The Consultant 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 contractor. 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 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 Consultant Personnel and all other personnel providing the Services are solely the employees of the Consultant and applicable Subconsultants (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 Consultant represents and warrants to Metrolinx that the Consultant is entering into this Contract solely on the Consultant's own behalf and not as an agent for any other Person.

18.8 Joint and Several Liability

Where the Consultant comprises two or more Persons, each of them shall be jointly and severally liable for the obligations of the Consultant 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

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

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

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

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 Consultant'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.

(b) The Consultant 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 Consultant 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 Subconsultants do not participate in or be involved with such Prohibited Procurements either directly or indirectly, including as a bidder or as a subcontractor or advisor to any bidder.

(c) The Consultant 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 Consultant, where:

(i) the Consultant fails to disclose an actual or potential Conflict of Interest;

(ii) the Consultant fails to comply with any requirements prescribed by Metrolinx to resolve a Conflict of Interest; or

(iii) the Consultant's Conflict of Interest cannot be resolved.

(e) This section shall survive any termination or expiry of this Contract.

18.15 Counterparts

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.

[End of General Conditions]

Schedule A – Definitions

"Acceptance" or **"Acceptable"** or **"Accepted"** means the act of formal notification by Metrolinx of no further objections regarding content, construction or compliance.

"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.

"Approvals" means any permits, licences, consents, approvals, clearances, orders, ordinances, registrations, filings or other authorizations respecting the work undertaken as part of the Services as may be required from any applicable Governmental Authority or otherwise by the Consultant's contract documents.

"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.

"Cash Allowance" means a sum included in the Estimated Contract Price by Metrolinx as a predetermined allowance to cover the items identified in the Articles of Agreement.

"Cash Allowance Items" means those items, work and/or services identified in the Articles of Agreement as items to be paid for using the designated Cash Allowance.

"Changes" has the meaning ascribed to it in Section 8.1 of the General Conditions.

"Construction Lien Act", means the *Construction Lien Act*, R.S.O. 1990, c. C.30.

"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 Consultant (including to employees, contractors, or other representatives thereof). For greater certainty, all Metrolinx Materials, construction documents, personal information (as defined in FIPPA), and anything else specifically marked or identified by Metrolinx as confidential or proprietary are deemed to be "Confidential Information" for the purposes of this Contract.

"Conflict of Interest" has the meaning ascribed to it in Section 18.14 of the General Conditions.

"Consultant" has the meaning ascribed to it in the Articles of Agreement.

"Consultant Background IP" means any methodologies, patterns, plans, procedures, Software, algorithms, computer code, documentation, tools, business processes, scripts, interfaces, commands, technical information, know-how, techniques, specifications, technologies and/or other Intellectual Property that is proprietary to the Consultant or which Consultant has the right and licence to use and make available to Metrolinx, in each case that was either: (a) created prior

to the Effective Date; or (b) created, developed or produced independently of this Contract and/or the performance of the Services.

"Consultant Personnel" or "Consultant's Personnel" means (a) with respect to the Consultant, all of the Consultant's personnel, employees and independent consultants (including the Key Personnel and the Consultant's Representative) engaged in the performance of the Services; and (b) with respect to each Subconsultant, all of that Subconsultant's personnel, employees and independent consultants engaged in the performance of the Services.

"Consultant Policies" has the meaning ascribed to it in Schedule D – Insurance of Appendix "A" General Conditions.

"Consultant's Representative" means the person identified by the Consultant, and Accepted by Metrolinx, as the Consultant's authorized representative pursuant to Section 2.8 of the General Conditions.

"Contract" means this contract between the Consultant and Metrolinx pursuant to **Request No.** RQQ-2017-BI-126 including the Articles of Agreement, the General Conditions and the Schedules thereto and the Contract Documents.

"Contract Closeout" means the date that the services are complete as per the Construction Lien Act.

"Contract Documents" means the Contract and those documents listed in Appendix "B" – Consultant's Scope of Services and any written amendments thereto as agreed to by the Parties.

"Contract Performance Appraisal" has the meaning given in Section 2.12(a) of the General Conditions.

"Deliverables" means the work product created by the Consultant and/or the Consultant Personal in connection with or as a requirement of the Services, including all reports, drawings, plans, designs, processes, tools, standards, registers, logs, updates, files, databases, Software, and documentation.

"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.

"Dispute Notice" has the meaning given in Schedule E – Dispute Resolution.

"Domain Expertise" means the required level of depth and breadth of qualifications and experience in respect of the tasks to be performed in connection with the Services, gained through a practical application of the knowledge underlying the tasks in an environment substantially similar to that of the Services.

"Effective Date" means the final date of execution of this Contract by both Parties.

"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.

"Estimated Contract Price" means the amount identified as such in the Articles of Agreement.

"FIPPA" means the Freedom of Information and Protection of Privacy Act, R.S.O. 1990, Chapter F.31.

"FIPPA Records" has the meaning ascribed to it in Section 10.6 of the General Conditions.

"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.

"French Language Services Act" means the *French Language Services Act*, R.S.O. 1990, c.F.32.

"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.

"Indemnified Parties" has the meaning ascribed to it in Section 12.1 of the General Conditions.

"Intellectual Property" means all intellectual and industrial property, including all Software, 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 all Intellectual Property Rights therein.

"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.

"Joint Venture" is the business arrangement of two or more parties proposed as identified in the Proponent's Submission.

"**Key Personnel**" has the meaning ascribed to it in Section 2.7(a) of the General Conditions.

"Key Responsibilities" means the main responsibilities and tasks to be performed by each category of Consultant Personnel, as identified in Schedule B – Consultant Personnel.

"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 Lien Act.

"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.

"Metrolinx" means Metrolinx, a provincial crown agency continued under the *Metrolinx Act*, S.O. 2006, Chapter 16, and its successors and assigns.

"Metrolinx IP" has the meaning ascribed to it in Section 6.1 of the General Conditions.

"Metrolinx Materials" means: (a) all materials, images, reports, Software, 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, and any other recorded information, in any form and on any media, that are proprietary to, or controlled or licensed by, Metrolinx and provided to the Consultant; (b) all procurement documents issued by Metrolinx; (c) all documentation or source materials (including source code) related to any of the foregoing; and (d) all copies, translations, improvements, modifications, enhancements, adaptations, or derivations made to the Metrolinx Materials by Metrolinx or any third party not performing work under this Contract.

"Metrolinx Representative" or **"Metrolinx's Representative"** has the meaning ascribed to it in Section 2.9 of the General Conditions.

"OHSA" means the *Occupational Health and Safety Act*, R.S.O. 1990, c. O.1.

"Parties" means both of Metrolinx and the Consultant and a "**Party**" means either one of them.

"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.

"Place of Work" is the designated site or location of the Services.

"Product" means any goods, machinery, equipment, fixtures and Software (including any components of any of the foregoing) forming part of the Deliverables, but does not include machinery and equipment used solely to perform the Services.

"Professional Engineer" means an engineer licensed to practice engineering in the Province of Ontario.

"Project Schedule" means the scheduling requirements identified in Section 8 of the Form of Request or otherwise provided by Metrolinx to the Consultant from time to time.

"Quotation" has the meaning given in Section 15 of Schedule C – Financial Terms.

"Rates" has the meaning given in Section 1(a) of Schedule C – Financial Terms.

"Required Standard of Care" means: (a) using the Standards, practices, methods and procedures to 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 Consultant or the Consultant 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.

"Services" has the meaning ascribed to it in Section 2.2(a) of the General Conditions.

"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.

"Standards" means, at a given time, those standards, specifications, manuals, codes, practices, methods and procedures applicable to the Required Standard of Care.

"Statutory Holdback" has the meaning ascribed to it in Section 7 of Schedule C – Financial Terms.

"Subconsultant" means an individual, firm, partnership, corporation or design professional having a direct contract with the Consultant or another Subconsultant to perform a part or parts of the Services as identified in the Submission.

"Submission" means all documentation and other materials and information submitted by the Proponent in response to Request No. RQQ-2017-BI-126.

"Task" has the meaning ascribed to it in Section 2.11(a) of the General Conditions.

"Task Assignment Process" has the meaning ascribed to it in Section 8.4(b) of the General Conditions.

"Task Release" has the meaning ascribed to it in Section 2.11(b) of the General Conditions.

"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.

"Term" has the meaning ascribed to it in Section 2.1 of the General Conditions.

"Third Party" or **"Third Parties"** means any Third Party Contractors or Third Party Operators.

"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 Services and/or the Consultant's acts or omissions, whether expressly identified to the Consultant or not.

"**Third Party Contractors**" means contractors, suppliers, service providers, utility owners or any other third party (excluding the Consultant and any Subconsultants and Consultant 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.

"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.

"**Third Party Work**" means work and services conducted or provided by Third Parties.

"Value Added Taxes" means such sum as shall be levied upon amounts payable to the Consultant under this Contract by any Governmental Authority that is computed as a percentage of the amounts payable to the Consultant (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 Consultant.

END OF SCHEDULE A

Schedule B – Consultant Personnel

1. Key Personnel

The following Key Personnel roles shall be filled, and they shall perform the following key responsibilities as well as any other responsibilities as requested by Metrolinx, in accordance with the Contract Documents and in accordance with the following requirements in respect of qualifications, experience and minimum years of experience.

1.1 Rate Category: Managers

Role	Key Responsibilities	Qualifications and Experience	Required Duration	Name of Individual
Project Manager	Refer to Appendix "B"	**Experience** • Fifteen (15) Years of Experience; • Professional Engineer (P.Eng.) licensed to practice in the Province of Ontario or Architect (O.A.A.) licenced to practice in the Province of Ontario; **Qualifications** • Professional and educational experience related to the design and construction of transit facilities, rehabilitation of transit facility building projects including Civil Engineering, Site Servicing, Lighting and Project Management; Previous relevant professional experience in design, evaluation and construction of the projects with similar nature and magnitude.	Entire Term of the Contract	Steve Law

1.2 Rate Category: Technical Specialists

Role	Key Responsibilities	Qualifications and Experience	Required Duration	Name of Individual
Contract Administrator	Refer to Appendix "B"	**Experience** • Ten (10) Years of Experience; • P.Eng., licensed to practice in the Province of Ontario, or Certified Engineering Technologist (C.E.T.) or equivalent of C.E.T. Other acceptable designations are; OAA, OAAAS, C.Tech, MAATO. **Qualifications** • Professional experience of site inspection and construction administration related to the construction and rehabilitation of transit facility building projects; • Demonstrated hands-on experience in supervising construction sites, field engineering, site work quality inspections and work progress measurements; Experience relevant to the type of work being requested.	Entire Term of the Contract	Steve Law
Civil Engineer	Refer to Appendix "B"	**Experience** • Ten (10) Years of Experience: **Qualifications** • Professional Engineer (P.Eng.) licensed to practice in the Province of Ontario; • Previous relevant professional experience in Design and Construction	Entire Term of the Contract	Yasar Ayub

Role	Key Responsibilities	Qualifications and Experience	Required Duration	Name of Individual
		of Municipal Infrastructure projects, including Civil Engineering, Site Servicing, storm water management, Roadway, and evaluation of the projects with similar nature and magnitude (transit facilities and similar type of the projects). • Professional and educational experience related to the design and construction of transit facility building projects of transit projects.		
Electrical Engineer	Refer to Appendix "B"	**Experience** • Ten (10) Years of Experience; **Qualifications** • Professional Engineer (P.Eng.) licensed to practice in the Province of Ontario; • Professional experience in Electrical Engineering, Street Lighting and Illumination Systems, CCTV and PA systems of transit facility building and rehabilitation project; • Experience relevant to the type of work being requested.	Entire Term of the Contract	Mary Etesami
Mechanical Engineer	Refer to Appendix "B"	**Experience** • Ten (10) Years of Experience; **Qualifications** • Professional Engineer (P.Eng.) licensed to practice in the Province of Ontario; • Previous relevant professional	Entire Term of the Contract	Milind Likhite

Role	Key Responsibilities	Qualifications and Experience	Required Duration	Name of Individual
		experience in mechanical engineering and building automation system and evaluation of the projects with similar nature and magnitude (transit facilities and similar type of the projects); • HVAC system, automation, fire protection and plumbing system design.		
Architect	Refer to Appendix "B"	**Experience** • Ten (10) Years of Experience; **Qualifications** • B.Arch, and OAA, licenced to practice in the Province of Ontario; • Professional and educational experience related to the design and construction of transit facility building and rehabilitation project; • Professional, design and construction experience in Architecture Design and Construction Review of Transit Facilities and similar type of projects and evaluation of the projects with similar nature and magnitude. • Experience relevant to the type of work being requested.	Entire Term of the Contract	Michael Ghaly
Environmental Specialist	Refer to Appendix "B"	**Experience** • Ten (10) Years of Experience; **Qualifications** • Extensive knowledge of soils, water, human health and waste management	Entire Term of the Contract	Michael Varty

Role	Key Responsibilities	Qualifications and Experience	Required Duration	Name of Individual
		systems; • Extensive knowledge of relevant Provincial legislation such as Ontario Water Resources Act (OWRA), Environmental Protection Act (EPA) and Applications for Environtmental Compliance Approvals (O.Reg. 255/11); • Relevant professional experience as Technical Contact for Environmental Compliance Approvals (ECAs) relating to Sewage Works for projects of a similar scope and size; • Experience relevant to the type of work being requested.		
Landscape Architect	Refer to Appendix "B"	**Experience** • Ten (10) Years of Experience; **Qualifications** • Bachelor of Landscape Architecture (B.L.A.) from a recognized Canadian teaching institution and licenced to practice in the Province of Ontario. Member of Ontario Association of Landscape Architects (OALA) or Canadian Society of Landscape Architects (CSLA); • Demonstrated experience and education related to Landscaping Architecture with projects including Municipal Infrastructure projects and Streetscape	Entire Term of the Contract	Bryn Barron

Role	Key Responsibilities	Qualifications and Experience	Required Duration	Name of Individual
		of bus facility and similar project and evaluation of the projects with similar nature and magnitude; • Experience relevant to the type of work being requested.		

2. Rate Category: Support Staff

Role	Key Responsibilities	Qualifications and Experience	Required Duration	Name of Individual
Principal	Refer to Appendix "B"	Professional and educational experience related to the design and construction of similar type and rehabilitation of transit projects.	Entire Term of the Contract	Steve Law
Signage Consultant	Refer to Appendix "B"	A way-finding professional with an accredited design degree program and/or a member of Registered Graphic Design (RGC) of Ontario.	Entire Term of the Contract	Vincent Gratton
CAD Coordinator	Refer to Appendix "B"	C.E.T. or equivalent with previous relevant professional experience of the projects with similar nature and magnitude.	Entire Term of the Contract	Brian Morehouse
Cost Consultant/Quantity Surveyor	Refer to Appendix "B"	Professional Quantity Surveyor (PQS) or Certified Cost Consultant (CCC) or Certified Cost Engineer (CCE) with an accredited degree and shall be a member of Ontario Institute of Quantity Surveyors or Canadian Institute of Quantity Surveyor.	Entire Term of the Contract	Richard Aqui

3. Format of Curriculum Vitae

(a) The format and layout of each curriculum vitae provided by the Consultant shall be consistent and shall include:

(i) Name of individual;

(ii) Proposed position;

(iii) Qualifications that relate to the proposed position;

(iv) Experience in performing the proposed position, include project names and brief project overviews;

(v) Number of years in the proposed position on each project as well as start date and completion date of each project;

(vi) Responsibilities on each project while performing the proposed position;

(vii) Details of accomplishments while performing the proposed position;

(viii) Education;

(ix) Professional memberships and affiliations; and

(x) References and contact information for projects of a similar complexity, successfully delivered on-time and on-budget while performing in the same capacity. Such references shall relate directly to the experience, responsibilities and details of project accomplishments noted above.

Schedule C – Financial Terms

1. Payment

(a) Metrolinx will pay the Consultant for the Services performed by the Consultant 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 C – Financial Terms.

(b) The Consultant shall perform all of the Services notwithstanding that the value of the time spent by the Consultant in performance thereof may exceed the maximum amount payable to the Consultant pursuant to Section 3 of this Schedule C – Financial Terms.

2. Limitation of Expenditure

(a) It is understood that the Contract is based on reimbursement for actual Services requested by Metrolinx and performed by the Consultant, to the satisfaction of Metrolinx.

(b) Metrolinx does not guarantee any minimum or maximum of work.

3. Estimated Contract Price

(a) Subject to Sections 8.1, 8.2 and Article 9 – Additional Resources of the General Conditions, Metrolinx and the Consultant acknowledge and agree that Estimated Contract Price set out in the Articles of Agreement is the maximum amount payable in respect the provision of the Services; provided, however, that the foregoing is not an entitlement to, nor a guarantee that the Consultant will be paid the full amount of, the Estimated Contract Price.

(b) The Estimated Contract Price includes all Cash Allowances identified in this Contract.

4. Rates for Services

(a) The Consultant 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. Without limiting the generality of the foregoing, the Rates include costs for the coordination, administration of the provision and management of the Services 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.

(b) Metrolinx shall not reimburse the Consultant for any hospitality, food or incidental expenses incurred. Subject to the prior consent of Metrolinx, Metrolinx shall reimburse the Consultant for reasonable traveling expenses incurred in connection with the performance of the Services, such reimbursement to be made in accordance with the Government of Ontario's Travel, Meal, and Hospitality Expenses Directive.

(c) As part of the Services, the Consultant 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 Consultant in connection thereto shall be included in the Rates set out in the Articles of Agreement.

5. Taxes

(a) The Estimated 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 Consultant shall be responsible for remittance of any and all Taxes due and payable in respect of the Services.

(b) 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 Services, is to be shown separately on all invoices for Services performed by the Consultant. The Consultant shall remit any HST paid or due to Revenue Canada Customs & Excise in accordance with Applicable Laws, and shall, at the request of Metrolinx, provide evidence of payment of same.

(c) 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 Consultant shall show on each invoice, and in the manner directed by Metrolinx, either the actual Value Added Taxes paid by the Consultant by category or the portion of the Consultant's fees eligible under Applicable Law for the rebate.

(d) 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 Consultant 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. Invoicing and Payment Process

(a) The Consultant shall submit an invoice for payment for Services completed no less than ten (10) Business Days following the end of the month in respect of which the related Services were rendered. The invoice shall be in form and substance satisfactory to Metrolinx acting reasonably and shall set out with sufficient particularity the Services performed in the previous month and the total time spent by each category of Consultant Personnel multiplied by the applicable Rate.

(b) The aggregate amount invoiced by the Consultant shall not exceed the Estimated Contract Price, unless such additional amount is agreed by the Parties pursuant to the change management process set out in Article 8 of the General Conditions.

(c) Unless there is a Dispute with respect to the content of an invoice and subject to the other provisions of this Schedule C, Metrolinx shall make payment to the Consultant no later than thirty (30) Business Days following receipt of the invoice for payment from the Consultant, unless otherwise provided or permitted in the Contract.

7. Statutory Holdback

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

8. Withholding of Payment

Notwithstanding any other term in the Contract Documents, Metrolinx shall not be obligated to make payment to the Consultant if at the time such payment was otherwise due:

(a) there is a Lien or other Encumbrance arising from the performance of the Services, whether valid or not and whether preserved or perfected, in relation to, or otherwise affecting, the Services or the Place of Work; or

(b) written notice of a Lien arising from the performance of the Services has been given to Metrolinx or an owner, mortgagee or other entity with an interest in the Services or a claim for Lien arising from the performance of the Services and otherwise affects the Services.

9. Substantial Performance

(a) When the Consultant considers the Contract to be substantially performed, as defined by the Construction Lien Act, and prior to submission of the application for substantial performance, the Consultant 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 Consultant to complete the item or the Services.

(b) Within seven (7) Business Days of receipt of the Consultant'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 Lien Act and the Contract Documents. Then:

(i) if Metrolinx determines that the Contract has been substantially performed as required by the Construction Lien Act, Metrolinx shall issue a certificate of substantial performance which shall state the date of substantial performance; or

(ii) if Metrolinx determines that the Contract has not been substantially performed as required by the Construction Lien Act, Metrolinx shall advise the Consultant in writing of the reasons for which such a certificate is not being issued.

(c) Immediately following the issuance of a certificate of substantial performance, the Consultant, in consultation with Metrolinx, shall establish a reasonable date for expeditiously finishing the Services.

10. Release of Statutory Holdback Upon Substantial Performance

(a) After the issuance of the certificate of substantial performance in accordance with Section 9 of this Schedule C – Financial Terms and the Construction Lien Act, the Consultant shall:

(i) satisfy the requirements of the Construction Lien Act with respect to publication of a copy of the certificate of substantial performance;

(ii) submit an application for payment of the Statutory Holdback amount;

(iii) submit documentary proof of compliance with Section 10(a)(i) of this Schedule C – Financial Terms; and

(iv) submit a sworn statement that all accounts for indebtedness which may have been incurred by the Consultant in connection with the performance of the Services 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) After receipt of an application for payment of the Statutory Holdback amount from the Consultant and the other documents required to be

provided under this Contract, Metrolinx shall issue a certificate for payment for the Statutory Holdback amount.

(c) Provided that the Consultant has satisfied the requirements of Section 10(a) of this Schedule C – 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 Lien Act.

(d) Notwithstanding the foregoing, Metrolinx may retain out of the Statutory Holdback amount any sums required by law to satisfy any Liens against the Services or, if permitted by the Construction Lien Act, such other third party monetary claims against the Consultant which are enforceable against Metrolinx or any other claims by Metrolinx against the Consultant.

11. No Progressive Release of Holdback

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

12. Final Payment Certificate

(a) When the Consultant considers that the performance of the Services is completed as defined in the Construction Lien Act, the Consultant shall submit an application for final payment.

(b) Metrolinx shall review the record of the Services performed to verify the validity, or otherwise, of the application after the receipt of the Consultant's application for final payment. Metrolinx shall review the record of Services performed within ten (10) Business Days of receipt of the Consultant's application and shall issue, no later than seven (7) Business Days after reviewing the record of Services, 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 Consultant in writing giving reasons for the amendment.

(c) Subject to the provisions of this Contract and the Construction Lien Act, Metrolinx shall make payment to the Consultant on account no later than thirty (30) days following the receipt of a final payment certificate issued by the Metrolinx pursuant to Section 12(b) of this Schedule C – Financial Terms, provided that:

(i) the Consultant has provided Metrolinx, in a form acceptable to Metrolinx, a sworn statement that all accounts for indebtedness which may have been incurred by the Consultant 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;

(ii) the Consultant has provided the documents required to demonstrate compliance with applicable workers compensation legislation; and

(iii) the Consultant has satisfied all requirements set out in this Contract.

(d) Subject to the same conditions as listed in Section 10(a) of this Schedule C – 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 Lien Act.

13. Cost of Changes

(a) Changes shall be implemented by the Consultant without any additional charge, unless Consultant is able to demonstrate (with supporting documentation) that the Change causes the Consultant to incur additional costs.

(b) The Consultant shall implement all Changes for a reasonable price in accordance with the same pricing principles and price levels as originally agreed in the Articles of Agreement. Where Rates apply to Consultant Personnel, those same Rates shall apply with reference to the applicable level of experience and/or expertise.

(c) With respect to any Changes that (in whole or in part) require the services of a third party, Metrolinx (at its sole discretion) shall have the right to require the Consultant to provide three (3) quotes to Metrolinx in respect of such third party services, in accordance with Section 14 of this Schedule C – Financial Terms.

(d) Metrolinx shall have the right to request such documentation and other supporting information as it reasonably requires to confirm and substantiate the costs associated with any Change request, and the Consultant shall provide same to Metrolinx within five (5) Business Days of the request therefor.

14. Expenditure of Cash Allowance

(a) Where the expenditure of a Cash Allowance has been approved by Metrolinx, the value of completed or delivered Cash Allowance Items may be claimed as part of the Consultant's monthly application for payment, in accordance with Section 6 of this Schedule C – Financial Terms. Cash Allowance expenditures must not exceed the Estimated Contract Price.

(b) The Consultant is not entitled to any extra payment on account of a specified Cash Allowance Item and is not entitled to any unexpended Cash Allowance amounts.

(c) A Cash Allowance is in no way a guarantee of monies and shall only be expended for the portion of the Cash Allowance Items specified in the Articles of Agreement and authorized by Metrolinx pursuant to Section 8.4 of the General Conditions.

(i) The Cash Allowance shall cover the net cost of performing all Cash Allowance Items, excluding Consultant's overhead and profit which shall be included in the Rates, exclusive of the Cash Allowance. Should the cost of performing the Cash Allowance Items be less than the identified amount of the Cash Allowance, the Consultant shall only be compensated for the actual cost of performing the Services.

(ii) In the event that the Consultant reasonably anticipates that the cost of performing the Services under the Cash Allowance will exceed the amount of the Cash Allowance, the Consultant shall immediately notify Metrolinx and the matter shall be addressed pursuant to the change management process set out in Article 8 of the General Conditions. The Consultant shall not be compensated for any amount exceeding the Cash Allowance unless and until same has been authorized in writing in accordance with Article 8 of the General Conditions.

(iii) All expenditures by the Consultant under the Cash Allowance must be substantiated with appropriate documentation clearly documenting the amount of the expenditure and the goods and/or services to which it relates. The Consultant shall only be compensated for expenditures under the Cash Allowance that are substantiated.

15. Quotations - Changes and Cash Allowance Items

(a) With respect to any Changes or Cash Allowance Items (or any part thereof), the Consultant shall, upon request by Metrolinx (at its sole discretion), submit up to three (3) quotes detailing the estimated cost of the applicable Change or Cash Allowance Item (each a "**Quotation**"). Where Metrolinx has not provided the names of third parties from which quotations should be obtained, the Consultant 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 the General Conditions, where a Cash Allowance Item includes work that the Consultant proposes would be most efficiently performed by the Consultant's own workforces, the Consultant shall include as one of the three (3) quotes the price proposal for having its own workforce perform the work.

(i) Any and all costs incurred by the Consultant for providing a Quotation or obtaining quotations from third parties, shall be borne by the Consultant.

(ii) All Quotations shall be prepared on the Consultant's letterhead and in a format agreed to by Metrolinx and the Consultant. The Quotation shall at a minimum contain the following information:

a. a description of the work required by the Services;

b. Curriculum Vitae for each required position and two (2) references for each individual;

c. estimated hours of work for each identified key role;

d. any requirement for additional positions other than those listed in Schedule B of Appendix "A";

e. required Subconsultants; and specialized service providers;

f. any requirements for testing and/or reporting;

g. detailed breakdown of costs;

h. detailed work schedule which complies with completion date provided by Metrolinx (as required by Metrolinx); and

i. any other requirements/instructions.

(iii) The Consultant shall, upon request, disclose to Metrolinx the originals of all bids, quotations and other price related information received from suppliers or Subconsultants.

(iv) Metrolinx reserves the right to accept or reject a Quotation, in whole or in part.

16. Metrolinx Property

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

17. Records and Audit

(a) The Consultant agrees to keep and maintain full and complete records and accounts of all costs in accordance with Metrolinx' requirements. All such records, including timesheets, correspondence, receipts and memoranda pertaining to the Services shall be available for inspection by any authorized employee or agent of Metrolinx at all reasonable times for the purpose of auditing the Consultant' reasonable costs and the Consultant shall provide every reasonable assistance for that purpose including, but not limited to, making the records available for inspection at the Consultant's office during normal business hours and acting reasonable to observations made by Metrolinx or its auditors. The results of the audit will be maintained as confidential to be used for the purposes of and as

contemplated by this Contract or as otherwise required by Applicable Laws. Such records shall be kept for a period of seven (7) years after termination of this Contract.

(b) During the Term and for a period of seven (7) years thereafter, Metrolinx or any other Person acting on behalf of Metrolinx, shall have the right, upon no less than 24 hours' notice in writing during the Term, and on no less than five (5) Business Days' notice in writing during the seven (7) year period following the Term, to the Consultant and during normal office hours, to inspect and audit, and to have access to, all relevant premises, sites, books, records, payrolls, accounts and documentation of the Consultant relating to this Contract, and to take extracts therefrom. The Consultant shall make available or cause to be made available such reasonable information and material as may be required and shall otherwise reasonably cooperate with Metrolinx and any other Person acting on Metrolinx' behalf. Without limiting the generality of the foregoing, the rights set out in this Section shall extend to any Governmental Authority exercising its right to audit pursuant to Applicable Law or any contract with Metrolinx.

END OF SCHEDULE C

Schedule D – Insurance

1. Consultant Insurance Requirements

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

1.1 Commercial General Liability

The policy shall provide a policy limit of not less than two million ($2,000,000) dollars per occurrence for all claims arising out of bodily injury (including death), personal injury, damage to property of others. Such policy shall not contain any exclusions that conflict with the Services required to be performed under this Contract. The Consultant 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 Consultant Policies hereof as "Additional Insured". The policy shall contain a waiver of subrogation, cross liability and severability of interest.

1.2 Automobile Liability Insurance

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 Services. Coverage shall consist of a combined single limit of not less than two million ($2,000,000) dollars per occurrence. Alternatively, for Services that do not require the use of owned, non-owned, leased or hired automobile, the Consultant shall provide a written confirmation within five (5) business days of contract award, stating same, in place of the insurance coverage.

1.3 Errors and Omissions Insurance

The policy shall provide errors and omissions insurance including coverage for privacy, infringement of trademark and copyright covering the Services rendered by the Consultant, any Subconsultants or any Consultant Personnel, including personnel on loan to the Consultant who perform normal services of the Consultant under this Contract. The policy shall have a limit of liability of not less than two million ($2,000,000) dollars per occurrence and in the policy aggregate. The policy shall be maintained throughout the Term, plus thirty-six (36) months after the termination or expiration of this Contract.

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 Consultant in accordance with this Contract have been exhausted.

1.4 Additional Coverage

(a) Without prejudice to any other provisions of this Contract (including Section 1.1 of this Schedule D – Insurance), the Consultant shall, at all relevant times and at its own expense, obtain and maintain, or cause to be

obtained and maintained (during the Term plus coverage for an extended reporting period of not less than thirty-six (36) months):

(b) those insurances that are reasonable for the performance of the type and scope of Services set out by this Contract (including, as applicable, insurance as would typically be required by prudent designers or consultants); and/or

(c) those insurances that the Consultant is required to obtain and maintain, or cause to be obtained or maintained, by Applicable Law.

1.5 Requirements for Insurance

(a) All of Consultant's policies of insurance, as required under this Contract (the "**Consultant 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 Consultant. Notwithstanding the foregoing, such deductibles or self-insured retention must be consistent with standard commercial practice and acceptable to Metrolinx, acting reasonably.

(c) All Consultant Policies shall be kept in full force and effect during the Term, including any requirements for the period following Contract Closeout.

(d) In the event that the Consultant fails to obtain and/or maintain in full force and effect any such insurance as aforementioned, then Metrolinx shall have the right as the Consultant's true and lawful attorney to do all things necessary for this purpose. The Consultant 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 D – Insurance, but not paid by the Consultant 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 Consultant by Metrolinx either under this Contract or otherwise.

(e) All Consultant 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 Consultant, or the failure of any such insurance company to pay claims that occur will not be held to waive any of the provisions hereof.

1.6 Proof of Insurance

(a) The Consultant shall, prior to the commencement of the Services and thereafter upon request, provide to Metrolinx original signed certificates of insurance for the Contractor Policies, confirming that the required coverage has been placed and maintained. In addition, at least fifteen (15) days prior to the expiry date of any policy, the Consultant shall provide original signed certificates evidencing renewals or replacements of such policy to Metrolinx, without notice or request by Metrolinx.

(b) The Consultant shall, upon request, provide evidence to Metrolinx that the premiums associated with the Consultant 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 Consultant.

(c) The Consultant also agrees to provide Metrolinx with proof of errors and omissions insurance maintained by any Subconsultant, where such Subconsultant 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 Consultant and to be in a form and with an insurer acceptable to Metrolinx.

1.7 Consultant's Liability Preserved

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

1.8 Workplace Safety & Insurance Board Protection

(a) With respect to the WSIB coverage as required under the *Workplace Safety and Insurance Act* (Ontario), the Consultant unconditionally guarantees to Metrolinx full compliance with the conditions, regulations and laws relating to workplace safety insurance by itself and by all Subconsultants.

(b) Without restricting the indemnity obligations of the Consultant in Article 12 of the General Conditions, the Consultant shall produce, at the commencement of this Contract, from time to time as may be 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 Services.

END OF SCHEDULE D

Schedule E – Dispute Resolution

1. Bona fide efforts to resolve

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 E – Dispute Resolution.

2. Continuance of the Services During Dispute

Unless expressly directed otherwise by Metrolinx, the Consultant shall not stop or delay the performance of the Services, in whole or in part, on account of a Dispute between the Consultant and Metrolinx or between the Consultant and any other Person. Without limiting the generality of the foregoing, at all times during the course of a Dispute, the Consultant shall:

(a) continue with the Services 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.

The Parties acknowledge and agree that the Consultant's compliance with this Section 2 shall not operate to waive any claim or contention that the Consultant may have in relation to any Dispute.

3. Tiered-Dispute Resolution

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. Negotiation

(a) 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 Consultant, of equivalent seniority and duly appointed to represent the Consultant 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 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.

(b) Negotiations under this Section 4 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. Mediation

(a) If a Dispute has not been resolved through high-level negotiation as contemplated in Section 4, either Party may refer the Dispute to be resolved through mediation.

(b) 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.

(c) 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.

(d) 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.

(e) Unless the Parties otherwise agree, the mediation shall proceed in accordance with the following procedures:

(i) 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.

(ii) 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.

(iii) A Party may be represented at the mediation by counsel or another representative at the sole cost of such Party.

(iv) 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.

(v) In all respects, the mediation is deemed to be a "without prejudice" proceeding.

(f) The costs of the mediator shall be apportioned equally between the Parties unless otherwise agreed under any settlement reached under this Section 5.

(g) 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.

(h) Both Parties acknowledge and agree that they may not refer a Dispute for resolution by arbitration under Section 6 prior to attempting to resolve such Dispute through mediation pursuant to this Section 5.

6. Arbitration

(a) 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.

(b) 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. 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.

(c) 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.

(d) The arbitration shall be conducted in accordance with the provisions of the *Arbitration Act, 1991*, S.O. 1991, c. 17, except to the extent they are modified by the express provisions of this Schedule E – Dispute Resolution or unless the Parties otherwise agree.

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

(f) The arbitrator(s) has the jurisdiction to deal with all matters relating to a Dispute.

(g) 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.

(h) 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.

(i) The language of the arbitration shall be English.

(j) 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, 1991* (Ontario).

(k) 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, 1991* (Ontario) and the *Courts of Justice Act* (Ontario).

END OF SCHEDULE E

Appendix "B" – Consultant's Scope of Services

List of Contents

The following documents hereby form part of and are appended to this Request Document as the Appendix "B" – Consultant's Scope of Services

ITEM NO.	DOCUMENT TITLE
1.	Abbreviations and Definitions
2.	Project Overview
3.	Consultant's General Requirements For The Work
4.	Consultant's Management of the Services
5.	Consultant's Scope of Services
6.	Stage One: Feasibility Study Services Feasibility study services are not required for the Work of this Project
7.	Stage Two: Preliminary Design Services
8.	Stage Three: Detailed Design and Preparation of Construction Project Documents
9.	Stage Four: Assistance With Procurement And Evaluation Process (Option Exercisable Solely At Metrolinx's Discretion)
10.	Stage Five: Construction Inspection, Contract Administration And Engineering Services During Construction (Option Exercisable Solely At Metrolinx's Discretion)
11.	Stage Six: Post Construction Services

1. Abbreviations and Definitions

In this Appendix "B":

(a) "AREMA" is American Railway Engineering Maintenance of Way Association.

(b) "Assignment" shall be as defined in Section 2(i) of the Appendix "A" – General Conditions.

(c) "CAD" means computer aided design.

(d) "CCDC" is Canadian Construction Committee Document.

(e) "CCTV" means closed circuit television.

(f) "CN" is Canadian National Railway Company.

(g) "CP" is Canadian Pacific Railway Company.

(h) "CPTED is Crime Prevention through Environmental Design.

(i) "Contractor" means the company awarded the construction contract for the Project.

(j) "DRM" means Metrolinx's Design Requirements Manual.

(k) "HVAC" means heating, ventilation and air conditioning.

(l) "Hot Work Authority" shall be as defined in SS-0501-08, Corporate Safety Procedures, Hot Work Permit of Metrolinx' System Safety Program Plan Manual, provided for in Appendix "D" – Documents.

(m) "IT" means Metrolinx's Information Technology department.

(n) "LEED" is Leadership in Energy and Environmental Design.

(o) "OBC" is Ontario Building Code.

(p) "OEM" means original equipment manufacturer.

(q) "OHSA" is Occupational Health and Safety Act.

(r) "OLS" is Ontario Land Surveyors.

(s) "OPSD" is Ontario Provincial Standard Drawings.

(t) "OPSS" is Ontario Provincial Standard Specifications.

(u) "POP" means point of purchase.

(v) "Project" means Engineering Services for Office Expansion at Aberfoyle Bus Facility.

(w) "Project Manager" means Metrolinx's Project Coordinator for Bus Infrastructure.

(x) "PA System" means public address system.

(y) "RGC" means registered graphic consultant.

(z) "Site" means the Aberfoyle Bus Facility site.

(aa) "TSSA" is Technical Safety Standards Association.

(bb) "TVM" means ticket vending machine.

(cc) "UPS" means uninterrupted power supply.

(dd) "Work" means engineering services for the completion of a feasibility study.

2. Project Overview

(a) To meet operational requirements and growth, Metrolinx is proposing to expand the multi-purpose and office space at the Aberfoyle Bus Facility, as well as minor building improvements to increase energy efficiency, which will reduce operating expenses.

(b) Metrolinx is proposing to assess the condition of the existing septic system, and repair/replace as required to regain 100% functionality of the system.

(i) **Background**

The existing Aberfoyle garage was constructed as a Class "C" bus facility in 2010 to provide support for GO buses assigned to the West Region. This garage has indoor storage for twelve (12) buses, basic driver amenities, including a multi-purpose room, lockers, washrooms, a fluid storage room, building service room and outdoor car parking area for GO employees.

With service expansion and continued growth, GO Bus Services identified the need to expand the bus storage garage to meet these increasing demands. This expansion was completed in early 2016 and consisted of:

A. A new bus wash and fueling bay;

B. Expansion of the interior bus storage area by adding capacity for eight (8) more buses, thereby allowing for a total of twenty (20) buses to be stored internally at Aberfoyle.

C. Rehabilitation of the adjacent GO Transit Park & Ride Lot.

Based on Bus service growth in the Aberfoyle geographical area, it has become apparent that the multi-purpose space and office space does not meet the anticipated staffing growth. The current facility has one (1) office for a supervisor: with the increased growth, two (2) supervisors are sharing the space intended for one person. Furthermore, bus driver manpower has significantly increased from 28 in 2015 to 48 in 2017 in addition to the second supervisor. Along with staff growth, the trips/service out of the Aberfoyle facility is anticipated to increase in the foreseeable future. There are seven (7) scheduled routes (Routes 24, 25, 29, 30, 31, 33, 48) that operate out of Aberfoyle Currently there are 48 drivers with an anticipated increase when Kitchener garage opens, to cover off vacation requests. The growth in operational staff and operational needs have resulted in the following substandard conditions at the facility:

A. Crowded multi-purpose space even with just a few people in it. This is a serious concern with our drivers.

B. Extremely small rest area for the drivers.

C. Town Halls are difficult as only two (2) or three (3) employees can attend at a time, others wait in the hall.

D. Limited space in the supervisor's office, resulting in minimal office furniture. No space available for Supervisors to store outerwear. Requires a second desk for files and confidential materials.

E. Difficult to open and close the supervisor door (fire hazard).

F. Disciplinary meetings are scheduled off site as current facility does not allow for necessary privacy. This has a major impact on manpower/over-time and travel time.

G. Limited storage is forcing personnel to store supplies in the electrical room, which is a considerable safety concern.

H. Have to book Halton Hills or Streetsville for any meetings requiring more than 3 attendees.

Lastly, an increase of ground water saturation at the septic bed has resulted in an influx of sewage backflow being experienced at the bus facility. At this time, operational staff are pumping the septic system on a weekly basis to mitigate any sewage spills.

(ii) Purpose

The facility has recently gone through an expansion to the bus storage and maintenance areas by increasing the bus storage capacity from twelve (12) to twenty (20) buses. It is due to this increase and projected staffing growth that Metrolinx proposes an expansion to the existing multi-purpose space, complete with an increased office area. The expanded office will provide a work area for on-site meetings, eliminating the need to schedule off site appointments. In addition, due to the issues related to the existing septic system, Metrolinx proposes an assessment of the system be completed, and a report be prepared and used as the basis for remedial measures.

(iii) Project Scope to be Designed

Major components of the Project are, but are not limited to:

A. Extension of the multi-purpose space, incorporating revision to both civil and landscaped areas.

B. New quiet room for bus drivers to be located off the expanded multi-purpose space.

C. Reconfiguration of existing office and storage area to combine into a single room.

D. Review existing septic system that serves the office washrooms and kitchen, provide a report and detailed recommendations which may be required to regain 100% functionality of the system.

E. Addition of two (2) high pressure hot water pipes in the bus garage.

F. Replacement of the existing lighting in the bus garage with LED's to match the new extension; thus reducing hydro consumption and on-going operating costs.

G. Relocation of the existing compressor from the fluids room to the new extension area (vacuum room).

H. Provision for two new (energy efficient) radiant heaters above existing high speed rolling doors 1 and 2.

I. Provision for five (5) new lane lights to the bus garage, complete with controller located in the supervisor's office.

3. Consultant's General Requirements For The Work

(a) Drawings, Diagrams and Documents

The Consultant shall provide:

(i) Metrolinx's requirements for construction drawings, as contained within the DRM.

(ii) Metrolinx with "record" construction drawings both in hard copy and respective computer (CAD) files, as specified herein.

(iii) All drawings are to be produced and submitted on a CAD system.

(iv) Computer CAD files shall be encoded with the Consultant's stamp and signature (Storage Media: CD ROM).

(v) Hard copy of 'record' construction drawings shall bear the Consultant's stamp and signature. One (1) SET 11x17 on BOND PAPER, and One (1) set 24 x 36 on BOND PAPER.

(vi) Hard copy documents shall be forwarded in an appropriate size format and with black text on white background, such that they readily reproduce a clear, sharp and readable image on standard recycled photocopy stock using standard photocopy equipment.

A. Operating System: WINDOWS XP;

B. Software Program: WORD for Windows;

C. Font: Times New Roman, 12pt.; and

D. Storage Media: CD ROM.

(b) Environmental Assessment

(i) Background

A. For the purpose of fulfilling the requirements of the *Environmental Assessment Act*, Metrolinx utilizes a class approval process using its Class Environmental Assessment Document (most current version) or the Transit Project Assessment Process (TPAP).

B. It is anticipated by Metrolinx that this Project is classified as a deemed approved group "A" undertaking and other findings.

(ii) Requirements

A. The Consultant shall review the Project and relevant information provided by Metrolinx and Metrolinx's class environmental document, and following the screening process therein, confirm that the Project is a deemed approved group "A" undertaking.

B. Further, should the Consultant in its determination identify that the Project is of a different classification level the Consultant shall provide justification as to why it is of the different level classification and request direction from Metrolinx before proceeding further with the Project.

(c) Design Guidelines

(i) Background

A. Design guidelines are prescribed in the DRM [available for viewing at http://www.gosite.ca/engineering_public/] and incorporate Metrolinx guiding principles, operational considerations, and customer needs.

B. The DRM has a combination of performance requirements, as well as detailed specifications and standard drawings, for specialty items.

a. Metrolinx may also provide other standard drawings which are not within the DRM.

(ii) Requirements

The Consultant shall:

A. review and become familiar with the DRM and any other standards, as required.

B. review specific site and Project conditions to determine potential areas of incompatibility with the standards set out in the DRM and formally request variance approval from Metrolinx.

C. design the proposed Project in accordance with the all applicable sections of the AREMA Signals and Communications Manual of Recommended Practices, the AREMA Manual for Railway Engineering, all applicable CN Signals and Communications Standards as well as codes, standards and specifications of authorities having jurisdiction.

D. Verify existing site conditions by physically visiting the site and be aware of any obstructions.

(d) Accessibility and Barrier Free Design

(i) Background

A. Metrolinx is committed to barrier-free design and at least one defined accessible route at all stations and facilities.

B. Metrolinx utilizes a "best practice" approach in the provision of enhanced equipment or station features when there is not a readily acceptable solution common to the transit environment available to address each and every disability.

(ii) Requirements

The Consultant shall:

A. review with Metrolinx any proposed change from the enhanced equipment and station features identified by Metrolinx or required by the OBC. The Consultant shall obtain approval in writing from Metrolinx before proceeding with any change.

B. The Consultant's design shall be in accordance with the OBC and Metrolinx's most current accessibility plan entitled GO Accessibility Plan available for viewing at http://www.metrolinx.com;

(e) Sustainability and Performance Oriented Design

(i) Background

A. It is Metrolinx's intention to continually reduce operating and maintenance costs associated with its stations and facilities through energy efficient design and low maintenance building materials.

(ii) Requirements

A. For all elements of this Project, the Consultant shall consider performance orientated design principles aimed at reducing the energy and maintenance resources required to operate the station or facility.

B. Performance oriented design principles may include, but not be limited to:

a. passive solar lighting and/or solar power generation;

b. solar controlled glazing;

c. energy efficient appliances and light fixtures;

d. reduced lighting cycles and motion activated lighting;

e. low consumption toilets and automatic faucets;

f. air tempering ventilators;

g. programmable thermostats and light control systems; and

h. low maintenance building materials.

(f) Site Hazards

Construction may take place at various Metrolinx operating locations. Some of the unique hazards include, but are not limited to:

(i) At station platform and heavy track level:

A. There is a safety and signal hazard. Under no circumstances shall any person associated with the Project access track level unless prior approval in writing is obtained from Metrolinx and the affected railway company.

(ii) At Metrolinx GO rail stations, bus terminals, bus garages, train maintenance and shop facilities:

A. Vehicles, buses, and trains enter and exit the station terminals and Metrolinx facilities at any time.

(g) System Safety Requirements

(i) The Consultant shall:

A. utilize safe-by-design engineering principles, CPTED for public passenger transportation use and its integration with other systems;

B. take reasonable steps to ensure that the design minimizes any person's exposure to hazards during the life cycle of the Project at commissioning, operation, future maintenance and decommissioning, thereafter;

C. identify specific construction methods that will require a written plan to be submitted by the Contractor prior to commencing the work of the Project as per regulatory requirements; and

D. ensure applicable railway specific requirements are considered and implemented as required in the process.

(ii) Metrolinx reserves the right to classify a risk level to the Project and will thereby require the Consultant to provide written plans to educate and mitigate those risks, as required.

(h) Work Site Safety

(i) Under the provisions of the OHSA and subsequent regulations, the Consultant shall act as a representative to Metrolinx. The primary role is to monitor on-site safety and report observations and/or findings to the Metrolinx Project Manager in a timely manner.

(ii) The Consultant shall be equipped with all appropriate safety wear while on Site for inspections and/or any Site meeting(s). Failure to comply with this requirement shall result in the Consultant's removal from the Site until such time as the proper equipment is obtained.

(iii) The Consultant shall act as the Hot Work Authority.

(iv) Monitor the Contractor's compliance to the occupational health and safety requirements as set out in the appropriate codes, regulations, Metrolinx's safety guidelines and the Contractor's own safety program developed for the Project.

(v) Take appropriate and immediate action to bring observed and/or reported unsafe acts and/or conditions to the attention of both the Contractor and Metrolinx. These could range from: enquiring as to the Contractor's

corrective action plan in writing and reporting above findings to Metrolinx, to immediately notifying the Project Manager of any serious unsafe acts and/or conditions observed by, or reported to, the Consultant.

(vi) The Consultant is to notify the Project Manager of above findings and actions within three (3) business days based on the severity of infraction.

(vii) The Consultant is to participate monthly in pre-planned safety inspections of the Site with Metrolinx, as required.

(viii) Ensure the Contractor provides copies of all safety related correspondence as per the "*Metrolinx Capital Projects Group Construction Safety Management Program*" (provided for in Appendix "D" – Documents).

(ix) One (1) copy of the Contractor's construction safety document shall be maintained as part of the Consultant's records along with a second copy to be maintained on site for review, at any time, by Metrolinx or others.

(x) Ensure that the safety performance section of the "Contractor's Performance Report" (provided for in Appendix "D – Documents") is complete and accurate.

(xi) **4. <u>Consultant's Management of the Services</u>**

The Consultant shall:

(a) Assign a Principle and a Project Manager who will direct the provision of the Services. The Principle and/or the Project Manager will maintain ongoing contact with the Metrolinx Project Manager to ensure that issues arising during the terms of the Contract are dealt with in an efficient, effective and timely manner.

(b) Maintain communications contact, as may be necessary, to keep Metrolinx properly informed and up to date on the progress of the Project.

(c) Provide to Metrolinx a list identifying the Consultant's and all subconsultants' employees assigned to the Project.

(d) Be responsible for coordinating and interfacing with other disciplines it retains to perform the Work under the Project.

(e) Coordinate the design with Metrolinx, external agencies and authorities having jurisdiction including local utilities.

(f) Arrange, coordinate and chair in a number of meetings with Metrolinx and/or external authorities in connection with the Project, as required.

(g) Arrange, coordinate, chair meetings and liaise with subconsultants and support services as required.

(h) The Consultant's cost for each phase of the Services, as stated in the "Articles of Agreement" for this Contract, shall not be exceeded without written authorization from Metrolinx. The Consultant must monitor its work effort and related cost thereof and manage the provision of each phase of the Services. Request for adjustment of costs and schedules must be submitted in writing for consideration by Metrolinx.

(i) Maintain a system to identify and report changes in the design scope of the Services to be provided and immediately notify Metrolinx in writing of any proposed changes that will affect the design schedule or costs regardless, if the changes are initiated by the Consultant, Metrolinx or third parties. Only changes approved in writing by Metrolinx will be reflected in the design, schedule and Project cost for this Contract.

(j) Progress Reports and Minutes of Meetings

(i) Chair, record, prepare and distribute, within five (5) working days of the meeting date, minutes (of all meetings associated with the Project).

(ii) Prepare and submit to Metrolinx an updated "Consultant's Monthly Status Report" (provided for in Appendix "D") within seven (7) working days after the reported month.

A. The report shall include a summary of the Project progress, identification of unresolved issues, design inputs by others, information required, schedule and cost status.

(iii) The Consultant shall prepare and submit, on a monthly basis, the appropriate cost/budget control reports for the engineering activities including the overall Project cash flow requirements.

(k) Services and Costs Related to External Agencies and Authorities

(i) The Consultant's scope of Services shall include coordination and administration of the provision of Services necessary to achieve compliance with external agencies and authorities having jurisdiction as required to obtain approvals for the Project.

(ii) The Consultant's fee for the Services shall include costs for the coordination, administration of the provision and management of the Services outlined in 4(k)(i) above. The Consultant's fee for the Services outlined in 4(k)(i) above shall not include the specific costs for approval application, permits fees or charges of the external agencies and/or authorities having jurisdiction, which shall be paid for directly by Metrolinx.

(l) Permits and Approvals

(i) Arrange and attend meetings with appropriate authorities necessary and assist Metrolinx and/or the applicable railway authority for permit application and approvals related to the Project.

(ii) Submit necessary drawings and documentation for review to the authorities having jurisdiction, including the Township of Puslinch, to a level of satisfactory to obtain their approval.

(iii) Metrolinx, as a Provincial Crown Agency, is not subject to either the *Ontario Municipal Act*, the *Planning Act* or the *Development Charges Act.* The services and infrastructure of Metrolinx are developed however, in partnership with local municipalities. When developing plans for new or expanded infrastructure, Metrolinx will keep the affected municipality

informed of progress and cooperate with municipal staff to ensure infrastructure is constructed to meet municipal requirements to the greatest extent possible.

(iv) Submissions relating to building permits and Site plan approvals for Metrolinx Projects are made in the spirit of co-operation and to provide the Municipality with an opportunity to comment. Metrolinx will compensate the Municipality for any direct cost of their review of the submissions.

(v) Prepare the required specifications and drawings associated with all work elements. Drawings shall be sealed and signed by the appropriate discipline (Engineer/Architect) and complete for construction and building permit/site plan application, if necessary.

(vi) The Consultant shall include the services required to assist Metrolinx in obtaining the necessary approvals required for the Project. Services shall include meetings with external authorities and preparation of submittals for approval.

(m) Customer Service Sensitivity and Considerations

(i) Apply customer service-driven design criteria and standards and review during the design phase.

(ii) Ensure that the detailed design reflects Metrolinx's operational requirements, and that its services remain fully protected during the construction period. The construction shall be staged in order to minimize disruptions to Metrolinx passenger service.

(iii) The Consultant shall prepare and submit to Metrolinx a customer impact document which includes a construction risk assessment identifying expected and potential impacts on customers, intended mitigation methods, and a coordination and communications plan. This document shall be introduced at the 25% design review stage, and updated at each subsequent design review and upon construction kick-off with the contractor's input. This document will be used to ensure that mitigation of customer impacts of the Project receives a high priority at all stages of the design and construction of the Project.

(iv) The Consultant must familiarize themselves with the operation of the station or facility (or a similar one in the case of a new station or facility) by means of on-site visits during various operational conditions, typically an am and a pm rush hour and off-peak bus operations.

(v) Minimize the duration and number of customer amenities, parking spaces and kiss & ride area out of service. Provide temporary amenities, parking and kiss & ride area, as required.

(vi) Minimize disruption to accesses, pathways, rail and bus platforms, shelters, waiting areas including public washrooms. Barrier-free path-of-travel shall be maintained. Provide for alternate facilities, as required.

(vii) The construction shall be staged in order to minimize disruptions to Metrolinx and freight train operations, city roads, and the surrounding community.

(viii) Identifying any service facilities (TVMs, Cancelling equipment, telephones, etc.) taken out of service and determining whether relocated equipment is required.

(ix) Provisions to address customer impacts of weather, scheduling problems, unexpected site conditions and other unforeseen developments during the construction.

(x) Scheduling of intrusive (noisy/dusty) work, with respect to facility operations/customer flow, and neighbourhood impacts.

(xi) Timing and location of storage facilities including construction deliveries to minimise duration and intrusion on customers and the facilities.

5. Consultant's Scope of Services

The Consultant shall provide the Scope of Services, as defined herein, for the Project. The Consultant's Scope of Services is summarized as follows:

(a) Consultant's Deliverables

(i) Presentation Material

Prepare display boards and other materials required for presentations, public meetings, etc.

(ii) Design Review Information Log

Produce and maintain a design review information log (provided for in Appendix "D"), to track the flow of information conveyed to parties regarding this Project. Table headings are to include the name of the person contacted, all correspondence sent and the reply received. Additional headings may be added as required.

(iii) Design Completion Milestones

Design completion milestones are to have associated milestone payments and be identified as a line item in the progress certificates.

Design completion milestones are to include 25%, 50%, 75% (optional at Metrolinx's request), and 95%, as follows:

A. 25% design completion key elements include but are not limited to: conceptual plans; basic engineering systems; conceptual estimate based on submission documents as outlined in this Appendix "B", site plan, major structural components, architectural layouts and elevations, civil works, conceptual mechanical, electrical, signals, etc.

The scope and magnitude of the project work, in general, will dictate the extent of review required and the participants need to be involved. As a guideline, any GO Project involving a new facility; Station, Rail Yard, Bus Terminal or Garage, etc… or any expansion work that involves major changes to an existing facility, a formal design review meeting should be held. It is recommended that for these types of projects, an invitation be extended to all GO Managers to give them an opportunity to attend or assign a representative. Projects involving minor rehabilitation work and those having minimal impact to customers or operations, meeting participants can be limited to the immediate Stakeholders.

A design presentation should be provided as part of the formal review meeting with adequate display material to illustrate the design concept and/or engineering plans. The presentation material can be hardcopy or in the form of a power point presentation. If more than one alternative is being considered, the presentation should include an assessment of the alternatives and provide a sound recommendation of the preferred alternative. Project constraints, operation and/or customer impacts should be identified and discussed.

An update of external requirements should be identified; example property, permits, utilities, service connections

A preliminary cost estimate should be provided for review. If needed, the estimate should include a design allowance for unknowns.

An update of the project schedule should be presented for review.

B. 50% design completion key elements which are to be broken down include but are not limited to: progressed details and interdependencies; estimate consisting of rough quantities based on submission document outlined in this Appendix “B”, completed site plans, detail architectural and structural documents and draft specifications.

A formal meeting should be held to involve immediate stakeholders and representatives from the related disciplines to review and discuss operation and/or customer impacts, communication requirements, architectural, electrical, mechanical, and signage design requirements. Invitation should also be extended to the Offices that expressed interest to be kept informed, e.g. System Safety, Customer Services. Attention should be given to maintenance & security issues and control systems such as lighting, backup and emergency services that are required.

A complete set of design progress drawings should be obtained from the Project Consultant for distribution prior to the meeting. The drawings should be titled and number correctly. Method of inclusion of OPDS and GO Standard drawings, if required, should

be discussed. Ten days review period should be assigned for review by Stakeholders.

Progress on review of plans by external Agencies should be discussed and consultant will summarize actions required.

Construction cost estimate should be updated and provided for review.

An update of the project schedule should be presented for review.

A construction contract number should be obtained from Procurement if there are no major design changes or issues.

C. 75% design completion is an optional milestone planned to coordinate electrical, mechanical, and communications details.

A formal meeting should be held to involve immediate stakeholders and representatives from the related disciplines to review and discuss overall progress of the project. The general purpose of this meeting is for stakeholders to compare project progress with their expectations. Invitation should also be extended to the Offices that expressed interest to be kept informed.

A complete set of design progress drawings should be obtained from the Project Consultant for distribution prior to the meeting. The drawings should be titled and number correctly. Method of inclusion of OPDS and GO Standard drawings, if required, should be discussed. Ten days review period should be assigned for review by Stakeholders.

Progress on review of plans by external Agencies should be discussed and consultant will summarize actions required.

Construction cost estimate and the project schedule should be updated and provided for review.

D. 95% design completion shall provide details for construction tendering which includes, but shall not be limited to: tender check set documents, specifications; estimate based on detailed quantities for all aspects of the Project and submission documents.

A formal meeting should be held to review the tender ready drawings to enable stakeholders for final comments and input. Sample boards, construction staging plan, customer impact statement and required notifications should be discussed. Construction work limits to be defined and construction staging/storage areas should be reviewed. Temporary fencing walkways, barricades and protection requirements should be reviewed.

A complete set of design progress drawings and draft specifications should be obtained from the Project Consultant for distribution prior to the meeting. A ten day period should be assigned for review by Stakeholders.

A detailed construction cost estimate should be provided by the Consultant for review.

A planned construction schedule should be presented for review and shall describe staging and how they may affect operation and the public.

Following the design review meeting, if there are no major issues, the contract signature sheet should be forwarded, together with a detailed estimate in tender format, customer impact statement and staging plan for approval.

Start coordination with the assigned Procurement agent to confirm dates for tender of the construction contract.

E. Submit to Metrolinx a minimum of six (6) hard copies and one (1) soft copy of the specifications and drawings at each review stage as outlined above.

(iv) Review and approval of the associated deliverables will follow Metrolinx standard protocol. They include:

A. Meeting with clients and stakeholders, as determined by the Project Manager.

B. Design drawings and specifications, as available.

C. Updated Consultant's estimate.

D. Updated Project schedule.

(b) Design Calculations and Supporting Material

(i) Prepare and maintain a record of design calculations for all elements of the design for each engineering and specialized services discipline. Submit design calculations and supporting material to Metrolinx upon request.

(ii) Prepare all supporting material necessary for furtherance of the design and use for discussion purposes at design review meetings with Metrolinx and/or with external authorities.

(c) Construction Estimate and Schedule

(i) Prepare and submit to Metrolinx a construction estimate and schedule at the preliminary design stage (Stage Two), at each stage of design submissions (i.e. 50%, 75%, and 95%) in the detailed design stage (Stage Three), and 24 hours prior to tender closing(refer to clause 9c).

(ii) The Consultant shall work with Metrolinx staff to determine how construction shall be phased.

(iii) Estimates are to include appropriate contingency depending on what phase of design the Project is in.

(iv) Estimates should include all elements to deliver the intended design including, but not limited to:

A. Working in the ROW;

B. Winter construction, if required;

C. Existing site conditions, relocations and removals; and

D. Temporary/phasing requirements.

(v) It is required that a cost consultant/quantity surveyor for third party verification of project estimates be part of the Project team.

A. Stage Two: Preliminary design;

B. Stage Three: Detailed design and preparation of construction Project documents;

C. Stage Four: Assistance with construction Project procurement process and evaluation;

D. Stage Five: Construction inspection, contract administration and engineering services during construction; and

E. Stage Six: Post construction services.

(d) The Consultant shall make its own determination of the actual scope and magnitude of the Project to be undertaken. The Services shall be complete in all respects, and shall ensure that the proposed project for construction work can be constructed in a safe, cost effective and efficient manner.

(e) The Consultant's Scope of Services, in addition to items listed in Section 4 above includes but is not limited to:

(i) overall management of the Services;

(ii) compliance with general instructions and requirements as specified in Article 3 above.

(iii) an established working agreement with a local Ontario Land Surveyors (OLS) firm, if not a component of the Consultant's firm;

(iv) a way-finding professional with an accredited design degree program and/or a member of registered graphic design (RGC) of Ontario.

(v) Key Personnel

A. The Consultant shall employ only skilled staff with experience and qualifications relevant to the proposed Work, under the supervision of a senior staff member to perform the Work contemplated under this Contract.

B. The Consultant shall employ staff for the following positions to perform the Work contemplated herein who possess the minimum years of experience and qualifications specified as follows:

I. Position – Project Manager
   i. Years Experience: 15
   ii. Required qualifications and experience:
      a) Professional Engineer licenced to practice in the Province of Ontario (P.Eng.) or Architect (O.A.A.) licenced to practice in the Province of Ontario.

b) Professional and educational experience related to the design and construction of transit facilities, rehabilitation of transit facility building projects including Civil Engineering, Site Servicing, Lighting and Project Management.
c) Previous relevant professional experience in design, evaluation and construction of the projects with similar nature and magnitude.

II. Position - Construction Administrator
i. Years Experience: 10
ii. Required qualifications and experience:
a) P.Eng., licensed to practice in the Province of Ontario, or Certified Engineering Technologist (C.E.T.) or equivalent of C.E.T.
b) Professional experience of site inspection and construction administration related to the construction and rehabilitation of transit facility building projects.
c) Demonstrated hands-on experience in supervising construction sites, field engineering, site work quality inspections and work progress measurements.
d) Experience relevant to the type of work being requested.

III. Position – Civil Engineer
i. Years Experience: 10
ii. Required qualifications and experience:
a) Professional Engineer licenced to practice in the Province of Ontario.
b) Previous relevant professional experience in Design and Construction of Municipal Infrastructure projects, including Civil Engineering, Site Servicing, storm water management, Roadway, and evaluation of the projects with similar nature and magnitude (transit facilities and similar type of the projects).
c) Professional and educational experience related to the design and construction of transit facility building projects of transit projects

IV. Position – Electrical Engineer
i. Years Experience: 10
ii. Required qualifications and experience:
a) Professional Engineer licenced to practice in the Province of Ontario.

b) Professional experience in Electrical Engineering, Street Lighting and Illumination Systems, CCTV and PA systems of transit facility building and rehabilitation project.
c) Experience relevant to the type of work being requested.

V. Position – Mechanical Engineer
i. Years Experience: 10
ii. Required qualifications and experience:
a) Professional Engineer licenced to practice in the Province of Ontario.
b) Previous relevant professional experience in mechanical engineering and building automation system and evaluation of the projects with similar nature and magnitude (transit facilities and similar type of the projects).
c) Experience relevant to the type of work being requested.

VI. Position – Architect
i. Years Experience: 10
ii. Required qualifications and experience:
a) B.Arch, and OAA, licenced to practice in the Province of Ontario.
b) Professional and educational experience related to the design and construction of transit facility building and rehabilitation project.
c) Professional, design and construction experience in Architecture Design and Construction Review of Transit Facilities and similar type of projects and evaluation of the projects with similar nature and magnitude.
d) Experience relevant to the type of work being requested

VII. Position – Environmental Specialist
i. Years Experience: 10
ii. Required qualifications and experience:
a) Extensive knowledge of soils, water, human health and waste management systems
b) Extensive knowledge of relevant Provincial legislation such as Ontario Water Resources Act (OWRA), Environmental Protection Act (EPA) and Applications for Environtmental Compliance Approvals (O.Reg. 255/11)
c) Relevant professional experience as Technical Contact for Environmental Compliance

Approvals (ECAs) relating to Sewage Works for projects of a similar scope and size

d) Experience relevant to the type of work being requested

VIII. Position – Landscape Architect

i. Years Experience: 10

ii. Required qualifications and experience:

a) Bachelor of Landscape Architecture (B.L.A.) from a recognized Canadian teaching institution and licenced to practice in the Province of Ontario. Member of Ontario Association of Landscape Architects (OALA) or Canadian Society of Landscape Architects (CSLA).

b) Demonstrated experience and education related to Landscaping Architecture with projects including Municipal Infrastructure projects and Streetscape of bus facility and similar project and evaluation of the projects with similar nature and magnitude.

c) Experience relevant to the type of work being requested.

(vi) Additional Project Staffing Requirements

(A) Position – Principal

i. Years Experience: 15

ii. Required qualifications and experience:

a) Professional and educational experience related to the design and construction of similar type and rehabilitation of transit projects.

b) Previous relevant professional experience in design, feasibility study, evaluation and construction of the projects with similar nature and magnitude.

(B) Position - Signage Consultant

i. Years Experience: 10

ii. Required qualifications and experience:

a) Accredited Graphic Design Degree Program or Industrial Design Program, member of GDC (Graphic Design of Canada) or member of RGD (Association of Registered Graphic Designers of Ontario).

b) Experience in planning, design and construction of signage/systems associated with transit facilities. Working knowledge of: wayfinding and signage system development, graphic and information design layout and placement, technical engineering for signage systems and industry standards, production ready specifications and Tender Documents.

(C) Position - CAD Coordinator
  i. Years Experience: 10
  ii. Required qualifications and experience:
    a) Previous relevant professional experience of the projects with similar nature and magnitude.

(D) Position - Cost Consultant / Quantity Surveyor
  i. Years Experience: 10
  ii. Required qualifications and experience:
    a) Professional Quantity Surveyor (PQS) or Certified Cost Consultant (CCC) or Certified Cost Engineer (CCE) with an accredited degree and shall be a member of Ontario Institute of Quantity Surveyors or Canadian Institute of Quantity Surveyor.
    b) Previous relevant professional experience with projects of similar nature and magnitude.

(E) An established working agreement with a local Ontario Legal Surveyors (OLS) firm if not a component of the Consultant's firm.

(F) A way-finding professional with an accredited design degree program and/or a member of registered graphic design (RGC) of Ontario.

6. **Stage One: Feasibility Study Services**

Feasibility study services are not required for the Work of this Project.

7. **Stage Two: Preliminary Design Services**

(a) Before commencement of the preliminary design, review and confirm the accuracy of any drawings listed in Appendix "D", if applicable, against the conditions at the Site of the Project as may be relative to the provision of the Services. Report all discrepancies to Metrolinx.

(b) Metrolinx will provide further information and direction necessary to resolve any reported discrepancy.

(c) The Consultant shall orient himself with existing site conditions, and confirm surveys and geotechnical information, as deemed necessary.

(d) Obtain and review all applicable drawings, legal surveys, documents, reports, data, codes, regulations, standards, by-laws, directives and agreements and other relevant materials required to carry out the design.

(e) It is the Consultant's responsibility to verify all locates and surveys. Base plans provided are not solely relied on.

(e) Undertake site inspections and become familiar with all Site conditions and constraints. Verify existing conditions and field dimensions.

(f) Obtain and verify all utility services.

(g) Meet with Metrolinx staff, as directed by the Project Manager, to become sufficiently familiarized with relevant design requirements and operating procedures.

(h) Arrange and meet with external agencies and authorities having jurisdiction and incorporate their requirements into the design.

(i) Develop and prepare a minimum of three (3) preliminary design concepts for review and discussion purposes with Metrolinx and external parties.

(j) The design shall at minimum consider maximum utilization of available space for customer circulation, pedestrian and cyclist movements, bus connections, pick up and drop off areas, parking including a phased parking expansion plan, the location of the rail platform, the future addition of a third track, interface(s) with municipal/regional roads, location of station facilities and internal site traffic control.

(k) Prepare preliminary design drawings, in sufficient detail and to the extent that all major components are identified. Modify the preliminary design drawings until an acceptance is established.

(l) Preliminary design report/Portfolio shall be prepared and submitted for Metrolinx's review detailing the preferred design concept, the preliminary construction cost estimate, preliminary construction schedule and other related information.

(m) Topographical Survey

(i) Interface with the local municipality to establish a temporary site benchmark that is based on existing established elevations adjacent to the site. Locate, mark and adequately protect this benchmark close to the site.

(ii) Once a benchmark has been established carry out a topographical survey, as required, to identify reference points, locations, elevations, dimensions, inverts, existing structures, underground and overhead services, platform accesses, municipal/regional roads, and related topographical features as necessary to carry out the design

(iii) Provide a digitally produced base survey plan (completed site and surrounding areas) in a format that may be used as a reference in locating and designing the station's rail platform, station building, parking lot, etc.

(iv) Obtain a legal survey showing all registered easements and determine their significance and impact on the proposed project.

(v) A copy of the previously prepared (digital) legal survey base plan shall be provided to the successful Consultant by Metrolinx.

(vi) Payment for this Work shall be made under Cash Allowance as contained within this Form of Request and is subject to the conditions associated with such payment.

(n) Geotechnical Investigation

(i) Review any related environmental site assessment reports, if applicable, provided for in Appendix "D" herein, and give consideration to its conclusions in the preliminary design of the Project.

(ii) Undertake geotechnical investigations of the Site, by a qualified soils consultant, as required to determine soils conditions, bearing capacities and structure foundation design necessary to carry out the design.

(iii) Review geotechnical investigation information and determine if it is sufficient for the design purposes.

(iv) Further, should the Consultant or its geotechnical firm in the carrying out of the geotechnical investigations identify or encounter environmental soils conditions different than those identified or discussed in any environmental site assessment report(s), the Consultant shall immediately give written notice to Metrolinx of the found conditions and request direction from Metrolinx before proceeding further with the Project.

(v) If through the geotechnical investigations, contaminated materials are found on Site, then the Consultant is to confirm one location willing to accept this type of material and include it in the geotechnical investigations report. The construction tender documents shall identify the site and price that will serve as the maximum that Metrolinx is willing to pay for the disposal of the contaminated materials.

(vi) Submit three (3) copies of the final geotechnical investigation report to Metrolinx for its information and records.

(vii) Payment for this work shall be made under Cash Allowance as contained within this Form of Request and is subject to the conditions associated with such payment.

(p) Site Development

(i) Begin the Site development design using the digital base plan showing existing conditions, indicating existing surface and below grade structures and elements, municipal/regional roads, property lines, utilities, grade elevations and other salient features. (Refer to Section 7(m)(i-vi) under Topographical Survey above).

(ii) Prepare a Site development design of a sufficiency necessary to illustrate and demonstrate the Site's functional requirements and conformance with the conditions imposed by the authorities having jurisdiction.

(iii) Obtain Metrolinx's approval of the Site development design prior to proceeding with the balance of design. Distribute the approved base plans, as required, for use by other disciplines retained to perform Services under this Contract.

(q) Wastewater Treatment System Evaluation and Recommendation

(i) The Consultant shall include the Services required to undertake a wasterwater treatment system evaluation as required by external Authorities and shall coordinate efforts between the appropriate ministries, the region, the municipality and Metrolinx.

(ii) Review available traffic information and determine its sufficiency for design purposes. Undertake additional investigations required to provide recommendations for appropriate wastewater treatment system operation, maintenance, upgrades or repairs that will promote the ongoing functionality and performance of the existing system.

(iii) Submit three (3) copies of the wastewater treatment system evaluation to Metrolinx for its information and records.

8. Stage Three: Detailed Design and Preparation of Construction Project Documents

(a) General

(i) Based on the final preliminary design accepted by Metrolinx, the Consultant shall carry out the detailed design for the Project.

(ii) Prepare for review and approval by Metrolinx staff, an itemized list, which scopes and quantifies the Project prior to the production of working drawings, specifications and pricing.

(iii) Prepare for review and approval a detailed design package for the construction tender document, of all technical disciplines that includes, but which is not limited to, architectural, structural, electrical, mechanical, communications, civil, and landscaping work.

(iv) Coordinate all related disciplines and specialty consultants.

(v) Incorporate any and all comments into the construction tender document.

(b) Civil

(i) The civil design shall address the clearing, excavation, fill and removal of unsuitable materials from the site, compaction and grading work, storm

drainage, granular materials, asphalt paving, concrete curbs, walkways, stairs, line painting, signage (temporary and permanent), fencing, landscaping and snow storage.

(ii) The design shall also include access/egress to the parking lot, internal roadways and pedestrian, cyclists and vehicular site traffic circulation requirements and for existing facility protection and/or relocation.

(iii) The design should include all considerations for connectivity with the surrounding community and local transit.

(iv) Modified drainage features such as direction of flow, invert elevations and location of drainage structures and right-of-way ditches shall be included on all drawings.

(v) Designs shall be prepared in accordance with the identified railway authority's and Metrolinx's rail engineering standards, as well as other codes and standards.

(vi) The design shall include all necessary civil works to support the track and signal structures including all modified horizontal and vertical geometry, slopes, berms, retaining walls, track work, proposed fencing, signage, lighting, silt fence, right-of-way limits, access roads, crossings and walkways.

(d) Architectural

The architectural design shall include, but is not limited to:

(i) Space planning programming; zoning/development approval as applicable;

(ii) Design in context to the Scope of Work outlined in Section 2(iii) herein, includes but is not limited to:

A. Building Code analysis;

B. Preparation of perspective sketches, renderings and/or presentation model;

C. Facility accessibility review;

D. Energy efficiency and sustainable design considerations;

E. Security considerations;

F. Ergonomic design assessment;

G. Material selection;

H. Related civil services and storm water management;

I. Related structural services;

J. Related geotechnical services; and

K. Related environmental services.

(iii) GO station buildings and facilities should aim to achieve LEED Silver as per practice of the CaGBC, where practically and economically responsible.

(iv) Where LEED certification is not available for the design scope, LEED principles and initiatives should be implemented, where practically and economically responsible.

(e) Electrical

The Electrical design shall include, but is not limited to:

(i) Address the power source and supply distribution and emergency power supply and distribution for the new area, and elements thereof.

(ii) Assess existing power source and relative impacts due to the planned scope of work (i.e. shelters, lighting, electronic signage, etc.).

(iii) Calculate power requirements for all electrical components associated with the Project including all future expansion elements.

(iv) Design shall include drawings, including an overall single line diagram, showing conduits, raceways, boxes and devices for the all power and communications systems.

(v) Prepare a photometric distribution layout to determine the lighting requirements for achieving the illumination levels prescribed in the DRM.

(vi) Prepare panel and riser diagrams detailing the power distribution related to the Project.

(vii) Essential facility systems includes IT and communications equipment, fare collection systems, security lighting levels for the station building, parking lot, bus loop and platform, egress lighting, security, monitoring and fire alarm systems, PA, CCTV, telephone and clock systems, the passenger notification system and required sump pumps, exhaust fans, air conditioning units etc.

(viii) Include a back-up power and distribution system to service the station building, parking lot, bus loop and platform. The back-up power system shall meet, at minimum, the following requirements:

A. The back-up power system shall consist of both UPS and fuel powered generator supplies.

B. The UPS shall serve the necessary computer and communications systems.

C. The fuel powered generator supply shall serve the balance and shall also maintain the UPS. The two systems shall be coordinated with each other.

(ix) The Consultant shall investigate the local hydro authorities requirements and incorporate those into the design. Additionally, plans may be required to obtain approval of the hydro company for new site services.

(x) The Consultant shall conduct an electrical arc flash hazard analysis as prescribed under NFPA 70E and provide a written report to Metrolinx summarizing the findings and recommended control measures to be taken.

(f) Mechanical

The Mechanical design shall include, but is not limited to:

(i) Provisions for a new water, sanitary and gas service. Prepare detailed drawings identifying system components in sufficient detail for municipal service application.

(ii) The mechanical design shall include provisions for a complete water, sanitary and HVAC system for the new station building. A separate HVAC system is required for the communication and electrical room.

(iii) Design shall include line diagrams showing piping distribution and locations of valves, clean outs and control devices.

(iv) Design shall include station building HVAC requirements including ducts, dampers, vents, and other equipment or control devices.

(g) Telecommunication and Electronic Systems

The telecommunication and electronic design shall include, but is not limited to:

(i) In addition to the general design review process, allow for a separate communications and electronic systems design review meeting at or around the 50% design stage.

(ii) Ensure that the division of responsibility between appropriate trades, sub-contractors, vendors and Metrolinx is clearly identified in the construction documents. Responsibilities include the supply, installation, connection, testing and commissioning of the communications and electronic systems as well as of the associated electrical and mechanical systems.

(iii) The Consultant shall be responsible for implementing a logical sequence of events for the installation of communications and electronic systems.

(iv) Provide sign-off and validation that the infrastructure is ready to receive the communications and electronic systems. The communications and

electronic systems installation can only commence after the infrastructure is fully ready and verified by Metrolinx.

(v) Shut down and transfer period, associated back-up and protection are required to be discussed and in place.

(vi) Allow for at least seven (7) working days interval between the infrastructure-ready date and the systems installation start date for proper inspection of the infrastructure by Metrolinx.

(h) Public Address (PA) System

The public address system design shall include, but is not limited to:

(i) Design shall include the provision of either a new system or expansion to the existing system including related conduit, wiring, and any required upgrade to current corporate standards.

(ii) Consultant shall prepare the required construction drawings associated with the PA system work in sufficient details for competitive pricing by Bidders when the construction work is tendered.

(iii) Consultant shall prepare the required technical construction specifications, separately from the electrical division, for the entire PA system including devised, controls and zoning, following guidelines provided by Metrolinx.

(iv) These specifications shall reference the related conduit system (to be included in the electrical division) to facilitate the installation of the PA equipment and wiring. The specifications shall include the commissioning and testing of the PA system.

(i) Closed Circuit Television (CCTV) System

The CCTV design shall include, but is not limited to:

(i) The design of either a new system or expansion to the existing system including related conduit and wiring.

(ii) Preparation of the required technical specifications, separately from the electrical division, for the entire CCTV system including devised, controls and zoning, following guidelines provided by Metrolinx. These specifications shall reference the related conduit system (to be included in the electrical division) to facilitate the installation of the CCTV equipment and wiring. The specifications shall include the commissioning and testing of the CCTV system.

(iii) Consultant shall prepare the required construction drawings associated with the CCTV system work in sufficient details for competitive pricing by bidders when the construction work is tendered.

(k) Fire Safety Systems

The fire safety systems design shall include, but is not limited to:

(i) Review fire safety requirements to ensure fire codes and regulations are met. Incorporate all requirements into the design.

(ii) A fire plan in accordance with Metrolinx's System Safety Program Plan under Corporate Safety Procedures and Sections 2.8.1 of the Fire Code.

(A) The fire plan should include a building floor plan, and a fire route drawing.

(B) The OBC Section 1.5.4, building fire hazard group rating, as relevant to the fire plan which shall be submitted as part of review of the 25% design documents for approval by Metrolinx.

(C) The fire plan must be completed prior to commissioning and provided to Metrolinx for final approval and posting prior to building occupancy.

(l) Static Signage

(i) Prepare and submit to Metrolinx for approval, detailed construction drawings associated with signage which shall include elements such as:

A. Construction phasing;

B. Temporary construction signage;

C. Signage location plans with legend;

D. Mounting and installation details;

E. Sign type and mounting schedule;

F. Production ready artwork for sign manufactures; and

G. Tender specifications.

(ii) Signage drawings shall include individual plans and the fabrication and installation elevations and sections required to sufficiently detail both static and illuminated signage.

(iii) The drawings shall utilize Metrolinx's established identification numbering system for standard signs, where applicable.

(iv) The approved signage plans and details shall be included as part of the completed construction tender document package.

(m) Landscaping

(i) Prepare a landscaping plan including fencing requirements.

(ii) Provisions shall be made for an automated sprinkler system serving the gardens and lawns surrounding the station building, parking lot, bus loop and platform. System shall be designed to Metrolinx's approval.

(n) Long Delivery Items

(i) The Consultant, prior to completing detailed design, shall identify long delivery items that might delay the construction work. A list of those items, including the quantities and detailed product information, shall be provided to Metrolinx who may decide to order these items prior to tendering the construction work.

(ii) Long delivery items include but are not limited to elevators, snowmelt system, HVAC units, track material, signal equipment, snow clearing devices and switch machines, light poles and anchors, sump pumps, various tiles, shelters, light fixtures, and other electrical equipment.

(o) Preparation of Construction Project Documents

(i) Guidelines

All original, plans, drawings, specifications, designs, computer files (including CADD files), data and documents, prepared by the Consultant shall be, and remain, the property of Metrolinx. The Consultant may retain a copy of such documents for record purposes only, and shall not use, nor permit the use thereof, for any other purpose without the prior written consent of Metrolinx.

(ii) Completed construction drawings shall be sealed and signed by the appropriate discipline (Engineer/Architect) and complete for tendering.

(iii) The form of construction Contract to be utilized by Metrolinx for this Project is the CCDC2 document, Agreement Between Owner and Contractor.

(iv) The Consultant shall familiarize itself with Metrolinx's standard construction tender document, to be provided by the Project Manager, and shall take all necessary steps to avoid duplication of information contained within the general requirements listed in sections 00000 through 01800.

(A) Consultant shall only add information as needed to front end and shall obtain the Project Manager's input prior to doing so.

(B) Consultant shall amend Metrolinx Standard Division 01000 in a transparent manner so that it is consistent with the remaining document.

(v) The Consultant shall follow Metrolinx guidelines for preparation of construction Project documents, as provided in Appendix "D" – Documents.

(vi) Where a name brand or trademark is specified for a particular product or service, costing in excess of $10,000, the Consultant shall add "or approved equivalent" next to the identified product/service, unless specifying a product/service provided by an Original Equipment Manufacturer (O.E.M.) or from Metrolinx's approved Corporate Standard product/service listing.

(vii) Where an O.E.M. is identified, the Consultant must provide the contact information for the specified O.E.M., including mailing address, phone, email and contact person.

(viii) All Cash Allowances included within the Construction tender document's Form of Request, must be identified as such in the specifications and reciprocally within the Form of Request (i.e., Reference specific section of Specifications/Drawings for each cash allowance).

(ix) The Consultant shall identify when any standards such as Ontario Provincial Standard Drawings (OPSD) and Ontario Provincial Standard Specifications (OPSS) are referenced within the tender documents, and if not provided in hard copy it must indicated that the standards have been "Incorporated by Reference".

(p) Format of Construction Project Documents

Metrolinx uses the MERX system to advertise and distribute construction Project documents for tender to prospective Bidders. Merx is a federal, provincial and municipal Canadian public tender website**.**

(i) Bidders are required to register with MERX;

(ii) The final version of construction Project documents shall be provided to the Project Manager in the following format:

(iii) All drawings are to be either Adobe (.pdf) or AutoCAD (.dwx; .dwfx) format.

(iv) File names for each drawing are to be the actual drawing number.

(v) Specifications are to be in MS Word format as follows:

(A) Operating System: WINDOWS XP;

(B) Software Program: WORD for Windows; and

(C) Font: Times New Roman, 12pt.

(vi) Pricing Information

Pricing information shall not be requested in the construction specifications or drawings and shall only be included in the Form of Request of the construction tender document. Pricing information shall be submitted as a MS Word document in Font: Times New Roman, 12pt., in the following format:

Item No.	Spec	Description	Estimated Quantity	Unit of Measure	Unit Price	Extended Total
INSERT HEADER DESCRIPTION						

(vii) Two (2) CD's, of final construction Project documents, shall be forwarded to Metrolinx, containing construction drawings, construction specifications, pricing information including cash and contingency allowance descriptions and amounts.

(viii) The CD shall include a main folder entitled "English" and two subfolders entitled "Drawings" and "Specifications".

A. Main Folder

I. The main folder is to be titled "English".

B. Drawings Folder

I. Drawings must be submitted in either Adobe (.PDF) or AutoCAD (dwx or dwfx) format.

II. Each Drawing must be saved in its own file and is limited to one (1) page per file, with an unlimited number of files permitted.

III. File names for each Drawing shall be the actual drawing number.

C. Specifications Folder

I. Specifications must be submitted in MS Word (.doc) format.

II. Each section of specification shall be saved in its own file and can be an unlimited number of pages. An unlimited number of files shall be permitted.

III. File names for each specification section shall be the actual Specification Section number.

IV. Pricing information shall be included in the specifications folder and shall be entitled "Section 00300".

(q) Requirements of Construction Project Documents

Produce and submit to Metrolinx up to twenty (20) full-size, bound sets of construction drawings and ten (10) reduced size, bound sets of same.

Produce and submit three (3) hard copies of constructions specifications.

9. **Stage Four: Assistance With Procurement And Evaluation Process (Option Exercisable Solely At Metrolinx's Discretion)**

Assistance with Procurement Process

The Consultant shall:

(a) Assist Metrolinx during the procurement process of the proposed construction work by receiving and responding to technical questions that may arise regarding the construction drawings, construction specifications and pricing pages for the Project:

(i) All verbal or written technical enquiries received by the Consultant during the procurement process, shall be responded to in writing only to the Project Manager as defined herein and the Procurement representative identified in the construction tender document. Metrolinx's Procurement representative shall solely be responsible for the issuance of all addenda.

(A) The Consultant shall provide a twenty four (24) hour turnaround time on all responses to questions received.

(ii) Verbal communication between the Consultant and bidders shall be limited to the Consultant directing the bidder to a particular section of the specifications and/or drawings for clarification. All clarifications shall reference the applicable specification section and/or Drawing. (i.e., Delete Section 2(a)(i) of Section 02701, Aggregates: General). Information requested by a bidder, not contained within the construction tender documents must be conveyed to all bidders in writing via addenda.

(iii) Where a requested clarification does not apply to a particular construction specification and/or drawing, a detailed and concise response shall be provided by the Consultant in writing via e-mail to the Project Manager and Procurement representative.

(iv) Prepare a record of questions asked by bidders and the responses given. Prepare all revisions, additions and deletions required to construction drawings, specifications and pricing for any addenda to be issued in response to such questions.

(v) Where there is a change in the scope of work that affects unit pricing, in a CCDC2 lump sum format, the Consultant shall submit a revised and complete marked-up Form of Request to Metrolinx's Procurement representative.

(b) Attend the mandatory site visit for bidders, as scheduled.

(c) Prepare and submit a revised construction cost estimate twenty four (24) hours prior to the construction tender closing date taking into account any addenda, changes to market conditions and any other factors influencing the construction cost.

(d) The Consultant shall not release budgetary and/or estimate information about the Project to anyone other than the Project Manager.

(e) The Consultant shall not communicate with any bidder after the closing date of the construction tender document. Enquiries received by the Consultant from a bidder after such time shall be directed to Metrolinx's Procurement representative.

(f) Should additional information be required from a bidder after the closing date specified, the Consultant shall request permission from Metrolinx's Procurement representative to meet with or enter into verbal and/or written communications with the bidder.

Assistance with Tender Evaluation Process

The Consultant shall:

(a) Analyse all tenders received by Metrolinx from bidders, for compliance with the technical aspects of the construction tender documents.

(b) Investigate the qualifications and prior performance of the bidders by contacting references, and determine the contractor's ability to execute the work as defined in the tender documents. Document the investigation for record purposes.

(c) Submit a tender evaluation analysis and a contract award recommendation letter identifying and qualifying bidders directly to the Project Manager.

(d) Report any issues or concerns to the Project Manager immediately upon discovery.

10. Stage Five: Construction Inspection, Contract Administration And Engineering Services During Construction (Option Exercisable Solely At Metrolinx's Discretion)

Engineering Services During Construction

(a) Metrolinx reserves the right, at its sole discretion, to proceed or not to proceed with the construction of this Project.

(b) Should Metrolinx enter into a construction contract and proceed with the construction for this Project, the Consultant shall, upon receiving written direction and authorization from Metrolinx, provide Services for Construction Inspection and Engineering Services during construction.

(c) The fee payment for construction inspection, contract administration and engineering services during construction at the Site shall be as stated in the Articles of Agreement between Metrolinx and the Consultant for this Contract.

(d) The Consultant's weekly fee includes the costs for full time construction inspection at the Site. The Consultant shall be paid on the basis of the fixed seven (7) day weekly rate for full time construction inspection for the duration of the construction contract.

(e) Construction inspection includes the Services to be provided at the Site by the Consultant's designated resident representative, subconsultants, specialized services providers, engineers, Project managers, principles and administrative staff during the construction of the Project.

(f) Subject to this Contract, applicable building codes and standards of external agencies and authorities having jurisdiction, provide administration and inspection of the construction contract to ensure conformance with any requirement of such external agency or authority.

(g) The form of construction contract to be utilized by Metrolinx for this Project is the CCDC2 Document, which shall form a part of the Consultant's scope of Services, in addition to other requirements contained herein, pertaining to construction inspection, contract administration and engineering services during construction, as amended by the construction tender document "Supplementary General Conditions" provided for in Appendix "D" – Documents.

The Consultant shall:

(a) Assign necessary field staff to perform such field operations necessary in the provision of the foregoing construction inspection and Engineering Services.

(b) Have the authority to act on behalf of Metrolinx to the extent provided in the construction contract documents, unless otherwise modified by amendments to this Contract and the construction contract documents.

(c) Provide sufficient competent on-site inspection to ensure that the work of the construction contract is proceeding and is being performed in general conformity with the construction contract documents and any amendments thereto, and that the work of the construction contract is proceeding as expeditiously as possible and with the minimum interference or impact on the day-to-day operations of Metrolinx's station facility.

(d) Ensure that the customer service considerations outlined in Section 4(m) hereinafter applied, and specifically ensure that the contractor responds to

emergent conditions (weather, scheduling changes, unexpected site conditions, etc.) to maintain good conditions for all users of the facility.

(e) Coordinate construction staging with the contractor to minimize impact on GO commuters and station operations.

(f) Assist Metrolinx to prepare necessary notices or public relation information package for advising and updating commuters concerning the progress of the Work.

(g) Chair, record and distribute minutes for all meetings site associated with this Contract, the construction contract and the construction of the work as required.

(h) Carry out all quality assurance and quality control functions to confirm contractor's adherence to the construction contract documents.

(i) Review and make recommendations regarding the contractor's quality of work, construction progress, schedule, payment application, requests for supplemental instruction, change orders, change directives, substantial performance and total performance of the work and claims.

(j) Prepare and distribute progress, incident, and other reports as required during construction, including reports to external agencies and authorities having jurisdiction.

(k) Review construction contractor's submittals, including shop drawings, any and all necessary revisions, product data, and samples, as provided in the construction contract and/or as requested by Metrolinx.

(l) Calculate and record quantities, and prepare progress and final payment of certificates prescribed by Metrolinx.

(m) Compile survey notes, diaries, records, photos, and reports substantiating such certificates during construction and on completion of the work of the construction contract.

(n) Coordinate and carry out testing during construction of the work of the construction contract to verify acceptability according to the construction contract specifications.

(o) Carry out surveys of the place of work and the construction work for topography contour, elevation, dimension layout, foundation locations for quantity measurement, verification of the work and compliance with the construction contract requirements.

(p) Carry out substantial and final inspection at the conclusion of the construction contract, distribute a list of deficient work, and expedite completion of all work of the construction contract in conformance with the construction contract.

(q) During construction, ensure an updated as-built record is kept current. All deviations from the original design shall be recorded on black line white prints. All reports on deviations from the original design shall be provided to Metrolinx.

(r) Prior to installation of electrical, mechanical, underground and telecommunication systems, an accurate assessment of the infrastructure can be made and recorded.

(s) Prepare and submit to Metrolinx three (3) complete sets of revised construction contract drawings showing the 'record' Project.

Engineering Services During Construction

(a) The Consultant is to assume all responsibilities and roles for engineering Services during construction as the 'engineer of record'.

(b) The fee payment for engineering services during construction shall be as stated in the Articles of Agreement between Metrolinx and the Consultant for this Contract.

(c) The Consultant's weekly fee includes the costs for "Full Time" engineering services. Engineering services during construction includes the Services to be provided by the Consultant's designated resident representative, sub consultants, specialized services providers, engineers, project managers, principals and administrative staff to support the Consultant's during the construction of the Project.

(d) The Consultant has the authority to act on behalf of Metrolinx to the extent provided in the construction Contract Documents, unless otherwise modified by amendments to this Contract and the construction contract documents.

(e) Engineering Services during construction shall include:

(i) Review construction contractor's submittals, including shop drawings, product data, and samples, as provided in the construction contract and/or as requested by Metrolinx.

(ii) Attend site meetings as requested.

(iii) Prepare and issue revised design drawings required due to Metrolinx and/or external stakeholder requirements, as well as unforeseen site conditions.

(iv) During construction, ensure an updated as-built record is kept current. All deviations from the original design shall be recorded on black line white prints. All reports on deviations from the original design shall be provided to Metrolinx.

(v) Prepare and submit to Metrolinx one (1) complete set of stamped drawings showing the 'as built" Project.

Testing and Commissioning

(a) Prepare a plan for testing and commissioning including detailed procedures, such as:

(i) applicable codes and standards,

(ii) safety issues and risks assessments,

(iii) operational training, and

(iv) manufacturer requirements and recommendations.

(b) Include a timeline containing potential test train requirements and applicable movements.

(c) Submit all testing and commissioning procedures to Metrolinx for review and coordination, and incorporate Metrolinx comments before implementation.

11. Stage Six: Post Construction Services

Handover and Post Project Report

(a) Prepare and submit three (3) copies of a post construction report in accordance with Metrolinx' Project handover protocol.

(b) The post Project report shall include a brief summary of the following:

(i) Project Scope Description

- Detailed description of Project scope and design features.

(ii) Project Key Issues

(A) Operational issues to be considered going forward.

(B) Lessons Learned; and

(C) Future recommended action.

(iii) Deficiencies

(A) Outstanding deficiencies;

(B) Timeline and associated cost for completion; and

(C) Anticipated Total Performance date.

(c) Submission elements include:

(i) Project Handover Report

(A) Location, civic address, telephone numbers;

(B) Key plan showing fire route and accessible path;

(C) Maintenance and other legal agreements;

(D) List of mechanical equipment;

(E) List of electrical equipment;

(F) List of CCTV cameras, light poles, etc.;

(G) List of supplied furniture and accessories; and

(H) External agency contacts (ie., Bell, railway, city works, hydro).

(ii) Operating and Maintenance Manuals;

(iii) Warranties;

(iv) Commissioning Checklist and Manual;

(v) Fire Safety Plan;

(vi) Record Drawings

(vii) Contractor Performance Evaluation; and

(viii) Consultant Performance Evaluation.

END OF SECTION

Appendix "C" – Metrolinx Services

Metrolinx shall:

(a) provide the Consultant with general direction in the provision of the Services;

(b) designate an individual to act as its Representative, who shall transmit instructions to, and receive information from the Consultant. The designated Metrolinx Representative will be accountable for all project expenditures relative to design, procurement and construction activities;

(c) provide access to and where necessary, make available copies of existing plans, reports, studies, information and correspondence relevant to the Project;

(d) make available registered land plans, legal documents and surveys, where necessary, defining the property limits of land affected by the project, following acquisition. (Note that the Consultant is to determine requirements for initial and additional surveys);

(e) negotiate and purchase the necessary additional property if required for the Project;

(f) provide the Consultant with a copy of the Metrolinx Environmental Assessment Class Document and any guidelines and/or assistance regarding the application of the Class Document as it relates to the Project;

(g) establish Metrolinx Engineering Standards for architectural, civil, mechanical as well as specimen contract documents for the guidance of the Consultant in the design of the Project;

(h) attend with the Consultant at public presentations and information centres and at liaison meetings with Metrolinx in-house Offices, CN and CP Rail, all affected external, federal, provincial, municipal, utilities and other governing agencies as required to obtain concurrence with design;

(i) arrange and chair pre-design meeting with Metrolinx architectural, mechanical, electrical and communications engineering disciplines to establish design input and liaison requirements throughout the Project;

(j) arrange and chair a separate pre-design meeting with the Metrolinx User Group(s) to define operational requirements as related to facility design;

(k) provide a Preliminary Project Schedule outlining required major milestones of the work;

(l) provide a conceptual plan of the parking lot(s) including the arrangement of parking spaces, kiss and ride area, bus loop and incoming roadways;

(m) ensure that all Agreements between Metrolinx and external agencies are executed in a timely manner;

(n) provide the Consultant with contact names of the individual(s) who shall be representing the railways, regions, municipalities, government agencies or other jurisdictional bodies;

(o) facilitate arrangements and provisions for the Consultant's entry to property (public and private) as well as the site of the Project, as necessary to enable it to perform its Services;

(p) review final contract package prior to submission to ensure that the drawings and specifications have addressed Metrolinx engineering, operational and procedural requirements;

(q) arrange for public advertisement:

(i) for notification of public meeting, E.A. submissions, etc.

(ii) for submission in accordance with Metrolinx's Procurement Services Policies and Procedures;

(r) attend meetings with the contractor(s) as required;

(s) arrange for necessary services from the applicable railways such as design approvals, inspection and flagging;

(t) arrange for the necessary information bulletins to inform the public of any potential service disruptions or inconvenience that will occur as a result of the Project;

(u) ensure that valid changes to the contract receive approvals in a timely manner. Final analysis of change(s), based on Consultant's justification including cost benefit, will be undertaken by Metrolinx prior to approval;

(v) receive and approve all invoices and payment certificates, submitted by the Consultant or by the contractors through the Consultant; and

(w) arrange and participate in information and training sessions for Metrolinx Plant Management and applicable user group staff prior to occupancy of the facility.

Appendix "D" – Documents

The following Documents form part of, and are appended to this Request Document.

ITEM NO.	DOCUMENT TITLE
1.	Consultant's Monthly Status Report
2.	Contract Performance Report
3.	Vendor Q & A
4.	Contract Performance Appraisal
5.	Parental Guarantee
6.	Metrolinx Merx Portal – General Information
7.	Metrolinx Capital Projects Group Construction Safety Management Program
8.	ESSE Canada, April 1, 2015 – Property Inspection
9.	Articles of Agreement
10.	Reference As-Built Dwg: 129709 – Cover Sheet
11.	Reference As-Built Dwg: 129709 – Signature Sheet
12.	Reference As-Built Dwg: 129709 – G001
13.	Reference As-Built Dwg: 129709 – A002
14.	Reference As-Built Dwg: 129709 – A003
15.	Reference As-Built Dwg: 129709 – A004
16.	Reference As-Built Dwg: 129709 – A005
17.	Reference As-Built Dwg: 129709 – A006
18.	Reference As-Built Dwg: 129709 – A007
19.	Reference As-Built Dwg: 129709 – A008
20.	Reference As-Built Dwg: 129709 – A009
21.	Reference As-Built Dwg: 129709 – A010
22.	Reference As-Built Dwg: 129709 – A011
23.	Reference As-Built Dwg: 129709 – A012
24.	Reference As-Built Dwg: 129709 – A013

ITEM NO.	DOCUMENT TITLE
25.	Reference As-Built Dwg: 129709 – A014
26.	Reference As-Built Dwg: 129709 – A015
27.	Reference As-Built Dwg: 129709 – A016
28.	Reference As-Built Dwg: 129709 – A017
29.	Reference As-Built Dwg: C-001
30.	Reference As-Built Dwg: C-002
31.	Reference As-Built Dwg: C-003
32.	Reference As-Built Dwg: C-004
33.	Reference As-Built Dwg: C-005
34.	Reference As-Built Dwg: C-006
35.	Reference As-Built Dwg: C-007
36.	Reference As-Built Dwg: C-008
37.	Reference As-Built Dwg: 129709 – E001
38.	Reference As-Built Dwg: 129709 – E002
39.	Reference As-Built Dwg: 129709 – E003
40.	Reference As-Built Dwg: 129709 – E011
41.	Reference As-Built Dwg: 129709 – E012
42.	Reference As-Built Dwg: 129709 – E101
43.	Reference As-Built Dwg: 129709 – E102
44.	Reference As-Built Dwg: 129709 – E103
45.	Reference As-Built Dwg: 129709 – E104
46.	Reference As-Built Dwg: 129709 – E105
47.	Reference As-Built Dwg: 129709 – E111
48.	Reference As-Built Dwg: 129709 – E112
49.	Reference As-Built Dwg: 129709 – E113
50.	Reference As-Built Dwg: 129709 – E114
51.	Reference As-Built Dwg: 129709 – E211

ITEM NO.	DOCUMENT TITLE
52.	Reference As-Built Dwg: 129709 – E311
53.	Reference As-Built Dwg: 129709 – E401
54.	Reference As-Built Dwg: 129709-E402
55.	Reference As-Built Dwg: 129709 – E501
56.	Reference As-Built Dwg: 129709 – E502
57.	Reference As-Built Dwg: 129709 – E503
58.	Reference As-Built Dwg: 129709 – E504
59.	Reference As-Built Dwg: 129709 – E505
60.	Reference As-Built Dwg: 129709 – E506
61.	Reference As-Built Dwg: 129709 – E507
62.	Reference As-Built Dwg: 129709 – E508
63.	Reference As-Built Dwg: 129709 – E509
64.	Reference As-Built Dwg: 129709 – E510
65.	Reference As-Built Dwg: 129709 – E511
66.	Reference As-Built Dwg: 129709 – M001
67.	Reference As-Built Dwg: 129709 – M002
68.	Reference As-Built Dwg: 129709 – M003
69.	Reference As-Built Dwg: 129709 – M004
70.	Reference As-Built Dwg: 129709 – M005
71.	Reference As-Built Dwg: 129709 – M006
72.	Reference As-Built Dwg: 129709 – M007
73.	Reference As-Built Dwg: 129709 – M008
74.	Reference As-Built Dwg: 129709 – M009
75.	Reference As-Built Dwg: 129709 – M010
76.	Reference As-Built Dwg: 129709 – M011
77.	Reference As-Built Dwg: 129709 – M012
78.	Reference As-Built Dwg: 129709 – M013

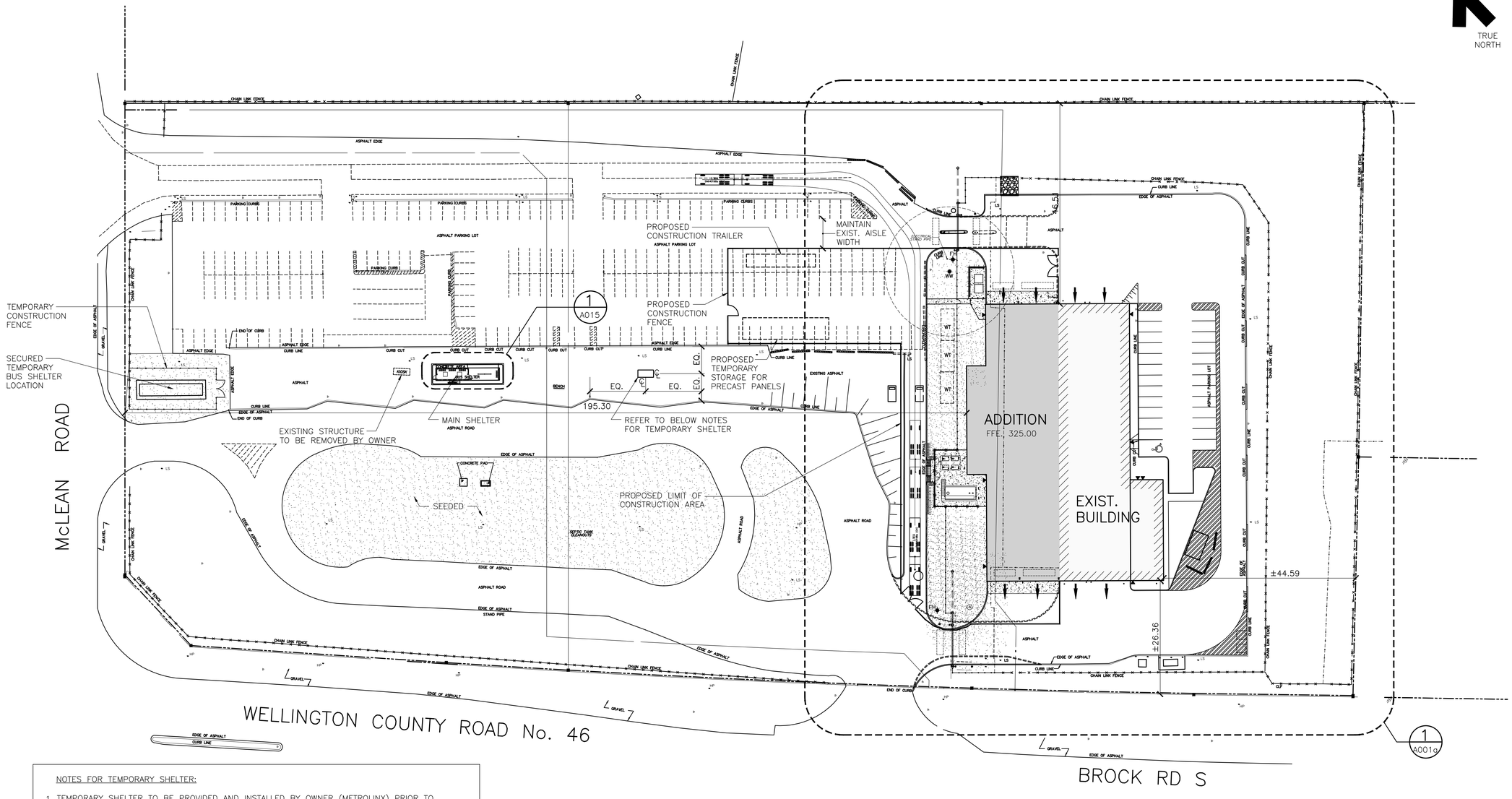
ITEM NO.	DOCUMENT TITLE
79.	Reference As-Built Dwg: 129709 – M014
80.	Reference As-Built Dwg: 129709 – M015
81.	Reference As-Built Dwg: 129709 – S001
82.	Reference As-Built Dwg: 129709 – S002
83.	Reference As-Built Dwg: 129709 – S003
84.	Reference As-Built Dwg: 129709 – S004
85.	Reference As-Built Dwg: 129709 – S005
86.	Reference As-Built Dwg: 129709 – S006
87.	Reference As-Built Dwg: 129709 – S007
88.	Reference As-Built Dwg: 129709 – S008
89.	Reference As-Built Dwg: 129709 – S009
90.	Reference As-Built Dwg: 129709 – S010
91.	Reference As-Built Dwg: 129709 – S011
92.	Reference As-Built Dwg: 129709 – S012
93.	Reference As-Built Dwg: 129709 – S013
94.	Reference As-Built Dwg: 129709 – S014

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH



NOTES FOR TEMPORARY SHELTER:

1. TEMPORARY SHELTER TO BE PROVIDED AND INSTALLED BY OWNER (METROLINX) PRIOR TO CONSTRUCTION.
2. AFTER COMPLETING THE CONSTRUCTION OF THE MAIN SHELTER AND ACCEPTED BY OWNER/ CONSULTANTS, CONTRACTOR SHALL REMOVE AND DELIVER THE TEMPORARY SHELTER TO METROLINX GORMLEY MAINTENANCE YARD AT (1 FORTECON DRIVE, GORMLEY, ON)
3. CONTRACTOR SHALL HAND OVER THE TEMPORARY SHELTER IN GOOD CONDITION TO METROLINX REPRESENTATIVE.
4. CONTRACTOR SHALL MAKE GOOD FINISH PLATFORM AFTER THE TEMPORARY SHELTER REMOVAL (TYP.).

