

BUILDING PERMIT

This card must be kept posted in a conspicuous place on site of construction.

24 134572 BLD 00 BA

This Building Permit has also been reviewed and approved under the provisions of the Ontario Heritage Act.

Site Address 400 COMMISSIONERS ST

Project Description Industrial;

Interior Alterations

Date Issued Monday July 15, 2024

Kamal Gogna, P. Eng.
Interim Chief Building
Official & Executive Director

Natasha Zappulla
Deputy Chief Building Official and
Director

**THIS IS YOUR PERMIT TO CONSTRUCT
PERMIT NUMBER: 24 134572 BLD 00 BA**

Owner:
CITY OF TORONTO

Address:
55 JOHN ST 13 FLOOR
TORONTO, ON M5V 3C6
CANADA

CITY OF TORONTO

C/O AHMAD MIAN
35 VANLEY CRES
TORONTO ON M3J 2B7

WORKS DEPARTMENT

METRO HALL STATION 1180
55 JOHN ST

Project Description: Industrial; Interior Alterations

Project Location: 400 COMMISSIONERS ST

Ward:

The issuance of this permit is based on the drawings, specifications, details and information submitted with the application. The submitted documents have been reviewed for compliance with the Ontario Building Code, Zoning By-laws, applicable regulations and legislation.

The referenced permit number listed above and on your permit placard also appears on all plans reviewed for this building permit application. The validity of this permit is restricted to the person/company named as owner. Permit ownership cannot be transferred unless prior written authorization is given by the Chief Building Official.

The extent of construction authorized under this permit is limited to the description contained herein as follows: Proposal to remove and replace the loading dock, overhead doors, lighting, electrical panels and fire protection system.

Stated work and use must be in accordance with the plans, specifications, building permit notes and other information issued with this building permit. Changes to any documents submitted are not to be made unless prior authorization is obtained from the Chief Building Official or designate. False information may be grounds for revocation of the building permit.

Notwithstanding, it is the responsibility of the owner to comply with requirements of the Ontario Building Code and applicable laws as well as to ensure compliance ..

The permit placard must be posted in a conspicuous place on the construction site.

Natasha Zappulla
Deputy Chief Building Official

Issued by: Toronto Building Issuance Te
Date Issued: July 15, 2024

Toronto and East York District

Please see the second page of this letter for additional requirements and inspection information.

WHEN YOU BEGIN DEMOLITION/CONSTRUCTION ...

Site Fencing

As soon as construction or demolition starts, your site must be entirely surrounded by a fence which is in compliance with the City of Toronto Municipal Code Chapter 363, Article III. The minimum requirement is plastic mesh fencing, 1.2 metres high, tied to posts spaced no more than 1.2 metres apart with an 11 gauge top and bottom wire threaded through the mesh and looped around each post. The Municipal Code is available on the City website at: http://www.toronto.ca/legdocs/municode/1184_363.pdf

Construction Noise

Any construction which generates noise is prohibited in residential areas between the hours of 7:00 p.m. one day to 7:00 a.m. the next day, 9:00 a.m. on Saturdays, and all day Sunday and Statutory holidays.

When To Call For Inspection

You are required by Division C, Part 1, Article 1.3.5.1. of the Ontario Building Code, to notify the building inspection office at several prescribed stages of construction. Please contact the building inspection office at the telephone number listed below, when each of the following stages are substantially complete:

Inspection Stages

- | | | |
|-----------------------------|-----------------------------|--------------------------------|
| * Structural Framing | * Insulation/Vapour Barrier | * Fire Separations |
| * Fire Protection Systems | * Fire Access Routes | * Interior Final Inspection |
| * Exterior Final Inspection | * Site Grading Inspection | * Pool Suction/Gravity Outlets |
| * Pool Circulation System | * Occupancy | |

To Schedule your Next Mandatory Inspection

When you are ready to book your inspection, you may request an inspection online from your computer or smart phone using Toronto Building's Inspection Request web application at www.toronto.ca/building-inspection-request.

Alternatively, you may contact your local building inspection office by telephone at 416-338-0700, by fax 416-696-4151 or by email to TOBldgInsp@toronto.ca.

Inspections will take place within two days commencing at the start of business on the day following your notification (Inspection Request).

Please leave a telephone number where you can be reached or a message can be left.