OVERALL SITE DEVELOPMENT PLAN 1 A001

SCALE: 1:500

LEGEND

NEW SEEDED AREAS

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		2	16/06/30	RECORD			
		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: D.V. 13/09/15	DESIGNED BY: A.K. 13/09/01
CHECKED BY: L.B. 14/03/07	APPROVED BY: R.K. 14/03/07
SCALE: 1:500	FULL SIZE ONLY

Disclaimer:

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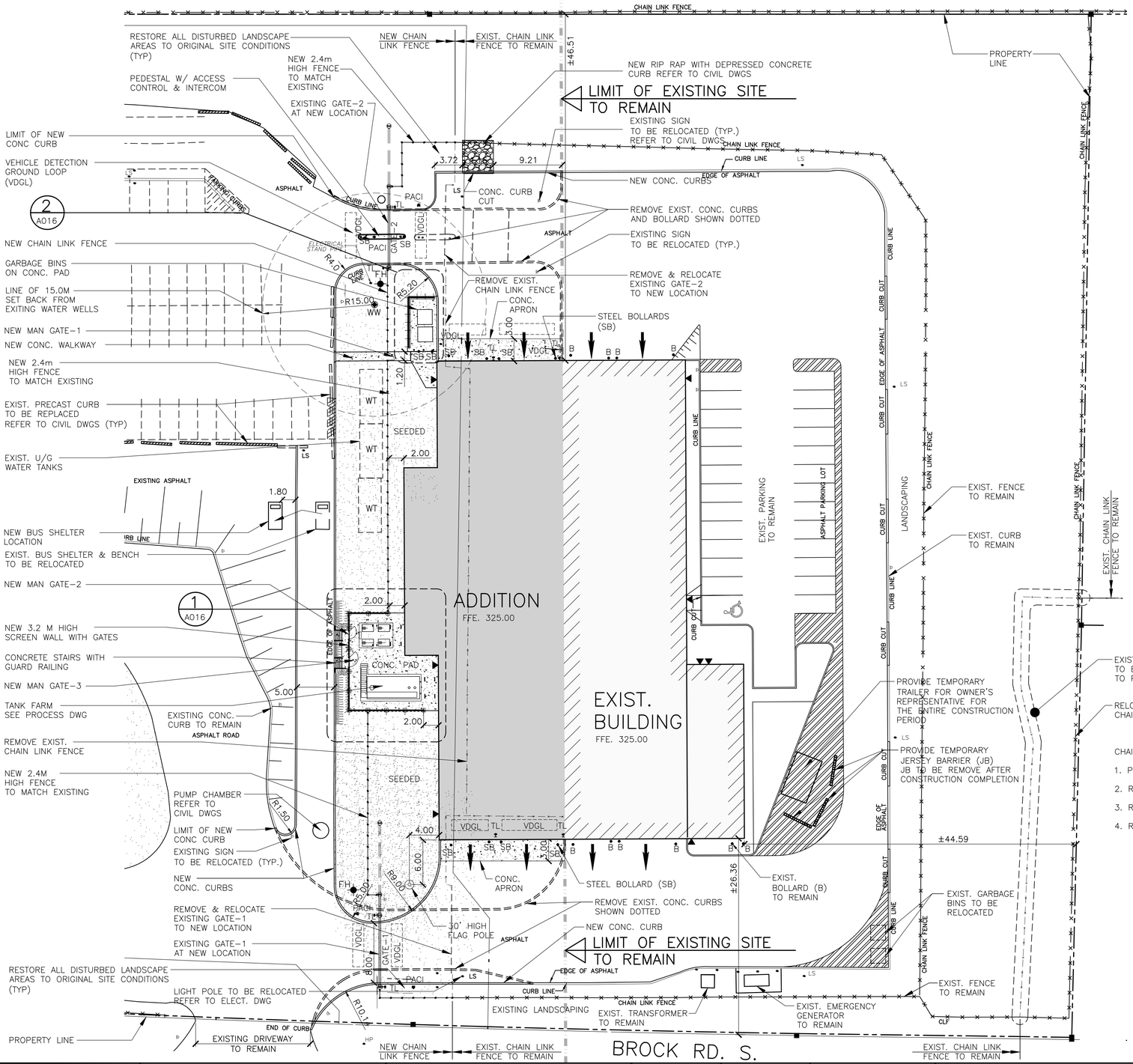
A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

OVERALL SITE DEVELOPMENT PLAN

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-001	0	12/92



PARTIAL SITE DEVELOPMENT PLAN 1 A001

SCALE: 1:300

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH

LEGEND:

- IRON BAR (REFER TO TOPOGRAPHICAL SURVEY)
- NEW BUILDING CONSTRUCTION
- EXISTING BUILDING TO REMAIN
- MAN DOOR LOCATION (EXIT/ACCESS DOOR)
- OVERHEAD DOOR LOCATION (EXIT/ ENTRANCE)
- FH FIRE HYDRANT
- NEW CHAIN LINK FENCE
- EXISTING CHAIN LINK FENCE TO REMAIN
- CONCRETE PAVING
- LS LIGHT STANDARD
- SB "CAUTION YELLOW" PAINTED STEEL BOLLARDS
- B EXISTING BOLLARD TO REMAIN
- VEHICLE DETECTION GROUND LOOP
- TL TRAFFIC LIGHT
- PACI PEDESTAL W/ ACCESS CONTROL & INTERCOM

SITE PLAN NOTES:

1. FOR ALL GRADING ELEVATIONS, UNDERGROUND SERVICES AND DRAINAGE REFER TO CIVIL DRAWINGS.
2. FOR EXTERIOR SITE LIGHTING, TRAFFIC LIGHT AND PEDESTAL W/ ACCESS CONTROL & INTERCOM REFER TO ELECTRICAL DRAWINGS.
3. FOR STEEL BOLLARDS REFER TO DETAIL 1/A-012
4. FOR OVERALL SITE PLAN REFER TO DRAWING A-001

CHAIN LINK FENCE NOTES:

1. PROVIDE NEW METAL POSTS TO MATCH EXISTING.
2. REINSTALL EXISTING MESH ON NEW POSTS.
3. REMOVE EXISTING POSTS & CONCRETE FOUNDATION.
4. RESTORE LANDSCAPE TO MATCH EXISTING.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		3	16/06/30	RECORD			
		2	14/09/05	CONSTRUCTION			
		1	14/07/11	ADDENDUM 1			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: D.V. 13/09/15	DESIGNED BY: A.K. 13/09/01
CHECKED BY: L.B. 14/03/07	APPROVED BY: R.K. 14/03/07
SCALE: 1:300	FULL SIZE ONLY

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

PARTIAL SITE DEVELOPMENT PLAN

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-001a	1	13/92

METRIC

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TRUE NORTH

CONSTRUCTION NORTH

EXISTING BUILDING

ADDITION

LIMIT OF 2–50MM LAYERS RIGID INSULATION

CROSS BRACING SHOWN FOR REFERENCE REFER TO STRUCT. DWGS (TYP)

GALV. PIPE SUPPORT REFER TO DET. 7/A015

CONTROL JOINT (CJ) (TYP)

FLOOR DRAIN (FD) REFER TO MECH DWG (TYP)

EYEWASH STATION REFER TO MECH DWGS.

STEEL BOLLARD WITH YELLOW PLASTIC COVER. REFER TO 1/A012 (TYP.)

WINDOW ABOVE (TYP)

FORKLIFT ROOM 05

BUS WASH EQUIP. RM. 04

VACUUM RM 03

SERVICE LANE 02

BUS WASH REFER TO PROCESS DWG

SPLASH GUARD

BUS DRYING REFER TO PROCESS DWG

SLOPE TO DRAIN (TYP)

LIMIT OF SMOOTH EPOXY

LIMIT OF UNDER SLAB VAPOUR RETARDER (TYP) REFER TO DET. 6/A008

LIMIT OF EPOXY FLOOR, WALLS AND EPOXY PAINTED EXPOSED ROOF STRUCTURE (TYP)

PVC FLAPS

SPLASH GUARD WALL REFER TO DWGS A–008 & A–009

200MM WIDE PAINTED LINE

CONCRETE CURB WITH S/S ISLAND FORM.

CONC. CURB

CUT NEW OPENING AT PRECAST FOR EXIT DOOR.

TRENCH DRAIN REFER TO MECH DWGS. (TYP)

CONT. 100mm WIDE PAINT LINE (TYP)

LINE OF CONC. APRON

BUS STORAGE GARAGE 01

FULL HEIGHT SPLASH GUARD CORRUGATED FIBERGLASS SHEET ON GALV STEEL FRAMING

PAINTED WALKWAY STRIPES AND BORDERS (100mm WIDE)

CATCH BASIN (CB) REFER TO MECH DWG (TYP)

EXISTING STEEL BRACING

SLOPE TO DRAIN REFER TO STRUCT. DWG (TYP)

BUS OUTLINE SHOWN FOR REFERENCE ONLY (TYP)

VEHICLE DETECTION GROUND LOOP (VDGL)

FFE. 325.00

NEW GL

EXIST. GL

NEW STEEL GUARD RAIL 38mm ø, PAINTED YELLOW, POSTS AT 1500 O/C. ANCHORED TO CONCRETE SLAB, 1070mm HIGH WITH MID RAIL.

FOR MECH., ELECT. AND PROCESS EQUIPMENT ALONG EXISTING WALL REFER TO M & E DWGS. (TYP.)

ALIGN W/ EXIST.

FULL HEIGHT HOARDING WALL REFER TO WALL SECTION 2/A006

CUT AND REMOVE EXT. SLAB & FOUNDATION TO INSTALL NEW FOOTING AND FOUNDATION FOR NEW STEEL COLUMNS REFER TO STRUCT. DWGS

EXIST. DOOR TO BE REMOVED

NEW 2400mm HIGH 240MM THICK CONC. BLOCK WALL TO SUPPORT EXIST. EQUIPMENT AND PIPING

EXISTING EQUIPMENT TO REMAIN REFER TO MECH & ELECT. DWGS TYP. ALONG GRID LINE A

EXISTING BUS STORAGE GARAGE 06

COLUMN PROTECTION REFER TO SPEC. (TYP.)

EXISTING OFFICE AREA 07

STAIR, JAN RM., WWR, MWR, FLUID RM., CORRIDOR, VEST., ELECT RM., COMM RM., OFFICE, STORAGE, LOCKERS, CHANGE RM, LUNCH RM.

EXISTING PRECAST PANELS ALONG GRID LINE A TO BE REMOVED, STORED TEMPORARILY ON–SITE. CONTRACTOR TO REWORK & COORDINATE THE RE–USE OF PRECAST PANELS AND INSTALL AT NEW LOCATION. PANELS WITH OPENINGS FOR DOORS & WINDOWS TO BE RE–INSTALLED AS PER FLOOR PLANS AND ELEVATIONS.

CUT EXIST. PRECAST PANEL AND PROVIDE NEW HM EXIT DOOR TO BE INSTALLED PRIOR TO CONSTRUCTION OF ADDITION

LEGEND:

00	ROOM NUMBER
00	DOOR NUMBER
W1	WINDOW TYPE
WT1	WALL ASSEMBLY TYPE
DCP	DOOR CONTROL PANEL
TL	TRAFFIC LIGHT
DO	DOOR OPENING
RO	ROUGH OPENING
VDGL	VEHICLE DETECTION GROUND LOOP
GL	GRID LINE

REFER TO G–001 FOR WALL TYPES

FOR EXIST./NEW PRECAST PANEL LOCATIONS REFER TO ELEVATIONS A004

FLOOR PLAN 1 A002

SCALE: 1:125

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		3	16/06/30	RECORD			
		2	15/05/15	CCN–07			
		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: D.V. 13/09/15	DESIGNED BY: A.K. 13/09/01
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SCALE: 1:125 FULL SIZE ONLY	

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A Division of METROLINX

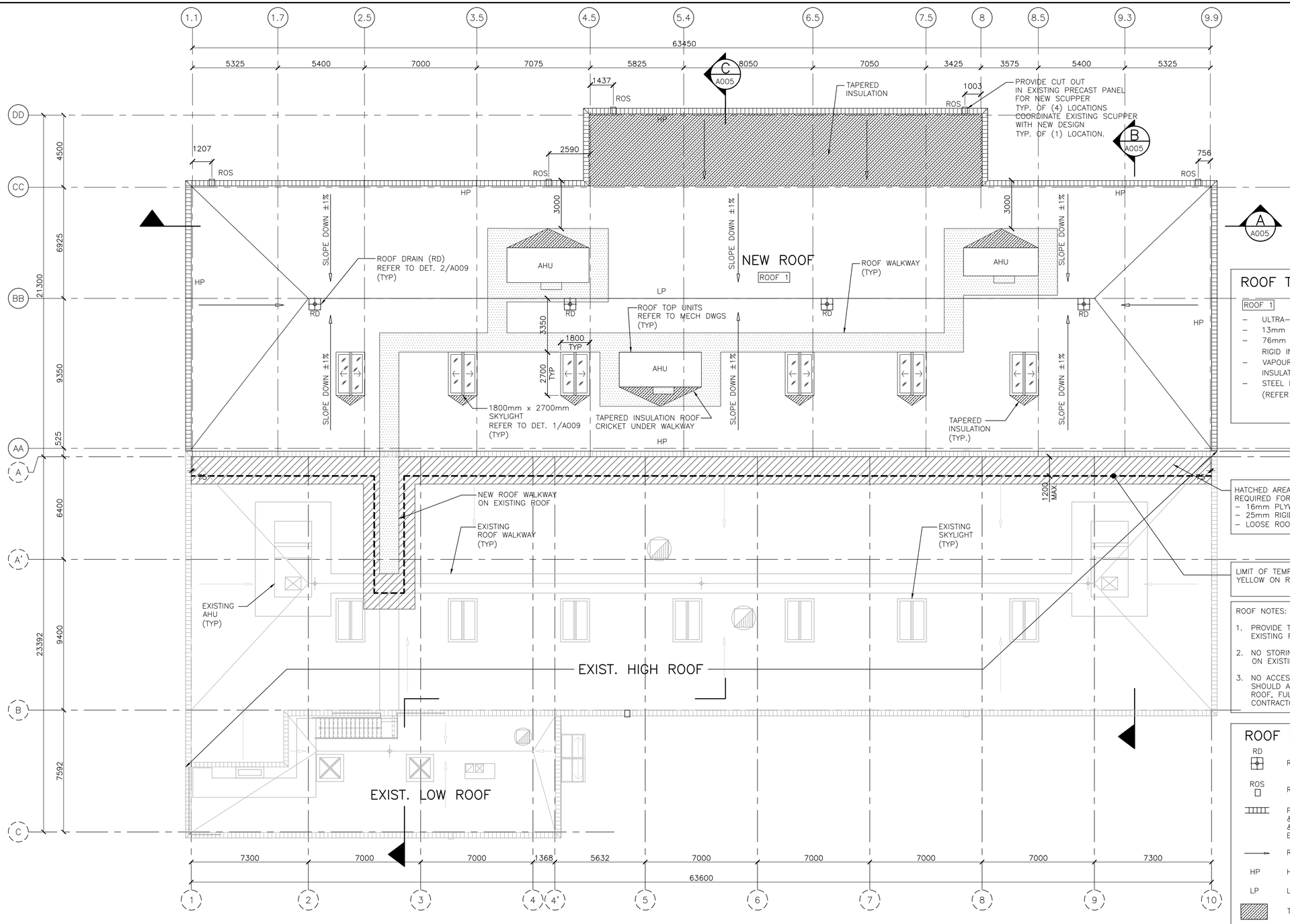
ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

FLOOR PLAN

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	A–002	0	14/92

User Name: Mariam Muhi Plot Date/Time: Wednesday, June 15, 2016 8:54:29 AM Path and File Name: J:\24RX13.0259\5.9 DRAWING\SUBMISSIONS\2016-06-XX_RECORD\ARCH\AUTOCAD\LAYOUTS\129709-A002.DWG



ROOF PLAN

SCALE: 1:125 (1 / A002)

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH — CONSTRUCTION NORTH

ROOF TYPE:

ROOF 1

- ULTRA–PLY TPO XR ROOFING SYSTEM
- 13mm FIBRE BOARD OVERLAY
- 76mm POLYISOCYANURATE RIGID INSULATION (R32)
- VAPOUR BARRIER LAPPED UNDER INSULATION UP AND OVER PARAPET
- STEEL DECK ON OWSJ (REFER TO STRUC DWGS)

HATCHED AREA DENOTES TEMPORARY PROTECTION REQUIRED FOR EXISTING ROOF:
- 16mm PLYWOOD ON
- 25mm RIGID POLYSTYRENE INSULATION
- LOOSE ROOF MEMBRANE (SIMILAR TO EXISTING)

LIMIT OF TEMPORARY GUARDRAIL. 1200mm HIGH PAINTED YELLOW ON ROOF MEMBRANE PROTECTION.

ROOF NOTES:

1. PROVIDE TEMPORARY PROTECTION TO PROTECT EXISTING ROOF MEMBRANE.
2. NO STORING OF BUILDING MATERIALS ALLOWED ON EXISTING ROOF.
3. NO ACCESS IS ALLOWED TO EXISTING ROOF. SHOULD ANY WORK BE REQUIRED ON EXISTING ROOF, FULL PROTECTION MUST BE PROVIDED BY CONTRACTOR.

ROOF LEGEND:

RD	ROOF DRAIN
ROS	ROOF OVERFLOW SCUPPER
	PREFINISHED METAL CAP FLASHING & COUNTER FLASHING AT ALL PARAPETS & ROOF CURBS FOR ALL ROOFTOP EQUIPMENT & SKYLIGHTS
	ROOF SLOPE
HP	HIGH POINT
LP	LOW POINT
	TAPERED INSULATION (TYP.)

EXISTING BUILDING — ADDITION

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS			ISSUE			REVISIONS		
			2	16/06/30	RECORD			
			1	14/09/05	CONSTRUCTION			
			0	14/03/18	TENDER			
DWG NO.	TITLE		NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: D.V. 13/09/15	DESIGNED BY: A.K. 13/09/01
CHECKED BY: L.B. 14/03/07	APPROVED BY: R.K. 14/03/07
SCALE: 1:125	FULL SIZE ONLY

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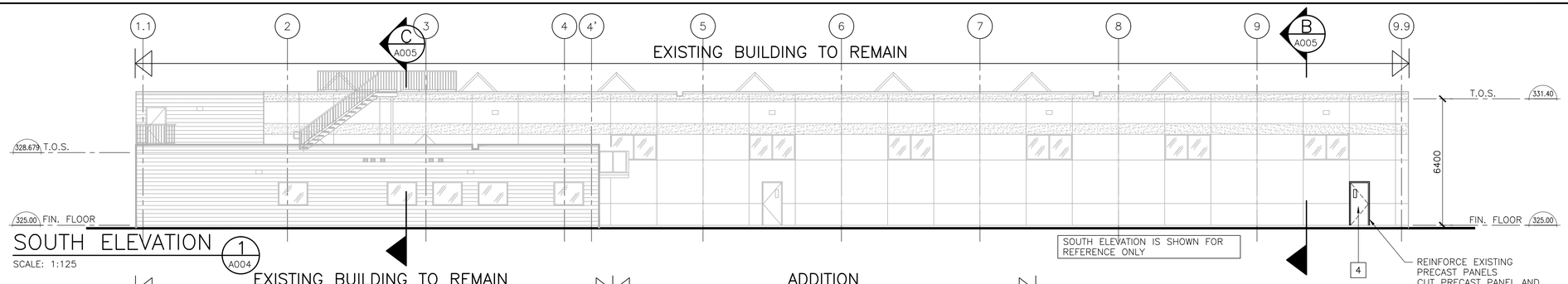
A Division of METROLINX

ABERFOYLE BUS FACILITY

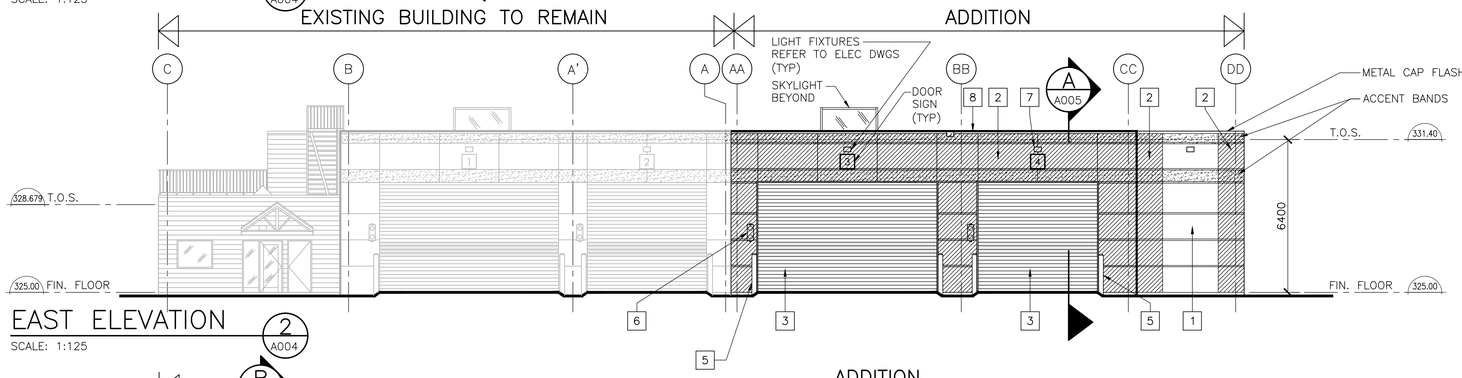
EXPANSION AND PARKING LOT REHABILITATION

ROOF PLAN

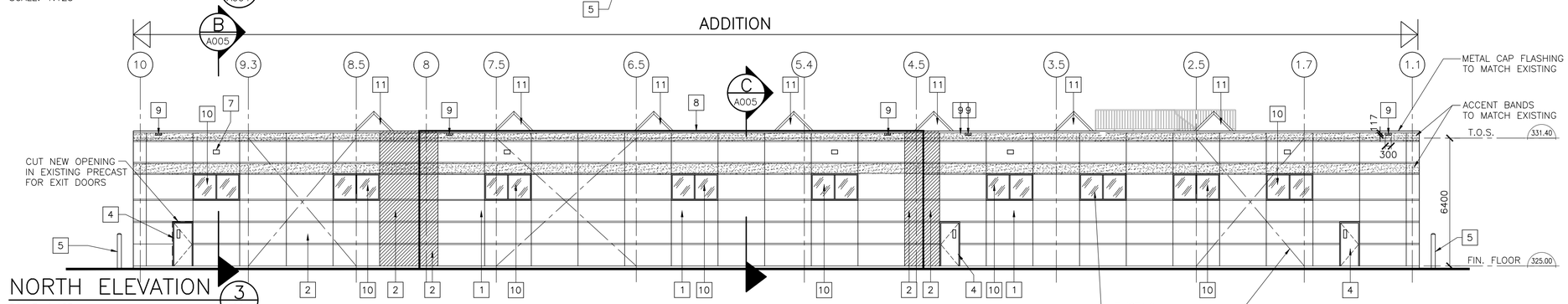
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	A–003	0	15/92



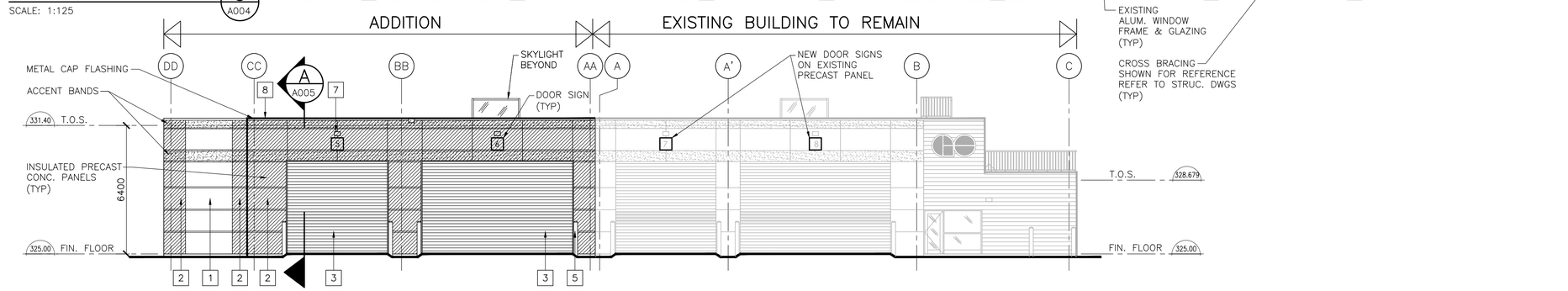
SOUTH ELEVATION 1 A004
SCALE: 1:125



EAST ELEVATION 2 A004
SCALE: 1:125



NORTH ELEVATION 3 A004
SCALE: 1:125



WEST ELEVATION 4 A004
SCALE: 1:125

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

EXTERIOR FINISH/ COLOUR SCHEDULE:

	1	EXISTING PRECAST PANELS TO BE REMOVED IN GOOD CONDITION AND INSTALLED AS PER PLAN AND ELEVATIONS
▨	2	DENOTES NEW PRECAST PANELS TO MATCH EXISTING
	3	ALUM. HIGH SPEED ROLLING DOOR WITH VISION PANEL TO MATCH EXISTING
	4	"DARK GREY" PAINTED INSULATED HOLLOW METAL DOOR & FRAME REFER TO DOOR SCHEDULE
	5	STEEL BOLLARD WITH YELLOW PLASTIC COVER
	6	SIGNAL LIGHTS
	7	LIGHT FIXTURE REFER TO ELECT. DWGS
	8	"WHITE" PREPAINTED METAL PARAPET CAP FLASHING TO MATCH EXISTING
	9	OVERFLOW ROOF SCUPPER FLASHING TO MATCH PARAPET COLOUR AND EXISTING
	10	EXISTING ALUM. WINDOW – NEW LOCATION
	11	PREFINISHED ALUM. SKYLIGHT

NOTE: ALL COLOURS, HEIGHTS AND DETAILS TO MATCH EXISTING

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		2	16/06/30	RECORD			
		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: D.V. 13/09/15	DESIGNED BY: A.K. 13/09/01
CHECKED BY: L.B. 14/03/07	APPROVED BY: R.K. 14/03/07
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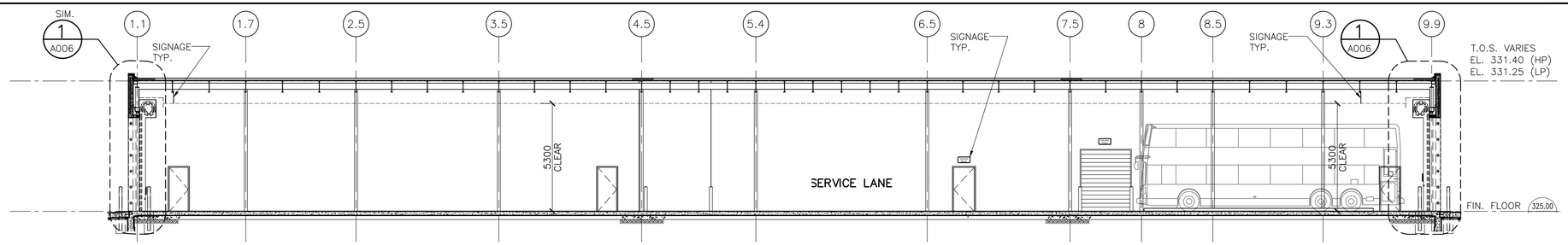
A Division of METROLINX

ABERFOYLE BUS FACILITY

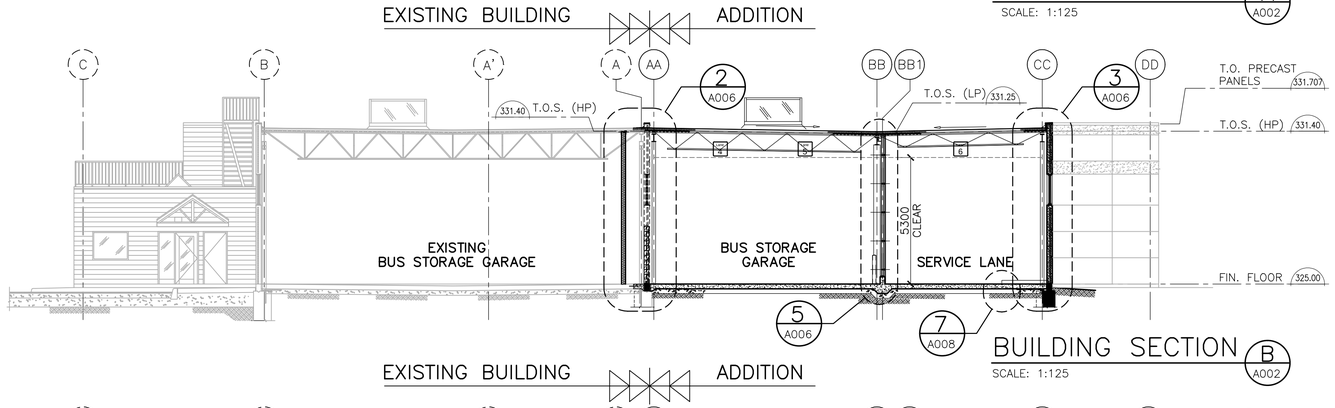
EXPANSION AND PARKING LOT REHABILITATION

BUILDING ELEVATIONS

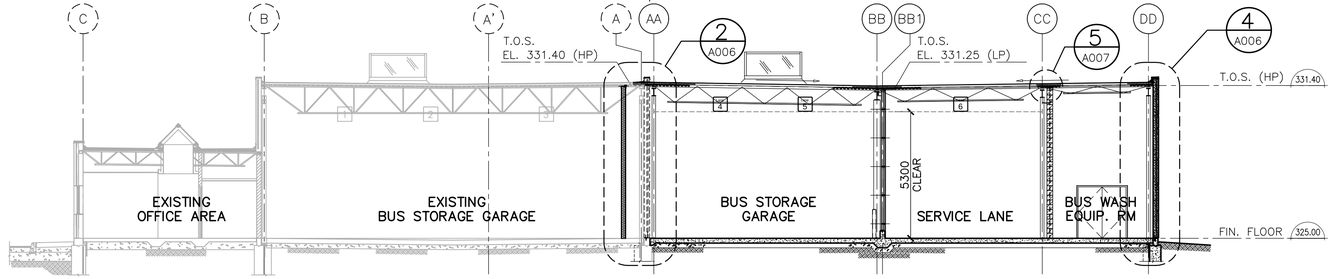
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-004	0	16/92



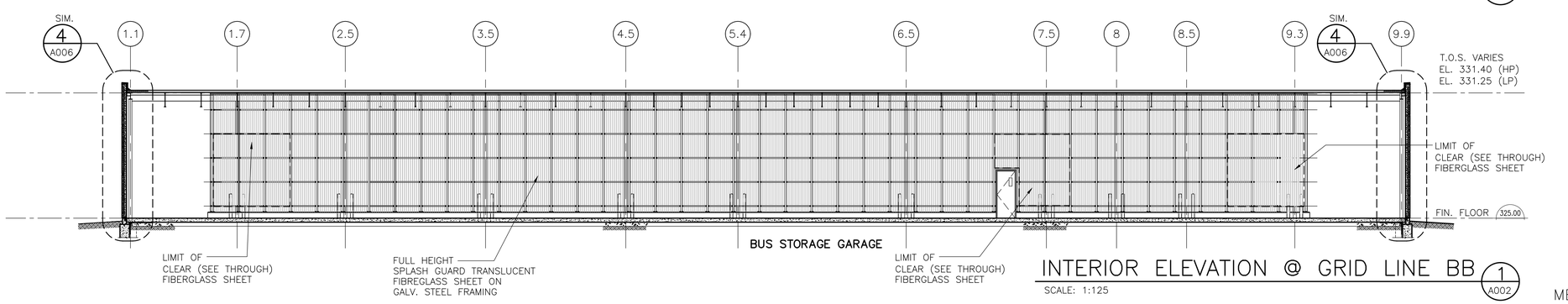
BUILDING SECTION A
SCALE: 1:125 — A002



BUILDING SECTION B
SCALE: 1:125 — A002



BUILDING SECTION C
SCALE: 1:125 — A002



INTERIOR ELEVATION @ GRID LINE BB
SCALE: 1:125 — 1 / A002

METRIC

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METROLINX PROJECT NO. 129709

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		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

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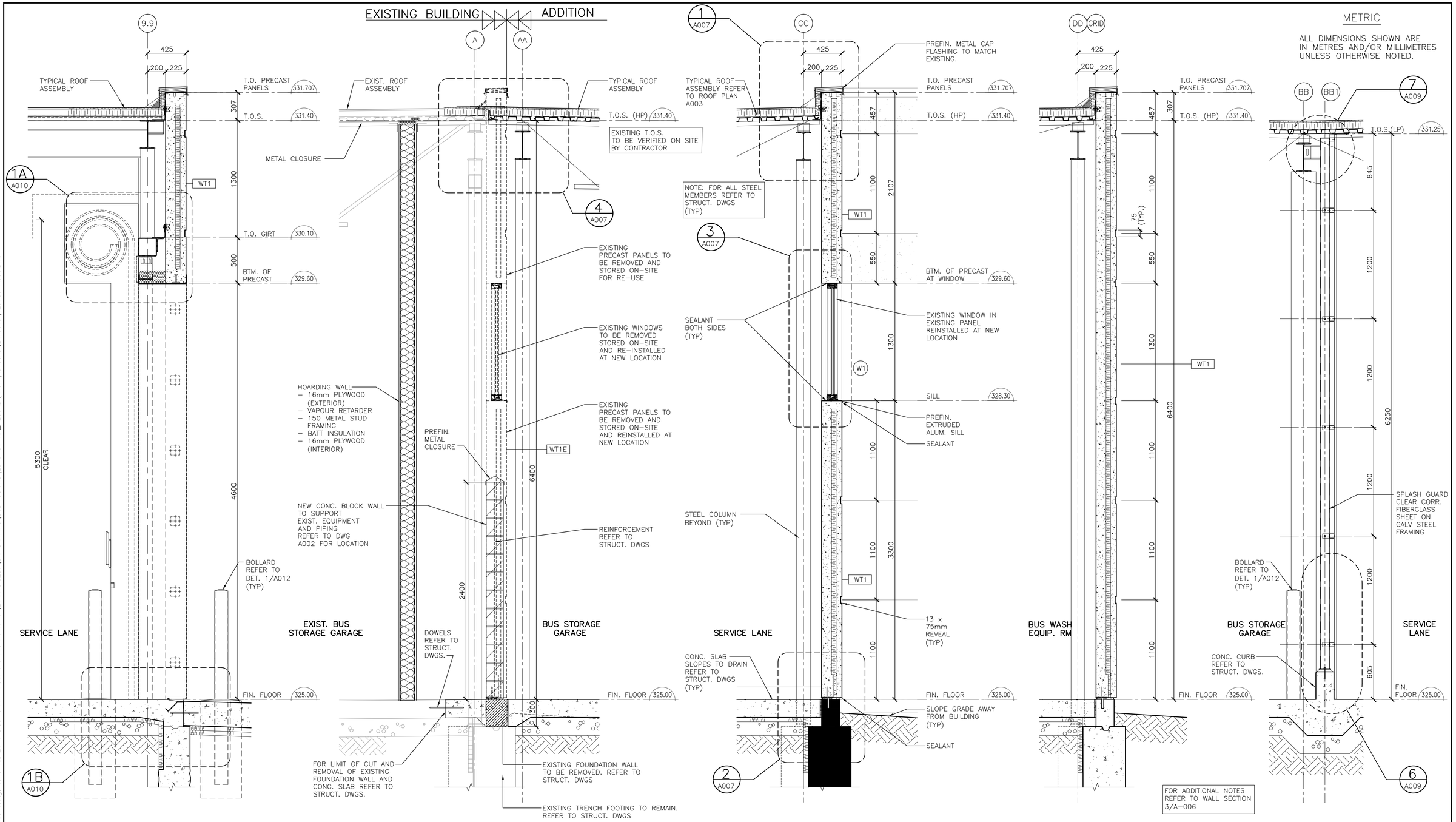
A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
BUILDING SECTIONS, INTERIOR ELEVATION

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-005	0	17/92

User Name: Mariam Mukhi Plot Date/Time: Wednesday, June 15, 2016 9:02:56 AM Path and File Name: J:\24RX13.0259\5.9 DRAWING\SUBMISSIONS\2016-06-XX_RECORD\ARCH\AUTOCAD\LAYOUTS\129709-A005.DWG



WALL SECTION 1 / A005
SCALE: 1:20

FOR ADDITIONAL NOTES REFER TO WALL SECTION 3/A-006

WALL SECTION 2 / A005
SCALE: 1:20

WALL SECTION 3 / A005
SCALE: 1:20

WALL SECTION 4 / A005
SCALE: 1:20

WALL SECTION 5 / A005
SCALE: 1:20

METRIC

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METROLINX PROJECT NO. 129709

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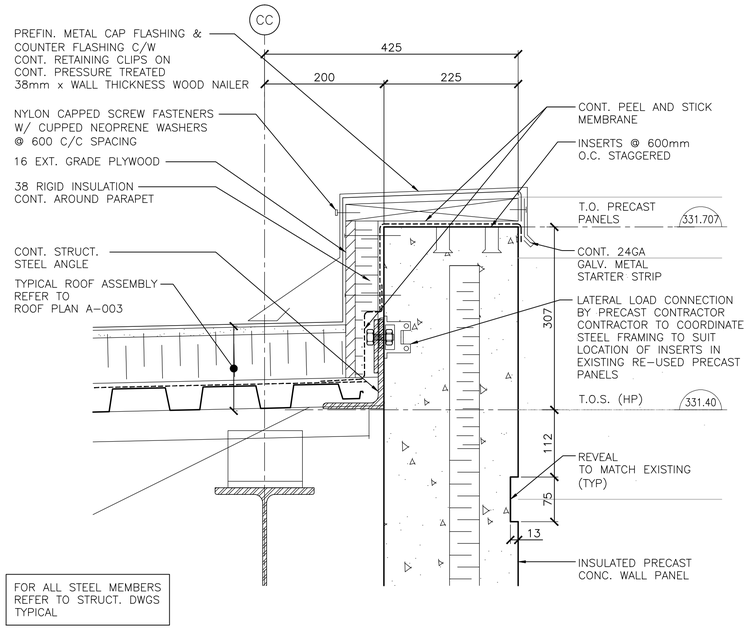
A Division of METROLINX

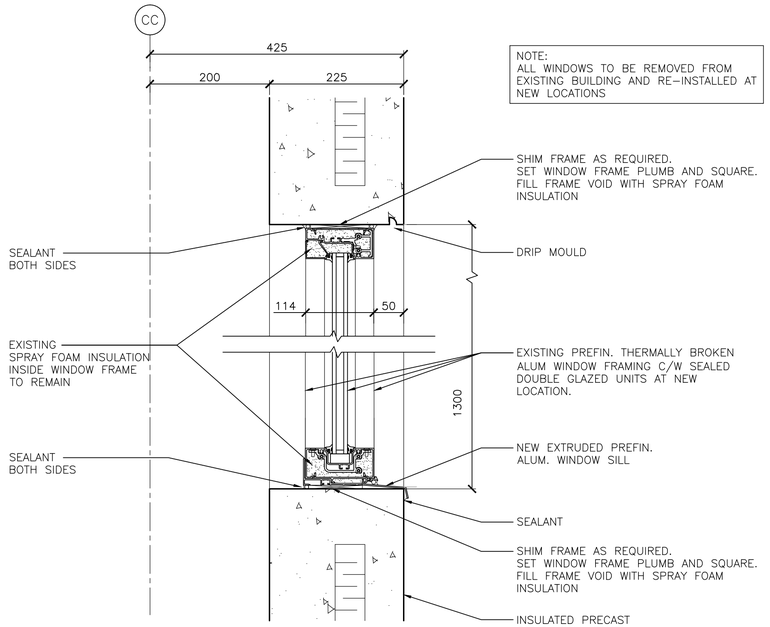
ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
WALL SECTIONS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-006	0	18/92



TYP. SECTION DETAIL 1 / A006

SCALE: 1:5



(TYP.)SECTION DETAIL 3 / A006

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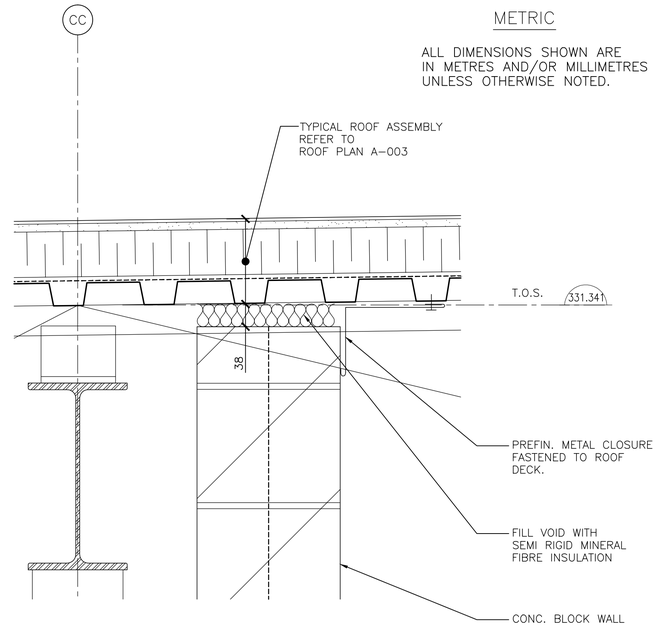
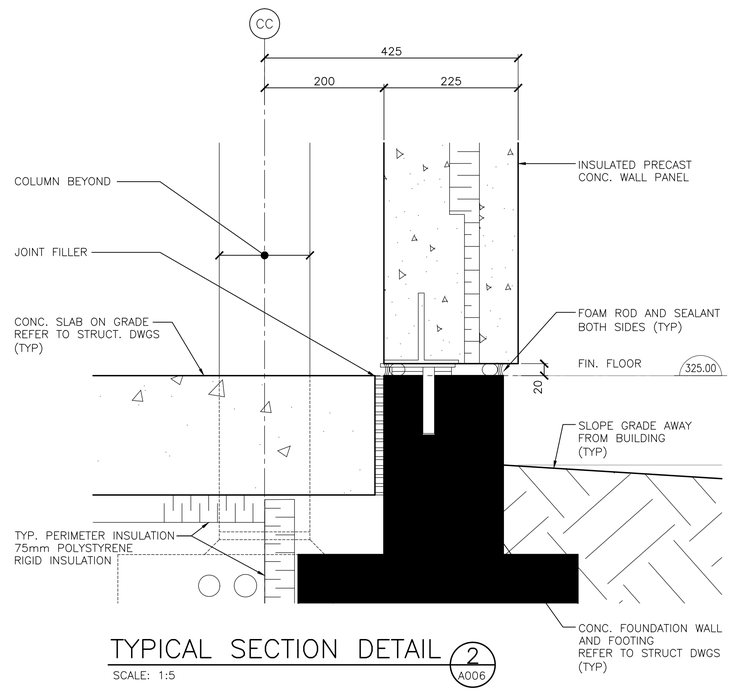


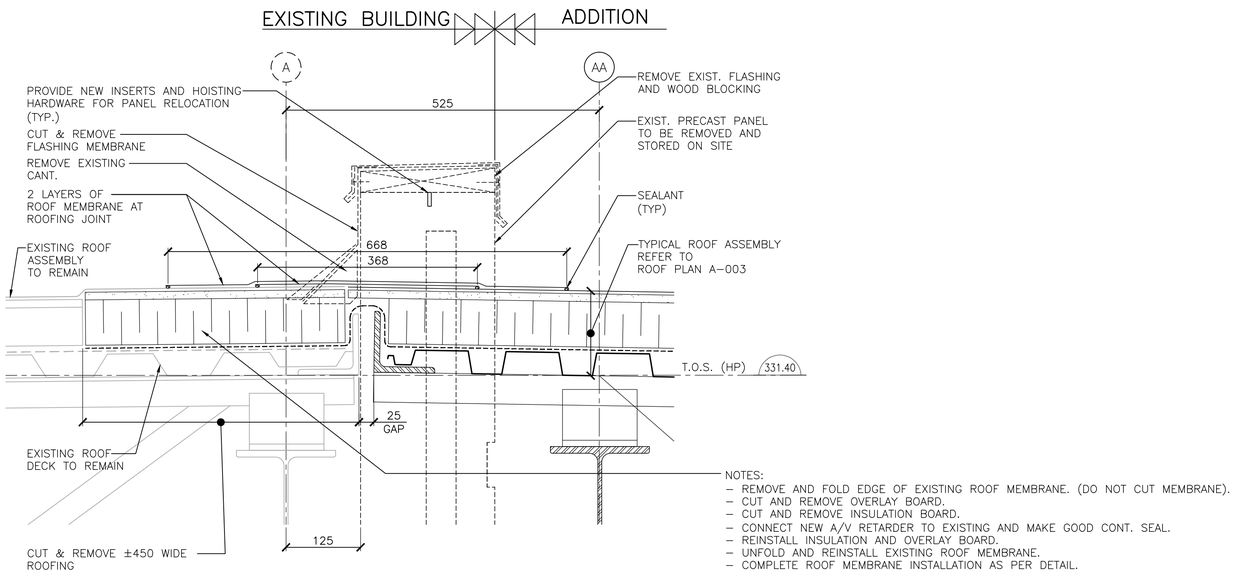
(TYP.) SECTION DETAIL 5 / A005

SCALE: 1:5



TYPICAL SECTION DETAIL 2 / A006

SCALE: 1:5



SECTION DETAIL 4 / A006

SCALE: 1:5

METROLINX PROJECT NO. 129709

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		2	16/06/30	RECORD			
		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

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ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

SECTION DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-007	0	19/92

METRIC

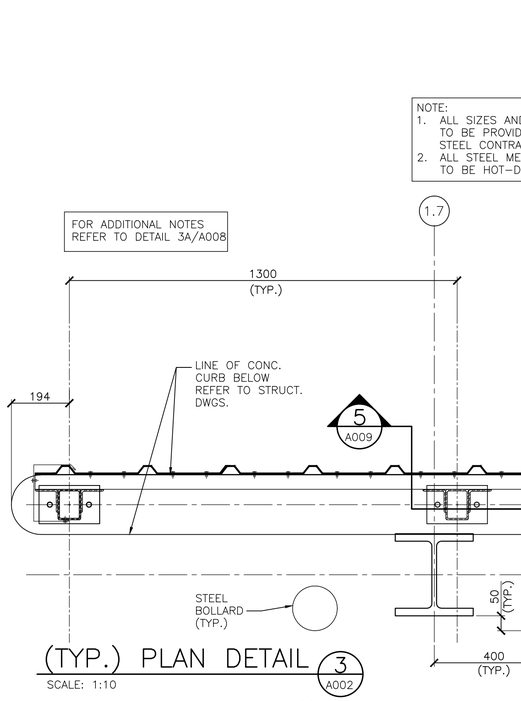
ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH

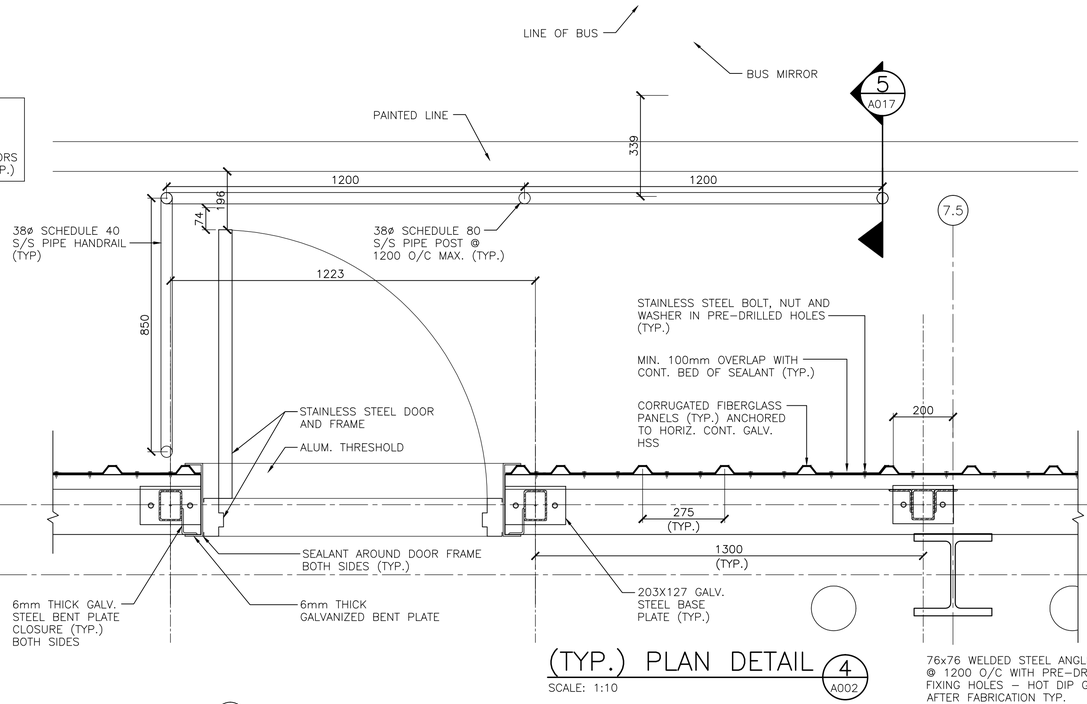
NOTE:
1. ALL SIZES AND CONNECTIONS TO BE PROVIDED BY MISC. STEEL CONTRACTOR
2. ALL STEEL MEMBERS AND ANCHORS TO BE HOT-DIP GALVANIZED (TYP.)

FOR ADDITIONAL NOTES REFER TO DETAIL 3A/A008



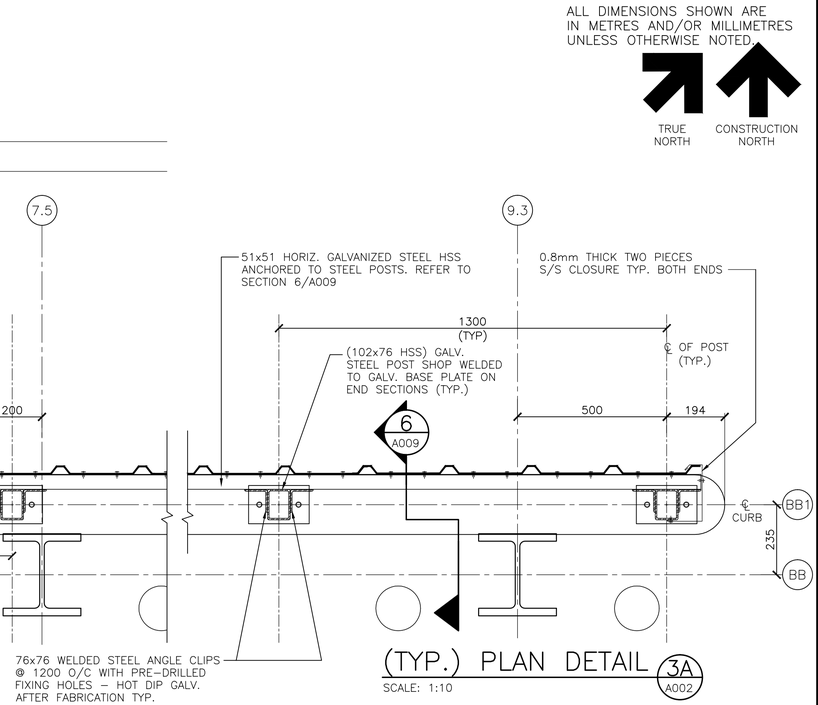
(TYP.) PLAN DETAIL 3 A002

SCALE: 1:10



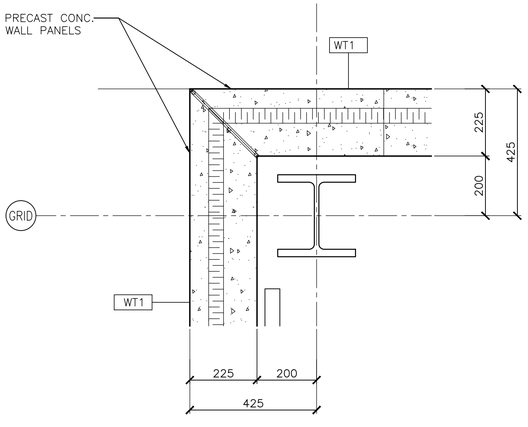
(TYP.) PLAN DETAIL 4 A002

SCALE: 1:10



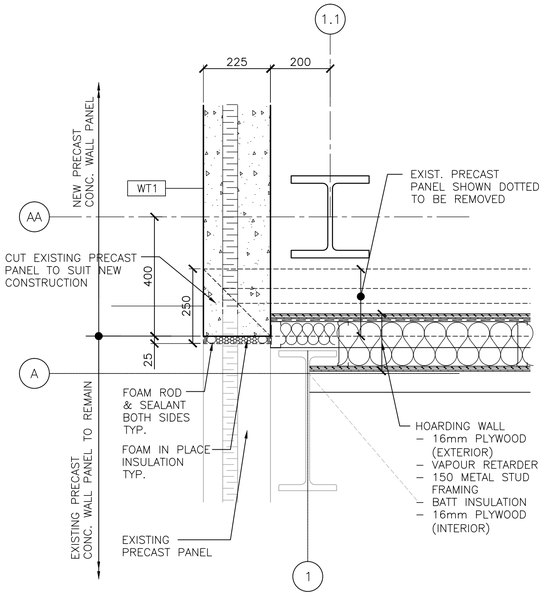
(TYP.) PLAN DETAIL 3A A002

SCALE: 1:10



(TYP.) PLAN DETAIL 1 A002

SCALE: 1:10



(TYP.) PLAN DETAIL 2 A002

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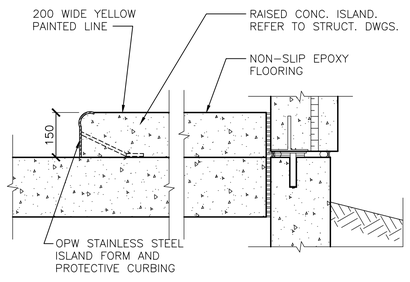
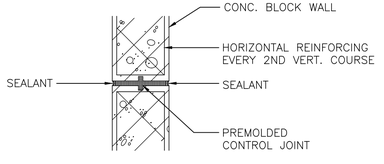


CURB DETAIL @ RAISED ISLAND 7 A005

SCALE: 1:10

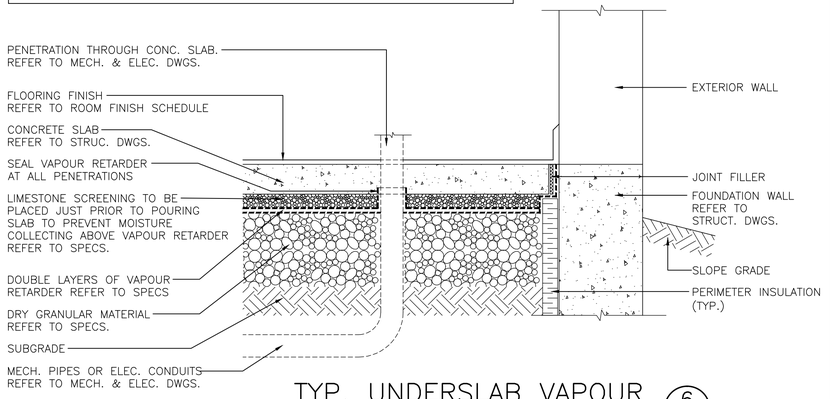


TYP. CONC. BLOCK CONTROL JOINT DETAIL 5 A008

SCALE: 1:10

NOTE:

1. UNDER SLAB VAPOUR RETARDER MUST BE PROVIDED UNDER SLABS THAT ARE COVERED WITH FLOORING FINISHES.
2. THE VAPOUR RETARDER SHALL HAVE ALL LAPS, SEAMS, PENETRATIONS AND TERMINATIONS SEALED AND SHOULD EITHER CARRY ACROSS FOOTINGS, PILE CAPS, GRADE BEAMS AND FOUNDATIONS OR BE TURNED UP TO THE TOP OF THE SLAB AT THESE ELEMENTS AND SEALED.
3. FOR ALL REQUIRED ASTM TESTS REFER TO SPECS.
4. EXTEND VAPOUR RETARDER 1500mm BEYOND THE LIMIT OF FLOOR WITH FINISHES. REFER TO PLAN.



TYP. UNDERSLAB VAPOUR RETARDER DETAIL 6 A008

SCALE: 1:10

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		2	16/06/30	RECORD			
		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: D.V. 13/09/15	DESIGNED BY: A.K. 13/09/01
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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

PLAN DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-008	0	20/92

METRIC

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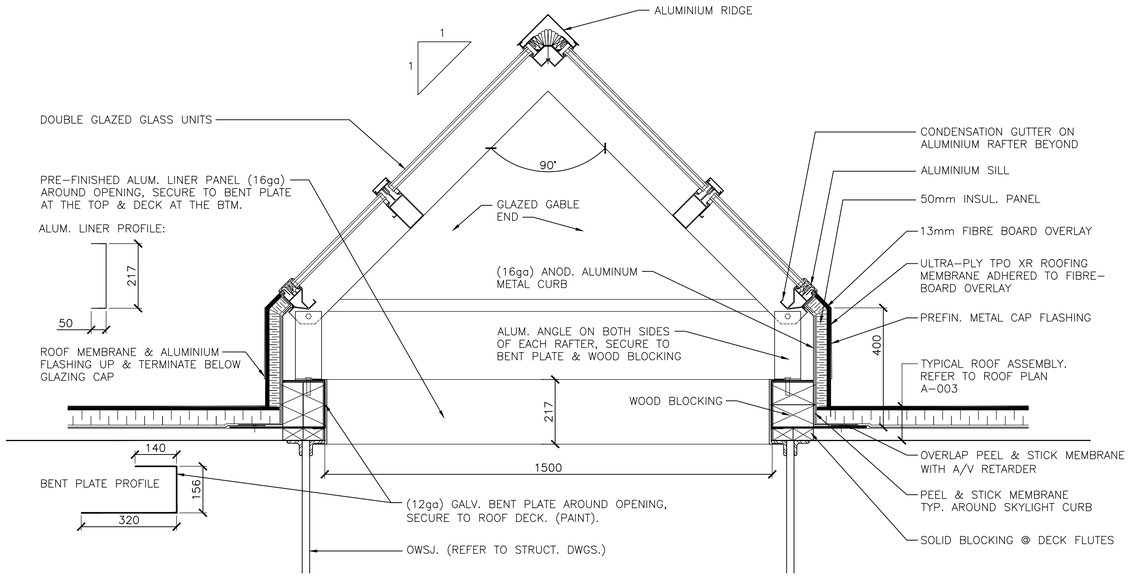
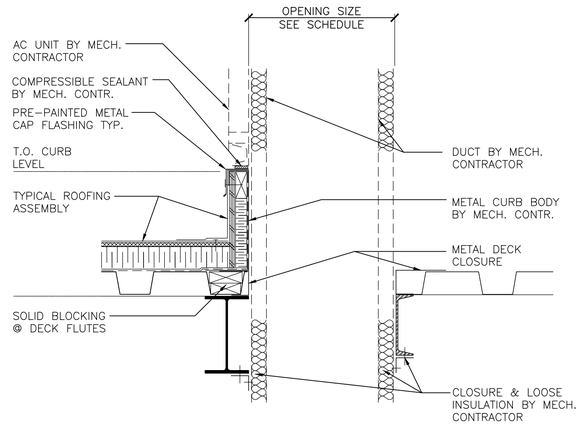


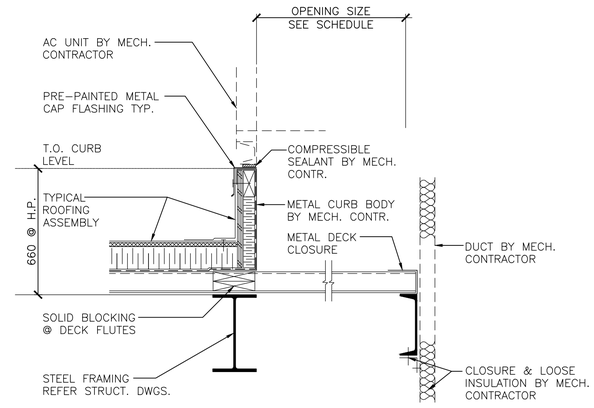
SECTION @ SKYLIGHT (1 TYP.)

SCALE: 1:10



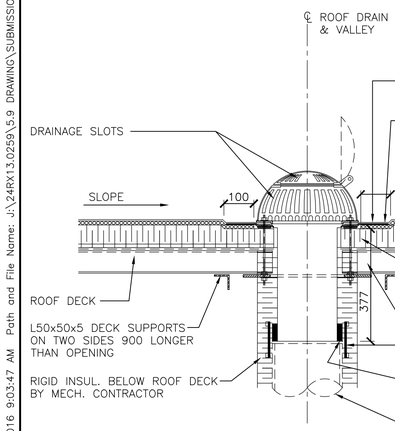
ROOF SUPPORT FOR MECH AC UNIT (3 TYP)

SCALE: 1:10



ROOF SUPPORT FOR MECH AC UNIT (4 TYP)

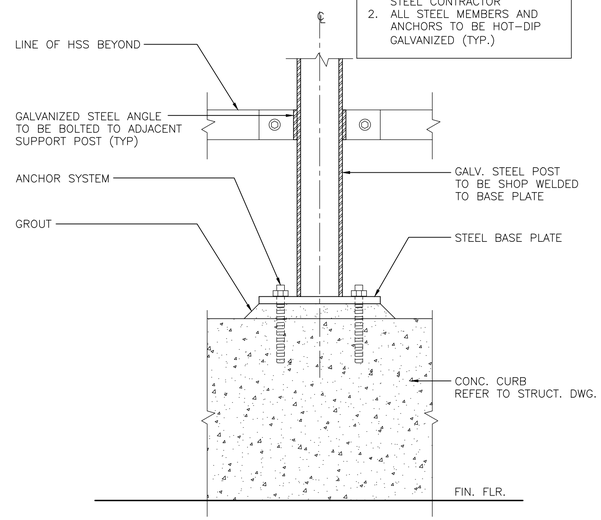
SCALE: 1:10



ROOF DRAIN DETAIL (2 TYP.)

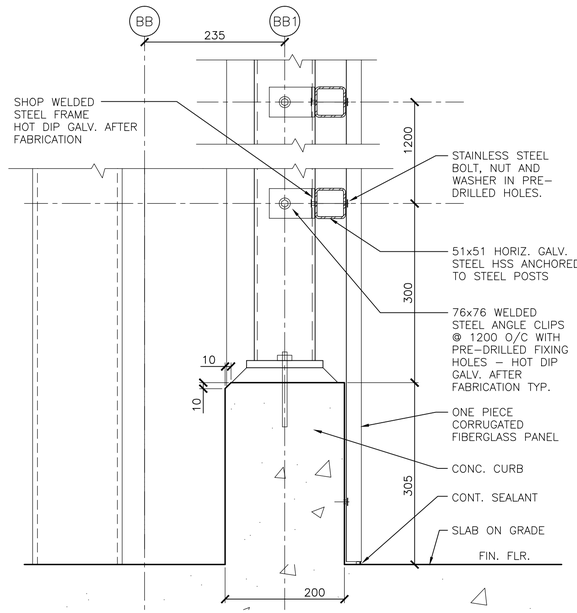
SCALE: 1:10

NOTES:
1. ALL SIZES AND CONNECTIONS TO BE PROVIDED BY MISC. STEEL CONTRACTOR
2. ALL STEEL MEMBERS AND ANCHORS TO BE HOT–DIP GALVANIZED (TYP.)



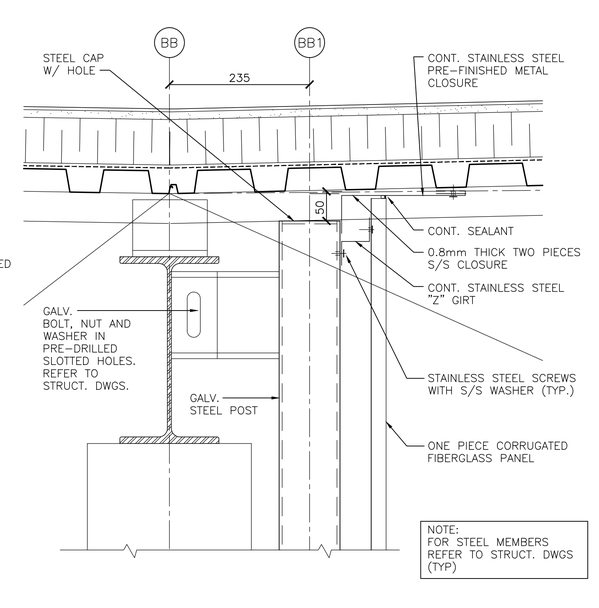
SECTION DETAIL @ SPLASH GUARD WALL (5 A008)

SCALE: 1:5



SECTION DETAIL @ SPLASH GUARD WALL (6 A006)

SCALE: 1:5



SECTION DETAIL @ SPLASH GUARD POST CONNECTION (7 A006)

SCALE: 1:5

METROLINX PROJECT NO. 129709

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		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

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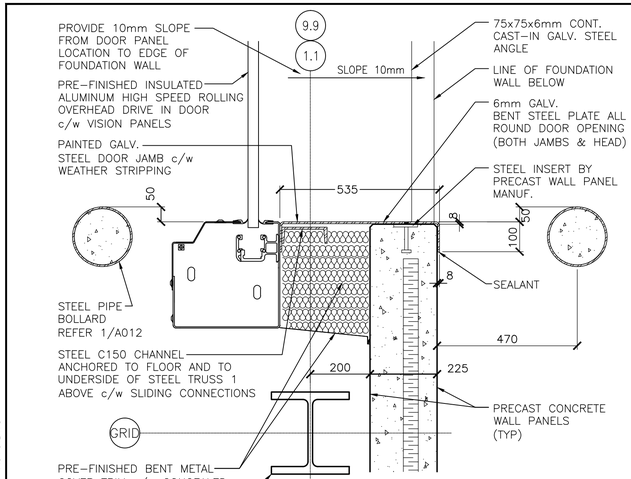
ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

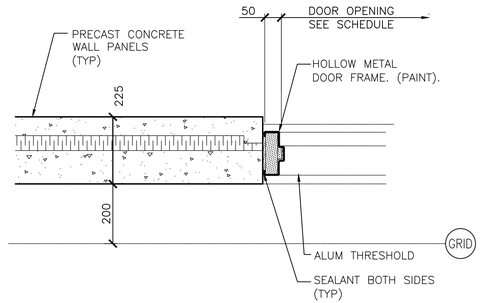
ROOF & MISC. DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	A–009	0	21/92



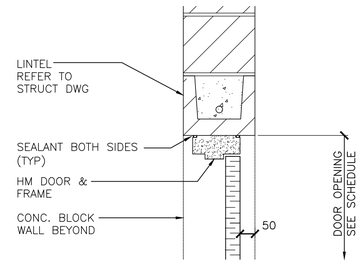
(TYP.) DOOR JAMB 1 / A010

SCALE: 1:10



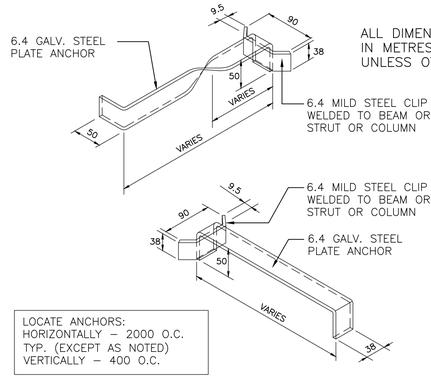
DOOR JAMB 2 / A010

SCALE: 1:10



DOOR HEAD 3A / A010

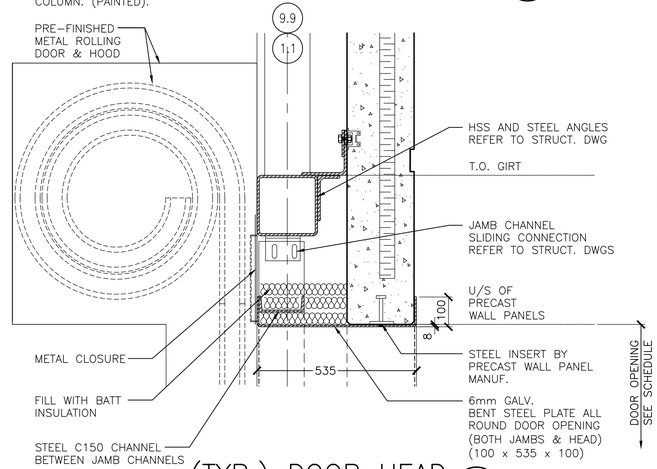
SCALE: 1:10



TYP. MASONRY ANCHOR DETAIL 5 / A010

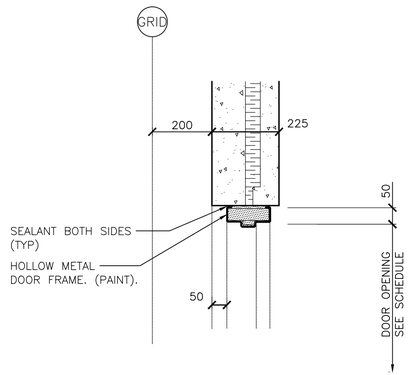
SCALE: 1:10

NOTE: FOR LINTEL REFER TO STRUCT. DWGS



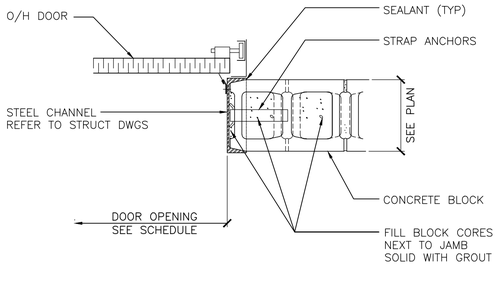
(TYP.) DOOR HEAD 1A / A006

SCALE: 1:10



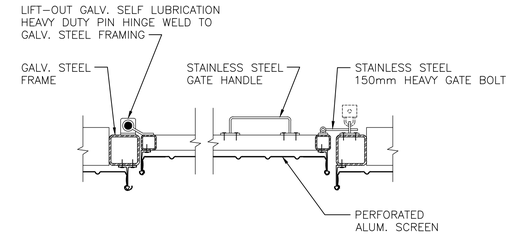
DOOR HEAD 2A / A010

SCALE: 1:10



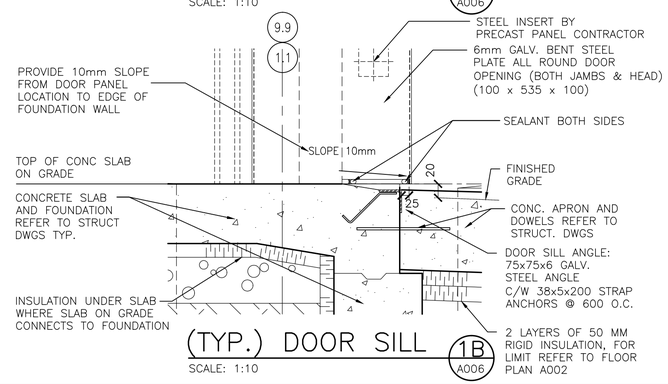
DOOR JAMB 4 / A010

SCALE: 1:10



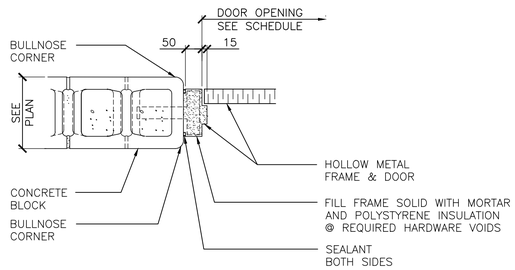
DOOR JAMB AT MANGATE 2 & 3 7 / A010

SCALE: 1:10



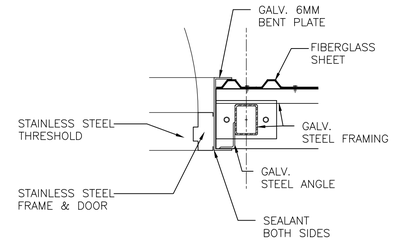
(TYP.) DOOR SILL 1B / A006

SCALE: 1:10



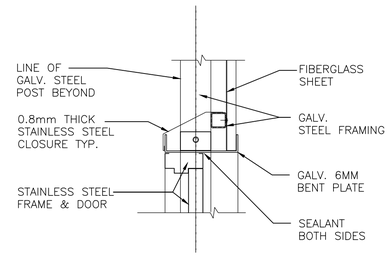
DOOR JAMB 3 / A010

SCALE: 1:10



DOOR JAMB 6 / A010

SCALE: 1:10



DOOR HEAD 6A / A010

SCALE: 1:10

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		2	16/06/30	RECORD			
		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: D.V. 13/09/15	DESIGNED BY: A.K. 13/09/01
CHECKED BY: L.B. 14/03/07	APPROVED BY: R.K. 14/03/07
SCALE: 1:10	FULL SIZE ONLY

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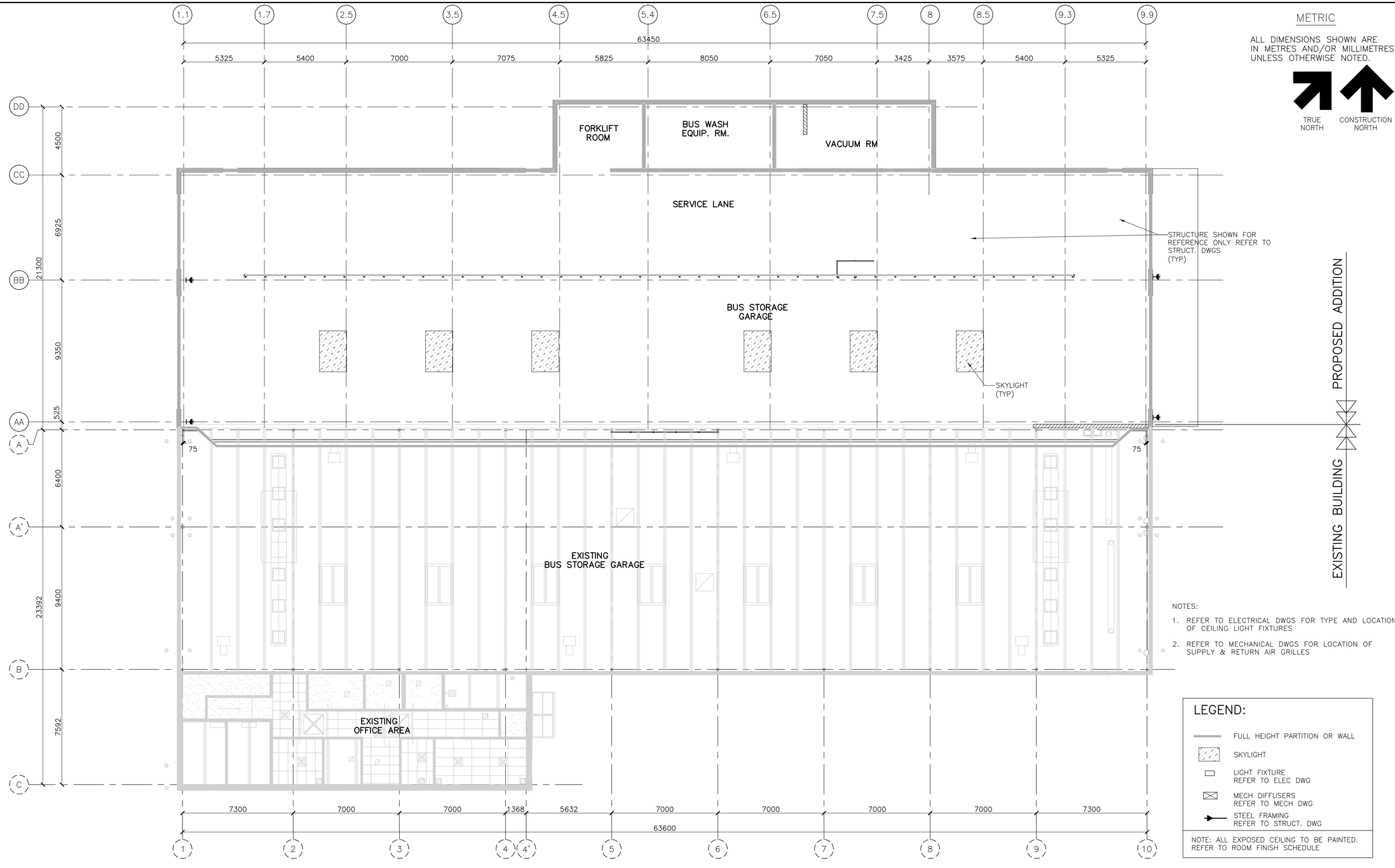
A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

TYPICAL DOOR DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-010	0	22/92



METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH

NOTES:

1. REFER TO ELECTRICAL DWGS FOR TYPE AND LOCATION OF CEILING LIGHT FIXTURES
2. REFER TO MECHANICAL DWGS FOR LOCATION OF SUPPLY & RETURN AIR GRILLES

LEGEND:

- FULL HEIGHT PARTITION OR WALL
- SKYLIGHT
- LIGHT FIXTURE REFER TO ELEC DWG
- MECH DIFFUSERS REFER TO MECH DWG
- STEEL FRAMING REFER TO STRUCT. DWG

NOTE: ALL EXPOSED CEILING TO BE PAINTED. REFER TO ROOM FINISH SCHEDULE

RELECTED CEILING PLAN

SCALE: 1:125

1 / A011

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		2	16/06/30	RECORD			
		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

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SCALE: 1:125	FULL SIZE ONLY

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

REFLECTED CEILING PLAN

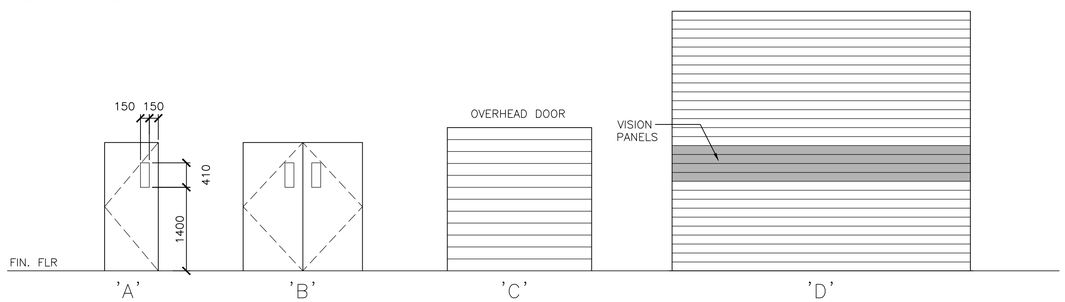
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-011	0	23/92

ROOM FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	FLOOR MAT.	FLOOR FIN.	BASE MAT.	BASE FIN.	WALLS NORTH MAT.	WALLS NORTH FIN.	WALLS SOUTH MAT.	WALLS SOUTH FIN.	WALLS EAST MAT.	WALLS EAST FIN.	WALLS WEST MAT.	WALLS WEST FIN.	CEILING MAT.	CEILING FIN.	CEILING HEIGHT	REMARKS
FLOOR PLAN – REFER TO DRAWING A002																	
01	BUS STORAGE GARAGE	CONC	H&S	–	–	FGS	PF	–	–	P/CON	PT	P/CON	PT	EXP	PT	6400	PAINT ALL STRUCTURAL FRAMING INCLUDING ROOF DECK
02	SERVICE LANE	CONC	EPF	EPC	–	P/CON CBLK	EPC	FGS	PF	P/CON	EPC	P/CON	EPC	EXP	EPC	6400	PAINT (EPC) ALL STRUCTURAL FRAMING INCLUDING DECK REFER TO FLOOR PLAN FOR EPOXY LIMIT
03	VACUUM ROOM	CONC	EPF	EPC	–	P/CON	PT	CBLK	PT	P/CON	PT	CBLK	PT	EXP	PT	6400	PAINT ALL STRUCTURAL FRAMING INCLUDING ROOF DECK
04	BUS WASH EQUIPMENT ROOM	CONC	EPF	EPC	–	P/CON	PT	CBLK	PT	CBLK	PT	CBLK	PT	EXP	PT	6400	PAINT ALL STRUCTURAL FRAMING INCLUDING ROOF DECK
05	FORKLIFT ROOM	CONC	EPF	EPC	–	P/CON	PT	CBLK	PT	CBLK	PT	P/CON	PT	EXP	EPC	6400	

DOOR SCHEDULE

DOOR No.	TYPE	SIZE NO.	DOOR MAT.	DOOR FIN.	DOOR GLASS	FRAME MAT.	FRAME FIN.	FRAME DETAIL	HARDWARE THRESHOLD	HARDWARE WEATHER STRIPPING	HARDWARE DOOR CLOSER	HARDWARE SECURITY CONTROLLED	HARDWARE PEDESTRIAN DOOR OPERATION & ACCESSORIES	OPERATIONS & ACCESSORIES: INSIDE GROUND LOOP (IGL)	OUTSIDE GROUND LOOP (OGL)	INSIDE ELECTRIC EYE (IEE)	OUTSIDE ELECTRIC EYE (OEE)	CARD READER (CR)	ALARM BELLS (AB)	INSIDE PUSH BUTTON STATION (IPB)	OUTSIDE TRAFFIC LIGHTS (OTL)	INSIDE TRAFFIC LIGHTS (ITL)	DOOR CONTROL INTERLOCK WITH DOCK LEVELLER	DOOR CONTROL INTERLOCK WITH FIRE ALARM	CONTROL SEQUENCE	PANIC DEVICE	FIRE RATING	SIGN	REMARKS
FLOOR PLAN – REFER TO DRAWING A002																												
ext–01	EXISTING DOOR AND DOOR FRAME TO BE REMOVED.																											
ext–02	EXISTING DOOR AND DOOR FRAME TO BE REMOVED.																											
01	A	1	HM	PT	WG	HM	PT	2&2A/A–010	*	*	*	–	LS					*								*		*	
02	A	1	HM	PT	WG	HM	PT	2&2A/A–010	*	*	*	–	LS					*								*		*	
03	A	2	SST	PF	WG	SST	PF	3&3A/A–010	*	*	*	–	LS					*										*	
04	B	3	SST	PF	WG	SST	PF	3&3A/A–010	*	*	*	–	LS					*										*	
05	A	1	SST	PF	WG	SST	PF	6&6A/A–010	*	*	*	–	PS					*										*	
06	A	1	HM	PT	WG	HM	PT	2&2A/A–010	*	*	*	–	LS					*								*		*	
07	A	1	HM	PT	WG	HM	PT	2&2A/A–010	*	*	*	–	LS					*								*		*	
M01A	D	4	ALUM	ANOD	VP	STL	PF	1,1A&1B/A–010		*					*	*		*		*	*							*	
M01B	D	4	ALUM	ANOD	VP	STL	PF	1,1A&1B/A–010		*				*		*		*		*		*							
M02A	D	5	ALUM	ANOD	VP	STL	PF	1,1A&1B/A–010		*					*	*		*		*	*								
M02B	D	5	ALUM	ANOD	VP	STL	PF	1,1A&1B/A–010		*				*		*		*		*		*							
M03	C	6	STL	PF				4/A–010		*						*		*		*		*							CONTROL PANEL ON SERVICE LINE SIDE
GATES–1&2	EXISTING GATES TO BE RELOCATED TO NEW LOCATIONS.																												
MAN GATE 1	CHAIN LINK FENCE GATE										*	*	CR					*											
MAN GATE 2	GALV. STEEL GATE WITH PERFORATED ALUM. PANELS WITH PAD LOCK																											REFER DETAIL 7/A010
MAN GATE 3	GALV. STEEL GATE WITH PERFORATED ALUM. PANELS WITH PAD LOCK																											REFER DETAIL 7/A010



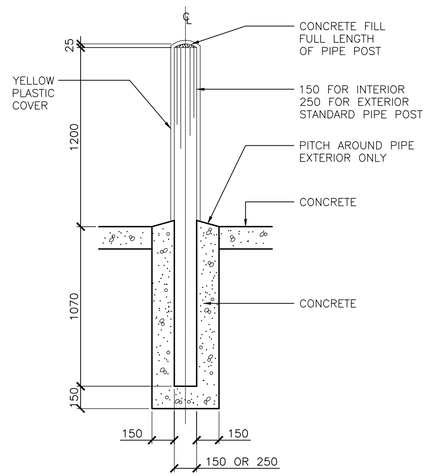
DOOR TYPES

ABBREVIATIONS

ALUM	ALUMINUM
ANOD	ANODIZED
ACT	ACOUSTIC CEILING TILE
AS	REMOVABLE ASTRAGAL
APSF	ALUMINIUM PARTITION SYSTEM FRAMING (PC350 OR EQUAL)
ATDG	AIR TRANSFER DOOR GRILLE
BP	BENT PLATE
CBLK	CONCRETE BLOCK
CFT	CERAMIC FLOOR TILE
CONC	CONCRETE
CPL	CHECKER PLATE
CPT	CARPET
CPTT	CARPET TILE
CWT	CERAMIC WALL TILE
DB	DEAD BOLT
D/GL	DOUBLE GLAZED
DR(P)	DOOR RELEASE (PANIC)
DSW	DOOR SWEEP
DO	DOOR OPENING
EDO	ELECTRIC DOOR OPERATOR
EPF	EPOXY FLOORING
EPC	EPOXY COATING
ES	ELECTRIC STRIKE PLATE
EXIST	EXISTING
EXP	EXPOSED
FB	FLUSH BOLT
FD	FLOOR DRAIN
FGS	FIBER GLASS SHEETS
FS FL	FIRE SHUTTER WITH FUSIBLE LINK
GALV	GALVANIZED
GB	GYPSUM BOARD
GCB	GYPSUM CEILING BOARD
GL	GLASS
GWB	GYPSUM WALL BOARD
GRTG	GRATING
HCW	HOLLOW CORE WOOD
HOD	HOLD OPEN DEVICE
HM	HOLLOW METAL
HR	HOUR
H&S	HARDENER & SEALER
IHM	INSULATED HOLLOW METAL
IMP	INSULATED METAL PANEL
ITGL	INSULATED TEMPERED (SAFETY) GLASS
LAM	LAMINATED
LAM/SGL	LAMINATED SAFETY GLASS
LH	LEFT HAND
LIQ/S	LIQUID SEALER
LS	LOCK SET
MC	MAGNETIC CATCH
MET	METAL
ML	METAL LINER
MLO	MANUAL LIFT OPERATOR
MP	METAL PANEL
MSNRY	MASONRY
MTL	METAL
NMH	NON–METALLIC HARDENER
NR	NON RATED
OGL	OBSCURE GLASS
P/CON	PRECAST CONCRETE
PB	PUSH BAR
PDO	POWER DOOR OPERATOR
PF	PREFINISHED
PH	PULL HANDLE
PLAM	PLASTIC LAMINATE
PL	PRIVACY LOCK
P&M	PLYWOOD & METAL
PFT	PORCELAIN FLOOR TILE
PS	PASSAGE SET
PT	PAINT
PP	PUSH PLATE
QT	QUARRY TILE
RBF	RUBBER SHEET FLOORING
RH	RIGHT HAND
RRV	RAPID ROLL VINYL
RWB	RUBBER WALL BASE
SCW	SOLID CORE WOOD
SL	SHEET LINOLEUM
SLD	SLIDING TRACK
S&L	STAIN & LACQUER
S/FPRF	SPRAYED FIREPROOFING
SPT	SPECIAL PAINT
SST	STAINLESS STEEL
STL	STEEL
STN	STONE
TT	THUMBTURN
TRZ	TERRAZZO
TSGL	TEMPERED SAFETY GLASS
UF	UNFINISHED
VCT	VINYL COMPOSITE TILE
VP	VISION PANEL
VSDT	VINYL STATIC DISSIPATIVE TILE
WD	WOOD
WG	WIRED GLASS
WSC	WOOD SOLID CORE
WSCV	WOOD SOLID CORE VENEER
WMP	WIRE MESH PARTITION

DOOR SIZES

NO.	WIDTH	HEIGHT	THK.
1	915	2150	45
2	1000	2150	45
3	2–1000	2150	45
4	7500	4600	±45
5	5000	4600	±45
6	2440	3000	±45



FIXED PIPE BOLLARD SECTION 1 TYP.

SCALE: 1:20

METROLINX PROJECT NO. 129709

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		2	16/06/30	RECORD			
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DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

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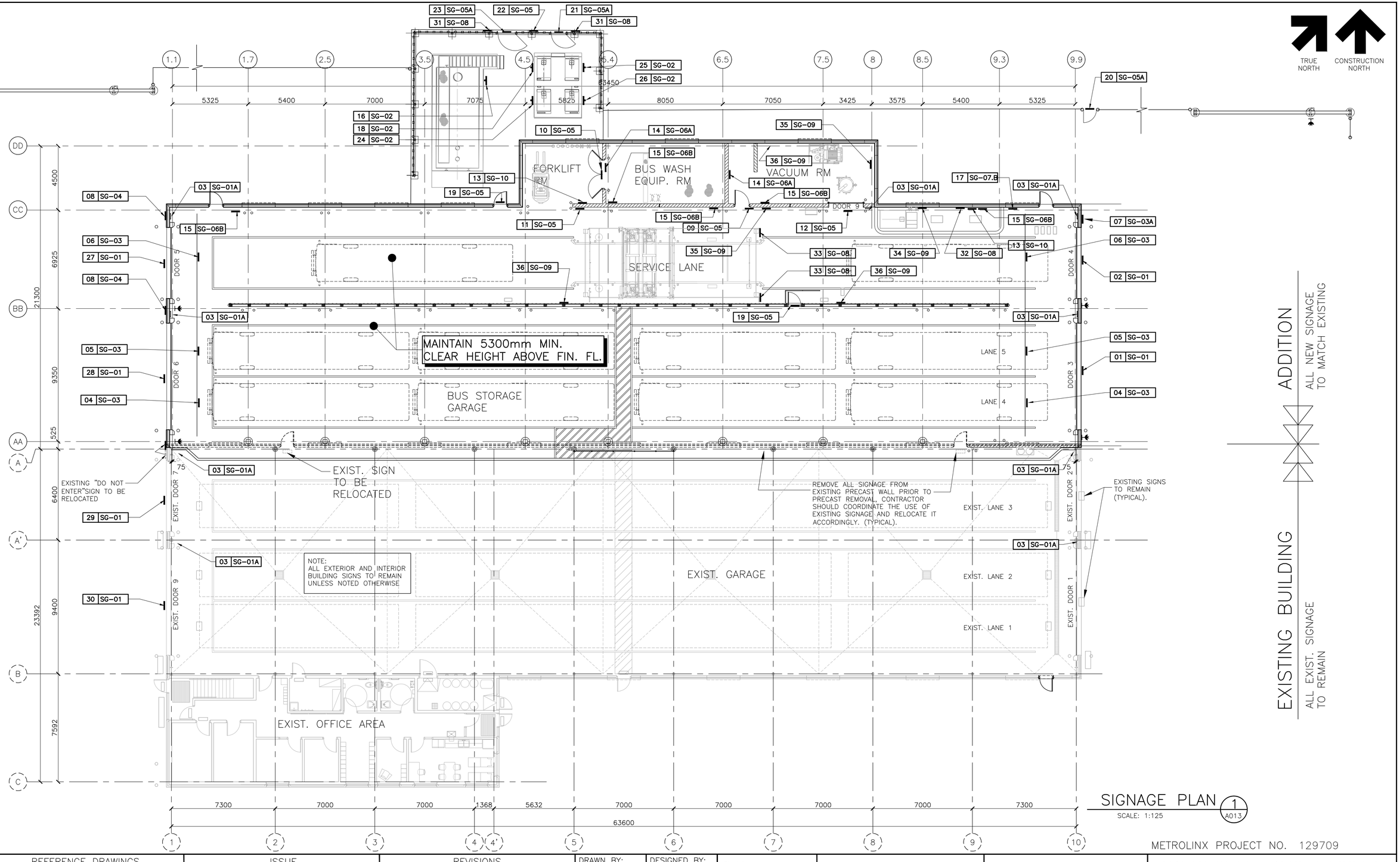
A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

ROOM FINISH SCHEDULE, DOOR SCHEDULE, DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	A–012	0	24/92



SIGNAGE PLAN 1 A013

SCALE: 1:125

METROLINX PROJECT NO. 129709

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		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY:	DESIGNED BY:
D.V. 13/09/15	A.K. 13/09/01
CHECKED BY:	APPROVED BY:
L.B. 14/03/07	R.K. 14/03/07

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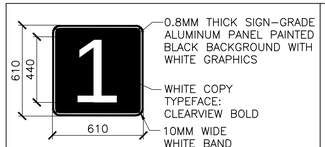
ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

SIGNAGE PLAN

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-013	0	25/92

User Name: Mariam Muhi Plot Date/Time: Wednesday, June 15, 2016 9:07:06 AM Path and File Name: J:\24RX13.0259\5.9 DRAWING\SUBMISSIONS\2016-06-XX_RECORD\ARCH\AUTOCAD\LAYOUTS\129709-A013.DWG



MESSAGES ARE EXAMPLES ONLY
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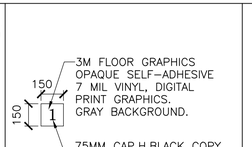
SIGN TYPE SG-01
BUS BAY NUMBER ID – WALL MOUNTED



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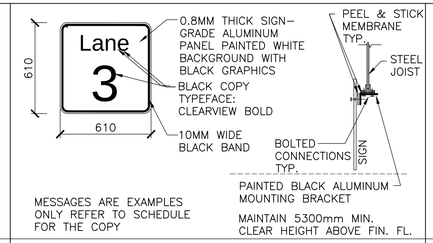
SIGN TYPE SG-01A
DOOR NUMBER ID–ADHERED TO DOOR CONTROL PANEL



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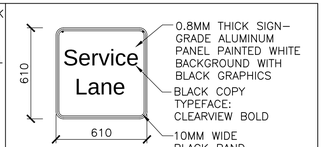
SIGN TYPE SG-03
BUS LANE NUMBER ID – ANCHORED TO STRUCTURAL



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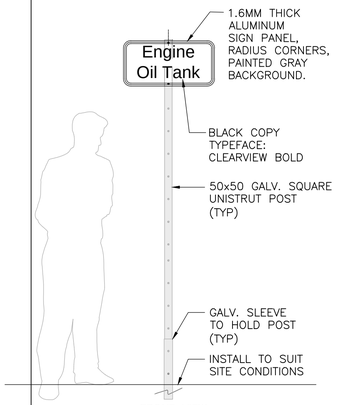
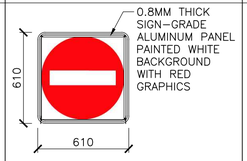
SIGN TYPE SG-03A
BUS LANE NAME ID – WALL MOUNTED



MESSAGES ARE EXAMPLES ONLY
REFER TO SCHEDULE FOR THE COPY

SIGN TYPE SG-02
WARNING SIGN – POLE MOUNTED



SIGN TYPE SG-04
DO NOT ENTER – WALL MOUNTED

0.8MM THICK SIGN–GRADE ALUMINUM PANEL PAINTED FIRE RED ON WHITE BACKGROUND WITH ARROWS AND DECALS. EACH CORNER IS ROUNDED AND HAS A HOLE FOR MOUNTING (TYP.)

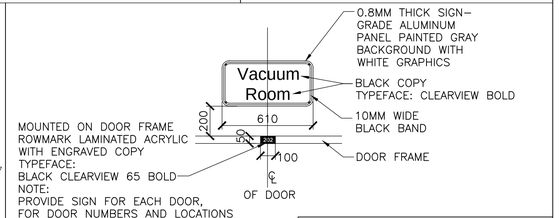
SIGN TYPE SG-06
DANGER – WALL/STEEL COLUMN MOUNTED

N.T.S

3M FLOOR GRAPHICS OPAQUE SELF–ADHESIVE 7 MIL VINYL, DIGITAL PRINT GRAPHICS. WHITE AND ORANGE BACKGROUND.

NOTE: CLASS TBD BY FINALIZED SHOP DRAWING AND ARC STUDY

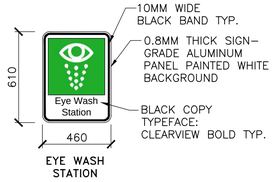
SIGN TYPE SG-06A
DANGER –ADHERED TO ELECTRICAL PANELS



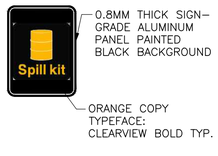
SIGN TYPE SG-05
ROOM ID – WALL MOUNTED
200mm ABOVE DOOR FRAME

300X300mm SAME AS SG–05
INSTALLED ON SIDING

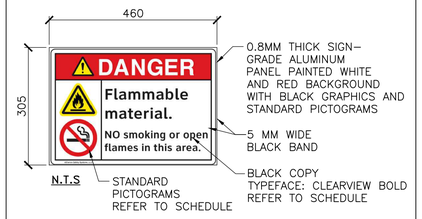
SIGN TYPE SG-05A



SIGN TYPE SG-07
SAFETY – WALL MOUNTED



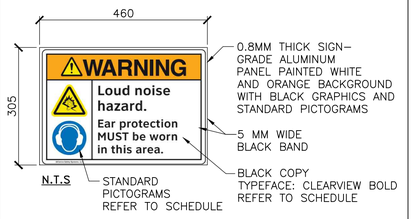
SIGN TYPE SG-10
SAFETY – WALL MOUNTED



NOTES:

1. MESSAGE AND PICTOGRAMS ARE EXAMPLES ONLY. REFER TO SCHEDULE FOR THE EXACT COPY AND PICTOGRAMS
2. SIZE OF TEXT AND PICTOGRAM TO FIT SIGN SIZE

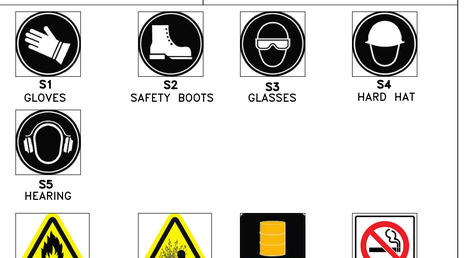
SIGN TYPE SG-08
DANGER – WALL/DOOR/EQUIPMENT MOUNTED



NOTES:

1. MESSAGE AND PICTOGRAMS ARE EXAMPLES ONLY. REFER TO SCHEDULE FOR THE EXACT COPY AND PICTOGRAMS
2. SIZE OF TEXT AND PICTOGRAM TO FIT SIGN SIZE

SIGN TYPE SG-09
WARNING – WALL/DOOR/EQUIPMENT MOUNTED



PICTOGRAMS

SIGNAGE SCHEDULE

SIGN NO.	SIGN TYPE	DESCRIPTION	QUANTITY	COPY & PICTOGRAM	REMARKS
01	SG–01	DOOR NUMBER, NUMERAL	1	3	
02	SG–01	DOOR NUMBER, NUMERAL	1	4	
03	SG–01A	DOOR NUMBER, NUMERAL	9 STICKERS	PROVIDE INDIVIDUAL STICKERS WITH THE FOLLOWING COPIES 1, 2, 3, 4, 5, 6, 7, 8 & 9	ONE STICKER TO BE ADHERED TO EACH EXISTING AND NEW DOOR CONTROL PANELS, LOCATION TO BE VERIFIED ON SITE
04	SG–03	LANE NUMBER, NUMERAL	2	LANE 4	DOUBLE LINE COPY
05	SG–03	LANE NUMBER, NUMERAL	2	LANE 5	DOUBLE LINE COPY
06	SG–03	LANE NUMBER, NUMERAL	2	LANE 6	DOUBLE LINE COPY
07	SG–03	OPERATIONAL BAY ID	1	SERVICE LANE	DOUBLE LINE COPY
08	SG–04	NO ENTRY WALL MOUNTED	2	AS PER SIGN TYPE	DOUBLE LINE COPY
09	SG–05	OPERATIONAL ENTRANCE ID/PLAQUE	1	VACUUM ROOM	DOUBLE LINE COPY
10	SG–05	OPERATIONAL ENTRANCE ID/PLAQUE	1	BUS WASH EQUIPMENT ROOM	DOUBLE LINE COPY MAKE SIGN LONGER TO FIT TEXT
11	SG–05	OPERATIONAL ENTRANCE ID/PLAQUE	1	FORK LIFT ROOM	DOUBLE LINE COPY INSTALL 2300 A.F.F.
12	SG–01	DOOR NUMBER, NUMERICAL	1	9	INSTALL ABOVE DOOR
13	SG–10	SAFETY – SPILL KIT	2		
14	SG–06A	ELECTRICAL HAZARD	2	AS PER SIGN TYPE	INSTALL ON ELECTRICAL PANEL
15	SG–06B	FIRE EXTINGUISHER	5	AS PER SIGN TYPE	INSTALL ON DOOR
16	SG–02	TANK ID	1	DIESEL TANK	
17	SG–07B	SAFETY – EYE WASH STATION	1	AS PER SIGN TYPE	
18	SG–02	TANK ID	1	ENGINE OIL TANK	
19	SG–05	OPERATIONAL ENTRANCE ID/PLAQUE	2	SERVICE LANE	DOUBLE LINE COPY
20	SG–05A	OPERATIONAL ENTRANCE ID/PLAQUE	1	MAN GATE–1	INSTALL ON SIDING
21	SG–05A	OPERATIONAL ENTRANCE ID/PLAQUE	1	MAN GATE–2	INSTALL ON SIDING
22	SG–05	OPERATIONAL ENTRANCE ID/PLAQUE	1	FUEL DELIVERY	INSTALL ON SIDING
23	SG–05A	OPERATIONAL ENTRANCE ID/PLAQUE	1	MAN GATE–3	
24	SG–02	TANK ID	1	AUTOMATIC TRANSMISSION FLUID TANK	DOUBLE LINE COPY
25	SG–02	TANK ID	1	WINDSHIELD WASHER FLUID TANK	DOUBLE LINE COPY
26	SG–02	TANK ID	1	ENGINE ANTIFREEZE FLUID TANK	DOUBLE LINE COPY
27	SG–01	DOOR NUMBER, NUMERAL	1	5	
28	SG–01	DOOR NUMBER, NUMERAL	1	6	
29	SG–01	DOOR NUMBER, NUMERAL	1	7	MOUNTED TO EXISTING PRECAST
30	SG–01	DOOR NUMBER, NUMERAL	1	8	MOUNTED TO EXISTING PRECAST
31	SG–08	DANGER	2	DIESEL FUEL STORAGE/FLAMMABLE LIQUIDS. NO SMOKING NO OPEN FLAME	
32	SG–08	DANGER	1	FUEL DISPENSING NO SMOKING NO OPEN FLAME	
33	SG–08	DANGER	2	DO NOT ENTER MOVING EQUIPMENT MAY START WITHOUT NOTICE	
34	SG–09	WARNING	1	UREA STORAGE TANK. WEAR EYE AND HAND PROTECTIONS	
35	SG–09	WARNING	2	HIGH NOISE LEVEL. WEAR EARS PROTECTION.	
36	SG–09	WARNING	2	WATER AT HIGH TEMPERATURE, HIGH PRESSURE. BURN HAZARD. WEAR EYE PROTECTION, SAFETY SHOES, COVERALL. DO NOT POINT HIGH PRESSURE NOZZLE TOWARDS ANY PERSON.	

LEGEND:
03 | SG–02A
03 – SIGN NO.
SG–02A – SIGN TYPE

NOTES:

1. ALL SIGNS COMES WITH ROUNDED CORNERS AND HOLES FOR MOUNTING (TYP.)
2. ALL FASTENERS TO BE STAINLESS STEEL WITH VINYL WASHER
3. PROVIDE VINYL WASHER OR PEEL AND STICK MEMBRANE TO PREVENT METAL TO METAL SITUATION.
4. ALL CONNECTION TO STEEL FRAME TO BE BOLTED.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		2	16/06/30	RECORD			
		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: D.V. 13/09/15	DESIGNED BY: A.K. 13/09/01
CHECKED BY: L.B. 14/03/07	APPROVED BY: R.K. 14/03/07
SCALE: AS SHOWN FULL SIZE ONLY	

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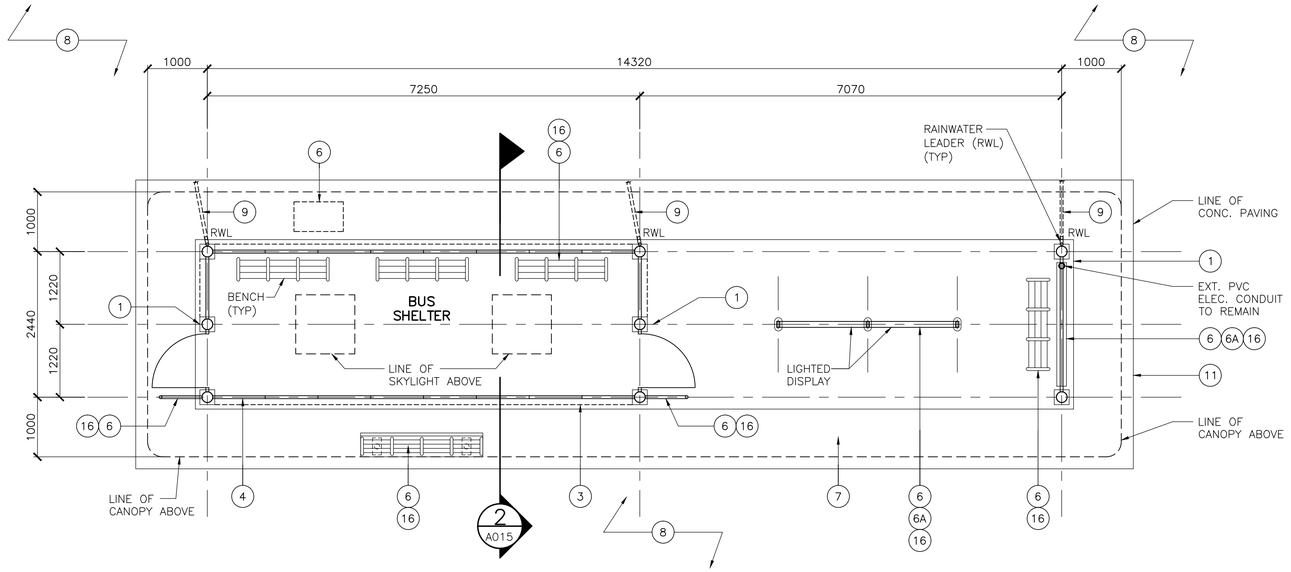
A Division of METROLINX

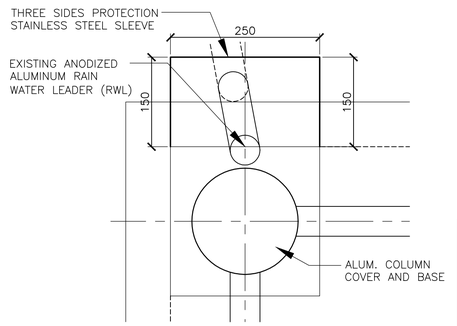
ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
SIGNAGE TYPE AND PICTOGRAMS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	A–014	0	26/92



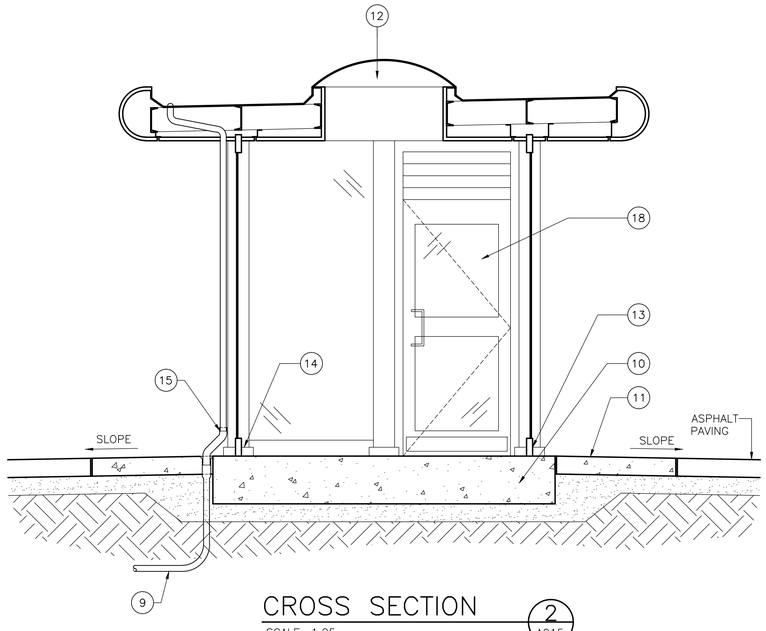
BUS SHELTER FLOOR PLAN (1 / A001)

SCALE: 1:50



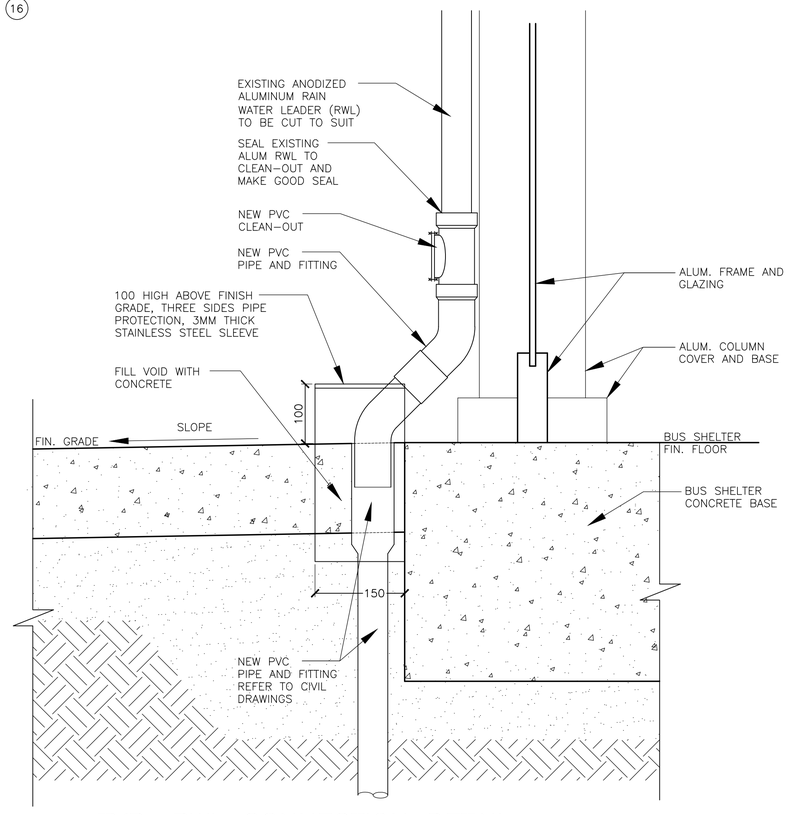
TYP. RWL PLAN DETAIL (4 / A015)

SCALE: 1:5



CROSS SECTION (2 / A015)

SCALE: 1:25



TYP. RWL CONNECTION DETAIL (3 / A015)

SCALE: 1:5

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH

CONSTRUCTION NOTES:

1. VERIFY AND DISCONNECT ALL HYDRO SERVICES TO EXISTING BUS SHELTER.
2. AT TEMPORARY LOCATION FOR THE EXISTING BUS SHELTER, PROVIDE SONOTUBE WITH SUITABLE STRUCTURE TO SUPPORT EXISTING BUS SHELTER UNTIL WORK ON CONCRETE BASE IS COMPLETED. (FOR LOCATION SEE A001)
2A. CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR ANY DAMAGE THAT OCCURS TO EXISTING BUS SHELTER DURING REMOVAL, TEMPORARY STORAGE AND REINSTALLING.
3. REMOVE EXISTING CONC. CURB & FIBREBOARD.
4. REMOVE GLASS PANELS AND STORE FOR RE-INSTALLATION.
5. PROVIDE SUPPORT TO ALL UNSECURED PARTS PRIOR TO REMOVING SHELTER. (TYP)
6. REMOVE ALL EXISTING BENCHES, CONC. BASE, LIGHTED DISPLAY, GUARD RAIL AND SIGN ETC. AND STORE FOR RE-INSTALLATION.
6A. DISCONNECT AND REMOVE INFORMATION SIGN AND STORE FOR RE-USE.
7. REMOVE EXISTING CONCRETE SLAB BASE ENTIRELY.
8. RE-GRADE AREA AROUND SHELTER. REFER TO CIVIL DWGS
9. CONSTRUCT UNDERGROUND DRAINAGE FROM EXISTING SHELTER RWL LOCATIONS TO CONNECT WITH NEW SITE UNDERGROUND STORM WATER DRAINAGE.
10. CONSTRUCT NEW FLAT REINFORCED CONCRETE SLAB FOR SHELTER REFER TO STRUCTURAL DRAWINGS
11. PROVIDE 1.2m WIDE x 150mm THICK CONCRETE PAVING AROUND SHELTER WITH MIN. OF 1% SLOPE AWAY FROM SHELTER.
12. RELOCATE EXISTING SHELTER TO NEW CONCRETE SLAB.
    - INSTALL ALL GLASS PANELS BACK INTO LOCATION, RESEAL ALL GLASS IN PLACE
    - REINSTALL SIDE PANELS AND CEILING PANELS TO ORIGINAL LOCATIONS.
13. SEAL ALUMINUM BOTTOM RAIL TO CONCRTE SLAB WITH CONTINUOUS BEAD OF MASTIC BOTH SIDES, TYPICAL ALL AROUND.
14. SEAL AROUND COLUMN BASE PLATE COVERS.
15. CONNECT RAINWATER LEADERS TO UNDERGROUND DRAINAGE.
16. INSTALL ALL EXISTING BENCHES, GUARD RAIL AND SIGN ETC., TO ORIGINAL LOCATIONS.
17. CONNECT POWER/ALL HYDRO SERVICES TO SHELTER. REFER TO ELEC. DWGS.
18. PROVIDE NEW DOOR HARDWARE TO SUIT NEW LOCATION (WEATHER STRIP THRESHOLD ETC.)
19. REMOVE TEMPORARY SHELTER BASE PRIOR TO RE-GRADING/RE-PAVING OF THE BUS PLATFORM.
20. PROVIDE REPLACEMENT PARTS DEEMED NECESSARY TO BRING STRUCTURE UP TO NEW REQUIREMENTS. (eg. NEW DRAIN SPOUT, NEW HEATING CABLE EXTENSIONS etc.)
21. RECONNECT ALL ELECTRICAL SERVICES.

METROLINX PROJECT NO. 129709

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DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY:	DESIGNED BY:
D.V. 13/11/18	A.K. 13/11/18
CHECKED BY:	APPROVED BY:
L.B. 14/03/07	R.K. 14/03/07
SCALE: AS SHOWN FULL SIZE ONLY	

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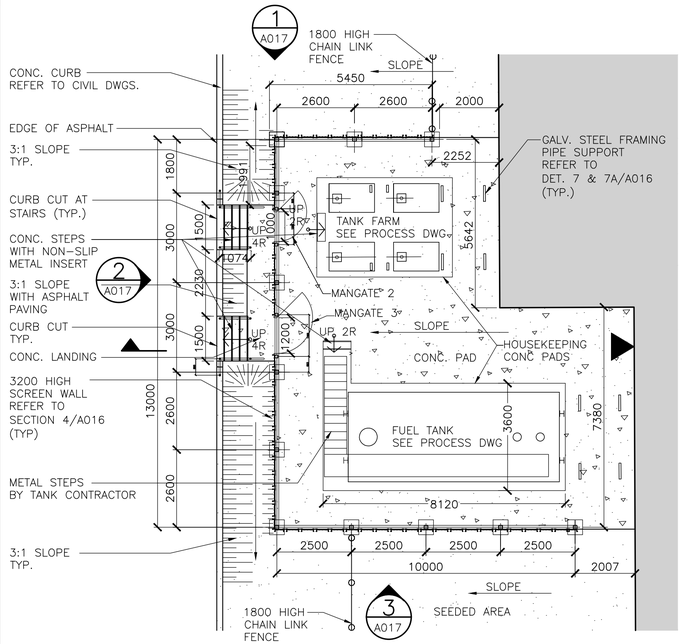
ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

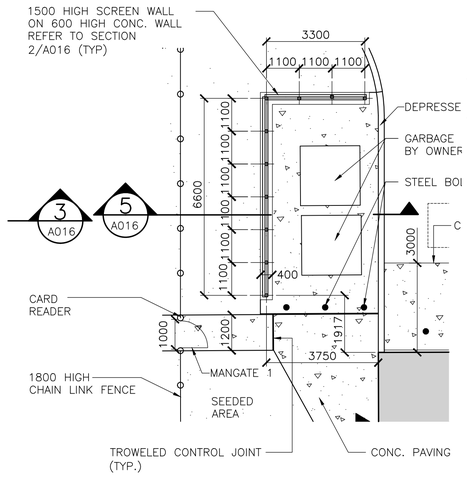
EXIST. BUS SHELTER REHABILITATION

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-015	0	27/92



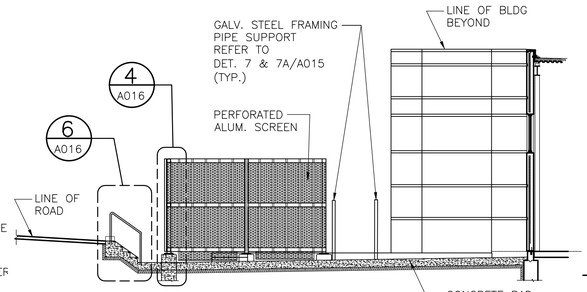
ENLARGED PLAN 1 (A001a)

SCALE: 1:100



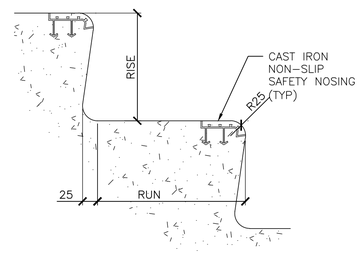
ENLARGED PLAN 2 (A001a)

SCALE: 1:100



SECTION 3 (A016)

SCALE: 1:100



TYP. CONC. STEP DETAIL 6A (A016)

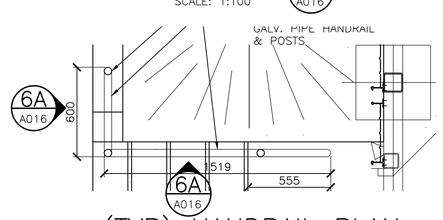
SCALE: 1:5

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

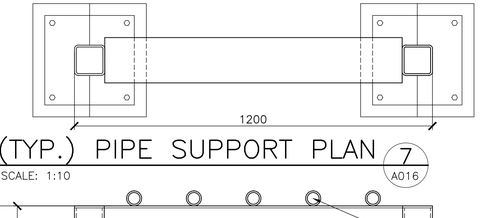
TRUE NORTH

CONSTRUCTION NORTH



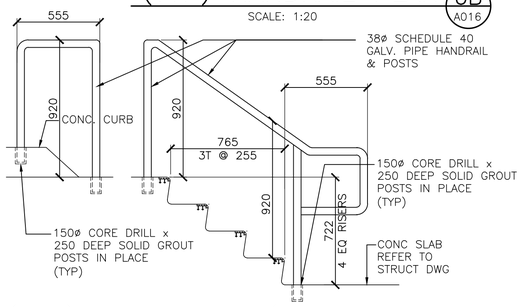
(TYP) HANDRAIL PLAN 6B (A016)

SCALE: 1:20



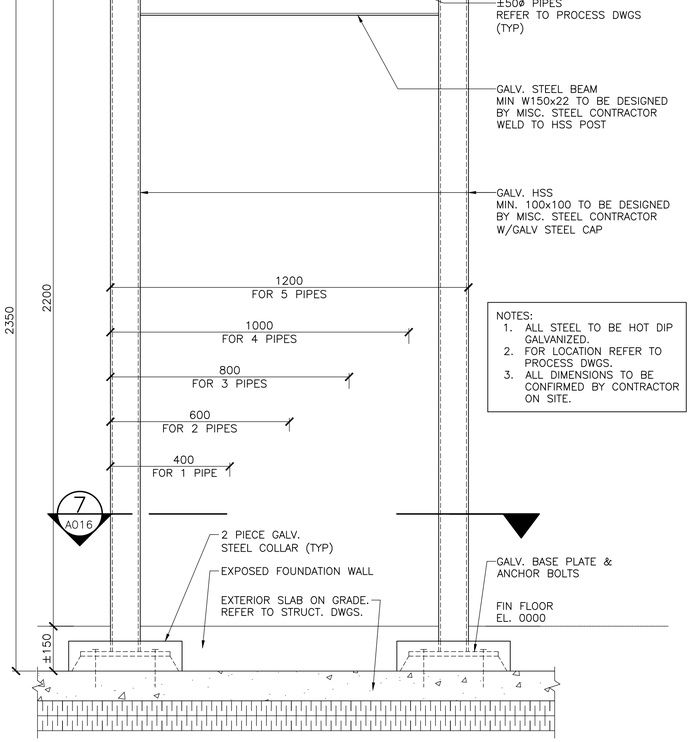
(TYP.) PIPE SUPPORT PLAN 7 (A016)

SCALE: 1:10



(TYP) HANDRAIL W/ EXTENSION 6A (A016)

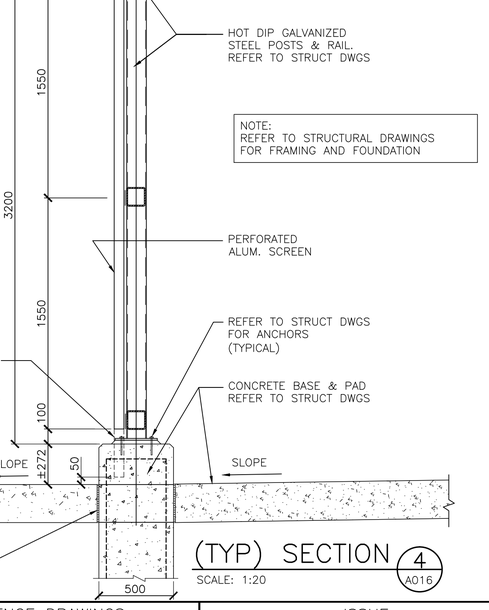
SCALE: 1:20



NOTES:
1. ALL STEEL TO BE HOT DIP GALVANIZED.
2. FOR LOCATION REFER TO PROCESS DWGS.
3. ALL DIMENSIONS TO BE CONFIRMED BY CONTRACTOR ON SITE.

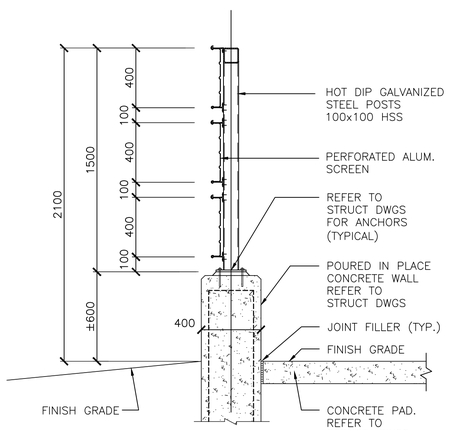
(TYP) PIPE SUPPORT FRAMING ELEVATION 7A (A016)

SCALE: 1:10



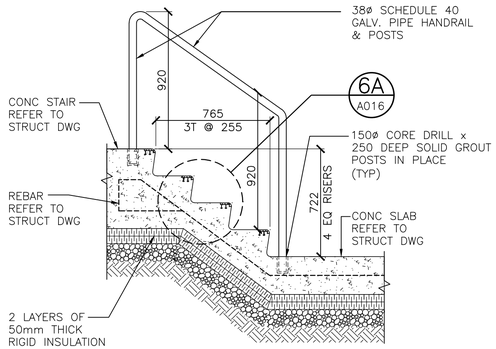
(TYP) SECTION 4 (A016)

SCALE: 1:20



(TYP) SECTION 5 (A016)

SCALE: 1:20



(TYP) CONC. STAIR SECTION 6 (A016)

SCALE: 1:20

METROLINX PROJECT NO. 129709

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		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: D.V. 13/09/15	DESIGNED BY: A.K. 13/09/01
CHECKED BY: L.B. 14/03/07	APPROVED BY: R.K. 14/03/07
SCALE: AS SHOWN FULL SIZE ONLY	

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

SCREEN PLAN & SECTION

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-016	0	28/92

METRIC

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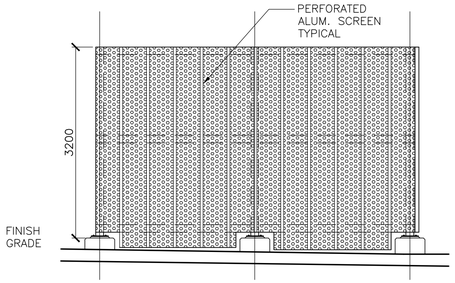
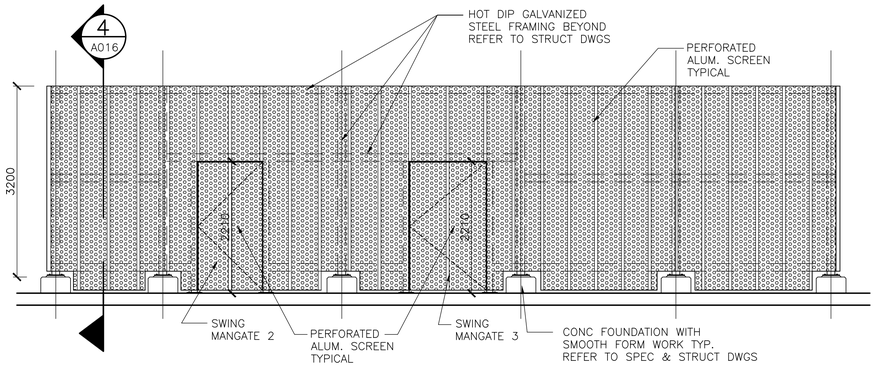


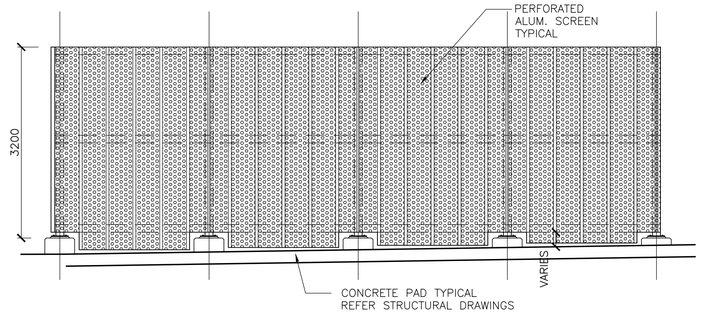
EAST ELEVATION 1 A016

SCALE: 1:50



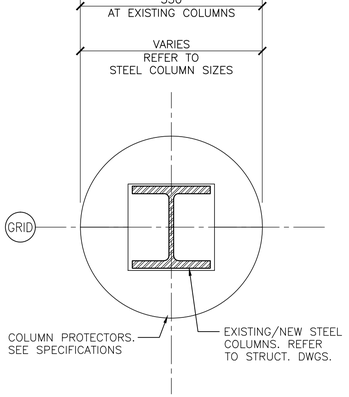
NORTH ELEVATION 2 A016

SCALE: 1:50



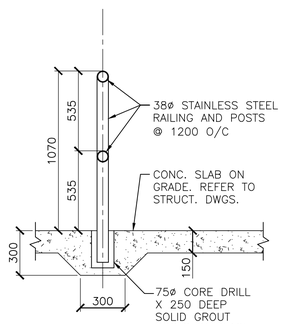
WEST ELEVATION 3 A016

SCALE: 1:50



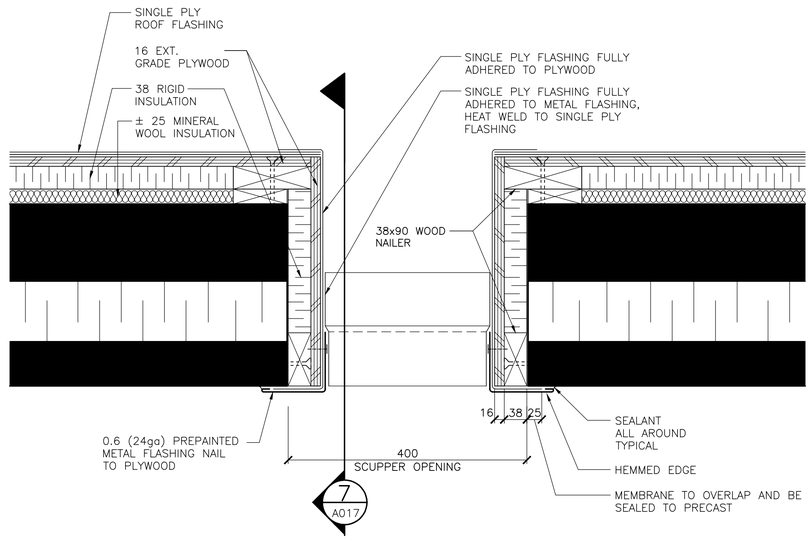
(TYP.) PLAN DETAIL @ COLUMN PROTECTION 4 A002

SCALE: 1:10



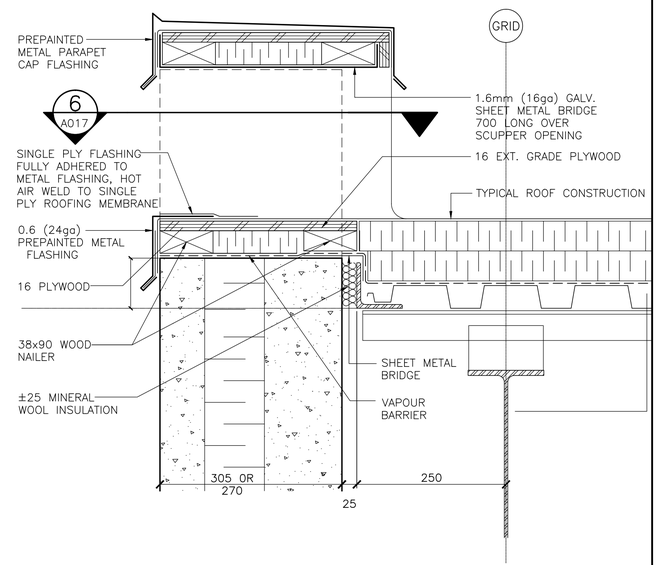
(TYP.) GUARDRAIL DETAIL 5 A008

SCALE: 1:20



(TYP.) SCUPPER PLAN DETAIL @ PRECAST 6 TYP.

SCALE: 1:5



(TYP.) SCUPPER SECTION DETAIL @ PRECAST 7 TYP.

SCALE: 1:5

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
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		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: J.P. 14/03/07	DESIGNED BY: A.K. 14/03/07
CHECKED BY: L.B. 14/03/07	APPROVED BY: R.K. 14/03/07
SCALE: 1:50	FULL SIZE ONLY

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

SCREEN ELEVATIONS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	A-017	0	29/92

A Division of METROLINX

ABERFOYLE BUS FACILITY EXPANSION
AND
PARKING LOT REHABILITATION

CONTRACT NO. PT-2014-BI-001

GREG PERCY - PRESIDENT, GO TRANSIT

Firm Name: IBI GROUP ARCHITECTS
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Name of Project: ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION

Location: 7471 McLEAN ROAD EAST
TOWNSHIP OF PUSLINCH,
COUNTY OF WELLINGTON, ONTARIO

ITEM	Ontario's 2012 Building Code Data Data Matrix Part 3 or 9	OBC REFERENCE (References are to Division B unless noted [A] for Division A or [C] for Division C)		REMARKS
		☒ PART 3	☐ PART 9	
1.	PROJECT DESCRIPTION ☐ New ☒ Addition ☐ Alteration ☐ CHANGE OF USE ☐ PART 11 (11.1 to 11.4)	1.1.2. [A]	1.1.2 [A] & 9.10.1.3.	
2.	MAJOR OCCUPANCY(S): GROUP F-3 LOW HAZARD INDUSTRIAL OCCUPANCY SUBSIDIARY OCCUPANCY(S): N/A	3.1.2.2 A-3.1.2.1(1) 3.1.3	9.10.2.	
3.	BUILDING AREA (m^2) EXISTING 1,244.0 NEW 1,198.5 TOTAL 2,442.5	PART 1 1.4.1.2 [A]	1.4.1.2 [A]	
4.	GROSS AREA (m^2) EXISTING 1,244.0 NEW 1,198.5 TOTAL 2,442.5	PART 1 1.4.1.2 [A]	1.4.1.2 [A]	
5.	NUMBER OF STOREYS ABOVE GRADE 1 BELOW GRADE 0	PART 1 1.4.1.2 [A] & 3.2.1.1	1.4.1.2 [A] & 9.10.4	
6.	NUMBER OF STREETS/FIRE FIGHTER ACCESS 1	3.2.2.10. & 3.2.5	9.10.20.	
7.	BUILDING CLASSIFICATION GROUP F, DIVISION 3, ONE STOREY	3.2.2.80	9.10.2.	
8.	SPRINKLER SYSTEM PROPOSED ☐ ENTIRE BUILDING ☐ SELECTED COMPARTMENTS ☐ SELECTED FLOOR AREA ☐ BASEMENT ☐ IN LIEU OF ROOF RATING ☒ NOT REQUIRED	3.2.2.20.-.83 3.2.1.5. 3.2.2.17. INDEX 3.2.2.80	9.10.8.2. INDEX	
9.	STANDPIPE REQUIRED ☐ YES ☒ NO STANDPIPE PROVIDED ☐ YES ☒ NO	3.2.9	N/A	
10.	FIRE ALARMS REQUIRED ☐ YES ☒ NO PROVIDED ☒ YES ☐ NO	3.2.4	9.10.18	TOTAL OCCUPANT LOAD < 300 FIRE ALARM PROVIDED BASED ON OWNER'S REQUEST
11.	WATER SERVICE/SUPPLY IS ADEQUATE ☒ YES ☐ NO	3.2.5.7	N/A	BASED ON WATER WELL REPORT PROVIDED BY OWNER
12.	HIGH BUILDING ☐ YES ☒ NO	3.2.6	N/A	BUILDING HEIGHT 6.4 m
13.	CONSTRUCTION RESTRICTIONS ☐ COMBUSTIBLE ☐ NON COMBUSTIBLE ☒ BOTH PERMITTED / REQUIRED ACTUAL CONSTRUCTION ☐ COMBUSTIBLE ☒ NON COMBUSTIBLE ☐ BOTH	3.2.2.80	9.10.6	
14.	MEZZANINE (S) AREA m^2 N/A	3.2.1.1(3)-(8)	9.10.4.1	
15.	OCCUPANT LOAD BASED ON ☐ m^2/PERSON ☒ DESIGN OF BUILDING BASEMENT: OCCUPANCY N/A LOAD 0 PERSONS 1ST FLOOR: OCCUPANCY MEDIUM HAZARD INDUSTRIAL LOAD 15 PERSONS	3.1.17.	9.9.1.3	EXISTING OCCUPANT LOAD TO REMAIN "NO CHANGE"
16.	BARRIER FREE DESIGN ☒ YES ☐ NO (EXPLAIN)	3.8.	9.5.2.	45m MAX. DISTANCE BETWEEN NON BARRIER FREE WASHROOMS & NEAREST BARRIER FREE WASHROOM
17.	HAZARDOUS SUBSTANCES ☐ YES ☒ NO	3.3.1.2 & 3.3.1.19.	9.10.1.3.(4)	
18.	REQUIRED FIRE RESISTANCE RATING (FRR): HORIZONTAL ASSEMBLIES FRR (HOURS) / LISTED DESIGN NO OR DESCRIPTION (SB-2) FLOORS N/A HOURS ROOF N/A HOURS MEZZANINE N/A HOURS ROOMS AND AREAS WHICH REQUIRE SEPARATION: FRR / LISTED DESIGN/DESCRIPTION — N/A / N/A / N/A	3.2.2.20 -.83 & 3.2.1.4	9.10.8. 9.10.9.	ALL EXISTING FIRE SEPARATIONS TO REMAIN.
19.	SPATIAL SEPARATION - CONSTRUCTION OF EXTERIOR WALLS	3.2.3.	9.10.14.	

WALL	AREA OF EBF (m^2)	LD (M)	L/H OR H/L	PERMITTED MAX. % OF OPENINGS	PROPOSED % OF OPENINGS	FRR (HOURS)	LISTED DESIGN OR DESCRIPTION	COMB CONST	COMB. CONST. NONC. CLADDING	NON-COMB. CONSTR.	
NORTH	421	195.3	3:1 TO 10:1	100%		N/A					LIMITING DISTANCES GREATER THAN 35m WITH ALLOWANCE AREA OF UNPROTECTED OPENINGS 100%
SOUTH	421	44.5	3:1 TO 10:1	100%		N/A					EXISTING TO REMAIN.
EAST	270	46.5	3:1 TO 10:1	100%		N/A					EXISTING TO REMAIN.
WEST	270	26	3:1 TO 10:1	100%		N/A					EXISTING TO REMAIN.

20. PLUMBING FIXTURE REQUIREMENTS	OBC REFERENCE ☒ PART 3	☐ PART 9	REMARKS
MALE/ FEMALE COUNT @ ____%/____%, EXCEPT AS NOTED OTHERWISE BASEMENT : OCCUPANCY N/A 1ST FLOOR : OCCUPANCY MEDIUM HAZARD INDUSTRIAL			

OCCUPANT LOAD	BC TABLE NUMBER	FIXTURES REQUIRED	FIXTURES PROVIDED			
9 MALE 6 FEMALE	3.7.4.9	1 1	2 1	3.7.4.9		EXISTING PLUMBING FIXTURES TO REMAIN

21. EXITS/ACCESS TO EXITS			
INDUSTRIAL AREA GROUND FLOOR	3.4.2.5 (1)(C)		NOT MORE THAN 60m APART ALONG PERIMETER.

DRAWING LIST

DWG No.	REV No.	SHEET	DESCRIPTION
GENERAL			
		1	COVER PAGE
		2	SIGNATURE SHEET
G-001	0	3	OBC MATRIX, DRAWING LIST AND WALL TYPES
CIVIL			
C-001	C	4	GENERAL NOTES AND DETAILS
C-002	A	5	TOPOGRAPHIC SURVEY
C-003	C	6	SITE GRADING AND SERVICING PLAN
C-004	B	7	GRADING AND SERVICING PLAN
C-005	B	8	CENTRE PLATFORM GRADING AND SERVICING
C-006	B	9	PAVEMENT MARKING AND SIGNAGE PLAN
C-007	A	10	STAGING PLAN 1 OF 2
C-008	A	11	STAGING PLAN 2 OF 2
ARCHITECTURAL			
A-001	0	12	OVERALL SITE DEVELOPMENT PLAN
A-001a	0	13	PARTIAL SITE DEVELOPMENT PLAN
A-002	0	14	FLOOR PLAN
A-003	0	15	ROOF PLAN
A-004	0	16	BUILDING ELEVATIONS
A-005	0	17	BUILDING SECTIONS, INTERIOR ELEVATION
A-006	0	18	WALL SECTIONS
A-007	0	19	SECTION DETAILS
A-008	0	20	PLAN DETAILS
A-009	0	21	ROOF & MISC. DETAILS
A-010	0	22	TYPICAL DOOR DETAILS
A-011	0	23	REFLECTED CEILING PLAN
A-012	0	24	ROOM FINISH SCHEDULE, DOOR SCHEDULE, DETAILS
A-013	0	25	SIGNAGE PLAN
A-014	0	26	SIGNAGE TYPE & PICTOGRAMS
A-015	0	27	EXIST. BUS SHELTER REHABILITATION
A-016	0	28	SCREEN PLAN & SECTION
A-017	0	29	SCREEN ELEVATIONS
STRUCTURAL			
S-001	0	30	GENERAL NOTES
S-002	0	31	DESIGN LOADS
S-003	0	32	TYPICAL DETAILS
S-004	0	33	TYPICAL DETAILS
S-005	0	34	TYPICAL DETAILS
S-006	0	35	FOUNDATION AND SLAB ON GRADE PLAN
S-007	0	36	ROOF FRAMING PLAN
S-008	0	37	FOUNDATION SECTIONS, FOOTING SCHEDULE & PIER SCHEDULE
S-009	0	38	FOUNDATION SECTIONS
S-010	0	39	FOUNDATION SECTIONS
S-011	0	40	FUEL FARM AND REFUSE ENCLOSURE SLAB & FOUNDATION DETAILS
S-012	0	41	SECTIONS AND DETAILS
S-013	0	42	COLUMN SCHEDULE & COLUMN KEY PLAN
S-014	0	43	BUS SHELTER FOUNDATION AND DETAILS
MECHANICAL			
M-001	0	44	MECHANICAL LEGEND AND SYMBOLS
M-002	0	45	MECHANICAL EQUIPMENT SCHEDULES
M-003	0	46	FLOOR PLAN - DRAINAGE
M-004	0	47	FLOOR PLAN - PLUMBING AND PIPING

DWG No.	REV No.	SHEET	DESCRIPTION
MECHANICAL (CON'T)			
M-005	0	48	FLOOR PLAN - HVAC
M-006	0	49	SECTIONS AND DETAILS - HVAC
M-007	0	50	MECHANICAL DETAILS
M-008	0	51	B.A.S. SCHEMATIC
M-009	0	52	CONTROL DETAILS
M-010	0	53	PROCESS EQUIPMENT & PIPING LAYOUT & DETAILS
M-011	0	54	DIESEL PROCESS FLOW DIAGRAM
M-012	0	55	UREA (DEF) PROCESS FLOW DIAGRAM
M-013	0	56	GENERAL LUBE PROCESS FLOW DIAGRAM
M-014	0	57	BUS WASH WATER STORAGE SYSTEM
M-015	0	58	EXISTING BUILDING PROCESS EQUIPMENT - DEMOLITION AND NEW WORK
ELECTRICAL			
E-001	0	59	ELECTRICAL LEGEND - 1 OF 2
E-002	0	60	ELECTRICAL LEGEND - 2 OF 2
E-003	0	61	ELECTRICAL GENERAL NOTES
E-011	0	62	ELECTRICAL OVERALL SITE PLAN
E-012	0	63	ELECTRICAL SITE PLAN - PARTIAL ENLARGED PLAN
E-101	0	64	POWER SINGLE LINE DIAGRAM - 1 OF 2
E-102	0	65	POWER SINGLE LINE DIAGRAM - 2 OF 2
E-103	0	66	AUXILIARY SYSTEM RISER DIAGRAM - FIRE ALARM AND TELECOM CABLING
E-104	0	67	AUXILIARY SYSTEM RISER DIAGRAM - SECURITY SYSTEM
E-105	0	68	AUXILIARY SYSTEM RISER DIAGRAM - CCTV SYSTEM
E-111	0	69	POWER LAYOUT - GROUND FLOOR
E-112	0	70	AUXILIARY SYSTEMS LAYOUT - GROUND FLOOR
E-113	0	71	POWER LAYOUT - ROOF
E-114	0	72	ELECTRICAL AND COMMUNICATIONS ROOM LAYOUT
E-211	0	73	LIGHTING LAYOUT - GROUND FLOOR
E-311	0	74	LIGHTNING PROTECTION & GROUNDING LAYOUT
E-401	0	75	POWER PANEL & LOAD SCHEDULES
E-402	0	76	LIGHTING CONTROL DIAGRAM, LUMINAIRE & CONTROL SCHEDULES
E-501	0	77	ELECTRICAL SITE DETAILS
E-502	0	78	SECURITY SYSTEM DETAILS
E-503	0	79	CCTV SYSTEM DETAILS
E-504	0	80	6M CCTV HINGED POLE STANDARD DETAILS
E-505	0	81	6M CCTV HINGED POLE UPPER AND LOWER SECTIONS
E-506	0	82	6M CCTV HINGED POLE WINCH ASSEMBLY
E-507	0	83	6M CCTV HINGED POLE FOUNDATION DETAILS
E-508	0	84	6M CCTV HINGED POLE ANCHORING DETAILS
E-509	0	85	12M LIGHTING POLE STANDARD DETAILS - 1 OF 3
E-510	0	86	12M LIGHTING POLE STANDARD DETAILS - 2 OF 3
E-511	0	87	12M LIGHTING POLE STANDARD DETAILS - 3 OF 3
E-611	0	88	ELECTRICAL DEMOLITION & TEMPORARY PLAN - SITE
E-612	0	89	ELECTRICAL DEMOLITION PLAN - GROUND FLOOR
E-613	0	90	SITE PHOTOS - EXISTING NORTH WALL - 1 OF 2
E-614	0	91	SITE PHOTOS - EXISTING NORTH WALL - 2 OF 2
E-711	0	92	ELECTRICAL TEMPORARY LAYOUT - GROUND FLOOR

WALL TYPES:

WT1E - EXISTING 225mm INSULATED PRECAST PANELS TO BE REMOVED, TEMPORARILY STORED ON SITE, REWORKED AND INSTALLED AT NEW LOCATIONS.

WT1 - NEW AND EXISTING 225mm INSULATED PRECAST PANELS TO MATCH EXISTING PANELS.
NOTE 1: CONTRACTOR TO COORDINATE NEW PANELS WITH EXISTING RELOCATED PANELS AND PROVIDE SHOP DRAWINGS ACCORDINGLY.
NOTE 2: FOR LOCATION OF NEW/EXISTING PANELS REFER TO ELEVATIONS A004.

WT2 - 190 NORMAL WEIGHT CONCRETE BLOCK MASONRY UNITS

WT3 - SPLASH GUARD (REFER TO SPECS.)

WT4 - (LOW HEIGHT) 190 NORMAL WEIGHT CONCRETE BLOCK WALL

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		2	16/06/30	RECORD			
		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: D.V. 13/09/15
DESIGNED BY: A.K. 13/09/01
CHECKED BY: L.B. 14/03/07
APPROVED BY: R.K. 14/03/07
SCALE: N.T.S. FULL SIZE ONLY

Disclaimer:
This drawing includes contractor's information which has not been verified by the architect/engineer as to its completeness and accuracy. The architect/engineer does not certify or guarantee the completeness and accuracy of this drawing.

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A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
OBC MATRIX, DRAWING LIST AND WALL TYPES

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	G-001	0	3/92

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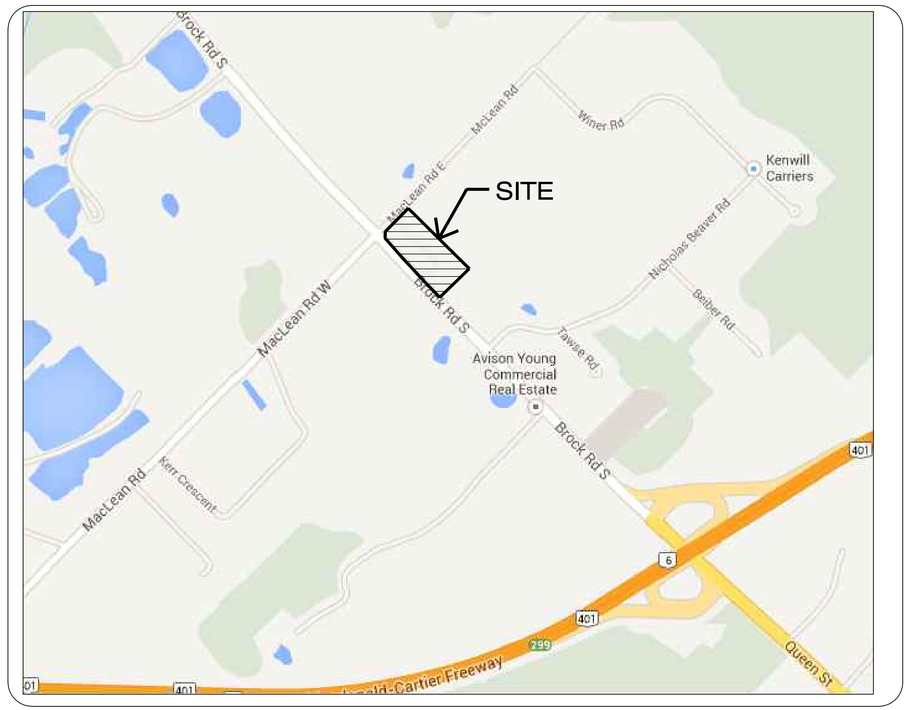


CONTRACT No. PT-2014-BI-001

TYPE OF WORK	ABERFOYLE BUS FACILITY EXPANSION AND PARKING LOT REHABILITATION
LOCATION	7471 MCLEAN ROAD EAST TOWN OF PUSLINCH
MUNICIPALITY	COUNTY OF WELLINGTON

N. SPENSIERI

DIRECTOR, MULTI MODAL INFRASTRUCTURE
GO CAPITAL INFRASTRUCTURE

DATE

M. WOLCZYK

ACTING VICE PRESIDENT
GO CAPITAL INFRASTRUCTURE

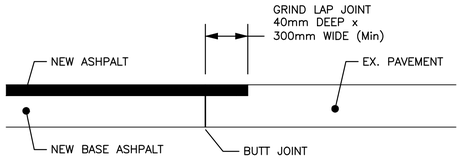
METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

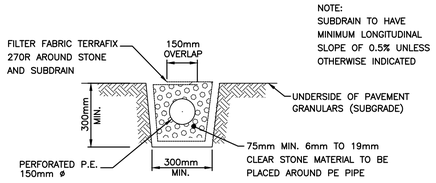
GENERAL NOTES

1. CONTRACTOR SHALL REPORT ANY ERROR OR OMISSION TO CONSULTANT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. ALL CONSTRUCTION WORK FOR THIS PROJECT SHALL COMPLY WITH THE STANDARDS DRAWINGS AND SPECIFICATIONS OF METROLINX, THE COUNTY OF WELLINGTON, TOWNSHIP OF PUSLINCH, AND THE ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS.
3. ELEVATIONS ARE GEODETIC AND BASED ON BENCHMARK M.O.T. No. 00819668019B DESCRIBED AS A TABLET SET HORIZONTALLY IN THE SOUTH WEST FACE OF THE MOST WESTERLY CONCRETE PILLAR OF A CONCRETE AND STEEL BRIDGE CARRYING HIGHWAY No. 6 OVER HIGHWAY No. 7, 0.67 METRES ABOVE GRADE, HAVING AN ELEVATION OF 325.420 METRES.
4. ALL EXISTING WORKS NOT INDICATED FOR REMOVAL TO BE MAINTAINED OR RESTORED TO ORIGINAL CONDITION OR BETTER.
5. GO AND PUCLIC ACCESS TO BUS FACILITY, PARK AND RIDE, AND BUS STALLS SHALL BE MAINTAINED AT ALL TIMES EXCEPT WHERE OTHERWISE INDICATED ON THESE DRAWINGS.
6. BUS OPERATIONS SHALL NOT BE INTERRUPTED BY THIS WORK.
7. FACILITY OPERATIONS SHALL NOT BE INTERRUPTED BY THIS WORK.
8. CONTRACTOR IS TO COORDINATE TEMPORARY SIGNAGE, STAGING, RELOCATIONS, ETC. WITH METROLINX / CONSULTANT AND OBTAIN METROLINX APPROVAL PRIOR TO COMMENCEMENT OF RELATED WORK.
9. PROPOSED ELEVATIONS AT TIE–IN POINTS TO EXISTING MUST MATCH EXISTING ELEVATIONS.
10. ALL SILT FENCES AS PER O.P.S.D. 219.130, EROSION AND SEDIMENT CONTROLS TO BE ERECTED PRIOR TO COMMENCEMENT OF ANY GRADING OPERATIONS.
11. ALL SUBDRAINS TO BE 200mmø UNLESS OTHERWISE NOTED.
12. ALL CATCHBASIN MANHOLES AND MANHOLES WITH INLET CONTROL DEVICES MUST HAVE A MINIMUM 0.3 METRE SUMP AND TOP AS PER PROVINCIAL STANDARDS.
13. ALL ELEVATIONS AND DIMENSIONS ARE METRIC UNLESS OTHERWISE INDICATED.
15. MAINTAIN POSITIVE DRAINAGE AT ALL TIMES.
16. ALL SURPLUS TOPSOIL, NATIVE FILL AND UNSUITABLE MATERIAL TO BE REMOVED AND DISPOSED OFF–SITE IN AN M.O.E. APPROVED LANDFILL AS DIRECTED BY THE CONSULTANT.
17. ALL PAVED AREAS DISTURBED BY CONSTRUCTION TO BE RESTORED TO THEIR ORIGINAL STATE.
18. O.P.S.D. REFERS TO ONTARIO PROVINCIAL STANDARD DRAWINGS O.P.S.S. REFERS TO ONTARIO PROVINCIAL STANDARD SPECIFICATIONS
19. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE DURING CONSTRUCTION ACTIVITIES. THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL, USING FILTER CLOTH UNDER THE GRATES OF CATCHBASINS AND MANHOLES AND INSTALLING SILT FENCES AND OTHER EFFECTIVE SEDIMENT TRAPS. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
20. NO RECYCLED MATERIAL TO BE USED IN ASPHALT PAVEMENT OR GRANULAR MATERIALS, UNLESS APPROVED BY THE GEOTECHNICAL ENGINEER.
21. ALL WORK ON MUNICIPAL RIGHT OF WAY TO MEET ALL REQUIREMENTS OF ALL AUTHORITIES.
22. PROVIDE AND MAINTAIN EROSION AND SEDIMENT CONTROLS TO PREVENT SILT AND DEBRIS FROM ENTERING STORMWATER PONDS.
23. PLUG ALL OPEN ENDS OF SUBDRAINS AT HIGH POINTS.
24. ALL MANHOLES AND CATCHBASIN MANHOLES TO BE PRECAST (UNLESS OTHERWISE NOTED) CONFORMING TO :
    (1) 1200 ø MANHOLE TO OPSD–701.010
    (2) 1500 ø MANHOLE TO OPSD–701.011
25. ALL CATCHBASINS TO BE PRECAST CONFORMING TO :
    (1) 600x600 CATCHBASIN TO OPSD–705.010
26. FRAMES AND GRATES TO CONFORM AS FOLLOWS:
    (1) MANHOLE TO OPSD–401.010
    (2) DITCH INLET CATCHBASIN TO OPSD–403.010
    (3) CATCHBASIN TO OPSD–400.020
    CATCHBASIN MANHOLE TO OPSD–400.020
27. BENCHING IN MANHOLES AND CATCHBASIN MANHOLES TO BE DONE IN ACCORDANCE WITH OPSD–701.021.
28. PROVIDE SUPPORT AND PROTECTION TO EXISTING SERVICES (STORM, SANITARY, GAS, ELECTRICAL CABLES AND TELECOMMUNICATION LINES). BACKFILL CROSSING UNDER STORM & SANITARY WITH 15MPa CONCRETE TO SPRINGLINE OF SEWERS OR UNDERSIDE OF DUCT BANK (TYPICAL).
29. CONTRACTOR TO OBSERVE ALL LOCAL ZONING BY–LAW, ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE LAWS DURING THE COURSE OF CONSTRUCTION.
30. CONTRACTOR TO OBTAIN ALL THE NECESSARY PERMITS FOR COMPLETION OF WORK AND AS OTHERWISE REQUIRED ON THE BUILDING PERMIT.
31. ALL WORKS TO BE TO THE SATISFACTION OF METROLINX, THE TOWNSHIP OF PUSLINCH, AND PROVINCIAL STANDARDS.

□ CB	CATCHBASIN
○ MH	MANHOLE
◎ CBMH	CATCHBASIN MANHOLE
□ DI	DITCH INLET CATCH BASIN
— X — X —	FENCE
— XXX — XXX —	SILT FENCE
——►	DITCH
— STM —	STORM SEWER
— SAN —	SANITARY SEWER
— S —	SUBDRAIN
	HEAVY DUTY ASPHALT 40mm HL–3 ASPHALT SURFACE COURSE 80mm HL–8 ASPHALT BASE COURSE 150mm GRANULAR A BASE 350mm GRANULAR B SUB–BASE
	ROAD CUT RESTORATION 50mm HL–3 ASPHALT SURFACE COURSE 100mm HL–8 ASPHALT BASE COURSE 150mm GRANULAR A BASE 150mm GRANULAR B SUB–BASE
	REMOVE AND DISPOSE OF EXISTING ASPHALT NEW PAVEMENT STRUCTURE: 40mm HL–3 ASPHALT SURFACE COURSE 50mm HL–8 ASPHALT BASE COURSE
	REMOVE AND DISPOSE OF EXISTING ASPHALT REGRADE TO MIN. 150mm GRANULAR A 40mm HL–3 ASPHALT SURFACE COURSE 50mm HL–8 ASPHALT BASE COURSE
	GRIND EXISTING ASPHALT 80mm TACK COAT 40mm HL–3 ASPHALT SURFACE COURSE 40mm HL–8 ASPHALT BASE COURSE
	CONCRETE APRON 275mm 32 MPa EXPOSURE C2 CONCRETE 150mm GRANULAR A BASE 300mm GRANULAR B SUB–BASE
	CONCRETE SIDEWALK (OPSD 310.010) 150mm 32 MPa EXPOSURE C2 CONCRETE 150mm GRANULAR A BASE 300mm GRANULAR B SUB–BASE
	BUFFALO GRASS SEED AS PER ONTARIO SEED COMPANY
	RETAIN AND REUSE BARRIER CURB
	DISPOSE OF EXISTING CURB PROVIDE NEW BARRIER CURB



LAP JOINT DETAIL
N.T.S.



SUBDRAIN DETAIL
N.T.S.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		2	16/05/27	RECORD			
		1	14/09/05	CONSTRUCTION			
		0	14/05/15	TENDER			
		0	14/03/18	TENDER			
		D	14/02/13	SITE PLAN REVIEW			
		C	14/01/10	95% CLIENT REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: J.W.O. 13/09/26	DESIGNED BY: J.W.O. 13/09/23
CHECKED BY: E.H. 13/11/22	APPROVED BY: E.C. 13/11/21
SCALE: N.T.S.	FULL SIZE ONLY

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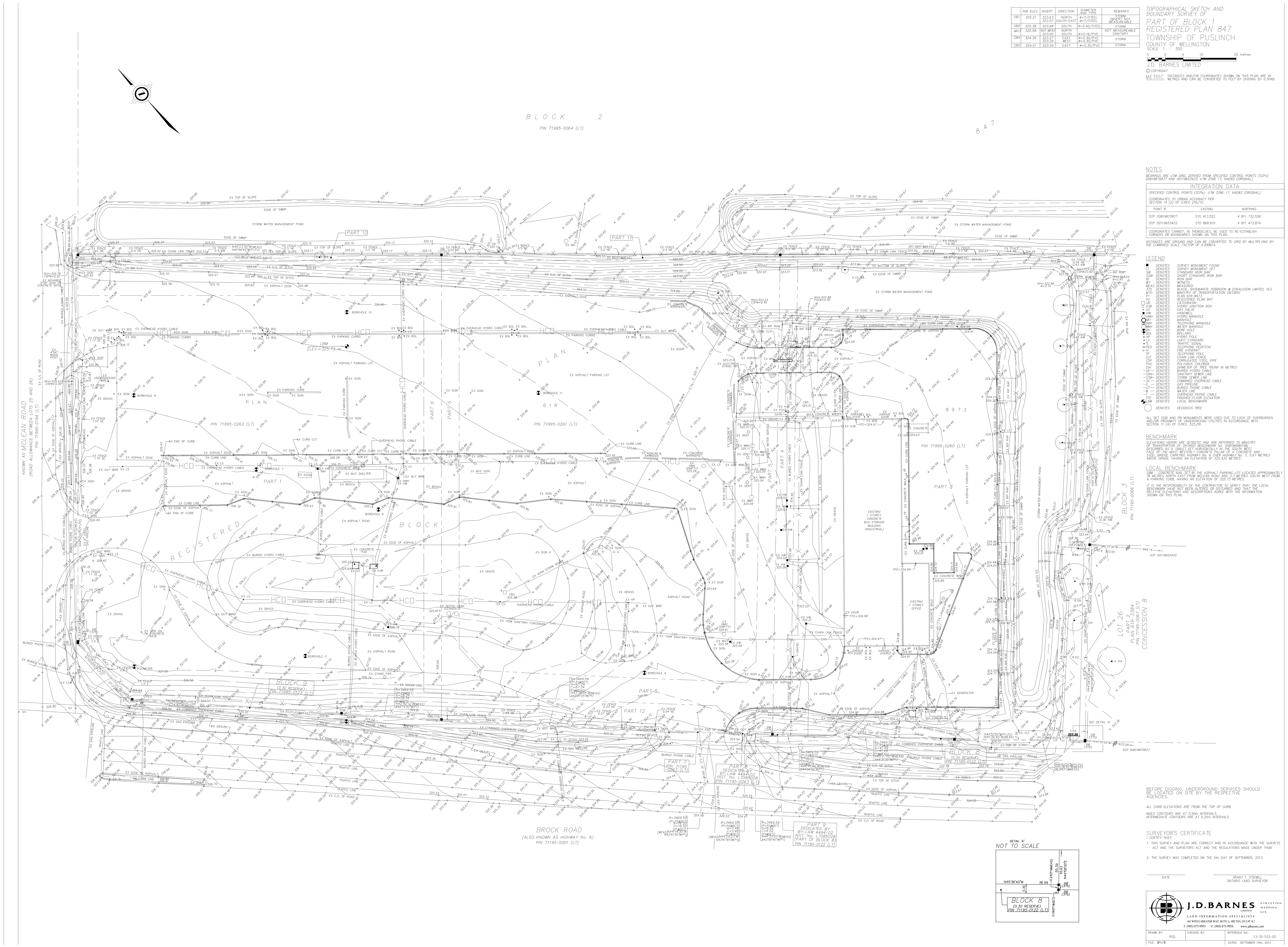
A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
GENERAL NOTES AND DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	C–001	2	4/92



METRIC

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METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS	
DWG. NO.	TITLE

ISSUE		
2	16/05/27	RECORD
0	14/09/05	CONSTRUCTION
0	14/05/15	TENDER
0	14/03/18	TENDER
C	14/01/10	95% REVIEW
B	13/11/21	50% REVIEW
NO.	DATE	ISSUED FOR

REVISIONS	
REV.	DATE

DRAWN BY: J.W.O. 13/08/26	DESIGNED BY: 13/08/26
CHECKED BY: J.O. 13/08/26	APPROVED BY: YY/MM/DD
SCALE: 1:500	FULL SIZE ONLY

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A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
TOPOGRAPHIC SURVEY

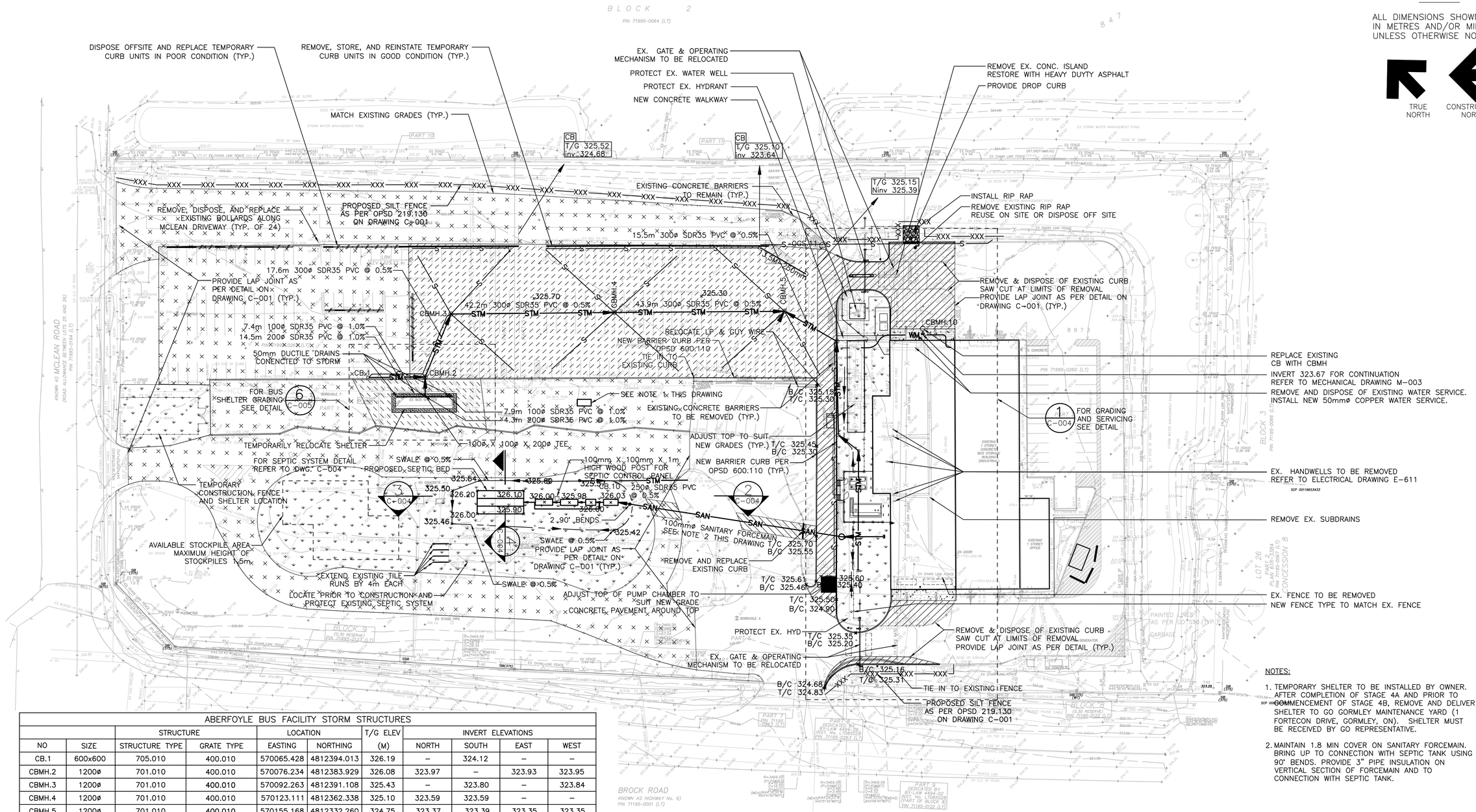
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	C-002	2	5/92

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH



ABERFOYLE BUS FACILITY STORM STRUCTURES

		STRUCTURE		LOCATION		T/G ELEV	INVERT ELEVATIONS			
NO	SIZE	STRUCTURE TYPE	GRATE TYPE	EASTING	NORTHING	(M)	NORTH	SOUTH	EAST	WEST
CB.1	600x600	705.010	400.010	570065.428	4812394.013	326.19	–	324.12	–	–
CBMH.2	1200ø	701.010	400.010	570076.234	4812383.929	326.08	323.97	–	323.93	323.95
CBMH.3	1200ø	701.010	400.010	570092.263	4812391.108	325.43	–	323.80	–	323.84
CBMH.4	1200ø	701.010	400.010	570123.111	4812362.338	325.10	323.59	323.59	–	–
CBMH.5	1200ø	701.010	400.010	570155.168	4812332.260	324.75	323.37	323.39	323.35	323.35
CBMH.6	1200ø	701.010	400.010	570159.545	4812317.389	325.00	323.47	–	–	323.49
MH.7	1200ø	701.010	401.010 TYPE 'B'	570143.197	4812299.525	324.75	–	–	323.61	323.63
DI.8	600x600	705.030	403.010	570142.934	4812294.200	324.65	–	–	323.66	323.68
DI.9	600x600	705.030	403.010	570121.510	4812271.872	324.65	–	–	323.83	–
CBMH.10	1200ø	701.010	400.010	570177.924	4812304.455	324.79	–	–	323.59	323.65
OGS.11	STC 6000 OR APPROVED EQUAL			570173.950	4812337.862	324.93	–	–	323.26	323.26

ABERFOYLE BUS FACILITY SANITARY STRUCTURES

		STRUCTURE		LOCATION		T/G ELEV	INVERT ELEVATIONS			
NO	SIZE	STRUCTURE TYPE	GRATE TYPE	EASTING	NORTHING	(M)	NORTH	SOUTH	EAST	WEST
MH.1A	1500ø	PREFAB FIBREGLASS	SOLID METAL W/ VENT HOLES	570122.749	4812282.731	325.50	–	–	322.98	323.20

NOTES:

1. TEMPORARY SHELTER TO BE INSTALLED BY OWNER. AFTER COMPLETION OF STAGE 4A AND PRIOR TO COMMENCEMENT OF STAGE 4B, REMOVE AND DELIVER SHELTER TO GO GORMLEY MAINTENANCE YARD (1 FORTECON DRIVE, GORMLEY, ON). SHELTER MUST BE RECEIVED BY GO REPRESENTATIVE.
2. MAINTAIN 1.8 MIN COVER ON SANITARY FORCEMAIN. BRING UP TO CONNECTION WITH SEPTIC TANK USING 90° BENDS. PROVIDE 3" PIPE INSULATION ON VERTICAL SECTION OF FORCEMAIN AND TO CONNECTION WITH SEPTIC TANK.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS

DWG NO.	TITLE

ISSUE

NO.	DATE	ISSUED FOR
2	16/05/27	RECORD
1	14/09/05	CONSTRUCTION
1	14/07/09	ADDENDUM
0	14/05/15	TENDER
0	14/03/18	TENDER
D	14/02/13	SITE PLAN REVIEW

REVISIONS

REV.	DATE	

DRAWN BY: J.W.O. 13/08/26

DESIGNED BY: J.W.O. 13/11/01

CHECKED BY: E.H. 13/11/21

APPROVED BY: E.C. 13/11/21

SCALE: 1:500 FULL SIZE ONLY

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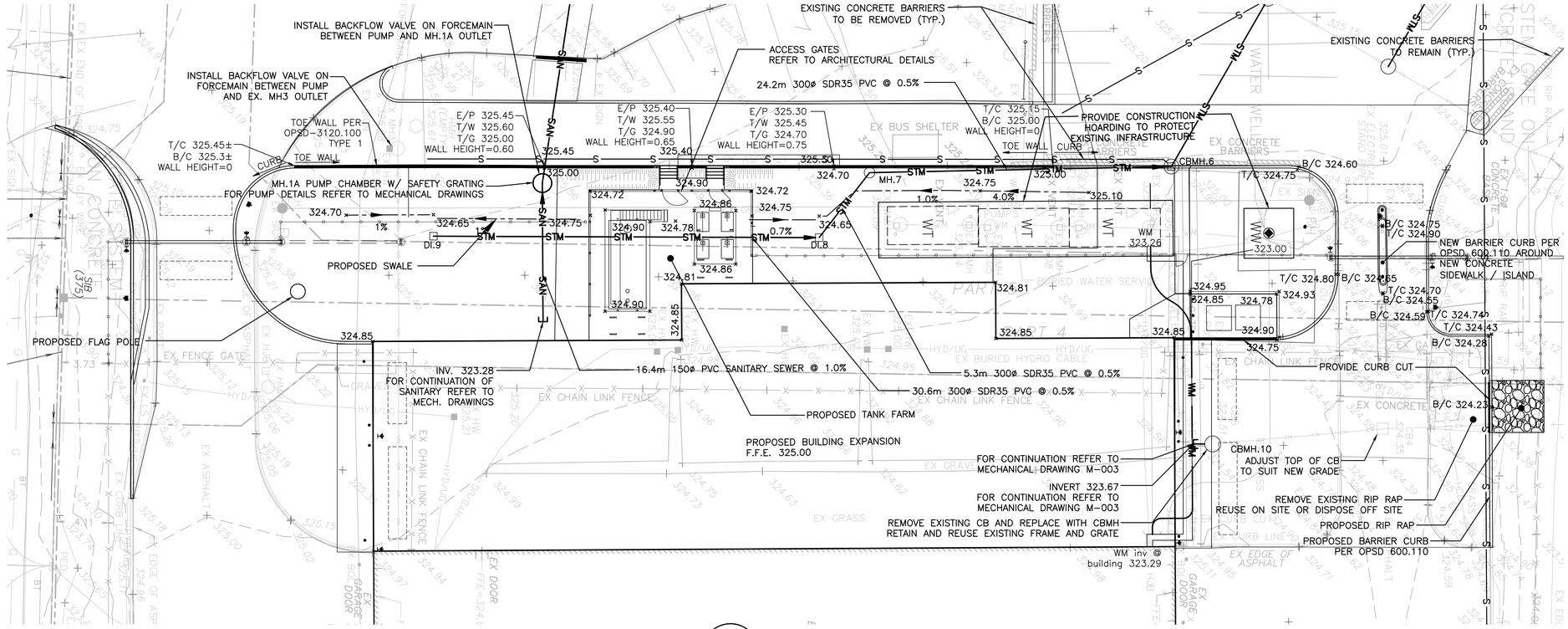
ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

SITE GRADING & SERVICING PLAN

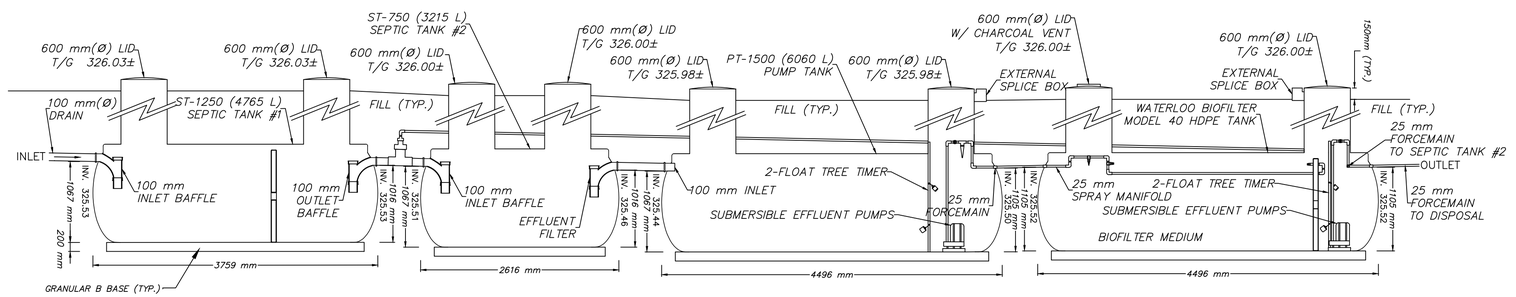
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	C-003	2	6/92

User Name: John Olaveson Plot Date/Time: Friday, July 22, 2016 10:05:27 AM Path and File Name: J:\24RX13.0259\5.9 DRAWING\59CIVIL\LAYOUTS\C-003.DWG

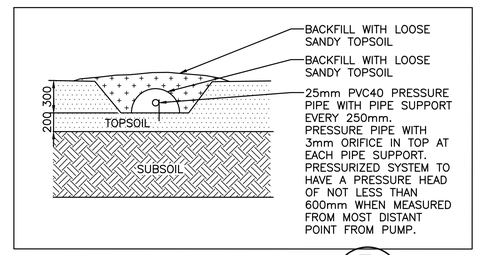


EXLARGED PLAN 1 / C-003
SCALE: 1:200

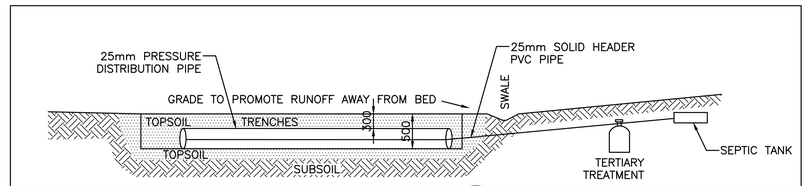
FOR LIMITS OF PAVING AND LANDSCAPING, REFER TO DRAWING C-003



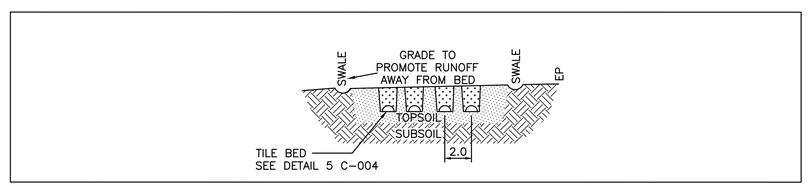
SECTION 2 / C-003
N.T.S.



TILE BED CROSS SECTION 5 / C-004
N.T.S.



SEPTIC BED DETAIL 3 / C-003
N.T.S.



SEPTIC BED DETAIL 4 / C-003
N.T.S.

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
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		1	14/09/05	CONSTRUCTION			
		1	14/07/09	ADDENDUM			
		0	14/05/15	TENDER			
		0	14/03/18	TENDER			
		C	14/02/13	SITE PLAN REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: J.W.O. 13/08/26	DESIGNED BY: J.W.O. 13/11/01
CHECKED BY: E.H. 13/11/21	APPROVED BY: E.C. 13/11/21
SCALE: AS SHOWN	FULL SIZE ONLY

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

GRADING & SERVICING PLAN

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	C-004	2	7/92

User Name: John Olaveson Plot Date/Time: Friday, July 22, 2016 10:08:44 AM Path and File Name: J:\24RX13.02591\5.9 DRAWING\59CIVIL\LAYOUTS\C-004.DWG

METRIC

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TRUE NORTH

CONSTRUCTION NORTH

CB-1

14.5m 200ø SDR35 PVC @ 1.0%

CBMH-2

EX CURB CUT

EX CURB CUT

EX SIGN

FOR TREATMENT OF EXISTING SERVICE STUBS REFER TO ELECTRICAL DRAWING E-011

CONNECT RWLs TO STORM SEWERS SEE ARCHITECTURAL DRAWING A-015

4.3m 200ø SDR35 PVC @ 1.0%

7.4m 100ø SDR35 PVC @ 1.0%

7.9m 100ø SDR35 PVC @ 1.0%

FOR DETAILS OF PROPOSED SHELTER REFER TO ARCHITECTURAL DWG. A-015
FOR DETAILS OF PROPOSED CONCRETE PAD REFER TO STRUCTURAL DWG. S-014

EX BUS SHELTER

100ø X 100ø X 200ø TEE

SHELTER COLUMN (TYP.)

NORTHING: 4812373.419
EASTING: 570075.790

EXISTING GREYHOUND KIOSK TO BE REMOVED (BY OWNER)

EX BENCH

F.F.E. 326.57

PROVIDE LAP JOINT AS PER DETAIL (TYP.)

PROVIDE LAP JOINT AS PER DETAIL (TYP.)

CONCRETE SIDEWALK SLOPED AWAY FROM BUS SHELTER

LIMIT OF PLATFORM GRIND AND PAVE

LIMIT OF PLATFORM REGRADING

LIMIT OF PLATFORM REGRADING

LIMIT OF PLATFORM GRIND AND PAVE

SECTION 6 / C-003
SCALE 1:50

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS			ISSUE			REVISIONS				DRAWN BY: J.W.O. 13/08/26	DESIGNED BY: J.W.O. 13/11/01
		2	16/05/27	RECORD						CHECKED BY: E.H. 13/11/21	APPROVED BY: E.C. 13/11/21
		0	14/09/05	CONSTRUCTION						SCALE: 1:50	FULL SIZE ONLY
		0	14/05/15	TENDER							
		0	14/03/18	TENDER							
		B	14/01/10	95% REVIEW							
		A	13/11/21	50% REVIEW							
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE					

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ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

CENTRE PLATFORM GRADING AND SERVICING PLAN

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	C-005	2	8/92

User Name: John Oloveson Plot Date/Time: Friday, July 22, 2016 10:10:14 AM Path and File Name: J:\24RX13.02591\5.9 DRAWING\59CIVIL\LAYOUTS\C-005.DWG

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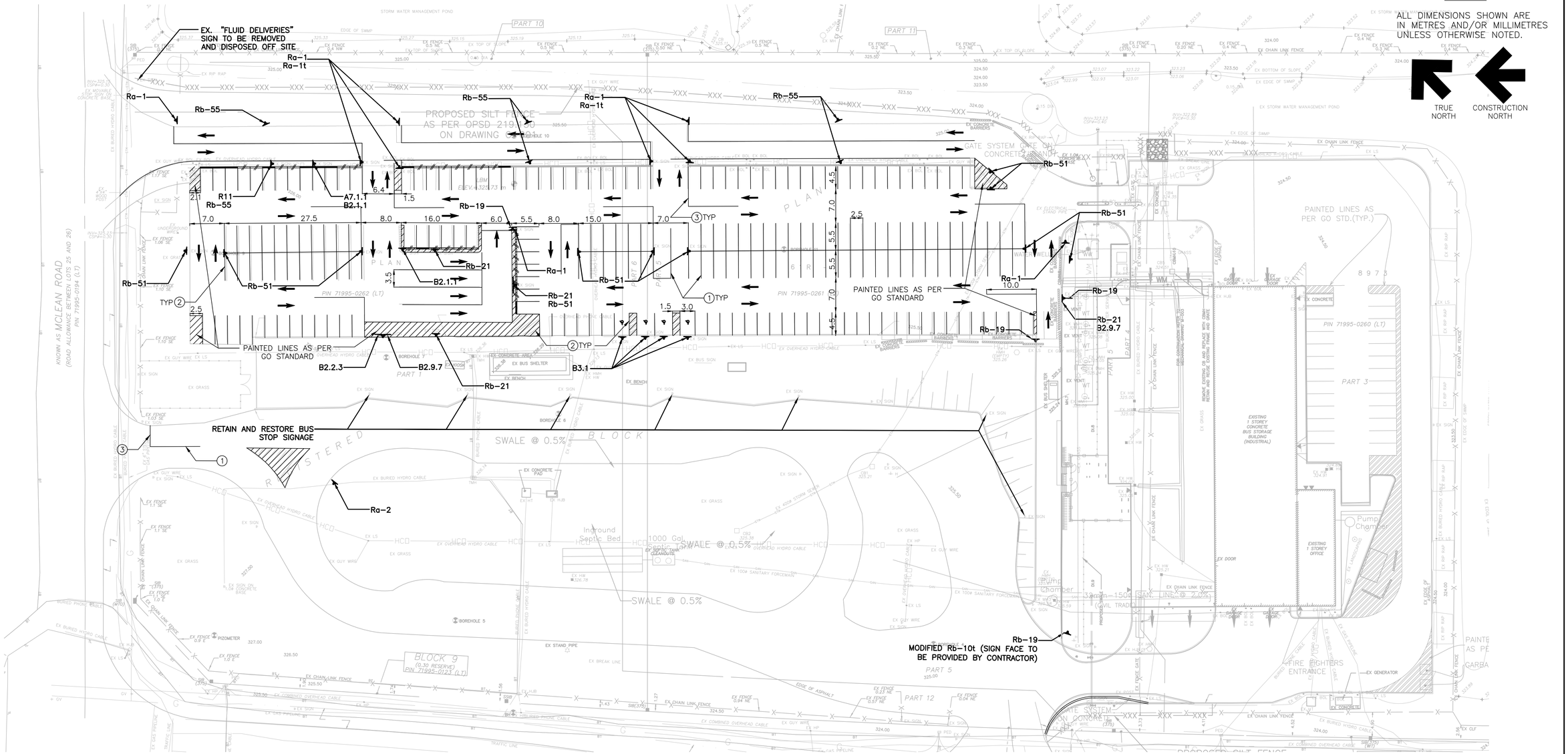
TRUE NORTH

CONSTRUCTION NORTH



SIGNAGE NOTES:

1. ALL SIGNAGE TO BE TO ONTARIO TRAFFIC MANUAL AND GO STATIC SIGNAGE CATALOGUE
3. PROVIDE FEASIBLE TEMPORARY SIGNAGE PLAN FOR EACH CONSTRUCTION STAGE FOR OWNER REVIEW AND APPROVAL (INCLUDING BUS STOP RELOCATIONS, ROAD AND LOT CLOSURES)
4. PERMANENT SIGNAGE TO BE INSTALLED AFTER PAVEMENT REHABILITATION COMPLETE
5. ALL SIGN FACES SHOWN ON THIS DRAWING ARE TO BE PROVIDED BY OWNER EXCEPT WHERE NOTED
6. ALLOW FOR SUPPLY, INSTALLATION, RELOCATION, REMOVAL, AND DISPOSAL OF 30 TEMPORARY SIGNS TO BE USED DURING CONSTRUCTION.

100mm YELLOW ①

200mm YELLOW ②

450mm WHITE ③

BLUE WHEELCHAIR SYMBOL

B2.1.1 B2.1.7 B2.9.7 B2.2.3 A7.1.1 B3.1 Ra-1 Ra-1t Ra-2 Rb-19 Rb-51 Rb-55 R11 Rb-21 MODIFIED Rb-10t

METROLINX PROJECT NO. 129709

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		0	14/03/18	TENDER			
		B	14/01/10	95% REVIEW			
		A	13/11/21	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY:	DESIGNED BY:
J.W.O. 13/08/26	J.W.O. 13/
CHECKED BY:	APPROVED BY:
E.H. 13/11/21	E.C. 13/11/21
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ABERFOYLE BUS FACILITY

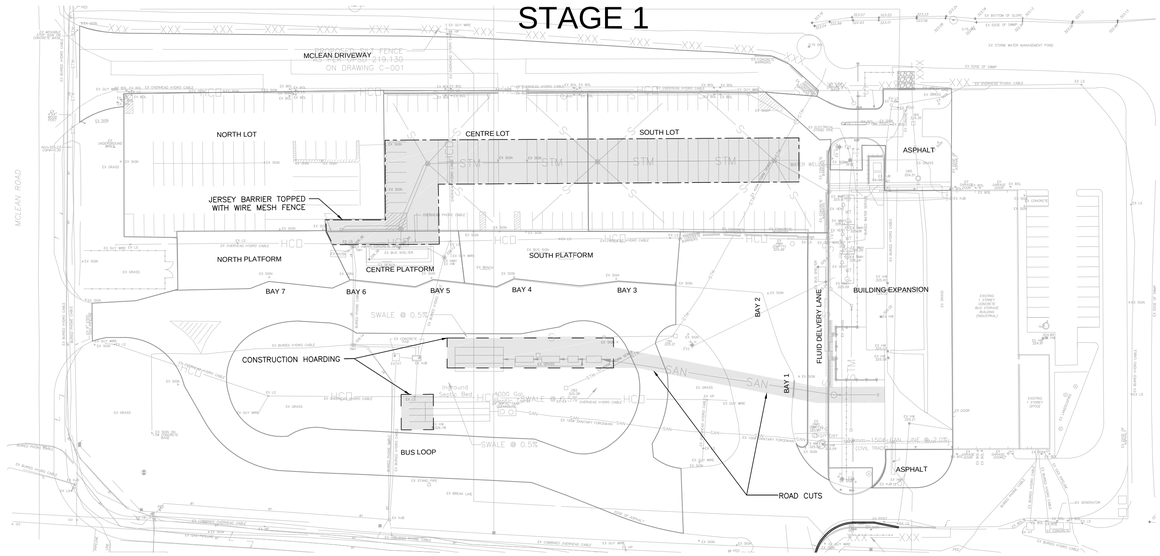
EXPANSION AND PARKING LOT REHABILITATION

PAVEMENT MARKING & SIGNAGE PLAN

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	C-006	2	9/92

User Name: John Olaveson Plot Date/Time: Friday, July 22, 2016 10:12:09 AM Path and File Name: J:\24RX13.0259\5.9 DRAWING\59CIVIL\LAYOUTS\C-006.DWG

STAGE 1



STAGE 1 NOTES:

INSTALL SANITARY AND STORM SEWERS, SEPTIC SYSTEMS

ROAD CUT WORK TO BE CONDUCTED BETWEEN 1AM AND 5AM

REPAVE PARKING LOT WITH 150mm HL-8 TEMPORARY ASPHALT, REPLACE PAVEMENT MARKINGS TO ORIGINAL CONFIGURATION

REPAVE BUS LOOP TO MATCH EXISTING

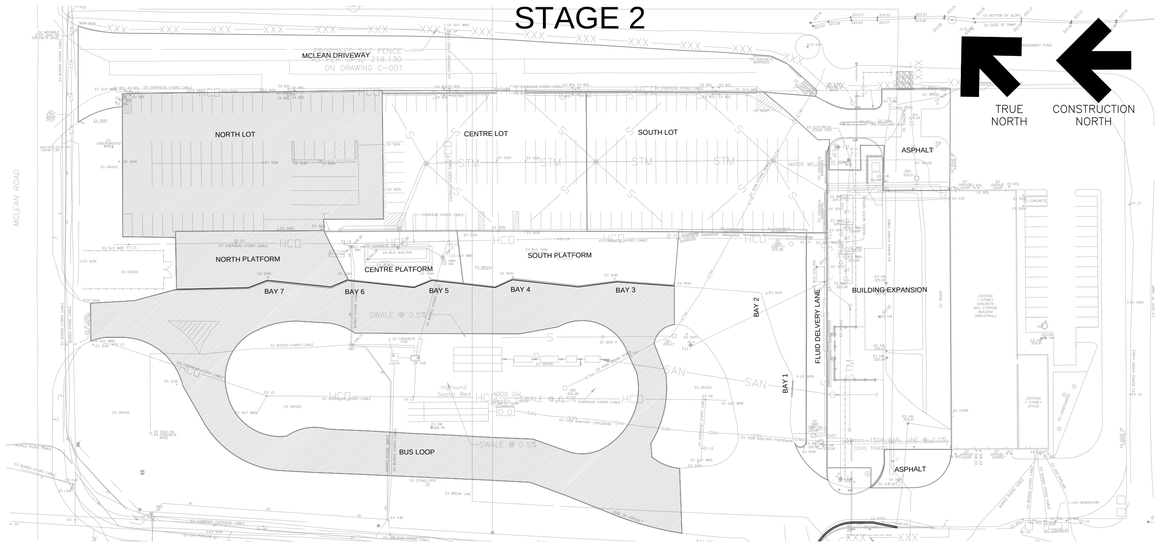
CONTRACTOR RESPONSIBLE TO CREATE AND SUBMIT TO OWNER FOR APPROVAL 2 WEEKS PRIOR TO COMMENCEMENT OF WORK TEMPORARY STAGING SCHEMES FOR ALL STAGES INCLUDING TEMPORARY SIGNAGE AND TRAFFIC CONTROL.

ALL TEMPORARY SIGNAGE AND STAGING PLANS ARE SUBJECT TO APPROVAL BY OWNER AND ARE TO BE IN GENERAL CONFORMANCE WITH GO STATIC SIGNAGE MANUAL AND MTO BOOK 7.

ALL SHIFTS IN OPERATIONAL BAYS ARE TO BE COORDINATED WITH OWNER.

BUS OPERATIONS SHALL NOT BE INTERRUPTED BY THIS WORK. NIGHTTIME WORK MAY BE REQUIRED

STAGE 2



STAGE 2 NOTES:

PROVIDE TEMPORARY SIGNAGE TO INDICATE:
-MOVE GREYHOUND TO BAY 3
-NORTH LOT INCLUDING KISS-AND-RIDE SHALL BE CLOSED

GRIND AND PAVE NORTH LOT AND NORTH PLATFORM

GRIND AND PAVE BUS LOOP; THIS WORK SHALL BE COMPLETED BETWEEN 1AM AND 5AM.

PROVIDE PAVEMENT MARKINGS IN NORTH LOT AND BUS LOOP

CONTRACTOR RESPONSIBLE TO CREATE AND SUBMIT TO OWNER FOR APPROVAL 2 WEEKS PRIOR TO COMMENCEMENT OF WORK TEMPORARY STAGING SCHEMES FOR ALL STAGES INCLUDING TEMPORARY SIGNAGE AND TRAFFIC CONTROL.

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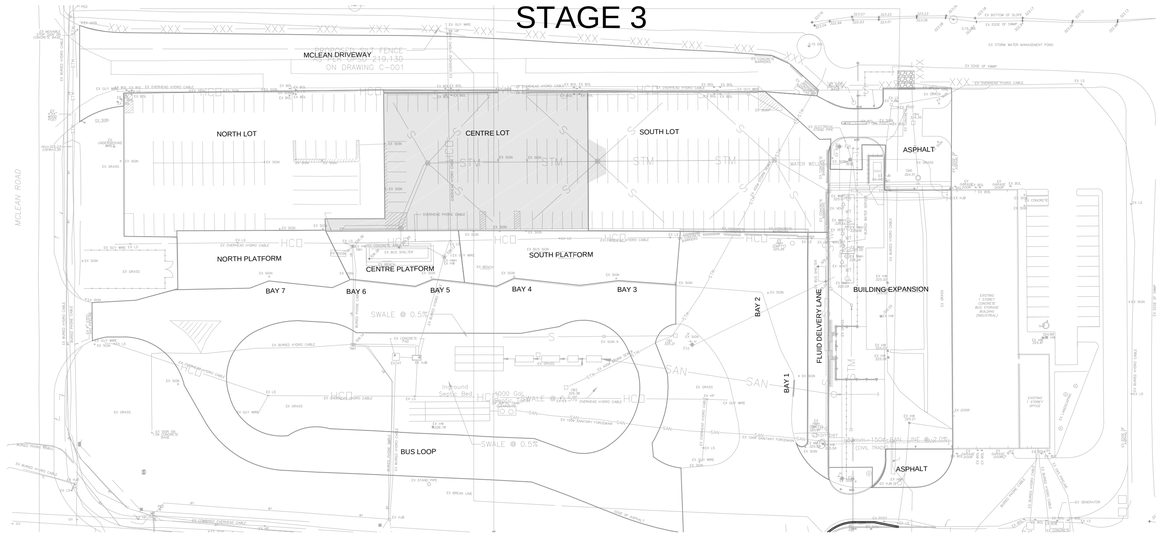
STAGE 3



STAGE 3 NOTES:

PROVIDE TEMPOARY SIGNAGE TO INDICATE:
-CENTRE LOT SHALL BE CLOSED
-WAYFINDING THAT SOUTH LOT IS OPEN

INSTALL SUBDRAINS AND REPAVE CENTRE LOT

PROVIDE PAVEMENT MARKINGS IN CENTRE LOT

CONTRACTOR RESPONSIBLE TO CREATE AND SUBMIT TO OWNER FOR APPROVAL 2 WEEKS PRIOR TO COMMENCEMENT OF WORK TEMPORARY STAGING SCHEMES FOR ALL STAGES INCLUDING TEMPORARY SIGNAGE AND TRAFFIC CONTROL.

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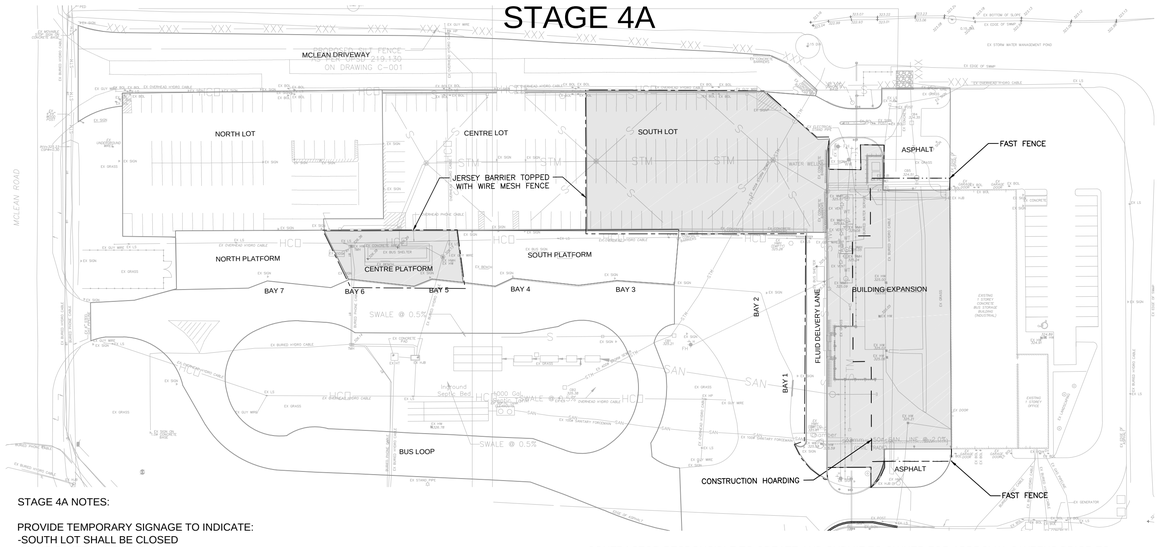
STAGE 4A



STAGE 4A NOTES:

PROVIDE TEMPORARY SIGNAGE TO INDICATE:
-SOUTH LOT SHALL BE CLOSED
-MOVE EASTBOUND TO BAY 4
-MOVE WESTBOUND TO BAY 3

RECONSTRUCT PERMANENT SHELTER AND CENTRE PLATFORM; PROVIDE PEDESTRIAN AISLE WITHIN CENTRE LOT TO CONNECT NORTH AND SOUTH PLATFORMS

BEGIN INSTALLATION OF REMAINING STORM SEWERS

BEGIN CONSTRUCTION OF BUILDING EXPANSION AND LANDSCAPING

CONTRACTOR RESPONSIBLE TO CREATE AND SUBMIT TO OWNER FOR APPROVAL 2 WEEKS PRIOR TO COMMENCEMENT OF WORK TEMPORARY STAGING SCHEMES FOR ALL STAGES INCLUDING TEMPORARY SIGNAGE AND TRAFFIC CONTROL.

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METROLINX PROJECT NO. 129709

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		1	14/05/15	TENDER			
		0	14/03/18	TENDER			
		A	14/01/10	95% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY:	DESIGNED BY:
J.W.O. 13/08/26	J.W.O. 13/11/01
CHECKED BY:	APPROVED BY:
E.H. 13/11/21	E.C. 13/11/21
SCALE: NTS	

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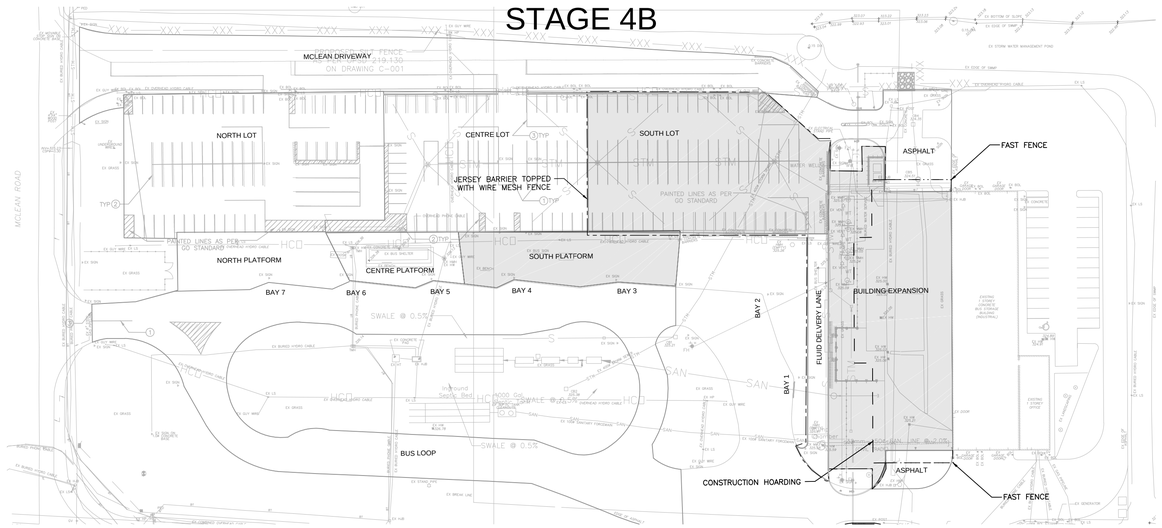
A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
STAGING PLAN 1 OF 2

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	C-007	2	10/92

User Name: John Oloveson Plot Date/Time: Friday, July 22, 2016 10:18:34 AM Path and File Name: J:\24RX13.02593\5.9 DRAWING\59CIVIL\LAYOUTS\C-007.DWG

STAGE 4B



STAGE 4B NOTES:

PROVIDE TEMPORARY SIGNAGE TO INDICATE:
-SOUTH LOT SHALL BE CLOSED
-MOVE EASTBOUND TO BAY 6
-MOVE WESTBOUND TO BAY 5

GRIND AND PAVE SOUTH PLATFORM

COMPLETE INSTALLATION OF REMAINING STORM SEWERS

COMPLETE CONSTRUCTION OF BUILDING EXPANSION AND LANDSCAPING

CONTRACTOR RESPONSIBLE TO CREATE AND SUBMIT TO OWNER FOR APPROVAL 2 WEEKS PRIOR TO COMMENCEMENT OF WORK TEMPORARY STAGING SCHEMES FOR ALL STAGES INCLUDING TEMPORARY SIGNAGE AND TRAFFIC CONTROL.

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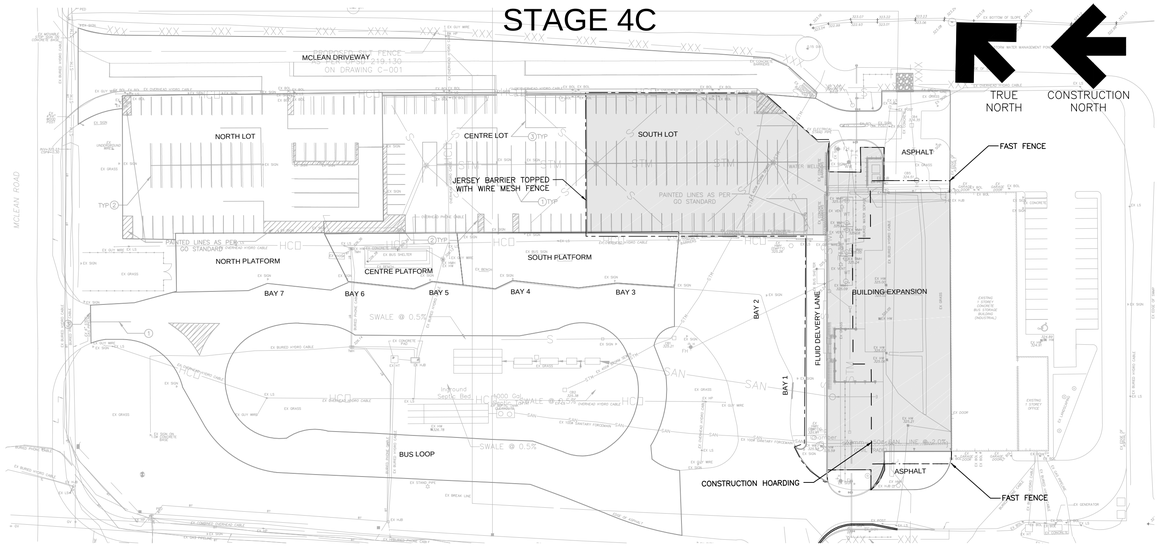
STAGE 4C



STAGE 4C NOTES:

PROVIDE TEMPORARY SIGNAGE TO INDICATE:
-SOUTH LOT SHALL BE CLOSED

COMPLETE INSTALLATION OF REMAINING STORM SEWERS

COMPLETE CONSTRUCTION OF BUILDING EXPANSION AND LANDSCAPING

CONTRACTOR RESPONSIBLE TO CREATE AND SUBMIT TO OWNER FOR APPROVAL 2 WEEKS PRIOR TO COMMENCEMENT OF WORK TEMPORARY STAGING SCHEMES FOR ALL STAGES INCLUDING TEMPORARY SIGNAGE AND TRAFFIC CONTROL.

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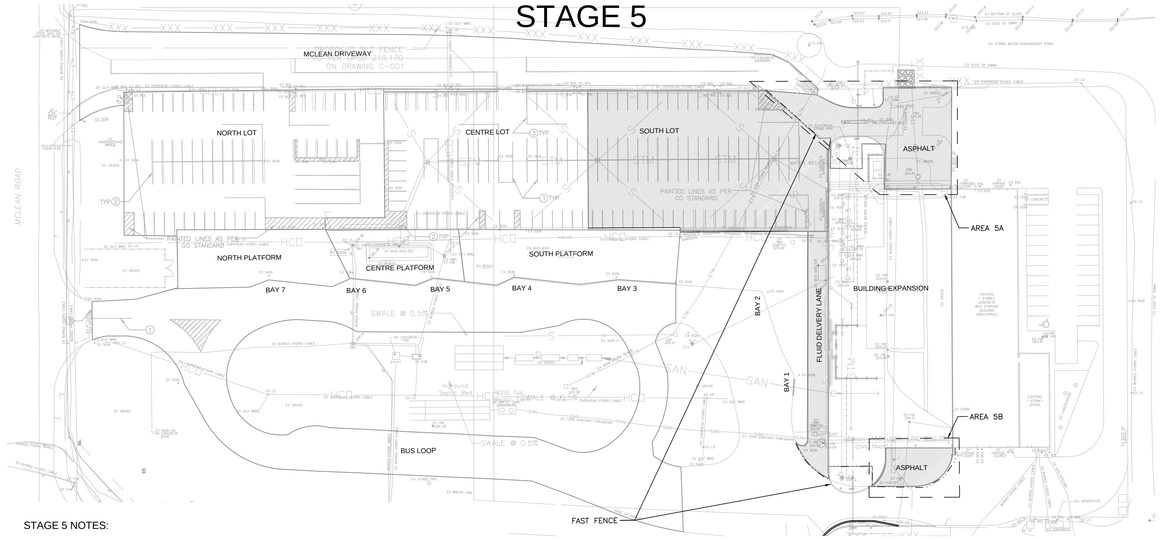
STAGE 5



STAGE 5 NOTES:

PROVIDE TEMPORARY SIGNAGE TO INDICATE:
-SOUTH LOT SHALL BE CLOSED

INSTALL SUBDRAINS IN FLUID DELIVERY LANE

REPAVE SOUTH LOT, PAVE FLUID DELIVERY LANE

PAVE AREAS 5A AND 5B BETWEEN 1AM AND 5AM

PROVIDE PAVEMENT MARKINGS IN SOUTH LOT, FUEL DELIVERY LANE, AND APRONS

CONTRACTOR RESPONSIBLE TO CREATE AND SUBMIT TO OWNER FOR APPROVAL 2 WEEKS PRIOR TO COMMENCEMENT OF WORK TEMPORARY STAGING SCHEMES FOR ALL STAGES INCLUDING TEMPORARY SIGNAGE AND TRAFFIC CONTROL.

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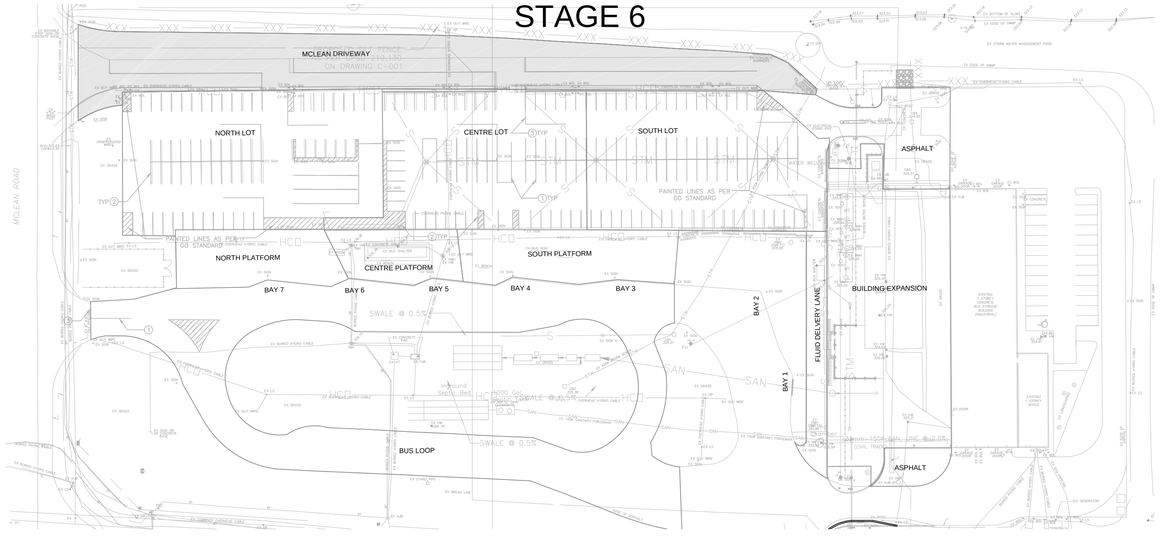
BUS OPERATIONS SHALL NOT BE INTERRUPTED BY THIS WORK. NIGHTTIME WORK MAY BE REQUIRED

STAGE 6



STAGE 6 NOTES:

GRIND AND PAVE MCLEAN DRIVEWAY

PROVIDE PAVEMENT MARKINGS ON MCLEAN DRIVEWAY

MAINTAIN PUBLIC ACCESS TO PARKING LOT AT ALL TIMES

CONTRACTOR RESPONSIBLE TO CREATE AND SUBMIT TO OWNER FOR APPROVAL 2 WEEKS PRIOR TO COMMENCEMENT OF WORK TEMPORARY STAGING SCHEMES FOR ALL STAGES INCLUDING TEMPORARY SIGNAGE AND TRAFFIC CONTROL.

ALL TEMPORARY SIGNAGE AND STAGING PLANS ARE SUBJECT TO APPROVAL BY OWNER AND ARE TO BE IN GENERAL CONFORMANCE WITH GO STATIC SIGNAGE MANUAL AND MTO BOOK 7.

ALL SHIFTS IN OPERATIONAL BAYS ARE TO BE COORDINATED WITH OWNER.