The inspector assigned to your project is Jackson Kwok (416) 338-0866

PERMIT PLANS MUST BE ON SITE

Your permit plans and specifications must be on site at all times. Inspections are conducted with your copy of the plans.

August 30, 2024

BULLETIN - CONSTRUCTION SAFETY

The responsibilities of the City of Toronto under the Occupational Health and Safety Act apply to all our employees regardless of the location at which they are working.

Responsibilities for the Construction Safety Regulations on construction sites are clearly spelled out in the Act under the definitions of constructor, employer, supervisor and worker.

The City of Toronto believes that the goal of safe and injury free construction sites is a priority for all parties involved in building construction.

Safety training for the City of Toronto Building Inspectors is mandatory. However the delivery of a safe working environment on construction sites must include the compliance of individual builders with the Occupational Health and Safety Act.

Safety measures include the following:

1. Temporary guards on all openings,
2. Correct use of ladders,
3. Temporary or permanent stairs above or below grade by the time the sub floor is complete,
4. Clear and safe access to the site,
5. Protection of trenches and excavation below four feet deep, and
6. Correct use of fall prevention equipment where required.

As the employer responsible for the safety of building inspectors, the City of Toronto has instructed its Building Inspectors not to conduct inspections on sites where conditions exist that could jeopardize their health and safety.

The following are examples of conditions which may jeopardize the health and safety of inspectors:

1. Guards are missing,
2. Ladders do not meet regulations,
3. Temporary or permanent stairs, above or below grade, to all floor levels are not provided as required.
4. Access to the site has impediments or hazards, or
5. Trenches or excavations lack required shoring or slope of bank.

Prior to calling for an inspection the appropriate safety measures shall be in place as a site inadequately provided with these measures is not ready for inspection. The City of Toronto Building Inspectors will cooperate with builders regarding the timing of making provision for these safety measures. However, if the measures are not provided, an Order Not To Cover could be issued and the Ministry of Labour informed.

We look forward to working with you toward the goal of a safe environment for all workers.

Notice of Project - Please be advised that the Ministry of Labour requires a Notice of Project be filed with them before starting any project costing \$50,000 or more.

For more information about the Notice of Project form and construction information please visit Ministry of Labour website at: <https://www.labour.gov.on.ca/english/hs/forms/>

Report an Incident

Notify the ministry of fatalities, critical injuries, work refusals, reprisals and unsafe work practices.
Ministry of Labour Health Safety Contact Centre

Toll-free: 1-877-202-0008

TTY: 1-855-653-9260

Fax: 905-577-1316

Construction of the work approved in this building permit must be carried out with reasonable care to ensure protection for everyone on the construction site from the hazards associated with all overhead and underground power lines. Obtain further information at: <http://www.torontohydro.com/powerlinesafety>

Permit Advisory Notes

Building permits issued under subsection 8(2) of the Building Code Act, 1992 (the "BCA") have been reviewed for compliance with the BCA, the Ontario Building Code 2012, and "applicable law", as that term is defined in Sentence 1.4.1.3(1) of Division A of the Ontario Building Code. There may be other approvals that you require to carry out the construction and/or demolition authorized by the building permit. The following advisory notes flag for you some of the other approvals that are frequently required to proceed with construction and/or demolition like that authorized by the building permit. These advisory notes are not meant to provide you with an exhaustive list of other approvals that may be required, and you must therefore satisfy yourself that you have obtained all other applicable approvals prior to commencing the construction and/or demolition authorized by the building permit.

- Permit issuance does not authorize encroachments onto adjacent property.

Building Permit 332_12

The reviewed plans and specifications must be available on site during construction/demolition. Changes to these plans and specifications are not to be made unless prior written approval is obtained from the Chief Building Official.

The owner/permit holder is required to comply with the following Permit Notes, which are part of the reviewed permit documents:

- Standards referenced in Section 1.3 of Division B shall be complied with Table 1.3.1.2.:
 - a) Wood - CAN/CSA- O86-09
 - b) Plain and Reinforced Masonry - CSA-S304.1
 - c) Plain, reinforced and Pre-stressed Concrete - CAN/CSA-23.3, CAN/CSA A23.1, CAN/CSA A23.2
 - d) Structural Steel - CAN/CSA-S16-09
 - e) Parking Structures - CSA-S413

- Emergency lights shall be provided along paths of egress as per 3.2.7. or 9.9.12.
Emergency lighting shall always be maintained to an average level of illumination of at least 10 lx at floor level.