BUS OPERATIONS SHALL NOT BE INTERRUPTED BY THIS WORK. NIGHTTIME WORK MAY BE REQUIRED

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		2	16/05/27	RECORD			
		1	14/09/05	CONSTRUCTION			
		1	14/05/15	TENDER			
		0	14/03/18	TENDER			
		A	14/01/10	95% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY:	DESIGNED BY:
J.W.O. 13/08/26	J.W.O. 13/11/01
CHECKED BY:	APPROVED BY:
E.H. 13/11/21	E.C. 13/11/21
SCALE: NTS	

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ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
STAGING PLAN 2 OF 2

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	C-008	2	11/92

User Name: John Oloveson Plot Date/Time: Friday, July 22, 2016 10:19:49 AM Path and File Name: J:\24RX13.0259\5.9 DRAWING\59CIVIL\LAYOUTS\C-008.DWG

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

GENERAL

- NOTE NUMBER / LOCATION OF NOTE ON E-002 (N1 / E-002)
- DETAIL NUMBER / LOCATION SHEET OR DETAIL SHEET (1 / E-021)
- NORTH ARROW — ARROW INDICATES PROJECT NORTH
- DIRECT BURIED OR EMBEDDED IN CONCRETE SLAB CONDUIT OR CABLE
- CONCRETE ENCASED CONDUIT
- EXPOSED CONDUIT OR CABLE
- CONDUIT OR CABLE TURNING UP
- CONDUIT OR CABLE TURNING DOWN
- MH — MANHOLE
- HH — HAND HOLE
- PB — CONCRETE PULL BOX (MINIMUM INTERNAL DIMENSIONS: 900x610x900)
- (H) — UTILITY POLE
- ø53C — CONDUIT STUB-UP (53C DENOTES 53mm CONDUIT TRADE SIZE)
- CONCRETE ENCASEMENT FOR UNDERGROUND CONDUITS

POWER AND CONTROL

- LP-A — LIGHTING PANELBOARD – SURFACE MOUNTED
- LP-A — LIGHTING PANELBOARD – RECESSED
- RP-RA — RECEPTACLE PANELBOARD – SURFACE MOUNTED
- RP-RA — RECEPTACLE PANELBOARD – RECESSED
- PP1 — POWER AND/OR DISTRIBUTION PANELBOARD – SURFACE MOUNTED
- PP1 — POWER AND/OR DISTRIBUTION PANELBOARD – RECESSED
- EF / 1 — MECHANICAL OR ELECTRICAL EQUIPMENT / TAG NUMBER

AC – AIR CONDITIONING UNIT
ACC – AIR COOLED CONDENSER UNIT
C – COMPRESSOR
CU – CONDENSER UNIT
DH – DOOR HEATER
EF – EXHAUST FAN
ETU – EXHAUST TERMINAL UNIT
H – HUMIDIFIER
HV – HEATING AND VENTILATING UNIT
HW – HOT WATER HEATER
MD – MOTORIZED DAMPER
P – PUMP
RAF – RETURN AIR FAN
SF – SUPPLY FAN
UH – UNIT HEATER
V – VENTILATING UNIT

- COMBINATION MAGNETIC STARTER
- MAGNETIC STARTER
- MANUAL STARTER
- $M — HORSEPOWER RATED MOTOR TOGGLE SWITCH

- DISCONNECT SWITCH – NON-FUSIBLE
- F — FUSED DISCONNECT SWITCH
- TX — TRANSFORMER
- CP — CONTROL PANEL
- J — JUNCTION BOX
- BLANK JUNCTION BOX
- PB — CONCRETE PULL BOX
- P — PULL BOX
- TBS — TERMINAL BOX WITH TERMINAL STRIPS
- BASEBOARD HEATING UNIT
- UH — ELECTRIC UNIT HEATER
- CH — ELECTRIC CONVECTION HEATER
- FF — ELECTRIC FORCE-FLOW HEATER
- MD — MOTORIZED DAMPER
- SINGLE RECEPTACLE
- DUPLEX RECEPTACLE
- SPLIT DUPLEX RECEPTACLE
- RECEPTACLE SUPPLIED WITH EQUIPMENT
- SPECIAL RECEPTACLE — A DENOTES TYPE

DESIGNATIONS FOR RECEPTACLE TYPES
F – FLOOR
E – EMERGENCY
IG – ISOLATED GROUND
GFCI – GROUND FAULT CIRCUIT INTERRUPTER
B – BENCH MOUNTED
WP – WEATHER PROOF

- DIRECT CONNECTION TO EQUIPMENT
- T — THERMOSTAT
- SWITCH HEATER/BLOWER
- T — HIGH/LOW TEMPERATURE THERMOSTAT

GROUNDING

- GROUND ROD
- GROUND ROD INSPECTION WELL
- GROUND BUS
- GROUND CONNECTION
- BURIED GROUND CABLE
- 60" — GROUND CABLE PIGTAIL – EXPOSED FOR FUTURE CONNECTION; 60" DENOTES LENGTH

LIGHTNING PROTECTION

- LIGHTNING PROTECTION CONDUCTOR
- LIGHTNING PROTECTION CONNECTION

LIGHTING

- F / G-28.1 — TYPICAL LUMINAIRE NOMENCLATURE:
  F – DENOTES LUMINAIRE TYPE
  G-28.1 – DENOTES CIRCUIT NUMBER
  (PREFIX 'E' IN CIRCUIT NUMBER DENOTES EMERGENCY PANEL)
  G – DENOTES PANELBOARD LABEL
  28 – DENOTES CIRCUIT NUMBER
  .1 – DENOTES SWITCH OR CONTROL ZONE NUMBER
- CEILING OR PENDANT MOUNTED LUMINAIRE
- WALL MOUNTED LUMINAIRE
- OR — CEILING, PENDANT OR WALL MOUNTED LUMINAIRE
- P01 / 12m,A — POLE MOUNTED LUMINAIRE
  12m DENOTES POLE HEIGHT
  A-DENOTES POLE BASE TYPE
  P01-LUMINAIRE TYPE
- $ — LIGHT SWITCH

DESIGNATIONS FOR LIGHT SWITCHES
3 – 3-WAY
4 – 4-WAY
D – DIMMER
M – MOMENTARY CONTACT
P – PILOT LIGHT
K – KEY OPERATED
LV – LOW VOLTAGE

- OS — OCCUPANCY SENSOR
- PE — PHOTO-ELECTRIC CONTROL
- EXIT SIGN – CEILING MOUNTED — ARROW DENOTES DIRECTION CHEVRON
- EXIT SIGN – WALL MOUNTED
- EMERGENCY LIGHTING BATTERY WITH 2 HEADS AND SINGLE RECEPTACLE
- EMERGENCY LIGHTING BATTERY FOR REMOTE HEADS AND SINGLE RECEPTACLE
- DOUBLE REMOTE EMERGENCY LIGHTING HEADS
- PMH-101 (I / II) — EQUIPMENT ID

I –SYSTEM ID
PMH – POWER MANHOLE HOLE
PMHS – POWER MANHOLE HOLE DRAINAGE CONNECTED TO SEWAGE SYSTEM
CMH – COMMUNICATIONS MANHOLE
CMHS – COMMUNICATIONS MANHOLE DRAINAGE CONNECTED TO SEWAGE SYSTEM
PHH – POWER HANDHOLE
CHH – COMMUNICATIONS HANDHOLE
PPB – POWER CONCRETE PULL BOX
CPB – COMMUNICATIONS CONCRETE PULL BOX
LP – LIGHTING POLE
PS – POWER SWITCH HEATER/BLOWER
C – CAMERA
PP – POWER PULL BOX
CP – COMMUNICATIONS PULL BOX

II – ID NUMBER

HEAT TRACING

- HT-STORM (I / II) — DIRECT CONNECTION TO HEAT TRACING:
  I – HEAT TERACING
  II – PIPE SYSTEM ID
  STORM
  SANITARY
  TPL: TRAP SEAL PRIMER
  DCW: DOMESTIC COLD WATER
- (T) HT — HEAT TRACING THERMOSTAT C/W IN LINE TEMPERATURE SENSOR

TELEVISION AND CCTV

- INDOOR PTZ CAMERA
- INDOOR FIXED CAMERA
- OUTDOOR/WALL/ROOF MOUNTED PTZ CAMERA
- OUTDOOR/WALL/ROOF MOUNTED FIXED CAMERA
- OUTDOOR FIXED CAMERA POLE MOUNTED
- OUTDOOR PTZ CAMERA POLE MOUNTED
- 6m,A — STEEL POLE BASE MOUNTED
  6m-DENOTES POLE HEIGHT
  A-DENOTES POLE BASE TYPE
- RP2 — REMOTE PANEL
  RP2 DENOTES REMOTE PANEL NO.2
- CCTV 2 — CLOSED CIRCUIT TELEVISION MONITOR
  2 DENOTES MONITOR TYPE

TELEPHONE AND COMMUNICATIONS

- 1-V / 1-D / 1-F — TELECOMMUNICATION OUTLET – WALL MOUNTED
  1-V DENOTES ONE TELEPHONE
  1-D DENOTES ONE DATA
  1-F DENOTES ONE FAX

FIRE ALARM

- FIRE ALARM PANEL
- S — AREA SMOKE DETECTOR
- ID — DUCT SMOKE DETECTOR
- H — COMBINATION RATE OF RISE AND FIXED TEMPERATURE HEAT DETECTOR
- F 2 — FIRE ALARM HORN, 2 DENOTES TYPE
- F — FIRE ALARM MINI HORN C/W STROBE LIGHT (15cd UNLESS OTHERWISE NOTED)
- F — FIRE ALARM MANUAL PULL STATION
- IL — ISOLATOR MODULE
- M — ACTIVE FIELD DEVICE – MONITOR MODULE
- C — ACTIVE FIELD DEVICE – CONTROL MODULE

SECURITY

- WEATHERPROOF PUSHBUTTON FOR POWER OPERATED DOOR
- KP — KEY PAD
- CR — CARD READER C/W ACCESS KEYPAD
- DC — DOOR CONTACT
- DK — DOOR BY-PASS KEYED SWITCH
- DO — DOOR OPERATOR SWITCH
- ES — ELECTRIC DOOR STRIKE
- IR — MOTION DETECTOR
- DL — DOOR LOCK – PUSHBUTTON OPERATED
- DOOR ALARM
- D — DOOR BELL
- JB — SECURITY SYSTEM JUNCTION BOX
- S — AREA SMOKE DETECTOR
- S — AREA SMOKE DETECTOR COMPLETE WITH REMOTE ALARM LIGHT
- H — COMBINATION RATE OF RISE AND FIXED TEMPERATURE HEAT DETECTOR
- CS — COMBINATION HEAT AND SMOKE DETECTOR
- M — ALARM MONITOR CONTACT
- R — SIGNAL REPEATER
- JB — JUNCTION/PULL BOX
- T — HI/LOW TEMPERATURE MONITORING THERMOSTAT
- RTE — DOOR AUTO REQUEST TO EXIT SENSOR

PUBLIC ADDRESS & INTERCOM

- IC — INTERCOM
- IA — INTERCOM HANDSET
- C — WALL INTERCOM OUTLET
- S — PA SPEAKER
- P — HORN/CONE SPEAKER
- A — AMPLIFIER
- F — ROUND FLUSH SPEAKER
- EOL — END OF LINE RESISTOR

SYMBOLS AND LEGEND AS APPLICABLE

METROLINX PROJECT NO. 129709

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		0	14/09/05	CONSTRUCTION			
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DRAWN BY: A.Z. 14/01/03	DESIGNED BY: T.S. 14/01/03
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SCALE: N.T.S.	FULL SIZE ONLY

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A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
ELECTRICAL LEGEND
SHEET 1 OF 2

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-001	0	59/92

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

SYMBOL	DESCRIPTION
	SINGLE LINE
	POWER TRANSFORMER
	TRANSFORMER
30A	LOW VOLTAGE DISCONNECT SWITCH (NUMBER DENOTES AMPERE RATING)
30A 15A	LOW VOLTAGE FUSED DISCONNECT SWITCH (NUMBER DENOTES AMPERE RATING)
15A	FUSE (NUMBER DENOTES AMPERE RATING)
	CIRCUIT BREAKER
	NORMALLY OPEN CONTACTS
	NORMALLY CLOSED CONTACTS
C	RELAY COIL
	DRAWOUT OR PLUG-IN CONNECTION
600A	MEDIUM VOLTAGE LOAD INTERRUPTER SWITCH – NUMBER DENOTES SWITCH RATING
	GROUND CONNECTION
3	LIGHTNING ARRESTER OR SURGE DIVERTER NUMBER DENOTES QUANTITY
	STRESS CONE
	DELTA/WYE TRANSFORMER CONNECTION WITH WYE POINT RESISTANCE GROUNDED
	DELTA/WYE TRANSFORMER CONNECTION WITH WYE POINT GROUNDED
	WYE/WYE TRANSFORMER CONNECTION
	DELTA/DELTA TRANSFORMER CONNECTION
ATS	AUTOMATIC TRANSFER SWITCH

SYMBOLS AND LEGEND AS APPLICABLE

SYMBOL	DESCRIPTION
	DRAWOUT LOW VOLTAGE CIRCUIT BREAKER
600AF LSIG MO 400AT	LOW VOLTAGE CIRCUIT BREAKER WITH SOLID STATE TRIP UNIT AF– BREAKER FRAME UNIT AT – TRIP RATING MO – MANUALLY OPERATED EO – ELECTRICALLY OPERATED L – LONG TIME TRIP FUNCTION S – SHORT TIME TRIP FUNCTION I – INSTANTANEOUS A – GROUND FAULT ALARM G – GROUND FAULT TRIP FUNCTION
3	CONTACTOR, NUMBER DENOTES SIZE OR RATING
Y	GENERATOR
	POWER FACTOR CORRECTION CAPACITOR
A L-O A L-O	KEY INTERLOCKS
20	MOTOR – NUMBER DENOTES SIZE (HP)
	NEON LIGHT VOLTAGE INDICATOR
M	MANUAL MOTOR STARTER
	MAGNETIC MOTOR STARTER
	SURGE SUPRESSOR

SYMBOLS AND LEGEND AS APPLICABLE

SYMBOL	DESCRIPTION
	METERING AND PROTECTION DEVICES
	CONTROL TRANSFORMER
3 100:5	CURRENT TRANSFORMER, NUMBERS DENOTE QUANTITY AND RATIO
	ZERO SEQUENCE CURRENT TRANSFORMER
2	FIXED FUSE AND FIXED POTENTIAL TRANSFORMER (PT) NUMBER DENOTES QUANTITY
2	WITHDRAWABLE FUSE AND WITHDRAWABLE POTENTIAL TRANSFORMER (PT) NUMBER DENOTES QUANTITY
2	WITHDRAWABLE FUSE AND FIXED POTENTIAL TRANSFORMER (PT) NUMBER DENOTES QUANTITY
HAND OFF AUTO	SELECTOR SWITCH – HAND–OFF–AUTO
	STOP
	START
	PILOT LIGHT
	OVERLOAD

SYMBOLS AND LEGEND AS APPLICABLE

SYMBOL	DESCRIPTION

SYMBOLS AND LEGEND AS APPLICABLE

	ABBREVIATIONS
AFF	ABOVE FINISHED FLOOR
BKR	CIRCUIT BREAKER
BOT	BOTTOM OF TRAY
C/W	COMPLETE WITH
EL	ELEVATION
EMS	ENERGY MANAGEMENT SYSTEM
EO	ELECTRICALLY OPERATED BREAKER
ETSP	ELECTRONIC TRAP SEAL PRIMER
FB#1	FEEDER CIRCUIT BREAKER (#1 DENOTES NUMBER)
FEPO	FIREMAN EMERGENCY POWER OFF
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
HOA	HAND–OFF–AUTO
LSIA	LONG TIME TRIP; SHORT TIME TRIP; INSTANTANEOUS TRIP; GROUND FAULT ALARM
LSIG	LONG TIME TRIP; SHORT TIME TRIP; INSTANTANEOUS TRIP; GROUND FAULT TRIP
MB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTRE
MCOV	MAXIMUM CIRCUIT OPERATING VOLTAGE
MO	MANUALLY OPERATED
NC	NORMALLY CLOSED
NGR	NEUTRAL GROUNDING RESISTOR
NO	NORMALLY OPEN
O/H	OVER HEAD
OC	ON CENTRE
SC	SHORT CIRCUIT
SLD	SINGLE LINE DIAGRAM
ST	SHUNT TRIP
TB	TIE CIRCUIT BREAKER
THES	TORONTO HYDRO–ELECTRIC SYSTEM
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
U/S	UNDERSIDE
EX	EXPLOSION PROOF
WP	WEATHERPROOF WHILE IN USE
WAP	WIRELESS ACCESS POINT
E	EXISTING
R	EXISTING TO BE REMOVED
ER	EXISTING TO BE RELOCATED
RL	RELOCATED
N.I.C	NOT IN CONTRACT

SYMBOLS AND LEGEND AS APPLICABLE

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS

DWG NO.	TITLE

ISSUE

NO.	DATE	ISSUED FOR
1	16/07/15	RECORD
0	14/09/05	CONSTRUCTION
0	14/05/15	TENDER

REVISIONS

REV.	DATE	

DRAWN BY: A.Z. 14/01/03
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A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
ELECTRICAL LEGEND
SHEET 2 OF 2

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	E–002	0	60/92

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

GENERAL NOTES

1. MOUNTING HEIGHTS TO TOP OF DEVICE. ALL DIMENSIONS ARE ABOVE FINISHED FLOOR (A.F.F.) UNLESS NOTED OTHERWISE.

LIGHT SWITCHES	1200mm
RECEPTACLES – FINISHED AREAS	450mm
RECEPTACLES – UNFINISHED AREAS	1200mm
FIRE ALARM STATIONS	1200mm
FIRE ALARM BELLS – BELOW CEILING	450mm
FIRE ALARM END OF LINE DEVICE	1200mm
THERMOSTATS	1200mm
TELEPHONE OUTLETS – FINISHED AREAS	450mm
TELEPHONE OUTLETS – UNFINISHED AREAS	1200mm
DATA OUTLETS – FINISHED AREAS	450mm
DATA OUTLETS – UNFINISHED AREAS	1200mm
PANELS	2000mm
REMOTE ANNUNCIATORS	2000mm
CONTROL PANELS	2000mm
STARTERS – DISCONNECT SWITCHES	1800mm
EMERGENCY BATTERY LIGHTS – BELOW CEILING	450mm
REMOTE EMERGENCY LIGHTING UNITS – BELOW CEILING	450mm
PUSH BUTTONS	1100mm
TIME SWITCHES	1200mm
CLOCK RECEPTACLES – BELOW CEILING	450mm

2. VERIFY ALL DIMENSIONS WITH VENDOR'S SHOP DRAWINGS AND FIELD MEASUREMENTS. DIMENSIONS INDICATED ARE FOR ESTIMATING PURPOSES ONLY.

3. PROVISION FOR FUTURE EQUIPMENT AND CONSTRUCTION:

   A) LEAVE CLEAR ALL SPACES DESIGNATED FOR FUTURE EQUIPMENT OR BUILDING EXPANSION.

   B) WHERE INDICATED, PROVIDE SERVICES FOR FUTURE EXTENSIONS COMPLETE WITH PRODUCTS NECESSARY FOR PRESENT TERMINATION AND TO PERMIT FUTURE EXTENSION.

   C) IDENTIFY EACH SERVICE BY A PERMANENT MARKER AT ITS TERMINATION.

4. REFER TO DIVISION 15 FOR EXACT LOCATION OF MECHANICAL AND PROCESS EQUIPMENT.

5. DETERMINE EXACT LOCATION OF EQUIPMENT AND RECEPTACLES IN NOTED ROOMS. LOCATE EQUIPMENT AND RECEPTACLES TO SUIT. OBTAIN CONSULTANT'S APPROVAL BEFORE INSTALLING.

6. PROVIDE SUITABLE GALVANIZED STEEL CHANNEL AND/OR CHANNELS BETWEEN STRUCTURAL MEMBERS AND FASTEN WITH CLAMPS WHENEVER EQUIPMENT CANNOT BE DIRECTLY SUSPENDED FROM THE STRUCTURE. DO NOT DRILL ROOF DECK MATERIAL AND/OR ITS SUPPORT STRUCTURE OR ANY STRUCTURAL STEEL MEMBER.

7. ALL CONDUITS IN BUS WASH AREA TO BE RIGID PVC UNLESS NOTED OTHERWISE

METROLINX PROJECT NO. 129709

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ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

GENERAL NOTES

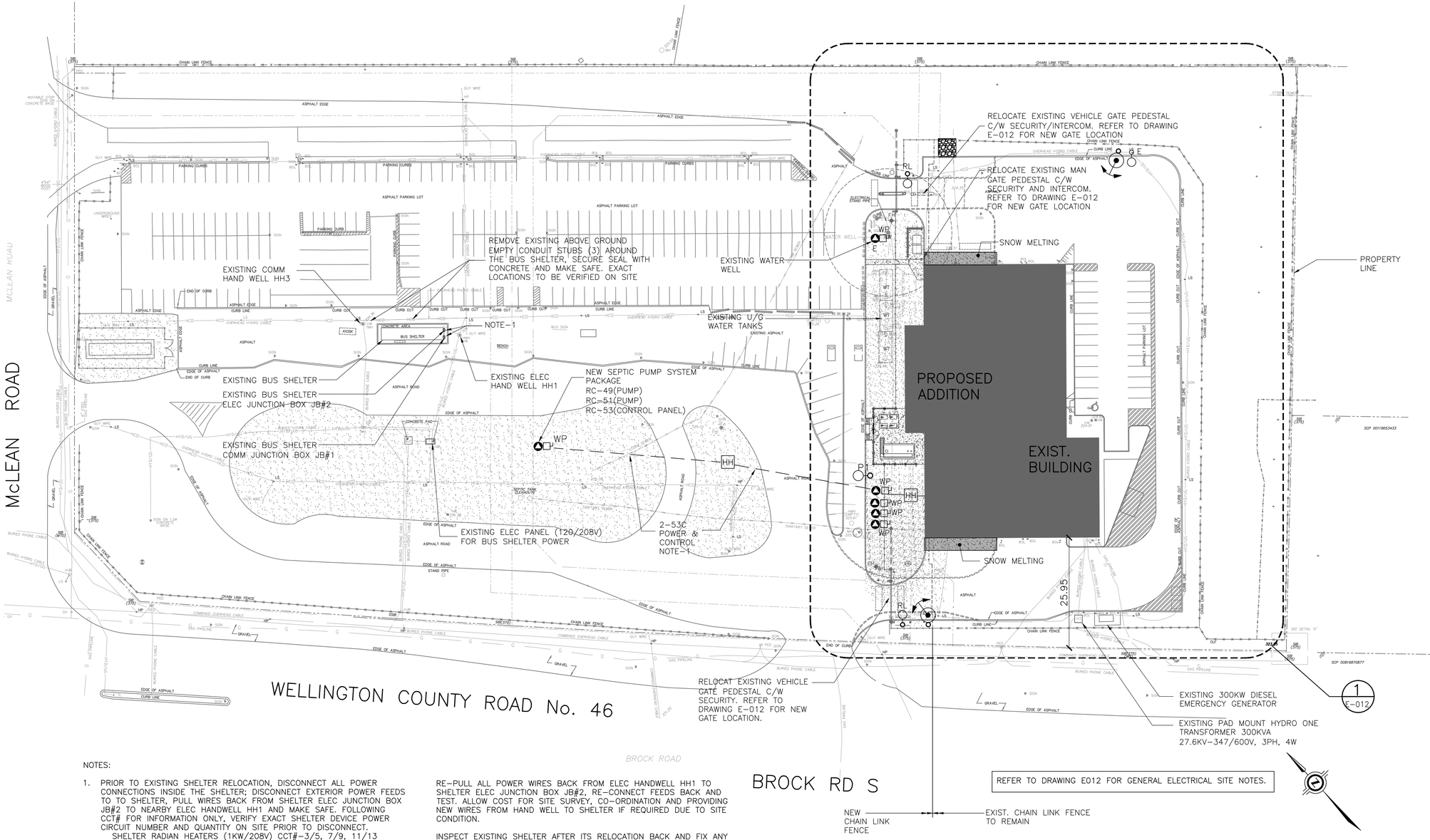
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-003	0	61/92

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH



NOTES:

1. PRIOR TO EXISTING SHELTER RELOCATION, DISCONNECT ALL POWER CONNECTIONS INSIDE THE SHELTER; DISCONNECT EXTERIOR POWER FEEDS TO TO SHELTER, PULL WIRES BACK FROM SHELTER ELEC JUNCTION BOX JB#2 TO NEARBY ELEC HANDWELL HH1 AND MAKE SAFE. FOLLOWING CCT# FOR INFORMATION ONLY, VERIFY EXACT SHELTER DEVICE POWER CIRCUIT NUMBER AND QUANTITY ON SITE PRIOR TO DISCONNECT.
   - SHELTER RADIAN HEATERS (1KW/208V) CCT#-3/5, 7/9, 11/13
   - SHELTER LIGHTING CCT#-34 AND CONTROL CCT#-20
   - SHELTER OPENER/REC CCT#-36
   - SHELTER SCUPPER HEAT TRACING CCT#-31/33

   DURING NEW SHELTER CONCRETE PAD CONSTRUCTION, INSTALL 2-53(2") U/G PVC CONDUITS FROM ELEC HANDWELL HH1 TO SHELTER JB#2 FOR POWER, 1-53(2") U/G PVC CONDUIT FROM COMM HANDWELL HH3 TO SHELTER JB#1 FOR FUTURE COMMUNICATIONS, CO-ORDINATE WITH CIVIL AND ARCH FOR EXACT LOCATIONS OF SHELTER ELEC/COMM JUNCTION BOXES JB#1/#2 FOR CONDUITS STUB-UP (EXISTING SHELTER TO BE RELOCATED BACK TO NEW CONCRETE PAD)

RE-PULL ALL POWER WIRES BACK FROM ELEC HANDWELL HH1 TO SHELTER ELEC JUNCTION BOX JB#2, RE-CONNECT FEEDS BACK AND TEST. ALLOW COST FOR SITE SURVEY, CO-ORDINATION AND PROVIDING NEW WIRES FROM HAND WELL TO SHELTER IF REQUIRED DUE TO SITE CONDITION.

INSPECT EXISTING SHELTER AFTER ITS RELOCATION BACK AND FIX ANY DAMAGED CABLES/WIRES OR LOOSE CONNECTIONS DURING RELOCATION TO MEET ELECTRICAL SAFETY CODE REQUIREMENT. RE-CONNECT ALL WIRES AND TEST ALL DEVICES AND MAKE WORK. RE-LAMP AND CLEAN ALL SHELTER LIGHT FIXTURES (TOTAL OF 10)

OVERALL SITE LAYOUT

SCALE: 1 : 500

1
E-011

METROLINX PROJECT NO. 129709

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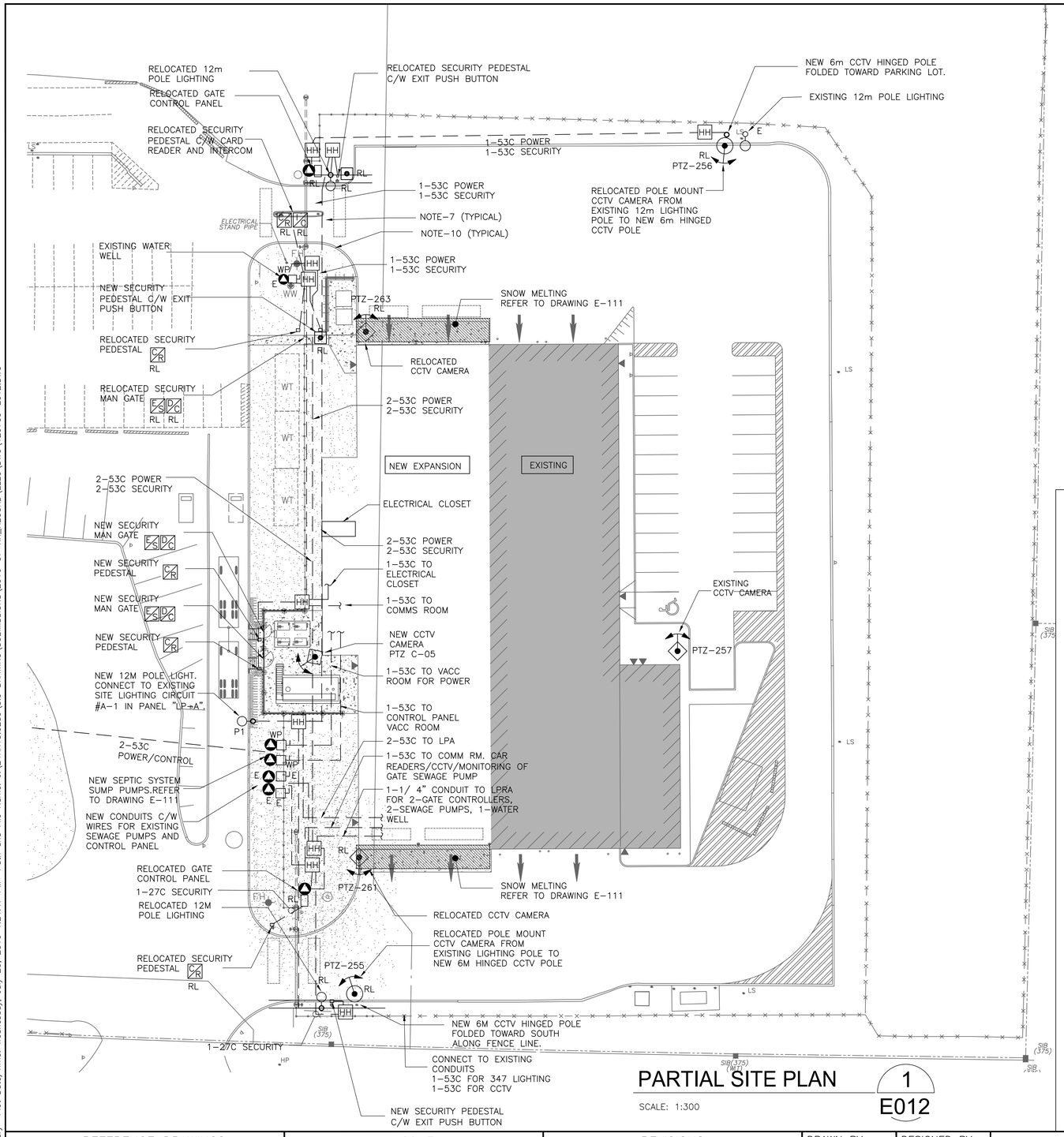
ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

ELECTRICAL
OVERALL SITE PLAN

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-011	0	62/92



PARTIAL SITE PLAN 1

SCALE: 1:300

E012

NOTES:

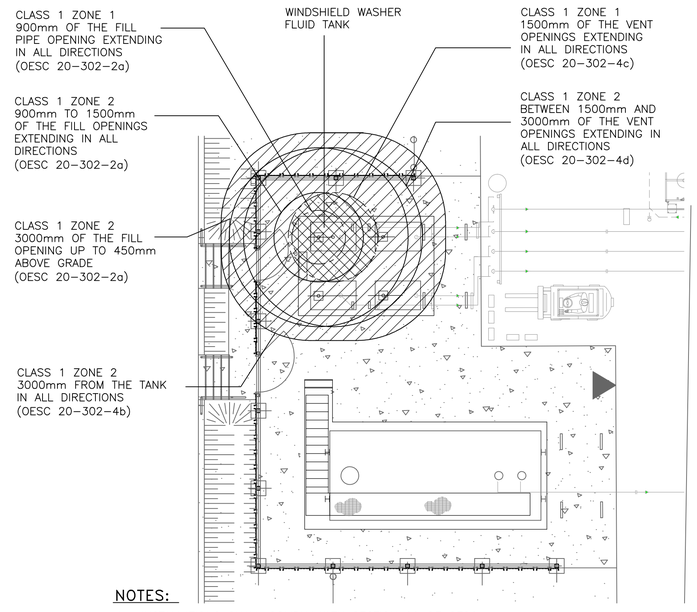
1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL, STRUCTURAL, PROCESS AND MECHANICAL DRAWINGS.
2. ALL RELOCATED OR REMOVED EQUIPMENT, DEVICES, CONDUITS AND CABLES ARE SHOWN ON DRAWING, BUT NOT LIMITED TO. ELECTRICAL CONTRACTOR TO VERIFY ON SITE.
3. REFER TO DRAWING E-011 AND E-611 FOR EXACT LOCATION OF OF RELOCATED DEVICES OR MORE INFORMATION.
4. ELECTRICAL CONTRACTOR TO REVIEW BASE BUILDING AS-BUILTS DRAWINGS AND VERIFY EXISTING SITE CONDITION PRIOR TO CONSTRUCTION.
5. FOR DESCRIPTION OF GATE CONTROLS, REFER TO CIVIL DRAWINGS AND SPECIFICATIONS
6. FOR DETAILS OF CCTV CAMERAS MOUNTED ON THE BUILDING REFER TO AUXILIARY LAYOUT DRAWINGS. SHOWN ON THIS DRAWING FOR CO-ORDINATION ONLY. DO NOT DUPLICATE.
7. ALL CONDUIT BELOW GRADE TO BE 53 DIA RIGID PVC EXCEPT WHERE SHOWN OTHERWISE. PROVIDE CONCRETE ENCASEMENT WHERE CONDUITS RUN UNDER VEHICLE AREAS AND ROADWAYS. PROVIDE HANDHOLES WHERE REQUIRED BY CODE. ALL CONDUITS PASS THROUGH CLASSIFIED AREAS TO MEET CLASS 1 ZONE 1 INSTALLATION REQUIREMENT
8. PROVIDE #6 RWU90-POWER AND #10 RWU90-GROUNDING IN 53C FOR POLE MOUNTED LIGHTING EXCEPT WHERE SHOWN OTHERWISE.
9. PROVIDE GROUND ROD AT EVERY NEW AND RELOCATED LIGHTING AND CCTV POLES. REFER TO DETAIL DRAWING SHEETS FOR 12M LIGHTING POLE AND 6M CCTV POLE REQUIREMENT.
10. TWO HAND HOLES
    ONE FOR COMMUNICATIONS SERVICE (TELECOM, SECURITY, CCTV, BAS, PROCESS CONTROL, CLASS 2 POWER, ETC)
    ONE FOR POWER SERVICE, PROVIDE BARRIER IN THE HAND HOLE BETWEEN 120-208V AND 347-600V POWER WIRES/CABLES WHERE APPLICABLE.
11. NO SPLICES BELOW GRADE.
12. PROVIDE NEW FEEDERS FOR ALL RELOCATED ELECTRICAL DEVICES AS SHOWN ON DRAWING.
13. PROVIDE NEW BASES FOR ALL RELOCATED LIGHTING POLES.
14. ELECTRICAL CONTRACTOR TO MAKE SURE ALL RELOCATED DEVICES IN GOOD CONDITION.
15. ALL PROPOSED LIGHTING FIXTURES (FREE-STANDING AND WALL-MOUNTED) TO CONTAIN FULL CUT-OFF SHIELDS AND ARE NIGHT SKY FRIENDLY, REFER TO LUMINAIRE SCHEDULE FOR DETAILS.

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH



LEGEND:

CLASS 1 ZONE 1

CLASS 1 ZONE 2

NOTES:

1. INSTALLATIONS SHALL COMPLY WITH SECTION 20 OF OESC, NFPA 30A AND NFPA 497.
2. REFER TO PROCESS DRAWINGS AND SHOP DRAWINGS FOR EQUIPMENT DETAILS.
3. BURIED WIRING AND CONDUITS THROUGH CLASSIFIED AREAS TO MEET THE REQUIREMENTS FOR CLASS 1, ZONE 1.

ELECTRICAL SITE DETAIL HAZARDOUS LOCATION CLASSIFICATION 2

SCALE: 1:100

E012

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
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		0	14/09/05	CONSTRUCTION			
		0	14/05/15	TENDER			
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CHECKED BY:	APPROVED BY:
C.B. 14/01/03	P.W. 14/01/03
SCALE: AS SHOWN FULL SIZE ONLY	

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

ELECTRICAL

SITE PLAN - PARTIAL ENLARGED

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-012	0	63/92

METRIC

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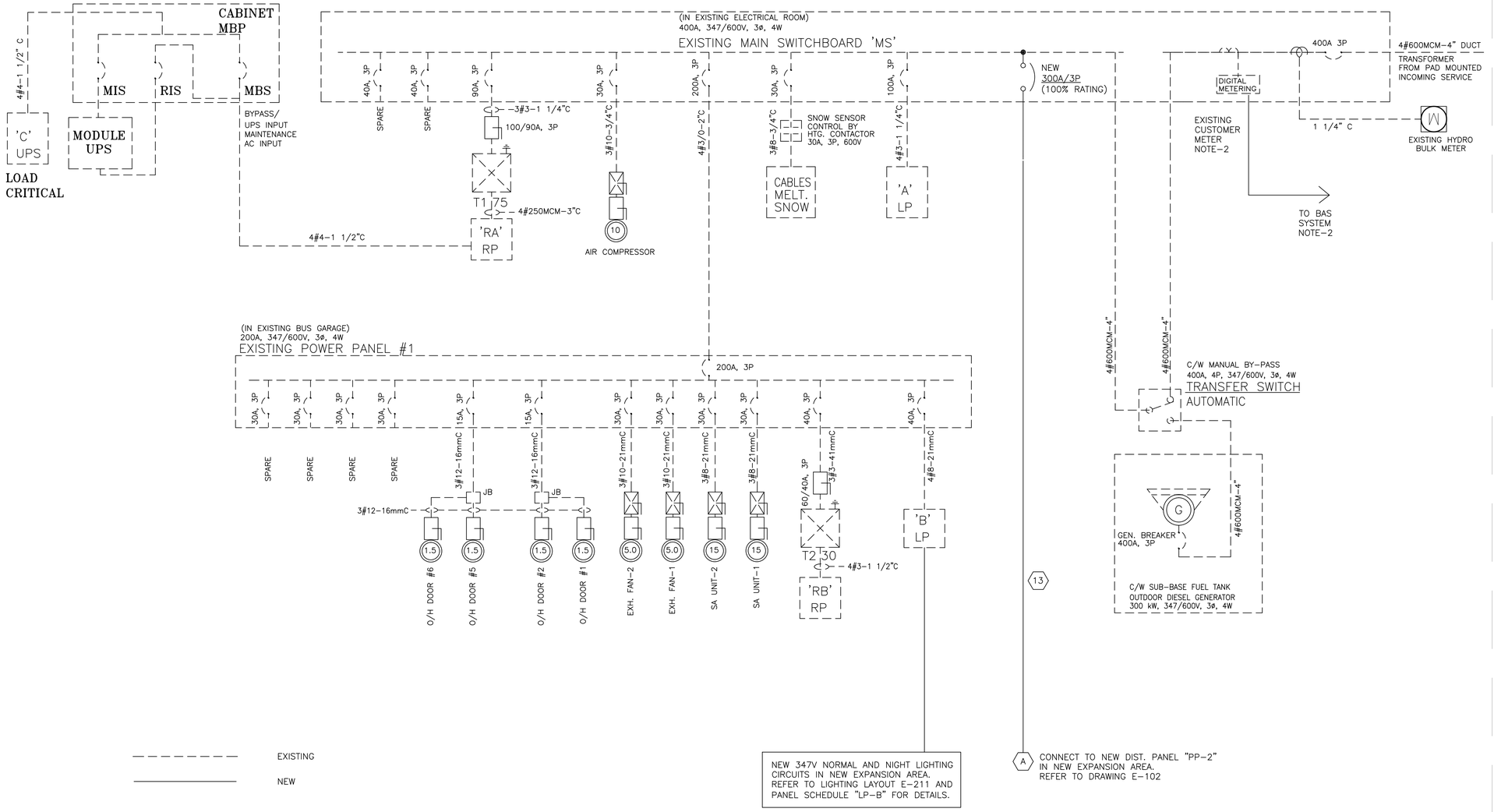

FEEDER AND CONDUIT SCHEDULE		
NUMBER	SIZE	RATING (A)
1	3# 12 + 1# 12 GND – 21C	25
2	3# 10 + 1# 12 GND – 21C	35
3	3# 8 + 1# 10 GND – 21C	45
4	3# 6 + 1# 8 GND – 27C	65
5	3# 4 + 1# 8 GND – 27C	85
6	3# 2 + 1# 6 GND – 35C	115
7	3# 1/0 + 1# 6 GND – 41C	150
8	3# 2/0 + 1# 6 GND – 53C	175
8a	4# 2/0 + 1# 6 GND – 53C	175
9	3# 4/0 + 1# 4 GND – 53C	230
10	3# 250kcmiL + 1# 4 GND – 63C	255
11	3# 300kcmiL + 1# 3 GND – 63C	285
12	3# 350kcmiL + 1# 3 GND – 63C	310
13	3# 500kcmiL + 1# 2 GND – 78C	380
14	3# 600kcmiL + 1# 2 GND – 78C	420

NOTES:

1. EXISTING ELECTRICAL POWER DISTRIBUTION EQUIPMENT AND DEVICES ARE EATON.
2. PROVIDE PROTOCOL INTERFACE (MASTER INCOM NETWORK TRANSLATOR) FOR EXISTING CUSTOMER METER (EATON IQ-230) TO CONVERT THE BUILT-IN EATON INCOM PROTOCOL TO MODBUS PROTOCOL AND TIE INTO BAS SYSTEM, ALLOW FOR ALL COST FOR AFTER HOUR INSTALLATION (DEVICE, CONDUIT, WIRES TO BAS PANEL, ETC), PROGRAMMING, COORDINATION AND COMMISSIONING.

METROLINX PROJECT NO. 129709

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		0	14/05/15	TENDER			
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ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

POWER SINGLE LINE
DIAGRAM 1 OF 2

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-101	0	64/92

METRIC

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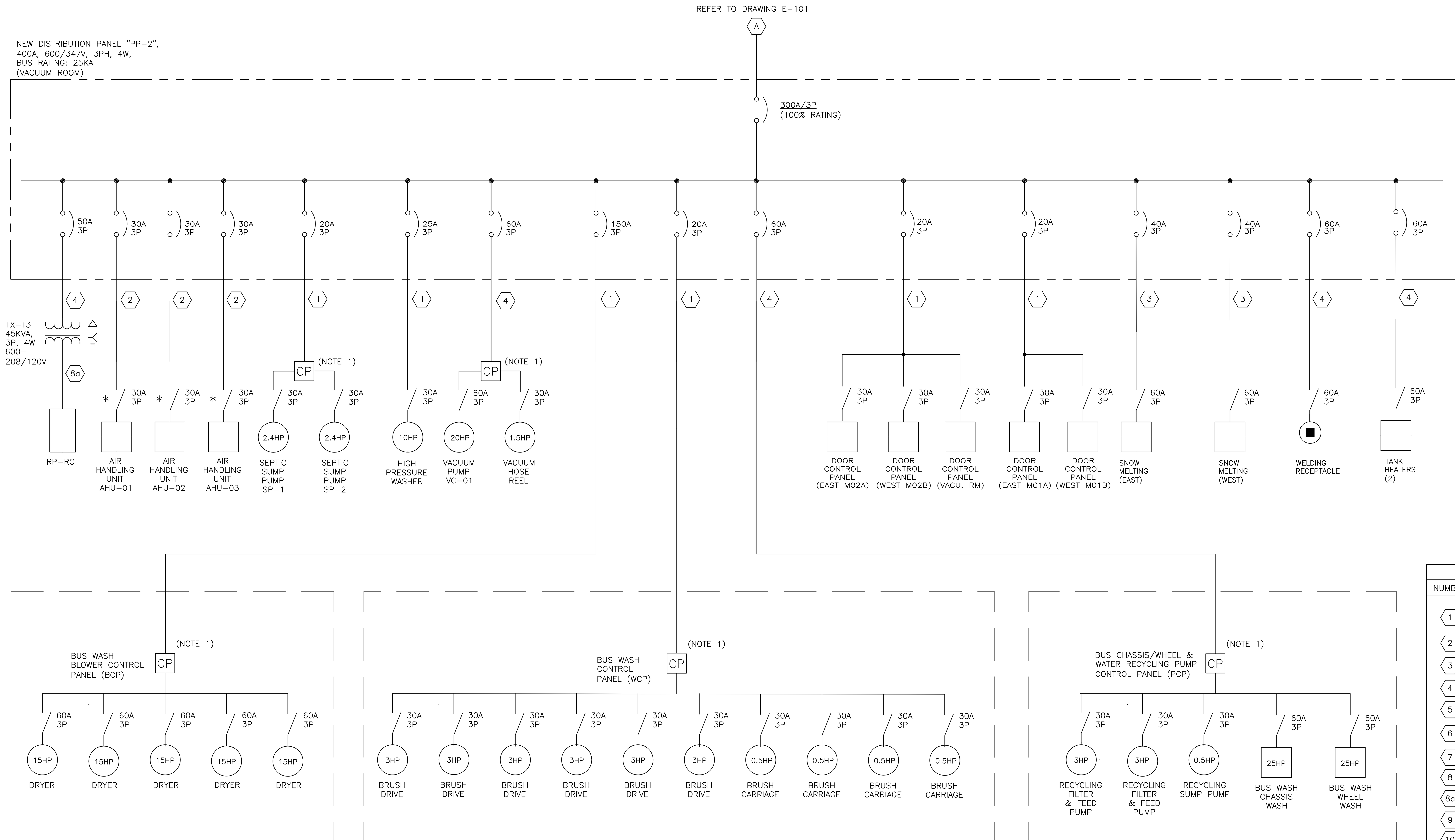

NOTES:

1. CONTROL PANEL SUPPLIED BY MECHANICAL CONTRACTOR
2. "*" DENOTES UNIT SUPPLIED WITH UNFUSED DISCONNECT, REFER TO MECHANICAL EQUIPMENT SCHEDULE.
3. DIAGRAM FOR DRYER, BRUSH AND RECYCLING PUMPS FOR REFERENCE ONLY. REFER TO SHOP DRAWINGS FOR EXACT CONFIGURATION.

FEEDER AND CONDUIT SCHEDULE

NUMBER	SIZE	RATING (A)
1	3# 12 + 1# 12 GND – 21C	25
2	3# 10 + 1# 12 GND – 21C	35
3	3# 8 + 1# 10 GND – 21C	45
4	3# 6 + 1# 8 GND – 27C	65
5	3# 4 + 1# 8 GND – 27C	85
6	3# 2 + 1# 6 GND – 35C	115
7	3# 1/0 + 1# 6 GND – 41C	150
8	3# 2/0 + 1# 6 GND – 53C	175
8a	4# 2/0 + 1# 6 GND – 53C	175
9	3# 4/0 + 1# 4 GND – 53C	230
10	3# 250kcmiL + 1# 4 GND – 63C	255
11	3# 300kcmiL + 1# 3 GND – 63C	285
12	3# 350kcmiL + 1# 3 GND – 63C	310
13	3# 500kcmiL + 1# 2 GND – 78C	380
14	3# 600kcmiL + 1# 2 GND – 78C	420

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS

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ISSUE

NO.	DATE	ISSUED FOR
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REVISIONS

REV.	DATE	
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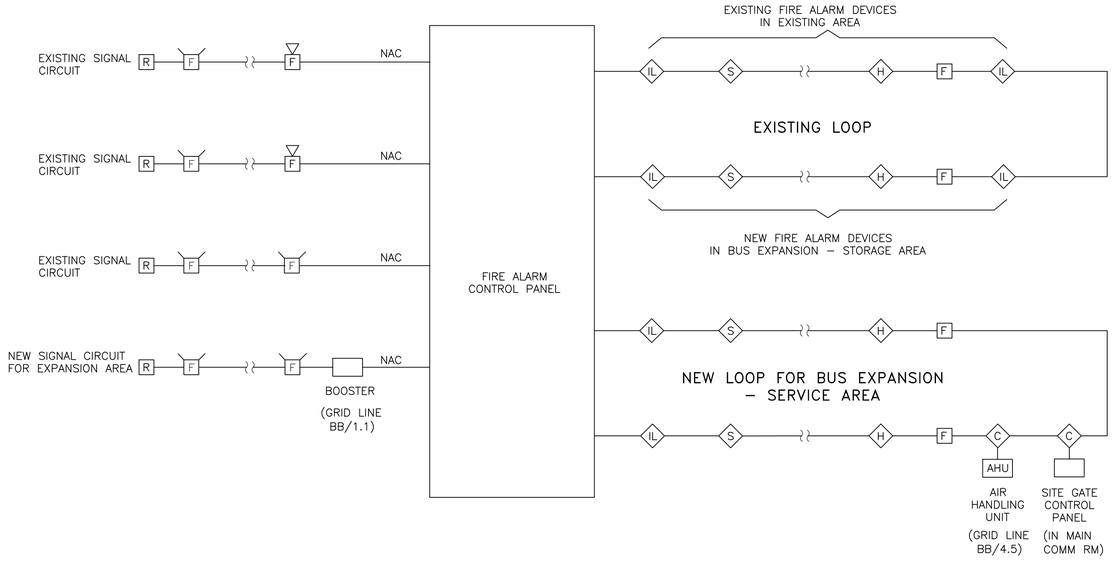
ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
ELECTRICAL POWER
SINGLE LINE DIAGRAM 2 OF 2

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-102	0	65/92



FIRE ALARM SCHEDULE

ALARM ZONES

CCT #	DESCRIPTION
1	EXISTING BUS STORAGE AREA
	NEW BUS EXPANSION – STORAGE AREA
2	EXISTING OFFICE AREA
3	EXISTING FLUIDS ROOM SUPPRESSION SYSTEM
4	EXISTING ELECTRICAL ROOM
5	EXISTING MECHANICAL ROOM
6	EXISTING STAIR #115
7	NEW BUS EXPANSION – SERVICE AREA
8	SPARE
PROVIDE 30% SPARE ZONES	

TROUBLE ZONES

CCT #	DESCRIPTION
1	EXISTING AUDIBLE CIRCUITS TROUBLE
2	EXISTING GENERATOR RUNNING
3	EXISTING GENERATOR TROUBLE
4	EXISTING GROUND FAULT

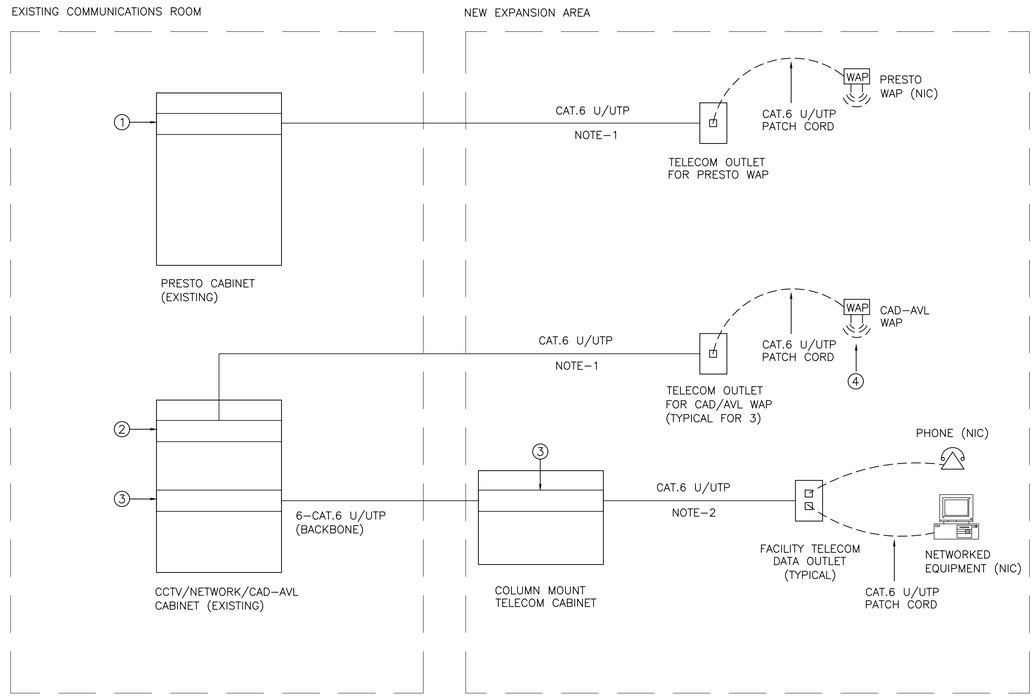
CONTROL

CCT #	DESCRIPTION
1	AIR HANDLING UNIT AHU–01 SHUT DOWN
2	AIR HANDLING UNIT AHU–02 SHUT DOWN
3	AIR HANDLING UNIT AHU–03 SHUT DOWN
4	SITE GATE#1 OPEN
5	SITE GATE#2 OPEN

NOTES:

1. DEVICES AND WIRING TOPOLOGY SHOWN SCHEMATICALLY, ADJUST TO SUIT ACTUAL SYSTEM REQUIREMENT.
2. FAULT ISOLATOR MODULES SHOWN SCHEMATICALLY ON THIS DRAWING. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ISOLATION MODULES AS PER FIRE ALARM ZONES TO MEET THE REQUIREMENT OF THE LATEST VERSION OF CAN/ULC–S524.
3. PAINT FIRE ALARM SYSTEM PULL BOXES, IAM ENCLOSURES AND JUNCTION BOXES RED IN COLOR.
4. PROVIDE VANDAL PROOF COVER FOR HORN/STROBE, PULL STATION.

FIRE ALARM RISER DIAGRAM — 1 / E103



① EXISTING CAT.6 UTP COPPER PATCH PANEL (PRESTO) IN EXISTING PRESTO CABINET FOR NEW PRESTO WAPS

② EXISTING CAT.6 UTP COPPER PATCH PANEL (CAD–AVL) IN EXISTING CCTV/NETWORK/CAD–AVL CABINET FOR NEW CAD–AVL WAPS

③ NEW 24 PORT CAT.6 UTP COPPER PATCH PANEL FOR NEW FACILITY IT DATA CABLING

④ EACH CAD/AVL WAP C/W 4 ANTENNA

WAP: CISCO 3600E

ANTENNA: AIR–ANT2524DW–R
2.4 GHZ 2 dBI/5 GHZ 4 dBi
Dipole Ant., White, RP–TNC

NOTES:

1. ONE CABLE PER JACK. QUANTITY OF JACKS IN EACH OUTLET AND QUANTITY OF OUTLETS AS PER LAYOUT DRAWINGS.
2. PROVIDE ALL U/UTP PATCH CORDS AND CROSS–CONNECT WIRES.
3. PROVIDE CONDUITS FOR VOICE/DATA, CAD/AVL AND PRESTO CABLING WITH PULL BOXES. DISTANCE BETWEEN PULL BOXES NOT GREATER THAN 30M (100'); AGGREGATED BENDS BETWEEN PULL BOX AND END AND ADJACENT PULL BOX NOT MORE THAN 180 DEGREES. VOICE/DATA, CAD/AVL AND PRESTO CABLING TO BE IN THEIR OWN DEDICATED CONDUIT SYSTEMS.

FACILITY IT DATA, CAD/AVL AND PRESTO SYSTEMS CABLING RISER DIAGRAM — 2 / E103

METROLINX PROJECT NO. 129709

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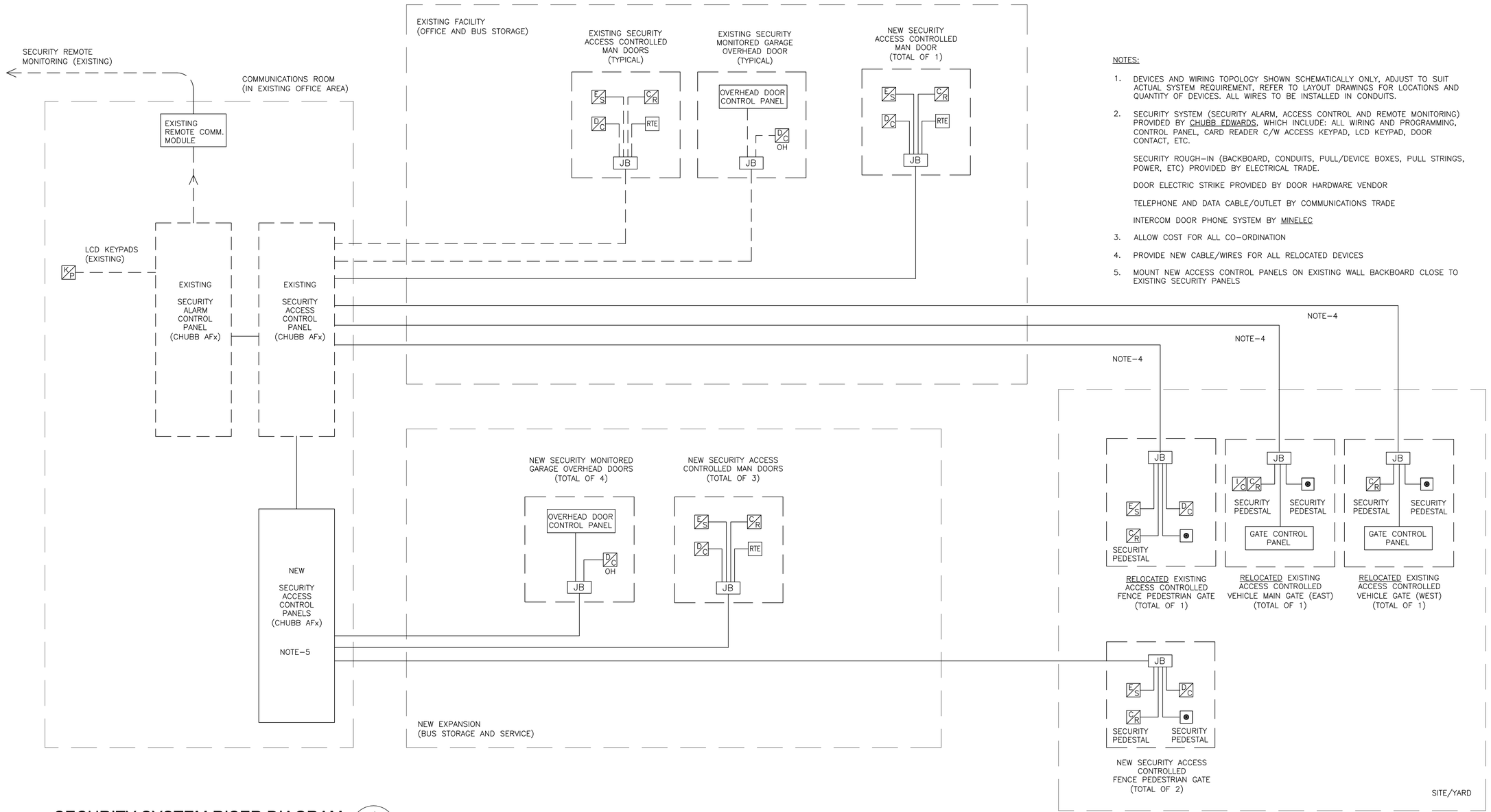
A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

AUXILIARY SYSTEM RISER DIAGRAM
– FIRE ALARM & TELECOM CABLING

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	E–103	0	66/92



NOTES:

1. DEVICES AND WIRING TOPOLOGY SHOWN SCHEMATICALLY ONLY, ADJUST TO SUIT ACTUAL SYSTEM REQUIREMENT, REFER TO LAYOUT DRAWINGS FOR LOCATIONS AND QUANTITY OF DEVICES. ALL WIRES TO BE INSTALLED IN CONDUITS.
2. SECURITY SYSTEM (SECURITY ALARM, ACCESS CONTROL AND REMOTE MONITORING) PROVIDED BY CHUBB EDWARDS, WHICH INCLUDE: ALL WIRING AND PROGRAMMING, CONTROL PANEL, CARD READER C/W ACCESS KEYPAD, LCD KEYPAD, DOOR CONTACT, ETC.

   SECURITY ROUGH-IN (BACKBOARD, CONDUITS, PULL/DEVICE BOXES, PULL STRINGS, POWER, ETC) PROVIDED BY ELECTRICAL TRADE.

   DOOR ELECTRIC STRIKE PROVIDED BY DOOR HARDWARE VENDOR

   TELEPHONE AND DATA CABLE/OUTLET BY COMMUNICATIONS TRADE

   INTERCOM DOOR PHONE SYSTEM BY MINELEC
3. ALLOW COST FOR ALL CO-ORDINATION
4. PROVIDE NEW CABLE/WIRES FOR ALL RELOCATED DEVICES
5. MOUNT NEW ACCESS CONTROL PANELS ON EXISTING WALL BACKBOARD CLOSE TO EXISTING SECURITY PANELS

SECURITY SYSTEM RISER DIAGRAM 1
E104

METROLINX PROJECT NO. 129709

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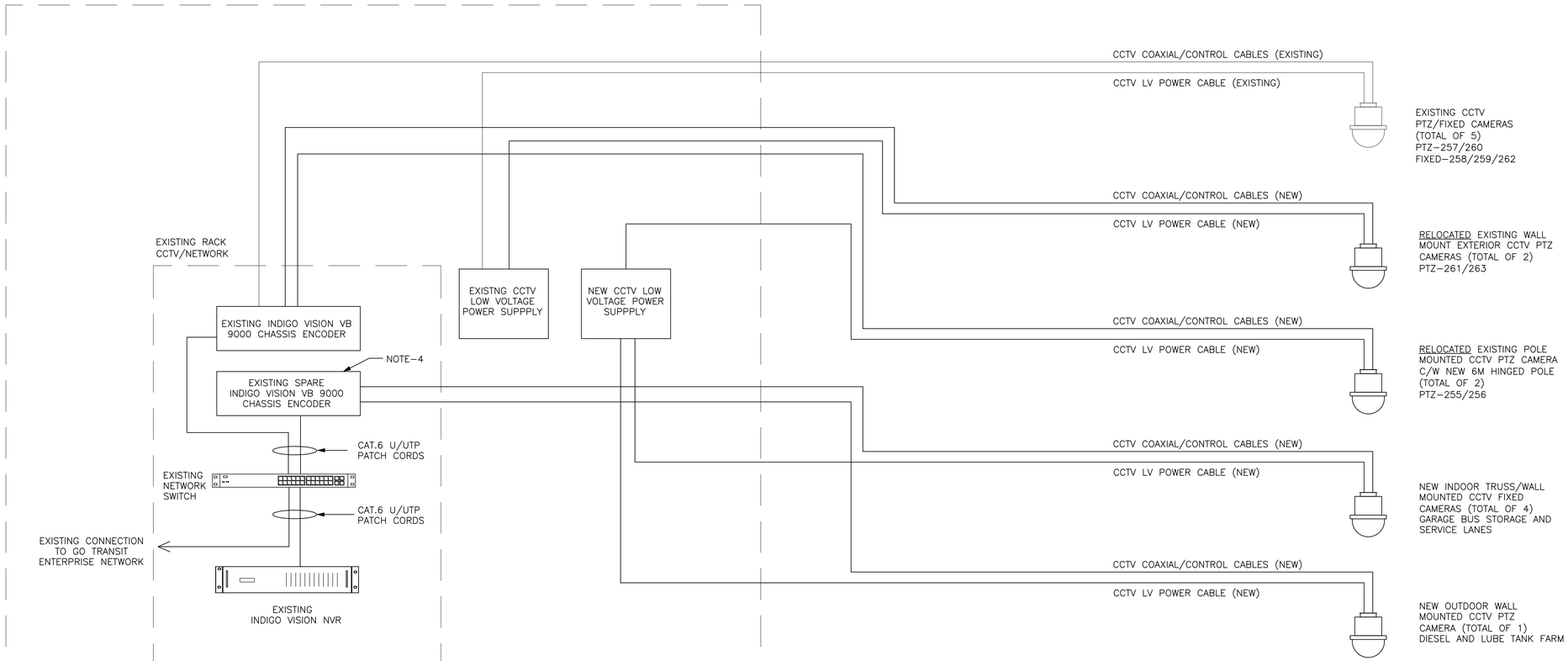
ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
AUXILIARY SYSTEM RISER DIAGRAM – SECURITY SYSTEM

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-104	0	67/92



CCTV SYSTEM RISER DIAGRAM 1

E105

NOTES:

1. DEVICES AND WIRING TOPOLOGY SHOWN SCHEMATICALLY ONLY, ADJUST TO SUIT ACTUAL SYSTEM REQUIREMENT, REFER TO LAYOUT DRAWINGS FOR LOCATIONS AND QUANTITY OF DEVICES.
2. PROVIDE WEATHER-PROOF ENCLOSURE (NEMA4X/IP66) AND HEATER FOR ALL OUTDOOR CCTV CAMERAS. ALL CCTV HEAD-END EQUIPMENT IN COMMUNICATIONS ROOM CCTV/NETWORK CABINET.
3. CCTV CABLING TO BE COAXIAL CABLE RG6 (LENGTH LESS THAN 750') OR OPTICAL FIBRE CABLE OM3 (LENGTH GREATER THAN 750'), VERIFY EXACT CABLE PATHWAY LENGTH PRIOR TO INSTALLATION. ONE CABLE PER CAMERA.
4. CHASSIS IS EXISTING, PROVIDE INDIGO VISION VB9000 ENCODER CARDS, ONE FOR EACH NEW CAMERA. PART NUMBER: 769102 QUANTITY: 5

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ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

AUXILIARY SYSTEM RISER DIAGRAM – CCTV SYSTEM

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-105	0	68/92

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

ALL CONDUITS IN GARAGE SERVICE/WASH/DRY AREA TO BE EPOXY OR PVC COATED INSIDE AND OUT RIGID GALVANIZED STEEL CONDUITS. ALL CONDUITS & JUNCTION/PULL BOXES TO BE WATER-PROOF.

TRUE NORTH / CONSTRUCTION NORTH

EXISTING SUMP PUMPS FED FROM EXISTING POWER PANEL TO REMAIN. REFER TO DRAWING E012 FOR EXACT LOCATION.

POWER FED FROM SEPTIC SUMP PUMP CONTROL PANEL IN VACCUM ROOM 03

HEAT TRACING NOTE-19

BUS DRYER CONTROL PANEL FED FROM "PP-2"

HT-SANITARY (10m) RC-62

SEPTIC SUMP PUMP CHAMBER HAZARDOUS AREA CLASS 1 ZONE 1 INSIDE PIT NOTE-20

REFER TO DETAIL 2/E111.

DEF PUMP CONTROL RC-30/32/42/44

VEEDER ROOT LUBE/DEF TANK/MONITORING PANEL RC-16/18

DIESEL TANK PUMP (STP) POWER PANEL RC-26/28

POWER CONNECTIONS FOR VALVES FROM PLC (TYPICAL FOR 4)

FORKLIFT ROOM 05

WATER TANK SENSOR & VALVE

FORKLIFT CHARGER

WELDING RECEPTACLE FED FROM "PP-2"

NEW PANEL "RP-RC" (208/120V)

POWER CONNECTION FOR DIGITAL METERS

NEW PANEL "PP-2" (600V)

100mm CONCRETE HOUSEKEEPING PAD

HIGH PRESSURE WASHER FED FROM PANEL "PP-2".

BUS WASH EQUIP. RM. 04

ELEC. CLOSET

WALL MOUNTED NEW TRANSFORMER "TX-T3"

NOTE-18

OZONE GENERATOR

OIL INTERCEPTOR CONTROL PANEL RC-36

VAC. SYSTEM CONTROL PANEL FED FROM "PP-2"

VACUUM RM 03

VACUUM MOTORIZED HOSE REEL STATION FED FROM CONTROL PANEL.

SUMP PUMP CONTROL PANEL FED FROM "PP-2" AND RP-RC(CCT#RC-33)

NEW BAS CONTROL PANEL RC-37

NEW GAS CONTROL PANEL RC-39

AIR HANDLER REMOTES AHU-1, 2, 3. RC-54

DEF TANK SENSOR

DEF PUMP AIR VALVE

DIESEL DISPENSER

FUEL ISLAND CONTROLLER

DEF DISPENSER

EYEWASH STATION RC-38

BUS WASH CONTROL PANEL FED FROM "PP-2"

SNOW MELTING NOTE-17 (TYPICAL FOR 2)

EXISTING WELL PUMP FED FROM EXISTING POWER PANEL TO REMAIN. REFER TO DRAWING E012 FOR EXACT LOCATION.

JUNCTION BOX WALL MOUNTED ABOVE SLAB. CONFIRM WITH SNOW MELTING MANUFACTORY FOR LOCATION AND MOUNTING HEIGHT. (TYPICAL FOR 6)

THERMOSTAT

OVERHEAD DOOR CONTROL PANEL FED FROM "PP-2" (TYPICAL)

SNOW MELTING CONTROLLER #2 NOTE-15

PROVIDE PULL BOXES MOUNTED U/S OF ROOF FOR NEW FEEDERS FOR EXISTING AND RELOCATED OUTDOOR DEVICES FORM EXISTING PANEL. REFER TO DRAWING E-012 AND E-611 FOR DETAILS. VERIFY EXACT LOCATION AND QUANTITY ON SITE.

OIL INTERCEPTOR CONTROL PANEL,CCT#RC-34

BUS DRYING AREA 02

BUS WASH & RECYCLE SYSTEM CONTROL PANEL FED FROM "PP-2"

BUS WASH 02

SERVICE LANE 02

NO2/CO 1200AFF NOTE-16

NO2 U/S ROOF NOTE-16

NO MORE THAN THREE GAS POWERED VEHICLES MAY STORED AT ONE TIME INSIDE GARAGE AND SERVICE AREA

BUS STORAGE GARAGE 01

SNOW MELTING CONTROLLER #1 NOTE-15

THERMOSTAT

SNOW SENSOR

NEW EXPANSION

EXISTING

POWER CONNECTION FOR TRAFFIC LIGHTS. (TYPICAL FOR 4)

PROVIDE PULL BOXES MOUNTED U/S OF ROOF FOR TEMPORARY FEEDERS FOR EXISTING AND RELOCATED OUTDOOR DEVICES FROM EXISTING PANELS DURING CONSTRUCTION. REFER TO DRAWING E-012 AND E-611 FOR DETAILS.VERIFY EXACT LOCATION AND QUANTITY ON SITE.

NOTE-14 (TYPICAL)

NOTE-12 (TYPICAL)

NOTE-13 (TYPICAL)

NOTE-11 (TYPICAL)

EXISTING BUS STORAGE GARAGE 06

NEW LOW VOLTAGE CONTROL PANEL "LV-B"

EXISTING PANELS PP-P1, LP-B, RP-RB AND EXISTING TRANSFORMER TX-T2

EXISTING PLYWOOD BACKBOARD

EXISTING ELEC ROOM

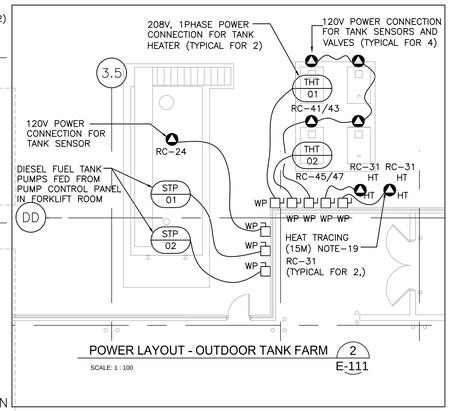
EXISTING COMM ROOM

EXISTING OFFICE AREA 07

EXISTING MAIN SWITCH BOARD 'MS', PANEL LP-A, RP-RA AND EXISTING TRANSFORMER TX-1, REFER TO DWG E-114

POWER LAYOUT - GROUND FLOOR (1 / E-111)

SCALE: 1 : 125



POWER LAYOUT - OUTDOOR TANK FARM (2 / E-111)

SCALE: 1 : 100

NOTES

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL, STRUCTURAL, PROCESS AND MECHANICAL DRAWINGS.
2. COORDINATE LOCATION AND MOUNTING HEIGHT FOR ELECTRICAL DEVICES ON SITE TO AVOID ANY INTERFERENCE WITH COLUMN, MECHANICAL EQUIPMENT, PROCESS EQUIPMENT, ETC. PROVIDE ALL STRUCTURAL SUPPORT AS REQUIRED.
3. RELOCATED ELECTRICAL DEVICES SHOWN ON DRAWING FOR REFERENCE ONLY. ELECTRICAL CONTRACTOR TO VERIFY EXACT LOCATION ON SITE PRIOR TO INSTALLATION AND PROVIDE ALL STRUCTURAL SUPPORT.
4. REFER TO DRAWINGS E-611, E-612, E-613, E-614 AND E-711 FOR RELOCATED ELECTRICAL DEVICES.
5. POWER CONNECTIONS FOR 600V EQUIPMENT TO BE FED FROM POWER PANEL "PP-2", UNLESS OTHERWISE NOTED. REFER TO DRAWING E-101&E-102 FOR DETAIL.
6. INTERNAL POWER CONNECTIONS FOR MECH/PROCESS MOTORS OR DEVICES FED FROM MECH/PROCESS CONTROL PANELS ARE NOT SHOWN ON THIS DRAWING. REFER TO MECH AND PROCESS DRAWINGS FOR EXACT LOCATION AND DETAILS. ALLOW FOR ALL ADDITIONAL COST.
7. RECEPTACLES IN BUS SERVICE/DRYER/WASH AREA AND FORKLIFT ROOM TO BE COMPLETE WITH WEATHER PROOF COVERS (P&S WIUC SERIES), GREY BASE/CLEAR COVER.
8. ELECTRICAL CONTRACTOR TO MAKE SURE ALL RELOCATED ELECTRICAL DEVICES OR EQUIPMENT IN GOOD CONDITION.
11. RELOCATED DISCONNECT SWITCHES AND CONTROL PANELS FOR OVERHEAD DOORS. REFER TO ELECTRICAL DEMOLITION DRAWING E612.
12. RELOCATED RECEPTACLES. REFER TO ELECTRICAL DEMOLITION DRAWING E-612.
13. RELOCATED THERMOSTATS. REFER TO ELECTRICAL DEMOLITION DRAWING E-612.
14. RELOCATED CO AND NO2 GAS DETECTORS ASSOCIATED WITH HORN/STORB FOR GAS MONITORING. REFER TO RELATED MECHANICAL DRAWINGS FOR DETAILS
15. SNOW MELTING CONTROLLER AT BUS EXITS AND ENTRANCES AS SHOWN.
16. JUNCTION/DEVICE BOX FOR NO2/CO DETECTION DEVICES, ELECTRICAL CONTRACTOR TO PROVIDE 20mm CONDUIT FROM GAS CONTROL PANEL TO DETECTION DEVICES. COORDINATE WITH MECHANICAL CONTRACTOR AND VERIFY EXACT LOCATION AND REQUIREMENT PRIOR TO ROUGH-IN. WIRING AND DETECTION DEVICE PROVIDED BY MECHANICAL CONTRACTOR.
17. AREA SHALL TO BE ELECTRICALLY HEATED WITH SNOW-MELTING CABLES, CONTROL BY SNOW SENSOR AND THERMOSTAT. REFER TO DETAIL 1/E-401.
18. ELECTRICAL GROUNDING BUS BAR. CONNECT BACK TO EXISTING ELECTRICAL ROOM MAIN GROUNDING BUS BAR VIA #2 GROUNDING WIRE.
19. PROVIDE HEAT TRACING PROTECTION IN HAZARDOUS AREA FOR DISCHARGE PIPES IN THE SEPTIC SUMP PUMP PIT, AND EO/ATF TANKS PIPING IN TANK FIELD. REFER TO MECHANICAL DRAWING FOR PIPING LAYOUT AND DETAILS. ELECTRIC HEAT TRACE TO BE PENTAIR RAYCHEM, 120V, 1PH, SELF REGULATING TRACING CABLE OR APPROVED EQUIVALENT C/W POWER SUPPLY MODULE, THERMOSTAT AND ALL ACCESSORIES FOR A COMPLETE AND FUNCTIONING SYSTEM. THERMOSTAT TEMPERATURE SENSOR BULB TO BE INSTALLED AS LINE-SENSING MODE IN THE PIT. SINGLE-ENTRY POWER CONTROLLER WITH JUNCTION BOX TO BE INSTALLED ADJACENT TO DISCONNECT SWITCHES. VERIFY CABLE LENGTH ON SITE, REFER TO MECH DRAWINGS M-010 AND M-013 FOR DETAIL LOCATIONS AND REQUIREMENT.
20. REFER TO CIVIL DRAWING FOR SANITY SUMP PUMP LOCATION AND DETAILS. CONDUIT, CABLE/WIRE AND EQUIPMENT INSTALLATIONS INSIDE TO COMPLY WITH OESC 2012, NFPA 30A AND NFPA 497 TO MEET THE REQUIREMENTS FOR CLASS 1, ZONE 1.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		1	16/07/15	RECORD			
		0	14/09/05	CONSTRUCTION			
		0	14/05/15	TENDER	1	15/05/14	CCN-01R1
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: A.Z. 14/01/03	DESIGNED BY: T.S. 14/01/03
CHECKED BY: C.B. 14/01/03	APPROVED BY: P.W. 14/01/03
SCALE: 1:125	FULL SIZE ONLY

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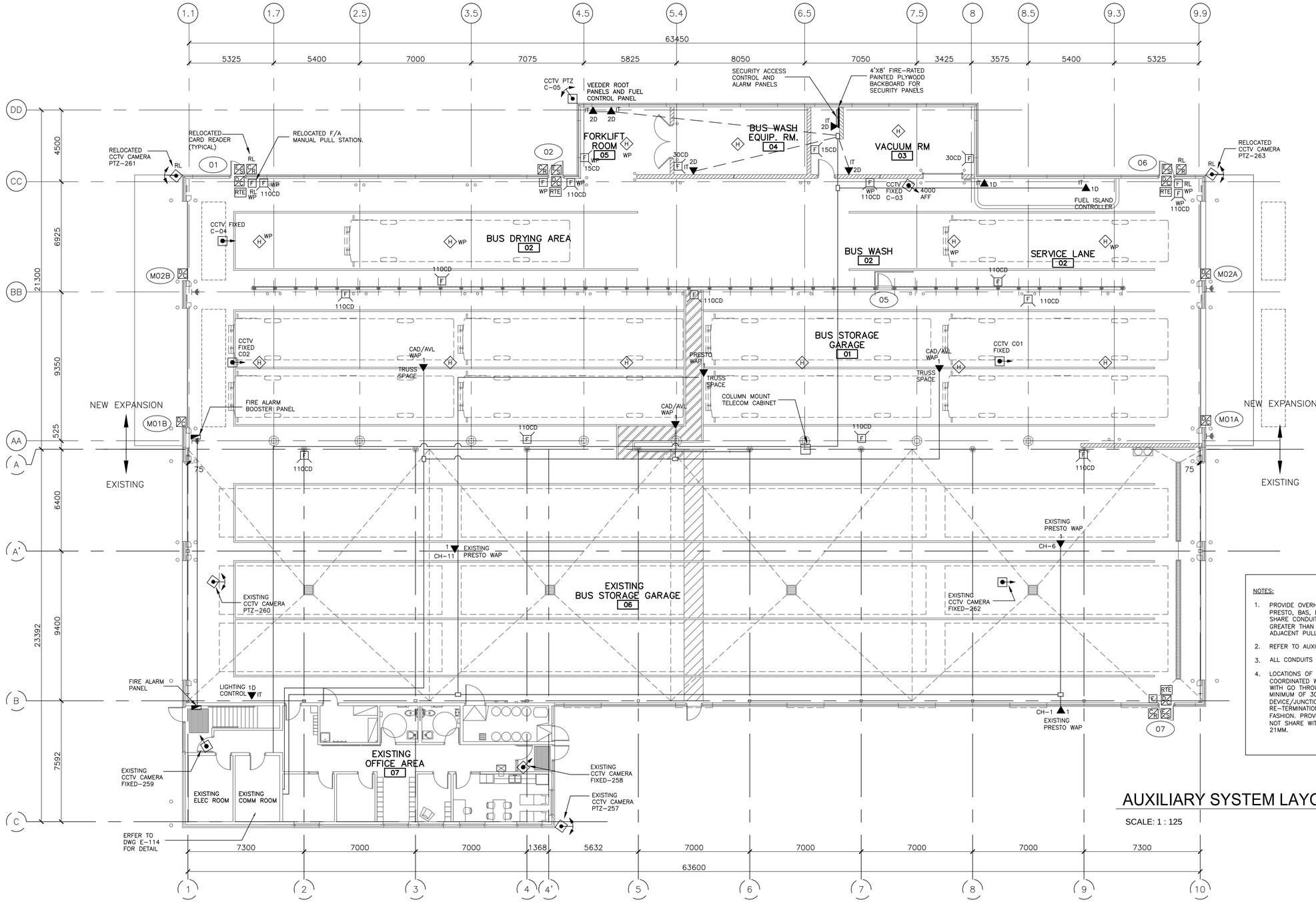
A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

POWER LAYOUT – GROUND FLOOR

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-111	0	69/92



METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH

NOTES:

1. PROVIDE OVERHEAD CONDUITS FOR VOICE/DATA NETWORK, SECURITY, CCTV, CAD/AVL, PRESTO, BAS, ETC). EACH SYSTEM CABLING TO BE IN ITS DEDICATED CONDUITS, DO NOT SHARE CONDUITS FOR DIFFERENT SYSTEMS. DISTANCE BETWEEN PULL BOXES NOT GREATER THAN 30M (100"); AGGREGATED BENDS BETWEEN PULL BOX AND END AND ADJACENT PULL BOX NOT MORE THAN 180 DEGREES.
2. REFER TO AUXILIARY SYSTEMS RISER DIAGRAM DRAWINGS FOR CABLING INFORMATION.
3. ALL CONDUITS WITH PULL STRINGS, BUSHING AND FIRE STOP WHERE APPLICABLE.
4. LOCATIONS OF CAD/AVL AND PRESTO WAP OUTLETS IN CEILING JOIST TO BE COORDINATED WITH THE FINAL SITE SURVEY (BY OWNERS) FOR THIS FACILITY. CONFIRM WITH GO THROUGH CONSULTANT FOR EXACT LOCATIONS PRIOR TO ROUGH-IN. LEAVE A MINIMUM OF 300MM OF SLACK CABLE MUST BE LEFT WITHIN THE OUTLET 2-GANG DEVICE/JUNCTION BOX AFTER TERMINATION TO ALLOW FOR EASY REPLACEMENT, AND RE-TERMINATION IF NECESSARY. ALL JUNCTION BOXES MUST BE MOUNTED IN A SECURE FASHION. PROVIDE DEDICATED CONDUIT SYSTEMS FOR BOTH PRESTO AND CAD/AVL. DO NOT SHARE WITH FACILITY VOICE/DATA CONDUIT SYSTEM. CONDUIT SIZE TO BE MIN. 21MM.

AUXILIARY SYSTEM LAYOUT - GROUND FLOOR 1

SCALE: 1 : 125

E-112

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		1	16/07/15	RECORD			
		0	14/09/05	CONSTRUCTION	2	15/09/21	CCN-017
		0	14/05/15	TENDER	1	15/05/14	CCN-01R1
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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

AUXILIARY SYSTEMS LAYOUT – GROUND FLOOR

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-112	2	70/92

METRIC

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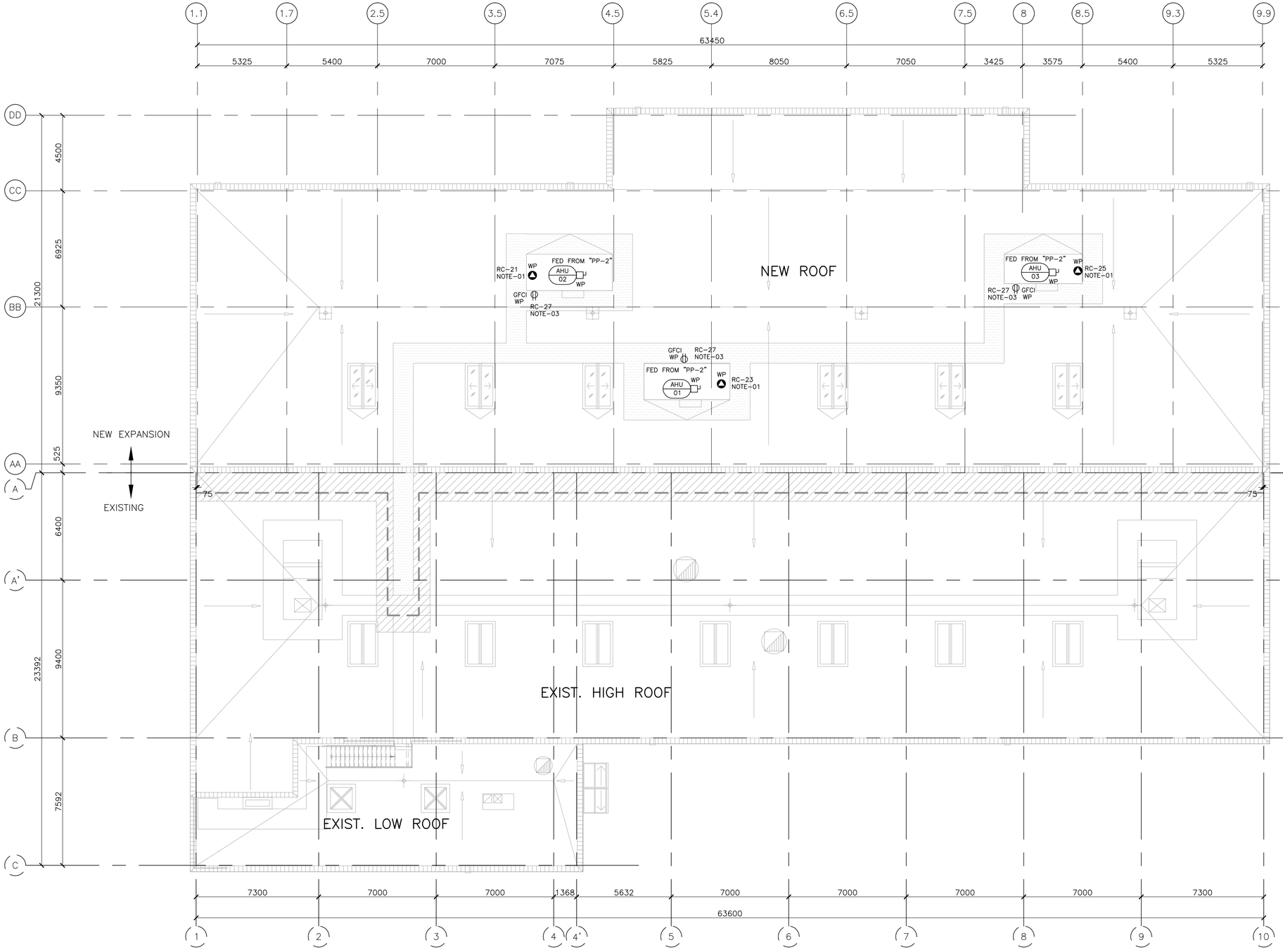
TRUE NORTH

CONSTRUCTION NORTH



NOTES

1. 120V POWER CONNECTION FOR AUXILIARY SYSTEM IN AHU UNITS.
2. PROVIDE DEDICATED CIRCUIT FOR 120V MAINTENANCE RECEPTACLES.
3. ALL OUTDOOR RECEPTACLES TO BE WEATHER PROOF WHILE IN USE. ELECTRICAL CONTRACTOR TO MOUNT THE RECEPTACLES TO THE SIDE OF THE AHU AT 750MM ABOVE THE ROOF. COORDINATE WITH MECH TRADE ON SITE FOR EXACT LOCATION PRIOR TO ROUGH-IN.

POWER LAYOUT - ROOF 1

SCALE: 1 : 125

E113

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		1	16/07/15	RECORD			
		0	14/09/05	CONSTRUCTION			
		0	14/05/15	TENDER	1	15/05/14	CCN-01R1
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LICENSED PROFESSIONAL ENGINEER
X. D. SHEN
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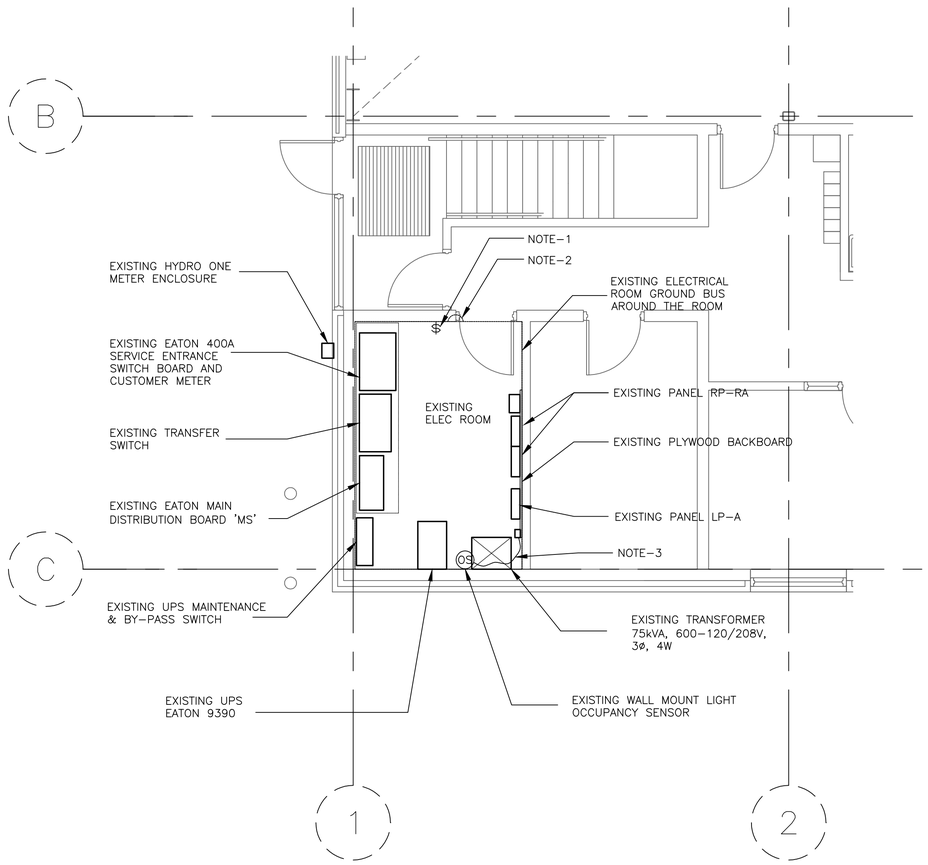
ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

POWER LAYOUT – ROOF

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-113	0	71/92



NOTES:

1. BOND DOOR/DOOR FRAME TO ELECTRICAL GROUNDING BAR LOOP WITH FLEXIBLE COPPER GROUND STRAP
2. PROVIDE MANUAL OVER–RIDE LIGHT TOGGLE SWITCH FOR THE OCCUPANCY SENSOR CONTROLLED LIGHTS IN THIS ROOM.
3. PROVIDE 1–21C RIGID STEEL CONDUIT TO CONCEAL THE OPEN WIRING BETWEEN THE EXISTING LIGHT OCCUPANCY SENSOR AND THE JUNCTION BOX.

ELECTRICAL ROOM LAYOUT 1

SCALE: 1 : 50

E114

METRIC

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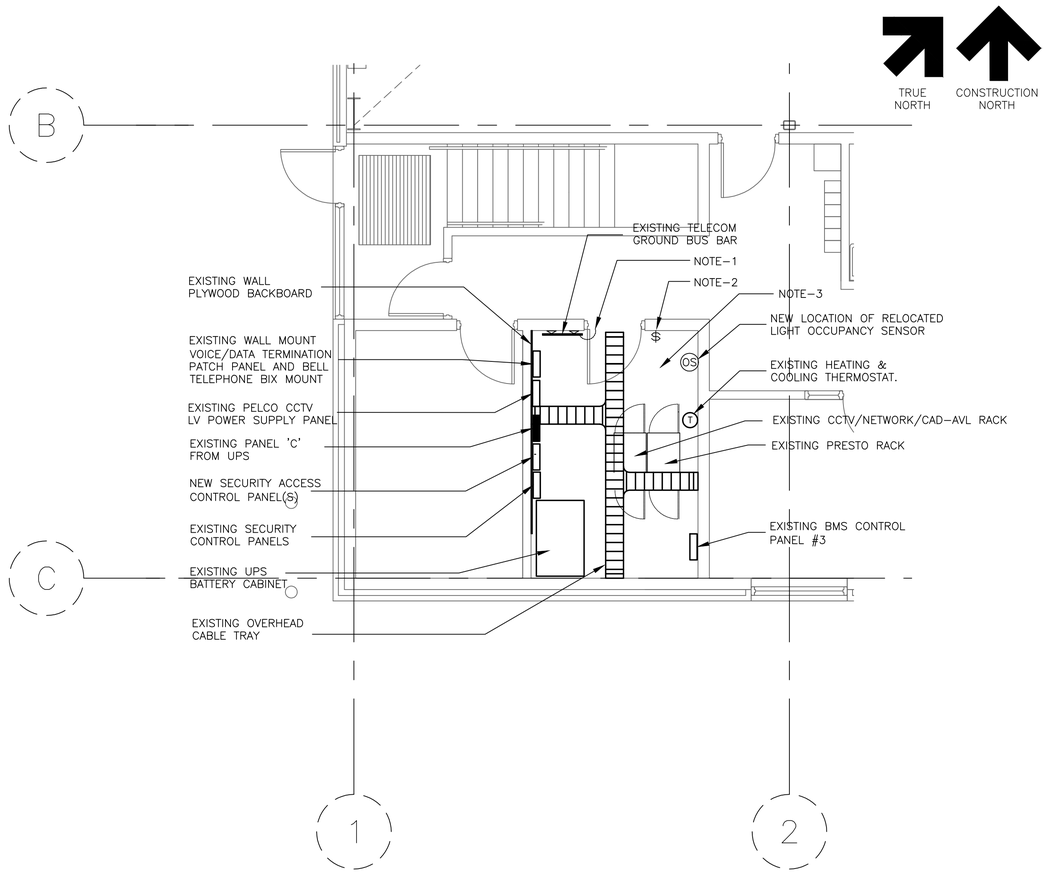

NOTES:

1. BOND DOOR/DOOR FRAME TO TELECOM GROUNDING BAR WITH FLEXIBLE COPPER GROUND STRAP
2. PROVIDE MANUAL OVER–RIDE LIGHT TOGGLE SWITCH FOR THE OCCUPANCY SENSOR CONTROLLED LIGHTS IN THIS ROOM.
3. INSTALL WIRES IN RIGID STEEL CONDUIT BETWEEN THE RELOCATED LIGHT OCCUPANCY SENSOR AND THE JUNCTION BOX.

COMMUMICATIONS ROOM LAYOUT 2

SCALE: 1 : 50

E114

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		1	16/07/15	RECORD			
		0	14/09/05	CONSTRUCTION			
		0	14/05/15	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

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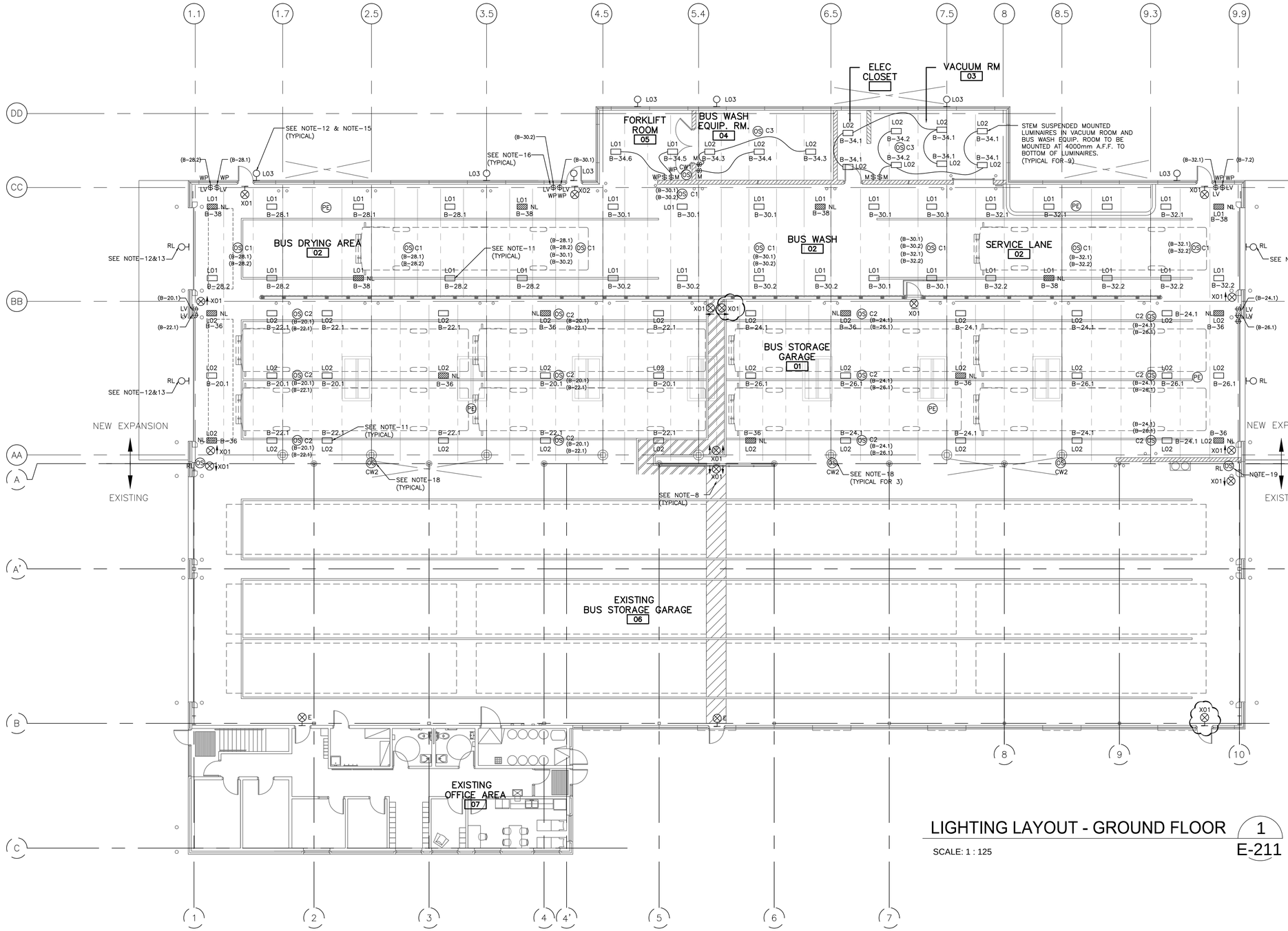
A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

ELECTRICAL AND COMMUNICATIONS ROOM LAYOUT

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	E–114	0	72/92



LIGHTING LAYOUT - GROUND FLOOR 1

SCALE: 1 : 125

E-211

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

NO UNDERGROUND CONDUITS IN GARAGE AREA, UNLESS OTHERWISE NOTED.

ALL CONDUITS IN GARAGE SERVICE/WASH/DRY AREA TO BE EPOXY OR PVC COATED INSIDE AND OUT RIGID GALVANIZED STEEL CONDUITS. ALL CONDUITS & JUNCTION/PULL BOXES TO BE WATER-PROOF.

TRUE NORTH

CONSTRUCTION NORTH

NOTES

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL, STRUCTURAL, PROCESS AND MECHANICAL DRAWINGS.
2. COORDINATE LUMINAIRE LOCATION AND MOUNTING HEIGHT ON SITE TO AVOID ANY INTERFERENCE WITH JOISTS, BEAMS, DUCTS, PIPES, OVERHEAD DOORS, ETC. PROVIDE ALL STRUCTURAL SUPPORT AS REQUIRED.
3. VERIFY EXACT LOCATION AND INSTALLATION FOR OCCUPANCY SENSORS, DAYLIGHT SENSORS, CONTROL MODULES AND INTERFACES PER RECOMMENDATION OF MANUFACTURE.
4. ALL LIGHTING SWITCHES IN BUS SERVICE/DRYER/WASH AREA AND FORKLIFT ROOM TO BE COMPLETE WITH WEATHER PROOF COVERS (P&S 3723FS SERIES), GREY BASE/CLEAR COVER.
5. REFER TO DRAWINGS E611, E612, E613 AND E711 FOR RELOCATED ELECTRICAL DEVICES.ELECTRICAL CONTRACTOR TO MAKE SURE RELOCATED ELECTRICAL DEVICES IN GOOD CONDITION.
6. REFER TO ARCHITECTURAL DRAWING FOR MOUNTING HEIGHT FOR EXTERIOR WALL MOUNTED LUMINAIRES.
7. LIGHTING SWITCHES IN BUS SERVICE/DRYER/WASH AREA AND FORKLIFT ROOM TO BE COMPLETE WITH WEATHER PROOF COVERS (P&S 3723 SERIES), GREY BASE/CLEAR COVER. REFER TO LAYOUT FOR EXACT LOCATION FOR SWITCHES.
8. EXIT SIGN TO BE CONNECTED TO THE NEAREST EXISTING EXIT SIGN CIRCUITS.
9. NOT USED.
10. NOT USED.
11. STEM SUSPENDED MOUNTED LUMINAIRES TO BE MOUNTED AT SAME HEIGHT AS EXISTING FIXTURES. MINIMUM MOUNTING HEIGHT 5300mm A.F.F. TO BOTTOM OF LUMINAIRES, UNLESS OTHERWISE NOTED. VERIFY EXACT MOUNTING HEIGHT AND LOCATION ON SITE PRIOR TO INSTALLATION. PROVIDE ALL SUPPORT STEEL. ENSURE CLEARANCE FOR OVERHEAD DOOR TRACKS AND MECHANICAL DUCTS.
12. EXTERIOR WALL MOUNTED LUMINAIRES TO BE MOUNTED AT SAME HEIGHT AS EXISTING WALL MOUNTED LUMINAIRES. REFER TO ARCHITECTURAL DRAWING ELEVATIONS. VERIFY EXACT MOUNTING HEIGHT AND LOCATION ON SITE PRIOR TO INSTALLATION.
13. RELOCATED EXTERIOR WALL MOUNTED LUMINAIRES ON WEST WALL TO BE CONNECTED TO EXISTING CIRCUIT #B-1. VERIFY EXACT EXISTING CIRCUIT AND PANEL FOR EXISTING EXTERIOR WALL MOUNTED LUMINAIRES ON SITE PRIOR TO INSTALLATION. PROVIDE NEW FEEDS FROM EXISTING PANEL OR THE NEAREST EXISTING EXTERIOR LUMINAIRES. CONTRACTOR TO MAKE SURE ALL LUMINAIRES IN GOOD CONDITION.
14. RELOCATED EXTERIOR WALL MOUNTED LUMINAIRES ON EAST WALL TO BE CONNECTED TO EXISTING CIRCUIT #B-3. VERIFY EXACT EXISTING CIRCUIT AND PANEL FOR EXISTING EXTERIOR WALL MOUNTED LUMINAIRES ON SITE PRIOR TO INSTALLATION. PROVIDE NEW FEEDS FROM EXISTING PANEL OR THE NEAREST EXISTING EXTERIOR LUMINAIRES. CONTRACTOR TO MAKE SURE ALL LUMINAIRES IN GOOD CONDITION.
15. NEW EXTERIOR WALL MOUNTED LUMINAIRES ON NORTH WALL TO BE CONNECTED TO EXISTING CIRCUIT #B-1. VERIFY EXACT EXISTING CIRCUIT AND PANEL FOR EXISTING EXTERIOR WALL MOUNTED LUMINAIRES ON SITE PRIOR TO INSTALLATION.
16. LOW VOLTAGE SWITCH C/W WEATHER PROOF COVER.
18. NEW OCCUPANCY SENSORS TO BE MOUNTED ON COLUMN AT 3000mm A.F.F. AND CONNECTED TO THE EXISTING LIGHTING CONTROL CIRCUITS FOR EXISTING BUS STORAGE AREA. CONTRACTOR TO VERIFY EXACT EXISTING LIGHTING CONTROL CIRCUITS AND POWER PACKS ON SITE AND PROVIDE ADDITIONAL POWER PACKS IF REQUIRED.
19. EXISTING OCCUPANCY SENSORS TO BE RELOCATED AND MOUNTED AT 3000mm A.F.F. REFER TO ELECTRICAL DEMOLITION DRAWING E612.

LIGHTING CONTROLS

1. OCCUPANCY SENSORS – DESIGN BASED ON WATTSTOPPER PRODUCTS – MODELS AS NOTED

   C1 – HIGH BAY CEILING MOUNTED, PASSIVE INFRARED OCCUPANCY SENSOR, 360 DEGREES COVERAGE, SUITABLE FOR WET LOCATION, AUTO-ON, AUTO-OFF. WATTSTOPPER HB-300W

   C2 – CEILING MOUNTED, PASSIVE INFRARED OCCUPANCY SENSOR, TWO-SIDED AISLEWAY LENS, AUTO-ON, AUTO-OFF. WATTSTOPPER CX-100-3

   C3 – HIGH BAY CEILING MOUNTED, PASSIVE INFRARED OCCUPANCY SENSOR, 360 DEGREES COVERAGE, MANUAL-ON/OFF, AUTO-ON/OFF. WATTSTOPPER HB-300

   CW1 – CEILING/WALL MOUNTED, PASSIVE INFRARED SWITCH SENSOR, 90 DEGREES COVERAGE, MANUAL-ON/OFF, AUTO-ON/OFF. WATTSTOPPER CX-100

   CW2 – CEILING/WALL MOUNTED, PASSIVE INFRARED SWITCH SENSOR, 90 DEGREES COVERAGE, AUTO-ON, AUTO-OFF. WATTSTOPPER CX-100

2. PHOTOSENSOR – DESIGN BASED ON WATTSTOPPER PRODUCTS – MODELS AS NOTED

   DIMMING PHOTOSENSOR: LS500 or AS PER MANUFACTORY RECOMMENDATION.

3. SWITCHES WITH NO TYPE ARE LINE VOLTAGE.

   M – LOW VOLTAGE MOMENTARY SWITCH PER EACH CONTROL ZONE AS SHOWN.

   LV – LOW VOLTAGE WALL STATION PER EACH CONTROL ZONE AS SHOWN.

4. PROVIDE POWER PACKS OR ROOM CONTROLLER FOR OCCUPANCY SENSORS AND DAYLIGHT SENSORS AS REQUIRED AND INSTALL POWER PACKS AND ROOM CONTROLLER AS PER MANUFACTORY RECOMMENDATION.
5. THE CIRCUIT NUMBERS SHOWN BESIDE OCCUPANCY SENSORS AND LOW VOLTAGE SWITCHES FOR LIGHTING CONTROL ZONE REFERENCE ONLY.
6. OCCUPANCY SENSORS AND DAYLIGHT SENSORS TO BE PENDENT MOUNTED OR MOUNTED AS PER MANUFACTORY RECOMMENDATION AND NO LESS THAN 5300mm A.F.F. PROVIDE ALL STRUCTURAL SUPPORT AND JUNCTION BOXES AS REQUIRED.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		1	16/07/15	RECORD			
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		0	14/05/15	TENDER	1	15/01/23	CCN-01
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY:	DESIGNED BY:
A.Z. 14/01/03	A.Z. 14/01/03
CHECKED BY:	APPROVED BY:
C.B. 14/01/03	P.W. 14/01/03
SCALE: 1:125	FULL SIZE ONLY

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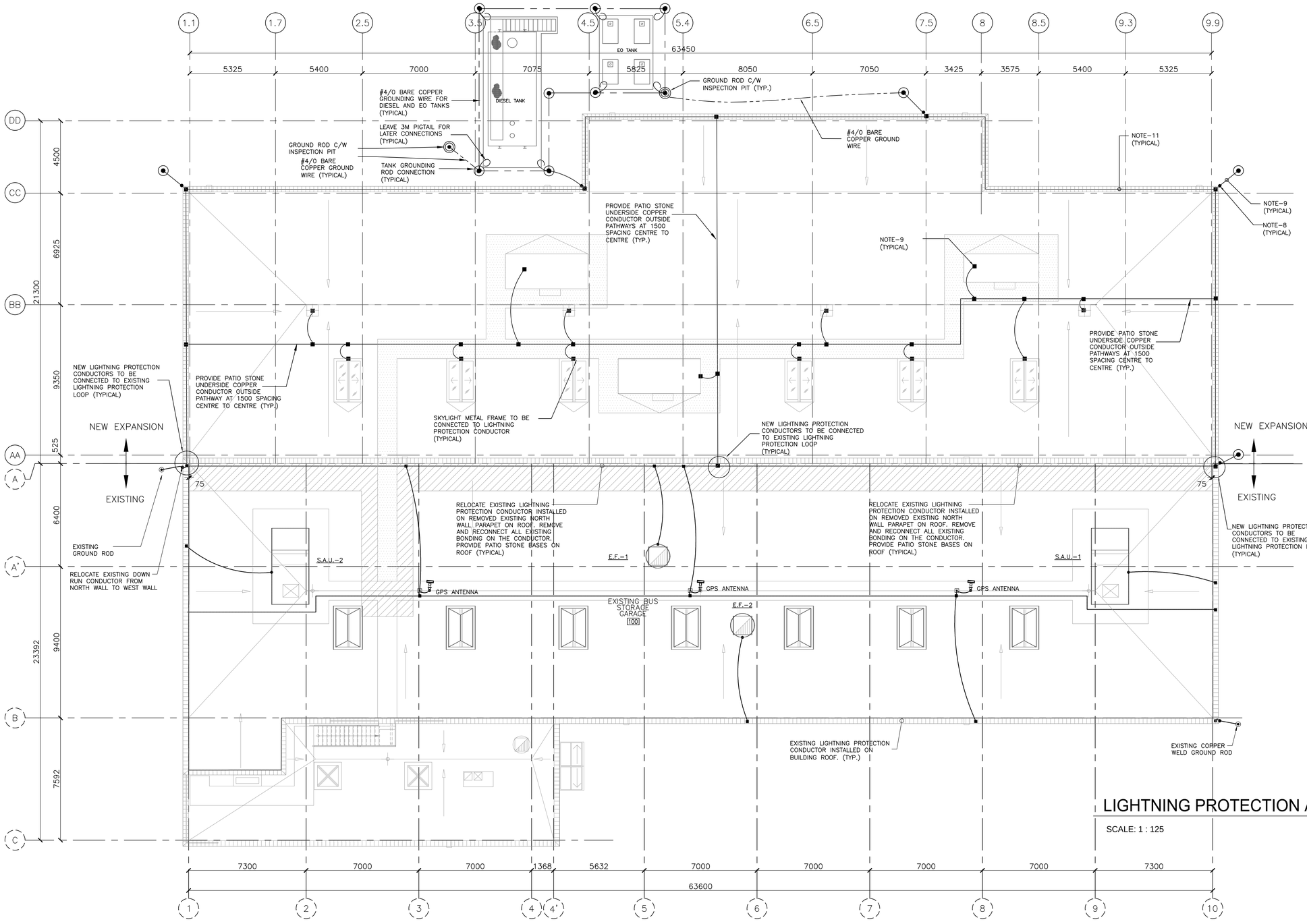
A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
LIGHTING LAYOUT – GROUND FLOOR

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-211	0	73/92



METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH

NOTES

1. REFER TO SPECIFICATION FOR ALL LIGHTNING AND BONDING CONDUCTORS TYPE.
2. ALL CONNECTIONS TO LIGHTNING PROTECTION CONDUCTOR SHALL BE MADE USING EXOTHERMIC WELDS OR APPROVED COMPRESSION CONNECTORS.
3. CONNECTIONS TO SOLID METALLIC OBJECTS OR GROUND BAR SHALL BE MADE WITH TWO-HOLE COPPER COMPRESSION TYPE LUGS.
4. NO-OX-ID COMPOUND IS TO BE USED BETWEEN ALL CONNECTIONS WHERE DISSIMILAR METALS COME IN CONTACT.
5. LIGHTNING PROTECTION SHALL BE PROVIDED BY A SUB-CONTRACTOR LICENSED BY THE ONTARIO FIRE MARSHAL TO PERFORM LIGHTNING PROTECTION WORK.
6. CONFORM TO THE FOLLOWING CODES AND STANDARDS
   (i) CAN/CSA-B72-M87 INSTALLATION CODE FOR LIGHTNING PROTECTION SYSTEMS
7. ON COMPLETION OF LIGHTNING PROTECTION WORK PROVIDE CERTIFICATE OF INSTALLATION TO THE FIRE MARSHAL OF ONTARIO WITH A COPY TO THE CONSULTANT.
8. LIGHTNING PROTECTION CONDUCTOR DOWN RUN FIXED TO OUTSIDE WALL OF BUILDING; BOTTOM 2.4m OF DOWN RUN CONDUCTOR SHALL BE PROTECTED BY PVC PIPE.
9. DIRECT BURIED LIGHTNING CONDUCTOR MINIMUM 400mm BELOW GRADE, BOND TO GROUND RODS.
10. COPPER-CLAD STEEL GROUND ROD (3000mm x ø19mm). TOP OF GROUND ROD TO BE MINIMUM 400mm BELOW GRADE AND MINIMUM 600mm FROM WALLS OR FOUNDATIONS.
    THE GROUND INSPECTION PIT/CHAMBER SHALL EXTEND 150 MM BELOW TOP OF GROUND ROD.
11. NEW LIGHTNING PROTECTION CONDUCTOR TO BE INSTALLED ON).THE HIGHEST PART OF THE ROOF PERIMETER (ON TOP OF PARAPET
12. CONNECT AHU UNITS, EXHAUST FANS, MECH AND PROCESS VENTS, AND ALL METALLIC OBJECTS ON THE ROOF TO LIGHTNING PROTECTION CONDUCTOR.

DISCLAIMER

THE DESIGN OF THE LIGHTNING PROTECTION SYSTEM INDICATED ON THIS DRAWING INCLUDING ILLUSTRATIONS AND NOTES APPLIES TO THE NEW EXPANSION AREA ONLY

LIGHTNING PROTECTION AND GROUNDING LAYOUT

SCALE: 1 : 125

1

E311

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		1	16/07/15	RECORD			
		0	14/09/05	CONSTRUCTION			
		0	14/05/15	TENDER	1	15/06/23	CCN-13
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

LIGHTNING PROTECTION AND GROUNDING LAYOUT

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-311	1	74/92

Cct No.	*	Load Description	Volt-Amperes A	B	C	Breaker Pole	A	Wire Size		Breaker A	Pole	Volt-Amperes A	B	C	Load Description	*	Cct No.
1		Existing Outdoor Wall Lighting				1	20	12	12	20	1				Existing Bus Garage Lighting		2
3		Existing Outdoor Wall Lighting				1	20	12	12	20	1				Existing Bus Garage Lighting		4
5		Existing Outdoor Wall Lighting				1	20	12	12	20	1				Existing Bus Garage Lighting		6
7		Lighting Poles				1	20		12	20	1				Existing Bus Garage Lighting		8
9		Spare				1	15		12	20	1				Existing Bus Garage Lighting		10
11		Spare				1	15		12	20	1				Existing Bus Garage Lighting		12
13		Spare				1	15			15	1				Spare		14
15		Spare				1	15			15	1				Spare		16
17		Spare				1	15			15	1				Spare		18
19		Spare				1	15		**12**	15	1	438			**Expansion Dry Side Lights**		20
21		Spare				1	15		**12**	15	1		584		**Expansion Dry Side Lights**		22
23		Spare				1	15		**12**	15	1			438	**Expansion Dry Side Lights**		24
25		Spare				1	15		**12**	15	1	584			**Expansion Dry Side Lights**		26
27		Spare				1	15		**12**	15	1		770		**Expansion Dry Side Lights**		28
29		Spare				1	15		**12**	15	1			1210	**Expansion Dry Side Lights**		30
31		Spare				1	15		**12**	15	1	880			**Expansion Dry Side Lights**		32
33		Spare				1	15		**12**	15	1		803		**Expansion Dry Side Lights**		34
35		Spare				1	15		**12**	15	1			584	**Dry Side Night Lights**	L	36
37		Spare				1	15		**12**	15	1	660			**Wet Side Night Lights**	L	38
39		Spare				1	15			15	1				**Wattstopper CP**		40
41		Spare				1	15			15	1				Spare		42
43																	44
45																	46
47																	48
49																	50
51																	52
53																	54
55																	56
57																	58
59																	60
61																	62
63																	64
65																	66
		Odd Circuit Number Subtotals	0	0	0	Features:						2562	2157	2232	Even Circuit Number Subtotals		

Bus and Lugs Rating (A):	225	Total Phase A Load:	2.6	kVA	
Main Circuit Breaker Rating (A):	-	Total Phase B Load:	2.2	kVA	
Circuit Breaker IC Rating (kA):	14	Total Phase C Load:	2.2	kVA	
Phase:	3	Total Connected Load:	7.0	kVA	
Wires:	4	Demand Factor:	100	%	
Line to Line Voltage (V):	600	Demand Load:	7.0	kVA	
Line to Neutral Voltage (V):	347	Future Load:	0.0	kVA	
Number of Poles:	42	Total Demand Load:	7.0	kVA	
Mounting:	Surface	Total Demand Current:	6.7	A	

"L" Denotes Handle Lock *
"S" Denotes Shunt Trip *
"G" Denotes GFCI

Sprinkler Shield

Remarks:
Existing Lighting Panel LP "B"

Project Title: Aberfoyle Bus Facility - Expansion and Parking Lot Rehabilitation
Project Number: 129709 (24RX13.0259)
Plan Drawing Number:
Revision Number: 0 Revision Date: 3/18/2014

Panelboard LP "B" (Existing)

Cct No.	*	Load Description	Volt-Amperes A	B	C	Breaker Pole	A	Wire Size		Breaker A	Pole	Volt-Amperes A	B	C	Load Description	*	Cct No.
1		GFI Receptacles in Bus Dry/Wash/Service	400			1	20	12	12	20	1	400			Receptacle Bus Wash Storage		2
3		GFI Receptacles in Bus Dry/Wash/Service		400		1	20	12	12	20	1		400		Receptacle Bus Wash Storage		4
5		GFI Receptacles in Bus Dry/Wash/Service			400	1	20	12		20	1				Receptacle Bus Wash Storage		6
7		Spare				1	20			20	1				Spare		8
9		GFI Receptacle in Forklift Rm for Forklift Charger		1000		1	20	12		20	1				Spare		10
11		Receptacle in Forklift & Bus Wash Equip. Rooms			600	1	20	12		20	1				Spare		12
13		Receptacle in Vacuum Room wall	800			1	20	12		20	1				Spare		14
15		Receptacle in Vacuum Room		600		1	20	12	10	30	1		400		PLC Fuel		16
17		Receptacles in Vacuum Room Panel			600	1	20	12	12	20	1			400	PLC Fuel		18
19		Spare				1	20		12	20	1	400			TLS 350		20
21		AHU-01 AUXILIARY		300		1	20	12		20	1				Spare		22
23		AHU-02 AUXILIARY			300	1	20	12		20	1				Spare		24
25		AHU-03 AUXILIARY	300			1	20	12	10	25	2	2288			STP-01/02 (1.5HP x2)		26
27		Roof Receptacles		400		1	20	12					2288				28
29	G	Spare				1	20	12	12	15	1			300	Def. Motor		30
31	G	Spare				1	20	12	12	15	1	300			Def. Motor		32
33		Sump Pump Control Panel		400		1	20	12	12	20	1		400		Oil Interceptor -01		34
35		Radiant heater Controllers (4)			400	1	20	12	12	20	1			400	Oil Interceptor -02		36
37		New Bas Control Panel	200			1	20	12	12	20	1	355			Eyewash		38
39		New Gas Control Panel		200		1	20	12		20	1				Spare		40
41		Gas Unit Heater Vacuum Room			500									2496	Def. Motor		42
43		Gas Unit Heater BWR	500			2	20	12	10	30	2	2496			Def. Motor		44
45		Spare								20	1				Spare		46
47		Spare				2	20	12		20	1				Spare		48
49		Septic Pump 0.5 hp 40 Amp.	2000			1	***40***	***2***	12	15	1	50			Heat Trac ATF		50
51		Septic Pump 0.5 hp 70 Amp.		2000		1	***70***	***2***		20	1				Heat Trace E/O		52
53		Septic Pump Control Panel			500	1	20	***8***		20	1				RCP AHU1-3		54
55		GFCI Receptacles on Exterior Wall	600			1	20	12		20	1				Chubb Security		56
57		Traffic Lights		200		1	20	12		20	1				Spare		58
59		Receptacle North Wall Indoor			200	1	15	12		20	1				Spare		60
61		Spare				1	15	12							Heat Trace Sump Tank		62
63		Spare				1	15								Space		64
65		Spare				1	15								Space		66
		Odd Circuit Number Subtotals	4800	5500	3500	Features:						6289	3488	3596	Even Circuit Number Subtotals		

Bus and Lugs Rating (A):	225	Total Phase A Load:	11.1	kVA	
Main Circuit Breaker Rating (A):	200	Total Phase B Load:	9.0	kVA	
Circuit Breaker IC Rating (kA):	14	Total Phase C Load:	7.1	kVA	
Phase:	3	Total Connected Load:	27.2	kVA	
Wires:	4	Demand Factor:	80	%	
Line to Line Voltage (V):	208	Demand Load:	21.7	kVA	
Line to Neutral Voltage (V):	120	Future Load:	0.0	kVA	
Number of Poles:	66	Total Demand Load:	21.7	kVA	
Mounting:	Surface	Total Demand Current:	60.3	A	

"L" Denotes Handle Lock *
"S" Denotes Shunt Trip *
"G" Denotes GFCI

Remarks:
Sprinkler Shield
Fed from TX-T3 45KVA

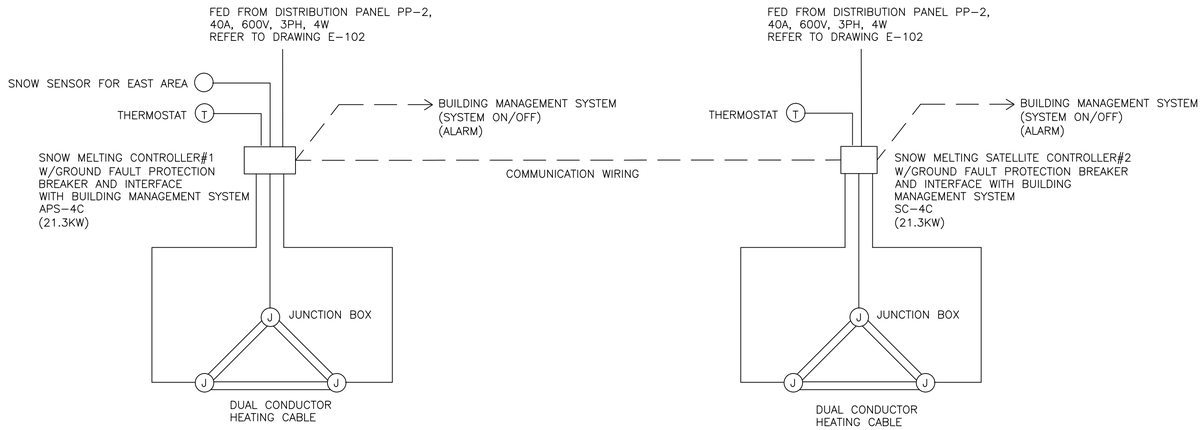
Project Title: Aberfoyle Bus Facility - Expansion and Parking Lot Rehabilitation
Project Number: 129709 (24RX13.0259)
Plan Drawing Number:
Revision Number: 1 Revision Date: 5/14/2015

Panelboard RP "RC"

ABERFIYKE BUS FACILITY - EXPANSION AND PARKING LOT REHABILITATION
Project No. 24RX13.0259 20-Feb-14

BUILDING LOAD SUMMARY (Including Existing Building Load)

Load Description	Connected Load KVA	KW	Demand Factor	Demand Load KVA	KW
NEW BUILDING LOAD					
Lighting Load					
Interior Lighting Load	7	7	1	7	7
Exterior Lighting Load	1	1	1	1	1
Receptacle Load (Miscellaneous) (PF=0.85)	4	3	100% - First 10KVA 50% - Remaining Load	4	3
Auxiliary System Load (IT, Security)	2	2	1	2	2
Mech HVAC Equipment	53	43	0.8	42	34
Process Equipment	264	219	0.6	157	128
Snow Melting	43	43	0.7	30	30
Expansion SUB-LOAD	375	318		243	205
EXISTING BUILDING SUB-LOAD				**34**	**32**
Total				**277**	**237**
TOTAL ESTIMATED DEMAND LOAD (KW)					**237**
TOTAL ESTIMATED DEMAND LOAD (KVA)					**277**



NOTES:

1. THIS DIAGRAM FOR REFERENCE ONLY. CONFIRM WITH MANUFACTORY FOR EXACT REQUIREMENT AND WIRING DIAGRAM.
2. AREA SHOWN ON DRAWING E-111 SHALL BE ELECTRICALLY HEATED WITH COPPER-SHEATHED, HDPE JACKET, DUAL-CONDUCTOR, MINERAL INSULATED HEATING CABLES, CODE NAME 62HE4950, 7100W, 600V, SPACING 4", CONTROL BY SNOW SENSOR AND THERMOSTAT. VERIFY WITH MANUFACTORY PRIOR TO INSTALLATION.

SNOW MELTING SYSTEM WIRING DIAGRAM 1
SCALE N.T.S. E-401

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		1	16/07/15	RECORD			
		0	14/09/05	CONSTRUCTION			
		0	14/05/15	TENDER	1	15/05/14	CCN-01R1
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: A.Z 14/01/03 | DESIGNED BY: A.Z 14/01/03
CHECKED BY: C.B 14/01/03 | APPROVED BY: P.W. 14/01/03
SCALE: N.T.S. FULL SIZE ONLY

Disclaimer:
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A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
POWER PANEL AND LOAD SCHEDULES

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-401	0	75/92

Rev.: 0 Issued: May 15 2014

LUMINAIRE SCHEDULE

TYPE	VOLTS	LAMP (QTY)	DESCRIPTION	MFR.TYPE/SERIES
L01	347	LED	Stem mounted LED Luminaire, Die Cast Aluminum Housing and Heat Sinks, Solite Lens, Dimmable Driver, Suitable for wet location, IP65 rated. Luminaire Finished With Polyester Powder Coating, Colour to Be Selected By Consultant. 9,000 Lumens, 4000K CCT, 75 CRI, 110 Watts, Aisle Distribution	Philips Day-Brite HBL 064GL53 Series Or approved equivalent
L02	347	LED	Stem mounted LED Luminaire, Die Cast Aluminum Housing and Heat Sinks, Solite Lens, Dimmable Driver, Suitable for damp location. Luminaire Finished With Polyester Powder Coating, Colour to Be Selected By Consultant. 6,500 Lumens, 4000K CCT, 75 CRI, 73 Watts, Aisle Distribution	Philips Day-Brite HBL 064GL35 Series Or approved equivalent
L03	347	High Pressure Sodium 100 Watt	Exterior Wall Mounted Luminaire, High Pressure Sodium, Heavy Duty Two Piece Die Cast Aluminum Housing, Thermal and Shock Resistant Clear Prismatic Borosilicate Glass Refractor, Lamp With Fixture, Finish to Match Existing Exterior Wall Mounted Luminaire. Total Watts 130	Philips Keene WLM 100S Series Or approved equivalent
P01	347	High Pressure Sodium 400 Watt	Single Pole Mounted High Pressure Sodium Luminaire, Horizonal Lamp, One-Piece Die Cast Aluminum Housing, Single Piece Diecast Aluminum Door Fram, Clear Tempered Flat Glass Lens, Completely Sealed and Gasketed, IP66 Enclosure Rating, 12m Pole, Pole and Luminaire Finished With Polyester Powder Coating, Colour to Match Existing. 50000 Lumens, 465Watts, Type V Distribution,	Philips Gardco Gullwing G18 Series Or approved equivalent
X01	120/347	LED	Exit Sign, Aluminum Housing, High-output LED, Single or Double Face, Back -to-Wall, End-to-Wall, Pendant or Ceiling Mounted As Shown on Drawings, **Pictogram**, White Baked Powder Coat Finish, Chevrons Where Shown On Drawings	Lumacell LA Series Or approved equivalent
X02	120/347	LED	Exit Sign, Fully Gasketed, Aluminum Housing, High-output LED, Suitable for Wet Location, NEMA-4X, Single or Double Face, Back -to-Wall, End-to-Wall, Pendant or Ceiling Mounted As Shown on Drawings, **Pictogram**, Chevrons Where Shown On Drawings.	Lumacell LN Series Or approved equivalent

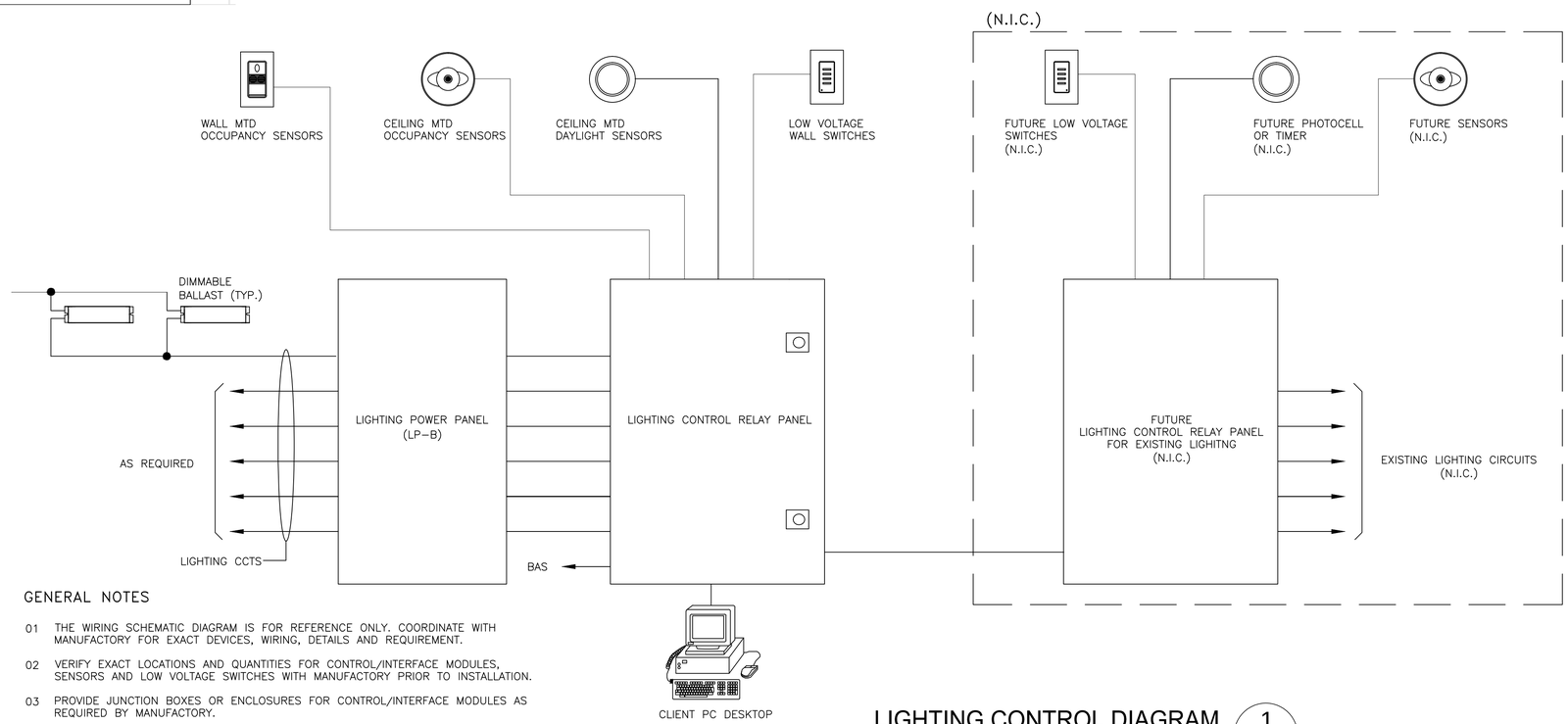
NEW LIGHTING CONTROL RELAY PANEL AND ZONE SCHEDULE

Relay No.	Area Controlled	Circuit Controlled Panelboard	Circuit Controlled Cct.No.	Zone No.	Controlled Via
1	03 Compressor Vacuum Room	LP-B	1.1	1	Two Low Voltage Momentary Switches & Occupancy Sensor
2		LP-B	1.2	2	
3	04 Bus Wash Equipment Room	LP-B	1.3	3	Two Low Voltage Momentary Switches & Occupancy Sensor
4		LP-B	1.4	4	
5	05 Forklift Room	LP-B	1.5	5	Two Low Voltage Momentary Switches & Occupancy Sensor
6		LP-B	1.6	6	
7	02 Bus Drying Area	LP-B	3.1	7	Low Voltage Switches, Occupancy Sensors & Daylight Sensor (Dimming)
8		LP-B	3.2	8	Same as above, except no dimming control
9	02 Bus Wash Area	LP-B	5.1	9	Low Voltage Switches, Occupancy Sensors
10		LP-B	5.2	10	Same as above.
11	02 Bus Service Line	LP-B	7.1	11	Low Voltage Switches, Occupancy Sensors & Daylight Sensor (Dimming)
12		LP-B	7.2	12	Same as above, except no dimming control
13	01 Bus Storage Garage	LP-B	9.1	13	Low Voltage Switches, Occupancy Sensors & Daylight Sensor (Dimming)
14		LP-B	11.1	14	Same as above.
15		LP-B	13.1	15	Same as above.
16		LP-B	15.1	16	Same as above.
17	Spare				
18	Spare				
19	Spare				
20	Spare				
21	Spare				
22	Spare				
23	Spare				
24	Spare				
Notes:					

LIGHTING CONTROL SEQUENCE OF OPERATIONS

INTERIOR LIGHTS

ROOM NAMES	SEQUENCE:
01-Bus Storage Area	Sequence: ON: Occupant enters the space and the lights automatically turn on through relay panel via occupancy sensors per zone. Refer to lighting control zone schedule and lighting layout. ADJUST: The lights in area continually adjust between off and a maximum level predetermined by the available day light within the space. (Daylight Harvesting). OFF: 30 minutes after the room has been vacated, all lights in the room will automatically turn off per zone. Additional Control: All lights in the room also can be turned on/off through the use of the low voltage switches on the wall.
02-Bus Drying Area 02-Bus Wash Area 02-Bus Service Area	Sequence: ON: Occupant enters the space and the lights automatically turn on through relay panel via occupancy sensor per zone. Refer to lighting control zone schedule and lighting layout. ADJUST: The lights along the window continually adjust between off and a maximum level predetermined by the available day light within the space. (Daylight Harvesting). Refer to lighting control zone schedule and lighting layout. OFF: 30 minutes after the room has been vacated, all lights in the room will automatically turn off. Additional Control: All lights in the room also can be turned on/off through the use of the low voltage switches on the wall.
03-Compressor Room 04-Bus Wash Equp Rm 05-Forklift Room	Sequence: ON: Occupant enters the space and the lights automatically turn on through relay panel via occupancy sensors. Occupant also can turn on the lights from wall mounted momentary switches per zone. OFF: The lights are turned off 15 minutes via corner or suspended mounted occupancy sensor after area has been vacated. The lights also can be turned off through the use of the low voltage momentary switches.
Night Lights	Sequence: ON: Lights will be on all day. OFF: n/a
	EXTERIOR LIGHTS
Exterior Wall Mtd Luminaires	Sequence: ON/OFF: Connected to existing circuit. Controlled Via Existing photocell or time switch



GENERAL NOTES

01 THE WIRING SCHEMATIC DIAGRAM IS FOR REFERENCE ONLY. COORDINATE WITH MANUFACTORY FOR EXACT DEVICES, WIRING, DETAILS AND REQUIREMENT.

02 VERIFY EXACT LOCATIONS AND QUANTITIES FOR CONTROL/INTERFACE MODULES, SENSORS AND LOW VOLTAGE SWITCHES WITH MANUFACTORY PRIOR TO INSTALLATION.

03 PROVIDE JUNCTION BOXES OR ENCLOSURES FOR CONTROL/INTERFACE MODULES AS REQUIRED BY MANUFACTORY.

04 VERIFY ALL POWER REQUIREMENT WITH MANUFACTORY PRIOR TO INSTALLATION.

05 "N.I.C." DENOTES "NOT IN CONTRACT".

LIGHTING CONTROL DIAGRAM 1 / E-402

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		1	16/07/15	RECORD			
		0	14/09/05	CONSTRUCTION			
		0	14/05/15	TENDER	1	15/01/23	CCN-01
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: A.Z 14/01/03	DESIGNED BY: A.Z 14/01/03
CHECKED BY: C.B 14/01/03	APPROVED BY: P.W. 14/01/03
SCALE: N.T.S. FULL SIZE ONLY	

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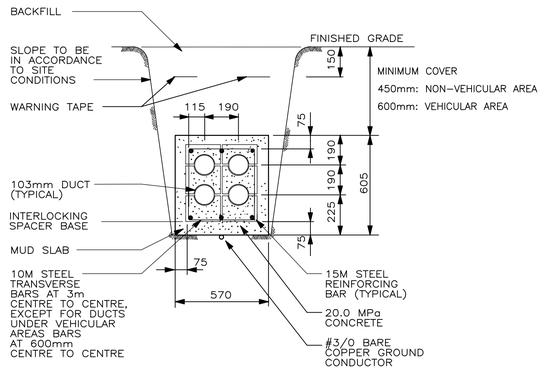
A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
LIGHTING CONTROL DIAGRAM,
LUMINAIRE AND CONTROL SCHEDULES

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-402	0	76/92

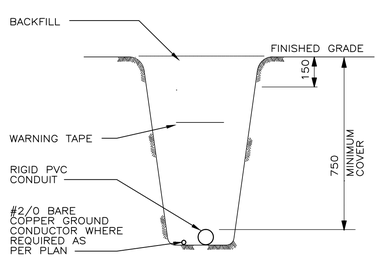


NOTES:

1. CONDUIT (DUCT) QUANTITY AS PER LAYOUT DRAWING. ADJUST DUCT BANK DIMENSIONS TO SUIT
2. ADJUST CONDUIT (DUCT) SIZES TO MATCH THOSE SHOWN ON DRAWINGS.

DUCT BANK ENCASED IN RE-ENFORCED CONCRETE (TYPICAL) — 1 / E-501

SCALE N.T.S.

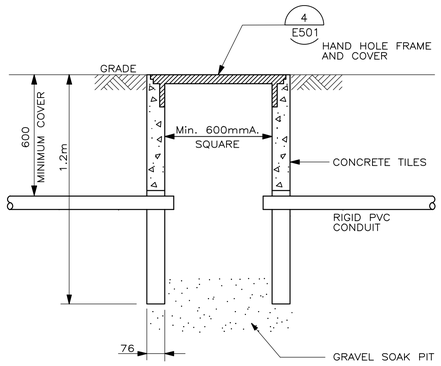


NOTES:

1. CONDUIT (DUCT) QUANTITY AS PER LAYOUT DRAWING. ADJUST DUCT BANK DIMENSIONS TO SUIT
2. ADJUST CONDUIT (DUCT) SIZES TO MATCH THOSE SHOWN ON DRAWINGS.

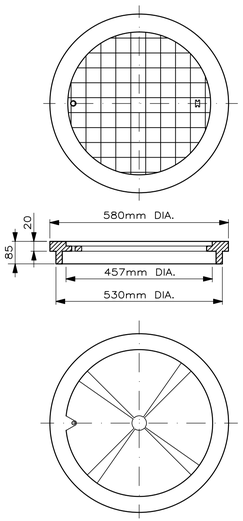
TYPICAL DIRECT BURIED CONDUIT DETAIL — 2 / E-501

SCALE N.T.S.



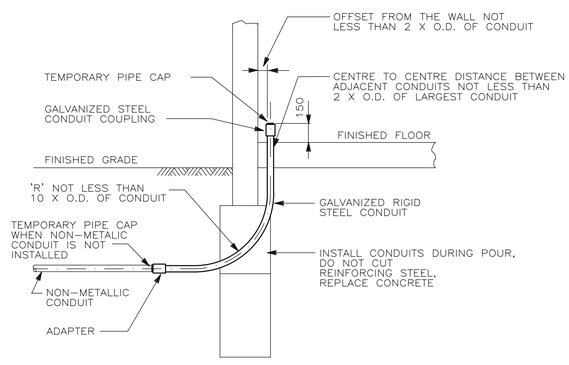
HAND HOLE DETAIL — 3 / E-501

SCALE N.T.S.



HAND HOLE COVER DETAIL — 4 / E-501

SCALE N.T.S.



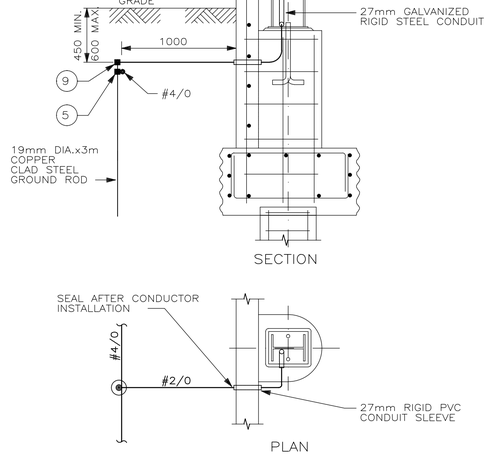
CONDUIT FLOOR /WALL TERMINATION — 5 / E-501

SCALE N.T.S.

GROUNDING NOTES:

1. COMPLETE GROUNDING INSTALLATION SHALL BE TO THE APPROVAL OF ELECTRICAL SAFETY AUTHORITY.
2. ALL GROUNDING CONDUCTORS TO BE STRANDED MEDIUM HARD DRAWN BARE COPPER.
3. BOND CONDUIT SLEEVE TO GROUNDING CONDUCTOR USING "THOMAS & BETTS" GROUNDING BUSHING, #6 GROUNDING CONDUCTOR AND "BURNDY" CONNECTOR.
4. LEAVE 1.5m OF GROUNDING CONDUCTOR COILED FOR FUTURE CONNECTION.
4. LEAVE 1.5m OF GROUNDING CONDUCTOR COILED FOR FUTURE CONNECTION.

ITEM NO.	DESCRIPTION
1	CADWELD TYPE "TA" CONNECTION
2	CADWELD TYPE "VS" CONNECTION
3	CADWELD TYPE "XB" CONNECTION
4	CADWELD TYPE "GT" CONNECTION
5	CADWELD TYPE "GY" CONNECTION
6	CADWELD TYPE "RR" OR "RC" CONNECTION
7	CADWELD TYPE "XA" CONNECTION
8	CADWELD TYPE "VV" CONNECTION
9	CADWELD TYPE "GR" CONNECTION
10	CADWELD TYPE "NC" CONNECTION
11	"THOMAS & BETTS" 27mm DIA. BUSHING



EXTERNAL LOOP GROUNDING CONN. TO BUILDING STEEL COLIMN — 6 / E-501

SCALE N.T.S.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		1	16/07/15	RECORD			
		0	14/09/05	CONSTRUCTION			
		0	14/05/15	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: A.Z 14/01/03	DESIGNED BY: A.Z 14/01/03
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SCALE: N.T.S.	FULL SIZE ONLY

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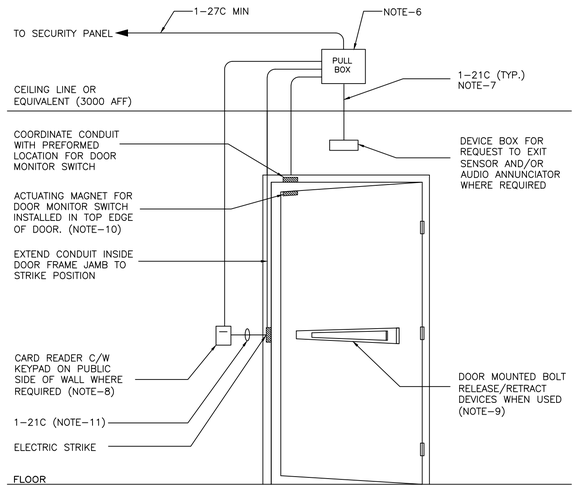
A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
ELECTRICAL SITE DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-501	0	77/92



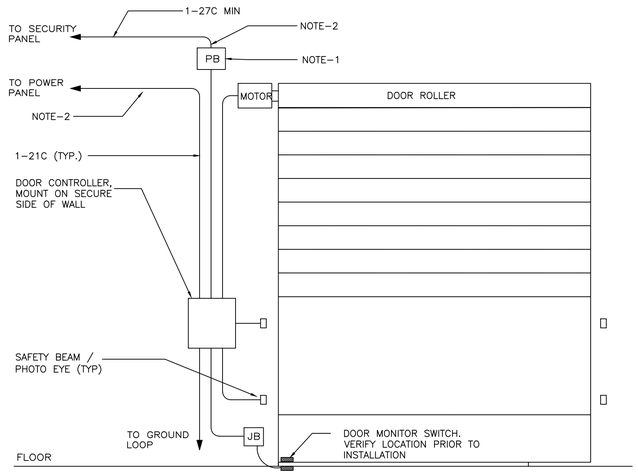
NOTES:

1. THIS CONSTRUCTION DETAIL IS FOR SCHEMATIC PURPOSE ONLY, REFER TO POWER AND SECURITY LAYOUT DRAWINGS AND DOOR HARDWARE SCHEDULE FOR EXACT COMPONENTS REQUIRED AND CONDUIT ROUTING.
2. ALL CONDUITS WITH PULL STRING, JUNCTION BOXES, PULL BOXES, DEVICE BOXES AND POWER WIRES BY DIV.26.
3. SECURITY DOOR CONTROLLER, CARD READER, ALARM BUZZER, KEYPAD, REQUEST TO EXIT SENSOR AND SECURITY WIRES BY SECURITY VENDER WHERE REQUIRED.
4. POWER SUPPLY, ELECTRIC STRIKE/BOLT/LATCH, DOOR CONTACT (MONITOR SWITCH), BY DOOR HARDWARE CONTRACTOR WHERE REQUIRED.
5. PROVIDE CONTINUOUS ELECTRICAL RACEWAY CONSISTING OF CONDUIT AND/OR CABLE TRAY. NO FREE AIR RUNNING SECURITY CABLE.
6. JUNCTION BOX SIZED TO ACCOMMODATE LOCAL DOOR CONTROL SYSTEM; MIN. 300x300x150 WITH REMOVABLE AND TAMPER RESISTANT COVER; SURFACE MOUNTED FOR SOLID WALL CONSTRUCTION. SAME WITH 100x100x54 DEVICE BOX WITH 38MM EXTENSION RING TO DEPTH OF 92MM, FLUSH MOUNT FOR CAVITY OR BLOCK WALL CONSTRUCTION. USE COMMON CONDUIT, PULL BOXES AND JUNCTION BOXES FOR INTRUSION DETECTION AND ACCESS CONTROL WIRING.
7. USE JUNCTION BOX AT CORNER FOR BLOCK WALL CONSTRUCTION. CONCEAL VERTICAL CONDUIT. SURFACE MOUNT HORIZONTAL CONDUIT ON SOLID WALL ONLY
8. DEVICE BOX TO MOUNT FLUSH WITH SURFACE. PROVIDE SINGLE DEVICE COVER PLASTER RING FOR CAVITY OR BLOCK WALL CONSTRUCTION. REFER TO LAYOUT DRAWING FOR LOCATION. COORDINATE WITH DOOR HARDWARE SCHEDULE FOR EXACT SIZE. DISPENSE WITH WALL BOX WHEN MULLION MOUNT IS INDICATED IN THE DOOR HARDWARE SCHEDULE.
9. BOLT RELEASE/RETRACT DEVICE MAY BE PUSH–BAR OR LEVER TYPE. USE TYPE INDICATED IN DOOR HARDWARE SCHEDULE.
10. WHERE DOOR PERFORMANCE REQUIREMENTS CALL FOR INTRUSION DETECTION AND ACCESS CONTROL, USE MAY BE MADE OF 2 SEPARATE SINGLE POLE SWITCHES OR ONE COMMON 2 POLE SWITCH. MAINTAIN SEPARATION BETWEEN WIRING OF TWO SYSTEMS.
11. USE OF BRIDGING CONDUIT ACCEPTABLE FOR CAVITY OR BLOCK WALL CONSTUCTION WHERE SITE CONDITIONS PERMIT.

SECURITY SINGLE DOOR DETAIL

1
E–502

SCALE N.T.S.



NOTES:

1. PULL BOX SIZED MINIMUM 300x300x150 WITH REMOVABLE AND TAMPER RESISTANT COVER; SURFACE MOUNTED FOR SOLID OR BLOCK WALL CONSTRUCTION. SAME WITH 120x120x54 FLUSH MOUNT BACK BOX FOR CAVITY WALL CONSTRUCTION. USE COMMON CONDUIT, PULL BOXES AND JUNCTION BOXES FOR INTRUSION DETECTION AND ACCESS CONTROL WIRING WHERE REQUIRED.
2. USE JUNCTION BOX AT CORNER FOR BLOCK WALL CONSTRUCTION. CONCEAL VERTICAL CONDUIT. SURFACE MOUNT HORIZONTAL CONDUIT ON SOLID WALL ONLY.
3. DOOR OPEN/CLOSE MONITOR SWITCH INCLUDED IN DOOR HARDWARE.
4. PROVIDE CONTINUOUS ELECTRICAL RACEWAY CONSISTING OF CONDUIT. AVOID RUNNING SECURITY CABLE IN FREE AIR.
5. THIS CONSTRUCTION DETAIL IS FOR SCHEMATIC PURPOSE, REFER TO LAYOUT DRAWINGS AND ARCHITECTURAL HARDWARE SCHEDULE FOR EXACT COMPONENTS REQUIRED AND CONDUIT ROUTING.

OVERHEAD DOOR DETAIL

2
E–502

SCALE N.T.S.

METROLINX PROJECT NO. 129709

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		0	14/05/15	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

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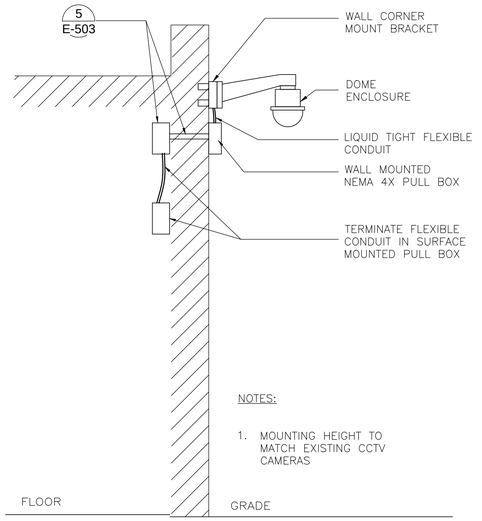
ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
SECURITY SYSTEM DETAILS

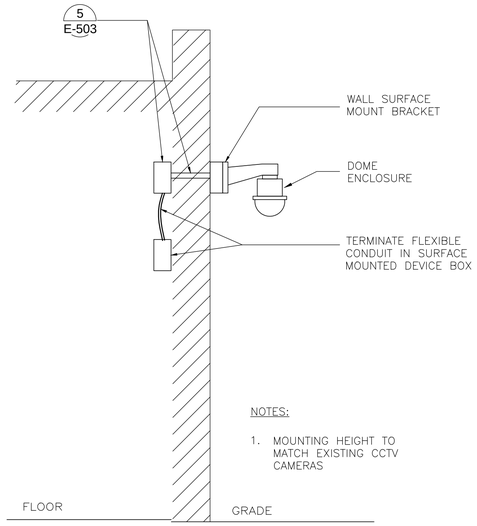
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	E–502	0	78/92



OUTDOOR CCTV CAMERA WALL CORNER PENDANT MOUNT

SCALE N.T.S.

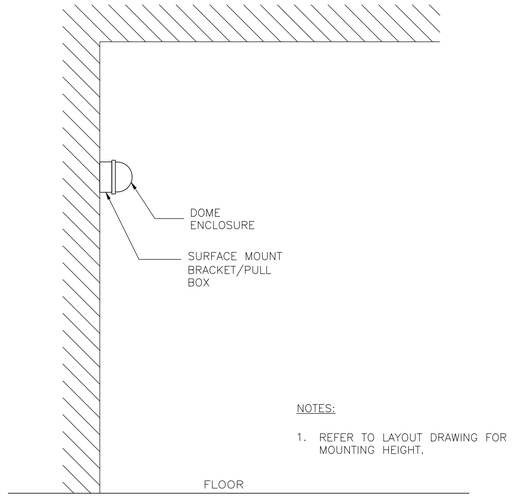
1 / E-503



OUTDOOR CCTV CAMERA WALL SURFACE PENDANT MOUNT

SCALE N.T.S.

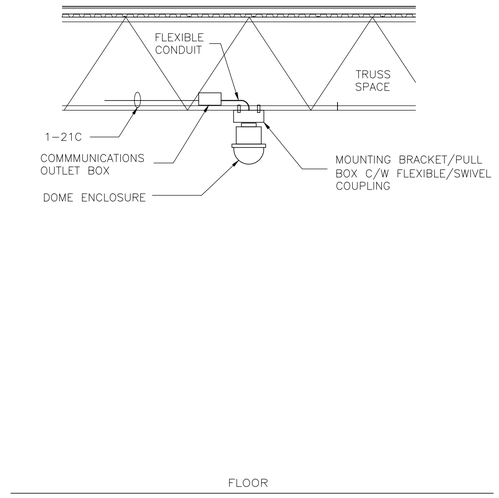
2 / E-503



INDOOR CCTV CAMERA WALL SURFACE MOUNT

SCALE N.T.S.

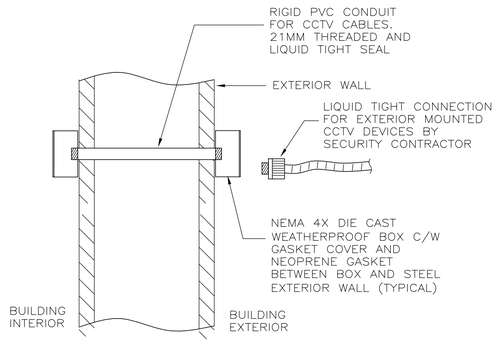
3 / E-503



INDOOR CCTV CAMERA TRUSS PENDANT MOUNT

SCALE N.T.S.

4 / E-503



OUTDOOR CCTV CAMERA CONDUIT WALL PENETRATION DETAIL (TYPICAL)

SCALE N.T.S.

5 / E-503

METROLINX PROJECT NO. 129709

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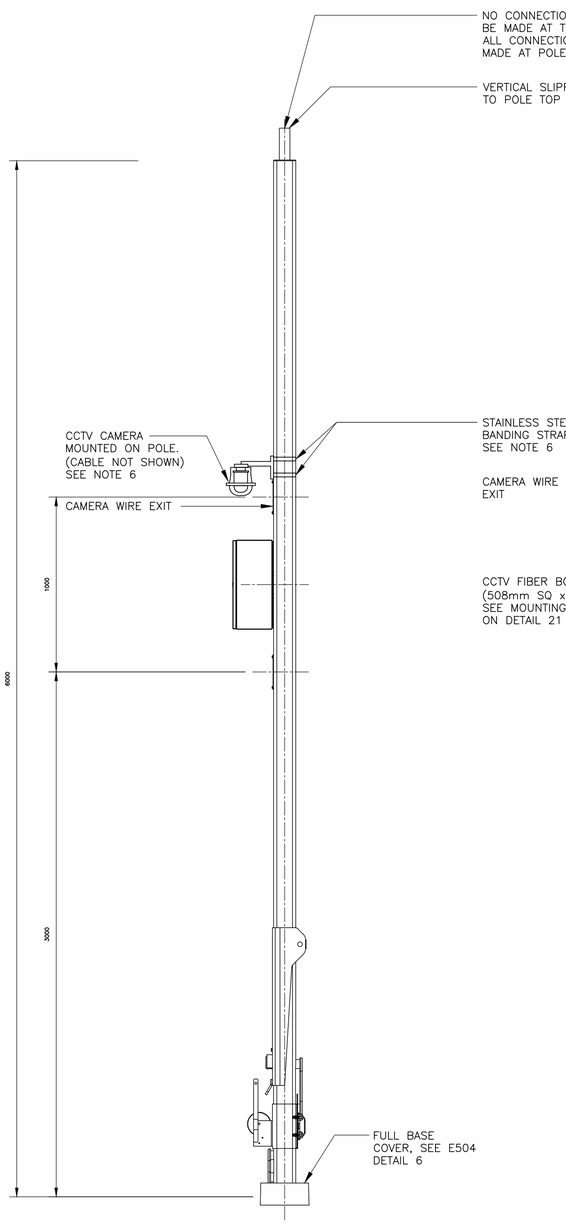
ABERFOYLE BUS FACILITY

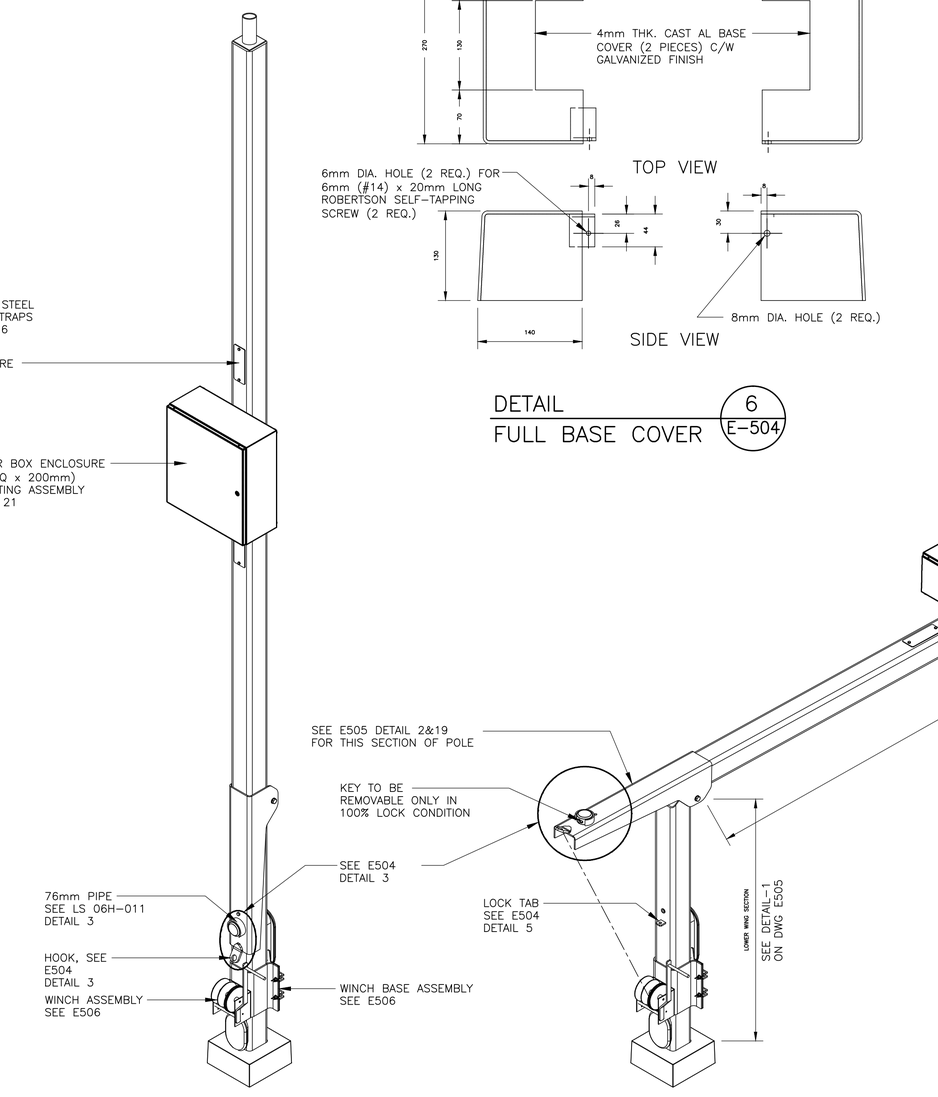
EXPANSION AND PARKING LOT REHABILITATION

CCTV SYSTEM DETAILS

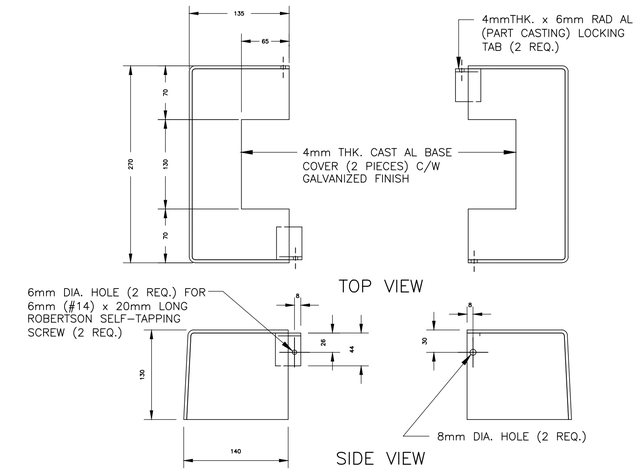
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-503	0	79/92



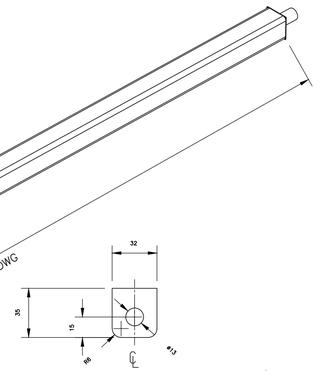
ELEVATION
TYPICAL PLATFORM
LIGHTING/CCTV POLE ASSEMBLY — 1 / E-504



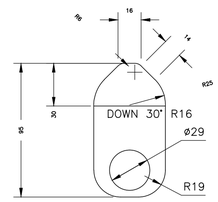
ISOMETRIC VIEW
TYPICAL PLATFORM
LIGHTING/CCTV POLE ASSEMBLY — 2 / E-504



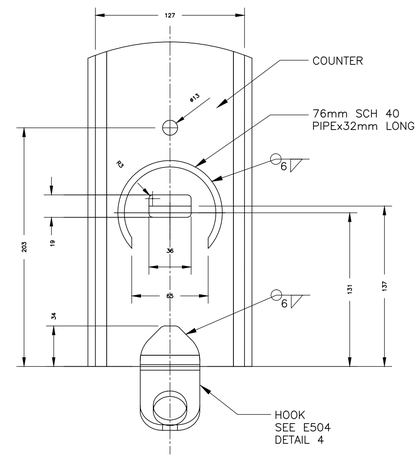
DETAIL
FULL BASE COVER — 6 / E-504



DETAIL
LOCK TAB — 5 / E-504



DETAIL
HOOK — 4 / E-504



DETAIL — 3 / E-504

GENERAL NOTES:

1. THIS TYPICAL 6m STRAIGHT SQUARE GALVANIZED STEEL STEEL POLE ASSEMBLY IS GENERAL GUIDANCE FOR ELECTRICAL INSTALLATION APPLICABLE TO PLATFORM, BUS LOADING, KISS & RIDE AND WALKWAY AREA LIGHTING. FOR CONCRETE FOUNDATION REQUIREMENT, REFER TO LAYOUT DRAWINGS AND CONCRETE FOUNDATION REINFORCEMENT TABLE ON STANDARD DRAWING E507.
2. NOT USED.
3. THE HORIZONTAL AND VERTICAL TRACK CLEARANCES FOR ALL PLATFORM CCTV POLE INSTALLATIONS SHALL COMPLY WITH THE LATEST CANADIAN NATIONAL AND/OR CANADIAN PACIFIC RAILWAYS STANDARD CLEARANCE DIAGRAM. THE DESIGNER TO DETERMINE EXACT DISTANCE AND MUST OBTAIN WRITTEN APPROVALS BEFORE ANY WORK IS STARTED.
4. NOT USED.
5. NOT USED.
6. CCTV HARDWARE AND WIRING SUPPLIED AND INSTALLED AS SPECIFIED. FOR EXACT LOCATION OF SPEAKERS, REFER TO LAYOUT DRAWINGS.
7. GROUNDING RODS TO BE LOCATED AT BASE OF EVERY OTHER POLE OR EVERY 50m (PLATFORM ONLY.)
8. ORIENTATE POLE SUCH THAT POLE SWING PARALLEL TO TRACK.
9. CCTV POLE CONSTRUCTION AND COMPONENTS SHALL BE HOT DIP GALVANIZED STEEL C.S.A. G40.21-44 W MINIMUM WITH 50Ksi YIELD
10. SEE ELECTRICAL SPECIFICATIONS FOR ALL WELDING, WIND SPEED AND EPA STANDARDS.
11. ALL FASTENERS TO BE STAINLESS STEEL EXCEPT WHERE NOTED OTHERWISE.
12. POLE MANUFACTURER SHALL SUPPLY BOLTS, NUTS AND WASHERS TO TO SUIT DESIGN SPECIFIED IN NOTE 10 ABOVE.
13. SEE DRAWING E507 FOR POLE CONCRETE FOUNDATION DETAIL.

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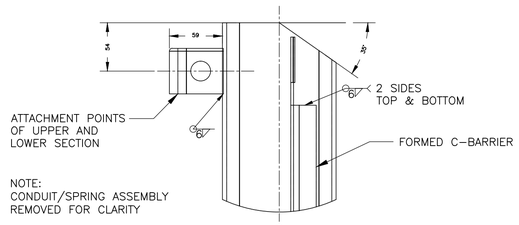
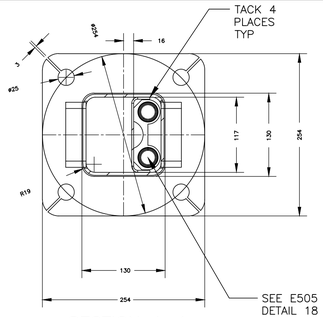
ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
6M CCTV HINGED POLE
STANDARD DETAILS

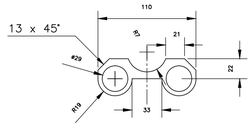
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-504	0	80/92



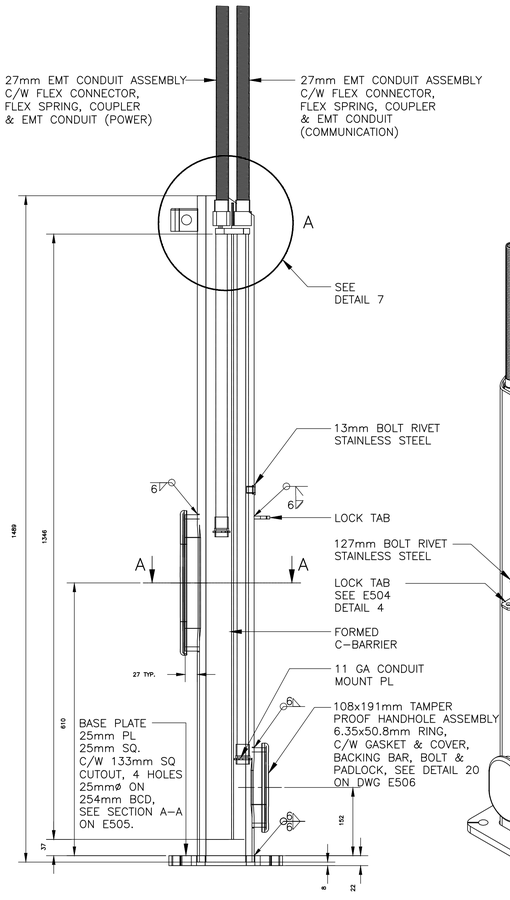
DETAIL 7 — 505



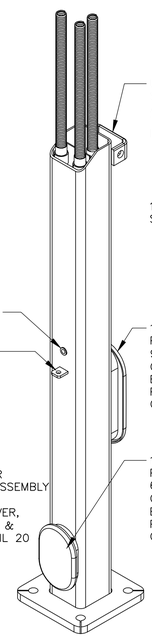
SECTION A–A



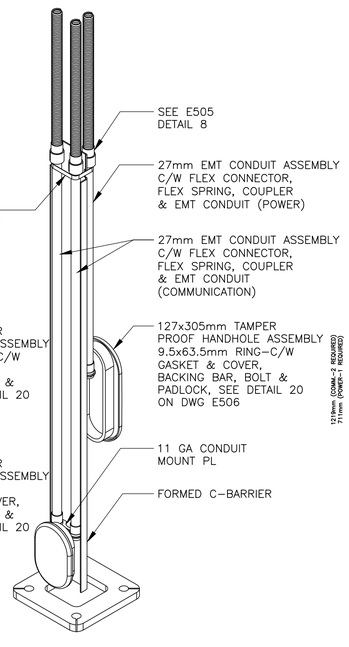
DETAIL — CONDUIT MOUNT PLATE — 18 — 505



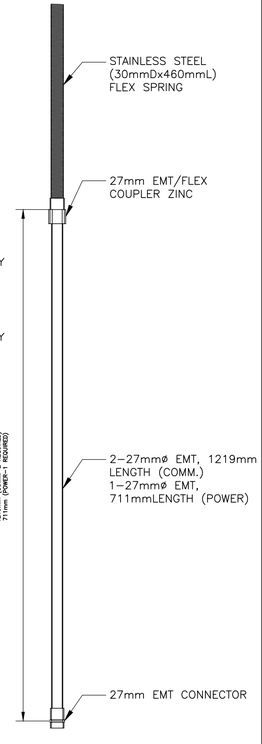
ELEVATION



ISOMETRIC VIEW
SHOWN WITHOUT
WINCH MOUNT

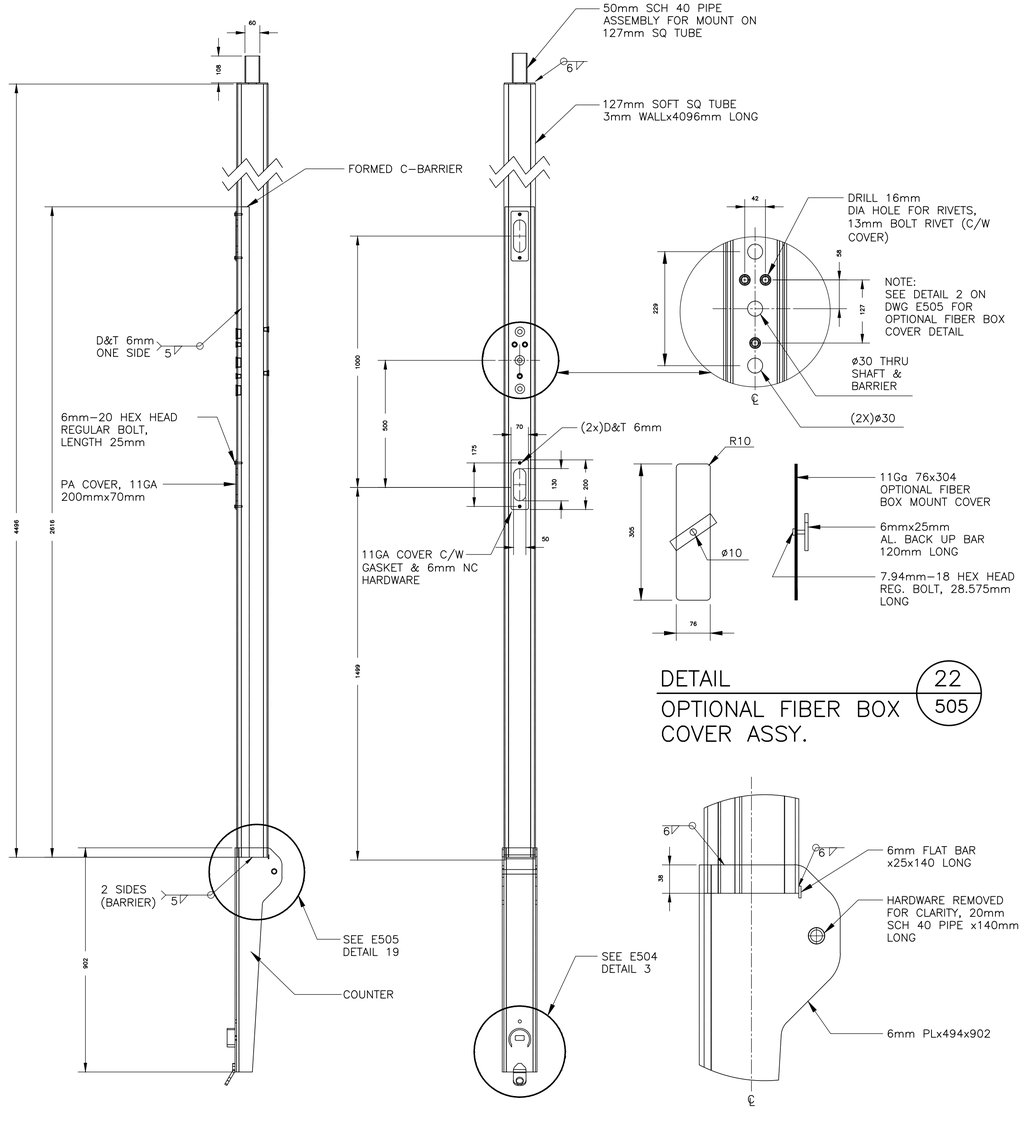


ISOMETRIC VIEW
SHOWN WITHOUT
SQ TUBE



DETAIL — CONDUIT — 8 — 505

DETAIL — LOWER SECTION — 1 — 505



DETAIL — UPPER SECTION — 2 — 505

DETAIL — OPTIONAL FIBER BOX COVER ASSY. — 22 — 505

DETAIL — 19 — 505

METROLINX PROJECT NO. 129709

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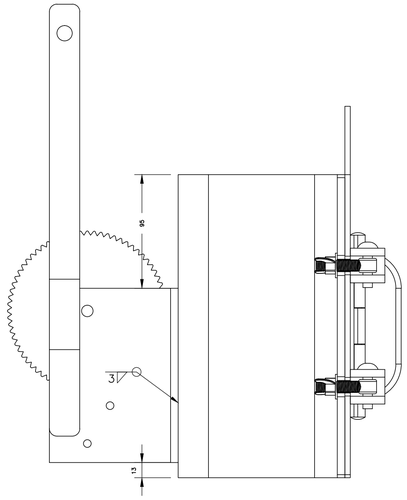
ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

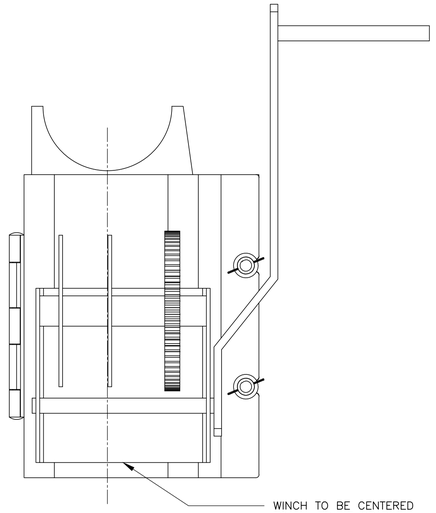
6M CCTV HINGED POLE
UPPER AND LOWER SECTIONS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-505	0	81/92

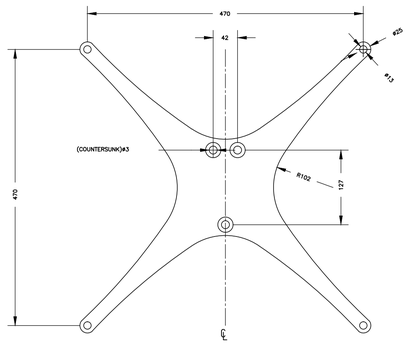
User Name: Sadaqat Chaudhary Plot Date/Time: Wednesday, July 20, 2016 1:25:37 PM Path and File Name: J:\24RX13.0259\5.9 DRAWING\SUBMISSIONS\2016-07-XX_RECORD\ELEC\DWG\129709-E505.DWG



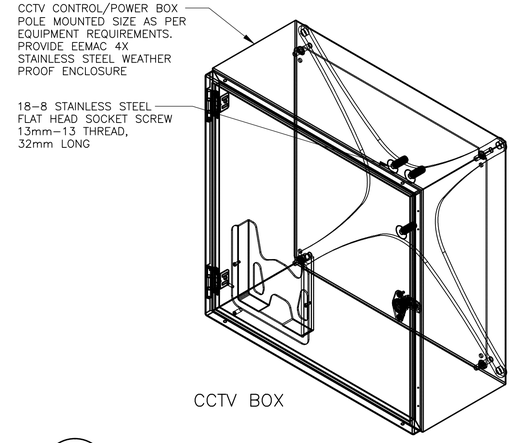
ELEVATION
RIGHT SIDE VIEW — B / 506



ELEVATION
FRONT VIEW — A / 506

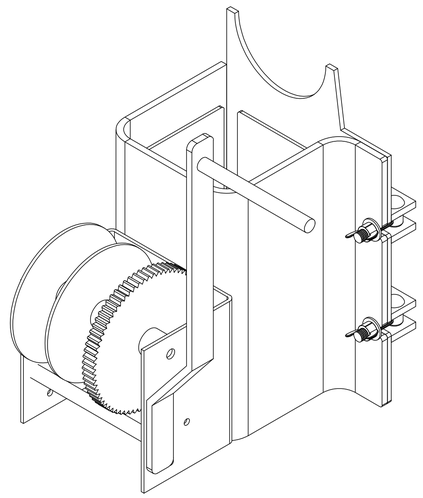


"X"BOX MOUNT
HARDWARE

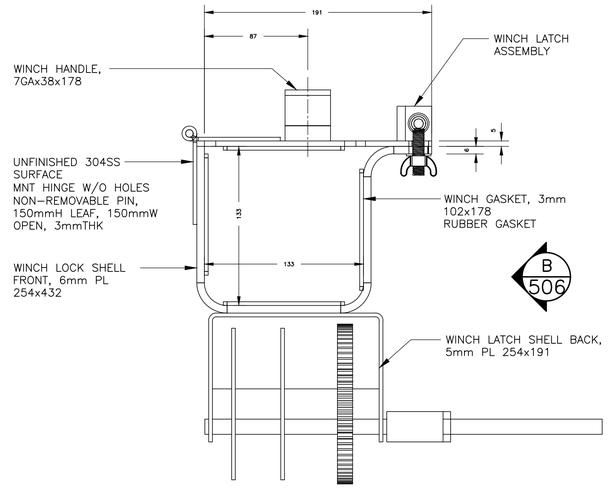


CCTV BOX

DETAIL
CCTV BOX — 21 / 506



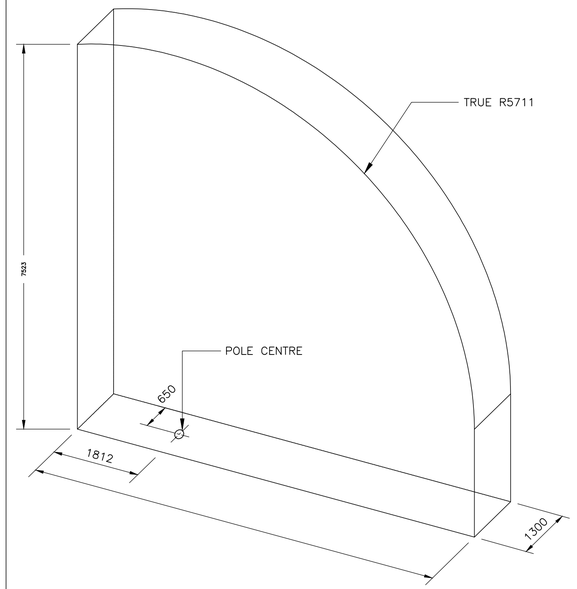
SEE E506, DETAIL 9 FOR TOP VIEW DETAIL



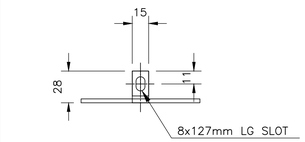
ISOMETRIC VIEW
WINCH BASE & ASSEMBLY — C / 506

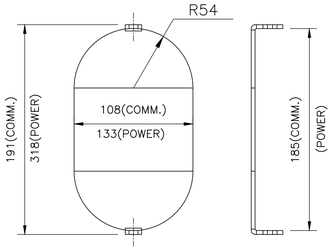
NOTE: WINCH ASSEMBLY CONTAINS
- AUTO BREAK WINCH
- 3053mm STAINLESS STEEL CABLE
- SAFETY HOOK SYSTEM.

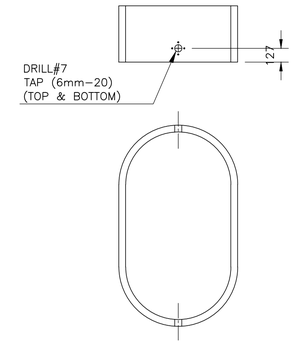
DETAIL
TOP VIEW — 9 / 506

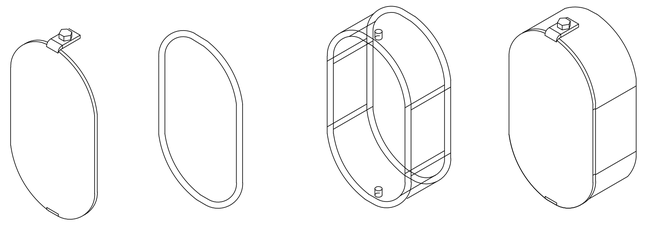


3D CLEARANCE FOOTPRINT (LIMITS)









COVER — GASKET — EXISTING FRAME — COMPLETE ASSY

COVER — FRAME

DETAIL
TAMPER PROOF
HANDHOLE ASSEMBLY — 20 / 506

METROLINX PROJECT NO. 129709

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CHECKED BY:	APPROVED BY:
C.B 14/01/03	P.W. 14/01/03
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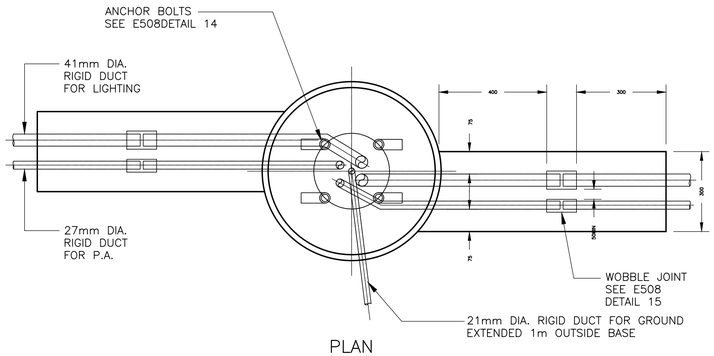
A Division of METROLINX

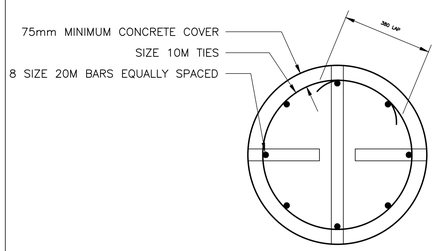
ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
6M CCTV HINGED POLE
WINCH ASSEMBLY

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-506	0	82/92

User Name: Sadaqat Chaudhary Plot Date/Time: Wednesday, July 20, 2016 1:25:40 PM Path and File Name: J:\24RX13.0259\5.9 DRAWING\SUBMISSIONS\2016-07-XX_RECORD\ELEC\DWG\129709-E506.DWG



PLAN



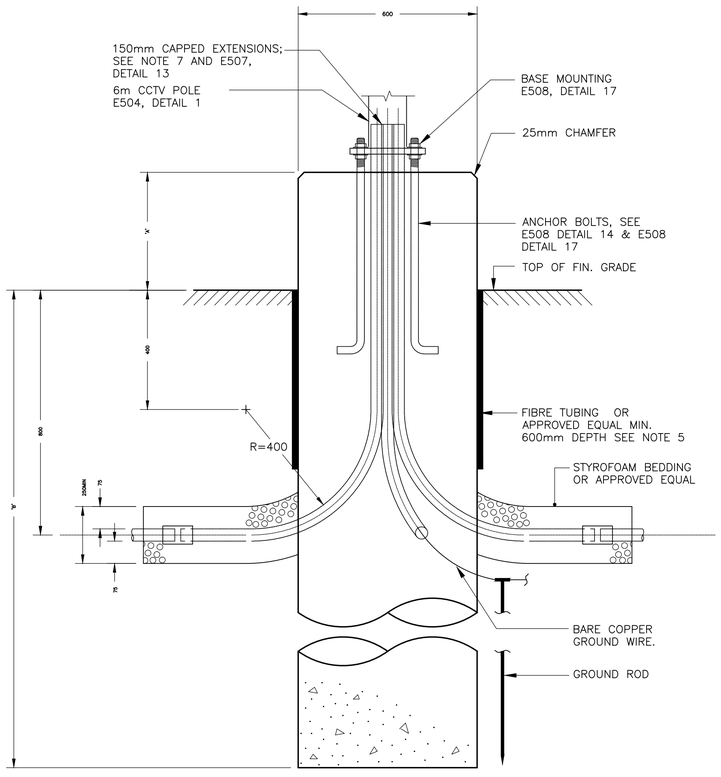
PLAN

CONCRETE FOUNDATION REINFORCEMENT TABLE

AREA	POLE LENGTH	BOLT CIRCLE DIAMETER	FOUND. HEIGHT ABOVE GRADE 'A'	NORMAL BURIAL DEPTH 'B'	LENGTH OF VERT. REINF.	NO. OF TIES	
						150mm C/C	450mm C/C
RAIL PLATFORM & WALKWAYS	6m	254mm	300mm	2.95m	2.95m	4	3
BUS, PLATFORM, LOADING, KISS & RIDE AND POLES	6m	254mm	900mm	2.50m	3.25m	4	5

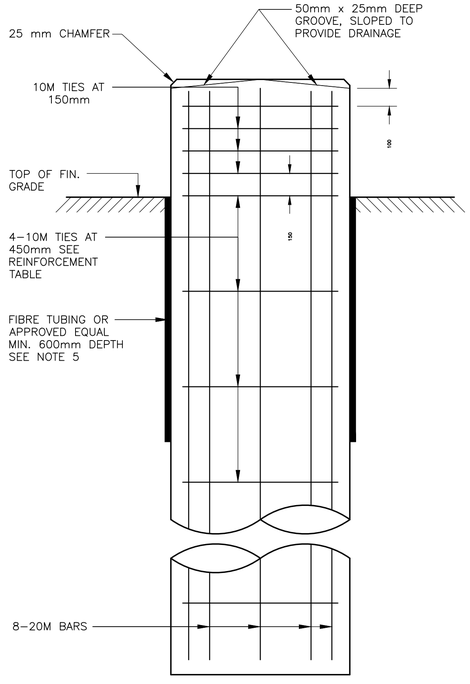
NOTES:

1. CONCRETE COMPRESSIVE STRENGTH SHALL BE 30 MPa AT 28 DAYS. PROVIDE 6 % AIR ENTRAINMENT.
2. REINFORCING SHALL CONFIRM TO C.S.A. SPECIFICATION G 30.12 M (MIN. YIELD STRENGTH OF 400 MPa)
3. CONCRETE IN FOUNDATION SHALL BE PLACED AGAINST UNDISTURBED GROUND.
4. TOP OF FOUNDATION SHALL BE TRUE LEVEL.
5. AFTER CONCRETE HARDENS THE FIBRE TUBING TO BE PEELED OFF FROM THE TOP TO THE FINISH GRADE AS INDICATED IN REINFORCEMENT TABLE COLUMN 'A'.
6. ALL RIGID DUCTS AND FITTINGS SHALL BE 'PVC' OR 'FIBRE REINFORCED' AS INDICATED ON LAYOUT DRAWINGS AND SHALL MEET THE REQUIREMENTS OF C.S.A. STANDARDS.
7. NO CONDUITS SHALL BE SET IN CONCRETE BASE WITHOUT ANCHOR SETTING TEMPLATE.



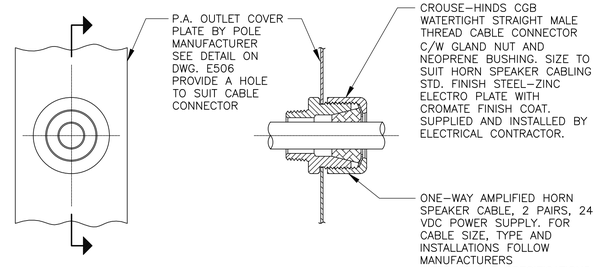
ELEVATION

DETAIL CONCRETE FOUNDATION DIMENSIONS — 12 / 507



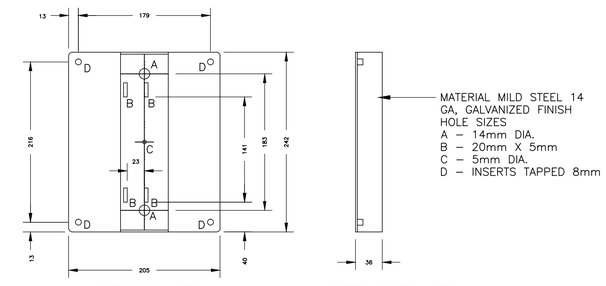
ELEVATION

DETAIL CONCRETE FOUNDATION REINFORCEMENT — 13 / 507



FRONT VIEW SECTION

DETAIL P.A. WIRING OUTLET — 10 / 507



FRONT VIEW LEFT SIDE VIEW

DETAIL P.A. MOUNTING BRACKET — 11 / 507

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		1	16/07/15	RECORD			
		0	14/09/05	CONSTRUCTION			
		0	14/05/15	TENDER			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: A.Z 14/01/03	DESIGNED BY: A.Z 14/01/03
CHECKED BY: C.B 14/01/03	APPROVED BY: P.W. 14/01/03
SCALE: N.T.S.	FULL SIZE ONLY

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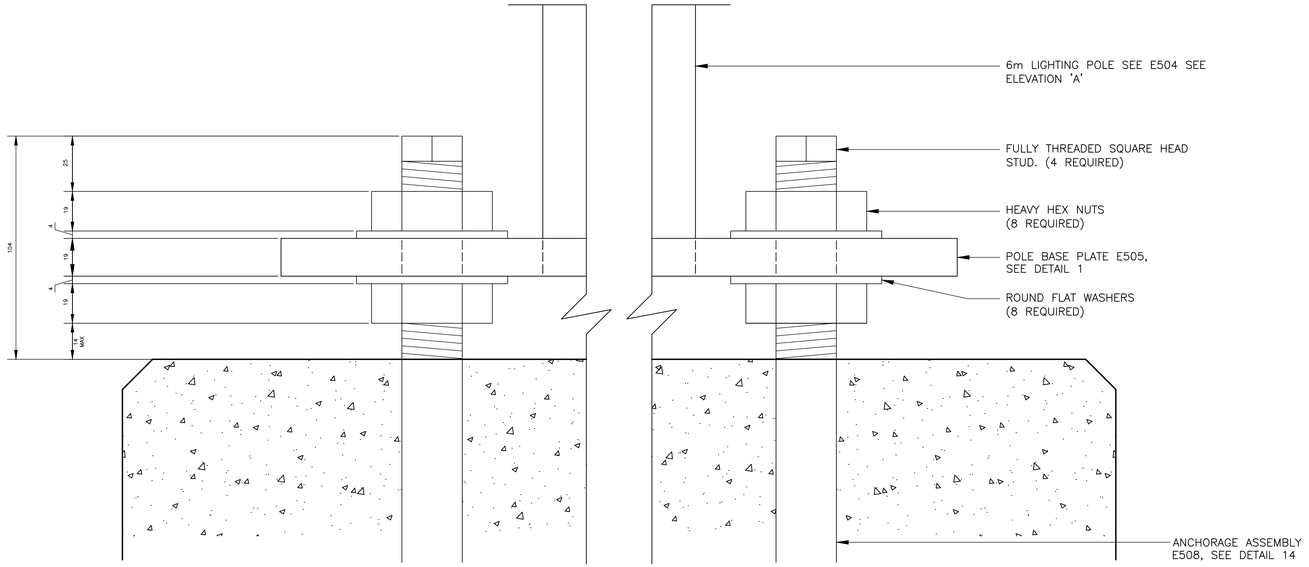
A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

6M CCTV HINGED POLE FOUNDATION DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-507	0	83/92

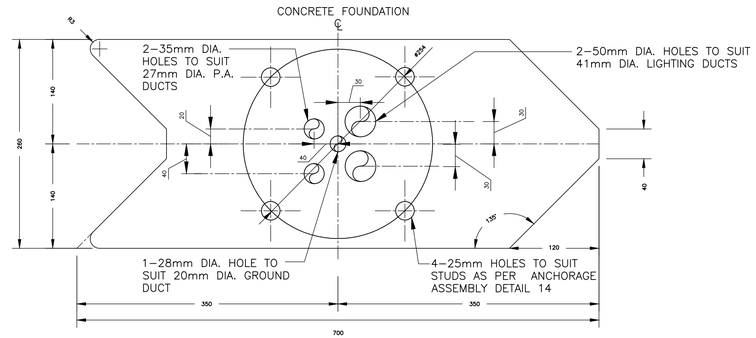


SIDE VIEW

DETAIL 17 / BASE MOUNTING 508

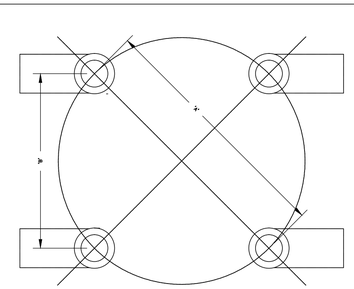
TEMPLATE ARROW POINTS TO POLE DOWN SWING DIRECTION.

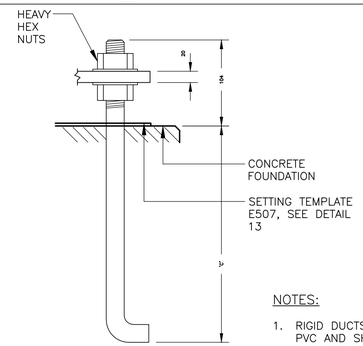
DATA SIDE POWER SIDE



11GA STEEL TEMPLATE TO BE PROVIDED BY POLE MANUFACTURER

DETAIL 16 / SETTING TEMPLATE 508



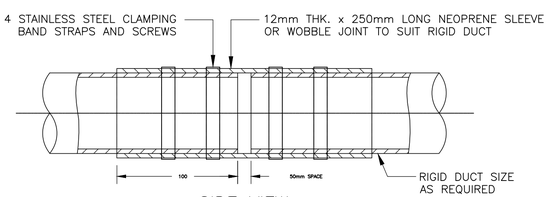


BOLT CIRCLE DIAMETER TABLE			
STUD DIAMETER (mm)	BOLT CIRCLE DIA. 'A' (mm)	STUD DISTANCE 'B' (mm)	ANCHORAGE DEPTH 'C' (mm)
22 (7/8")	254 (10")	180 (7")	609

DETAIL 14 / ANCHORAGE ASSEMBLY 508

NOTES:

1. RIGID DUCTS AND FITTINGS SHALL BE RIGID PVC AND SHALL MEET THE REQUIREMENTS OF CSA STANDARD.
2. ANCHOR BOLTS, HEX NUTS AND WASHERS SHALL BE MADE OF SAE 10–30 STEEL AND WILL BE HOT DIP GALVANIZED IN ACCORDANCE WITH CSA STANDARD G–164 SPECIFICATIONS.
3. STUDS WILL BE GIVEN A LIBERAL COATING OF WHITE NON–STAINING GREASE.
4. EACH ANCHORAGE ASSEMBLY SHALL BE FINISHED WITH ONE SETTING TEMPLATE FOR ACCURATE POSITION OF THE ANCHORAGE ASSEMBLY AND CONDUITS WITHIN THE FORM. TEMPLATE TO BE REMOVED AFTER CONCRETE HARDENS.



SIDE VIEW

DETAIL 15 / WOBBLE JOINT 508

METROLINX PROJECT NO. 129709

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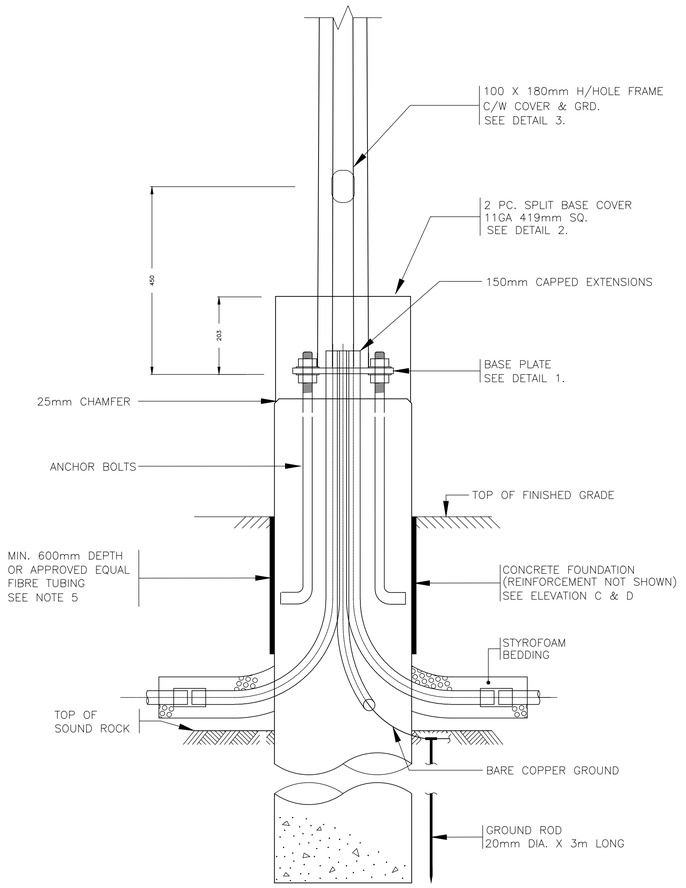
A Division of METROLINX

ABERFOYLE BUS FACILITY

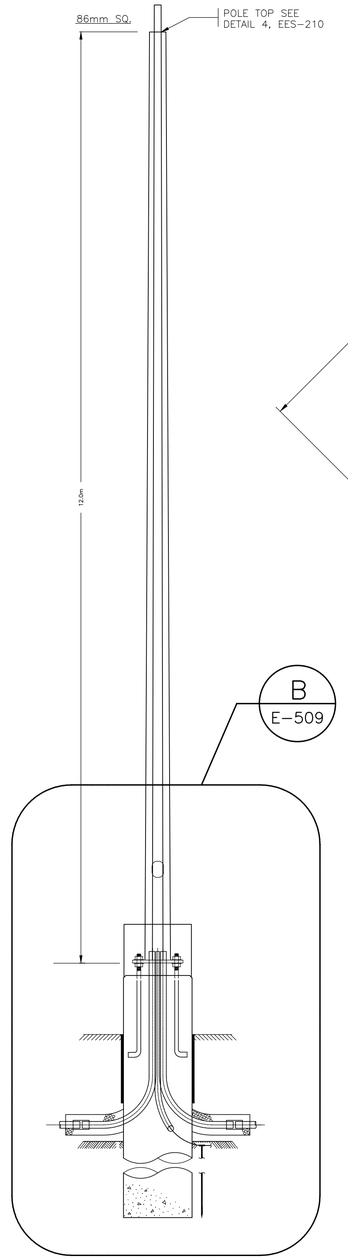
EXPANSION AND PARKING LOT REHABILITATION

6M CCTV HINGED POLE ANCHORING DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	E–508	0	84/92



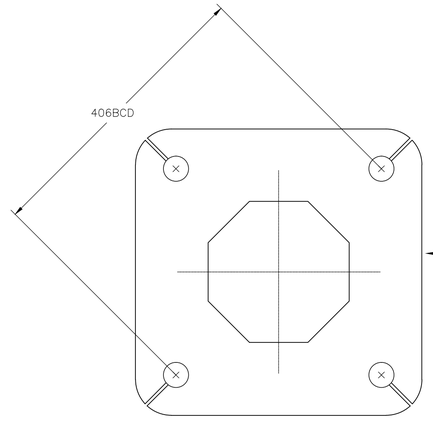
ELEVATION
POLE ASSEMBLY A E-509



ELEVATION
POLE ASSEMBLY B E-509

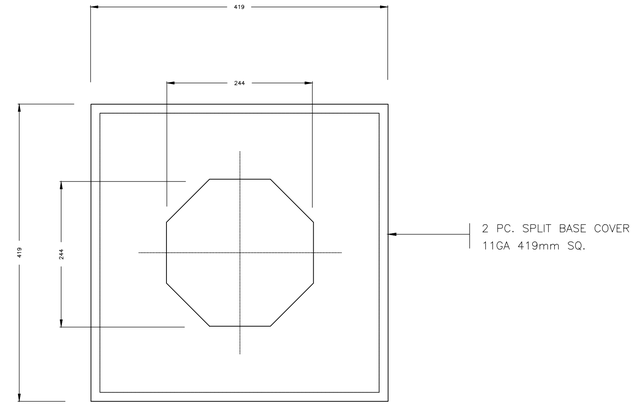
NOTES:

1. LIGHTING POLE ASSEMBLY SHALL BE OCTAGONAL HOT DIP GALVANIZED STEEL C.S.A. G40 21.44W MIN. WITH 50Ksi YIEL ALL WELDING IN ACCORDANCE WITH CSA W59 & W47.1 DESIGNED TO AASHTO WITH 80mph WIND SPEED & 1.3 GUST FACTOR, DESIGNED FOR EPA OF 10 MINIMUM.
2. NOT USED.
3. NOT USED
4. NOT USED
5. FIBRE TUBING TO BE PEELED OFF 900mm FROM THE TOP AFTER CONCRETE HARDENS



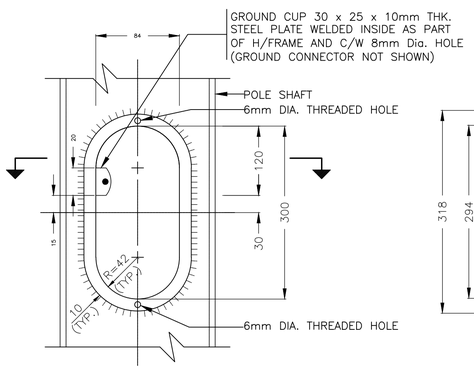
SECTION

DETAIL
BASE PLATE 1 E-509

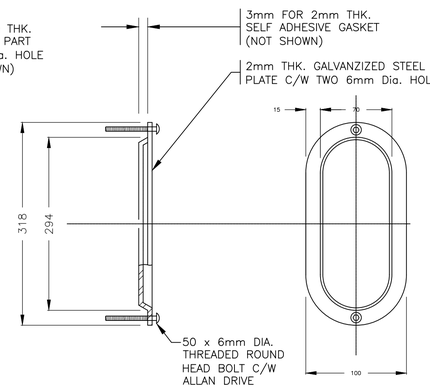


SECTION

DETAIL
BASE COVER 2 E-509

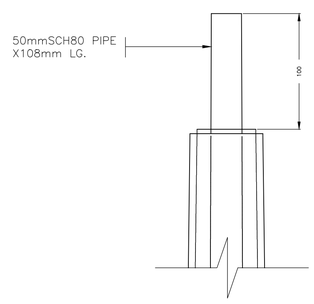


FRONT VIEW
AT HANDHOLES



SIDE VIEW FRONT VIEW

DETAIL
HANDHOLE AND COVER 3 E-509



DETAIL
POLE TOP 4 E-509

METROLINX PROJECT NO. 129709

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A Division of METROLINX

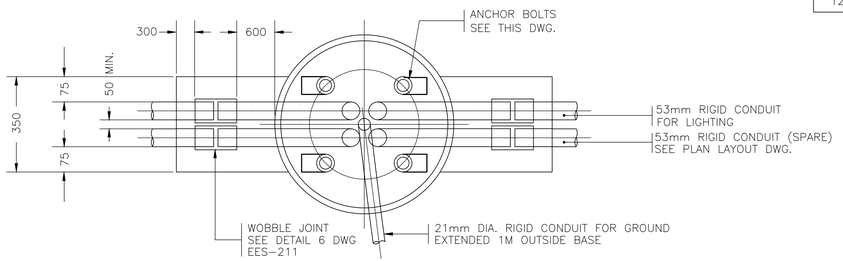
ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

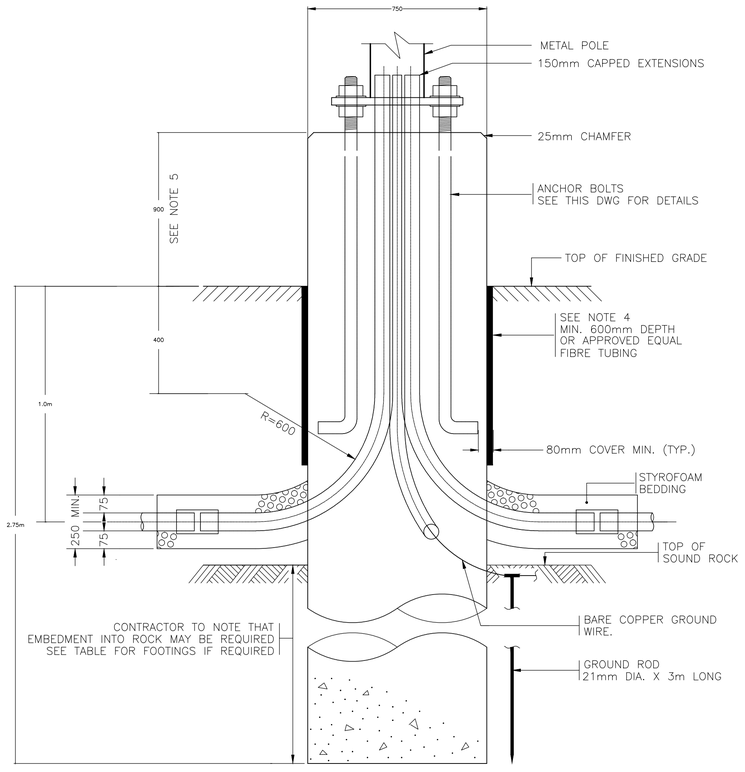
12M LIGHTING POLE STANDARD DETAILS
– 1 OF 3

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-509	0	85/92

REINFORCEMENT TABLE							
AREA	POLE LENGTH	BURIAL DEPTH	LENGTH OF VERT. REINF.	NO. OF TIES		BOLT CIRCLE DIAMETER	FOUNDATION HEIGHT ABOVE GRADE
				150mm c/c	450mm c/c		
ALL AREAS	12.0m	2.75m	3.50m	5	6	406	900
ACCESS ROAD	12.0m	2.75m	3.50m	3	6	406	150



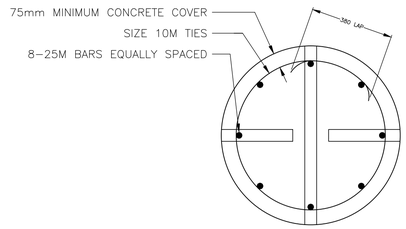
PLAN



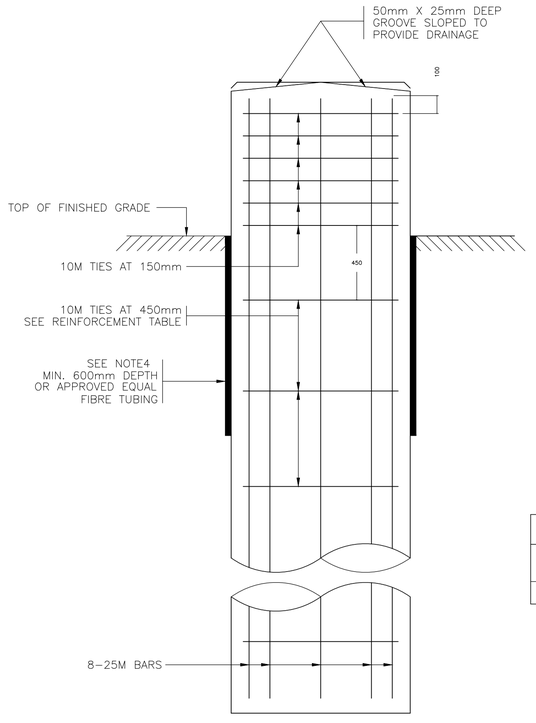
ELEVATION
DIMENSIONS — C / E-510

FOOTINGS FOR BASEMOUNTED POLES WHERE ROCK IS ENCOUNTERED								
POLE LENGTH (m)	NORMAL BURIAL DEPTH IN EARTH (m)	DEPTH TO TOP OF ROCK BELOW GROUND (m)						
		0.0	0.30	0.60	0.90	1.20	1.50	1.80
		DEPTH OF ROCK EXCAVATION REQUIRED (m)						
12.0	2.75	1.65 *	1.35 *	1.05 *	0.75 *	0.45 *	0.15 *	0 *

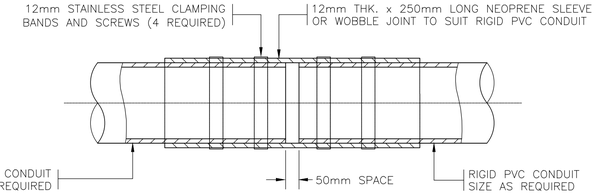
* ROCK ANCHORAGES NOT REQUIRED



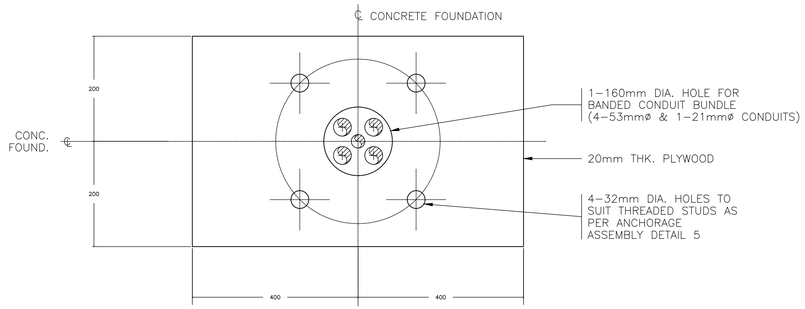
PLAN



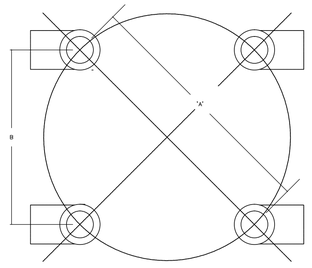
ELEVATION
REINFORCEMENT — D / E-510



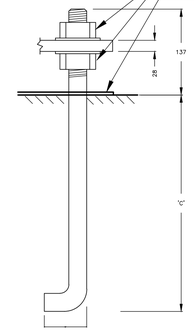
DETAIL
WOBBLE JOINT — 6 / E-510



DETAIL
SETTING TEMPLATE — 7 / E-510



TOP VIEW



ANCHOR BOLT

BOLT CIRCLE DIAMETER TABLE			
STUD DIAMETER (mm)	BOLT CIRCLE DIA. 'A' (mm)	STUD DISTANCE 'B' (mm)	ANCHORAGE DEPTH 'C' (mm)
32	406	287	1219

DETAIL
PRE-SET ANCHORAGE ASSEMBLY — 5 / E-510

NOTES:

1. CONCRETE IN FOUNDATION SHALL BE PLACED AGAINST UNDISTURBED GROUND.
2. TOP OF FOUNDATION SHALL BE TRULY LEVEL.
3. CONCRETE COMPRESSIVE STRENGTH SHALL BE 30 MPa AT 28 DAYS. PROVIDE 6 % AIR ENTRAINMENT.
4. FIBRE TUBING TO BE PEELED OFF 900mm FROM THE TOP AFTER CONCRETE HARDENS.
5. WHERE ACCESS ROAD FORMS PART OF THE PARKING AREA, REDUCE HEIGHT TO 150mm.

METROLINX PROJECT NO. 129709

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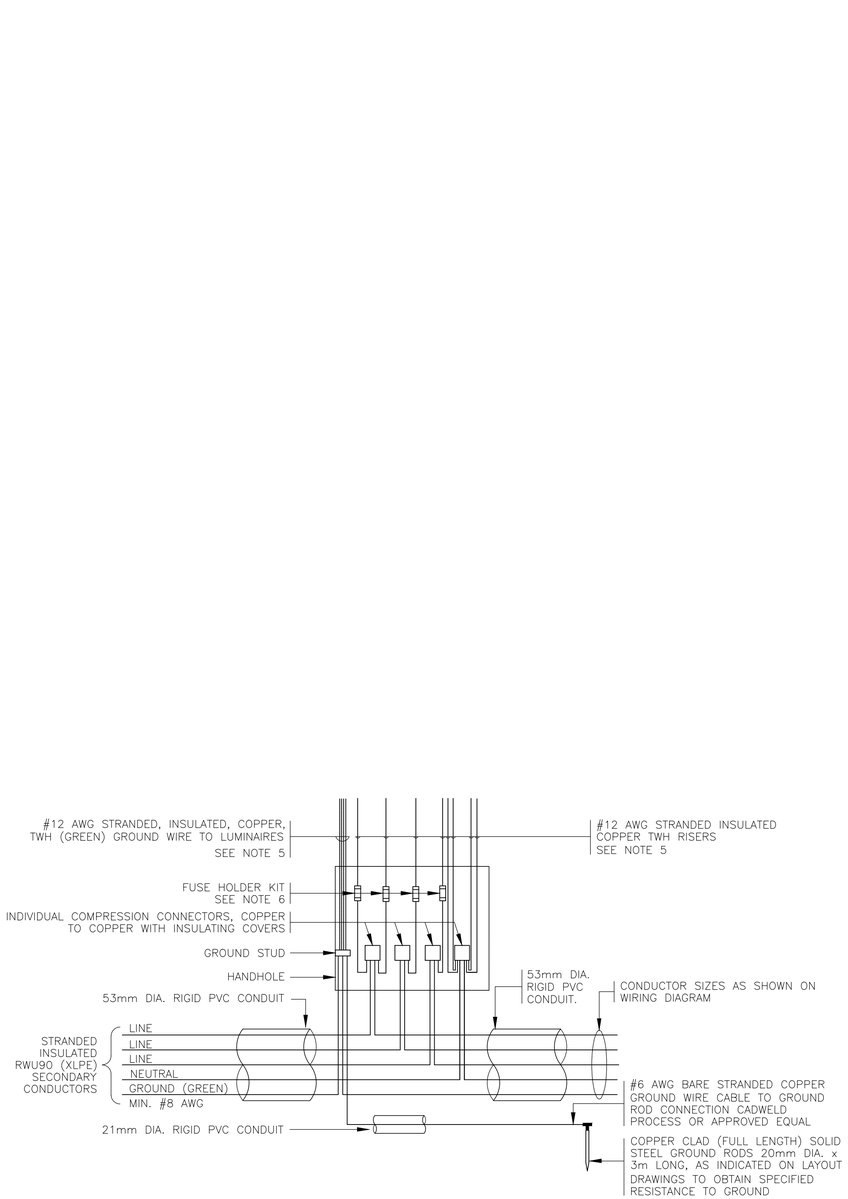
ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
12M LIGHTING POLE STANDARD DETAILS – 2 OF 3

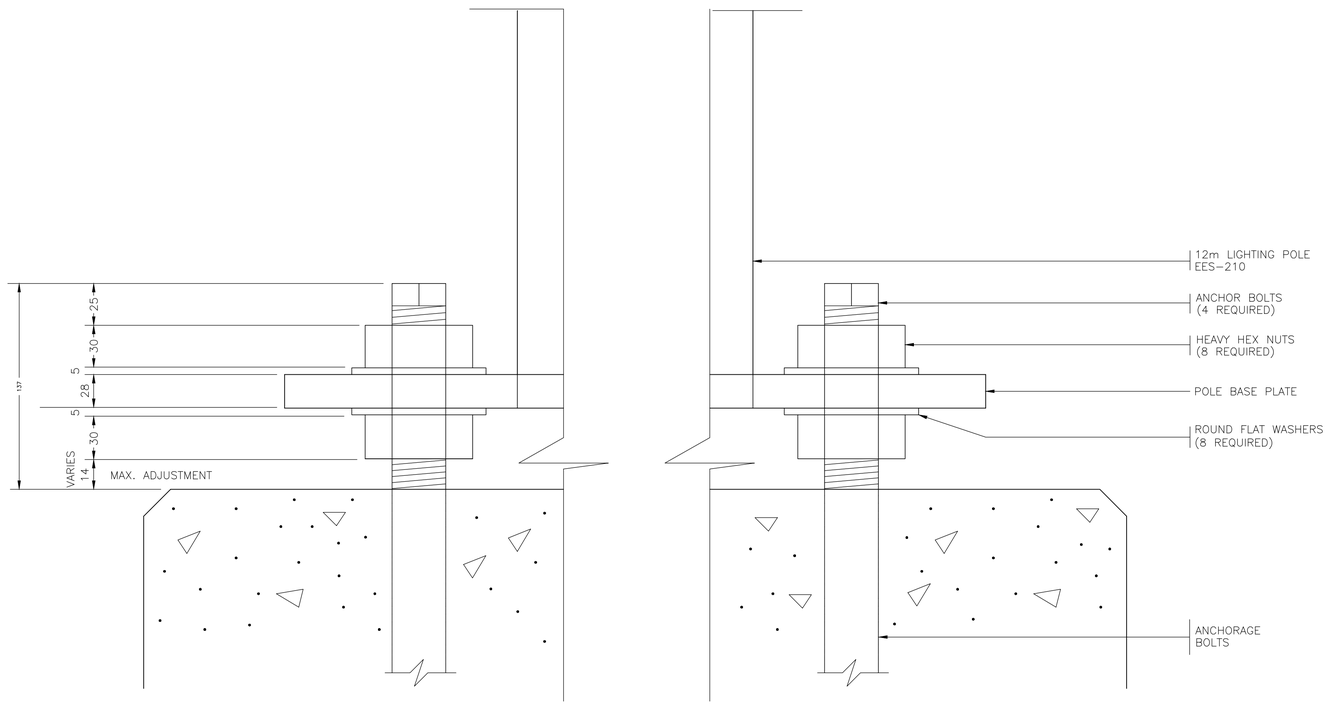
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	E-510	0	86/92

NOTES:

1. CONDUITS AND FITTINGS SHALL BE RIGID PVC AND SHALL MEET THE REQUIREMENTS OF CSA STANDARD.
2. ANCHOR BOLTS, HEX NUTS AND WASHERS SHALL BE MADE OF SAE 10–30 STEEL AND WILL BE HOT DIP GALVANIZED IN ACCORDANCE WITH CSA STANDARD G–164 SPECIFICATIONS.
3. STUDS WILL BE GIVEN A LIBERAL COATING OF WHITE NON–STAINING GREASE.
4. A SETTING TEMPLATE SHALL BE PROVIDED FOR ACCURATE POSITIONING OF THE ANCHORAGE ASSEMBLY AND CONDUITS WITHIN THE FORM. TEMPLATE TO BE REMOVED AFTER CONCRETE HARDENS.
5. BROKEN LINES INDICATE ADDITIONAL CONDUCTORS FOR TWO, THREE, AND FOUR LUMINAIRES INSTALLATION IN ACCORDANCE WITH PARKING AREA LIGHTING LAYOUT AND WIRING DIAGRAM DRAWINGS.
6. IN–LINE WATERPROOF FUSEHOLDER 600V, 30A WITH BREAKAWAY FEATURE FOR EACH LAMP. GOULD GEB–11–11 C/W WATERPROOF INSULATING BOOTS AND ONE 10 AMP FUSE TYPE KTK 600 VOLTS OR APPROVED EQUAL.