- Excavations that exceed 1.2 m are required to be shored or cut back at the top so that the angle of the cut does not exceed 1:1. If shoring is to be provided submit drawings with design parameters clearly stated for approval under separate permit application. A soil report and/or calculations may be requested.

- Existing foundation shall be verified by designer/qualified person that the existing foundation is adequate to support the loads imposed by the new construction.

- Exit signs shall consist of a green pictogram and white graphic symbol meeting the visibility specifications referred to in ISO 3864-1 and conform to the dimensions indicated in ISO 7010 for the following symbols:
 - (i) E001 emergency exit left;
 - (ii) E002 emergency exit right;
 - (iii) E005 90-degree directional arrow; and
 - (iv) E006 45-degree directional arrow.

- The City has Relied upon the plans and drawings prepared and submitted by the qualified architects and/or engineers on this project.

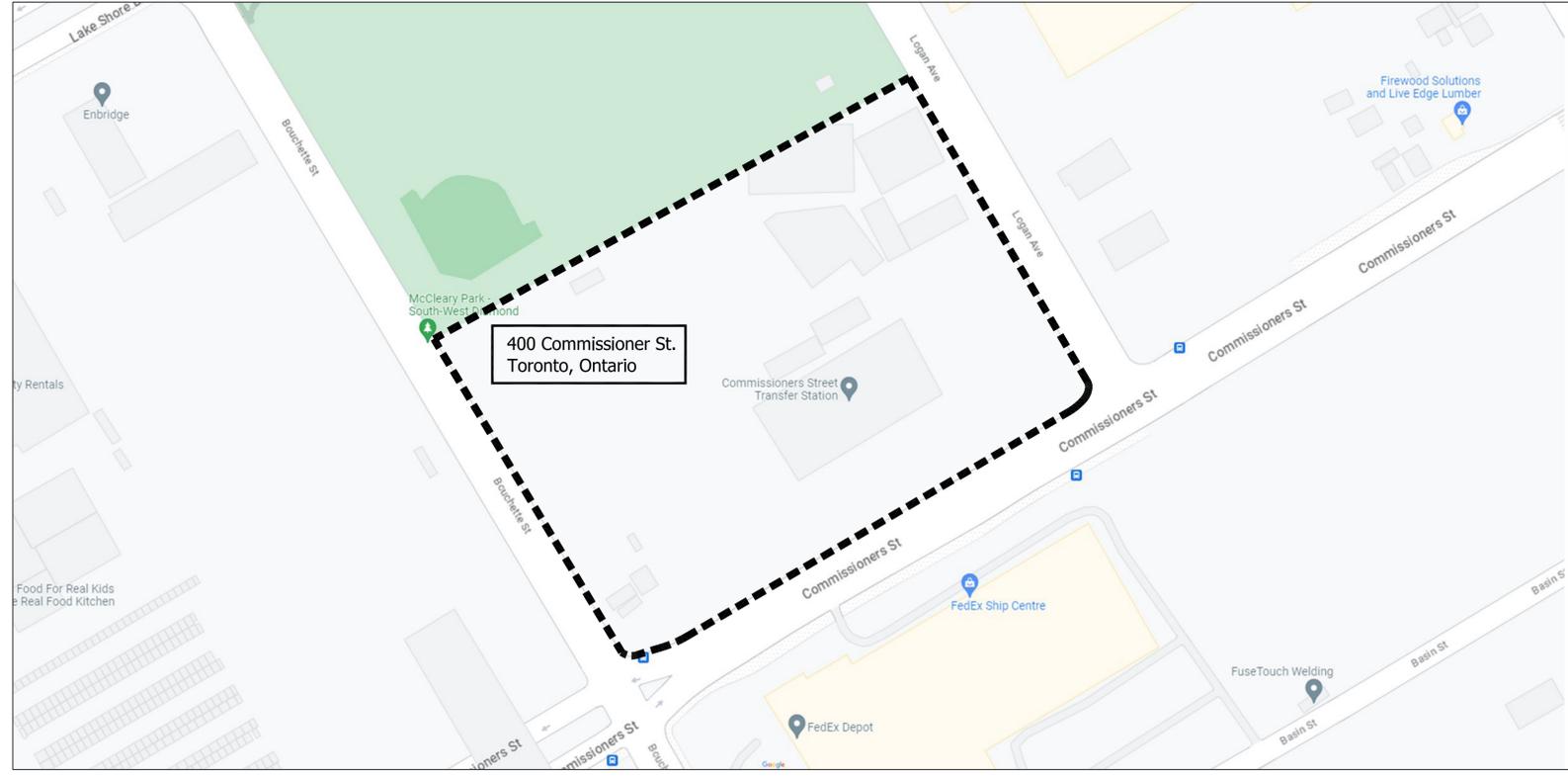
The issuance of a permit does not imply a complete design review of this project has been performed and does not relieve the owner and designers from the need to comply with the Ontario Building Code and referenced standards where contravention are subsequently noted.