120/208 OR 600/347 VOLT 3–PHASE SYSTEM



DETAIL 8
POLE MOUNTING E–511

METROLINX PROJECT NO. 129709

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ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

12M LIGHTING POLE STANDARD DETAILS – 3 OF 3

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	E–511	0	87/92

LEGEND AND SYMBOLS

PLUMBING AND DRAINAGE

- SAN — SANITARY DRAIN–ABOVE GRADE
- SAN — SANITARY DRAIN–BELOW GRADE
- ST — STORM DRAIN–ABOVE GRADE
- ST — STORM DRAIN–BELOW GRADE
- VENT (DRAINAGE)
- CW — DOMESTIC COLD WATER
- HW — DOMESTIC HOT WATER
- HWR — DOMESTIC HOT RECIRCULATION
- XXX — HOT WATER – XXX – TEMPERATURE °F.(°C.)
- NPW — NON–POTABLE WATER
- IRR — IRRIGATION WATER
- TW — TEMPERED WATER
- W — WEEPER DRAIN (SUB–DRAIN)
- PW — PROCESS WASTE – ABOVE GRADE
- PW — PROCESS WASTE – BELOW GRADE
- PSW — PUMPED SANITARY WASTE – ABOVE GRADE
- PSW — PUMPED SANITARY WASTE – BELOW GRADE
- G — NATURAL GAS
- CA — COMPRESSED AIR
- FD–A — FLOOR DRAIN, LETTER INDICATES TYPE–SEE SPECS
- RD — ROOF DRAIN (CONVENTIONAL)
- RD–1 — ROOF DRAIN (CONTROL FLOW), NUMBER INDICATES NOTCHES
- FUNNEL DRAIN – ELEVATION
- HB — HOSE BIBB
- NFHB — NON–FREEZE HOSE BIBB
- NFRH — NON–FREEZE ROOF HYDRANT
- WHNF — WALL HYDRANT – NON–FREEZE
- SHOWER HEAD
- GATE VALVE
- BALL VALVE
- PLUG VALVE
- CHECK VALVE
- PRESSURE REDUCING VALVE
- % — PITCH INDICATES DOWN SLOPE IN DIRECTION OF FLOW
- CLEANOUT – ABOVE GRADE OR FLOOR
- CLEANOUT – ABOVE GRADE OR FLOOR
- CLEANOUT – BELOW GRADE OR FLOOR
- CLEANOUT – BELOW GRADE OR FLOOR
- RUNNING TRAP
- BACKWATER VALVE – DRAINAGE
- BACKFLOW PREVENTER WITH TEST PORTS
- BACKFLOW PREVENTER
- MH — MANHOLE
- WATER CLOSET (WALL HUNG, FLUSH VALVE)
- URINAL (WALL HUNG, FLUSH VALVE)
- LAVATORY (WALL HUNG)
- LAVATORY (COUNTER TOP)
- WT — WASH–UP TROUGH
- SS — SERVICE SINK
- GROUP WASHFOUNTAIN
- SS — SAFETY SHOWER & EYE/WASH STATION
- EW — EYE/WASH STATION
- G — GAS METER
- M — WATER METER

FIRE PROTECTION

- F — FIRE MAINS
- S — SPRINKLER FEED MAINS
- PS — PREACTION SPRINKLER FEED MAIN
- CO2 — CO2 PIPING
- STP — STANDPIPE
- SPRINKLER HEAD–UPRIGHT
- SPRINKLER HEAD–PENDANT
- RECESSED (PENDANT FLUSH) SPRINKLER HEAD
- SPRINKLER HEAD – SIDEWALL
- S — SUPERVISED VALVE
- O.S. & Y. VALVE
- O.S. & Y. VALVE–IN RISER
- INSPECTORS TEST CONNECTION
- FLOW ALARM CHECK VALVE (WET)
- FLOW ALARM CHECK VALVE (DRY)
- PRE–ACTION CONTROL VALVE
- POST INDICATOR VALVE
- FIRE HYDRANT
- FIRE DEPARTMENT CONNECTION
- ALARM GONG
- WH — WALL HYDRANT
- THRUST BLOCK
- FS — FLOW SWITCH
- PS — PRESSURE SWITCH
- FE — FIRE EXTINGUISHER TYPE: FE–1 STAFF/STORAGE TRAILERS, & WASTE DISPOSAL BUILDING
- TYPE: FE–2 ELECTRICAL SUBSTATION
- FE — FIRE EXTINGUISHER c/w CABINET
- CO2 CYLINDERS
- FHR — FIRE HOSE REEL
- FIRE HOSE HANGER
- RHH — ROOF HOSE HOUSE
- FHC — FIRE HOSE CABINET (FHC) SURFACE MOUNT
- FHC — FIRE HOSE CABINET (FHC) RECESSED

ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
B.O.D. EL.	BOTTOM OF DUCT ELEVATION
B.O.P. EL.	BOTTOM OF PIPE ELEVATION
℄ EL.	CENTER LINE OF PIPE ELEVATION
CO	CLEANOUT
CW	DOMESTIC COLD WATER
E.A.	EXHAUST AIR
E.R.	EXISTING RELOCATED
F.O.	FLAT OVAL DUCTWORK
FU	FIXTURE UNITS
INV.EL.	INVERT ELEVATION
N.C.	NORMALLY CLOSED
N.I.C.	NOT IN CONTRACT
N.O.	NORMALLY OPEN
NPS	NATIONAL PIPE STANDARD
O.A.	OUTSIDE AIR
O.B.B.	OPPOSED BLADE BALANCING
OED	OPEN ENDED DUCT
PH	PREHEAT
R.A.	RETURN AIR
RHE	REHEAT
RWL	RAIN WATER LEADER
S.A.	SUPPLY AIR
T.O.D. EL.	TOP OF DUCT ELEVATION
T.O.P. EL.	TOP OF PIPE ELEVATION
U/S	UNDERSIDE
OR C.T.E.	CONNECT TO EXISTING
H.O.A.	HAND–OFF–AUTO
TD	TRENCH DRAIN
CB	CATCH BASIN
X	REFERENCE NOTE 'X'

HEATING, VENTILATION AND AIR CONDITIONING

DOUBLE LINE		SINGLE LINE
	DUCTWORK (RECTANGULAR)	AAAxBBB
	DUCTWORK (ROUND)	XX⌀
	FLEXIBLE DUCT	
	ACOUSTIC DUCT INSULATION – INTERNAL	
FD	FIRE DAMPER	FD
FSD	MOTORIZED FIRE SMOKE DAMPER	FSD
	OPPOSED BLADE DAMPER	3 M
	PARALLEL BLADE DAMPER	3 M
	BUTTERFLY DAMPER	
	TURNING VANES	
	VOLUME EXTRACTOR	
	SPLIT–STREAM FITTING WITH BALANCING DAMPER	
	TAP–IN FITTING	
	CONICAL TEE FITTING	
	BULLHEAD TEE	
	WYE–TEE (3 GORE)	
	SUPPLY DUCT TURNING TOWARD	
	RETURN DUCT TURNING TOWARD	
	SUPPLY DUCT TURNING AWAY	
	RETURN DUCT TURNING AWAY	
	ROUND DUCT TURNING TOWARD	
	ROUND DUCT TURNING AWAY	
	DUCT TO BE DEMOLISHED	
	LEAVE SPACE FOR FUTURE DUCT	
	ELBOW FULL RADIUS	
	REDUCER/ EXPANDER	
	SILENCER	19
19	FLEXIBLE CONNECTION	

- INFRARED HEATER
- TERMINAL UNIT WITH ATTENUATOR SIZE A, 1000LPS, 0% MIN. SETTING — A/1000/0
- COOLING COIL
- FAN POWERED BOX WITH ATTENUATOR SIZE B, 500LPS, 40% MIN. SETTING — B/500/40
- HEATING COIL
- HUMIDIFIER
- AIR FLOW MEASURING STATION
- B–10⌀ / 450 — SUPPLY AIR DIFFUSER– TYPE 'B', SIZE 10 NECK, 450 LPS
- A–24x12 / 450 — RETURN AIR GRILLE– TYPE 'A', SIZE 24x12, 450 LPS
- 100 — DOOR GRILLE – FIGURE INDICATES LPS

AIR DISTRIBUTION BOXES

400 / 200 / 200 / 400 — AIR DISTRIBUTION BOX (AIR QUANTITIES AS INDICATED)

LINEAR DIFFUSER WITH PLENUM

Q–1000 / 250–1000 — LINEAR DIFFUSER WITH PLENUM TYPE Q, 1000mm ACTIVE LENGTH 250⌀ NECK, 1000 LPS

WALL FIN CONVECTOR

(XX) / 3QJ–1500–5 — WALL FIN CONVECTOR TYPE J, 1500mm LONG, 5 kW HEAT RATING (XX) LPS WATER FLOW

A–600–100 — RADIANT CEILING PANEL TYPE 'A', 600mm WIDE, 100W

- HORIZONTAL UNIT HEATER
- VERTICAL UNIT HEATER
- $ — FAN SWITCH
- T — THERMOSTAT
- H_2 — HYDROGEN SENSOR
- T — TEMPERATURE SENSOR
- CO — CARBON MONOXIDE SENSOR
- CO_2 — CARBON DIOXIDE SENSOR
- NO_2 — NITROGEN DIOXIDE SENSOR

EQUIPMENT IDENTIFICATION

AB	AIR BLENDER	FFC	FORCED FLOW CONVECTOR
AC	AIR CONDITIONING UNIT	H	HUMIDIFIER
ACCU	AIR COOLED CONDENSING UNIT	HC	HEATING COIL
AHU	AIR HANDLING UNIT	HT	WATER HEATER
BFP	BACKFLOW PROTECTION	HV	HEATING AND VENTILATING UNIT
B	BOILER	HX	HEAT EXCHANGER
BB	BASEBOARD HEATER	OI	OIL INTERCEPTOR
C	AIR COMPRESSOR	ME	MISCELLANEOUS EQUIPMENT
CAC	COMPUTER ROOM A/C UNIT	MAU	MAKE–UP AIR UNIT
CC	COOLING COIL	P	PUMP
CT	COOLING TOWER	PRV	PRESSURE REDUCING VALVE
CV	CONTROL VALVE	RF	RETURN AIR FAN
DC	DUST COLLECTOR	RC	REFRIGERATION COMPRESSOR OR CHILLER
DD	DESICANT AIR DRYER	RHC	REHEAT COIL
DH	DOOR HEATER	RO	REVERSE OSMOSIS WATER TREATMENT UNIT
DI	DRAINAGE INTERCEPTOR	RP	RADIANT PANELS
DR	REFRIGERATED AIR DRYERS	S	SILENCER
EAO	EXHAUST AIR OUTLET	SF	SUPPLY AIR FAN
EF	EXHAUST AIR FAN	SP	SEWAGE PUMP
ER	EVAPORATOR (REFRIGERATION)	T	TANK
ERV	ENERGY RECOVERY VENTILATOR	UH	UNIT HEATER
ET	EXPANSION TANK	VP	VACUUM PUMP
FAI	FRESH AIR INTAKE	WCF	WATER CLEANING FILTER
FB	FILTER BANK	WF	WALL FIN RADIATION
FC	FAN COIL		

XX / XXXX — ITEM / UNIT COUNTER

GENERAL NOTE:

THIS LEGEND IS THE STANDARD FORM SHEET NOT ALL LEGEND ITEMS MAY BE ASSOCIATED WITH THIS PROJECT.

METRIC

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METROLINX PROJECT NO. 129709

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		0	14/03/18	TENDER			
		C	14/01/06	95% CLIENT REVIEW			
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DRAWN BY: A.P. 13/11/07	DESIGNED BY: S.L. 13/11/07
CHECKED BY: K.T. 14/01/06	APPROVED BY: E.C. 14/01/06
SCALE: N.T.S.	FULL SIZE ONLY

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

MECHANICAL
LEGEND & SYMBOLS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	M–001	0	44/92

DIFFUSERS, GRILLES & REGISTERS SCHEDULE

GENERAL DATA			E.H. PRICE MODEL No.	REMARKS
MARK No.	DESCRIPTION	LOCATION		
A	GENERAL SUPPLY	ON DUCT	520D/L/B12	SUPPLY AIR REGISTER, 19MM BLADE SPACING DOUBLE DEFLECTION C/W OPPOSED BLADE STEEL DAMPER
A1			520D/S/B12	
B	GENERAL EXHAUST	ON DUCT	530D/L/B12	EXHAUST REGISTER, 19MM BLADE SPACING, 45° DEFELCTION C/W OPPOSED BLADE STEEL DAMPER
B1			530D/S/B12	
C	GENERAL SUPPLY BUS WASH AREA	ON DUCT	720D/L	STAINLESS STEEL SUPPLY AIR REGISTER, 19MM BLADE SPACING DOUBLE DEFLECTION C/W OPPOSED BLADE STAINLESS STEEL DAMPER
C1			720D/S	
D	GENERAL EXHAUST BUS WASH AREA	ON DUCT	730D/L	STAINLESS STEEL EXHAUST AIR REGISTER, 19MM BLADE SPACING, 45° DEFLECTION C/W OPPOSED BLADE STAINLESS STEEL DAMPER

NATURAL GAS PRESSURE REGULATING VALVE (PRV)

GENERAL DATA					REMARKS
MARK No.	SERVICE	UPSTREAM PRESSURE	DOWNSTREAM PRESSURE	CAPACITY KW (MBH)	
PRV-01	NATURAL GAS	14 KPa (2 PSI)	1.75 KPa (7" W.C.)	90.8 (310)	LOCATED IN JOISTS SPACE. EXTEND RELIEF VENT THROUGH ROOF C/W GOOSENECK
PRV-02	NATURAL GAS	14 KPa (2 PSI)	1.75 KPa (7" W.C.)	90.8 (310)	LOCATED IN JOISTS SPACE. EXTEND RELIEF VENT THROUGH ROOF C/W GOOSENECK
PRV-03	NATURAL GAS	14 KPa (2 PSI)	1.75 KPa (7" W.C.)	296 (1010)	LOCATED IN JOISTS SPACE. EXTEND RELIEF VENT THROUGH ROOF C/W GOOSENECK

OIL INTERCEPTOR SCHEDULE (OI)

GENERAL DATA				TOTAL CAPACITY (LITRES)	OIL HOLDING CAPACITY (LITRES)	SOLID HOLDING CAPACITY (LITRES)	INLET (NPS)	DISCHARGE (NPS)	VENT (NPS)	REMARKS
MARK No.	SERVICE	MANUF.	MODEL							
OI-01	BUS WASH AND STORAGE	GREENTURTLE PROCEPTOR OR APPROVED EQUIVALENT	OMC 1500	5670	2185	2520	6	6	2x3	PROVIDE REMOTE SUCTION LINE C/W WALL MOUNTED CAMLOCK CONNECTION WITH DUST COVER
OI-02	FUELING	GREENTURTLE PROCEPTOR OR APPROVED EQUIVALENT	OMC 500	1890	985	655	4	4	2x3	C/W COALESCING FILTER PROVIDE REMOTE SUCTION LINE AND WALL MOUNTED CAMLOCK CONNECTION WITH DUST COVER

NOTE: PROVIDE INTEGRAL EXTENSION FOR RECESSED INSTALLATION, HEAVY DUTY REINFORCED COVER FOR VEHICULAR TRAFFIC, ELECTRONIC LEVEL CONTROL MONITORING SYSTEM.

RADIANT HEATER SCHEDULE (RH)

GENERAL DATA				UNIT LENGTH (m)	MTG HEIGHT (m)	VIBRATION ISOLATOR	GAS FIRED UNIT					REMARKS
MARK No.	SERVICE	MANUF.	MODEL				INPUT (kW) (MBH)	OUTPUT (kW) (MBH)	GAS PRESSURE (kPA)	COMB. AIR INTAKE DIA. (NPS)	FLUE DIA. (NPS)	
RH-01	DOOR	SCHWANK OR APPROVED EQUIVALENT	S100U-155-20	6.8	5.5	NONE	45.4 (155)	36.3 (124)	1.75	4	6	PROVIDE SUMMER/WINTER SWITCH, THERMOSTAT. UNIT HORIZONTALLY SUSPENDED
RH-02	DOOR	SCHWANK OR APPROVED EQUIVALENT	S100U-155-20	6.8	5.5	NONE	45.4 (155)	36.3 (124)	1.75	4	6	PROVIDE SUMMER/WINTER SWITCH, THERMOSTAT. UNIT HORIZONTALLY SUSPENDED
RH-03	DOOR	SCHWANK OR APPROVED EQUIVALENT	S100U-155-20	6.8	5.5	NONE	45.4 (155)	36.3 (124)	1.75	4	6	PROVIDE SUMMER/WINTER SWITCH, THERMOSTAT. UNIT HORIZONTALLY SUSPENDED
RH-04	DOOR	SCHWANK OR APPROVED EQUIVALENT	S100U-155-20	6.8	5.5	NONE	45.4 (155)	36.3 (124)	1.75	4	6	PROVIDE SUMMER/WINTER SWITCH, THERMOSTAT. UNIT HORIZONTALLY SUSPENDED

METRIC

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AIR HANDLING UNIT SCHEDULE (AHU)

GENERAL DATA					SUPPLY AIR FAN							EXHAUST AIR FAN							GAS HEATING SECTION					FILTER					ENERGY RECOVERY SECTION						CONTROL SEQUENCE	REMARKS
					FAN				MOTOR			FAN				MOTOR														EFFECTIVENESS							
MARK No.	SERVICE	LOCATION	MANUFACTURER	WEIGHT (KG)	CAPACITY (L/s)	E.S.P. (Pa)	BHP	WHEEL DIA (mm)	HP	RPM	V/Ph/Hz	CAPACITY (L/s)	E.S.P. (Pa)	BHP	WHEEL DIA (mm)	HP	RPM	V/Ph/Hz	TYPE	GAS PRESSURE (kPA)	INPUT (kW) (MBH)	OUTPUT (kW) (MBH)	TURNDOWN	LOCATION	TYPE	MERV RATING	MAXIMUM FACE VELOCITY (m/s)	NOMINAL THICKNESS (mm)	TYPE	MEDIA	SUMMER SENS.	SUMMER TOTAL	WINTER SENS.	WINTER TOTAL		
AHU-01	STORAGE	ROOF	VENMAR CES	2800	2250	249	3.0	406	2HPx2	1750	575/3/60	2500	249	4.5	356	3HPX2	3500	575/3/60	DIRECT FIRED	14	136 (465)	125 (427)	20:1	SUPPLY	PLEAT	8	2.5	50	AIR-AIR PLATE	ALUMINUM PLATE	–	–	73%	73%	CS714	PROVIDE UN-FUSED DISCONNECT, HOA SWITCH, CONTROL PANEL, 400MM(H) ROOF CURB.
																							EXHAUST	PLEAT	8	2.5	50								
AHU-02	BUS WASH	ROOF	VENMAR CES	3000	2250	249	3.0	406	2HPx2	1750	575/3/60	2500	249	4.5	356	3HPX2	3500	575/3/60	DIRECT FIRED	14	136 (465)	125 (427)	20:1	SUPPLY	PLEAT	8	2.5	50	AIR-AIR PLATE	ALUMINUM PLATE	–	–	73%	73%	CS714	PROVIDE UN-FUSED DISCONNECT, HOA SWITCH, CONTROL PANEL, 400MM(H) ROOF CURB.
																							EXHAUST	PLEAT	8	2.5	50								
AHU-03	FUELING	ROOF	VENMAR CES	2300	1350	249	1.7	305	1.5HPx2	3450	575/3/60	1500	249	2.4	305	1.5HPX2	3450	575/3/60	DIRECT FIRED	14	82 (280)	76 (259)	20:1	SUPPLY	PLEAT	8	2.5	50	AIR-AIR PLATE	ALUMINUM PLATE	–	–	68%	73%	CS714	PROVIDE UN-FUSED DISCONNECT, HOA SWITCH, CONTROL PANEL, 400MM(H) ROOF CURB.
																							EXHAUST	PLEAT	8	2.5	50								

NOTES:
1. UNIT DESIGN IS BASED ON FAN WALL FOR BOTH SUPPLY AND EXHAUST FANS.
2. UNIT AHU-2 INTERIOR CASING SHALL BE STAINLESS STEEL TYPE 316
3. HEATPIPE IS ACCEPTED AS ALTERNATIVE ENERGY RECOVERY TYPE
4. ACCEPTED MANUFACTURERS:
   A. VENMAR CES
   B. MAFNA
   C. HAAKON
   D. INGENIA
   E. APPROVED EQUIVALENT

SUMP PUMP SCHEDULE (SP)

GENERAL DATA			PUMP			MOTOR			INLET DIA (MM)	DISCHARGE DIA (MM)	VENT DIA (MM)	HIGH WATER ALARM (M)	REMARKS
MARK No.	SERVICE	LOCATION	CAPACITY (L/S)	HEAD (M)	IMPELLER (MM)	kW (hp)	RPM	V/Ph/Hz					
SP-01 SP-02	SANITARY DRAIN	MANHOLE SEE CIVIL DWGS	2.0	6.5	145	1.8 (2.4)	1680	575/3/60	65	65	100	SEE M-009 CS412	ITT FLYGT DP 3068 MT OR APPROVED EQUIVALENT. SUITABLE FOR CLASS 1 DIV 1.

UNIT HEATER SCHEDULE (UH)

GENERAL DATA				MTG HEIGHT (m)	VIBRATION ISOLATOR	SUPPLY AIR FAN MOTOR			GAS FIRED UNIT					REMARKS
MARK No.	SERVICE	MANUF.	MODEL			HP	RPM	V/Ph/Hz	INPUT (kW)	OUTPUT (kW)	GAS PRESSURE (kPA)	COMB. AIR INTAKE DIA. (NPS)	FLUE DIA. (NPS)	
UH-01	VACUUM ROOM	MODINE OR APPROVED EQUIVALENT	HDS 125	4.5	SPRING HANGER	1/8	1625	120/1/60	36.6	29.2	1.75	4	4	PROVIDE SUMMER/WINTER SWITCH, THERMOSTAT, SEPARATE COMBUSTION.
UH-02	BUS WASH EQUIPMENT ROOM	MODINE OR APPROVED EQUIVALENT	HDS 125	4.5	SPRING HANGER	1/8	1625	120/1/60	36.6	29.2	1.75	4	4	PROVIDE SUMMER/WINTER SWITCH, THERMOSTAT, SEPARATE COMBUSTION.

DOMESTIC WATER HEATER SCHEDULE (HT)

GENERAL DATA			CAPACITY		TYPE – GAS FIRED								MAKE/MODEL
					WATER SIDE				GAS SIDE			POWER	
MARK No.	SERVICE	LOCATION	INPUT kW (MBH)	OUTPUT kW (MBH)	DESIGN PRESSURE (KPa)	TEMP. RISE (°C)	FLOW RATE (L/S)	MINIMUM FLOW (L/S)	PRESSURE (KPa)	COMB. AIR INTAKE DIA. (MM)	VENT DIA. (MM)	V/PH/HZ	
HT-01	EMERGENCY EYEWASH STATION	WALL MOUNTED	41 (140)	33 (112)	1000	45	0.2	0.03	1.75	100	100	120/1/60	GAS FIRED TANKLESS WATER HEATER, TAKAGI MODEL T-KJR2 C/W DIRECT VENT KIT (TK-TV10) OR APPROVED EQUIVALENT. SUPPLY WATER TEMPERATURE 50°C (122°F)

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS

DWG NO.	TITLE

ISSUE

NO.	DATE	ISSUED FOR
1	16/06/30	RECORD
0	14/09/05	ISSUED FOR CONSTRUCTION
0	14/05/15	TENDER
0	14/03/18	TENDER
B	14/01/06	95% CLIENT REVIEW
A	13/11/21	50% CLIENT REVIEW

REVISIONS

REV.	DATE	

DRAWN BY: A.P. 13/11/11 | DESIGNED BY: S.L. 13/11/11
CHECKED BY: K.T. 14/01/06 | APPROVED BY: E.C. 14/01/06
SCALE: N.T.S. FULL SIZE ONLY

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ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
MECHANICAL
EQUIPMENT SCHEDULES

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	M-002	0	45/92

TRUE NORTH

CONSTRUCTION NORTH

METRIC

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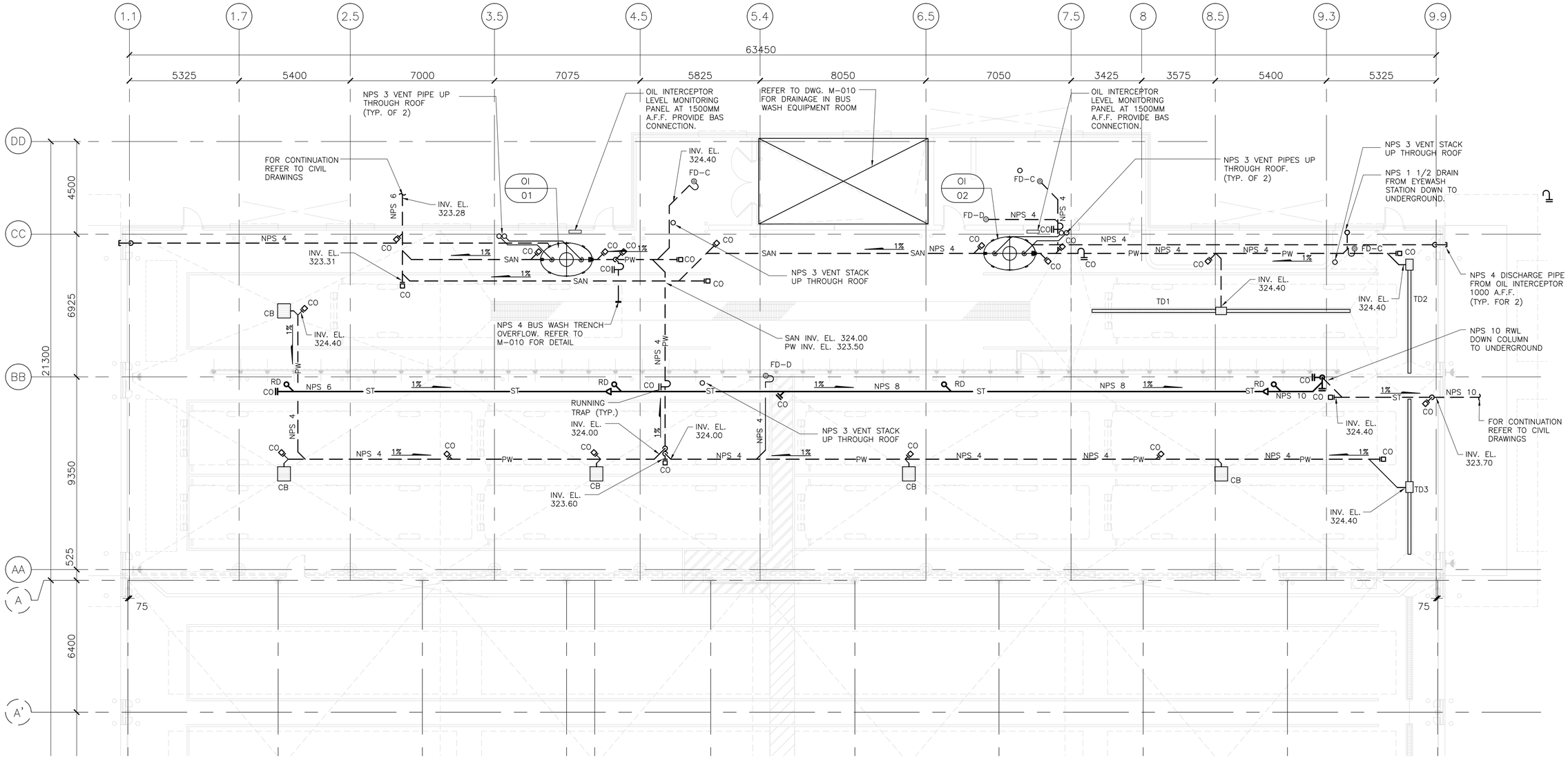

NOTES:

1. ALL FD TO BE NPS 4.
2. ALL DRAINS NPS 4 AND LARGER SHALL SLOPE AT MIN. 1%.
   ALL DRAINS NPS 3 AND SMALLER SHALL SLOPE AT 2%.
3. ALL VENTING AND TRAP SEAL PRIMER SHALL BE IN CONFORMANCE WITH O.B.C. PART 7 AND IS THE RESPONSIBILITY OF THE PLUMBING SUBCONTRACTOR.
4. ALL VENT STACK TERMINATED AT 1000MM ABOVE ROOF. REFER TO ARCHITECTURAL DRAWINGS FOR FLASHING

FLOOR PLAN – DRAINAGE

F.F.EL 325.00 — SCALE: 1:100 — 1 / M-003

METROLINX PROJECT NO. 129709

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		C	14/01/06	95% CLIENT REVIEW			
		B	13/11/21	50% CLIENT REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

FLOOR PLAN
DRAINAGE

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	M-003	0	46/92

METRIC

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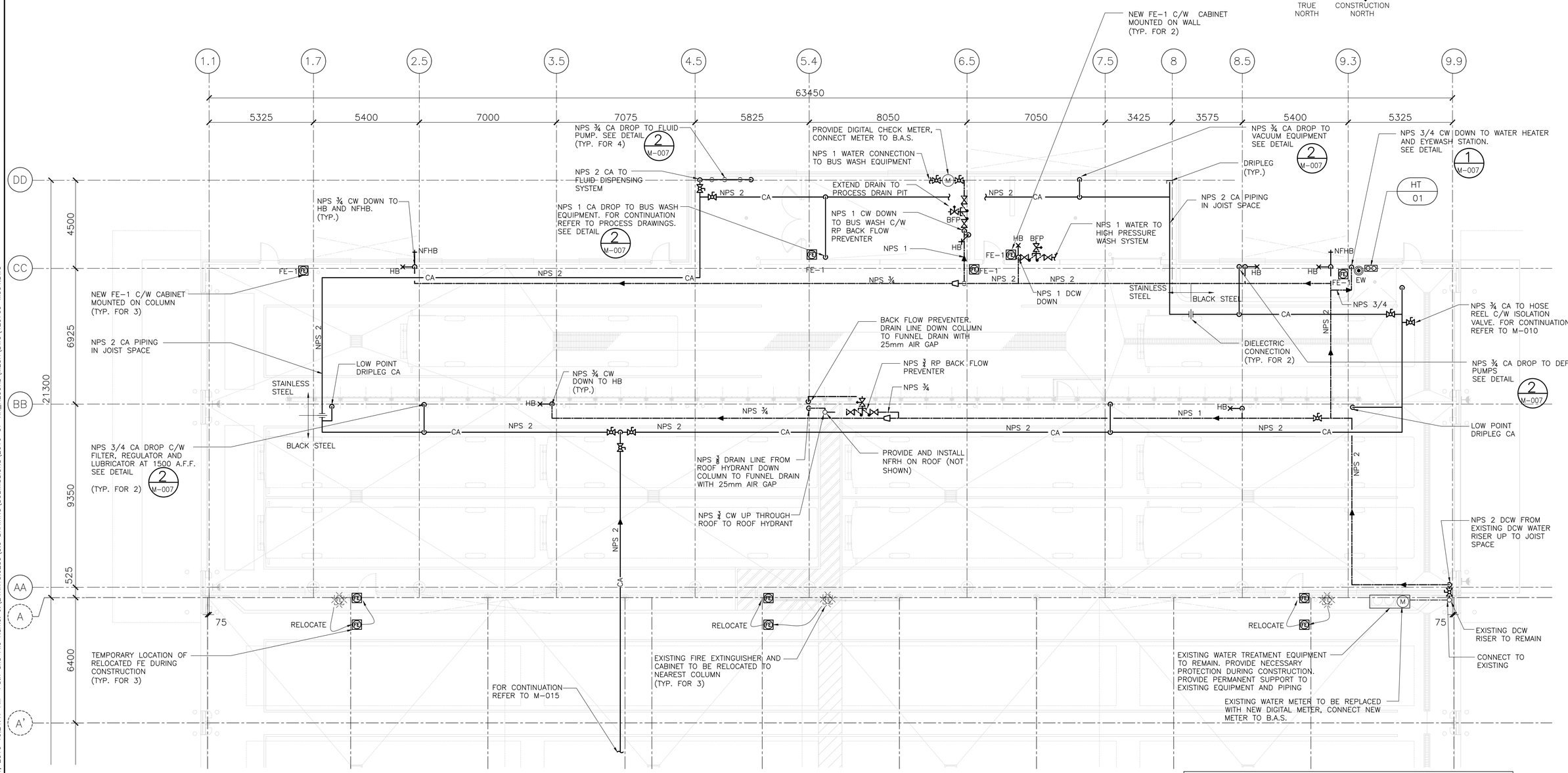
TRUE NORTH

CONSTRUCTION NORTH



FLOOR PLAN – PLUMBING & PIPING

F.F.EL 325.00 — SCALE: 1:100 — 1 M-004

NOTES:

1. CA PIPING SHALL BE STAINLESS STEEL TYPE 316 IN BUS WASH AREA AS SHOWN.
2. ALL DOMESTIC COLD WATER AND CA PIPING TO RUN IN JOIST SPACE
3. ALL DOMESTIC COLD, HOT AND TEMPERED WATER PIPING SHALL BE THERMALLY INSULATED WITH MINIMUM THICKNESS OF 25MM.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		1	16/06/30	RECORD			
		0	14/09/05	ISSUED FOR CONSTRUCTION			
		0	14/05/15	TENDER			
		0	14/03/18	TENDER			
		C	14/01/06	95% CLIENT REVIEW			
		B	13/11/21	50% CLIENT REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: A.P. 13/09/26	DESIGNED BY: S.L. 13/09/26
CHECKED BY: K.T. 14/01/06	APPROVED BY: E.C. 14/01/06
SCALE: 1:100	FULL SIZE ONLY

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A Division of METROLINX

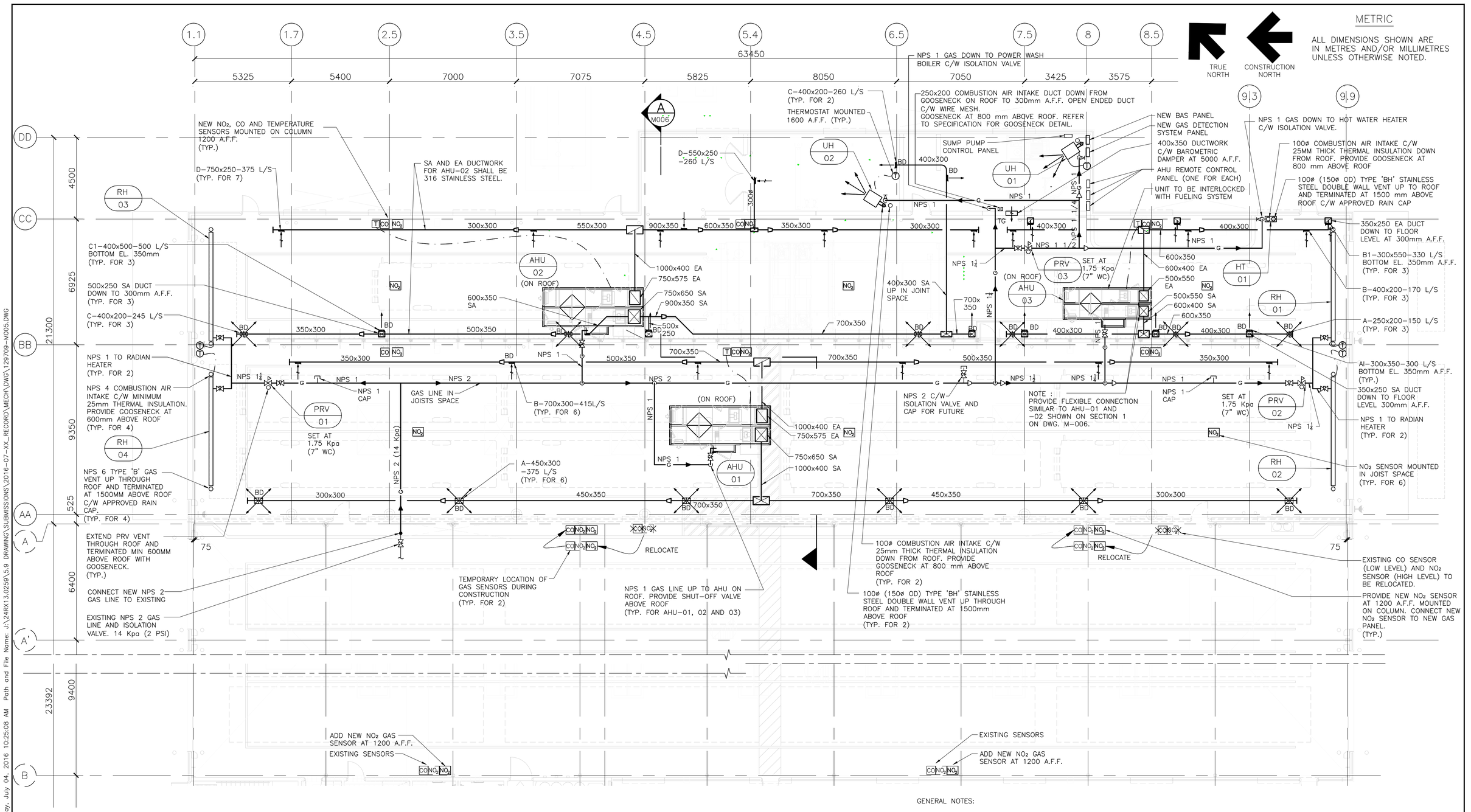
ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

FLOOR PLAN
PLUMBING & PIPING

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	M-004	0	47/92

User Name: Ritchie Chow Plot Date/Time: Monday, July 04, 2016 10:24:47 AM Path and File Name: J:\24RX13.0259\5.9 DRAWING\SUBMISSIONS\2016-07-XX_RECORD\MECH\DWG\129709-M004.DWG



FLOOR PLAN – HVAC

F.F.EL 325.00 — SCALE: 1:100 — (1 / M-005)

GENERAL NOTES:

1. ALL EXISTING SERVICES TO REMAIN UNLESS NOTED OTHERWISE ON DRAWINGS.
2. ALL NEW GAS DETECTION SENSORS TO BE CONNECTED TO NEW GAS PANEL.
3. REPLACE EXISTING MAIN GAS METER WITH NEW DIGITAL METER. REFER TO DWG. M-008.

METROLINX PROJECT NO. 129709

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		0	14/09/05	ISSUED FOR CONSTRUCTION			
		0	14/05/15	TENDER			
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		C	14/01/06	95% CLIENT REVIEW			
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DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

FLOOR PLAN
H.V.A.C.

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	M-005	0	48/92

User Name: Ritchie Chow Plot Date/Time: Monday, July 04, 2016 10:25:08 AM Path and File Name: J:\24RX13.0259\5.9 DRAWING\SUBMISSIONS\2016-07-XX_RECORD\MECH\DWG\129709-M005.DWG

METRIC

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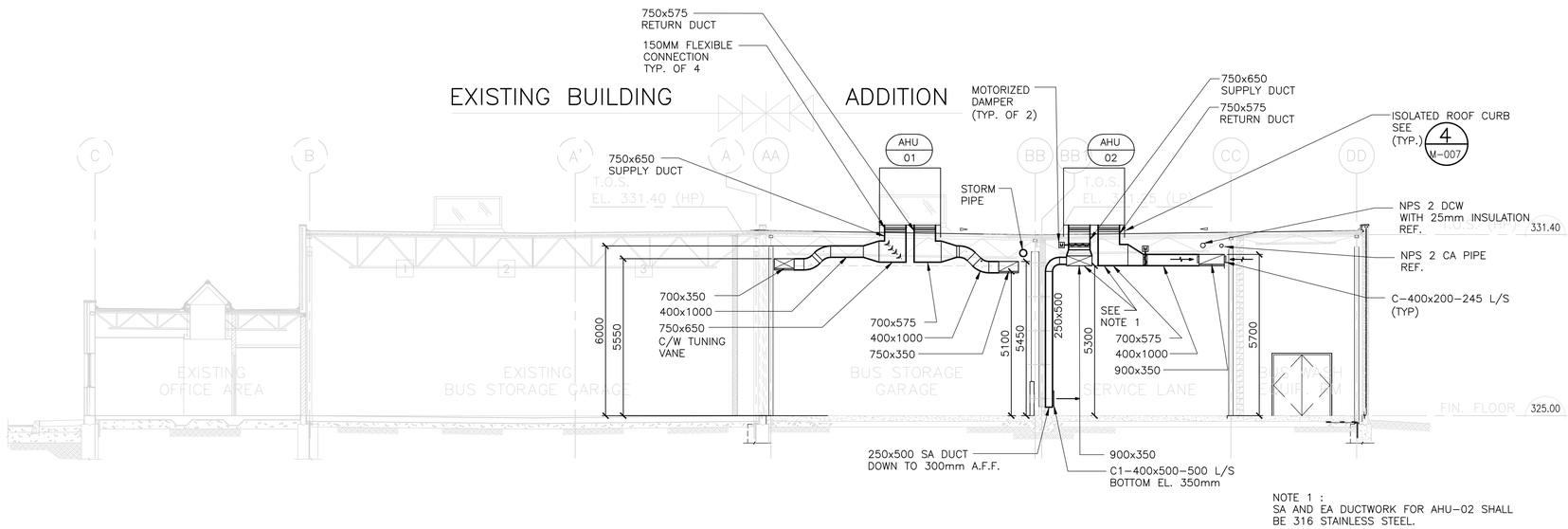
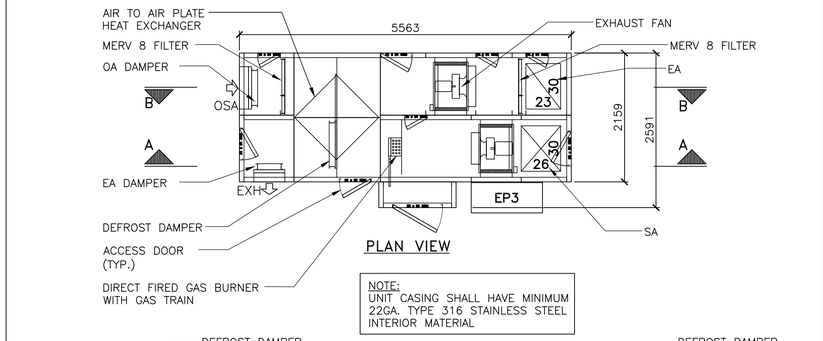
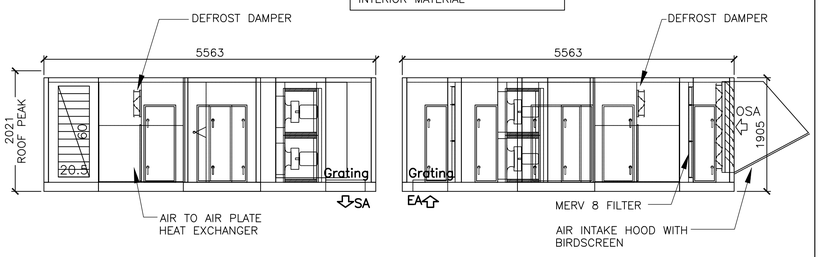


BUILDING SECTION (A / M-005)

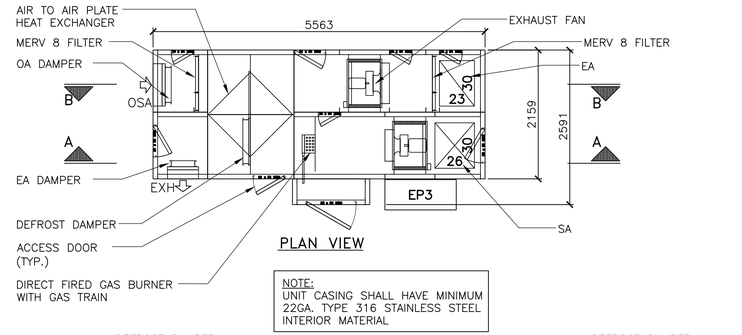
SCALE: 1:100

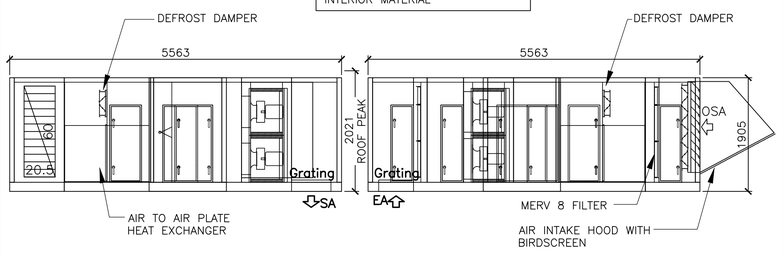




AHU-1 DETAILS (2 / M-006)

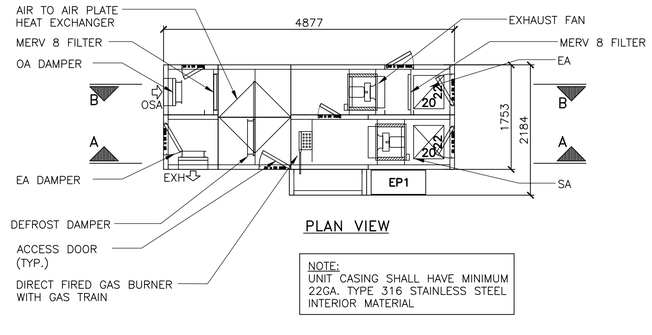
SCALE: N.T.S.

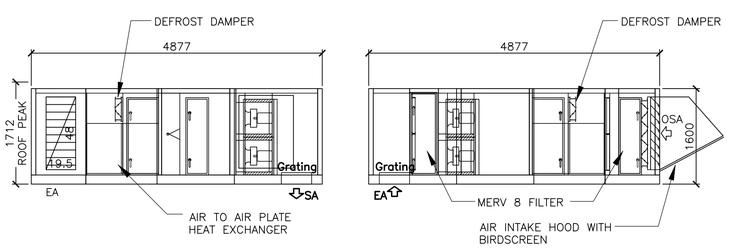




AHU-2 DETAILS (3 / M-006)

SCALE: N.T.S.





AHU-3 DETAILS (4 / M-006)

SCALE: N.T.S.

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		0	14/05/15	TENDER			
		0	14/03/18	TENDER			
		B	14/01/06	95% CLIENT REVIEW			
		A	13/11/21	50% CLIENT REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

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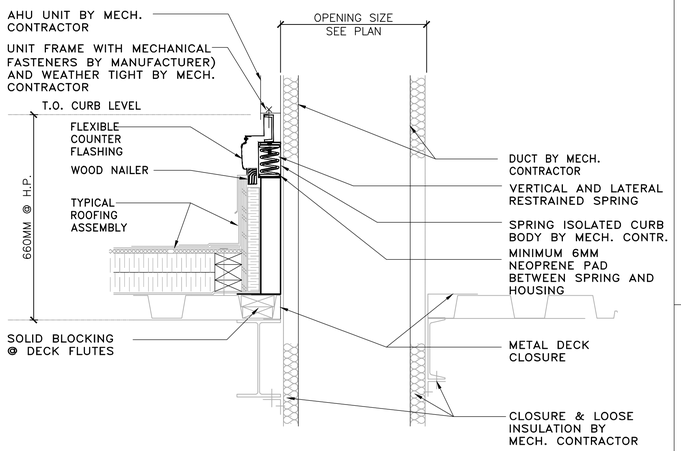
A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

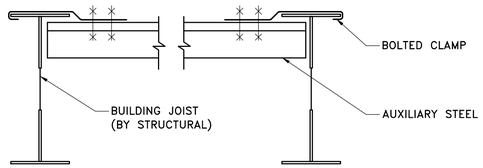
SECTIONS AND DETAILS
H.V.A.C.

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	M-006	0	49/92



ROOF CURB FOR MECH UNITS (4 / M-007)

SCALE: N.T.S.



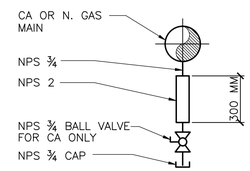
SUGGESTED INSTALLATION OF HANGER AUXILIARY STEEL

NOTE:

SIZE OF AUXILIARY STEEL AND TYPE OF CLAMPS BY MECHANICAL CONTRACTOR. REFER TO MECHANICAL SPECIFICATIONS

HANGER AUXILIARY STEEL (3 / M-007)

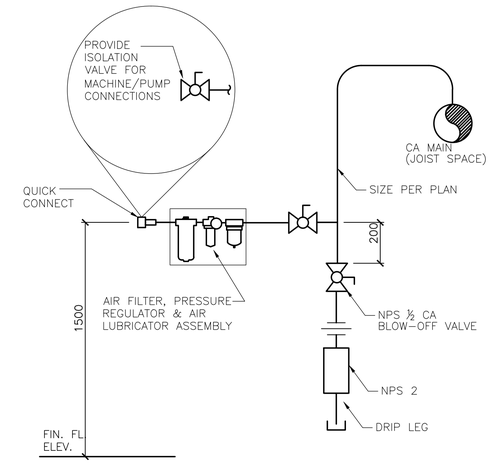
SCALE: N.T.S.



NOTE:
TO BE INSTALLED IN SYSTEM LOW POINTS.

CA & GAS DRIP LEG (8 / M-007)

SCALE: N.T.S.



CA GROUND FLOOR TAKE-OFF (2 / M-007)

SCALE: N.T.S.

METRIC

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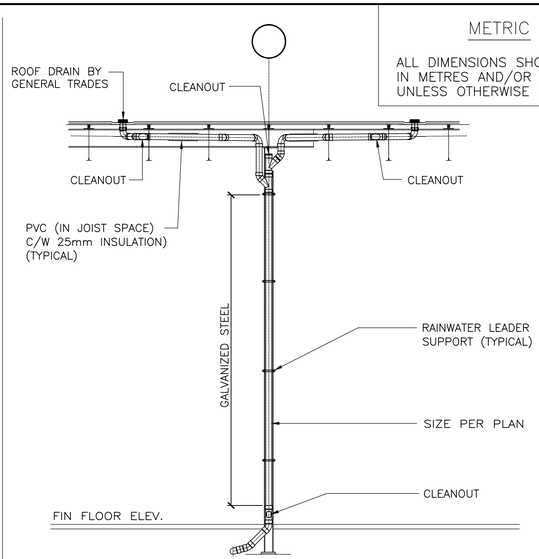
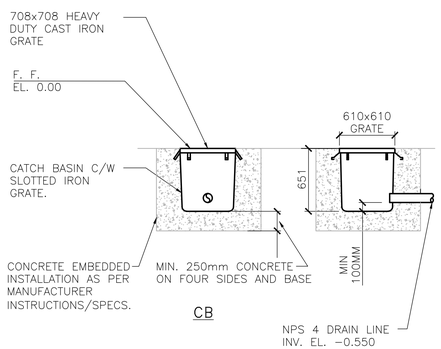


RWL STACK DETAIL – ELEVATION (5 / M-007)

SCALE: N.T.S.



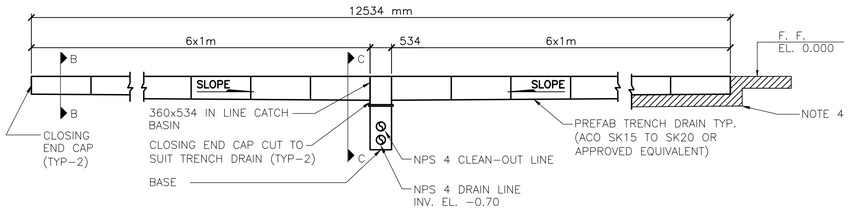
CB

GENERAL NOTES:

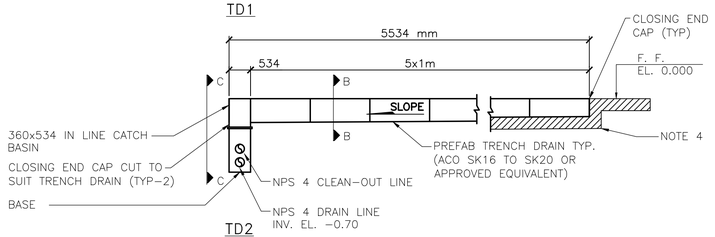
1. ALL DIMENSIONS ARE BASED ON 'ACO DRAIN SYSTEM'–TYPE 2x2x2 POLYMER CONCRETE CATCH BASIN.

INDIVIDUAL CATCH BASIN DETAIL (7 / M-007)

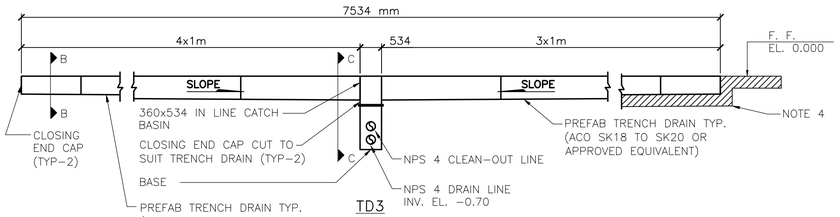
SCALE: N.T.S.



TD1



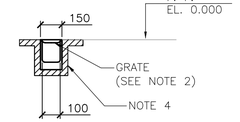
TD2



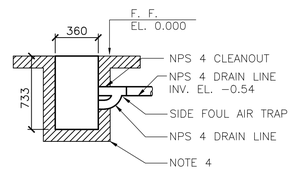
TD3

TRENCH DRAIN DETAILS (6 / M-007)

SCALE: N.T.S.



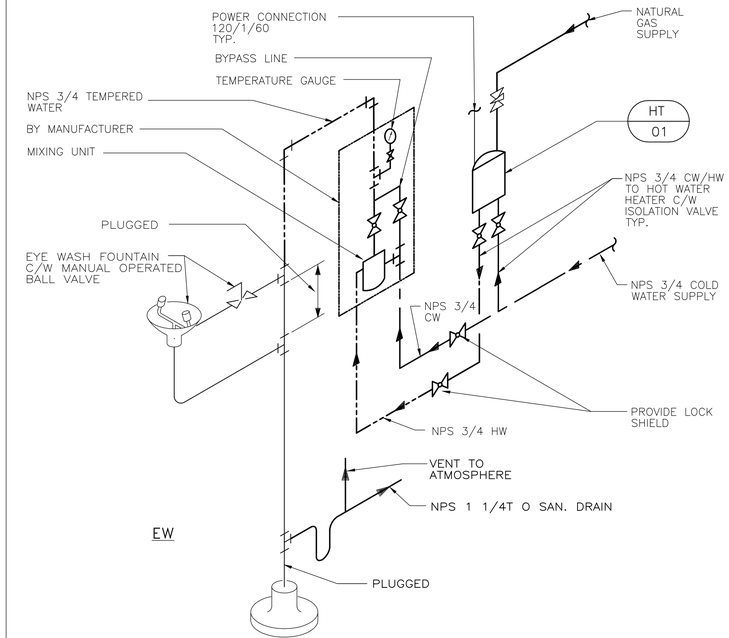
B–B TYPICAL TRENCH DRAIN SECTION – S100K



C–C IN–LINE CATCHBASIN SECTION

NOTES:

1. ALL DIMENSIONS ARE BASED ON 'ACO POWER DRAIN SYSTEM–TYPE S100K'.
2. TRENCH DRAINS GRATES TO BE CLASS 'F' HEAVY DUTY. SEE SPEC.
3. PROVIDE TRASH BASKET FOR IN–LINE CATCH BASIN.
4. CONCRETE AS PER TRENCH DRAIN MANUFACTURER.



EW

EYEWASH STATION DETAIL (1 / M-007)

SCALE: N.T.S.

METROLINX PROJECT NO. 129709

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		0	14/03/18	TENDER			
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		A	13/11/21	50% CLIENT REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: A.P. 13/11/11	DESIGNED BY: S.L. 13/11/11
CHECKED BY: K.T. 14/01/06	APPROVED BY: E.T. 14/01/06
SCALE: N.T.S.	FULL SIZE ONLY

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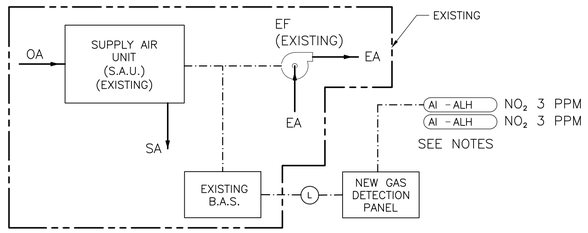
A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

MECHANICAL DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	M–007	0	50/92



NOTES ;

1. PROVIDE TWO (2) NO_2 SENSORS AT 1200mm A.F.F. FOR EACH EXISTING S.A.U./EF. REFER TO PLANS FOR SENSOR LOCATION.
2. WHEN ANY OF THE NO_2 SENSOR REACHES 3 PPM (ADJUSTABLE), SATART EXISTING S.A.U./EF AND INITIATE ALARM SIGNALS TO B.A.S..

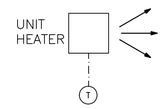
NEW NO_2 SENSOR IN EXISTING AREA

N.T.S.

NOTE :
COMMUNICATE WITH EXISTING B.A.S.
FOR OUTDOOR CONDITION.

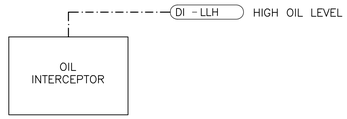
OUTDOOR AIR CONDITION

N.T.S.



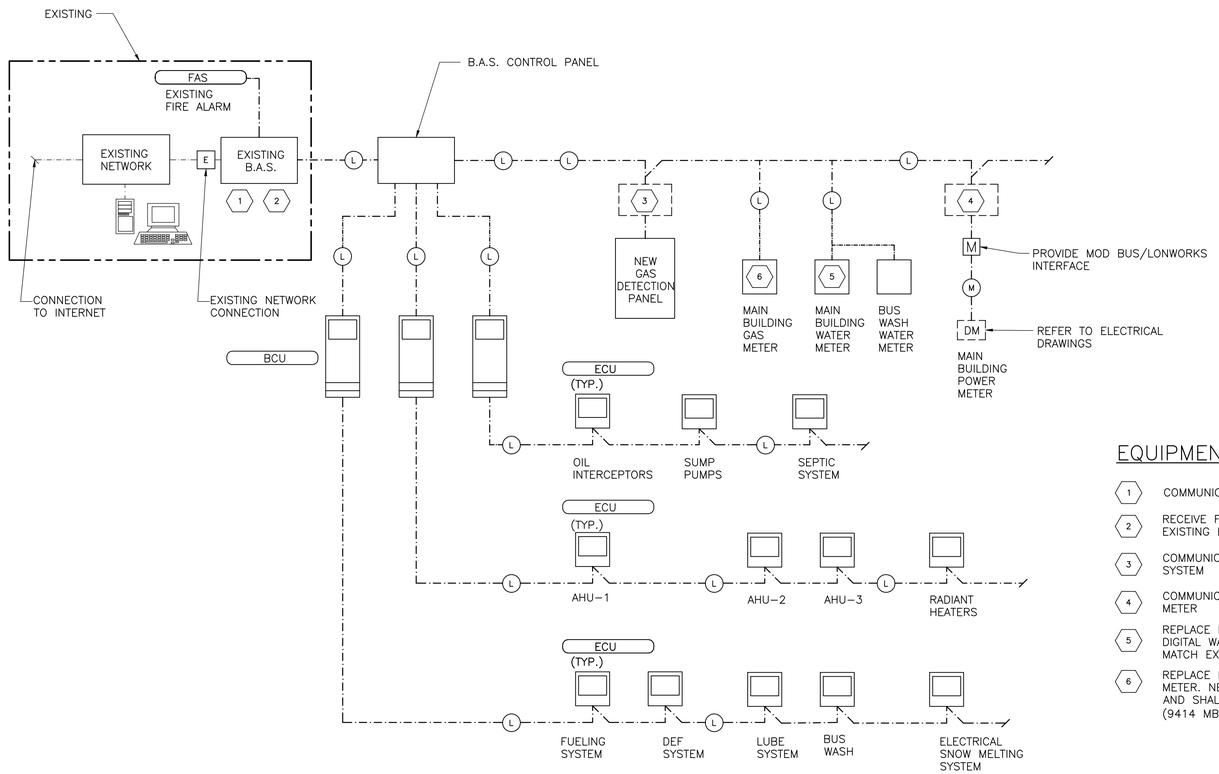
CS721 ELECTRIC UNIT HEATER

NO B.A.S. CONTROL N.T.S.



CS203 OIL INTERCEPTOR

N.T.S.



EQUIPMENT IDENTIFICATION:

1. COMMUNICATE WITH EXISTING B.A.S.
2. RECEIVE FIRE ALARM SIGNAL THROUGH EXISTING B.A.S.
3. COMMUNICATE WITH NEW GAS DETECTION SYSTEM
4. COMMUNICATE WITH BUILDING POWER METER
5. REPLACE EXISTING WATER METER WITH NEW DIGITAL WATER METER. NEW WATER METER TO MATCH EXISTING.
6. REPLACE EXISTING GAS METER WITH NEW DIGITAL METER. NEW METER TO MATCH EXISTING GAS METER AND SHALL BE APPROVED BY LOCAL GAS COMPANY. (9414 MBH AT 2 PSIG)

1 / M-008 B.A.S. ARCHITECTURE

N.T.S.

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

CONTROL LEGEND:

- BUILDING CONTROLLER UNIT — BCU
- EQUIPMENT CONTROLLER UNIT — ECU
- FUTURE BCU
- FUTURE ECU
- FIELD WIRING
- COPPER LAN WIRING
- FIBRE LAN WIRING
- RJ45 CONNECTOR PAIR
- SC CONNECTOR PAIR
- M — MOD BUS COMMUNICATIONS BRIDGE
- DM — DIGITAL POWER METER (DIV. 16)
- E — ETHERNET CABLING (DIV. 16)
- ETHERNET CONNECTION
- B — BACNET NETWORK (DIV. 15)
- L — LONWORKS NETWORK (DIV. 15)
- M — MOD BUS TWISTED PAIR (DIV. 16)
- A — LONWORKS CHANNEL "A" (OR B, C, D)
- R — RS 232
- LON WORK LAN REPEATER AS REQUIRED
- D — BMS FIELD DEVICE
- C — BMS CONTROLLER
- E — ETHERNET MEDIA CONVERTOR
- A — ETHERNET ACCESS SWITCH
- S — CORE BMS ETHERNET SWITCH

CONTROLS ABBREVIATIONS

FIRST LETTER		SECOND LETTER		THIRD LETTER		FOURTH LETTER	
A	AIR	A	H-O-A STATUS	H	HIGH	H	HIGH
C	COMPRESSED GAS	C	CLOSE	L	LOW	L	LOW
D	DAMPER	E	VOLTAGE	X	TRANSMITTER		
E	EQUIPMENT	F	FIRE (ALARM) SMOKE	Z	INDICATING TRANSMITTER		
G	NATURAL GAS	FL	FLOW	D	DIFFERENTIAL		
L	LIQUID	H	HUMIDITY				
S	STEAM	I	CURRENT				
V	VALVE	L	LEVEL				
M	MISCELLANEOUS	O	OPEN				
		OL	OVERLOAD				
		OR	OVERRIDE				
		P	PRESSURE				
		SS	START/STOP				
		ST	STATUS				
		T	TEMPERATURE				
		V	VELOCITY/SPEED				
		WT	WINDING TEMPERATURE				
		X	POSITION				
		Y	SERIAL COMM'S				

BMS POINT

NOTE: IF AN INSTRUMENT IS NOT DESIGNATED AS A TRANSMITTER 'X' OR AN INDICATING TRANSMITTER 'Z', IT IS A SENSOR OR SWITCH, DEPENDING ON POINT TYPE.

XX-YYYY
- POINT FUNCTION ABBREVIATION
- POINT TYPE
  - AI : ANALOG INPUT
  - AO : ANALOG OUTPUT
  - DI : DIGITAL INPUT
  - DO : DIGITAL OUTPUT
  - HW : HARDWIRED
  - SC : SERIAL COMMUNICATION

EXAMPLE: DO-ESS
- START/STOP
- EQUIPMENT
- DIGITAL OUTPUT

GENERAL NOTES:

1. FOR GENERAL SYSTEM ARCHITECTURE INTENT ONLY. DEVELOPMENT OF SYSTEM ARCHITECTURE, INCLUDING QUANTITY AND TYPE OF DEVICES BY CONTROLS CONTRACTOR.
2. NOT ALL ECU UNITS ARE SHOWN FOR CLARITY. THIS DRAWING TO BE DEVELOPED AND COMPLETED BY THE CONTROLS CONTRACTOR AS PART OF THE SHOP DRAWING SUBMISSION AND RECORD DRAWINGS. OBTAIN A COPY OF THE AUTOCAD FILE FROM THE CONSULTANT AT THE START OF THE PROJECT.
3. REFER TO M-001 FOR ADDITIONAL LEGEND AND SYMBOL
4. ALL SERVICES SHOWN ARE NEW UNLESS NOTED OTHERWISE

METROLINX PROJECT NO. 129709

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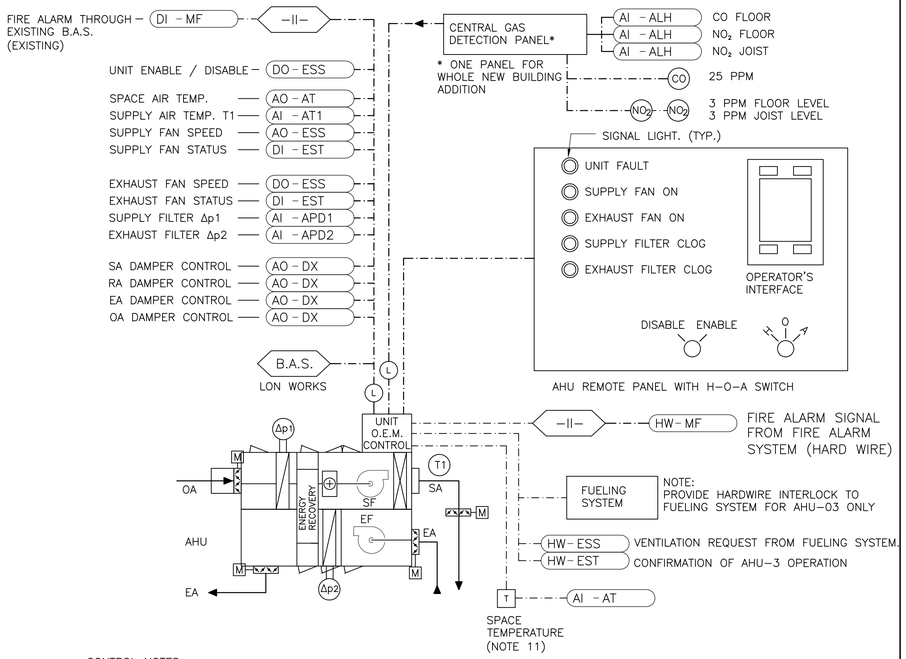
ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
B.A.S.
SCHEMATIC

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	M-008	0	51/92

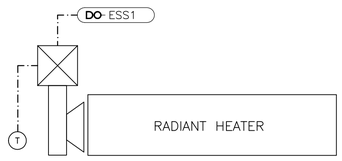


CONTROL NOTES

1. AHU CONTROLLED BY UNIT O.E.M. CONTROLLER. ALL POINTS WILL BE PROVIDED ON GRAPHICS AT B.A.S..
2. PROVIDE REMOTE PANEL WITH H-O-A (HAND-OFF-AUTO) SWITCH FOR EACH AHU.
   WHEN H-O-A ON "HAND" POSITION, AHU TO BE CONTROLLED BY ITS STANDALONE O.E.M. CONTROLLER REGARDLESS B.A.S. SETTINGS
   WHEN H-O-A ON "OFF" POSITION, TURN OFF AHU AND CLOSE ALL ASSOCIATED MOTORIZED DAMPERS
   WHEN H-O-A ON "AUTO" POSITION, AHU TO BE INTERFACE WITH B.A.S. CONTROLS
3. ALL ANALOG INPUT AHU POINTS WILL HAVE ASSOCIATED HIGH AND LOW ALARM.
4. EACH ANALOG OUTPUT POINT WILL HAVE AN ASSOCIATED SET POINT.
5. ALL SET VALUES ARE FIELD ADJUSTABLE.
6. CO DETECTOR AT +1200 A.F.F. MONITORS CARBON MONOXIDE LEVEL AT MAXIMUM 25 PPM.
7. NO_2 DETECTORS AT TWO HEIGHTS: +1200 A.F.F. AND JOIST LEVEL, NO_2 TO MAXIMUM 3PPM, MAXIMUM LEVEL, MAINTAINING AHU IN OPERATION.
8. FOR NUMBER OF TOXIC GAS DETECTORS, REFER TO HVAC PLAN
9. B.A.S. (DDC) CONTROLLERS CONTROL UNITS ACCORDING TO OCCUPIED/UNOCCUPIED MODE. DURING OCCUPIED MODE THEY MODULATE FAN SPEED TO MAINTAIN MIN. 10% NEGATIVE PRESSURE INSIDE
10. PROVIDE POSITION SWITCH FOR EACH MOTORIZED DAMPER
11. SPACE TEMPERATURE SENSOR SHALL BE ABLE TO ADJUST THE TEMPERATURE SETPOINT ±2°C
12. WHEN AHU UNDER "HAND" MODE, THE SPACE TEMPERATURE SETPOINT IS FROM SPACE TEMPERATURE SENSOR. WHEN AHU UNDER "AUTO" MODE, THE SPACE TEMPERATURE SETPOINT IS FROM BAS.
13. PROVIDE HARDWIRE CONNECTION FROM BUILDING FIRE ALARM SYSTEM TO EACH AHU
14. AHU-3 START UPON REQUEST FROM FUELING SYSTEM AND SEND OPERATION CONFIRMATION SIGNAL TO FUELING SYSTEM. CONTINUOUSLY OPERATE AHU-3 FOR MINIMUM 15 MINUTES (ADJUSTABLE) AFTER FUELING IS COMPLETED.

CS714 AIR HANDLING UNIT (AHU)

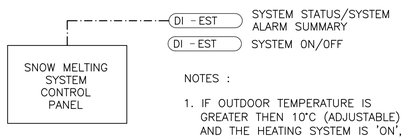
N.T.S.



NOTE :
UNIT WILL BE ONLY ENERGIZED WHEN OUTDOOR AIR TEMPERATURE BELOW 10°C.

CS724 RADIANT HEATERS-NATURAL GAS

N.T.S.

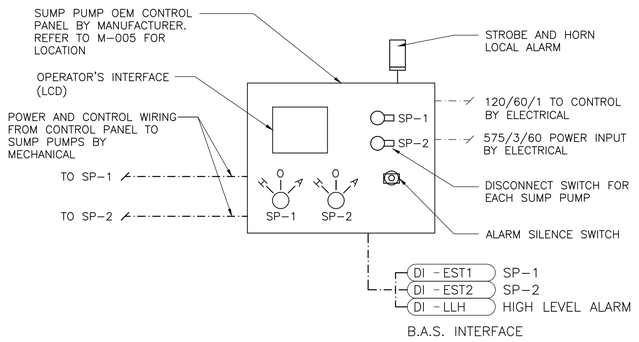


NOTES :

1. IF OUTDOOR TEMPERATURE IS GREATER THEN 10°C (ADJUSTABLE) AND THE HEATING SYSTEM IS 'ON', INITIATE AN ALARM SIGNAL.
2. FOR NUMBER OF ELECTRIC SNOW MELTING CONTROL PANEL AND LOCATIONS, REFER TO ELECTRIC DRAWINGS.

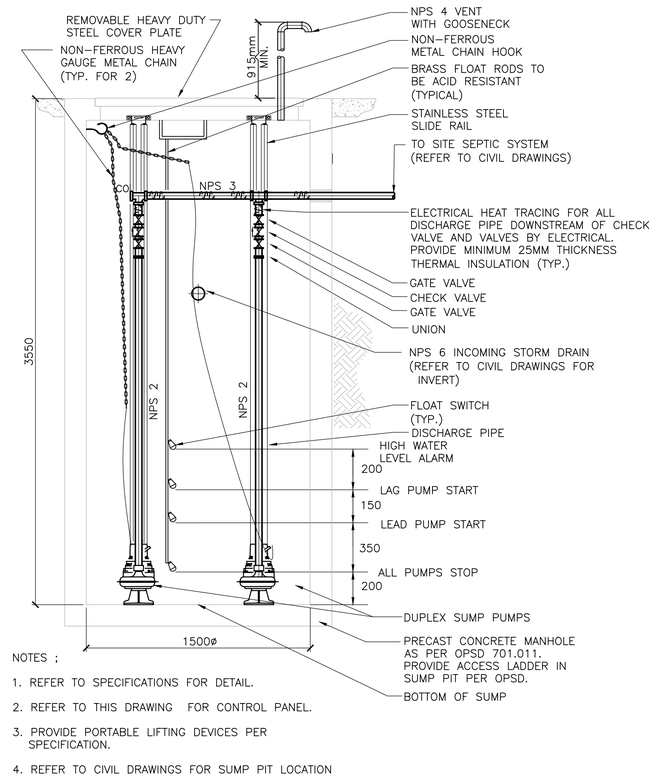
ELECTRIC SNOW MELTING SYSTEM INTERFACE

N.T.S.



SUMP PUMP CONTROL PANEL

N.T.S.



NOTES ;

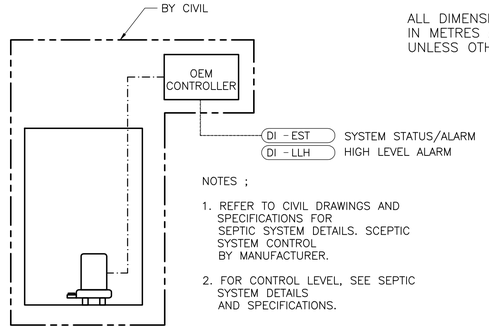
1. REFER TO SPECIFICATIONS FOR DETAIL.
2. REFER TO THIS DRAWING FOR CONTROL PANEL.
3. PROVIDE PORTABLE LIFTING DEVICES PER SPECIFICATION.
4. REFER TO CIVIL DRAWINGS FOR SUMP PIT LOCATION

CS412 DUPLEX SANITARY SUMP PUMP DETAIL

N.T.S.

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

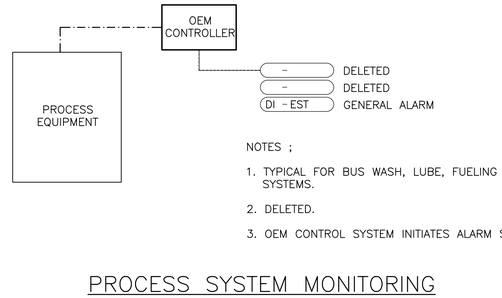


NOTES ;

1. REFER TO CIVIL DRAWINGS AND SPECIFICATIONS FOR SEPTIC SYSTEM DETAILS. SCEPTIC SYSTEM CONTROL BY MANUFACTURER.
2. FOR CONTROL LEVEL, SEE SEPTIC SYSTEM DETAILS AND SPECIFICATIONS.

CS412 SEPTIC SYSTEM

N.T.S.

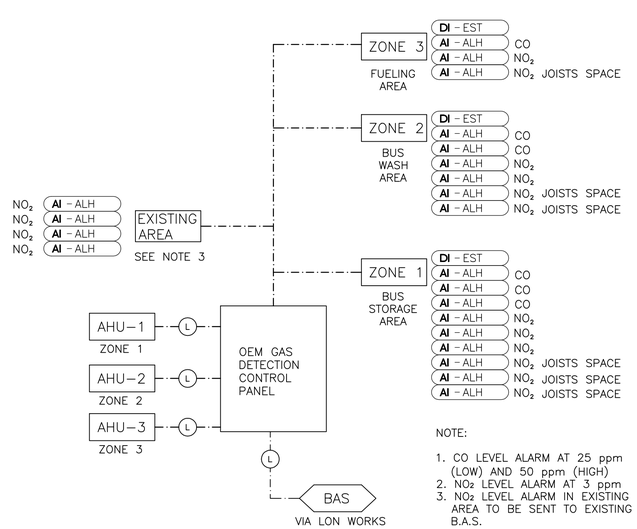


NOTES ;

1. TYPICAL FOR BUS WASH, LUBE, FUELING AND DEF SYSTEMS.
2. DELETED.
3. OEM CONTROL SYSTEM INITIATES ALARM SIGNALS TO B.A.S..

PROCESS SYSTEM MONITORING

N.T.S.



NOTE:

1. CO LEVEL ALARM AT 25 ppm (LOW) AND 50 ppm (HIGH)
2. NO_2 LEVEL ALARM AT 3 ppm
3. NO_2 LEVEL ALARM IN EXISTING AREA TO BE SENT TO EXISTING B.A.S.

CS857 GAS DETECTION SYSTEM

N.T.S.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS	
DWG NO.	TITLE

ISSUE			
1	16/06/30	RECORD	
0	14/09/05	ISSUED FOR CONSTRUCTION	
0	14/05/15	TENDER	
0	14/03/18	TENDER	
B	14/01/06	95% CLIENT REVIEW	
A	13/11/21	50% CLIENT REVIEW	
NO.	DATE	ISSUED FOR	

REVISIONS		
1	15/04/16	CCN-05
REV.	DATE	

DRAWN BY: A.P. 14/01/03	DESIGNED BY: S.L. 14/01/03
CHECKED BY: S.L. 14/01/06	APPROVED BY: E.C. 14/01/06
SCALE: N.T.S.	FULL SIZE ONLY

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

CONTROL DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	M-009	1	52/92

METRIC

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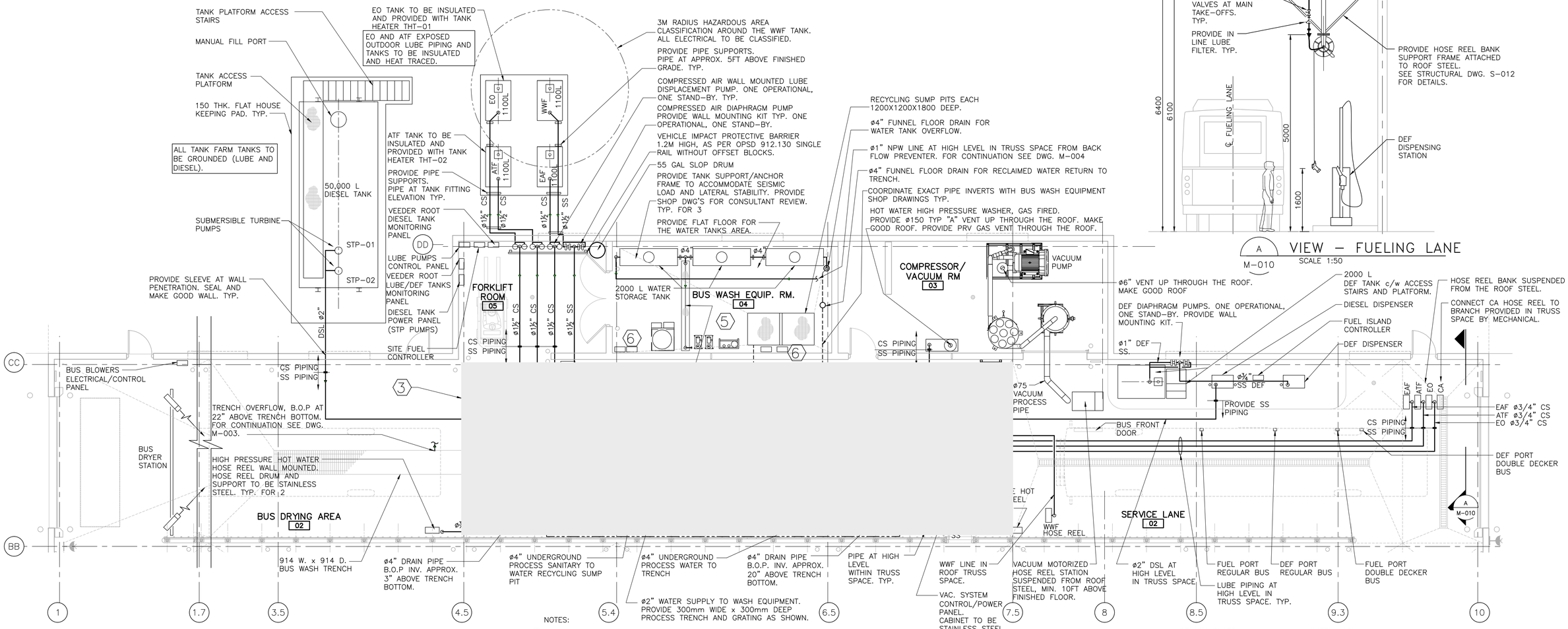
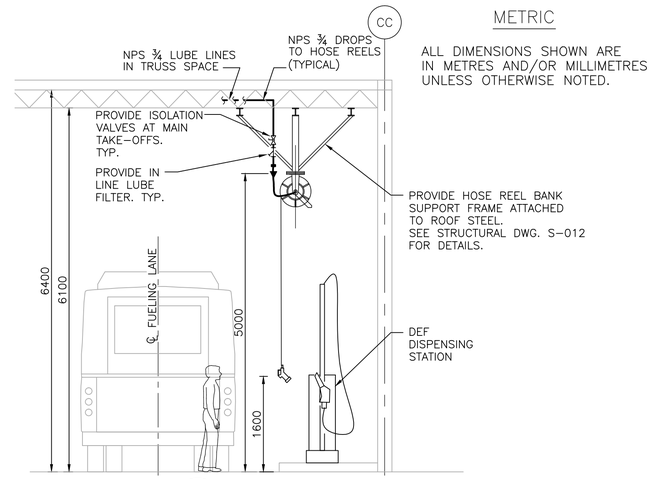




A VIEW – FUELING LANE
M-010 SCALE 1:50

PARTIAL PLAN

SCALE 1:75

NOTES:

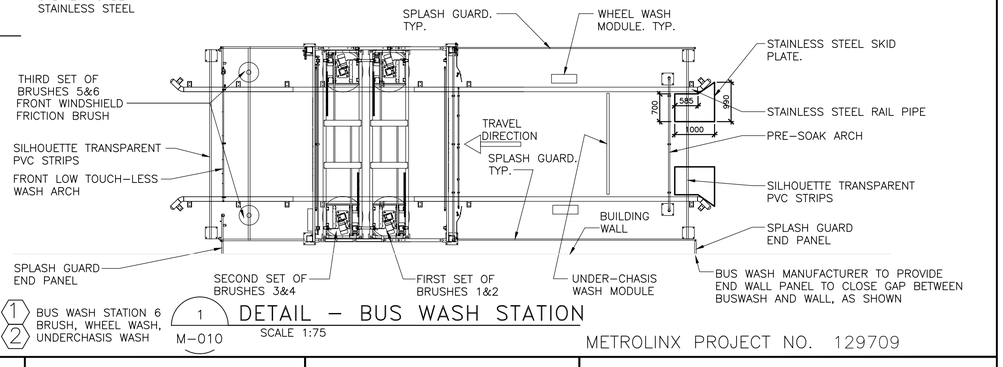
1. COORDINATE RECLAIM PIT PIPING INVERTS WITH BUS WASH EQUIPMENT SHOP DRAWINGS.
2. BUS WASH SHOWN IS BASED ON WESTMATIC EQUIPMENT. CONTRACTOR IS RESPONSIBLE TO DO ALL REQUIRED INTEGRATION (STRUCTURAL, MECHANICAL, ELECTRICAL) FREE OF CHARGE IF OTHER BUS WASH EQUIPMENT IS SELECTED.
3. ALL WALLS, FLOORS TO BE EPOXY COATED IN THE BUS WASH EQUIPMENT STATION SHADED AREA (GRID LINE 4.5 TO 7.5). STEEL ROOF STRUCTURE TO BE FACTORY EPOXY COATED IN THE HATCHED AREA (GRID LINE 4.5 TO 7.5). ALL ELECTRICAL/MECHANICAL/PROCESS PIPING, DUCTWORK OR ANY METAL COMPONENTS IN HATCHED AREA TO BE EPOXY COATED. USE ONLY GALVANIZED STEEL AS A MINIMUM, FOR BOLTS, FASTENERS, BRACKETS, MISCELLANEOUS METAL, ETC.
4. ALL PROCESS PIPING IN THE BUS WASH STATION AREA (WITHIN LIMITS SHOWN) TO BE 316 STAINLESS STEEL, SCHEDULE AS PER PRESSURE RATING REQUIRED. PROVIDE FLANGED CONNECTION AT MATERIAL TRANSITION C/W DIELECTRIC GASKET AS REQUIRED.
5. BUS WASH EQUIPMENT.FOR EXACT LAYOUT REFER TO SHOP DRAWINGS.
6. BUS WASH CONTROL PANELS (REGULAR WASH, WHEEL WASH, CHASIS WASH, RECYCLING PIT PUMPS AND RECYCLING MODULE PUMPS) COORDINATE EXACT LOCATION WITH EQUIPMENT LAYOUT SHOP DWG'S.

GENERAL NOTES:

1. READ THIS DRAWING IN CONJUNCTION WITH APPLICABLE PROCESS FLOW DIAGRAMS.
2. READ THIS DRAWING IN CONJUNCTION WITH APPLICABLE MECHANICAL SPECIFICATIONS AND STANDARD MECHANICAL DETAILS.
3. THIS DRAWING IS NOT A SHOP DRAWING. COORDINATE INSTALLATION OF ALL PIPING SHOWN WITH ALL OTHER BUILDING SERVICES PRIOR TO FABRICATION.
4. NOT ALL VALVES/FITTINGS SHOWN. FOR DETAILS REFER TO APPLICABLE FLOW DIAGRAMS, PROCESS SPECIFICATIONS AND APPLICABLE CODE REQUIREMENTS. PROVIDE ISOLATION VALVES AT ALL TAKE-OFFS AND UPSTREAM OF EQUIPMENT SERVED. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL PROCESS FLOW DIAGRAMS/SHOP DRAWINGS FOR COMPLETE SYSTEMS, FOR TSSA APPROVALS OR FOR ANY OTHER AUTHORITIES HAVING JURISDICTION. CONTRACTOR TO CONFIRM ALL MAIN DISTRIBUTION PIPING SIZES SHOWN, TO SIZE ALL SERVICE FLUIDS DISTRIBUTION SYSTEMS (PUMPS, FITTINGS, VALVES) BASED ON NUMBER OF USERS AS INDICATED IN THIS DRAWING.
5. FOR DETAILS ON SUMP PITS, TRENCHES, TANK PADS, ETC. COORDINATE WITH MECHANICAL, STRUCTURAL AND CIVIL DRAWINGS.
6. ALL EQUIPMENT SHOWN TO BE PROVIDED BY CONTRACTOR UNLESS OTHERWISE NOTED. ALL REQUIRED SERVICES (I.E. POWER, CONTROLS, DCW, GAS, CA) AND INSTALLATION OF ALL PROCESS EQUIPMENT TO BE PROVIDED BY CONTRACTOR

ABBREVIATIONS:

EAF	ENGINE AUTOMOTIVE ANTIFREEZE
EO	ENGINE OIL
ATF	AUTOMATIC TRANSMISSION FLUID
DSL	DIESEL
DEF	DIESEL EXHAUST FLUID (UREA)
CA	COMPRESSED AIR
WWF	WINDSHIELD WASHER FLUID
DCW	DOMESTIC COLD WATER
CO	FLOOR CLEANOUT
HPHW	HIGH PRESSURE HOT WATER
BOP	BOTTOM OF PIPE



1 BUS WASH STATION 6 BRUSH, WHEEL WASH, UNDERCHASIS WASH
2

1 DETAIL – BUS WASH STATION
M-010 SCALE 1:75

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS			
		0	14/05/15	TENDER				
		0	14/03/18	TENDER				
		D	14/01/10	95% REVIEW				
		C	13/11/21	50% REVIEW	1	16/05/27	RECORD	
		B	13/10/07	25% REVIEW	1	14/09/05	CONSTRUCTION	
		A	13/09/26	25% REVIEW	1	14/07/16	ADDENDUM	
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE		

DRAWN BY: M.C. 13/10/30	DESIGNED BY: M.C. 13/10/30
CHECKED BY: B.B. 13/11/18	APPROVED BY: E.C. 13/11/18
SCALE: AS NOTED	FULL SIZE ONLY

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

PROCESS EQUIPMENT AND PIPING LAYOUT AND DETAILS

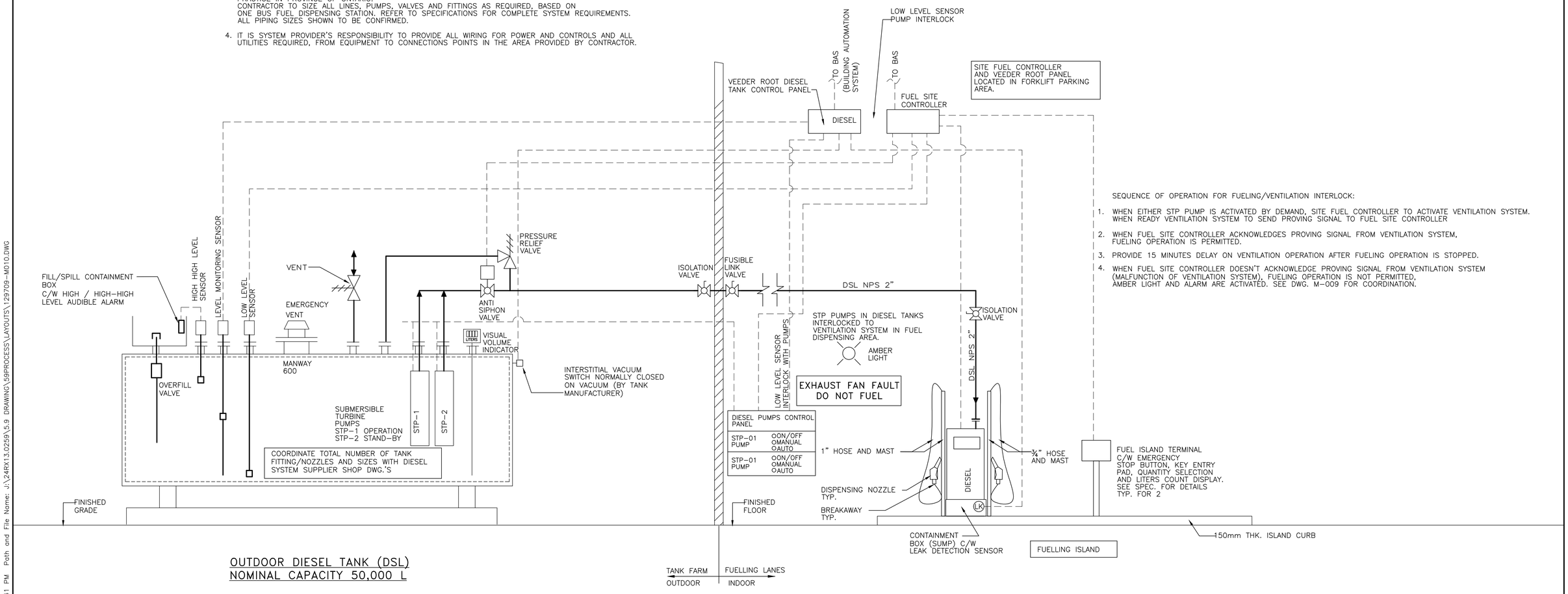
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	M-010	1	53/92

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

GENERAL NOTES:

1. THIS DWG. REPRESENTS A SCHEMATIC DIESEL FUEL STORAGE AND DISPENSING SYSTEM, TO BE USED ONLY AS DESIGN INTENT AND REFERENCE FOR SCOPE OF WORK FOR THE DIESEL STORAGE AND DISPENSING SYSTEM SUPPLIER/CONTRACTOR.
2. NOT ALL COMPONENTS/FITTINGS ARE SHOWN. PIPING SIZES SHOWN TO BE CONFIRMED.
3. SYSTEM SUPPLIER/CONTRACTOR TO DESIGN A COMPLETE SYSTEM AND PROVIDE SHOP DWG'S FOR CONSULTANT'S REVIEW INDICATING A COMPLETE SYSTEM, C/W ALL PIPING, PUMPS, FITTINGS AND CONTROLS AS PER TSSA LIQUID FUELS HANDLING CODE, LATEST REVISION. SHOP DWG'S TO BE STAMPED BY PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN PROVINCE OF ONTARIO.
CONTRACTOR TO SIZE ALL LINES, PUMPS, VALVES AND FITTINGS AS REQUIRED, BASED ON ONE BUS FUEL DISPENSING STATION. REFER TO SPECIFICATIONS FOR COMPLETE SYSTEM REQUIREMENTS.
ALL PIPING SIZES SHOWN TO BE CONFIRMED.
4. IT IS SYSTEM PROVIDER'S RESPONSIBILITY TO PROVIDE ALL WIRING FOR POWER AND CONTROLS AND ALL UTILITIES REQUIRED, FROM EQUIPMENT TO CONNECTIONS POINTS IN THE AREA PROVIDED BY CONTRACTOR.



OUTDOOR DIESEL TANK (DSL)
NOMINAL CAPACITY 50,000 L

SEQUENCE OF OPERATION FOR FUELING/VENTILATION INTERLOCK:

1. WHEN EITHER STP PUMP IS ACTIVATED BY DEMAND, SITE FUEL CONTROLLER TO ACTIVATE VENTILATION SYSTEM. WHEN READY VENTILATION SYSTEM TO SEND PROVING SIGNAL TO FUEL SITE CONTROLLER
2. WHEN FUEL SITE CONTROLLER ACKNOWLEDGES PROVING SIGNAL FROM VENTILATION SYSTEM, FUELING OPERATION IS PERMITTED.
3. PROVIDE 15 MINUTES DELAY ON VENTILATION OPERATION AFTER FUELING OPERATION IS STOPPED.
4. WHEN FUEL SITE CONTROLLER DOESN'T ACKNOWLEDGE PROVING SIGNAL FROM VENTILATION SYSTEM (MALFUNCTION OF VENTILATION SYSTEM), FUELING OPERATION IS NOT PERMITTED, AMBER LIGHT AND ALARM ARE ACTIVATED. SEE DWG. M–009 FOR COORDINATION.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		0	14/05/15	TENDER			
		0	14/03/18	TENDER			
		D	14/01/10	95% REVIEW			
		C	13/11/21	50% REVIEW			
		B	13/10/07	25% REVIEW	0	16/05/27	RECORD
		A	13/09/26	25% REVIEW	0	14/09/05	CONSTRUCTION
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: A.G. 13/11/18	DESIGNED BY: M.C. 13/11/18
CHECKED BY: B.B. 13/11/18	APPROVED BY: E.C. 13/11/18
SCALE: NONE	FULL SIZE ONLY

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ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
DIESEL PROCESS FLOW DIAGRAM

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	M–011	0	54/92

METRIC

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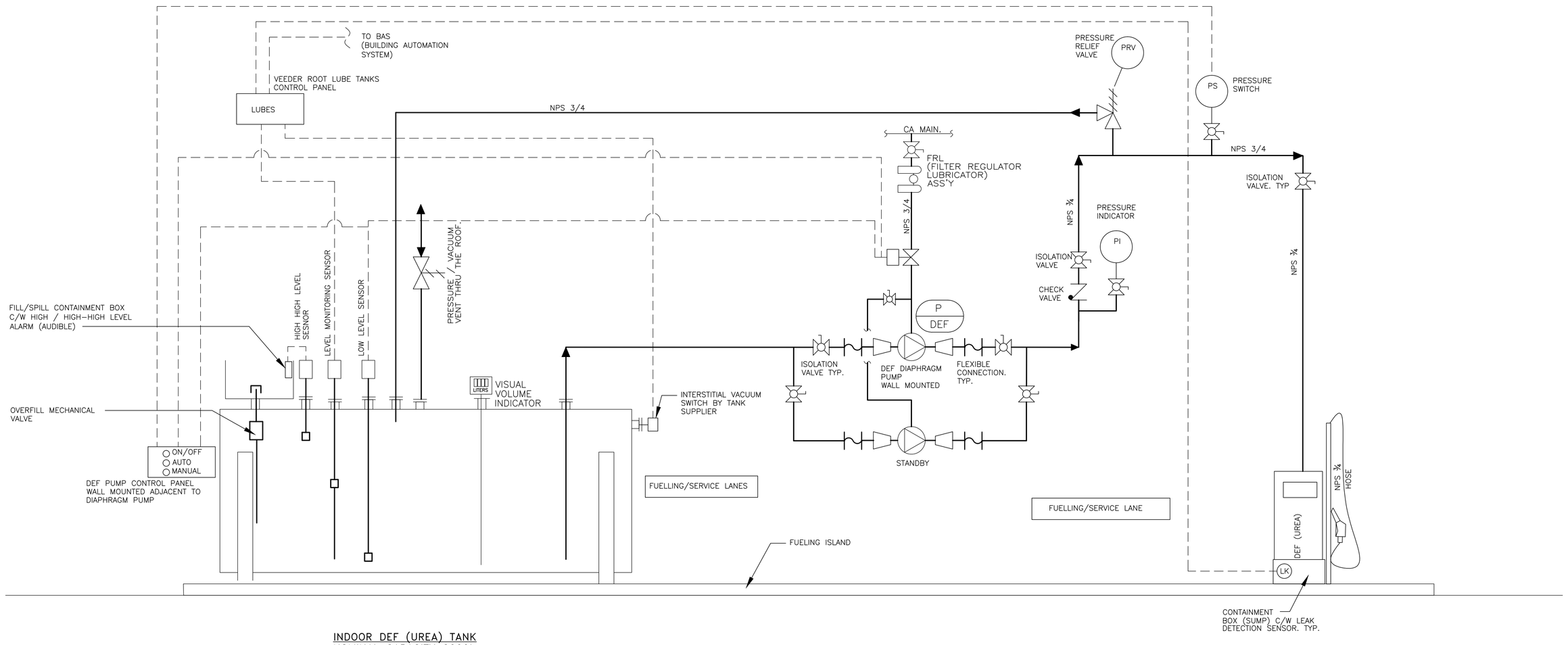
GENERAL NOTES:

1. THIS DRAWING REPRESENTS A SCHEMATIC DEF STORAGE AND DISPENSING SYSTEM, TO BE USED ONLY AS DESIGN INTENT AND REFERENCE FOR SCOPE OF WORK FOR THE DEF STORAGE AND DISPENSING SYSTEM SUPPLIER/CONTRACTOR.
2. NOT ALL COMPONENTS/FITTINGS ARE SHOWN. PIPING SIZES SHOWN TO BE CONFIRMED.
3. SYSTEM SUPPLIER/CONTRACTOR TO DESIGN A COMPLETE SYSTEM AND PROVIDE SHOP DRAWINGS FOR CONSULTANT'S REVIEW INDICATING A COMPLETE SYSTEM, C/W ALL PIPING, PUMPS, FITTINGS AND CONTROLS. SHOP DRAWINGS TO BE STAMPED BY PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN PROVINCE OF ONTARIO. CONTRACTOR TO SIZE ALL LINES, PUMPS, VALVES AND FITTINGS AS REQUIRED, BASED ON ONE BUS DEF DISPENSING STATION. REFER TO SPECIFICATIONS FOR COMPLETE SYSTEM REQUIREMENTS. ALL PIPING SIZES SHOWN TO BE CONFIRMED.
4. IT IS SYSTEM PROVIDER'S RESPONSIBILITY TO PROVIDE ALL WIRING FOR POWER AND CONTROLS AND ALL UTILITIES REQUIRED, FROM EQUIPMENT TO CONNECTIONS POINTS IN THE AREA PROVIDED BY CONTRACTOR.



INDOOR DEF (UREA) TANK
NOMINAL CAPACITY 2000L

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		0	14/05/15	TENDER			
		0	14/03/18	TENDER			
		D	14/01/10	95% REVIEW			
		C	13/11/21	50% REVIEW			
		B	13/10/07	25% REVIEW	0	16/05/27	RECORD
		A	13/09/26	25% REVIEW	0	14/09/05	CONSTRUCTION
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: A.G. 13/11/18	DESIGNED BY: M.C. 11/11/18
CHECKED BY: B.B. 13/11/18	APPROVED BY: E.C. 13/11/18
SCALE: NONE	FULL SIZE ONLY

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ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

UREA (DEF) PROCESS FLOW DIAGRAM

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	M-012	0	55/92

METRIC

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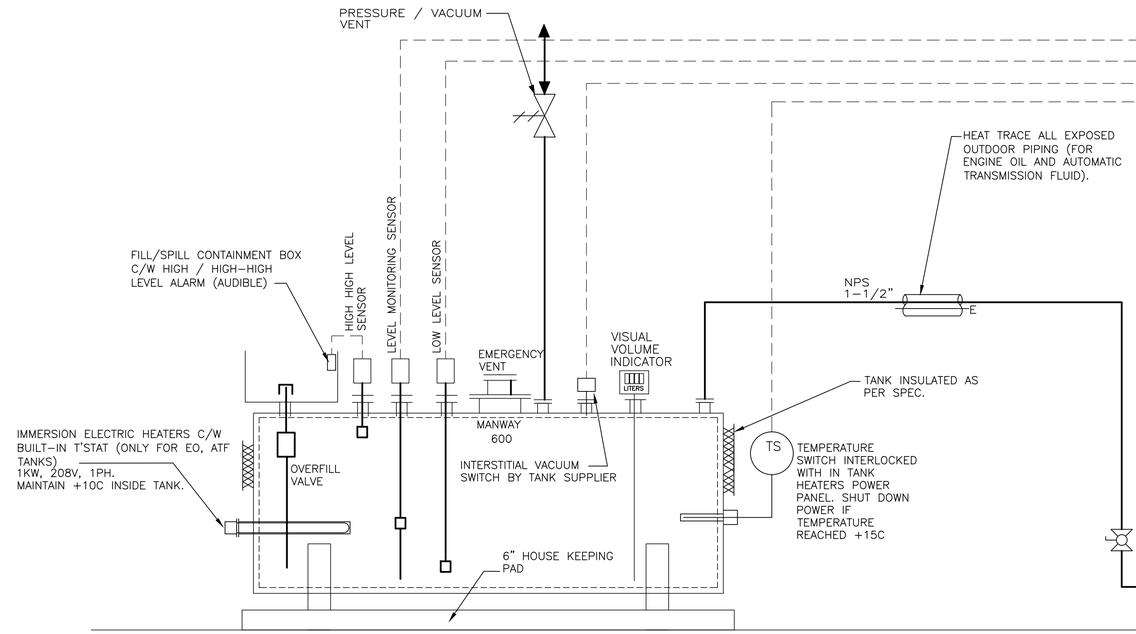
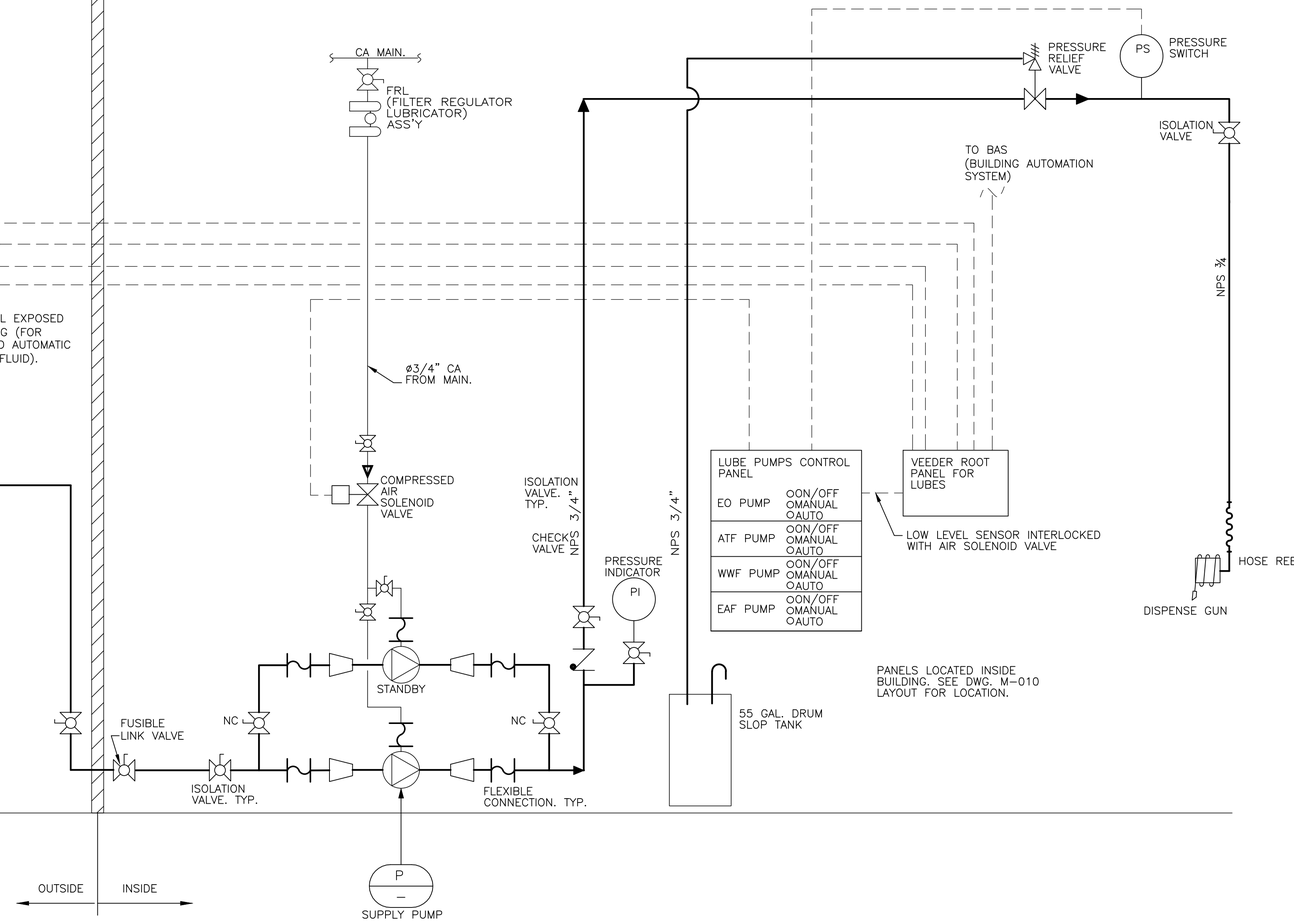
GENERAL NOTES:

1. THIS DWG. REPRESENTS A SCHEMATIC LUBE STORAGE AND DISPENSING SYSTEM, TO BE USED ONLY AS DESIGN INTENT AND REFERENCE FOR SCOPE OF WORK FOR THE LUBE STORAGE AND DISPENSING SYSTEM SUPPLIER/CONTRACTOR.
2. NOT ALL COMPONENTS/FITTINGS ARE SHOWN. PIPING SIZES SHOWN TO BE CONFIRMED.
3. SYSTEM SUPPLIER/CONTRACTOR TO DESIGN A COMPLETE SYSTEM AND PROVIDE SHOP DWG'S FOR CONSULTANT'S REVIEW INDICATING A COMPLETE SYSTEM, C/W ALL PIPING, PUMPS, FITTINGS AND CONTROLS AS PER TSSA LIQUID FUELS HANDLING CODE, LATEST REVISION. SHOP DWG'S TO BE STAMPED BY PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN PROVINCE OF ONTARIO. CONTRACTOR TO SIZE ALL LINES, PUMPS, VALVES AND FITTINGS AS REQUIRED, BASED ON ONE HOSE REEL DISPENSING STATION. REFER TO SPECIFICATIONS FOR COMPLETE SYSTEM REQUIREMENTS. ALL PIPING SIZES SHOWN TO BE CONFIRMED.
4. IT IS SYSTEM PROVIDER'S RESPONSIBILITY TO PROVIDE ALL WIRING FOR POWER AND CONTROLS AND ALL UTILITIES REQUIRED, FROM EQUIPMENT TO CONNECTIONS POINTS IN THE AREA PROVIDED BY CONTRACTOR.



OUTDOOR FLUID STORAGE TANK



FLUID NAME	ABBREVIATION	TANK CAPACITY	TANK INSULATED & HEATED	PIPING INSULATED & HEATED	TEMPERATURE TRANSMITTER	SUPPLY PUMP	PUMP TYPE
ENGINE OIL	EO	1000 L	YES	YES	TT-EO	P-EO	DISPLACEMENT
AUTOMATIC TRANSMISSION FLUID	ATF	1000 L	YES	YES	TT-ATF	P-ATF	DISPLACEMENT
WINDSHIELD WASHER FLUID	WWF	1000 L	NO	NO	NO	P-WWF	DIAPHRAGM
ENGINE ANFIFREEZE	EAF	1000 L	NO	NO	NO	P-EAF	DISPLACEMENT

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		1	14/09/05	CONSTRUCTION			
		1	14/05/15	TENDER			
		0	14/03/18	TENDER			
		C	14/01/10	95% REVIEW			
		B	13/11/21	50% REVIEW			
		A	13/10/07	25% REVIEW	1	16/05/27	RECORD
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY:	DESIGNED BY:
A.G. 13/11/18	M.C. 13/11/18
CHECKED BY:	APPROVED BY:
B.B. 13/11/18	E.C. 13/11/18
SCALE: NONE	FULL SIZE ONLY

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

GENERAL LUBE PROCESS FLOW DIAGRAM

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	M-013	1	56/92

METRIC

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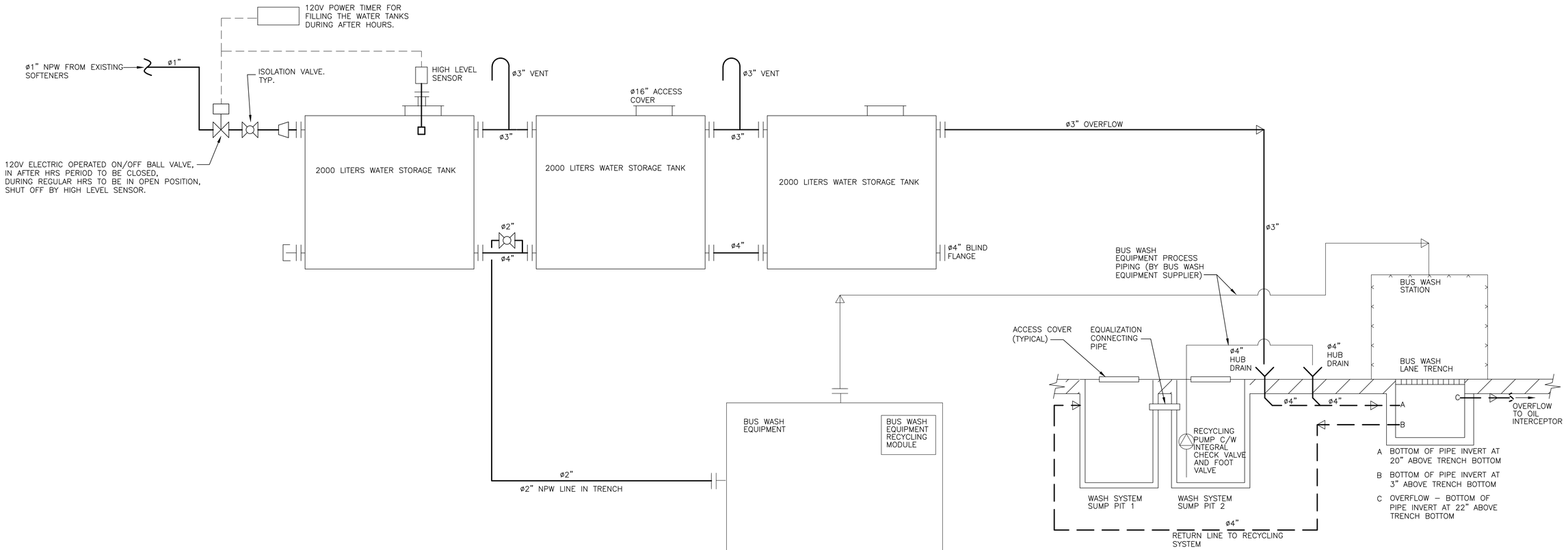

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		0	16/05/27	RECORD			
		0	14/09/05	CONSTRUCTION			
		0	14/05/15	TENDER			
		0	14/03/18	TENDER			
		B	14/01/10	95% REVIEW			
		A	13/11/21	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY:	DESIGNED BY:
A.G. 13/11/18	M.C. 13/11/18
CHECKED BY:	APPROVED BY:
B.B. 13/11/18	E.C. 13/11/18
SCALE: NONE	FULL SIZE ONLY

Disclaimer:

This drawing includes contractor's information which has not been verified by the architect/engineer as to its completeness and accuracy. The architect/engineer does not certify or guarantee the completeness and accuracy of this drawing.

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

BUS WASH WATER STORAGE SYSTEM SCHEMATIC

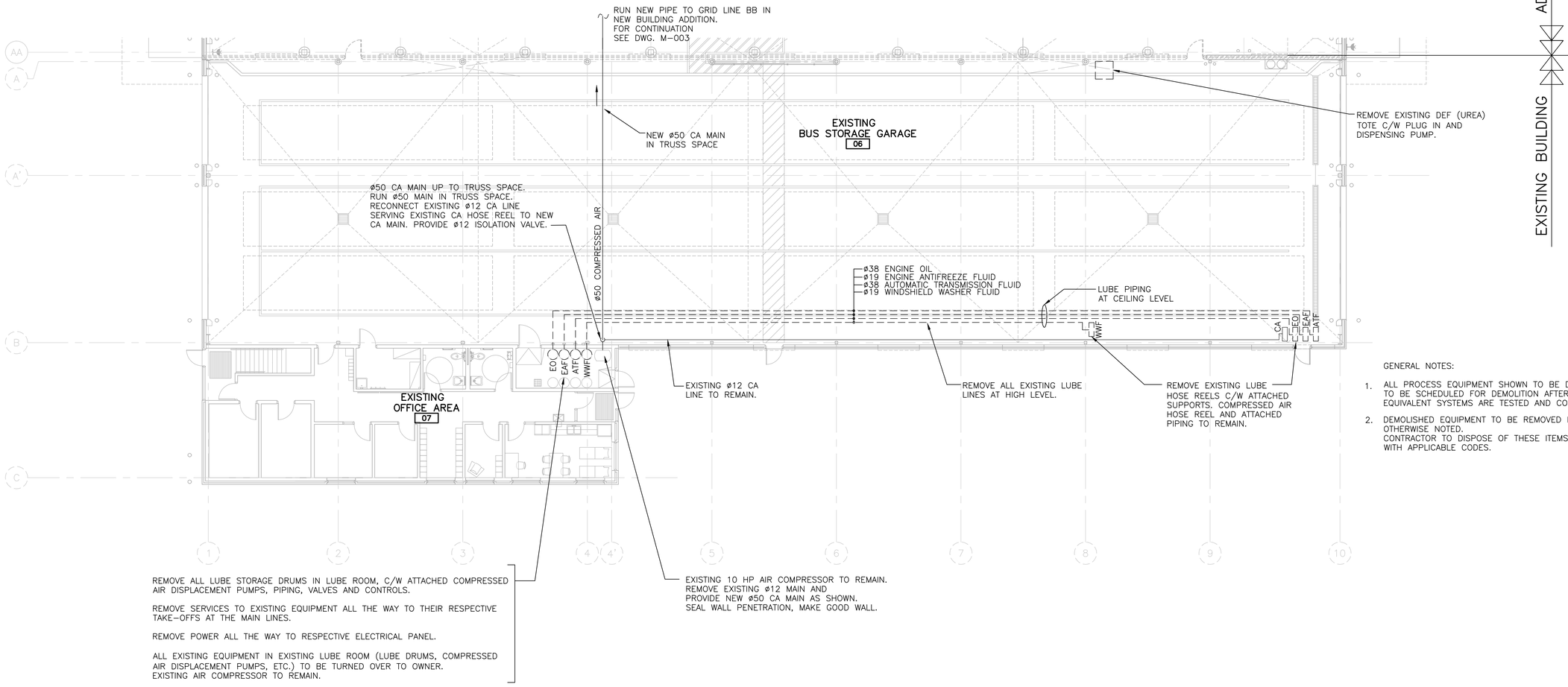
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	M-014	0	57/92

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH



GENERAL NOTES:

1. ALL PROCESS EQUIPMENT SHOWN TO BE DEMOLISHED TO BE SCHEDULED FOR DEMOLITION AFTER NEW EQUIVALENT SYSTEMS ARE TESTED AND COMMISSIONED.
2. DEMOLISHED EQUIPMENT TO BE REMOVED FROM SITE UNLESS OTHERWISE NOTED. CONTRACTOR TO DISPOSE OF THESE ITEMS IN COMPLIANCE WITH APPLICABLE CODES.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		0	16/05/27	RECORD			
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		B	14/01/10	95% REVIEW			
		A	13/11/21	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: M.C. 13/09/15	DESIGNED BY: M.C. 13/09/01
CHECKED BY: B.B. 13/11/18	APPROVED BY: E.C. 13/11/18
SCALE: 1:125	FULL SIZE ONLY

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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

EXISTING BUILDING PROCESS EQUIPMENT – DEMOLITION AND NEW WORK

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	M-015	0	58/92

GENERAL NOTES:

1. DO NOT SCALE THE DRAWINGS.
2. THE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATIONS ALL RELATED ARCHITECTURAL, MECHANICAL, ELECTRICAL & PROCESS DRAWINGS, AND OTHER RELEVANT CONTRACT DOCUMENTS.
3. THE DESIGN AND CONSTRUCTION OF ALL WORK ON THIS PROJECT IS TO CONFORM TO THE NATIONAL BUILDING CODE OF CANADA 2005, THE ONTARIO BUILDING CODE 2012 (REGULATION 332/12) AND THE FOLLOWING CSA STANDARDS, INCLUDING LATEST REVISIONS:
   CSA-A23.1-04 "CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION;"
   CSA-A23.2-04 "METHODS OF TEST AND STANDARD PRACTICES FOR CONCRETE;"
   CSA-A23.3-04 "DESIGN OF CONCRETE STRUCTURES;"
   CAN/CSA-G30.18 "BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT (GRADE Fy=400 MPa)."
4. THE CONTRACTOR SHALL FIELD CHECK AND VERIFY ALL DIMENSIONS, ELEVATIONS AND CONDITIONS AT THE SITE AND REPORT TO THE CONSULTANT ANY DISCREPANCIES OR UNSATISFACTORY CONDITIONS WHICH MAY ADVERSELY AFFECT THE PROPER COMPLETION, COST, SCHEDULE OR QUALITY OF WORK. COMMENCEMENT OF WORK BY THE CONTRACTOR IMPLIES ACCEPTANCE OF THE EXISTING CONDITIONS.
5. PROTECT ALL EXISTING STRUCTURES, UNDERGROUND UTILITIES AND OTHER EXISTING SERVICES DURING CONSTRUCTION. MAKE GOOD ANY DAMAGE RESULTING FROM THE WORK ON THIS PROJECT TO THE SATISFACTION OF THE OWNER AND CONSULTANT.
6. PROVIDE AND TAKE RESPONSIBILITY FOR ALL TEMPORARY BRACING AND SHORING.
7. TYPICAL DETAILS SHOWN ON DRAWINGS SHALL GOVERN THE WORK. IF DETAILS DIFFER ON OTHER DRAWINGS, THE MOST STRINGENT SHALL GOVERN.
8. WORK NOT INDICATED ON A PART OF THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES SHALL BE REPEATED.
9. SERVICE LIVE LOADS FOR EACH PORTION OF THE STRUCTURE ARE SHOWN. DO NOT EXCEED THESE LOADS DURING CONSTRUCTION.

EXCAVATION NOTES:

1. THE CONTRACTOR SHALL CHECK AND VERIFY THE LOCATION OF ANY UNDERGROUND UTILITIES OR OTHER EXISTING SERVICES WHICH MAY INTERFERE WITH THE WORK OF THIS PROJECT AND COORDINATE WITH THE OWNER OR OTHER AUTHORITIES AS MAY BE REQUIRED FOR THEIR RELOCATION, REMOVAL OR TEMPORARY SUPPORT.
2. PROVIDE ADEQUATE MEANS OF DEWATERING TO ENSURE EXCAVATIONS ARE DRY AT ALL TIMES. PLACEMENT OF CONCRETE SHALL ONLY BE MADE IN DRY EXCAVATIONS. THE METHOD OF DEWATERING SHALL BE SUCH AS TO PREVENT SETTLEMENT OF, AND DAMAGE TO, ANY ADJACENT STRUCTURES.
3. THE CONTRACTOR SHALL TAKE RESPONSIBILITY FOR SHORING THE EXCAVATION TO PREVENT UNDERMINING OF ADJACENT EXISTING FOUNDATIONS.

FOUNDATION NOTES:

1. ALL FOOTINGS SHALL BEAR ON NATIVE MATERIAL OR ENGINEERED FILL WITH MINIMUM FACTORED BEARING RESISTANCE OF 225 kPa, UNLESS NOTED.
2. ALL EXCAVATIONS AND FOUNDING MATERIAL SHALL BE INSPECTED AND APPROVED BY A QUALIFIED SOILS ENGINEER PRIOR TO CONCRETE PLACEMENT.
3. ALL BEARING VALUES AND GEOTECHNICAL INFORMATION ARE BASED ON REPORT NO. T040953a1 DATED NOVEMBER 21, 2013 AND SUPPLEMENTARY GEOTECHNICAL INFORMATION DATED JANUARY 7, 2014 PREPARED BY INSPEC.SOL ENGINEERING SOLUTIONS
4. PROTECT SOIL FROM WATER AND FREEZING ADJACENT TO AND BELOW ALL FOOTINGS, GRADE BEAMS AND OTHER CONCRETE POURS WITH MINIMUM 1200 mm SOIL COVER OR EQUIVALENT.
5. PROVIDE ALL SHORING WHERE REQUIRED DURING EXCAVATION TO PREVENT CAVE-IN. PROVIDE ALL UNDERPINNING OF EXISTING FOUNDATIONS. UNSHORED EXCAVATION ADJACENT EXISTING FOUNDATIONS SHALL NOT EXCEED THE RATIO OF 7 VERTICAL TO 10 HORIZONTAL OR AS DIRECTED IN WRITING BY SOIL ENGINEER.
6. ANY OVER EXCAVATION NECESSITATED BY LOCAL SOFT AREAS OR OTHER DELETERIOUS CONDITIONS SHALL BE MADE GOOD WITH 15 MPa CONCRETE FILL.
7. FOUNDATION WALL BACKFILL SHALL BE GRANULAR 'B' OR APPROVED FREE DRAINING IN-SITU MATERIAL COMPACTED IN LAYERS NOT TO EXCEED 200 mm TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.
8. BACKFILL TO PROCEED SIMULTANEOUSLY ON BOTH SIDES OF FOUNDATION WALLS UNLESS TEMPORARY SUPPORT IS PROVIDED. DO NOT BACKFILL UNTIL CONCRETE HAS ATTAINED 75% OF ITS DESIGN STRENGTH.
9. CONSTRUCTION JOINTS AND CONTROL JOINTS IN REINFORCED FOUNDATION WALLS SHALL BE LOCATED AT THE EDGE OF PIERS. MAXIMUM SPACING OF CONSTRUCTION JOINTS SHALL BE 20 m. MAXIMUM SPACING OF CONTROL JOINTS SHALL BE 8 m.
10. ALL EARTH RETAINING WALLS HAVE BEEN DESIGNED ASSUMING FREE-DRAINING BACKFILL.
11. WALLS RETAINING EARTH ARE DESIGNED TO SAFELY WITHSTAND A HORIZONTAL PRESSURE (p) AT VARIOUS DEPTH (H) GIVEN BY THE FOLLOWING EXPRESSION:

    $p = K(\gamma H + Q)$ WHERE γ = SOIL DENSITY = 18 kN/m^3,
    Q = SURCHARGE = 12 kPa, K = AT REST LATERAL EARTH PRESSURE COEFFICIENT = 0.58

12. FOUNDATIONS SHALL BE CONTRUCTED AS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL INCLUDE IN THEIR WORK ALL PROVISIONS, INCLUDING BUT NOT LIMITED TO EXCAVATION AND FORMING, AS REQUIRED TO CONSTRUCT FOUNDATIONS.

SLAB ON GRADE NOTES:

1. SEE PLAN FOR SLAB THICKNESS.
2. PLACE SLAB ON GRADE ON 200 mm OF 19 mm CLEAR STONE OR CRUSHER RUN LIMESTONE COMPACTED TO 100% STANDARD PROCTOR MAXIMUM DRY DENSITY. SUBGRADE MODULUS k = 25 MN/m^3 . REFER TO GEOTECHNICAL REPORT FOR SUB-BASE INFORMATION.
3. PRIOR TO PLACING GRANULAR FILL MATERIALS, PROOF-ROLL EXISTING SUB-GRADE TO IDENTIFY INCONSISTENCIES OR SOFT AREAS. PROCEED WITH GRANULAR PLACEMENT ONLY AFTER THESE AREAS HAVE BEEN REWORKED AND COMPACTED TO THE SATISFACTION OF THE CONSULTANT.
4. DO NOT POUR CONCRETE UNTIL ALL ELECTRICAL AND MECHANICAL CONDUITS, PIPING OR OTHER EMBEDDED SERVICES ARE INSTALLED AND VERIFIED.
5. AGREE ON LOCATION OF CONSTRUCTION JOINTS WITH CONSULTANT PRIOR TO CONSTRUCTION.
6. PROVIDE SAWCUTS AND CONTROL JOINTS AS SHOWN ON PLANS.
7. PROVIDE INTERIOR COLUMN ISOLATION JOINTS AND SAWCUTTING AS PER DETAILS SHOWN.
8. PERFORM SAWCUTTING FOR CONTROL JOINTS USING DRY METHOD (SOFF-CUT SAW) AS SOON AS POSSIBLE AFTER CONCRETE PLACEMENT WITHOUT LEAVING TREAD MARKS, DISLODGING AGGREGATE AND BEFORE UNCONTROLLED SHRINKAGE OCCURS. FILL CONTROL JOINTS, AS SPECIFIED, NO SOONER THAN 120 DAYS AFTER CONCRETE PLACEMENT.
9. FOR FLOOR FINISH SEE SPECIFICATIONS.

CONCRETE NOTES:

1. REFER TO SPECIFICATIONS FOR STANDARDS.
2. MINIMUM CONCRETE STRENGTH AT 28 DAYS SHALL BE AS FOLLOWS:
   - LEAN CONCRETE FILL ..... 15 MPa
   - FOOTINGS ..... 25 MPa
   - FOUNDATION WALLS AND PIERS ..... 25 MPa
   - SLABS ON GRADE, INTERIOR PADS ..... 25 MPa
   - WALLS, BASES/FOOTINGS FOR PITS & TRENCHES ..... 25 MPa
   - EXTERIOR PADS ..... 35 MPa (EXPOSURE CLASS C-1)
3. MINIMUM CONCRETE COVER TO REINFORCING BARS:

	EXPOSED TO EARTH OR WEATHER	NOT EXPOSED TO EARTH OR WEATHER
a) CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	75 mm	
b) (i) FOR BEAMS, GIRDERS, COLUMNS & PIERS PRINCIPAL REINFORCEMENT 35M & SMALLER TIES, STIRRUPSS & SPIRALS	50 mm	40 mm
(ii) FOR SLABS, WALLS, JOIST, SHELLS AND FOLDED PLATES 20M & SMALLER	40 mm	30 mm
C) FOR BARS WITH DIAMETER d_b LARGER THAN LISTED ABOVE, THE COVER SHALL BE AT LEAST * NEED NOT BE MORE THAN 60 mm	30 mm	20 mm
d) THE RATIO OF THE COVER TO THE NOMINAL MAXIMUM AGGREGATE SIZE SHALL BE AT LEAST	1.5 d_b *	1.0 d_b *
	1.5	1.0

4. DETAIL, BEND, PLACE AND SUPPORT REINFORCING STEEL IN CONFORMANCE WITH THE LATEST RSIC MANUAL OF STANDARD PRACTICE, UNLESS NOTED OTHERWISE.
5. ALL LAP SPLICES TO BE CLASS B TENSION SPLICES. PROVIDE 1200 mm LAP SPLICES FOR WALL FOOTING TOP BARS AND 900 mm LAP SPLICES FOR WALL FOOTING BOTTOM BARS. PROVIDE 900 mm LAP SPLICES FOR FOUNDATION WALL TOP BARS AND 600 mm LAP SPLICES FOR FOUNDATION WALL BOTTOM BARS.
6. PLAIN (UNREINFORCED) CONCRETE EXPOSED TO DEICING CHEMICAL SHALL MEET EXPOSURE CLASS C-2 IN ACCORDANCE WITH CSA-A23.3-94. PROVIDE CORROSION INHIBITOR IN ALL CONCRETE OF EXPOSURE CLASS C-1.
7. USE TYPE GU PORTLAND CEMENT FOR ALL CONCRETE.
8. ALL HORIZONTAL WALL AND GRADE BEAM REINFORCING SHALL BE CONTINUOUS THROUGH PIERS. SPLICE TOP BARS AT MID-SPAN AND BOTTOM BARS AT SUPPORTS FOR ALL GRADE BEAMS.
9. WHEREVER OPENINGS OCCUR IN SLABS OR WALLS INTERRUPTING ONE OR MORE REINFORCING BARS, PROVIDE ADDITIONAL REINFORCING STEEL EQUAL TO THE REINFORCING STEEL DISPLACED BY THE OPENING UNLESS OTHERWISE SHOWN. DISTRIBUTE REINFORCEMENT EQUALLY ON EITHER SIDE OF THE OPENING AND EXTENDING THE FULL SPAN LENGTH.
10. NO SLEEVES, PIPES, HOLES OR NOTCHES SHALL BE PLACED THROUGH WALLS, GRADE BEAMS, PIERS OR SLABS EXCEPT AS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE CONSULTANT.
11. DO NOT PLACE CONCRETE UNTIL ALL DESIGNATED REINFORCING STEEL HAS BEEN PLACED AND INSPECTED AND ANY CONDUITS, PIPING OR OTHER EMBEDDED ITEMS ARE INSTALLED AND VERIFIED.
12. MAXIMUM WATER TO CEMENT RATIO (w/cm) SHALL BE 0.55 FOR ALL CONCRETE FLOOR SLABS (BOTH SLABS ON GRADE AND SLABS ON DECK).

STRUCTURAL STEEL NOTES:

1. ALL SHOP CONNECTIONS SHALL BE WELDED. ALL FIELD CONNECTIONS SHALL BE WELDED OR BOLTED USING HIGH TENSILE STRENGTH BOLTS, BEARING TYPE. CONNECTIONS SHALL BE CISC DOUBLE ANGLE BEAM CONNECTIONS FOR A325 BOLTS AND E49XX FILLET WELDS, MINIMUM SIZE OF BOLTS - M20 DIAMETER. GIRTS AND DOOR FRAMES MAY BE BOLTED WITH A307 BOLTS UNLESS THEY ARE PART OF THE BRACING SYSTEM, IN WHICH CASE HIGH-STRENGTH TENSILE BOLTS SHALL BE USED.
2. ALL WELDING SHALL BE CARRIED OUT IN ACCORDANCE WITH THE FOLLOWING CSA SPECIFICATIONS:
   W47.1-1992 (R1998) FOR QUALIFICATIONS OF WELDERS
   W48.1 TO W48.7 FOR ELECTRODES
   W59-M1989 (R1998) FOR DESIGN AND WORKMANSHIP
3. ALL COLUMN ENDS SHALL BE SAWCUT AND WELDED TO BASE/CAP PLATES.
4. ALL COLUMNS TO HAVE ANGLES AT TOP TO SUPPORT STEEL DECK WHERE REQUIRED.
5. BRACING MEMBERS SHALL BE CONNECTED FOR THE FOLLOWING (WHICHEVER IS LARGER):
   - 50% OF THE NOMINAL TENSION CAPACITY OF THE MEMBER BASED ON GROSS AREA
   - FORCES AS SHOWN ON THE DRAWINGS
   - A MINIMUM OF TWO BOLTS
6. SUPPLY, INSTALL AND REMOVE ANY TEMPORARY BRACING REQUIRED DURING CONSTRUCTION.
7. FORCES ARE DESIGNATED BY (+) FOR TENSION AND (-) FOR COMPRESSION.
8. CONNECTIONS FOR BEAMS, GIRDERS, JOISTS AND JOIST GIRDERS SUBJECT TO AXIAL FORCES SHALL BE DESIGNED FOR THE AXIAL FORCES IN ADDITION TO THE SHEAR FORCES, MOMENT FORCES/EFFECTS AND TORSION FORCES/EFFECTS. FORCES INDICATED ARE FACTORED AND IN kN. MOMENTS AND TORSIONS INDICATED ARE FACTORED AND IN kN-m.
9. ALL EXTERIOR STEEL TO BE HOT-DIPPED GALVANIZED (BOTH STRUCTURAL AND MISCELLANEOUS). THIS SHALL INCLUDE NUTS, BOLTS, WASHERS, BASE PLATES, LEVELING PLATES, ANCHOR BOLTS AND ANCHORS.
10. FILLER BEAMS AND JOISTS SHALL BE PLACED EQUALLY BETWEEN ESTABLISHED DIMENSIONS, UNLESS NOTED OTHERWISE.
11. PROVIDE WELDED STIFFENER PLATES ON BOTH SIDES OF THE WEB OF BEAMS AT POINTS OF CONCENTRATED LOAD INCLUDING BEAMS SUPPORTING COLUMNS OR RUNNING OVER TOPS OF COLUMNS. MINIMUM STIFFENER PLATE THICKNESS SHALL BE 10 mm OR FLANGE THICKNESS OF COLUMNS ABOVE OR BELOW, WHICHEVER IS GREATER. MINIMUM SIZE OF WELD SHALL BE 5 mm DOUBLE FILLET WELD, OR SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE STIFFENER, WHICHEVER IS GREATER.
12. FOR LOCATIONS OF DOOR FRAMES, WALL OPENINGS, ROOF AND FLOOR OPENINGS, ETC., AND RELATED DETAILS, SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL & PROCESS DRAWINGS.
13. ±XXX SHOWN ON PLANS DENOTES AXIAL LOADS ALONG BEAMS DUE TO WIND OR EARTHQUAKE LOADS. DESIGN BEAM TO BEAM CONNECTIONS AND BEAM TO COLUMN CONNECTIONS FOR THESE LOADS IN COMBINATION WITH ALL GRAVITY LOADS.
14. PERIMETER ROOF ANGLE SHALL BE CONTINUOUS AND BUTT WELDED TOGETHER AT JOINTS.

JOIST NOTES:

1. BRIDGING DESIGN IS THE RESPONSIBILITY OF THE JOIST MANUFACTURER. BRIDGING SHOWN ON PLANS ARE MINIMUM AS REQUIRED FOR THE STABILITY OF THE STRUCTURAL STEEL MEMBERS. JOIST MANUFACTURER SHALL LOCATE AND SPACE THE BRIDGING BASED ON REQUIREMENTS OF CAN/CSA-S16-01.
2. >|< DENOTES X-BRIDGING.
3. |-|-| DENOTES TOP CHORD/FLANGE HORIZONTAL AND BOTTOM CHORD/FLANGE TO TOP OF MEMBER BRIDGING.
4. MANUFACTURED OPEN WEB STEEL JOISTS AND JOIST GIRDERS SHALL CONFORM TO CAN/CSA-S16-01 AND CISC "RECOMMENDED PRACTICE".
5. JOIST FABRICATION DRAWINGS SHALL BEAR THE SEAL OF A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF ONTARIO.
6. JOISTS TO BE WELDED CONSTRUCTION. NO HOLES TO BE DRILLED FOR HANGERS.
7. ALL JOISTS WHICH FRAME INTO COLUMNS SHALL BE TIE JOISTS/TIE JOIST GIRDERS UNLESS NOTED OTHERWISE.
8. ALL JOISTS TO BE DESIGNED FOR ALL LOADS SHOWN ON PLANS, ELEVATIONS, SECTIONS AND DETAILS.
9. JOISTS SHOES SHALL BE 125 mm DEEP UNLESS NOTED OTHERWISE.
10. EXTEND JOIST TOP CHORDS TO SUPPORT DECK AND SIDING WHERE REQUIRED.
11. CAMBER JOISTS FOR 75% OF DEAD LOADS ONLY.
12. DESIGN JOISTS FOR MAXIMUM LIVE LOAD DEFLECTIONS OF L/240 FOR ROOF AND L/360 FOR FLOOR (U/N).

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH — CONSTRUCTION NORTH

METAL DECK NOTES:

1. ALL METAL DECK TO BE NEW AND SHALL BE DESIGNED, FABRICATED AND INSTALLED TO CONFORM TO THE REQUIREMENTS OF CAN/CSA-S136-01 "COLD FORMED STEEL STRUCTURAL MEMBERS" AND THE REQUIREMENTS OF THE CANADIAN SHEET STEEL BUILDING INSTITUTE.
2. ALL ROOF DECK SHALL BE 38 x 0.91 mm MIN. WIDE RIB DECK (U/N). REFER TO SPECIFICATION FOR COATING.
3. SPAN DECK UNITS OVER THREE OR MORE SUPPORTS FOR INCREASED RIGIDITY.
4. DESIGN AND CONNECT METAL EDGE AND CLOSURE STRIPS TO SAFELY RESIST CONSTRUCTION LOADS AND PREVENT THE LOSS OF CONCRETE/GROUT WHEN THE DECK IS CONCRETED.
5. PLACE DECK IN ACCORDANCE WITH MANUFACTURER'S SHOP DRAWINGS. END LAPS SHALL ALWAYS OCCUR OVER SUPPORTS. SIDE LAPS SHALL BE ON HALF CORRUGATION. MINIMUM ROOF DECK END LAP IS 50 mm FOR WELDED ATTACHMENT.
6. ATTACH SHEETS TO TOP OF SUPPORTS BY FUSION WELDS WITH A MINIMUM EFFECTIVE DIAMETER OF 19 mm. MAXIMUM SPACING OF FUSION WELDS AND SIDE LAP BUTTON CLINCH SHALL BE AS FOLLOWS:
   ROOF & FLOOR: 150 C/C (EACH FLUTE) TRANSVERSE TO SPAN OF DECK AND AROUND PERIMETER, WITH SIDE LAP BUTTON CLINCH @ 300 C/C AND LONGITUDINAL WELDS @ 650 C/C MAX.
7. FIELD CUTTING OF DECK UNITS SHALL BE DONE IN WORKMANLIKE MANNER. CUT OPENINGS AND REINFORCE EDGES AS REQUIRED FOR PIPES, DUCTS, HOPPERS ETC. THE MAXIMUM SIZE OF AN UNREINFORCED OPENING IS 150 mm SQUARE OR IN DIAMETER. ROOF OPENINGS LARGER THAN 450 mm WIDE AND FLOOR OPENINGS LARGER THAN 300 mm WIDE SHALL BE SUPPORTED BY STEEL FRAMING.

MASONRY NOTES:

1. THE DESIGN AND CONSTRUCTION OF ALL WORK ON THIS PROJECT IS TO CONFORM TO CSA STANDARDS CSA-S304.1-04, CSA-A371-04, CSA-A179-04 AND CAN/CSA-G30.18. PROVIDE TYPE S MORTAR IN ACCORDANCE WITH CSA STANDARD CSA-A179-04.
2. PROVIDE STANDARD, HOLLOW 15 MPa CONCRETE BLOCK UNITS UNLESS NOTED OTHERWISE. AT LOCATIONS WHERE VERTICALLY REINFORCED MASONRY IS SPECIFIED, PROVIDE 1-15M FULL HEIGHT AT EACH SIDE OF CONTROL JOINTS, AND AT CORNERS, INTERSECTIONS, ENDS OF WALLS AND TO EACH SIDE OF ALL OPENINGS, UNLESS NOTED OTHERWISE. PROVIDE MATCHING DOWELS INTO FOOTING, SLAB THICKENING OR SLAB ON DECK FOR ALL VERTICAL WALL REINF. (TYP. U/N).
3. FOR HIGH-LIFT GROUTING, PROVIDE CLEAN-OUT HOLES IN BOTTOM COURSE AND MINIMUM SLUMP OF 200 mm.
4. MASONRY GROUT SHALL BE COARSE GROUT FOR 240 mm & 190 mm BLOCK AND FINE GROUT FOR 140 mm & 90 mm BLOCK. MASONRY GROUT SHALL BE PROPORTIONED ACCORDING TO, AND MEET ALL REQUIREMENTS OF CSA-A179-04.
5. PROVIDE CONTINUOUS, HORIZONTAL, STANDARD LADDER-TYPE JOINT REINFORCEMENT @ 400 mm C/C, IN BOTTOM TWO BED JOINTS, TOP TWO BED JOINTS AND FIRST BED JOINT ABOVE AND BELOW ALL WALL OPENINGS. ALL SUCH REINF. SHALL BE SPLICED USING CLASS B LAP SPLICES (AS DEFINED IN CSA-S304.1-04). PREFABRICATED CORNER AND INTERSECTION JOINT REINFORCING PIECES SHALL BE USED.
6. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF ALL MASONRY WALLS.

DESIGN CRITERIA:

1. THE DESIGN AND CONSTRUCTION OF ALL WORK ON THIS PROJECT IS TO CONFORM TO THE NATIONAL BUILDING CODE OF CANADA 2005, THE ONTARIO BUILDING CODE 2006 (REG. 423/06) AND THE FOLLOWING CSA STANDARDS INCLUDING LATEST REVISIONS:
   CAN/CSA-S16-01 "LIMIT STATES DESIGN OF STEEL STRUCTURES;"
   CAN/CSA-G40.20/21-04 "GENERAL REQUIREMENTS FOR ROLLED OR WELDED STRUCTURAL QUALITY STEEL;"
   CAN/CSA-S136-01 "COLD FORMED STEEL STRUCTURAL MEMBERS."
2. THE STRUCTURE HAS BEEN DESIGNED TO RESIST A BASIC WIND PRESSURE OF 0.36 kPa AND SEISMIC FORCES IN ACCORDANCE WITH THE USER'S GUIDE - NBC 2005 STRUCTURAL COMMENTARIES (PART 4 OF DIVISION B) FOR Sa(0.2)=0.17, Sa(0.5)=0.10, Sa(1.0)=0.059, Sa(2.0)=0.019, I_E=1.0 (ULS), SITE CLASS D, Fa=1.3, Fv=1.4, I_EFaSa(0.2)=0.35, Rd=1.5, Ro=1.3 (CONVERTIONAL CONSTRUCTION OF MOMENT FRAMES AND BRACED FRAMES), AND NO IRREGULARITIES USING STATIC ANALYSIS IN BOTH DIRECTIONS.
3. LATERAL LOADS DUE TO WIND AND SEISMIC FORCES ACT THROUGH THE HORIZONTAL METAL DECK DIAPHRAGMS, AND ARE RESISTED BY MOMENT-RESISTING FRAMES IN THE EAST-WEST DIRECTION AND BY A COMBINATION OF BRACED FRAMES AND MOMENT-RESISTING FRAMES IN THE NORTH-SOUTH DIRECTION. MOMENT FRAMES ARE USED EXCLUSIVELY IN BOTH EAST-WEST AND NORTH-SOUTH DIRECTIONS AT OFFICE BUILDING.
4. ROOF ELEMENTS SUCH AS JOISTS, METAL DECK, ETC. AND THEIR CONNECTIONS TO THE STRUCTURE ARE TO BE DESIGNED FOR UPWARD SUCTION DUE TO WIND. THE GROSS UPWARD DESIGN PRESSURES ARE SHOWN ON THE SNOW PILE-UP, GROSS WIND UPLIFT AND DIAPHRAGM SHEAR DIAGRAM.
5. ADDITIONAL SNOW ACCUMULATIONS ADJACENT TO HIGHER ROOFS, SCREENS, SKYLIGHTS AND MECHANICAL EQUIPMENT (INCLUDING DUCTS) ARE SHOWN ON THE SNOW PILE-UP, GROSS WIND UPLIFT AND DIAPHRAGM SHEAR DIAGRAM IN ACCORDANCE WITH THE USER'S GUIDE - NBC 2005 STRUCTURAL COMMENTARIES (PART 4 OF DIVISION B). FOR CLARITY, NOT ALL ACCUMULATIONS ARE SHOWN ON THE PLAN.
6. ROOF STRUCTURE (INCLUDING JOISTS AND JOIST GIRDERS) ARE TO BE DESIGNED FOR PONDING, INCLUDING PONDING INSTABILITY. MAXIMUM DESIGN PONDING DEPTH AT ROOF DRAINS TO BE 180 mm.
7. THE STRUCTURE HAS BEEN DESIGNED FOR FUTURE EXPANSION AS SHOW.
8. DESIGN SPECIFIED (UNFACTORED) DEAD AND LIVE LOADS ARE SHOWN IN THE STRUCTURAL DESIGN LOADS TABLE.
9. THE STEEL FRAME IS NOT STABLE UNTIL ALL MOMENT CONNECTIONS, STEEL BRACING, FLOOR AND ROOF DECKS ARE CONSTRUCTED.
10. MATERIALS:

STRUCTURAL STEEL:	CONFORM TO CAN/CSA-G40.20/G40.21. GRADE 350W FOR W-SECTIONS. GRADE 300W FOR OTHERS.
COLD-FORMED STEEL:	YIELD STRENGTH = 350 MPa MIN.
HOLLOW STRUCTURAL SECTIONS (HSS):	CONFORM TO CAN/CSA G40-20/G40.21-M GRADE 350W, CLASS H.
WELDING:	E49XX ELECTRODES.
BOLTS, NUTS AND WASHERS:	CONFORM TO ASTM A325 (EXCEPT AS NOTED IN STRUCTURAL STEEL NOTE #1)
ANCHOR BOLTS:	CONFORM TO ASTM A307 U/N.
PRIMER:	SEE SPECIFICATION.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		3	16/06/30	RECORD			
		2	14/09/05	CONSTRUCTION			
		1	14/07/16	ADDENDUM			
		0	14/03/18	TENDER			
		B	14/01/10	95% REVIEW			
		A	13/11/21	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: S.L 13/09/24	DESIGNED BY: M.M. 13/09/01
CHECKED BY: K.H. 14/03/07	APPROVED BY: K.A. 14/03/07
SCALE: N.T.S	FULL SIZE ONLY

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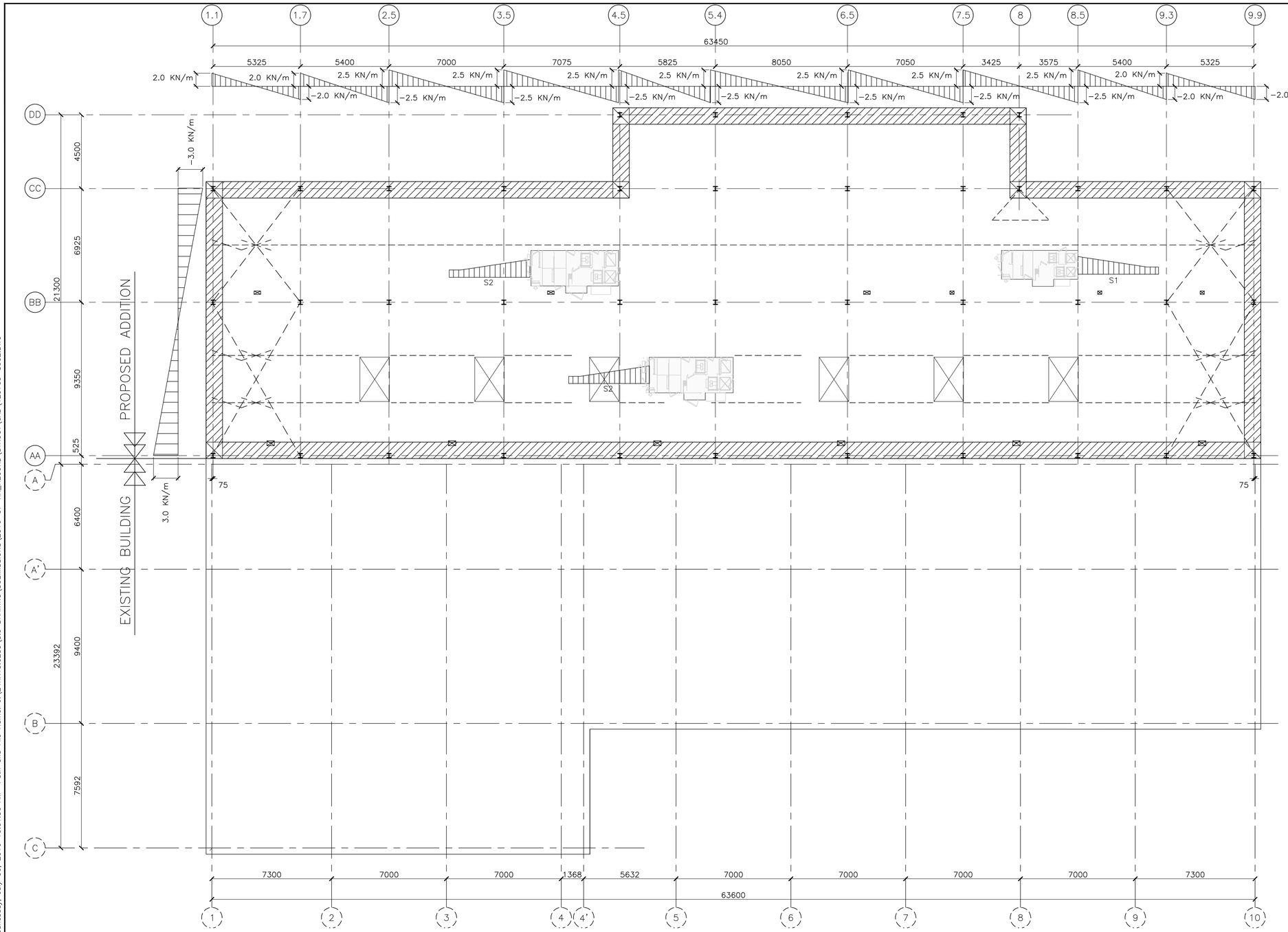
A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
GENERAL NOTES

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	S-001	1	30/92



METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH

COLUMN SIZES

C10 = W250X131

C11 = W250X115

STRUCTURAL DESIGN LOADS:

ROOF		kPa
D.L.	ROOFING (SINGLE-PLY PVC MEMBRANE)	0.30
	INSULATION	0.10
	ROOF DECK	0.10
	ELECTRICAL & MECHANICAL	0.25
	ROOF JOISTS	0.15
	CEILING	0.15
	TOTAL =	1.05
L.L.	SNOW AND RAIN (TYP. U/N)	1.92+ SPU
	180 mm PONDING	1.77

SNOW PILE-UP, GROSS WIND UPLIFT AND DIAPHRAGM SHEAR DIAGRAM

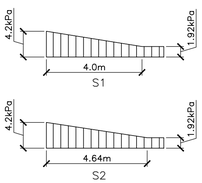
NOTES:

1. ⊠ DENOTES GROSS WIND UPLIFT = 2.24kPa
2. DENOTES GROSS WIND UPLIFT = 1.3 kPa.
3. DENOTES GROSS WIND UPLIFT = 0.96 kPa.
4. DENOTES SNOW DRIFT LOAD.
5. DENOTES DIAPHRAGM SHEAR.
6. NOT ALL MECHANICAL UNITS ARE SHOWN ON PLAN. REFER TO MECHANICAL AND ARCHITECTURAL DRAWINGS FOR MECHANICAL UNIT SIZE, ORIENTATION AND LOCATION.
7. FOR CLARITY, NOT ALL SNOW DRIFTS ARE SHOWN ON PLAN.

SNOW LOADS:
Ss=1.9kPa
Sr=0.4
Is=1.0 (ULS)
Is=0.90 (SLS)

WIND LOADS:
q (1/50)= 0.36kPa
q (1/10)= 0.28kPa
Iw = 1.00 (ULS)
Iw = 0.75 (SLS)

SEISMIC LOADS:
REFER TO GENERAL NOTES



DESIGN LOADS

SCALE: 1:125

1 / A002

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DRAWN BY: S.L 13/10/12	DESIGNED BY: M.M. 13/09/01
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ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

DESIGN LOADS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	S-002	0	31/92

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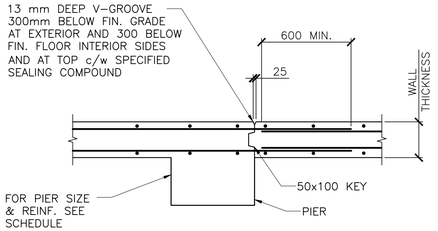
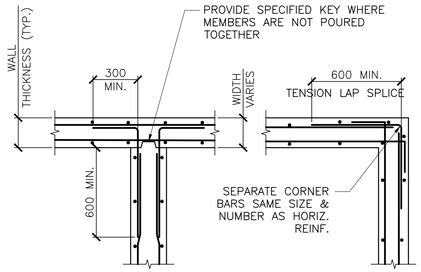
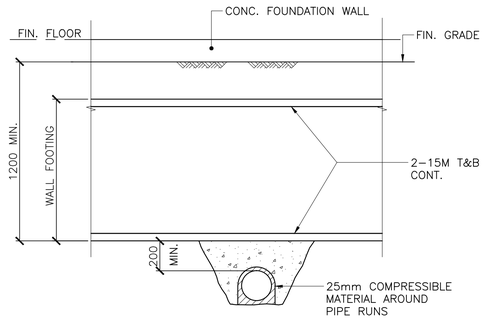
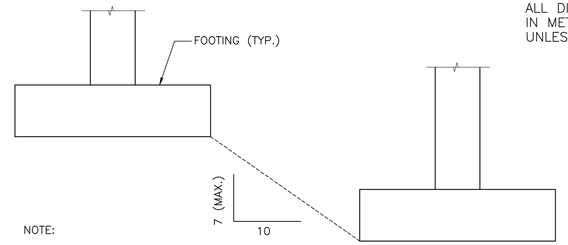




INTERSECTION CORNER



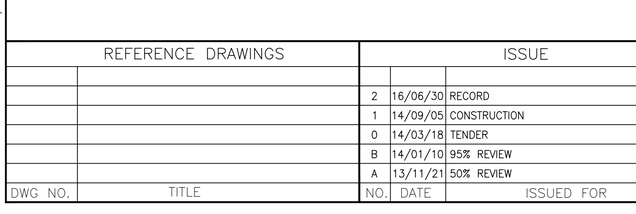


NOTE:

1. LOWER FOOTING MUST BE CONSTRUCTED BEFORE UPPER FOOTING.

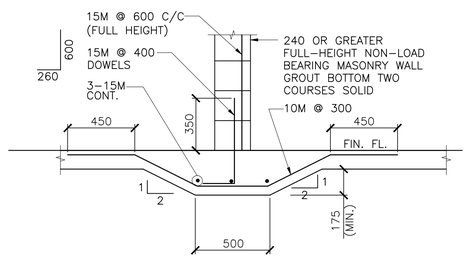
TYPICAL DETAIL SHOWING MAXIMUM SLOPE PERMITTED BETWEEN ADJACENT FOOTING BASES

TYPICAL CONSTRUCTION JOINT IN REINFORCED WALL AT PIERS



CONSTRUCTION JOINT CONTROL JOINT

TYPICAL DETAIL OF WALL INTERSECTION & CORNER



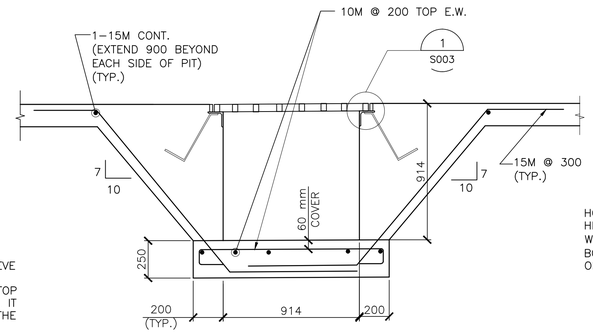
NOTES:

1. FOR WALL LOCATIONS, SEE ARCHITECTURAL DWGS.
2. INSTALL HOOKS W/HORIZ. LEG INTO PAGE WHERE NECESSARY TO ACHIEVE REQUIRED COVER.
3. FOR THIS DETAIL, FULL-HEIGHT DENOTES WALLS THAT EXTEND UP TO TOP LATERAL SUPPORTS, AS OPPOSED O VERTICALLY CANTILEVERED WALLS. IT DOES NOT IMPLY THAT DETAIL APPLIES ONLY TO WALLS THAT EXTEND THE FULL HEIGHT OF THE BUILDING.
4. WALL REINF. OMITTED FOR CLARITY.

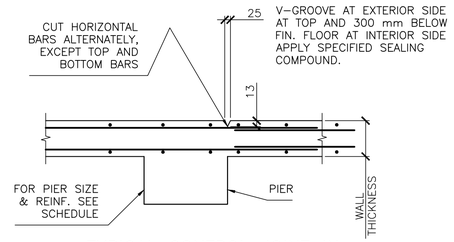
TYPICAL SLAB THICKENING BELOW 240 OR GREATER NON-LOAD BEARING WALL

TYPICAL DETAIL OF CONCRETE FILL AROUND PIPES BELOW WALL FOOTINGS

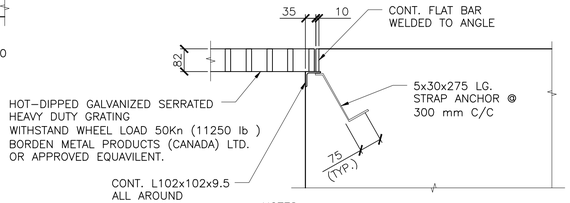
(IF REQUIRED)



TYPICAL BUS WASH TRENCH SECTION



TYPICAL CONTROL JOINT IN REINFORCED WALL AT PIERS

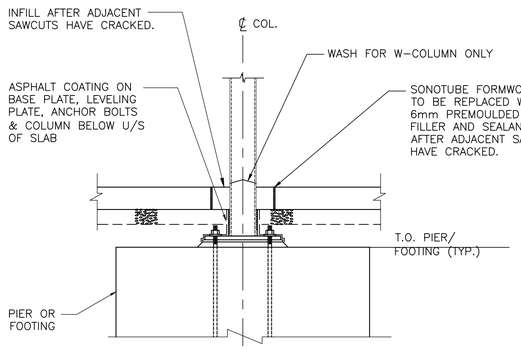


NOTES:

1. ALL STEEL TO BE HOT-DIPPED GALVANIZED.
2. GRATING SHOWN DIAGRAMMATICALLY ONLY.

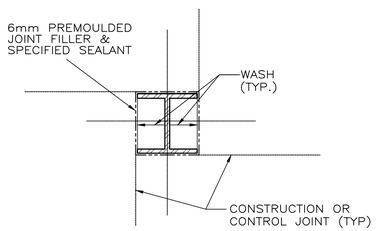
1 DETAIL
S003 1:20

SLAB ON GRADE

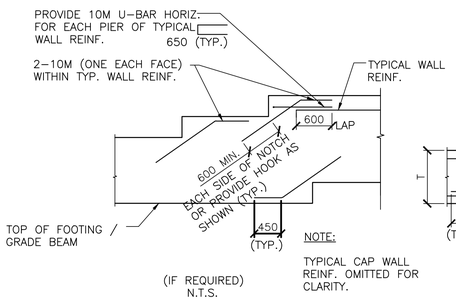


ELEVATION

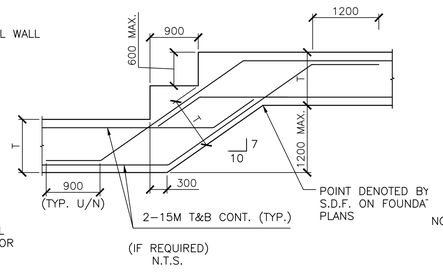
TYPICAL COLUMN ISOLATION JOINT AT INTERIOR COLUMN



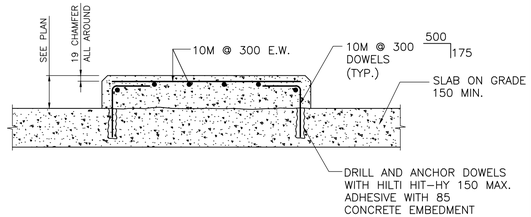
INTERIOR COLUMN ISOLATION JOINT



TYPICAL DETAIL OF STEP IN FOUNDATION WALL



TYPICAL DETAIL OF STEP IN TRENCH WALL FOOTING



NOTE: MINIMUM 28-DAY COMPRESSIVE STRENGTH OF HOUSEKEEPING PAD CONCRETE SHALL MEET REQUIREMENTS OF MANUFACTURER OF SUPPORTED EQUIPMENT AND THE SEISMIC RESTRAINT DESIGN ENGINEER FOR THE SUPPORTED EQUIPMENT, BUT SHALL NOT BE LESS THAN 30 MPa. INTERIOR HOUSKEEPING PAD CONCRETE SHALL BE EXPOSURE CLASS C-4, WITH NO AIR ENTRAINMENT.

TYPICAL CONCRETE HOUSEKEEPING PAD DETAIL

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DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: S.L 13/09/25	DESIGNED BY: M.M. 13/09/01
CHECKED BY: K.H. 14/03/07	APPROVED BY: K.A. 14/03/07
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A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

TYPICAL DETAILS

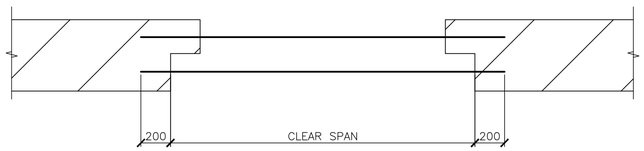
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	S-003	0	32/92

STEEL LINTEL SCHEDULE (NON-LOAD BEARING WALLS)

CLEAR SPAN	190 (8") WALL		240 (10") WALL	
	TYPE	MATERIAL	TYPE	MATERIAL
UP TO 1220 (UP TO 48")		2-Ls 90x90x8		2-Ls 100x100x8
1220 TO 1800 (48" TO 72")		2-Ls 100x75x8		2-Ls 100x100x10
1800 TO 2100 (72" TO 84")		2-Ls 125x90x10		2-Ls 125x90x13
2100 TO 3500 (84" TO 140")				W200x46 C\W PL. 10x220
3500 TO 4900 (140" TO 196")				W310x67 C\W PL. 10x220

NOTES FOR NON-LOAD BEARING WALL LINTELS

1. PAIRS OF LINTEL ANGLES TO BE BOLTED OR STITCH WELDED TOP AND BOTTOM @ 600 C/C MAX.
2. MINIMUM BEARING FOR STEEL LINTELS TO BE 200 UNLESS NOTED OTHERWISE.
3. PROVIDE STEEL PACKING PLATES TO ENSURE EVEN BEARING.
4. FOR WALLS OVER 300 THICK ADD 1 L FOR EACH ADDITIONAL 100 OF WALL THICKNESS OR PORTION THEREOF
5. FOR LINTELS ABBUTTING STEEL COLUMNS, CONCRETE WALLS OR COLUMNS PROVIDE 1-90x90x10 SHELF ANGL
6. FOR SPAN LENGTH OVER 2100mm - SEE LINTEL DETAIL 5/S014

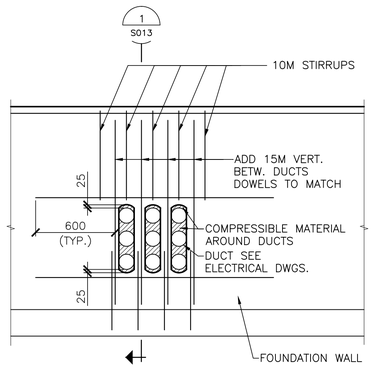


CONCRETE BLOCK LINTEL SCHEDULE

CLEAR SPAN	190 WALL	240 WALL
390 DEEP LINTEL (2 - COURSE)		
UP TO 1800 (U/N)	2-15M BOT.	2-15M T&B (SEE NOTE 5)
590 DEEP LINTEL (3 - COURSE)		
2000 TO 3000 (U/N)	2-15M T&B (SEE NOTE 4 & 5)	2-15M T&B (SEE NOTE 5)

NOTES:

1. USE ONLY FOR NON-LOAD BEARING MASONRY WALLS.
2. USE LINTELS ON THIS TYPICAL DETAIL ONLY IF THE HEIGHT OF THE MASONRY ABOVE THE OPENING IS EQUAL TO OR GREATER THAN HALF THE CLEAR SPAN OF THE OPENING AND IF THERE ARE NO CONCENTRATED LOAD DIRECTLY ABOVE THE LINTEL.
3. FILL LINTELS SOLID WITH MASONRY GROUT. USE FINE GROUT FOR 90 mm & 140 mm BLOCK AND COARSE GROUT FOR 190 mm & 240 mm BLOCK.
4. PROVIDE 100 mm COVER BELOW BOTTOM BARS.
5. PROVIDE 10M @ 200 STIRRUPS. PROVIDE 10M @ 200 H.E.F. (IN BOND BEAMS).
6. LINTELS ARE TO BE CONSTRUCTED OF LINTEL BLOCK AT BOTTOM COURSE AND STANDARD BLOCKS ABOVE UNLESS NOTED OTHERWISE.
7. PROVIDE MIN. 200 mm BEARING AT BOTH ENDS OF ALL LINTELS.
8. PROVIDE HORIZONTAL JOINT REINF. IN EACH BED JOINT OF LINTELS AND EXTEND THIS REINF. MIN. 1200 TO EACH SIDE OF OPENING.
9. THESE LINTELS MAY ALSO BE USED AT 3000 mm HIGH CONCRETE BLOCK WALLS.
10. AT DOOR M105A, PROVIDE 990 DEEP LINTEL (5-COURSE) C/W 2-20M BOTTOM.
11. REFER TO ARCH. DWGS. FOR DOOR NUMBER.

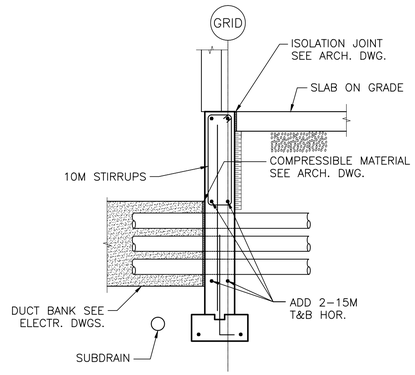


NOTE:

1. THE TYPICAL FOUNDATION WALL REINFORCEMENT IS NOT SHOWN FOR CLARITY.

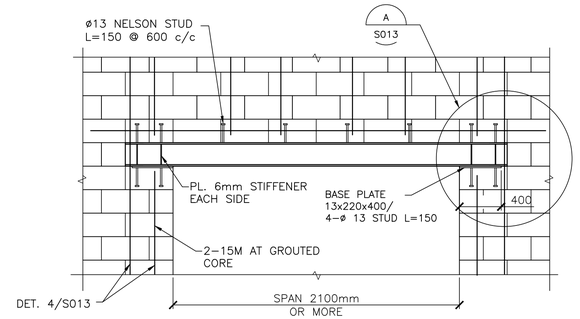
TYPICAL DETAIL OF DUCT TRANSFER THROUGH THE FOUNDATION WALL

SCALE 1:20



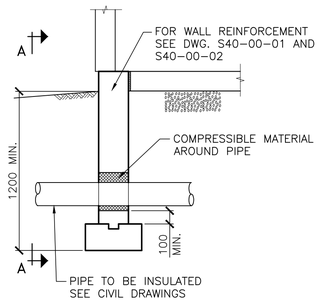
1 S013 **SECTION**

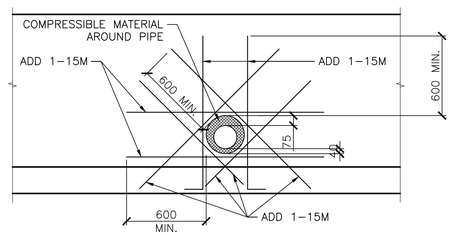
SCALE 1:20



5 S013 **DETAIL OF LINTEL IN BLOCK WALL**

SCALE 1=20

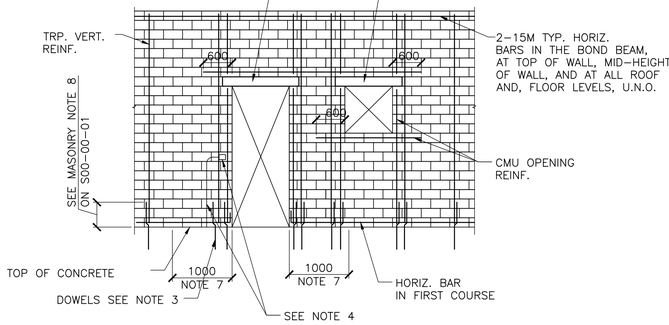




A-A

2 S013 **TYPICAL DETAIL OF PENETRATION OF FOUNDATION WALL WITHIN FROST DEPTH**

SCALE 1:10

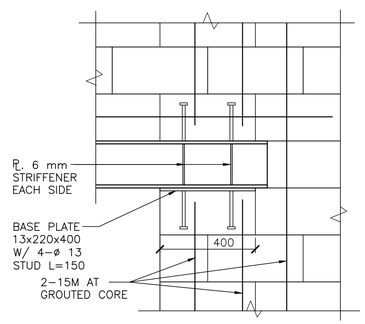


NOTES:

1. FOR TYPICAL WALL REINFORCING, SEE WALL SECTIONS, DETAILS AND MASONRY NOTES.
2. STAGGER SPLICES IN ADJACENT HORIZONTAL BARS IN THE SAME COURSE BY 600.
3. PROVIDE DOWEL BARS IN FOUNDATION TO MATCH ALL VERTICAL REINFORCING.
4. DO NOT PLACE VERTICAL CONDUIT IN THE SAME CELL AS VERTICAL REINFORCING.
5. PROVIDE STANDARD TRUSS TYPE HORIZONTAL JOINT REINFORCING @ 400.
6. FOR LINTEL - SEE DETAILS ON DRAWING S-004.
7. OPENING EDGES SHALL BE REINFORCED WITH 2-15M @ 200 C/C USE MASONRY UNIT STRENGTH 25 MPa.

4 S013 **REINFORCED CMU WALL - TYPICAL DETAIL**

SCALE 1=50



A S013 **DETAIL**

SCALE 1=10

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TYPICAL DETAILS

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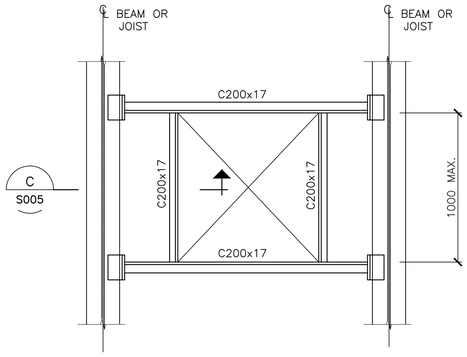
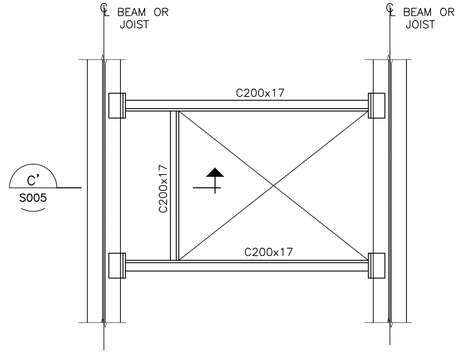


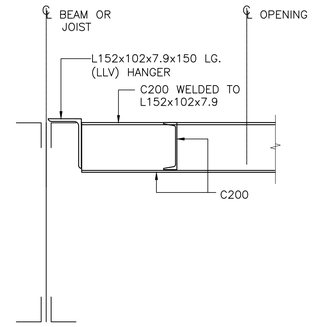
PLAN – TYPICAL ROOF OPENING FRAME TYPE 'A' (A S005)

N.T.S.



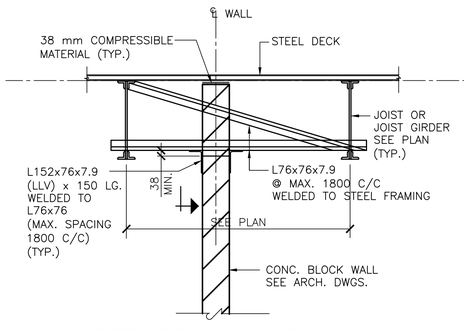
PLAN – TYPICAL ROOF OPENING FRAME TYPE 'B' (B S005)

N.T.S.



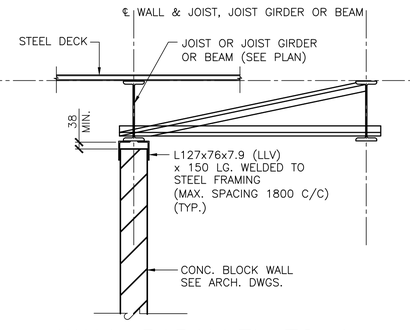
SECTION (C S005 / C' S005)

N.T.S.



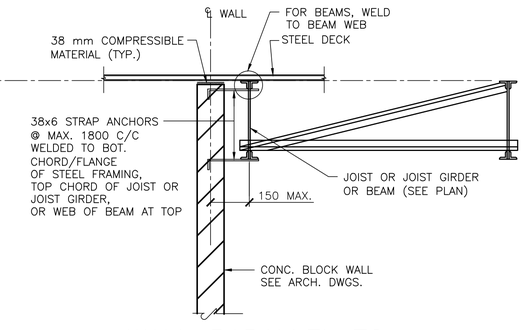
WALL BETWEEN JOISTS OR JOIST GIRDERS (D S005)

N.T.S.



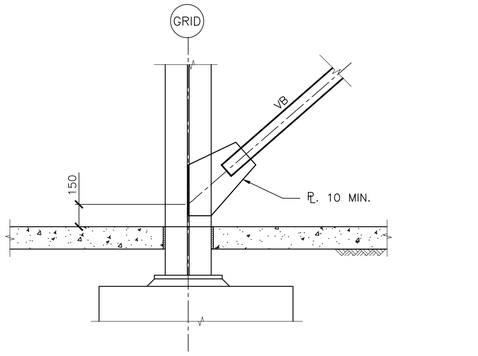
WALL PARALLEL TO & CENTRED ON JOIST OR BEAM (E S005)

N.T.S.



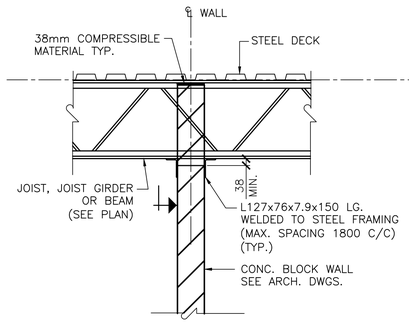
WALL PARALLEL TO JOISTS OR BEAM (F S005)

N.T.S.



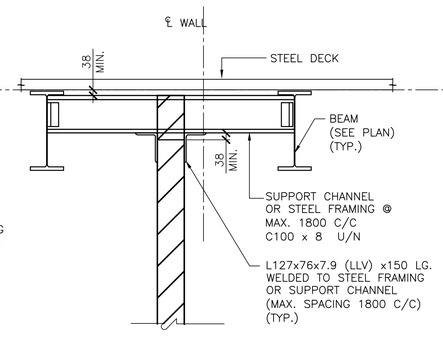
TYPICAL DETAIL FOR VERTICAL BRACING CONNECTING TO COLUMN (M S005)

N.T.S.



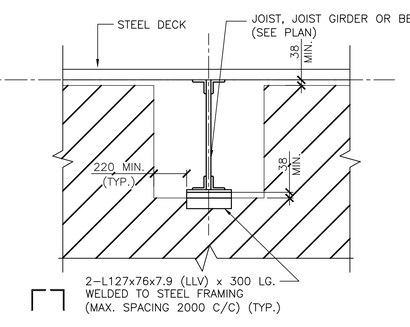
WALL PERPENDICULAR TO JOISTS OR BEAM (G S005)

N.T.S.



WALL BETWEEN BEAMS (H S005)

N.T.S.



AT PARTITION PERPENDICULAR TO JOIST OR BEAM (L S005)

N.T.S.

NOTE:

1. PROVIDE MIN. 220 mm CLEAR GAP BETWEEN SIDES OF STEEL FRAMING MEMBERS, SUPPORT CHANNELS, BRACING ANGLES AND MASONRY.

TYPICAL DETAILS FOR BRACING OF INTERIOR PARTITION WALLS

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		2	16/06/30	RECORD			
		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
		B	14/01/10	95% REVIEW			
		A	13/11/21	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: S.L 13/09/15	DESIGNED BY: M.M. 13/09/01
CHECKED BY: K.H. 14/03/07	APPROVED BY: K.A. 14/03/07
SCALE: 1:125	FULL SIZE ONLY

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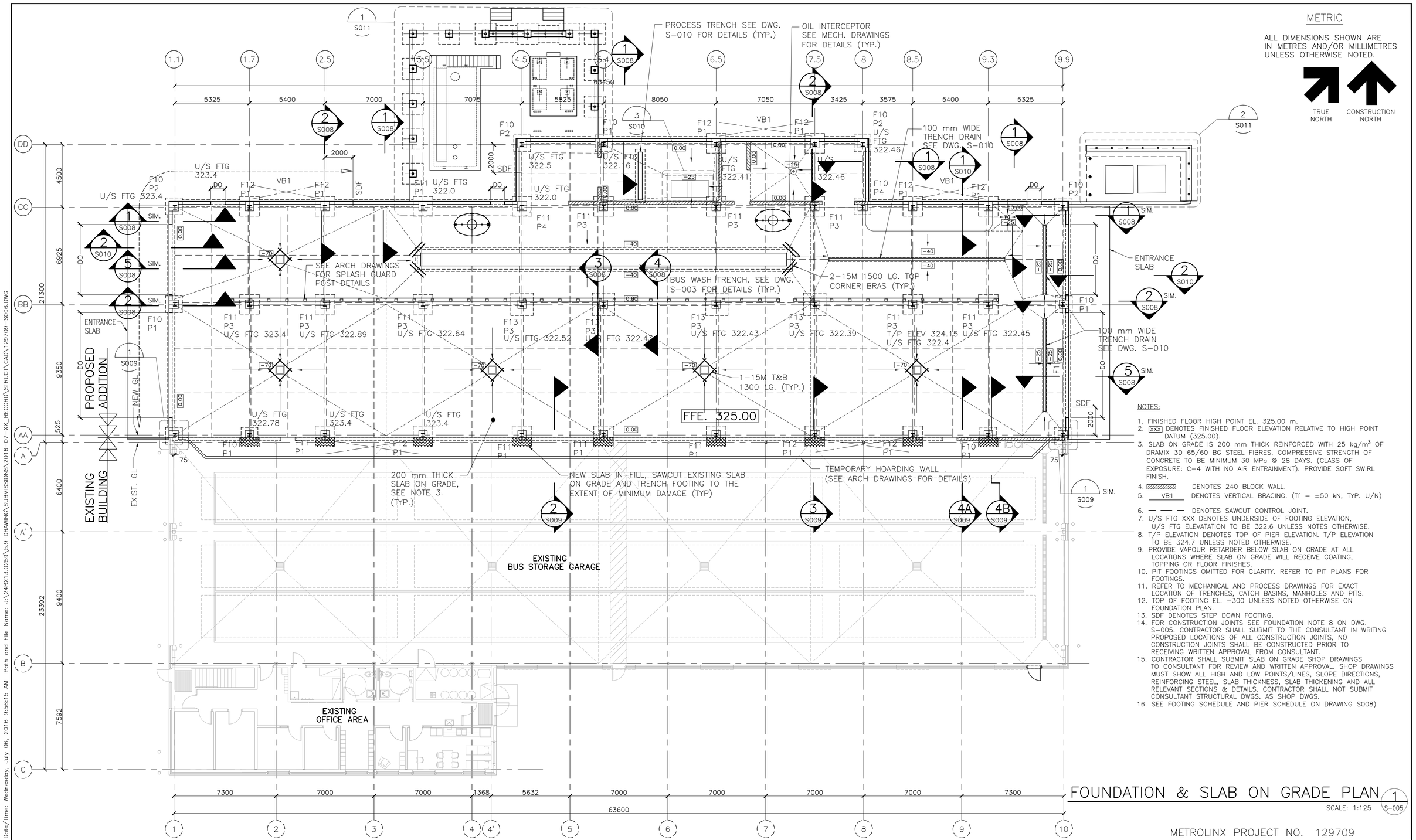
ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

TYPICAL DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	S–005	0	34/92



METRIC

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TRUE NORTH

CONSTRUCTION NORTH

NOTES:

1. FINISHED FLOOR HIGH POINT EL. 325.00 m.
2. XXX DENOTES FINISHED FLOOR ELEVATION RELATIVE TO HIGH POINT DATUM (325.00).
3. SLAB ON GRADE IS 200 mm THICK REINFORCED WITH 25 kg/m^3 OF DRAMIX 3D 65/60 BG STEEL FIBRES. COMPRESSIVE STRENGTH OF CONCRETE TO BE MINIMUM 30 MPa @ 28 DAYS. (CLASS OF EXPOSURE: C-4 WITH NO AIR ENTRAINMENT). PROVIDE SOFT SWIRL FINISH.
4. DENOTES 240 BLOCK WALL.
5. VB1 DENOTES VERTICAL BRACING. (Tf = ±50 kN, TYP. U/N)
6. DENOTES SAWCUT CONTROL JOINT.
7. U/S FTG XXX DENOTES UNDERSIDE OF FOOTING ELEVATION, U/S FTG ELEVATATION TO BE 322.6 UNLESS NOTES OTHERWISE.
8. T/P ELEVATION DENOTES TOP OF PIER ELEVATION. T/P ELEVATION TO BE 324.7 UNLESS NOTED OTHERWISE.
9. PROVIDE VAPOUR RETARDER BELOW SLAB ON GRADE AT ALL LOCATIONS WHERE SLAB ON GRADE WILL RECEIVE COATING, TOPPING OR FLOOR FINISHES.
10. PIT FOOTINGS OMITTED FOR CLARITY. REFER TO PIT PLANS FOR FOOTINGS.
11. REFER TO MECHANICAL AND PROCESS DRAWINGS FOR EXACT LOCATION OF TRENCHES, CATCH BASINS, MANHOLES AND PITS.
12. TOP OF FOOTING EL. -300 UNLESS NOTED OTHERWISE ON FOUNDATION PLAN.
13. SDF DENOTES STEP DOWN FOOTING.
14. FOR CONSTRUCTION JOINTS SEE FOUNDATION NOTE 8 ON DWG. S-005. CONTRACTOR SHALL SUBMIT TO THE CONSULTANT IN WRITING PROPOSED LOCATIONS OF ALL CONSTRUCTION JOINTS, NO CONSTRUCTION JOINTS SHALL BE CONSTRUCTED PRIOR TO RECEIVING WRITTEN APPROVAL FROM CONSULTANT.
15. CONTRACTOR SHALL SUBMIT SLAB ON GRADE SHOP DRAWINGS TO CONSULTANT FOR REVIEW AND WRITTEN APPROVAL. SHOP DRAWINGS MUST SHOW ALL HIGH AND LOW POINTS/LINES, SLOPE DIRECTIONS, REINFORCING STEEL, SLAB THICKNESS, SLAB THICKENING AND ALL RELEVANT SECTIONS & DETAILS. CONTRACTOR SHALL NOT SUBMIT CONSULTANT STRUCTURAL DWGS. AS SHOP DWGS.
16. SEE FOOTING SCHEDULE AND PIER SCHEDULE ON DRAWING S008)

FOUNDATION & SLAB ON GRADE PLAN 1

SCALE: 1:125 (1 S-005)

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		3	16/06/30	RECORD			
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		1	14/07/16	ADDENDUM			
		0	14/03/18	TENDER			
		C	14/01/10	95% REVIEW			
		B	13/11/21	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: S.L 13/09/26	DESIGNED BY: M.M. 13/09/02
CHECKED BY: K.H. 14/03/07	APPROVED BY: K.A. 14/03/07
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ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

FOUNDATION AND SLAB ON GRADE PLAN

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	S-006	1	35/92

ROOF FRAMING PLAN

SCALE: 1:125

(1 / S006)

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH

NOTES:

1. FOR GENERAL NOTES REFER TO DWG. S-001.
2. READ THIS DWG. IN CONJUNCTION WITH TYPICAL DETAILS.
3. J1 DENOTES 700 DEEP JOIST. I min @ T.J. = $216x10^6$ mm⁴ .
   J2 DENOTES 550 DEEP JOIST. I min @ T.J. = $127x10^6$ mm⁴ .
   J3 DENOTES 300 DEEP JOIST. I min @ T.J. = $127x10^6$ mm⁴ .
   TJ DENOTES TIE JOIST, DESIGN TIE JOISTS FOR REVERSIBLE WIND MOMENT.
4. JOIST SHOE DEPTH = 125 mm UNLESS NOTED OTHERWISE.
5. ▶——— DENOTES MOMENT CONNECTION.
6. TOP OF STEEL EL. 331.40 m AT HIGH POINT UNLESS NOTED OTHERWISE.
7. (XXXX) DENOTES TOP OF STEEL ELEVATION (mm) RELATIVE TO DATUM STATED IN NOTE 6 (EXCLUDING CAMBER).
8. VB1 DENOTES VERTICAL BRACINGS 2L89x89x7.9 (Tf = ±50 kN, TYP. U/N)
9. ALL JOISTS WHICH FRAME INTO COLUMNS TO BE DESIGNED FOR THEIR RESPECTIVE LOADS, SPANS, ORIENTATION GEOMETRY, ALL LATERAL BRACING AND ALL OTHER RELEVANT PARAMETERS INCLUDING COMPATIBILITY OF DEFLECTION WITH ADJACENT STRUCTURE. LATERAL STABILITY OF JOISTS MUST BE SPECIFIED AND PROVIDED BY JOIST DESIGNER AND MANUFACTURER.
10. WHERE BEAMS, GIRDERS, OR JOIST GIRDERS ARE SLOPED, TOP OF STEEL ELEVATION AT MEMBER ENDS IS SHOWN THUS H (XXXX) (XXXX) H ELEVATIONS ARE RELATIVE TO DATUM STATED IN NOTES.
11. TOP OF STEEL ELEVATION FOR JOISTS IS NOT SHOWN ON DRAWING AND IS BASED ON TOP OF STEEL ELEVATION OF SUPPORTING MEMBER, AND SHOE DEPTH STATED IN NOTE 4 UNLESS NOTED OTHERWISE.
12. WHERE HORIZONTAL BRIDGING IS INTERRUPTED BY ROOF OPENING, MECHANICAL EQUIPMENT OR OTHER OBSTRUCTIONS, PROVIDE X-BRIDGING ON BOTH SIDES OF INTERRUPTION.
13. JOIST MANUFACTURER TO ENSURE THAT COMPATIBILITY OF DEFLECTION IS PROVIDED WHERE JOISTS ARE JOIST ADJACENT TO MORE RIGID SURFACES.
14. ROOF DECK IS DESIGNED TO SUPPORT SNOW, ICE, RAIN AND WIND LOADS AND FOR DIAPHRAGM ACTION. NO EQUIPMENT OR OTHER LOADS ABOVE TO BE SUPPORTED BY ROOF DECK WITHOUT THE PRESENCE STRUCTURAL STEEL FRAMING MEMBERS IMMEDIATELY BELOW. IF SUCH STRUCTURAL STEEL IS NOT PRESENT, THE CONTRACTOR SHALL NOTIFY THE CONSULTANT IN WRITING AND SHALL NOT COMMENCE EQUIPMENT INSTALLATION UNTIL WRITTEN APPROVAL OR INSTRUCTIONS ARE RECEIVED FROM THE CONSULTANT AND IMPLEMENTED IN THE FIELD. NO EQUIPMENT OR OTHER LOADS SHALL BE SUSPENDED FROM THE ROOF DECK.
15. MECHANICAL UNIT LOADS ARE SPECIFIED (UNFACTORED) AND SHOWN ON DWG.
16. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR THE REEL SUPPORTS FRAMING AND CONNECTIONS, STAMPED BY P.ENG. FOR REVIEW. COORDINATE ALL SUPPORT LOCATIONS AND LOADING WITH BUILDING FRAMING, BUILDING SERVICES AND JOIST MANUFACTURER.
17. ALL SUSPENDED LOADS TO BE APPLIED AT BOTTOM CHORD PANEL POINT ONLY FOR JOISTS.
18. PROVIDE CLEAR OPENING IN JOIST GIRDERS TO ACCOMMODATE MECHANICAL DUCT OF SIZE SHOWN. REFER TO MECHANICAL DRAWINGS FOR DUCT ELEVATION.
19. MISC. FRAMING MEMBERS SHOWN ON PLAN ARE C200x17 U/N. PROVIDE C250x23 FOR SUPPORT OF "AHU" MECHANICAL UNITS AND SKYLIGHTS.
20. REFER TO MECHANICAL AND ARCHITECTURAL DRAWINGS FOR ALL MECHANICAL UNIT AND RELATED OPENING LOCATIONS.
21. COORDINATE EXACT LOCATION AND SIZE OF ALL MECHANICAL OPENINGS WITH MECHANICAL CONTRACTOR.
22. COORDINATE EXACT LOCATION OF ALL MECHANICAL UNIT FRAMING WITH MECHANICAL CONTRACTOR.
23. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND SIZE OF SKYLIGHT AND ROOF SCUTTLE OPENINGS.
24. COORDINATE EXACT LOCATIONS OF ALL FALL ARREST MONORAIL SUPPORT FRAMING WITH FALL ARREST SUPPLIER.

METROLINX PROJECT NO. 129709

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		C	14/01/10	95% REVIEW			
		B	13/11/21	50% REVIEW			
		A	13/09/26	25% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: S.L 13/10/05	DESIGNED BY: M.M. 13/09/01
CHECKED BY: K.H. 14/03/07	APPROVED BY: K.A. 14/03/07
SCALE: 1:125	FULL SIZE ONLY

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ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

ROOF FRAMING PLAN

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	S-007	0	36/92

METRIC

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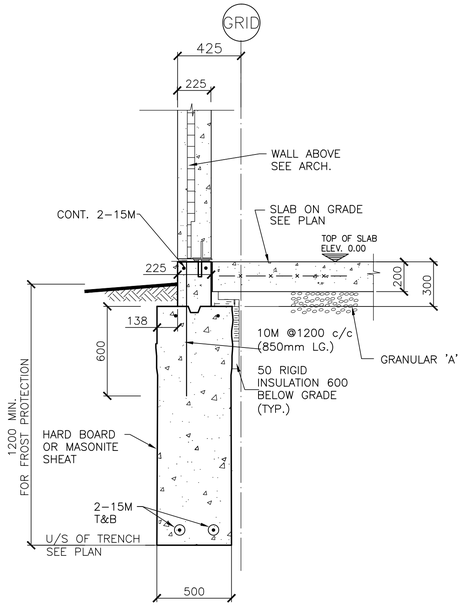
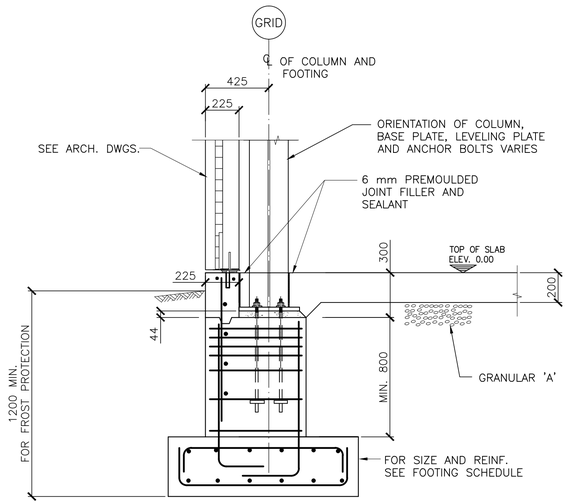


TYPICAL WALL FOOTING

SCALE 1:20

1 S-006



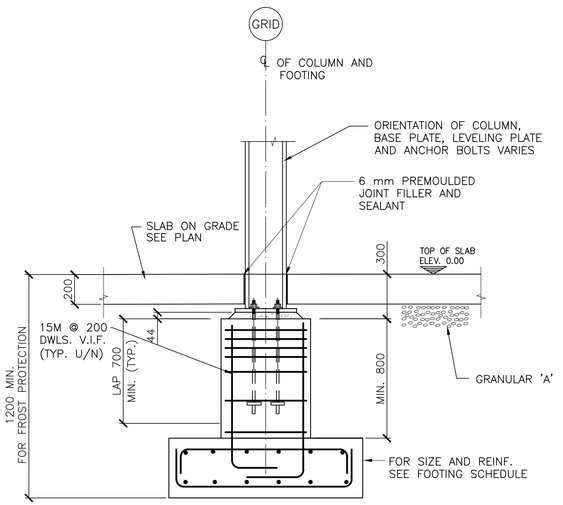
NOTE:

1. ASPHALT COATING ON STEEL COLUMN, BASE PLATE, LEVELING PLATE, ANCHOR BOLTS, NUTS AND WASHERS BELOW FIN. FLOOR.
2. INTERIOR DOWELS (SEE PIER SCHEDULE) OMITTED FOR CLARITY.

TYPICAL EXTERIOR COLUMN FOOTING

SCALE 1:20

2 S-006



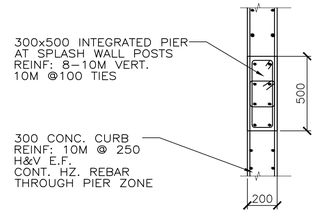
NOTE:

1. ASPHALT COATING ON STEEL COLUMN, BASE PLATE, LEVELING PLATE, ANCHOR BOLTS, NUTS AND WASHERS BELOW FIN. FLOOR.
2. INTERIOR DOWELS (SEE PIER SCHEDULE) OMITTED FOR CLARITY.

TYPICAL INTERIOR COLUMN FOOTING

SCALE 1:20

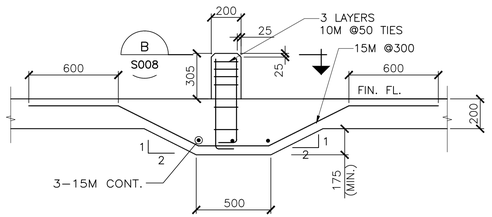
3 S-006



SECTION

SCALE 1:20

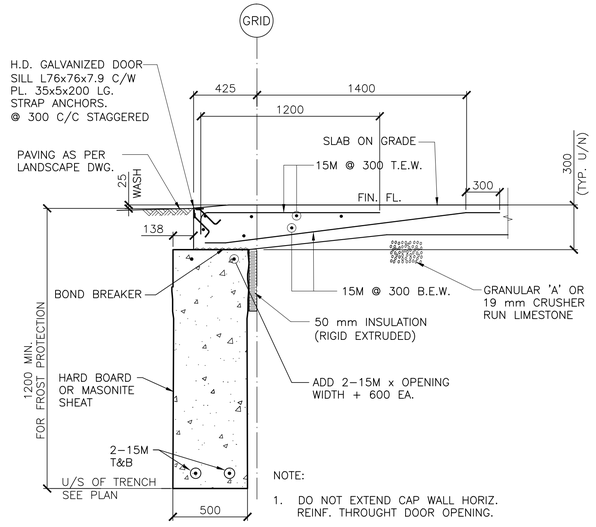
B S-008



SECTION

SCALE 1:20

4 S-006



NOTE:

1. DO NOT EXTEND CAP WALL HORIZ. REINF. THROUGHT DOOR OPENING.

ETRANCE SLAB DETAIL

SCALE 1:20

5 S-006

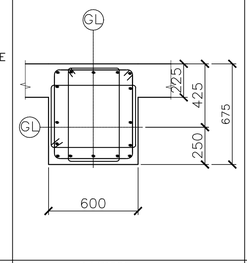
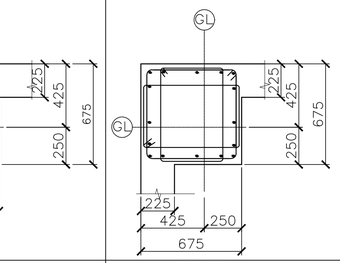
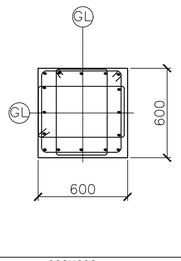
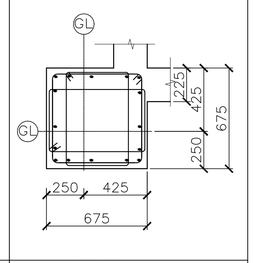
FOOTING SCHEDULE

FACTORED BEARING RESISTANC = 225 kPa					
MARK	FOOTING SIZE	FOOTING MIN. THICKNESS	REINFORCING	FOOTING DOWELS	REMARKS
F10	1200X1200	400	7-15M B.E.W	TO MATCH PIER VERT. REINF.	PROVIDE 90° HOOK BOTH ENDS OF ALL HORIZ. BARS
F11	1400X1400	400	8-15M B.E.W	TO MATCH PIER VERT. REINF.	PROVIDE 90° HOOK BOTH ENDS OF ALL HORIZ. BARS
F12	1400X1400	400	8-15M T&B.E.W	TO MATCH PIER VERT. REINF.	PROVIDE 90° HOOK BOTH ENDS OF ALL HORIZ. BARS
F13	1600X1600	400	9-15M B.E.W	TO MATCH PIER VERT. REINF.	PROVIDE 90° HOOK BOTH ENDS OF ALL HORIZ. BARS

NOTES:

1. ALL ANCHOR BOLTS TO BE GRADE A307 (WELDABLE).
2. U/S BASE PLATE ELEVATION IS RELATIVE TO TOP OF SLAB ON GRADE HIGH POINT (0.00).

PIER SCHEDULE

MARK / DATA		P1	P2	P3	P4
PIER SHAPE					
PIER SIZE		675X600	675x675	600X600	675x675
REINF.	VERT.	16-20M	16-20M	16-20M	16-20M
	TIES	10M @ 250 TIES PROVIDE 3-10M SETS OF TIES @ 50 C/C AT TOP OF PIER	10M @ 250 TIES PROVIDE 3-10M SETS OF TIES @ 50 C/C AT TOP OF PIER	10M @ 250 TIES PROVIDE 3-10M SETS OF TIES @ 50 C/C AT TOP OF PIER	10M @ 250 TIES PROVIDE 3-10M SETS OF TIES @ 50 C/C AT TOP OF PIER

NOTES:

1. DETAIL TIES TO ACCOMMODATE ANCHORE BOLTS
2. REBARS IN WALLS ARE NOT SHOWN FOR CLARITY
3. PROVIDE 3-15M SETS OF TIES @ 50 C/C AT TOP OF BRACE BAYS PIERS

METROLINX PROJECT NO. 129709

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		B	14/01/10	95% REVIEW			
		A	13/11/21	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: S.L. P.R. 14/03/05	DESIGNED BY: M.M. 13/09/01
CHECKED BY: K.H. 14/03/07	APPROVED BY: K.A. 14/03/07
SCALE: 1:20	FULL SIZE ONLY

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ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

FOUNDATION SECTIONS , FOOTING SCHEDULE & PIER SCHEDULE

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	S-008	0	37/92

METRIC

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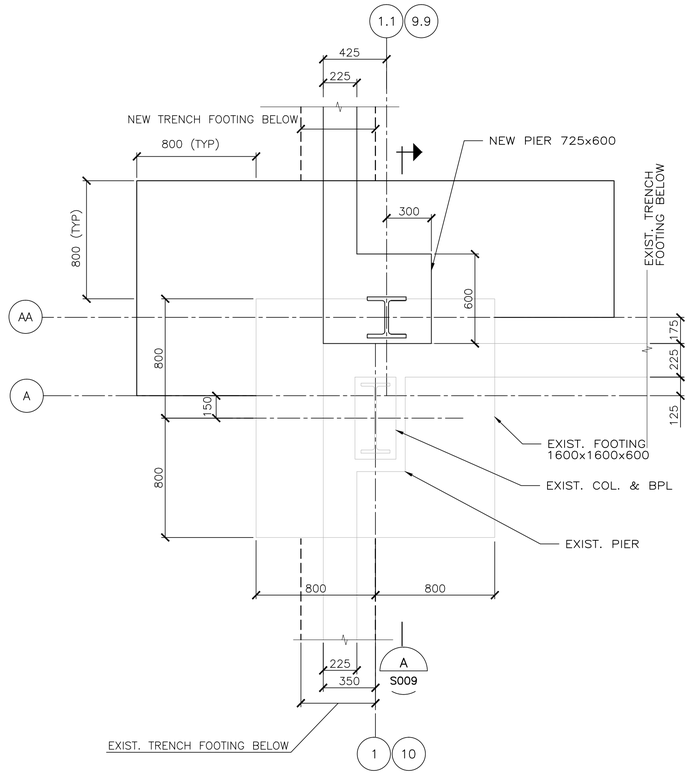
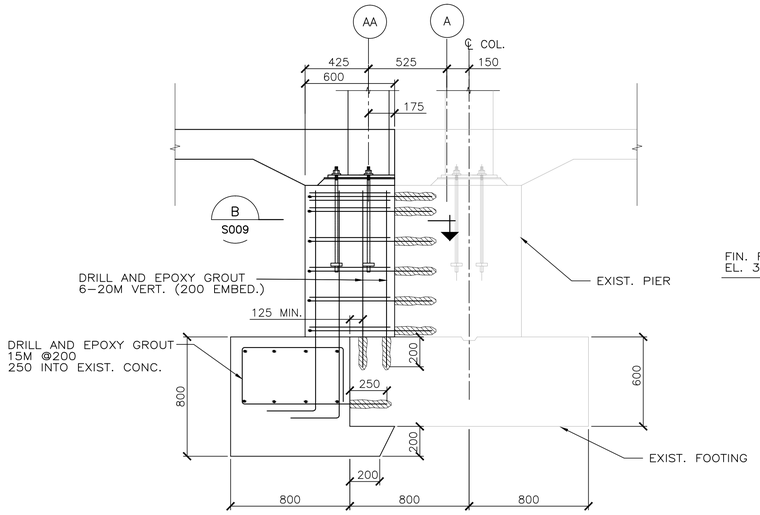
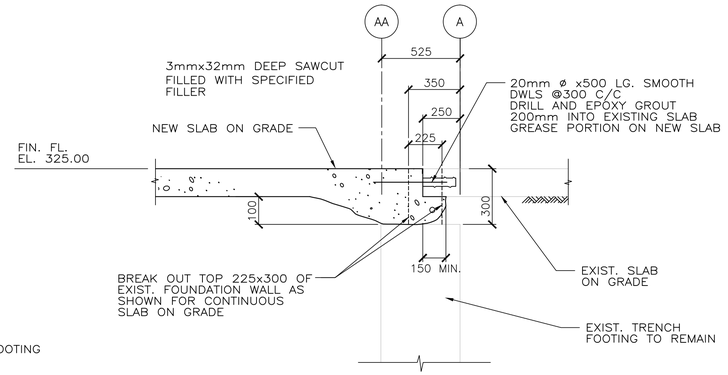


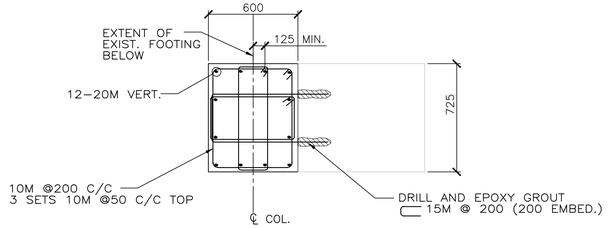
DETAIL 1 S-006
SCALE 1:20



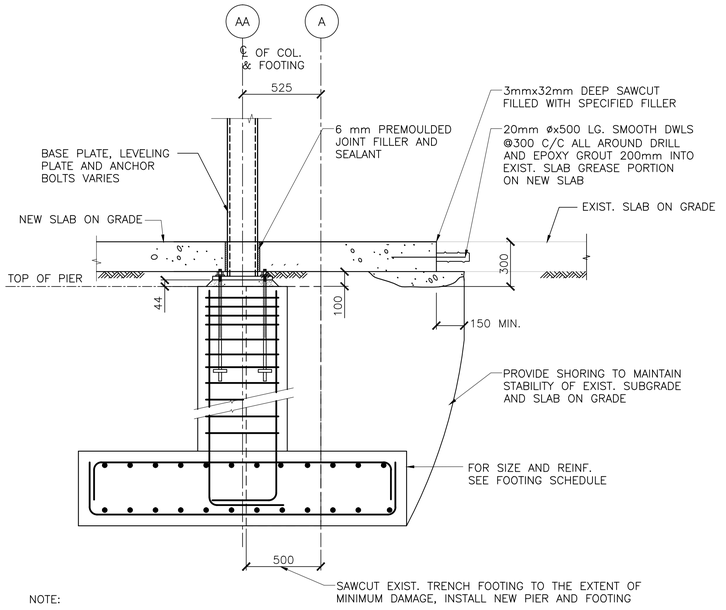
SECTION A S-009
SCALE 1:20



SECTION 2 S006
SCALE 1:20



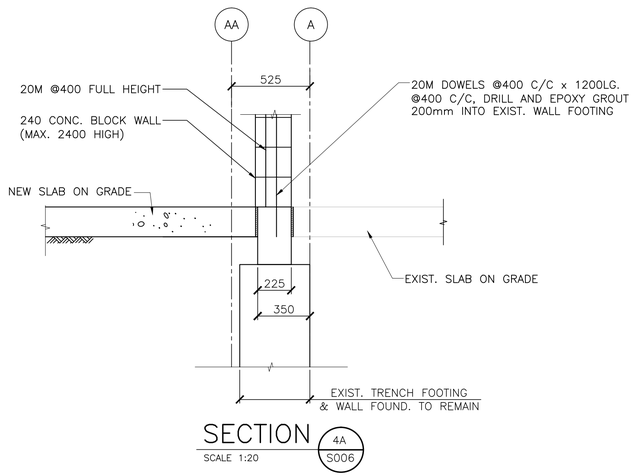
SECTION B S009
SCALE 1:20



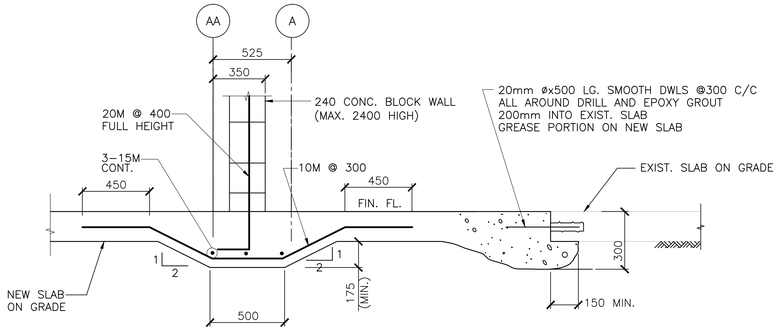
NOTE:

1. ASPHALT COATING ON STEEL COLUMN, BASE PLATE, LEVELING PLATE, ANCHOR BOLTS, NUTS AND WASHERS BELOW FIN. FLOOR.

SECTION 3 S006
SCALE 1:20



SECTION 4A S006
SCALE 1:20



SECTION 4B S006
SCALE 1:20

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		3	16/06/30	RECORD			
		2	14/09/05	CONSTRUCTION			
		1	14/07/16	ADDENDUM			
		0	14/03/18	TENDER			
		B	14/01/10	95% REVIEW			
		A	13/11/21	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: P.R. 14/03/04	DESIGNED BY: M.M. 13/09/01
CHECKED BY: K.H. 14/03/07	APPROVED BY: K.A. 14/03/07
SCALE: 1:20	FULL SIZE ONLY

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A Division of METROLINX

ABERFOYLE BUS FACILITY

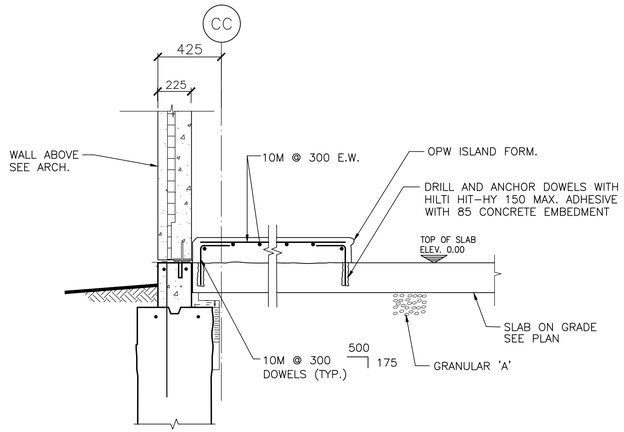
EXPANSION AND PARKING LOT REHABILITATION

FOUNDATION SECTIONS

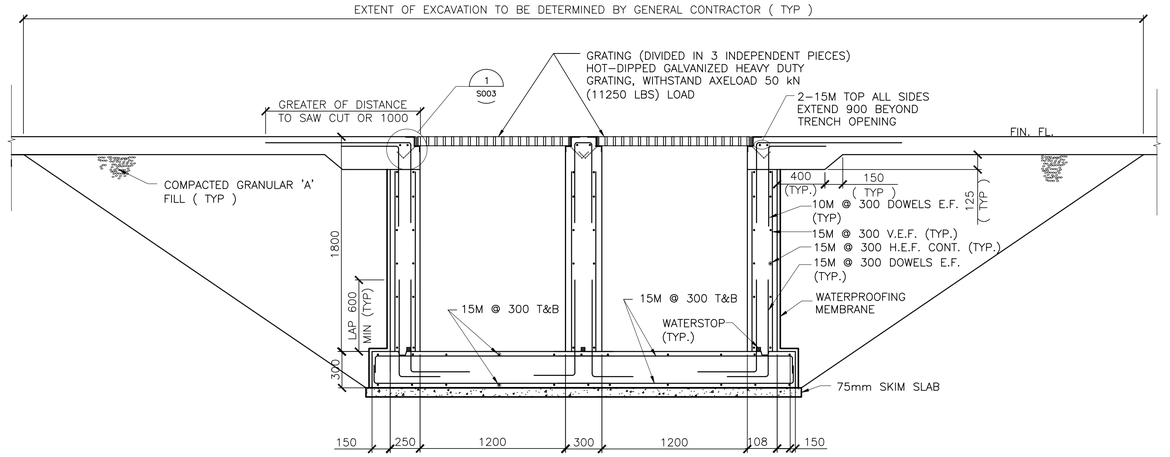
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	S-009	1	38/92

METRIC

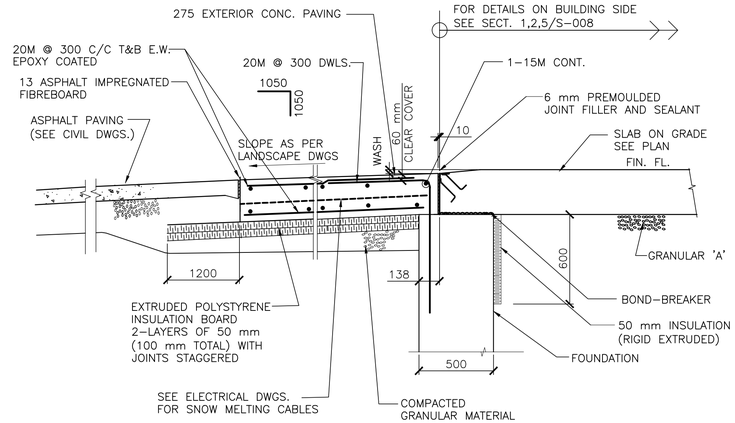
ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.



SECTION 1 / S-006
SCALE 1:20



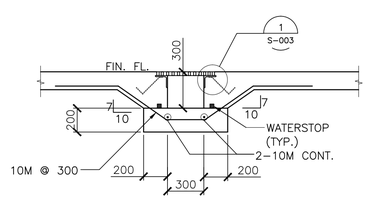
SECTION A / S-010
SCALE 1:25



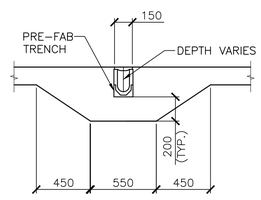
NOTE:

1. DO NOT EXTEND FOUNDATION WALL HORIZ. REINF. THROUGH DOOR OPENING.

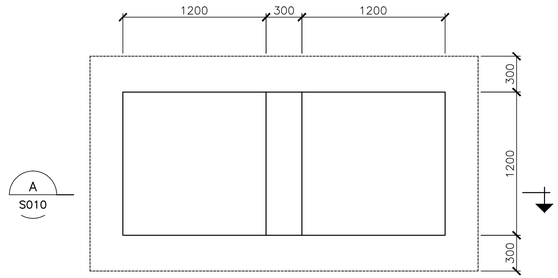
ENTRANCE SLAB DETAIL 2 / S-006
SCALE 1:20



TYPICAL PROCESS TRENCH SECTION TYP.
SCALE 1:25



TYPICAL 100mm TRENCH DRAIN SECTION TYP.
SCALE 1:25



DETAIL 3 / S-006
SCALE 1:25

RECYCLING SUMP PITS 1200x1200x1800 DEEP EACH

NOTE:

1. CONTRACTOR TO COORDINATE THE EXACT SIZE OF PITS WITH MANUFACTURER.

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
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		0	14/03/18	TENDER			
		B	14/01/10	95% REVIEW			
		A	13/11/21	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: S.L. P.R. 13/10/23	DESIGNED BY: M.M. 13/09/24
CHECKED BY: K.H. 14/03/07	APPROVED BY: K.A. 14/03/07
SCALE: AS SHOWN FULL SIZE ONLY	

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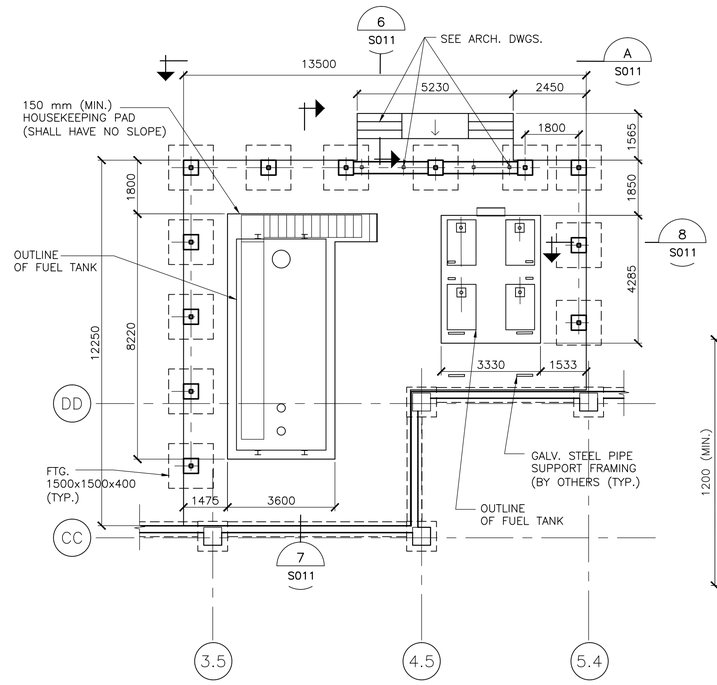
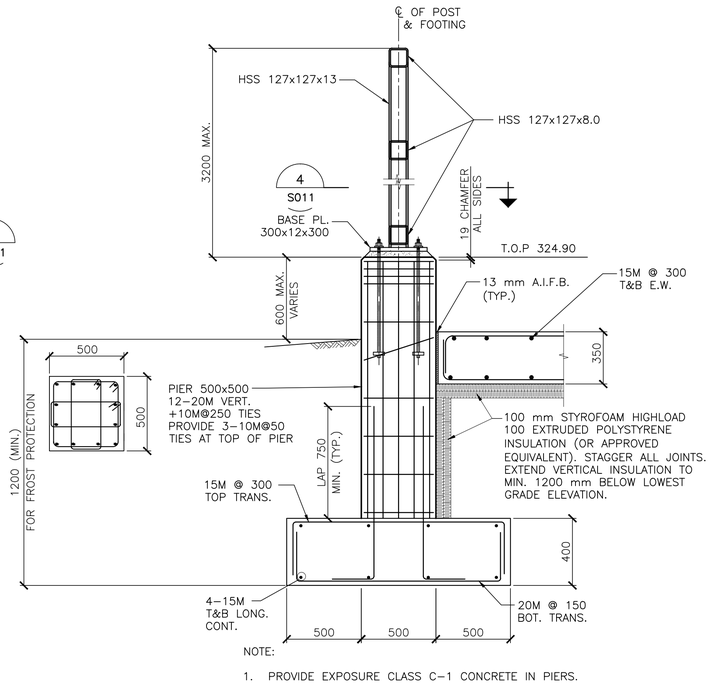
A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
FOUNDATION SECTIONS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	S-010	0	39/92

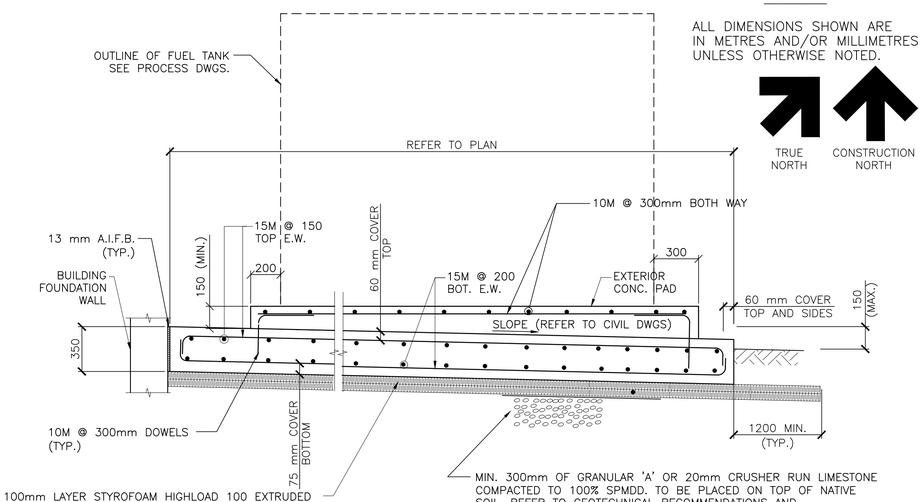


EXTERIOR SLAB PLAN 1 S006
SCALE: 1:100

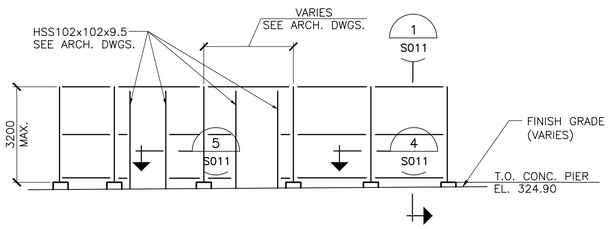


NOTE:
1. PROVIDE EXPOSURE CLASS C-1 CONCRETE IN PIERS.