SOLID WASTE MANAGEMENT SERVICES
COMMISSIONER TRANSFER STATION
MRF BUILDING UPGRADES
CONTRACT NO. 23SWM-IRM-026CDU
ISSUED FOR TENDER

TORONTO Building
 PERMIT REVIEWED FOR COMPLIANCE WITH
 THE ONTARIO BUILDING CODE
 24 134572 BLD 00

ZONING		
O.B.C.	Arifuzzaman, Shah	15/Jul/2024
FIRE SERVICES		
O.B.C. (S)		



400 COMMISSIONER ST., TORONTO LOCATION PLAN

Proposal to remove and replace the loading dock, overhead doors, lighting, electrical panels and fire protection system.

DRAWING INDEX

ITEM	CITY DWG No.	DISCIPLINE	DRAWING DESCRIPTION
1	1601-2023-3-1	G1	COVER SHEET
2	1601-2023-3-2	A1	SITE PLAN
3	1601-2023-3-3	A2	KEY FLOOR PLAN
4	1601-2023-3-4	A3	LOADING DOCK FLOOR PLAN, AND ELEVATION
5	1601-2023-3-5	A4	ELEVATION, CROSS SECTION AND SECTION DETAILS
6	1601-2023-3-6	S1	GENERAL NOTES
7	1601-2023-3-7	S2	GENERAL NOTES
8	1601-2023-3-8	S3	SCHEDULES
9	1601-2023-3-9	S4	TYPICAL DETAILS
10	1601-2023-3-10	S5	FOUNDATION FRAMING PLAN
11	1601-2023-3-11	S6	ROOF FRAMING PLAN
12	1601-2023-3-12	S7	DEMOLITION PLAN
13	1601-2023-3-13	S8	FOUNDATION SECTIONS
14	1601-2023-3-14	S9	ELEVATIONS
15	1601-2023-3-15	S10	DETAILS
16	1601-2023-3-16	S11	CONCEPTUAL STAGING PLAN
17	1601-2023-3-17	E1	GENERAL NOTES AND ABBREVIATIONS
18	1601-2023-3-18	E2	GROUND FLOOR PLAN - ELECTRICAL DEMO AND NEW PLAN
19	1601-2023-3-19	E3	ELECTRICAL SINGLE LINE DIAGRAM, LUMINARIES, MECHANICAL AND PANEL SCHEDULES
20	1601-2023-3-20	E4	ELECTRICAL SPECIFICATIONS
21	1601-2023-3-21	M1	PART GROUND FLOOR PLANS - PLUMBING, VENTILATION AND SPRINKLERS
22	1601-2023-3-22	M2	PART GROUND FLOOR PLANS - HEATING AND VENTILATION, MECHANICAL SCHEDULES
23	1601-2023-3-23	M3	MECHANICAL SPECIFICATIONS
24	1601-2023-3-24	ESC1	EROSION AND SEDIMENT CONTROL PLAN

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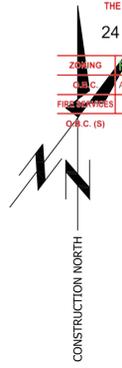
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4	NOV. 16, 2023	100% DRAFT DESIGN SUBMISSION	PJP	
3	OCT. 20, 2023	70% DESIGN SUBMISSION - CLIENT COMMENTS	PJP	
2	OCT. 3, 2023	70% DESIGN SUBMISSION - CLIENT COMMENTS	PJP	
1	JULY 18/23	70% DESIGN SUBMISSION	PJP	