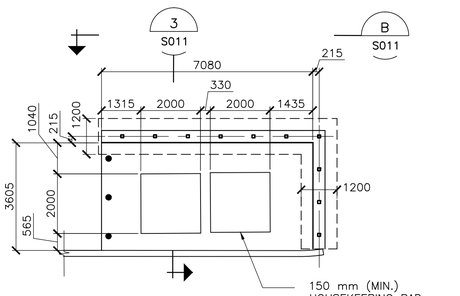
SECTION 8 S011
SCALE: 1:20



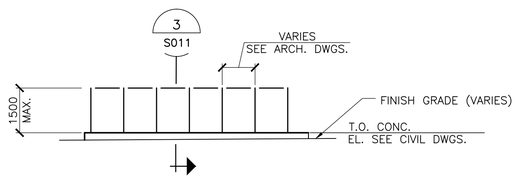
SECTION 7 S011
SCALE: 1:20



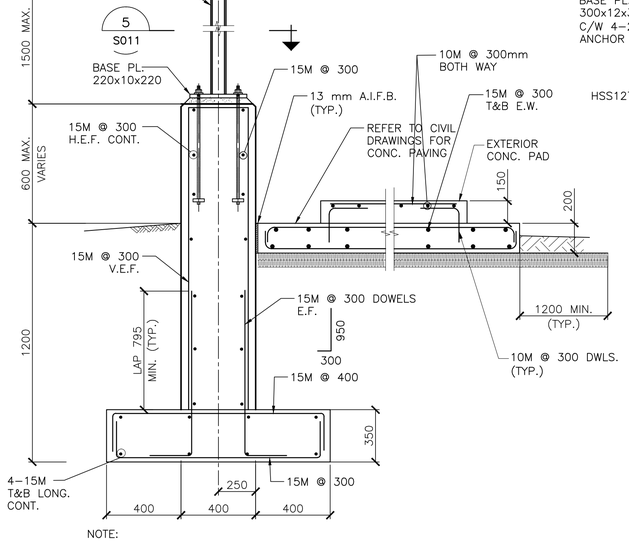
SCREEN WALL FRAME ELEVATION A S011
SCALE: 1:100



EXTERIOR SLAB PLAN 2 S006
SCALE: 1:100

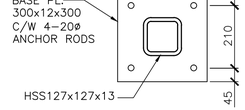


SCREEN WALL FRAME ELEVATION B S011
SCALE: 1:100

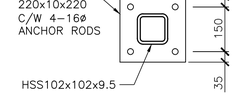


NOTE:
1. PROVIDE EXPOSURE CLASS C-1 CONCRETE IN PIERS.

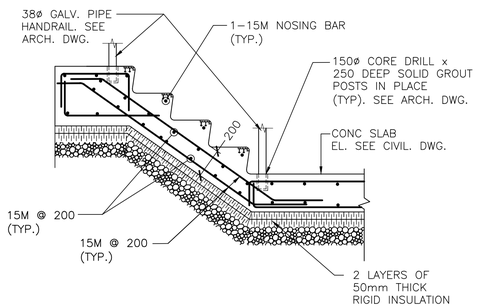
SECTION 3 S011
SCALE: 1:20



SECTION 4 S011
SCALE: 1:20



SECTION 5 S011
SCALE: 1:20



STAIR SECTION 6 S011
SCALE: 1:20

METROLINX PROJECT NO. 129709

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		0	14/03/18	TENDER			
		B	14/01/10	95% REVIEW			
		A	13/11/15	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: S.L. P.R. 13/10/11	DESIGNED BY: M.M. 13/09/15
CHECKED BY: K.H. 14/03/07	APPROVED BY: K.A. 14/03/07
SCALE: AS SHOWN FULL SIZE ONLY	

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A Division of METROLINX

ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
FUEL FARM AND REFUSE ENCLOSURE SLAB & FOUNDATION DETAILS

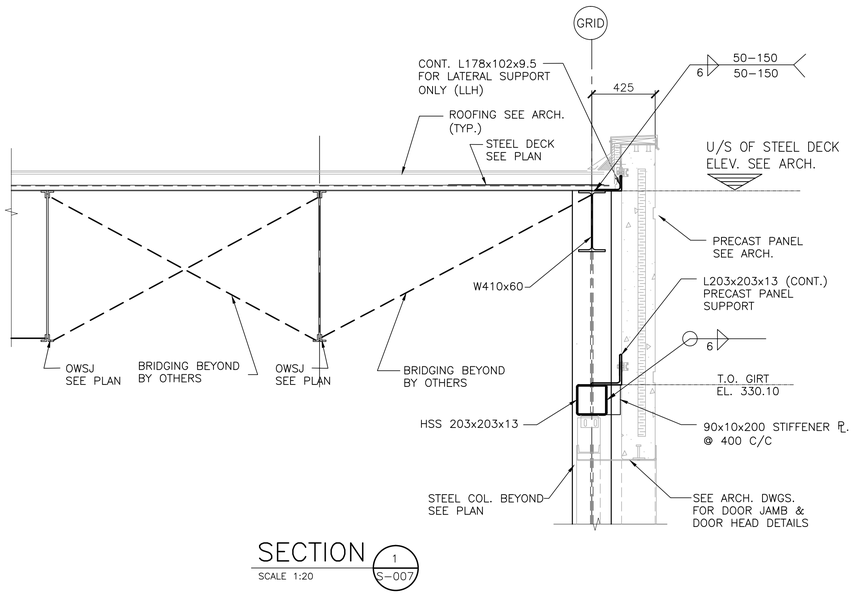
CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	S-011	1	40/92

METRIC

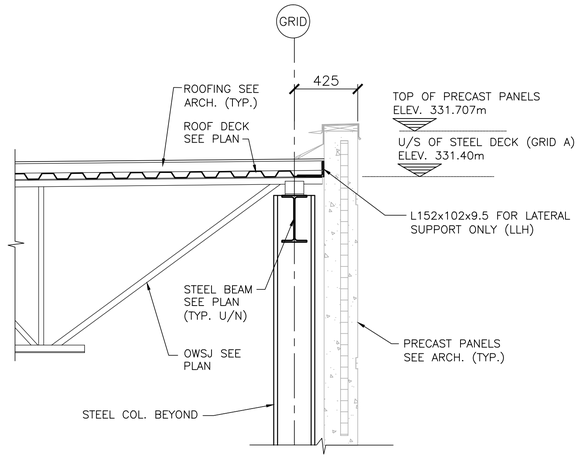
ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

TRUE NORTH

CONSTRUCTION NORTH



SECTION 1 S–007
SCALE 1:20



SECTION 2 S–007
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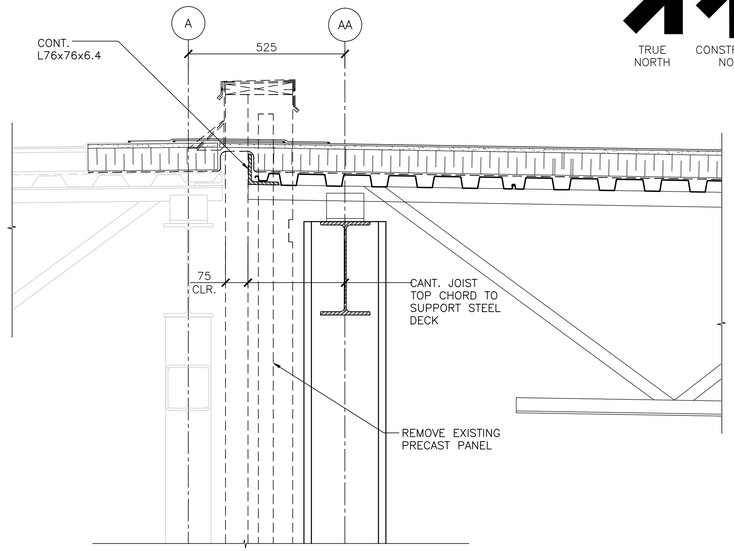

SECTION 3 S–007
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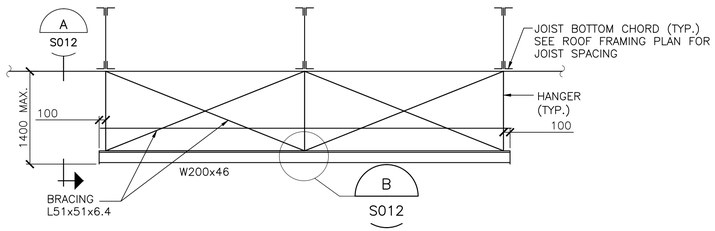
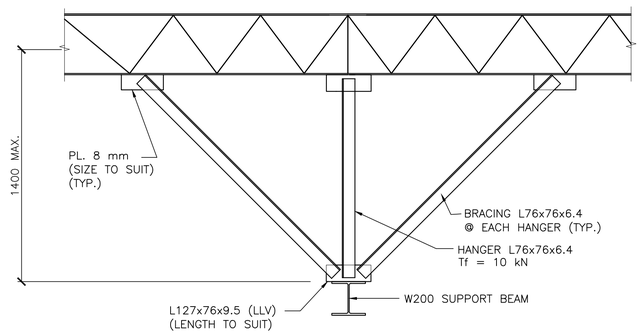
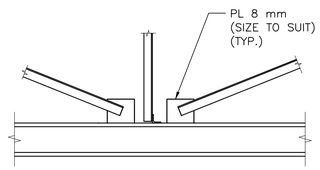


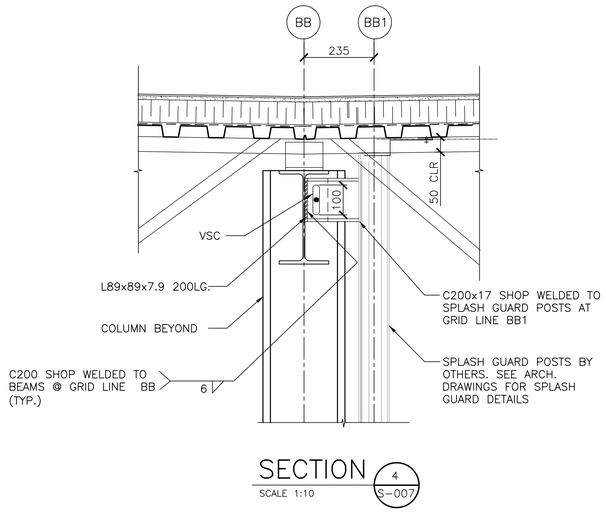
TYPICAL HOSE REEL SUPPORT DETAIL TYP.
SCALE 1:50



SECTION A S–012
SCALE 1:20



DETAIL B S–012
SCALE 1:20



SECTION 4 S–007
SCALE 1:10

METROLINX PROJECT NO. 129709

REFERENCE DRAWINGS		ISSUE			REVISIONS		
		2	16/06/30	RECORD			
		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
		B	14/01/10	95% REVIEW			
		A	13/11/15	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY: S.L 13/10/03	DESIGNED BY: M.M. 13/09/01
CHECKED BY: K.H. 14/03/07	APPROVED BY: K.A. 14/03/07
SCALE: 1:125	FULL SIZE ONLY

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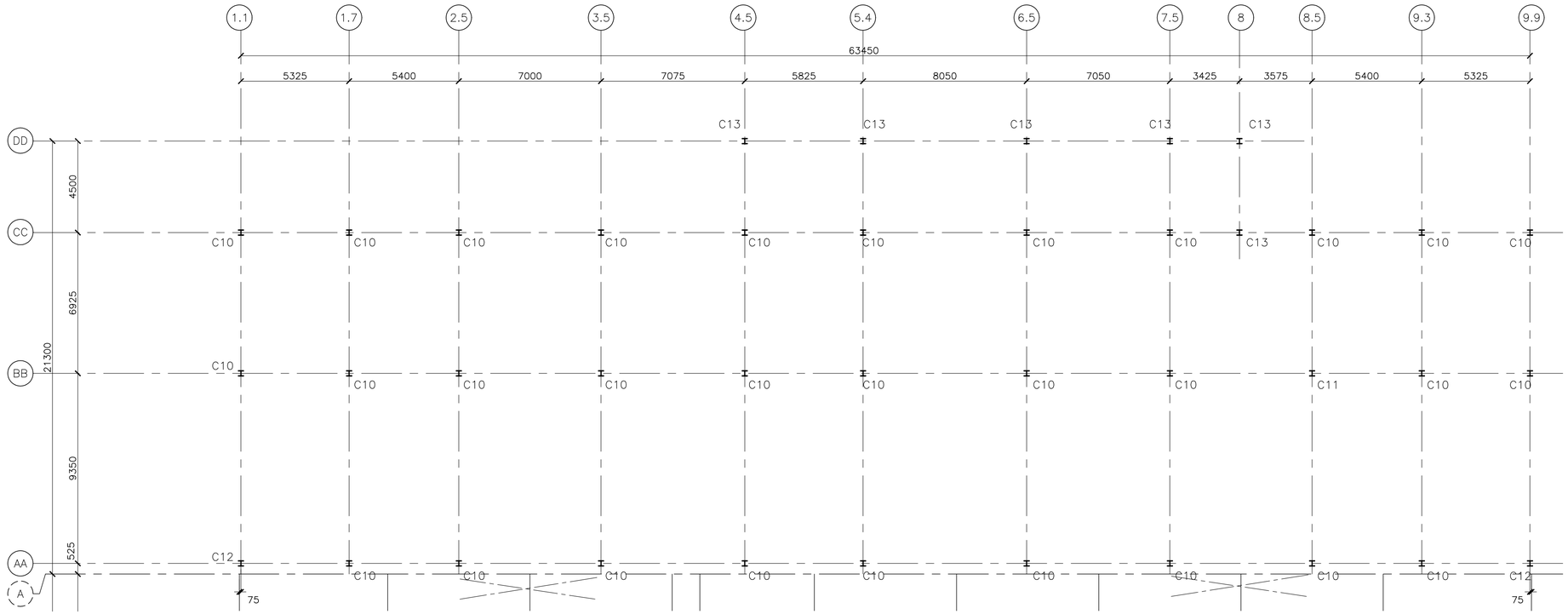
A Division of METROLINX

ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

SECTIONS AND DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT–2014–BI–001	S–012	0	41/92



COLUMN KEY PLAN (1 / S011)

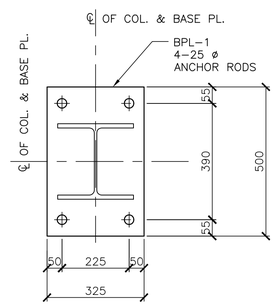
SCALE: 1:125

COLUMN SCHEDULE

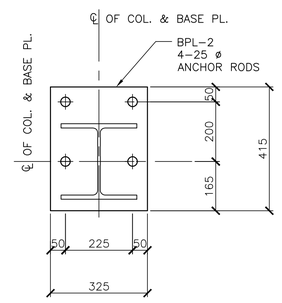
DATA \ MARK	C10	C11	C12	C13
SIZE	W250x131	W250x131	W250X131	W250X116
U/S BASE PLATE EL. (U/N) (mm)	−250	−800	−250	−250
BASE PLATE SIZE (a x t x b)	325X500X20	325X500X20	325X415X25	325X500X20
BASE PLATE TYPE	BPL1	BPL1	BPL2	BPL1
ANCHOR BOLTS (SEE DETAIL 3/S60−00−01 FOR CROSS−BRACE LOCATIONS	4−25 ø	4−25 ø	4−25 ø	4−25 ø
REMARKS	SEE DETAIL A1	SEE DETAIL A1	SEE DETAIL A2	SEE DETAIL A1

NOTES:

1. ALL ANCHOR BOLTS TO BE GRADE A307 (WELDABLE).
2. U/S BASE PLATE ELEVATION IS RELATIVE TO TOP OF SLAB ON GRADE HIGH POINT (0.00).



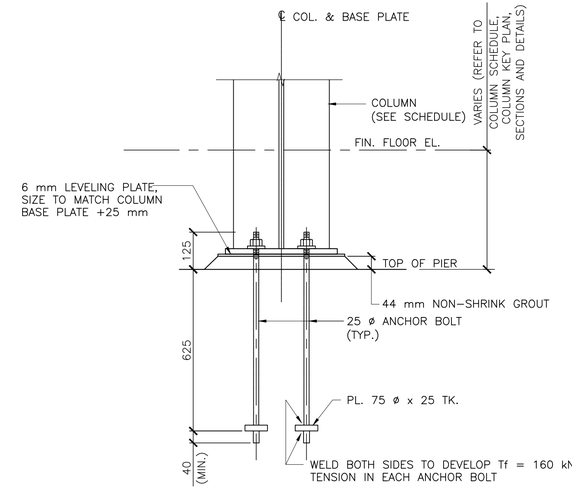
A1



A2

TYPICAL COLUMN BASE PLATE BPL−1 AND BPL−2 PLAN DETAILS (TYP.)

SCALE 1:10



TYPICAL COLUMN BASE PLATE ELEVATION DETAIL (TYP.)

SCALE 1:10

METRIC

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TRUE NORTH

CONSTRUCTION NORTH

METROLINX PROJECT NO. 129709

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		B	14/01/10	95% REVIEW			
		A	13/11/21	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY:	DESIGNED BY:
S.L P.R. 14/03/04	M.M. 13/10/09
CHECKED BY:	APPROVED BY:
K.H. 14/03/07	K.A. 14/03/07

SCALE: AS SHOWN FULL SIZE ONLY

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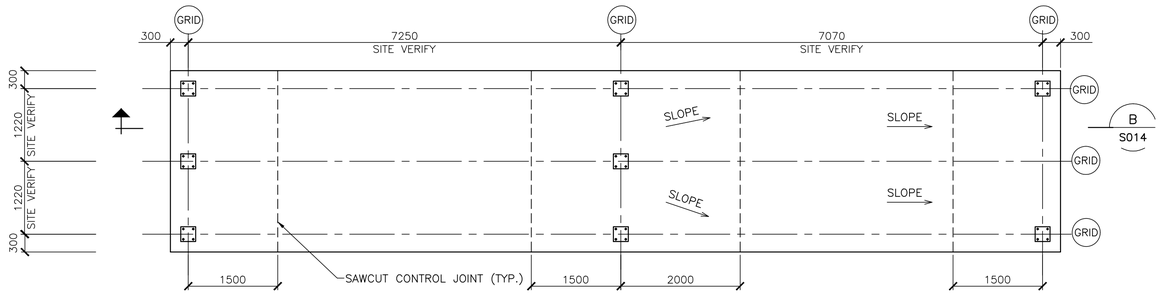
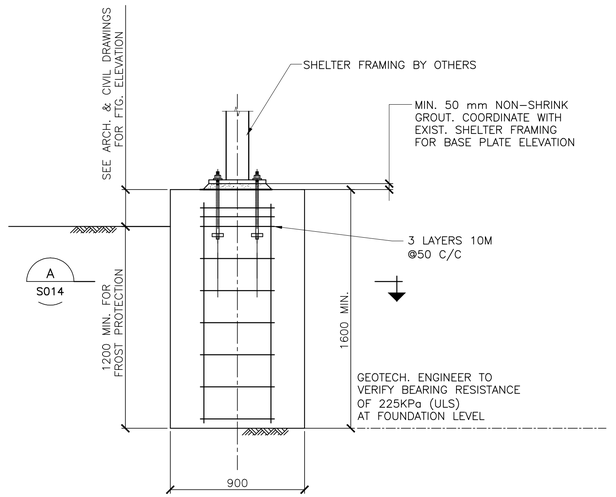
ABERFOYLE BUS FACILITY
EXPANSION AND PARKING LOT REHABILITATION
COLUMN SCHEDULE & COLUMN KEY PLAN

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT−2014−BI−001	S−013	0	42/92



BUS SHELTER FOUNDATION PLAN 1 S014

SCALE: 1:50



ELEVATION A S014

SCALE 1:20

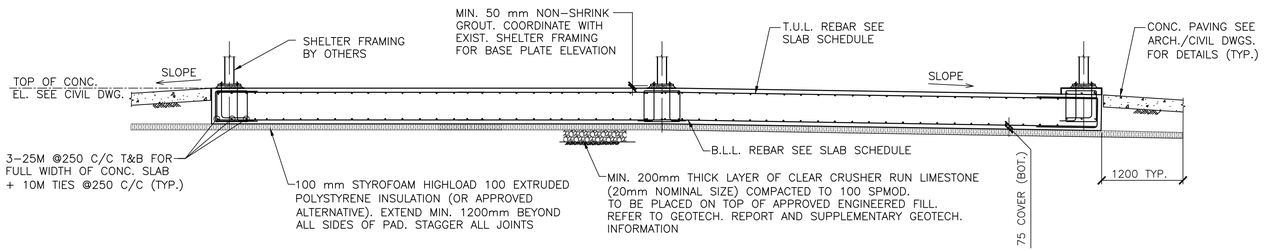
TEMPORARY FOOTING FOR BUS SHELTER POSTS (TOTAL 8)

METRIC

ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

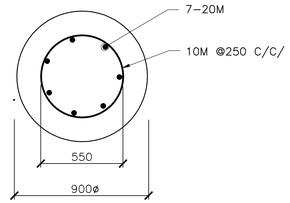
TRUE NORTH

CONSTRUCTION NORTH



SECTION B S014

SCALE: 1:50



SECTION A S014

SCALE 1:20

NOTES:

SLAB SCHEDULE

600mm THICK CONCRETE SLAB REINFORCED WITH
20M @ 250 mm o.c T.U.L LONG DIRECTION
25M @ 250 mm o.c B.L.L LONG DIRECTION
150M @ 3000 mm o.c T.L.L & B.U.L SHORT DIRECTION (TEMP. STEEL).

DESIGN LOADS

1. MAX. DEAD LOAD FOR THE STRUCTURE: 2.4 kPa.
2. MAX. LIVE LOAD DUE TO OCCUPANCY: 4.8 kPa.
3. ALL EXISTING COLUMN BASEPLATES ARE BY SHELTER FABRICATOR.

GENERAL NOTES

1. REFER TO CIVIL DRAWINGS FOR FOUNDATION SLAB GRADES.
2. ALL EXISTING COLUMN BASEPLATES ARE BY SHELTER FABRICATOR.
3. CONTRACTOR SHALL CHECK ALL DIMENSIONS AND REPORT ANY DISCREPANCY TO THE CONSULTANT BEFORE PROCEEDING WITH THE WORK.
4. REINFORCING STEEL SHALL BE EPOXY COATED DEFORMED BARS CONFORMING TO CSA STANDARDS G30.18 WITH A MINIMUM YIELD STRENGTH OF 400 MPa.
5. ALL REINFORCING STEEL SHALL BE SHOP FABRICATED.
6. REINFORCING STEEL SHALL BE PROPERLY SUPPORTED WITH WIRE BAR SUPPORTS AND CHAIRS.
7. THE CONTRACTOR SHALL CO-ORDINATE THE PLACEMENT OF ELECTRICAL CONDUITS, THE SLAB HEATING SYSTEM AND ALL SLAB INSERTS WITH THE PLACEMENT OF REINFORCING STEEL.
8. ALL ANCHOR RODS REQUIRED FOR THE STRUCTURE SHALL BE 20 Ø CAST-IN-PLACE IN THE FOUNDATION SLAB POUR (MIN. 4 FOR EACH COLUMN BASE PLATE). NO DRILL-IN TYPE ANCHORS SHALL BE PERMITTED.
9. CONCRETE SHALL BE NORMAL DENSITY CONCRETE IN CONFORMANCE WITH THE FOLLOWING. MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS: 35MPa CLASS OF EXPOSURE: C-1.

METROLINX PROJECT NO. 129709

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		1	14/09/05	CONSTRUCTION			
		0	14/03/18	TENDER			
		B	14/01/10	95% REVIEW			
		A	13/11/21	50% REVIEW			
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY:	DESIGNED BY:
S.L 13/10/09	M.M. 13/09/24
CHECKED BY:	APPROVED BY:
K.H. 14/03/07	K.A. 14/03/07
SCALE: AS SHOWN FULL SIZE ONLY	

Disclaimer:

This drawing includes contractor's information which has not been verified by the architect/engineer as to its completeness and accuracy. The architect/engineer does not certify or guarantee the completeness and accuracy of this drawing.

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ABERFOYLE BUS FACILITY

EXPANSION AND PARKING LOT REHABILITATION

BUS SHELTER FOUNDATION PLAN AND DETAILS

CONTRACT NO.	DWG. NO.	REV.	SHEET
PT-2014-BI-001	S-014	0	43/92

User Name: Andrew Luk Plot Date/Time: Wednesday, July 20, 2016 12:49:21 PM Path and File Name: J:\24RX13.0259\5.9 DRAWING\SUBMISSIONS\2016-07-XX_RECORD\STRUCT\CAD\129709-S014.DWG

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CONSULTANT'S MONTHLY STATUS REPORT

Consultant: _____ **GO Project No.:** _____

Report No.: _____ **Date:** _____

Project/Description: _____

Agreement No: _____

Agreement Fees: _____ **Fee to Date:** _____ **Forecast:** _____ ***Final Cost:** _____ **Over/(Under):** _____

		Work Schedule Control Reporting					Cost Control Reporting							
		Start Date D/M/Y	Completions Dates D/M/Y		% of Work Effort Expended		Original Contractual Amount	Current Contractual Amount	Cost Invoiced This Period	Cost Invoiced to Date	% of Fee Expended		Forecast to Complete	Forecast Final Cost
Code	Pay Items or Task Description	Scheduled	Scheduled	Actual	Planned	Actual Relative to Planned					Planned	Actual Relative to Planned		
Grand Total					100 %	%	$0.00	$0.00	$0.00	$0.00	100 %	%	$0.00	$0.00

1 **Work Completed This Period**

2 **Work Planned For Next Period**

3 **Work Schedule Review**

4 **Work Cost Review**

5 **Inputs Required From Others and Areas of Concern**

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Contractor Performance Appraisal

Section 1 Contract Details

Name of Contractor		
Contractor Project Manager		
Address - include street no. & name, city, province/state, postal code		
Original Contract Date	**Contract No.**	**Project No.**
Contract Name		
Division	**Branch**	
GO Project Coordinator		

Section 2 Performance Appraisal

This appraisal represents GO Transit's opinion at the time of project completion.

Scale 2,3,4 = Unsatisfactory
5,6,7 = Satisfactory
8,9 = Excellent

	Weight	Score	N/A	Total
Project Management = 25%				
Experience and capability of staff	25			0
Organization, scheduling and control of staff	15			0
Ability to work with minimum of direction	20			0
Identification and processing of changes	25			0
Public relations	15			0
Project Management TOTAL				0
Work Performance = 50%				
Knowledge and adherence to appropriate codes and regulations	15			0
Adherence to drawings and specifications	10			0
Quality Control	15			0
Field safety	30			0
Schedule adherence	15			0
Problem recognition and resolution	10			0
Sufficiency and Condition of Equipment and Tools	5			0
Work Performance TOTAL				0
Final Product = 25%				
Quality and workmanship	40			0
Deficiency Completion	30			0
Project Close Out	30			0
Final Product TOTAL				0
Overall Rating				0

.../2

Section 3 Qualification in Support of the Rating

Section 4 Changes

Original Contract Amount	# of Change Orders	Amount of Change Orders	Final Contract Amount

Description of Change Orders
(List only those Changes that could have been avoided and/or learned from for the benefit of future Contracts)

	Estimated	Actual
Construction Start		
Substantial Performance		
Total Performance		

Reasons for Variance

Section 5 Approval

Compiled by: Consultant	**Firm**	**Project Manager**	**Date**
Reviewed by: GO Transit	**Manager**	**Director**	**Date**

Contract Performance Appraisal

Section 1 Contract Details

Name of Vendor:		Vendor Project Manager:	
Street:	City:	Province/State:	Postal/ZIP Code:
Original Contract Date	Contract No. RQQ-2017-BI-126	Project No. 129709	
Contract Name:	Engineering Services for Aberfoyle Bus Facility Office Expansion		
Category of Work:	Design Engineering and Construction Administration		
Division:	Bus Infrastructure - Bus Program	Branch:	Rapid Transit - CPG
Project Coordinator:	Jean-Baptiste Nguyen		

Section 2 Performance Appraisal

Scale

0: Unacceptable - Does not meet any requirements of the key performance indicator
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

	Applied Weight	Score
Quality and Process	35%	0.0
Quality of work performed	25%	
Compliance to required staff qualifications	5%	
Compliance to Project Close Out requirements	5%	
Financial Management	20%	0.0
Compliance with contract terms including pricing	15%	
Compliance with invoice submission requirements	5%	
Customer Satisfaction	35%	0.0
Ability to work with minimum of direction	15%	
Organization, scheduling and control of staff/subcontractors	10%	
Compliance with all interim/final schedule requirements	10%	

Contract Performance Rating	*0%*
Corporate Performance Rating (0% to 100%)	*100%*
Vendor Performance Rating (90% Contract Performance Rating and 10% Corporate Performance Rating)	*10%*

Section 3 Qualifications in Support of the Rating

Section 4 Vendor Performance Rating Calculation

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.

METROLINX

METROLINX
CAPITAL PROJECTS GROUP (CPG)
CONSTRUCTION SAFETY MANAGEMENT PROGRAM (CSMP)

TITLE:	CONSTRUCTION SAFETY MANAGEMENT PROGRAM (CSMP)	REVISION:	5.1
DOCUMENT NUMBER:	CSMP-05	REVISION DATE:	2017 May
APPROVED BY:	ERIC HOPKINS, SR. MANAGER CMO	STATUS:	FINAL

DOCUMENT CONTROL

Revision No.	Date	Author	Revision Description
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 my 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: • completed CMO Contractor Orientation Training, • been issued and is in possession of a valid personal identification card and hard hat sticker, and • been granted access to the project site by CMO.

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, • is qualified because of knowledge, training and experience to organize the work and its performance; • is familiar with this Act and the regulations that apply to the work; and • has knowledge of any potential or actual danger to health or safety in the workplace.
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: *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.* 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: • CMO personnel; • "Consultants" as defined herein; • "Project Delivery Team" as defined herein; • "Project Lead" as defined herein; • "Flagmen" as defined herein (as it relates to the safe movement of Rail Equipment only).
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	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: o 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; o the moving of a building or structure; and o any work or undertaking, or any lands or appurtenances used in connection with Construction. 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.
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: • lock-out and tag-out • isolation of high pressure systems • confined space entry • live electrical work • work requiring fall protection • designated substances abatement • Right-of-Way protection • trenching and excavation • utility locates • vehicle operations
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: o that does not have a legal contract for work with Metrolinx or any of Metrolinx's contractors, o is not regularly employed in the project zone and who is performing only visual inspection work, and/or o is not involved in the physical execution of the project work.
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.

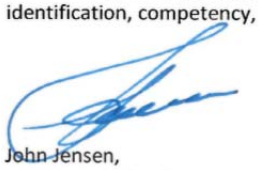
Metrolinx procures construction and maintenance work using the most appropriate method available: design-build (DB), design-bid-build (DBB), design-build-finance (DBF), etc. The resultant procurement model positions Metrolinx to occupy one of three roles based on the contractual relationships, corporate 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

D 2.0 Metrolinx's Corporate Health and Safety Policy

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.

January 2017 | January 2016 | January 2015 | January 2014

Bruce McCuaig,
President & Chief Executive Officer
Metrolinx

METROLINX

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 statues 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 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.

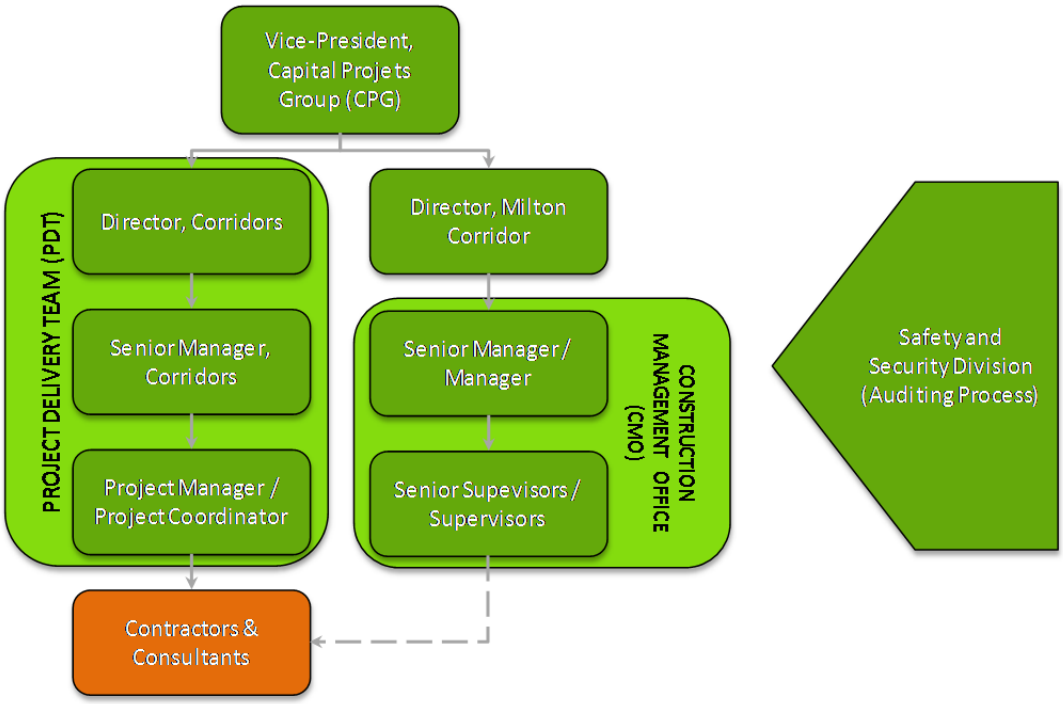
F 22.0 Program Audit

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.

SECTION K : SECTION INTENTIONALLY LEFT BLANK

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

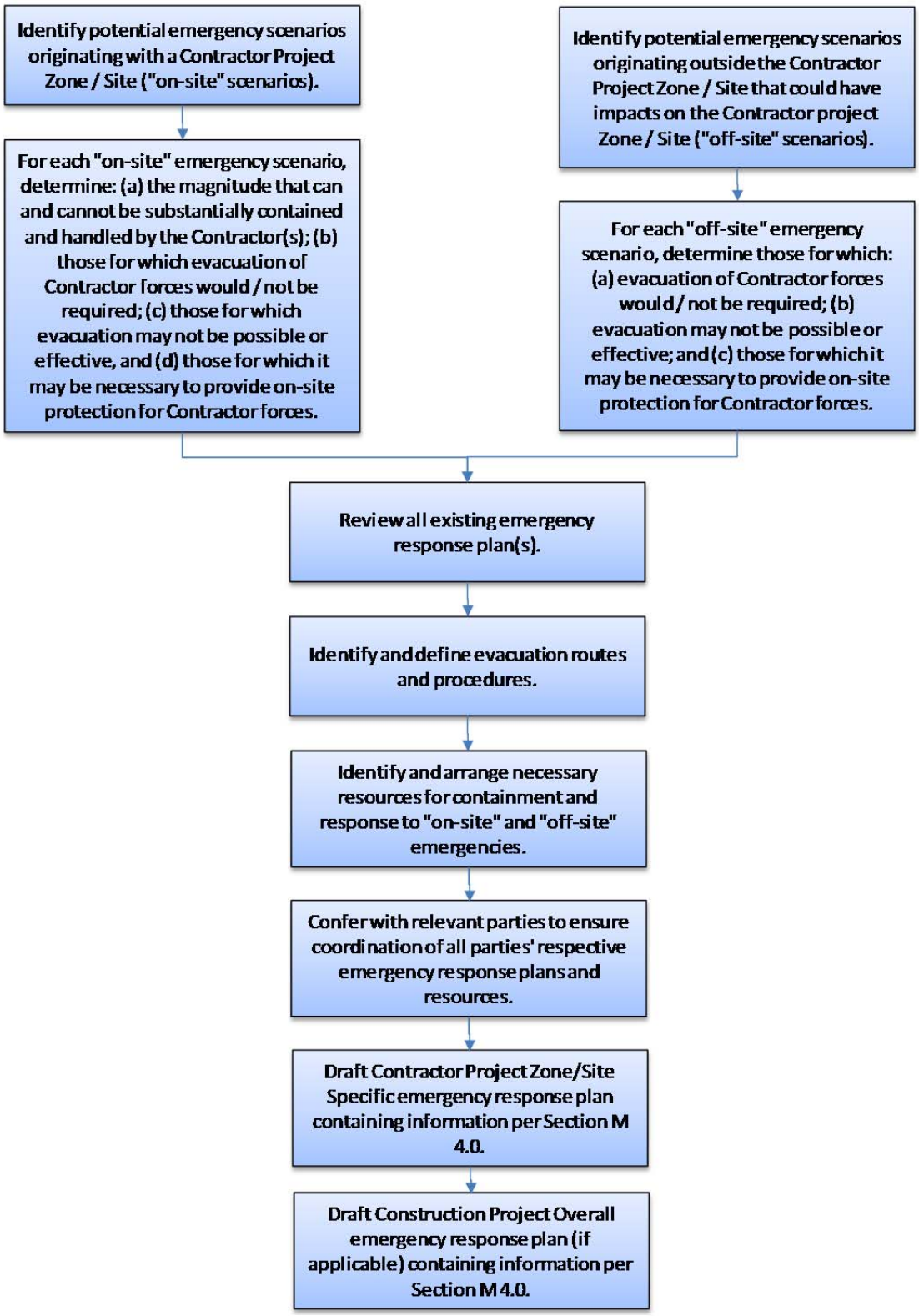
M.5.8 Defined means and procedures for educating site staff on process of evacuation.

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 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

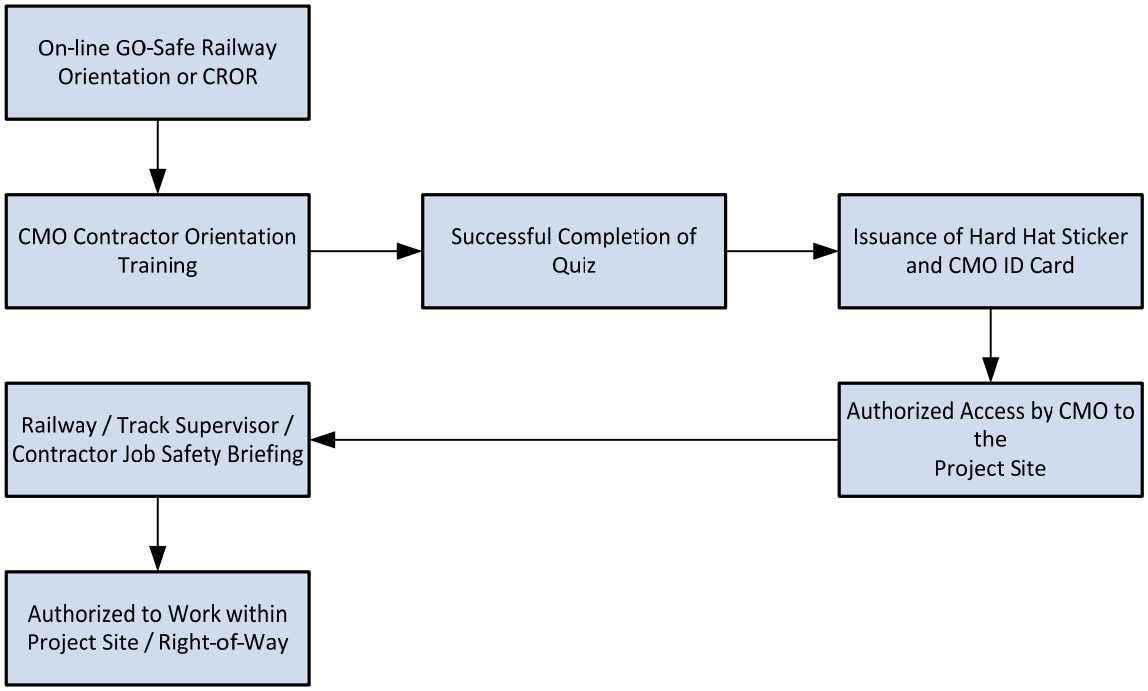
Q.1.1 Within or adjacent to the ROW, no person, including Contractors, Consultants, inspectors, supervisors, representatives from architectural or engineering firms, or others (excluding Visitors as defined in this Program and as permitted access under Section S of this Program), shall be permitted access 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:



SECTION R : SECTION INTENTIONALLY LEFT BLANK

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.

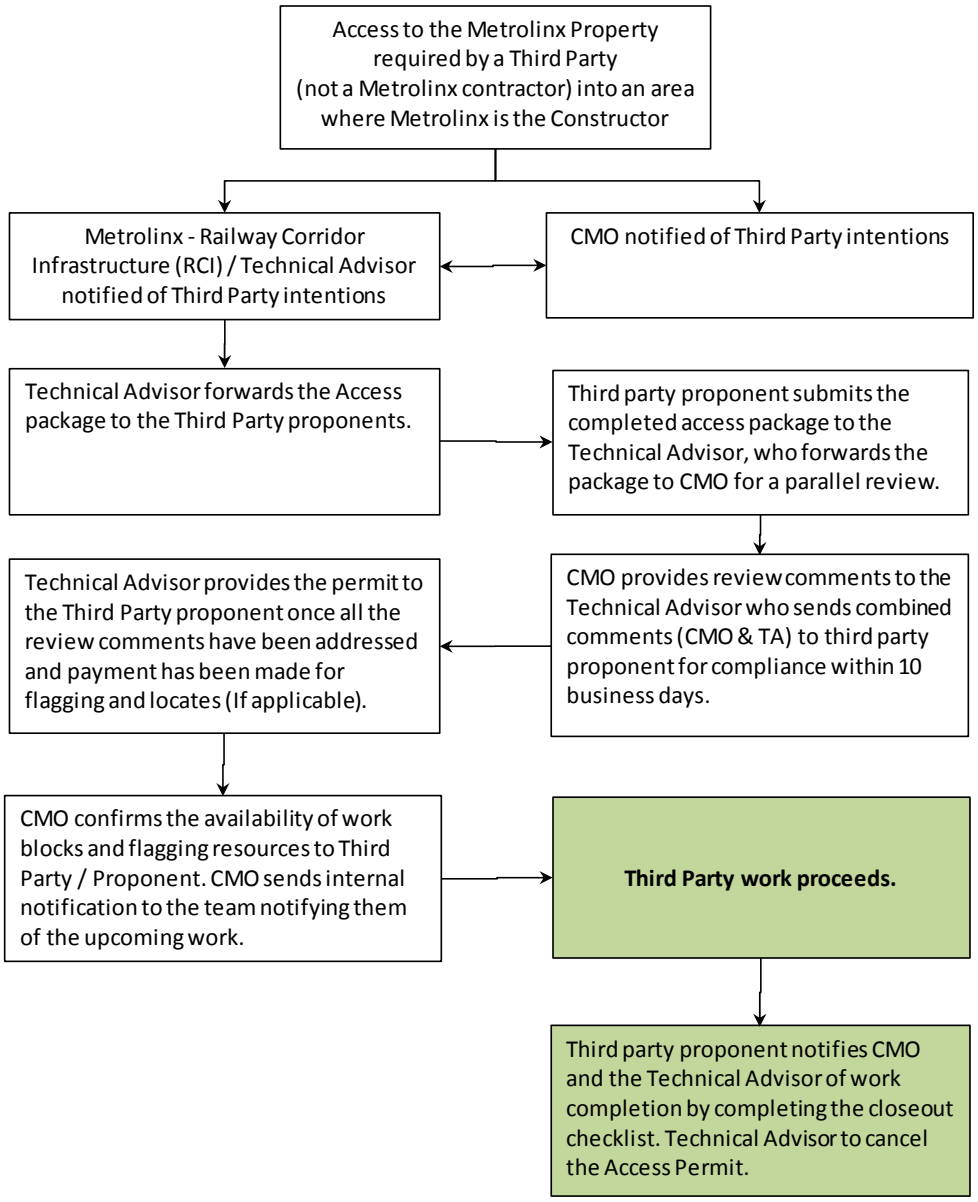
S.5.6 Only upon the satisfaction of the Technical Advisor and CMO, will the Third Party be granted access and permission to perform their work as proposed in their Work Plan and only when the work can be coordinated with existing work adjacent, above or below the area.

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 Contractors 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

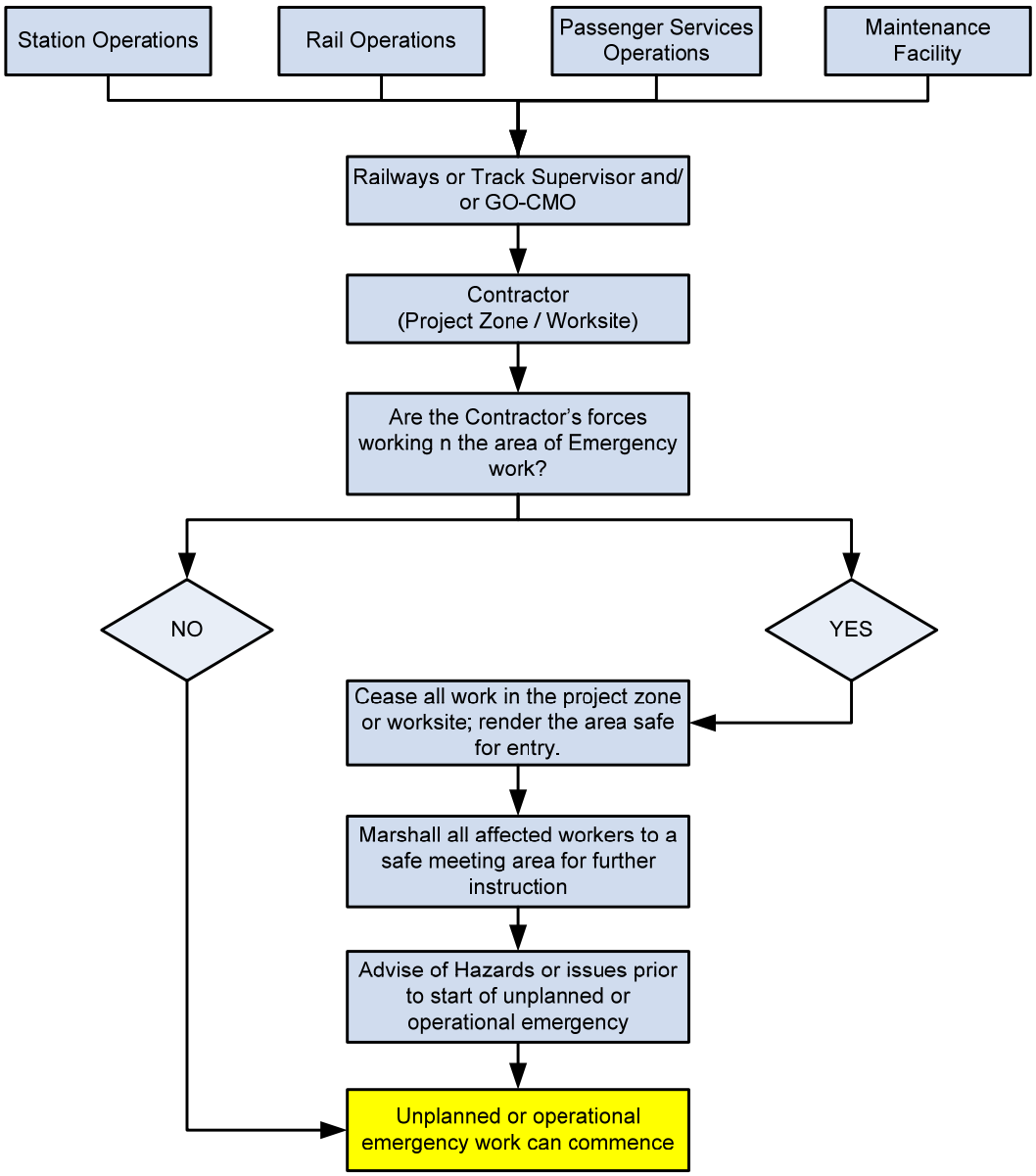
S.12.1 In the event of a situation where access to a Contractor's project zone is required in order to permit the continuous movement of rail traffic, the Flag Person or Track Supervisor (in rail yards) and/or CMO has priority and will advise the Contractor.

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.

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. 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.

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	

KEY:	
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 and 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				Within 14 Days	Professional Engineer's Report
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		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		-	-	-

KEY:
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.

SECTION CC : SECTION INTENTIONALLY LEFT BLANK

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.

SECTION EE : SECTION INTENTIONALLY LEFT BLANK

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 Constructor 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.

DEFINITIONS:

"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.

INSTRUCTIONS:

Complete Sections 1, 2 and 3 to determine whether Metrolinx is a Constructor or Owner for the Project.

SECTION 1 - PROJECT INFORMATION

Project Name:	Director:
Project Number:	Project Manager:
Corridor:	Project Coordinator:
Location (Facility, Municipal Address / Intersection / Mileage):	

SECTION 2 - CONTROL

"Control" over the execution of a construction project provides the opportunity to accomplish any of the following:

- ✓ Overlapping projects and contractors if weather, supply and/or other delays compress sequential work schedules
- ✓ Scheduling multiple contractors engaged directly by Mx to work without time or space restrictions and potentially advancing the construction schedule
- ✓ 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 fir
- ✓ Commissioning equipment by GO / Mx employees before the GC completes their work
- ✓ Greater assurance in the quality of the work through Mx review of work plans
- ✓ Greater assurance in the safety of the workers, passengers and public during the execution of the project

DO YOU WANT "CONTROL"?

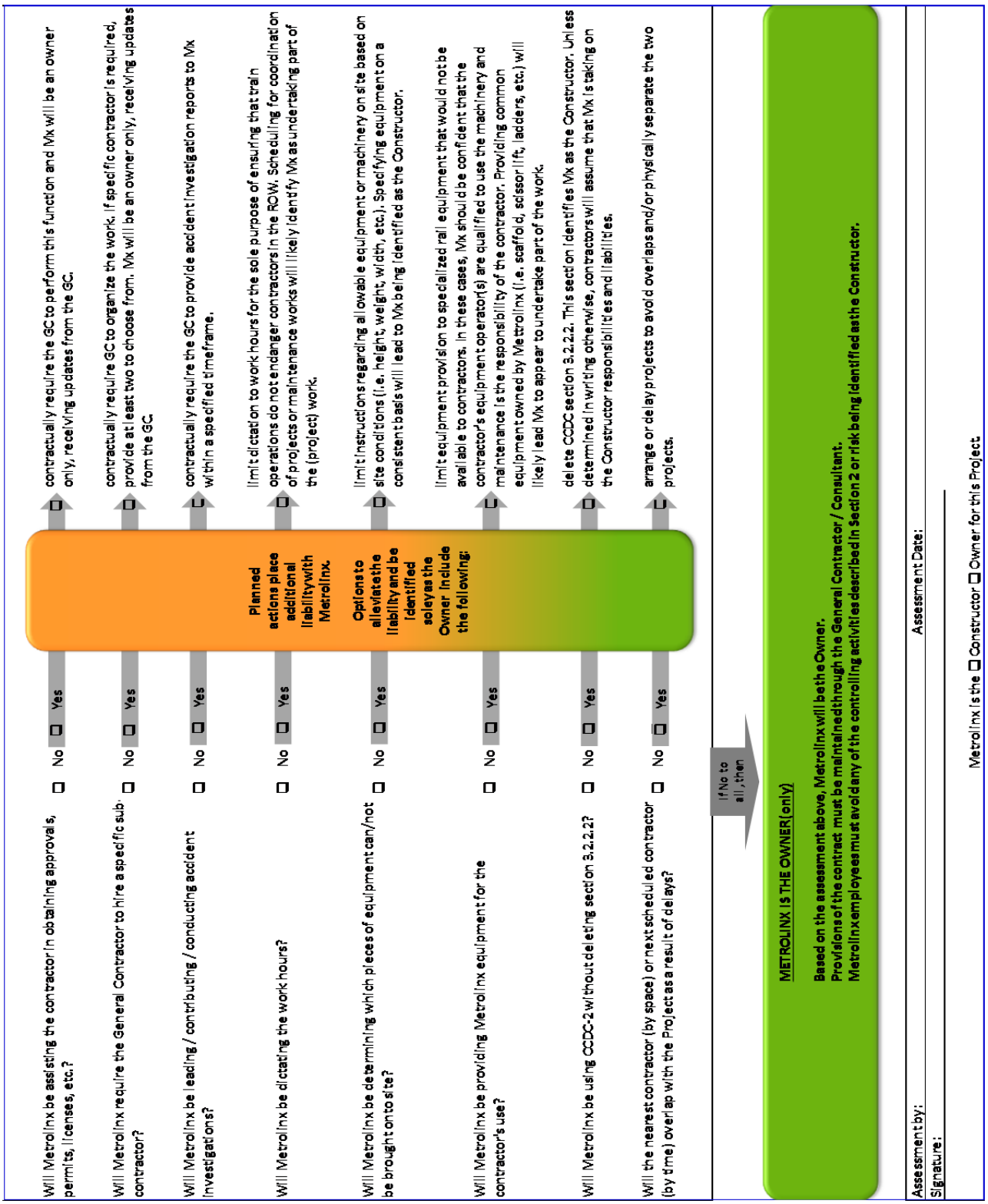
☐ No ☐ Yes

METROLINX TAKES ON CONSTRUCTOR ROLE

Metrolinx will be the Constructor and CPG will need to fulfill the legal requirements.

Coordination between PDT and CMO must be established prior to tendering contracts to ensure that due diligence and safety requirements will be met.

SECTION 3 - CONTRACTS AND SITE ACTIVITIES
Will Metrolinx be training workers on site safety requirements?
No
Yes
contractually require GC to provide training and Mx will be an owner only, redeving updates from the GC.
Will Metrolinx need to provide site safety orientation / training because of activities beyond the control of the contractor?
No
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?
No
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?
No
Yes
enforce contractual safety requirements through the General Contractor's site supervisor only (ie. 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?
No
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?
No
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?
No
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?
No
Yes
contractually require the GC to perform this function and Mx will be an owner only, receiving updates from the GC.
Will Metrolinx be filing the Notice of Project?
No
Yes
contractually require the GC to perform this function, fulfil the legal requirements of the Constructor, 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?
No
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?
No
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)?
No
Yes
create a separate entrance for each Project, document the separation plan and ensure that it is maintained throughout the Project.
Planned actions place additional liability with Metrolinx.
Options to alleviate the liability and be identified solely as the Owner include the following:


Will Metrolinx be assisting the contractor in obtaining approvals, permits, licenses, etc.?
No
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?
No
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?
No
Yes
contractually require the GC to provide accident investigation reports to Mx within a specified timeframe.
Will Metrolinx be dictating the work hours?
No
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?
No
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?
No
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?
No
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?
No
Yes
arrange or delay projects to avoid overlaps and/or physically separate the two projects.
Planned actions place additional liability with Metrolinx.
Options to alleviate the liability and be identified solely as the Owner include the following:
If No to all, then
METROLINX IS THE OWNER (only)
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.
Assessment by:
Assessment Date:
Signature:
Metrolinx is the ☐ Constructor ☐ 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:			

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:

(a) is qualified because of knowledge, training and experience to organize the work and its performance,

(b) is familiar with [the Act] and the regulations that apply to the work, and

(c) has knowledge of any potential or actual danger to the health or safety in the workplace.

Proposed Competent Supervisor(s) for the Work	
Name, Company	**Is Metrolinx the Constructor for this Project?** If yes, for each named supervisor, attach evidence of competency which may include but it not limited to the following: ❑ 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. ❑ OHS Certifications or Designations
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 _____ **Contract Number** _____

General Contractor _____

Item	Reference	Prior to Start of Work	As required through project	Upon item completion	Date Received	Revisions Required	Reason for Revision / Comments
REGULATORY DOCUMENTS							
MoL Notice of Project (Form 0175) *For CMO Projects, Mx to file NOP*	O.Reg.213/91, s.6	(X)					
MoL Registration of Employer (Form 1000) *Required for all contractors and sub contractors*	O.Reg.213/91, s.5	X	X				
WSIB Clearance Certificate (90 validity)	WSIA, s.141.2	X	X				
Permit To Take Water (PTTW) *>50,000 L per day*	OWRA, s.34	(X)					
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)					
TRAINING DOCUMENTS							
GO-Safe Rail & CMO Orientation *Mandatory for all site personnel*	CSMP	X	X				
WHMIS Training *Mandatory for all site personnel*	Contract	X	X				
Proof of Qualification for Site Safety Representative		X					
Proof of Qualifications for Competent Supervisor(s) *Complete list below of submittals*	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)(	(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	RRO 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	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 Harassement 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	OHSA	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

CMO Owner Project Start Up Checklist

Project Name | **Date**

Project Number | **Contract Number**

General Contractor

	Item	Reference	Date Received	Comments
	COLLECT DOCUMENTS FOR PROJECT FILE			
	CMO Project Tracking Sheet	CSMP - Owners		
	Contract Documents	N/A		
	Metrolinx Project Risk Assessment (PDT)	Metrolinx Project Management Handbook		
	MoL Notice of Project (Form 0175)	O.Reg.213/91, s.6		
	Permit To Take Water (PTTW) *>50,000 L per day*	OWRA, s.34		
	Street Occupancy Permit (if required)	TMC, §743-18		
	Sidewalk Occupancy Permit (if required)	TMC, §743-42		
	Tree Removal Permit, with Arborists Report (if required)	TMC, §813-7		
	Contractor's Site Specific OHS Policy and Procedure	Contract Requirement		
	Contractor Competent supervisor declaration	Contract Requirement		
	Emergency Contact List	Contract Requirement		
	Work Schedule - at least two-week look ahead	Contract Requirement		
	COLLECT AND REVIEW			
	Traffic Control Plan	Contract Requirement		
	Emergency Evacuation Plan	Contract Requirement		
	IFC Drawings	N/A		
	GC Site Layout Plan	Contract Requirement		
	Contractor Hazard Risk Assessment	Contract Requirement		
	Work Plans	CSMP - Owners / As required / Contract Requirement		WP's required when work will be carried out in public areas, will have a direct effect on the public, or is outside the contractors delineated project area .
	KICK-OFF MEETING REVIEW REQUIREMENTS			
	GO-Safe Rail *Mandatory for all site personnel*	Contract Requirement		
	Track Protection	Contract Requirement		
	CMO Emergency Line	CSMP - Owners		
	Incident Reporting	CSMP - Owners		
	Contractor's Monthly Safety Submission	CSMP - Owners		
	Isolation of construction zone	CSMP - Owners		
	CMO's Observations and Audits	CSMP - Owners		
	Develop			
	Pre-Project Risk Assessment (Metrolinx Stakeholders)	CSMP - Owners		
	On-Going Risk Assessment (Metrolinx Stakeholders, PDT/GC)	CSMP - Owners		
	Legend			

O.Reg.213/91	Construction Projects Regulation
OWRA	Ontario Water Resources Act
TMC	City of Toronto Municipal Code

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:
  - o Metrolinx Project Name
  - o Metrolinx Project No.
  - o Corridor
  - o Subdivision / Limits of Work
  - o Address, map, evacuation routes, directions and access points
  - o 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:
  - o address all types of situations and hazards which may arise at the site?
  - o cover everyone who may be present at the site (guests, visitors, suppliers, etc.)?
  - o allow for quick and safe evacuation when needed?
  - o clearly identify routes to safe assembly areas?
  - o consider special assistance for hearing, vision or mobility-impaired employees / workers
  - o 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?
  - o 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?
  - o If yes, is it required to be regularly tested to ensure its effectiveness?
  - o Does the plan contain the responsibilities of all parties and stakeholders involved?
  - o 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:

☐ General Access ☐ Trenching & Excavation ☐ Hot Work

☐ Work requiring Use of Fall Protection ☐ Use of Explosives ☐ Signals

☐ Work on Electrical Equipment (live or not) ☐ Crane & Hoisting ☐ Confined Space Entry

☐ Designated Substances (Contact with, Disturbance, or Removal) ☐ 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 hording 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").

"Visitor" means any person that:
(a) does not have a legal contract for work with Metrolinx or any of Metrolinx's contractors,
(b) is not regularly employed in the project zone and who is performing only visual inspections / work, or
(c) does not have a direct role in the execution of the project work.

NOTE:

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 authority and control over the Visitor for the purposes of their safety, and who is trained and authorized to access the named Metrolinx Project Zone.
4. Visitors must comply with the Rules stipulated below.

SECTION 1 - REQUEST, to be completed by the MX or GC Requestor who shall identify and endorse the named "Authorized Person" below.

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:	

SECTION 2 - ACKNOWLEDGEMENT, to be verbally reviewed by CMO with the Visitor and Authorized Person prior to issuance.

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.

REMEMBER:

- 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:**

SECTION 3 - CONFIRMATION, to be completed by CMO

CMO Construction Supervisor: (print name)	**CMO Construction Supervisor: (signature)**

Permit Valid From: (YY/MM/DD, Time)

THIS PERMIT EXPIRES 48 HOURS FROM THE DATE / TIME NOTED ABOVE.

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
☐	Project Delivery Team			
☐	CMO			
☐	GO Operations			
☐	GO Station			
☐	Rail Corridors			
☐	Transit Safety			
☐	Track COE			
☐	Other:			
☐	Other:			
☐	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
Provide a schedule breakdown in the available space below or as an attachment to this work plan with reference made in Part F *Note: The time scale of the schedule should correspond to the level of complexity of work ie. Hourly, Days, Weeks*

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.

Task No.	Activity/Task	Task Details	Location	Duration
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	*Delivery truck, wheel chocks, barricades, safety cones, caution tape*
02	*Scissor lift, fall protection harness and lanyard, zip ties, various hand tools ie. pliers*

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**
❑	Hot Work	O. Reg. 632/05, s.2
❑	Work Requiring Fall Protection	O. Reg. 297/13 *Note: Provide **site specific** fall rescue plan*
❑	Confined Space Entry	O. Reg. 632/05 Proof of Confined Space Training required *Note: Provide **site specific** CSE rescue plan*
❑	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
❑	Crane or Hoist Operations	O. Reg. 213/91, s.150 Proof of Crane / Hoisting Training required
❑	Tunnels , Shafts, Caissons or Cofferdam	O. Reg. 213/91, s.245 Proof of MoL Notification (Form 0077) required
❑	Designated Substances	O. Reg. 278/05, s.11 Proof of MoL Notification for Asbestos Removal Work (0072) may be required
❑	Site Visitor	Any visitor(s) access must be approved by CMO via the Site Visitor Permit.
❑	Shut Down (HVAC, electric power, fire alarm & sensors, fire suppression)	Permit required for all operations affecting building occupants and fire safety
❑	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

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 **NOT** just related to worker injury. They also may include:

"loss of system" - impact to bus or train operation; unable to repair equipment or inspect etc.

"**environmental damage"** – 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).

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

Once the frequency and severity have been determined, the Risk Rating can be determined from the Risk Rating table.

The result is a Number / Letter designation and a colour designation.

	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*	*- Hit by train movement* *- Lift uncharged and cannot be walked across or gets stuck on track* *- Truck or lifts hit signals or other infrastructure*	*C* *C* *C*	*1* *2* *2*	*1C* *2C* *2C*	*- Ensure flagging is provided to cross tracks* *- Drive delivery truck across to Platform 3* *- Ensure power source is available on Platform 3 for charging* *- Arrange for spotter to walk in front of truck*	*D* *D* *D*	*3* *3* *2*	*3D* *3D* *2D*
02	*Install cable above Platform 6/7*	*- Hit by train movement* *- Interactions with passengers* *- Fall from height* *- Scissor lift falls into ~~trackbed~~* *- Electric shock* *- Pollute ~~trackbed~~ with ~~zipties~~*	*C* *A* *B* *B* *B* *A*	*1* *3* *2* *2* *2* *3*	*1C* *3A* *2B* *2B* *2B* *3A*	*- Ensure TOPs for tracks 3 and 4* *- Barricade work area; caution tape vertical elements* *- Provide fall arrest equipment and training to workers; CMO Work at Height Permit* *- Ensure spotter on ground when navigating around narrow platform locations* *- Lock out electrical source; ensure electrician on crew; CMO Electrical Permit*	*D* *D* *D* *D* *D* *C*	*3* *3* *3* *3* *3* *3*	*3D* *3D* *3D* *3D* *3D* *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

D.1 General Contractor Staff		
All persons on site must hold valid CMO Orientation training. List all staff member names, position and contact number.		
Name, CMO #	**Role**	**Emergency Contact Number**
	Site Supervisor	
	Health and Safety Representative	
	Project Manager	
	Project Coordinator	

D.2 – Subcontractor Staff		
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.		
Company Name	**Name, Role, CMO #**	**Contact Number**

D.3 – 3rd Party
List of other personnel that will be required to assist with the completion of this work (i.e. Flagging company (TTR/A&B, PNR), GO Community Relations, Construction Management Office (CMO).

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 Click here to name of Hospital.	
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
Click here to enter additional Emergency Contact.	
Click here to enter additional Emergency Contact.	

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.

E.1 – Service and Operational Impact
E.2 – Immediate Public Impact
E.3 – Public and Railway Corridor Roadway Impacts
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.
E.4 – Surrounding Community Impacts
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		
List all additional documents submitted with this Work Plan submission such as, but not limited to:		
• *Detailed Schedule* • *Traffic Plans/Permits* • *Rescue Plan(s)* • *Risk Assessment (RA), RA policy/procedure*	• *Safe Work Procedures* • *Equipment Specifications* • *Site Specific Emergency Plan(s)*	• *Site Sketches* • *Training Records* • *Competent Supervisor Declaration*

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

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.

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**	**Returned**
1						
		SWWP Supported for Track Protection				

Part A – Scope of Site Walk

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.

Part B – Track Protection Method

Any persons within the Right of Way are required to have track protection in the form of Safety Watch, TOP or Rule42.

Part C – Site Safety and Emergency Measures

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.

Part D – Emergency Contacts

Name	Phone Number
CMO Emergency	416-601-3611
Police / Fire / Ambulance	911
Nearest Hospital (Include Map) Click here to name of Hospital.	
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.

Name	Company	CMO ID#	Signature

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.

- o Hot Work
- o Work on Electrical Equipment (Live or Not)
- o Shut-down of HVAC Equipment, Electric Power, Fire Sensors, Fire Alarms, Fire Suppression Systems or Elevators
- o Trenching or Excavation
- o Confined Space Entry
- o Work Requiring Use of Fall Protection
- o Crane or Hoist Operations
- o Tunnels, Shafts, Caissons, and Cofferdams
- o 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 ≥ 300V, has an adequately equipped competent worker who can perform rescue operations been stationed?
	Protection	Are the tools, devices and equipment for working ~~on /~~ 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:
  - o Hot Work Permit
  - o Work on Electrical Equipment (Live or Not)
  - o Trenching or Excavation Permit
  - o Confined Space Entry Permit
  - o Work Requiring the Use of Fall Protection Permit
  - o Crane or Hoist Operation Permit
  - o Tunneling Permit
  - o Designated Substances
  - o 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:

<u>For all ground disturbances on Metrolinx Property:</u>

- ❑ 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

<u>For all excavations:</u>

- ❑ 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 barring 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?
    - o Confined Space Program.
    - o Confined Space Hazard Assessment and Management Plan.
    - o Confined Space Entry / Work Plan.
    - o Confined Space Entry Permit.
    - o 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):
    - o Hazards: review the potential hazards listed in the HMP
    - o Lockouts: complete appropriate isolation requirements for the space and test, ensuring a 'Zero Energy Status' is attained.
    - o Floor Management: allocate space for the storage of tools, materials, and refuse and have a clear access to the entry point
    - o Close off area and post warning signage
    - o Barriers: set up vehicle, pedestrian or object barriers
    - o Testing: conduct pre-entry testing (readings for oxygen, toxic gas levels, etc.)
    - o Ventilation: set up and operate required ventilation equipment
    - o 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)
    - o Visual contact
    - o Voice
    - o Signalling
    - o Radio communication
    - o 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.

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) Y	Results (Pass) N	Initials	Location	Time (24 Hour)	O2% (19.5 – 23)	LEL% (< 5)	CO2 (< 25 ppm)	H2S (<10 ppm)	Results (Pass) Y	Results (Pass) N	Initials

Project Information			
Metrolinx Project Name:			Date:
Constructor:	CMO Construction Supervisor Name:		Contact Number:
Contractor Information – A section must be filled out for each Contractor entering the Confined Space.			
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

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.				
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) ❑ Guardrails installed at the fall edge ❑ Travel restraint system (suitable only where the fall can be prevented by stopping access to a fall edge) ❑ Fall restricting system ❑ Fall arrest system ❑ Safety net ❑ Bump line
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:
Note: 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. Note: A backhoe with a hook attached to the bucket will be considered a hoisting device if used for hoisting. Will a hoisting device be operated within nine (9) metres of a rail or track? □ YES □ NO Will a hoisting device be operated within 20 metres of other cranes? □ YES □ NO If YES to any of the above, has the appropriate authorization been obtained from: 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:
    - o Is the platform equipped with more than one means of support?
    - o Is the platform equipped with anchor points for a worker's fall arrest system?
    - o Is the platform equipped with a guardrail as per OHSA?
    - o Does the platform have a "maximum load rating" plate installed in a conspicuous manner?
    - o 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?
    - o 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 of 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 ≥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.
- ❑ 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:
  - o Barrier has been kept free of protruding nails and splinters?
  - o Gate in the barrier shall be kept closed and latched?
  - o Ground adjacent to the barrier slopes away from the barrier?
- ❑ Shaft:
  - o 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.
  - o A shaft shall be kept clear of ice & loose objects.
  - o A shaft shall be kept free of water when a worker is required to be in the shaft.
  - o 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:
  - o A tunnel shall have enough clear space for the movement of workers.
  - o Tunnels shall meet the specified requirements regarding the diameter/width/height & clear space on its sides.
- ❑ Platforms:
  - o A circular/elliptical tunnel shall have safety platforms at 60m intervals along it.
  - o A platform constructed above the tunnel invert shall be long enough for a crew to stand on.
- ❑ Supports:
  - o The sides & roof of a tunnel shall be supported by timbers set on ribs/beams/by an equivalent system of lining.
  - o The requirements for the permanent lining & supports shall be met.
- ❑ Inspection:
  - o The Constructor shall keep available design drawings for the primary supports at a project for inspection.
  - o 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:
  - o Shall be connected at the lowest point to permit the discharge of the compressed air; and
  - o Shall be opened at least once a shift for the purpose of ejecting oil, water and other matter from the vessel.

- ❑ Pumping:
  - o A project shall have pumping equipment of sufficient capacity and adequate source of energy to handle the pumping requirements.
  - o 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:
  - o Has the mechanical ventilation has been tested?
  - o 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				

RESCUE TEAM				
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	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.	
	Rescue	
	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.	
	Notifications	
	CMO must be notified (minimum of 24 hours' notice).	
	CMO entry permit must be completed.	
	Coordination	
	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).	
	Other Items	

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 notifed- 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
1	**Notice of Project and Registration Forms**			
1.1	Notice of Project is posted on site for review			
1.2	Form 1000 for each company on site available for review			
2	**Other Safety Board Postings and Documentation**			
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			
3	**CMO Hazardous Operations Work Permits**			
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			
4	**Safety and Emergency**			
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			
5	**Site Security and Access Control Measures**			
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			
6	**Rail Safety Practices**			
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			
7	**Personal Protective Equipment Use**			
7.1	Headgear			
7.2	Footwear			
7.3	Eyewear			
7.4	High visibility apparel			
7.5	Other protection where warranted			
8	**Guardrails**			
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			
9	**Travel Restraint / Fall Restricting / Fall Arrest / Safety Net Systems**			
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			
10	**Hygiene**			
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			
11	**Temporary Structures**			
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			
12	**Material Storage**			
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			
13	**Fire System / Fire Prevention**			
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			
14	**Fire Extinguishers**			
14.1	Provided in sufficient number and locations			
14.2	Correct type (ULC labeled)			
14.3	Monthly and annual inspection tags/records			
15	**Site Conditions**			
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			
16	**Ladders**			
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			
17	**Formwork and Falsework**			
17.1	Designing by a Professional Engineer			
17.2	Inspection prior to pouring			
18	**Welding and Cutting**			
18.1	Proper procedures followed			
18.2	Cylinders, piping's and fitting protected against damage			
18.3	Signage to protect other workers			
19	**Tools / Equipment (General)**			
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			
20	**Scaffolds and Elevated Work Platforms**			
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			
21	**Cranes, Hoisting and Rigging**			
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			
22	**Electrical Safety**			
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			
23	**Excavations**			
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			
24	**Confined Spaces**			
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			
25	**Dust Suppression**			
25.1	Use of appropriate means to suppress dust			
25.2	Use of HEPA vacuum where required			
26	**Traffic Control**			
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			
27	**Public Protection**			
27.1	Public roads and walkways cleared and maintained			
27.2	Separation and signage of work areas			

Notes / Comments:

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**
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

Work Progress Observed
Safety Observation(s) with Regulation and/or Contract References
Environmental Observation
Railway Protection (if applicable – Flag Person, Flagging company, Concerns)

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
Progress Photos	

CONTRACTOR OHS AUDIT

CPG Project Name: CPG Project Address / Location: CPG Contract Number: CPG Project Number:	General Contractor: GC Site Superintendent:	
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.

PROJECT SITE SAFETY RULES AND PROCEDURES

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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 form 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 heal 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 Lose 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 contactor 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 disesel-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 it 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

METROLINX **CMO SAFETY TICKET** No: _____

THIS SAFTY TICKET MAY BE AN INFRACTION OR WARNING.

WARNING ☐ **INFRACTION** ☐

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	
CORRECTIVE MEASURE	

DATE: _____ TIME: _____
mm/dd/year

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:		
FOR CMO USE		
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:	
Infraction Retracted ☐ Date:	**Infraction Stands** ☐ 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

CMO Control # 201__ - ____

INCIDENT TYPE: ☐ Property Damage ☐ Operational Impact ☐ Environmental ☐ Other:

ACCIDENT TYPE: ☐ Untreated Injury ☐ First Aid ☐ Medical Aid ☐ Lost Time Injury ☐ Fatality

LOCATION, DATE & TIME OF EVENT

Project Location & Zone	Date of incident (YYYY/MM/DD)	Time (24HR)
Contract Name & Number		
Contractor Name	Supervisor Name	

WORKER INFORMATION

Last Name	First Name	Initial
Mailing Address	City/Town	Province
Phone Number ( )	Trade	Shift Start Time
CMO ID #	Position	Shift End Time

EVENT DESCRIPTION - Describe sequence of events leading to occurrence

CMO Supervisor on Scene:

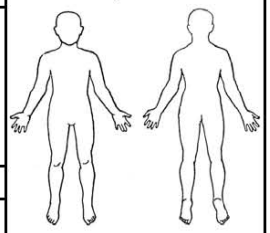
Name and Contact Information of Witness(es):

ATTACHMENTS: ☐ Witness Statement ☐ Photos ☐ Drawing / Sketch ☐ Other (specify):

INJURY DETAILS

Area of Injury ☐ LEFT SIDE ☐ RIGHT SIDE			Injury Type	
☐ Head	☐ Shoulder or upper arm	☐ Chest	☐ Cut / scratch	☐ Fracture
☐ Eye		☐ Groin	☐ Sprain / strain	☐ Concussion
☐ Neck	☐ Elbow / forearm	☐ Knee	☐ Bruise	☐ Dislocation
☐ Face	☐ Upper back	☐ Hip or thigh	☐ Puncture	☐ Allergic reaction
☐ Finger	☐ Lower back	☐ Leg	☐ Foreign body	☐ Loss of consciousness
☐ Hand	☐ Abdomen	☐ Ankle or foot	☐ Burn	☐ Other

Circle Injured Area



(R) Front (L) (L) Back (R)

INJURY TREATMENT

Name(s) of First Aider(s)

Name & Address of Attending Physician	Phone Number

Page 1 of 1

Construction Incident Report (continued)

EVENT TYPE & CAUSE - Select the category that best describes the event			
☐ Impact / struck by	☐ Sharp object contact	☐ Explosion	☐ Caught in / under / between
☐ Noise exposure	☐ Harmful substance / particle	☐ Weld flash	☐ Vehicle incident
☐ Cold exposure	☐ Overexertion	☐ Fire	☐ Spill
☐ Heat exposure	☐ Strain	☐ Fall	☐ Other:
☐ Radiation exposure	☐ Structural failure	☐ Slip / Trip	
☐ Chemical exposure	☐ Electrical contact / flash	☐ Fall from height	
☐ Water-related hazard	(Volts)	(m / ft)	
EVENT DETAILS - Select category that best describes activity at time of event			
☐ Hot work	☐ Operating equipment / tools	☐ Working with / near electricity	☐ Working at height
☐ Confined space	☐ Rainy conditions	☐ Inadequate visibility / lighting	☐ Driving
☐ Trenching / excavating	☐ Snow / ice	☐ Inadequate housekeeping	☐ Other:
☐ Handling chemicals	☐ Windy conditions	☐ Inadequate ventilation	
☐ Material handling	☐ Dusty environment	☐ Animals, plants, insects	
EVENT CAUSES AND / OR FACTORS - Select factors that may have contributed to the event or N/A ☐			
☐ Equipment / tool malfunction	☐ Physical barrier inadequate	☐ Incorrect procedures used	☐ Inattention
☐ Hazard not identified	☐ Physical barrier failure	☐ Failure to wear proper PPE	☐ Lack of skills / training
☐ Health / pre-existing condition	☐ Procedures not clear	☐ Inadequate PPE	☐ Lack of experience / knowledge
☐ Misjudgement	☐ Procedures not followed	☐ PPE not available	☐ Lack of supervision
☐ Miscommunication	☐ Procedures not available	☐ Job planning	☐ Other:
Describe the causes leading to the Incident			
CORRECTIVE MEASURES (Actions taken to prevent recurrence)			
☐ Communication change	☐ Training / retraining	☐ Workplace changes	☐ Other:
☐ Develop procedure	☐ Repair / replace	☐ Awareness	
☐ Planning / scheduling	☐ Equipment / hardware	☐ Provide PPE	
Describe corrective and preventative measures taken as a result of the incident			

Notified: ☐ MOL ☐ Railway ☐ GTCC ☐ Stn. Ops. ☐ MOE ☐ 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

Page 1 of 1

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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 #
LOCATION, DATE & TIME OF EVENT			
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
EVENT DESCRIPTION - Describe sequence of events leading to occurrence			
Name of Product/Chemical		Amount	□ MSDS Attached
SPILL ACTION CENTRE (SAC) 1 800 268 6060			
Date/Time CMO Notified		Date/Time SAC Notified	Date/Time Municipality Notified
Containment/Disposal			
Waste Generator Number		Product Destination	
Corrective Action			
□ Communication change □ Develop procedure	□ Training/retraining □ Repair/replace □ Equipment/hardware	□ Workplace changes □ Awareness	□ Other:
CORRECTIVE ACTIONS IMPLEMENTED - Describe corrective and preventative measures taken as a result of the event			
Actions Taken:			
Prepared By (Name and Signature)		Title	Date (YYYY/MM/DD)
Signature of Contractor			Date (YYYY/MM/DD)

Construction Spills Report

CMO Control #	

PERSONNEL ON SITE	COMPANY	ARRIVAL TIME (00:00)
Supervisor		

SPILLS RESPONSE TEAM	COMPANY	ARRIVAL TIME (00:00)
Team Member		
Team Member		
Team Member		
Team Member		
Team Member		
Team Member		

OTHERS PRESENT	COMPANY	ARRIVAL TIME (00:00)
Name		
Name		
Name		
Name		
Name		
Name		

COMMENTS/NOTES

INTERNAL NOTIFICATIONS:	ADVISED; (Y, N, N/A)	DATE/TIME ADVISED:
Manager,CMO :		
GTCC :		
System Safety :		
Station Operations :		
Other :		

Date Incident Closed _____ CMO Supervisor _____

APPENDIX INTENTIONALLY LEFT BLANK

CONTRACTOR MONTHLY OHS PERFORMANCE REPORTS

CPG Project Contractor Monthly Performance Report			
CPG Project Name: CPG Project Address / Location: CPG Contract Number: CPG Project Number:		General Contractor: GC Site Superintendent:	
Report Period (date range): Report Date:		No. GC Health and Safety Inspections to Reports Collected:	
		General Contractor	**Sub-Contractor(s)**
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)		

APPENDIX INTENTIONALLY LEFT BLANK

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: • The Project Lead • The Metrolinx Contractor Orientation Instructor • A Member of the Metrolinx CMO • A Supervisor of the Contractor
	If a Contractor's representative delivers orientation, has the Project Lead ensured that: • They completed orientation themselves? • They have the adequate literary and communication skills? • They have passed the Instructor's Level Quiz? • A written record of delegation exists?
	Has an audit of the Contractor been performed once every 5 sessions?
	Does the audit verify the following? • accurately completed attendance records,

	• provided instruction covering all requisite material, • marked quizzes upon completion • reviewed all wrong answers, identified correct answers, and explained reasons for same • issued hard hat stickers and ID cards
	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
	Are the following defined for all projects? • points of entry / exit from public or private roadways to the Metrolinx property, • pathways / access routes between the public roadway way entry / exit points • and the local project work zone on Metrolinx property, • points of entry / exit to the local project work zone, • pathways / access routes to be used by the Contractor for movement about the Metrolinx property, • the manner by which access routes will be demarcated, • the manner by which the local project work zone(s) will be demarcated, • whether the local project zones will require physical access controls, such as fencing, hoarding or similar barriers, and gates.
	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? • Inspection findings and deficiency correction. • Hazards and risks of upcoming operations • Discussion of incidents and necessary actions to reduce risk of re-occurrence. • Government enforcement agency site visits
	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: • 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 incidents.
	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.

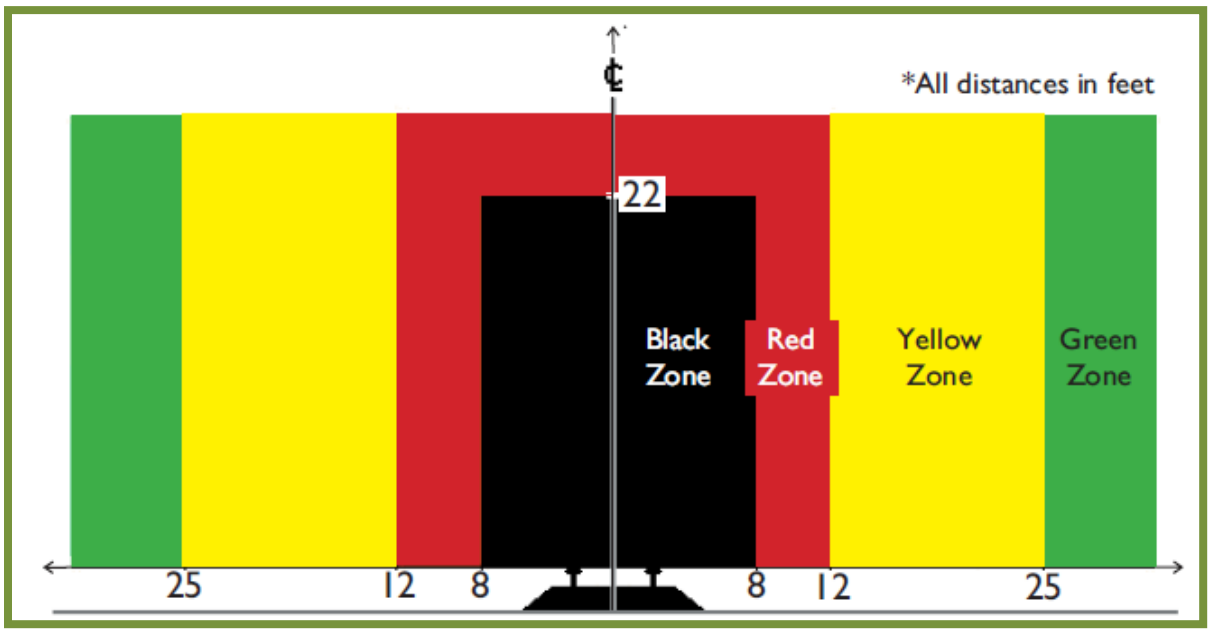

Figure 1: Train safety zone on railway corridors (exception: Union Station Train Shed Depot)

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.

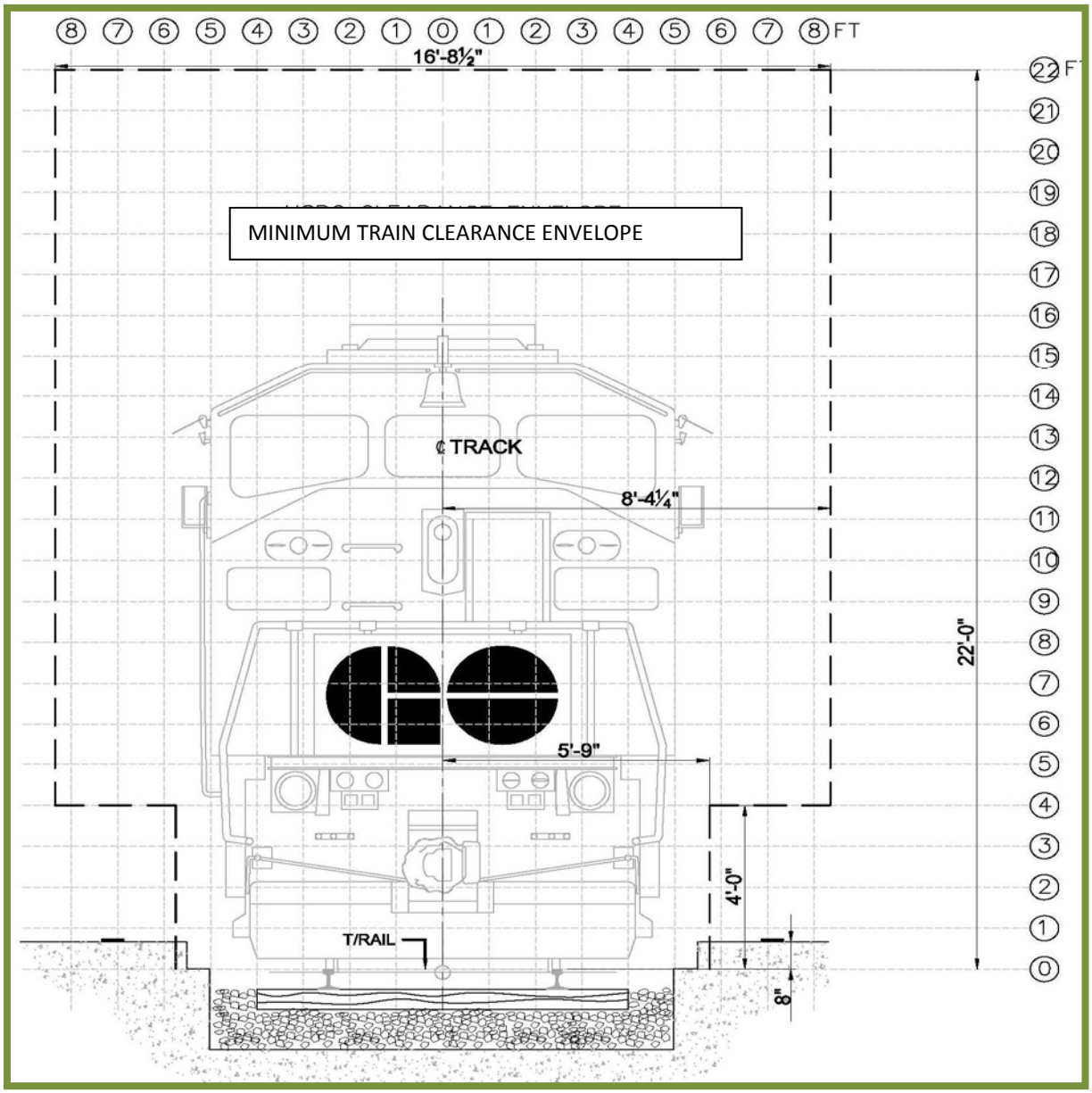

Figure 2: Minimum freight train clearance envelope on all railway corridors

(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.

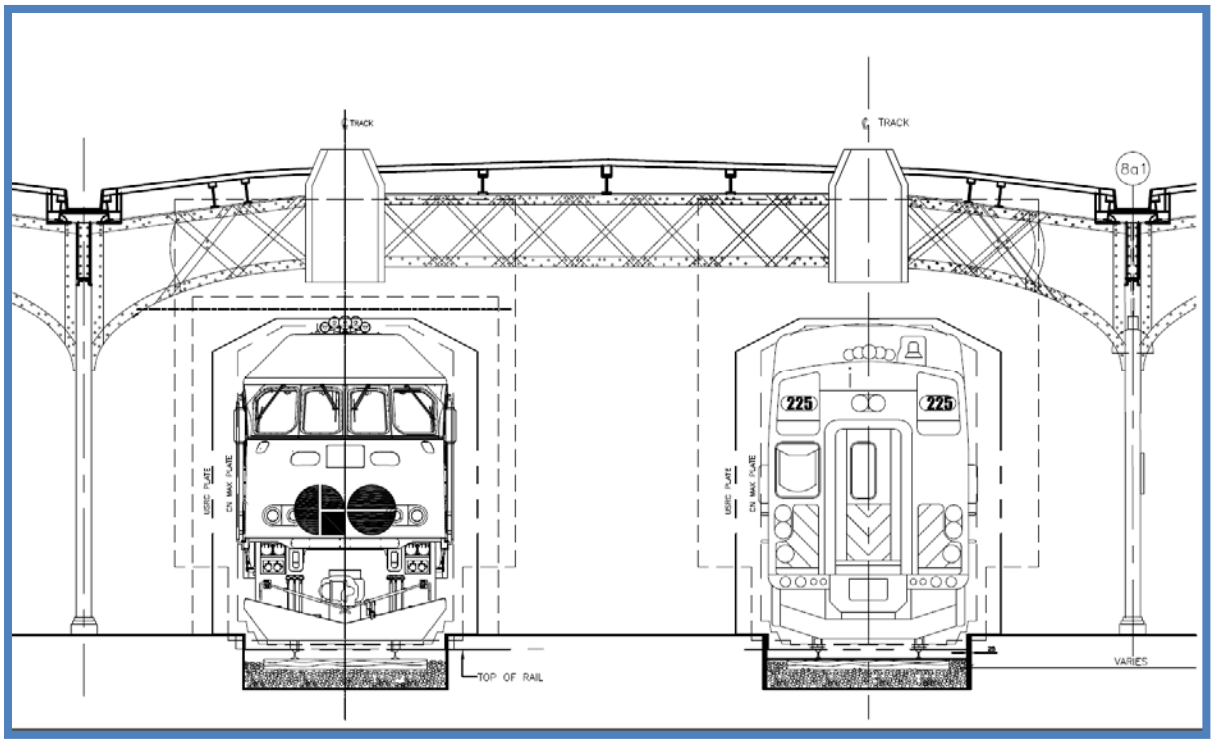

Figure 3: Train envelopes and the Union Station Train Shed Depot

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.

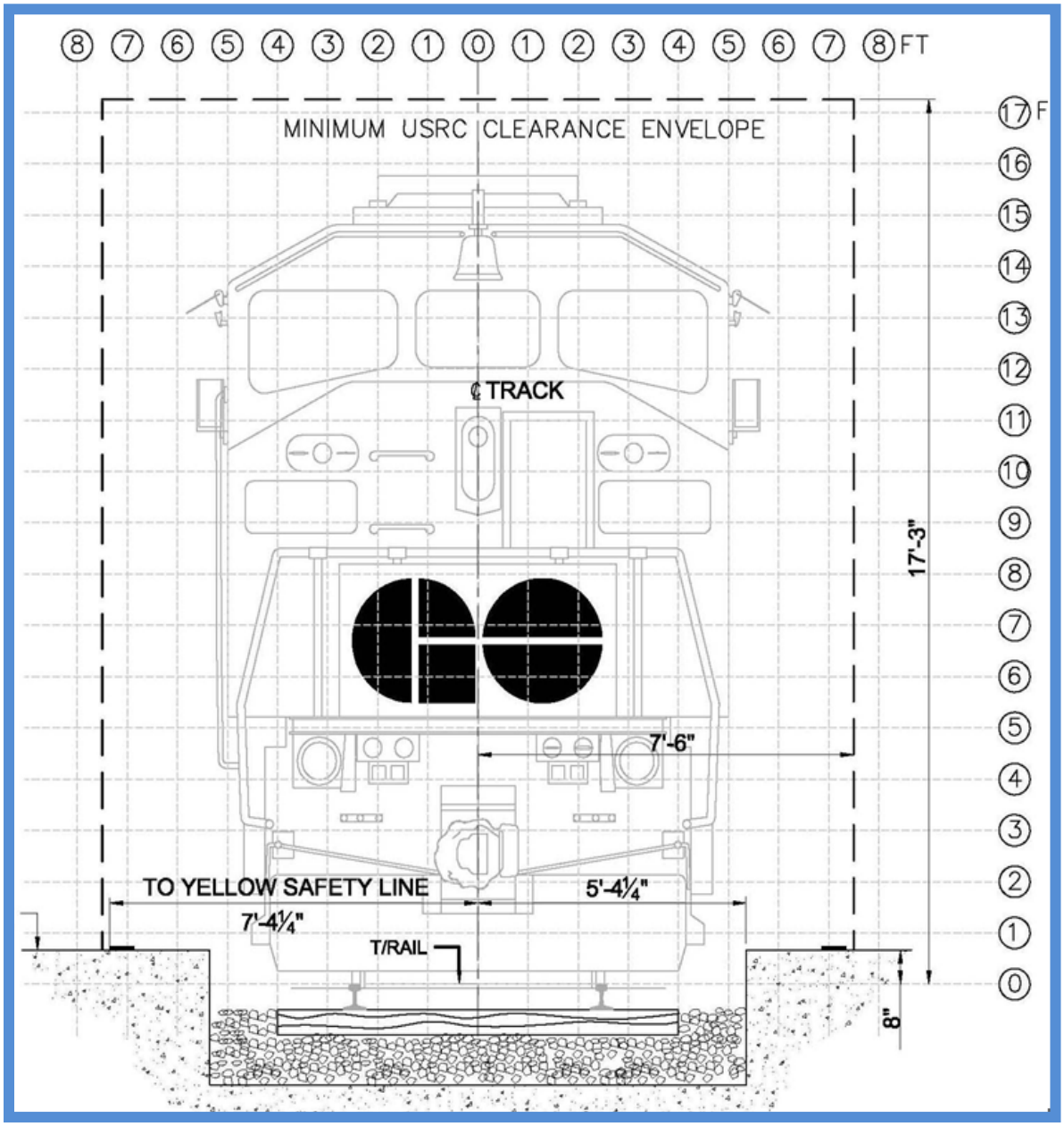

Figure 4: Minimum train clearance envelope within the Union Station Train Depot

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

GO Transit (Division of Metrolinx)
7471 McLean Rd,
Aberfoyle, ON

April 1, 2015

Attention: Michael Jugovich

Inspection Property: 7471 McLean Rd, Aberfoyle (GO Transit Station)

Environmental Health Inspection – Wastewater Treatment System (WTS) Evaluation:

- As per the Operation and Maintenance Section 8.9 of the Ontario Building Code and Guide for Sewage Systems (OBC)

Summary of Observations:

- **The WTS serving the GO Transit office building is a Class 4 system consisting of a raw sewage pump chamber, septic tank and absorption trench leaching field disposal bed;**
- **The system components were reported by Mr. Jugovich to be approximately 4-5years in age;**
  - *The typical life expectancy of a conventional septic system is 35-45 years*
- **At the time of inspection, the effluent level in the septic tank was elevated above the top of the discharge pipe which leaves the tank indicating a restriction of flow within the system;**
  - *This is consistent the reported history of high level events as well as the sewage hauler's report of a substantial volume of effluent flowing back into the septic tank when it was most recently pumped out a couple of week prior to the investigation*
- **Camera inspection of the discharge line leaving the septic tank did not identify any physical blockages within the piping manifold, however the pipes were observed to be full of standing water and floating solids confirming the inability of the leaching field to effectively accept and dispose of effluent wastewater[1];**
- **The grading around the leaching field envelope is generally poor and surface water was identified to be ponding in the depressions/swale on the east side of the field;**
- **An old aerial photograph of the site from *Google Maps* appears that the area where the existing WTS is located was once covered by a parking lot and could have resulted in the compaction of the soil underlying the field and offers another valid explanation as to why the leaching field is not functioning;**
- **Based on the history of events as well as the above noted deficiencies, it is our opinion that the leaching field is no longer functioning in its intended manner and that replacement will be required in order to provide a reliable, long terms means of wastewater treatments and dispersal;**
  - *Any alteration or extension of the existing leaching field is not considered to be a viable solution*
- **It is strongly advised that the client consult with a qualified septic designer to evaluate the property to determine the most suitable options to install a new field which would meet all current OBC requirements;**
- **It is likely that a raised leaching field (complete with an extended contact area/mantle) will be required along with a second pump chamber to be installed downstream of the septic tank;**

[1] Typical signs of a wastewater treatment system (WTS) malfunction include ponding or pooling sewage effluent, improper discharge of sewage effluent to the ground surface, sewage effluent leaking or discharging inappropriately from the septic tank, and excessive or abnormal vegetation growth on or around the leaching tile bed components

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- **Carrying out the other items listed in the and Operations & Maintenance Plan sections will help to prolong the performance of the existing system components and the ongoing function of the WTS**

Statement of Understanding:

ESSE & Associates Inc. (ESSE) was retained by GO Transit (client) to conduct an evaluation of the wastewater treatment system (WTS) serving the office building on the property located at 7471 McLean Rd in Aberfoyle, ON (Figure 1).

The scope of the evaluation included only the exterior components of the WTS and did not involve the physical testing of any mechanical pumps or alarms. A detailed visual assessment including accessing the tank and chamber components of the WTS was completed on March 31st to determine if the WTS was being operated and maintained in substantial compliance with the relevant sections of the Ontario Building Code.

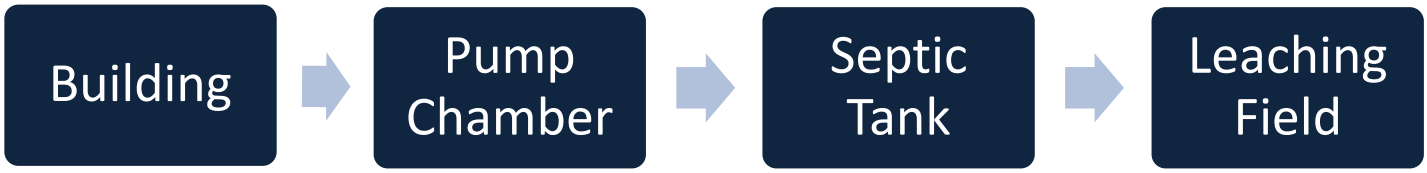
The evaluation included efforts to determine the locations or probable locations of the WTS components, and to provide recommendations for appropriate WTS operation, maintenance, upgrades or repairs that will promote the ongoing functionality and performance of the system. The evaluation did not include comprehensive excavation of the leaching field for determination of the exact location and construction of buried components, or any assessment or verification of the subsurface soil conditions such as 'biomat' development.

Background Information:

- The WTS serving the GO Transit building was reported to have been installed approximately 4-5 years ago as per the client;
    - *No construction upgrades or repairs reported or evident*
- A copy of the original site plan for the WTS was provided at the time of inspection and indicates the system consists of a pump chamber which dosing raw sewage across the asphalt driveway into a 1000 gallon (4500L) septic tank. Effluent flows by gravity from the septic tank into a leaching field consisting of four (4) distribution laterals, each 16m in length;
- The client had reported several instances of high level events and/or overflows over the past couple of years and requested an investigation into the potential causes and recommendations for corrective actions;
- The septic tank was last pumped approximately 2 weeks prior to the investigation at which time the hauler observed a significant volume of effluent flowing back from the leaching field into the tank

System Layout:

Source
• Raw sewage from the house flows by gravity into a cylindrical concrete pump chamber
Raw Sewage Pump Chamber
• Raw sewage is pumped from the chamber into a two-compartment concrete septic tank
Septic Tank
• Effluent flows by gravity from septic tank to the subsurface disposal field (leaching field)
Effluent flows by gravity from septic tank to the subsurface disposal field (leaching field)
• Effluent discharges into soil via *PVC* distribution laterals



The WTS components identified:

Raw Sewage Pump Chamber Tank
• Effluent flows by gravity from the office building tank into a cylindrical concrete pump chamber which demand doses effluent to the leaching field via an effluent pump operated off a control float (Figure 2); • The chamber is equipped with duplexing submersible effluent pumps which operate off of a control float (Figure 3); • An alarm float was also identified and functions to notify the tenant in the event of a high level occurrence; • At the time of inspection, the effluent level in the chamber was appropriate, which indicates that the pumps are functional noting that they were not physically tested at the time of inspection • The plumbing in the pump chamber was not easily accessible from grade making it difficult to remove the floats and/or pump for maintenance or replacement when required
Septic Tank
• Approximately 4500 litre double compartment concrete tank located on the north side of the building (Figure 4); • The septic tank was buried approximately 30 cm below the ground surface and was equipped with access risers to grade over both the inlet and discharge lids; • The septic tank discharge access lid was opened and the interior tank conditions were inspected: • The effluent level in the tank was elevated above the discharge pipe which leaves the tank and up into the riser indicating a restriction of flow within the leaching field; • The discharge baffle is a PVC 'Tee' equipped with an effluent filter and is designed to prevent solids from entering the leaching field (Figure 6);

- The concrete of the septic tank did not display significant evidence of corrosion / deterioration consistent with the age of the tank;
    - *Hydrogen sulphide gas naturally produced in a septic tank is corrosive to concrete and can eventually deteriorate the tank to require repair or replacement*
-

Leaching Field

- Installed as an in-ground subsoil absorption system located on the north side of the building, all materials and parts are concealed in ground and not visibly accessible (Figure 7-8);
    - *Note: Comprehensive excavation of the leaching field may damage the functional capabilities of the components and is beyond the scope of this inspection;*
- The leaching field envelope is approximately 16m x 8m;
- The surface drainage around the leaching field is generally poor and is susceptible to retaining surface water during periods of precipitation or snow melt (9-10);
- No significant trees or shrubs were observed within the leaching field envelope;
    - *Vegetation with extensive root systems within the leaching field envelope may have a negative impact on the functionality of effluent distribution through the lifting and/or plugging of the distribution piping;*
- PVC distribution pipes as observed through sewer camera inspection of discharge line leaving septic tank;
    - *A significant accumulation of solids and standing water was identified in the section of pipe inspected validating the restriction of flow observed in the septic tank*
- The underlying native soil appears to be primarily sandy till as per the referenced OGS Earth surficial geology maps;
- Permeability of the soil underlying the pipes, which is an important design aspect of the system cannot be determined without laboratory analysis and was beyond the scope of this inspection

WTS Component Locations & Minimum Separation Distances

- All of the components of the WTS appear to be contained within the approximated property boundaries, although a review of a current survey for the property was not completed, and the exact location of leaching field components was not confirmed.

Recommendations

- Replace the existing leaching field components to meet all current OBC requirements;
- Based on the available area on the property, the underlying soil characteristics and/or the depth to the high groundwater table, the installation of a raised system is expected in order to meet the vertical separation distance to the limiting layer or groundwater table to ensure adequate treatment prior to final dispersal;
    - *It is strongly advised that the client consult with a qualified septic designer to evaluate the property to determine the most suitable options to install a new system which would meet all current OBC requirements;*
- To further enhance the quality of effluent discharging to the leaching field, consider the installation of a septic tank treatment unit (i.e. *ClearPod*) in the first compartment of the septic tank (Approx. $2500-$3500);
    - *The ClearPod system increases the natural breakdown of wastewater water within the septic tank, producing higher quality of effluent to send to the leaching field*
- It was reported that a second WTS is to be constructed in the area to the east of the existing system for the proposed bus washing station.
    - *Any new WTS constructed should also be a raised system in order to avoid a similar fate as the existing WTS*
- While construction of the area between the raw sewage pump chamber and the existing septic tank continues, it is recommended that the discharge pipe connecting the pump chamber to the septic tank be reconfigured and installed deeper to avoid potential freezing of the pipe during cold weather months or alternatively, wrapped in heat tracer wire;
- Upgrading the plumbing inside the chamber to provided easy access to the pump and floats from grade is also advised to avoid the confined space entry into the chamber

Operations & Maintenance Plan

- Continue to monitor the accumulation of solids (scum and sludge) within the septic tank to determine when the tank requires a pump out;
    - *The OBC Act requires a pump-out when solids occupy more than 1/3 of the working capacity of the septic tank*
- For most properly sized systems, the typical pump out frequency is 3-5 years;
- Note that the effluent filter requires routine cleaning to prevent potential restrictions of flow & back up into the home as the filter clogs with solids;
    - *Cleaning is easily accomplished by removing the filter from the baffle housing, rinsing off solids back into the inlet compartment of the tank and reinstalling it inside the housing*
    - *Recommended frequency of cleaning is 1-2 times per year, dependent on usage*
- As an ongoing maintenance procedure for the overall health and function of the WTS, consider the routine application of an Engineered Biological Augmentation formula (i.e. Biologic) for improving bacterial digestion of waste in the septic tank and in the leaching field (Approx. $80/yr);
- As per section 8.9.3.2(2) of the OBC, ensure that the land in the vicinity of the leaching field is maintained in a way which will not cause damage to, or impair the function of the WTS;
    - *This can be accomplished by avoiding the planting of trees or shrubs within the leaching field envelope, as well as the construction of any buildings or structures which would result in soil compaction and reducing the evaporation potential of the field*

For more information regarding on-site septic system operations and maintenance as well as a comprehensive list of qualified industry professionals, please visit the Ontario Onsite Wastewater Association Website at www.oowa.org

ESSE trusts that this is the information that you require. Please contact the undersigned with any questions related to this report or for further information and support regarding operating, maintaining or upgrading the WTS.

Inspected by:

Jason Berry, BSc.
Project Manager
Drinking Water- Certified Operator - Limited Surface Water Subsystems MOE Lic. #64536
Certified Sewage Disposal System Inspector/Installer BCIN #41916

Reviewed by:

Rick Esselment,
BSc., BASc., DOHS, CPHI(c)
President
Certified Public Health Inspector #4490
Certified Sewage Disposal System Inspector/Installer BCIN #15244

Attachments: Digital Inspection Pictures

Limitations and Warranty:

This report is for the exclusive use of the client, and their agents, and is neither an endorsement nor condemnation of the subject property.

The findings and conclusions documented in this report have been prepared for specific application to this project and have been developed in a manner consistent with the level of care and skills normally exercised by qualified professionals currently practicing in this area of environmental assessment and are in accordance with the outline of work required for this project. No other warranty, expressed or implied is made.

The findings contained in this report are based upon conditions as they were observed at the time of investigation. No assurance is made regarding changes in conditions subsequent to the time of investigation. No assurances can be made about latent defects or deficiencies with system construction or function that was not reasonably identifiable using currently accepted protocols for inspection and investigation.

No assurance is made regarding the accuracy of this information. Site research performed herein relies on information and reports supplied by others. No attempt has been made to independently verify the accuracy of any such information, unless specifically noted in our report.

WASTEWATER TREATMENT SYSTEM PICTURES

1 Property plan view prior to construction

2 Raw Sewage Pump Chamber

3 Inside pump chamber

4 Septic Tank Location

5 Elevated effluent level in septic tank

6 Effluent filter

	
7 Leaching field area	8 Leaching field area
	
9 Poor grading/low lying area around leaching field	10 Standing water/ice around leaching field