MATT KELIHER
 GENERAL MANAGER
 SOLID WASTE MANAGEMENT SERVICES

MATTHEW CASCHERA
 DIRECTOR
 INFRASTRUCTURE AND
 RESOURCE MANAGEMENT

COVER SHEET				
DESIGN:	DRAFTING:	A.M.S.	CHECK:	P.J.P.
SCALE:	AS NOTED		DRAWING NUMBER:	1601-2023-3-1
DATE:	JULY 18, 2023			G1

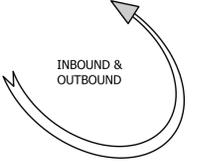
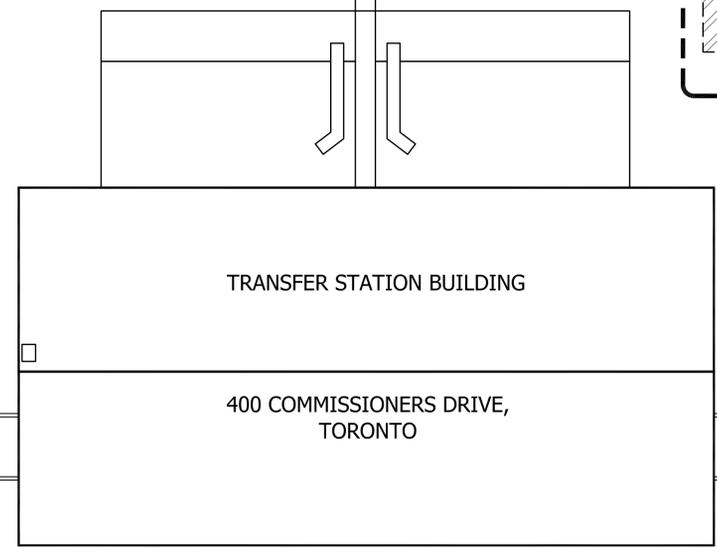
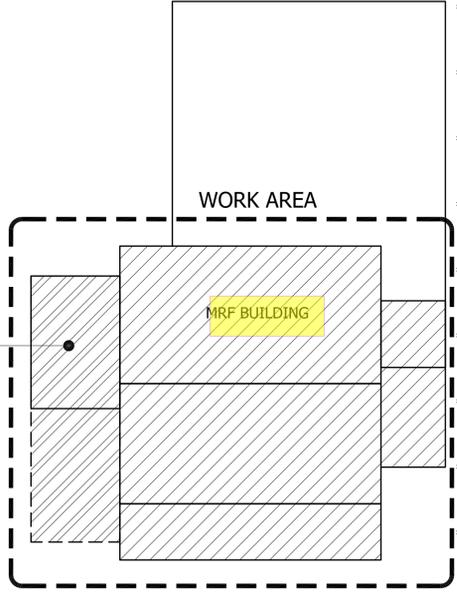
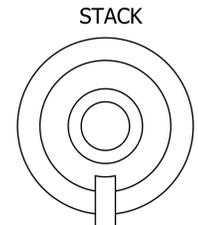
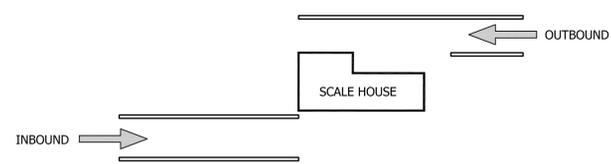
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BOUCHE TTE STREET

LOGAN AVENUE

COMMISSIONERS STREET



SITE PLAN

Scale: 1:300

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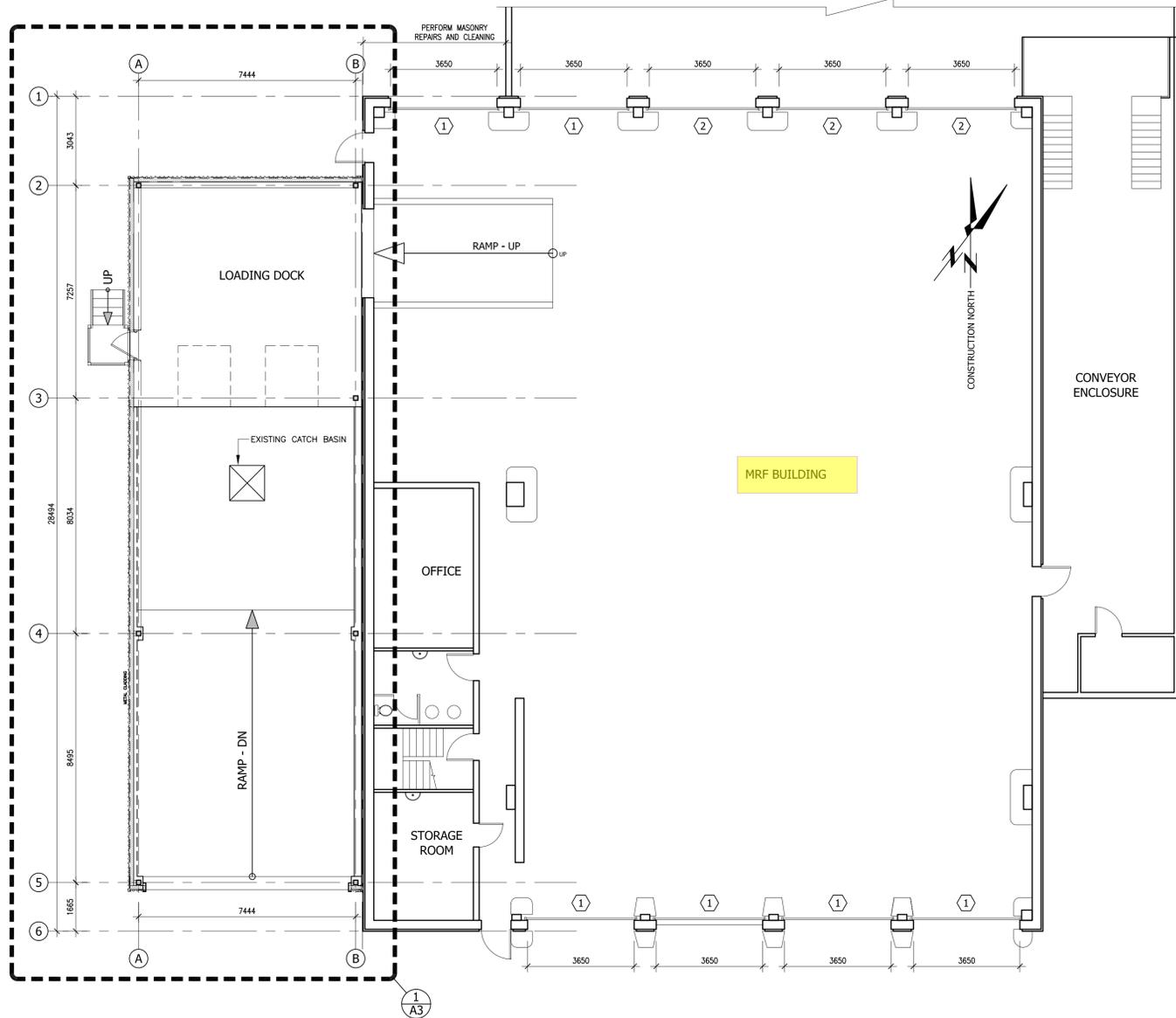
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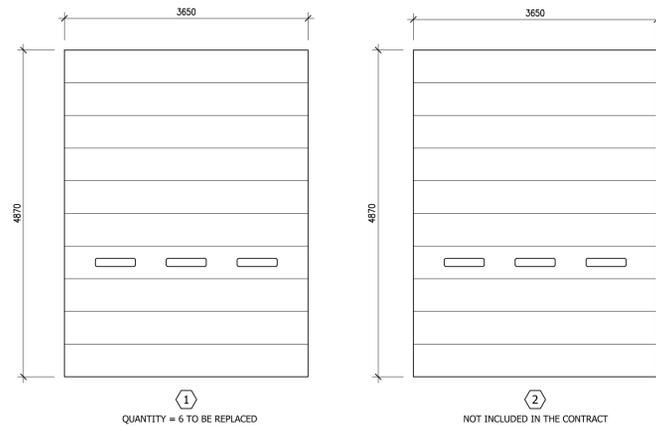
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DATE:	JULY 18, 2023		DRAWING NUMBER:	1601-2023-3-2
				A1



KEY FLOOR PLAN

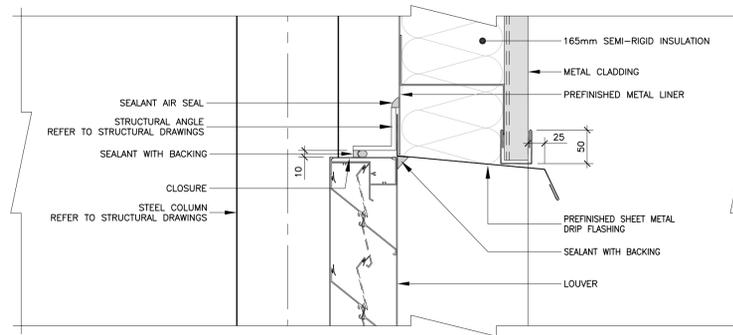
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Maintain integrity of existing fire and life safety system



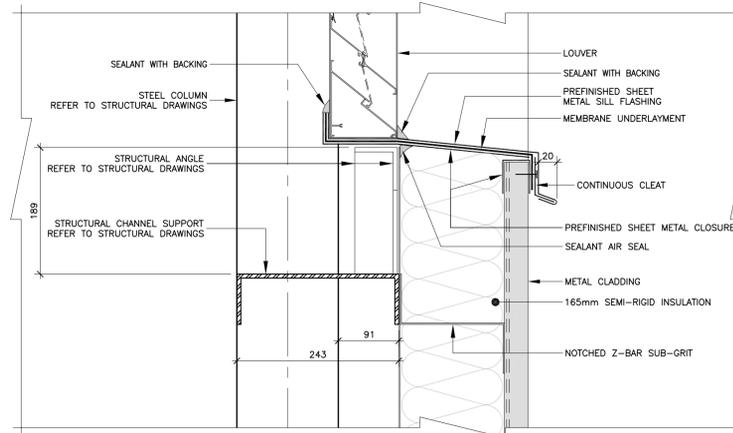
OVERHEAD DOOR SCHEDULE

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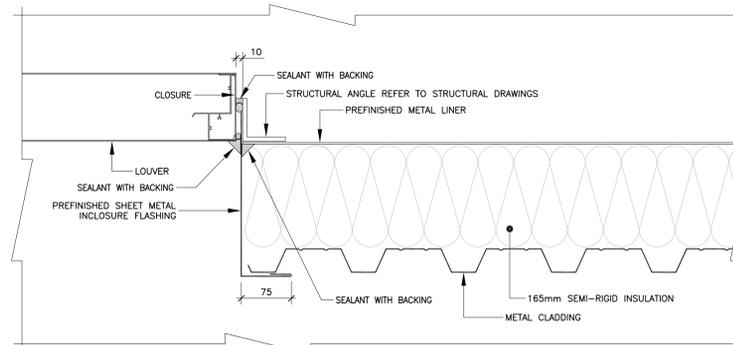
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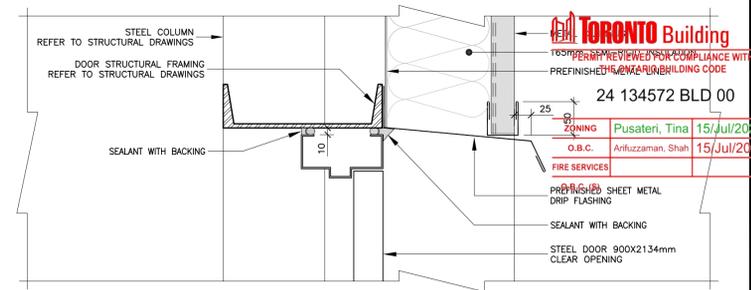
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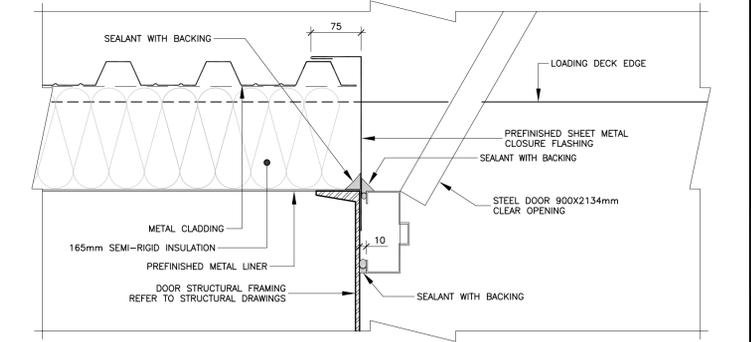
3 LOUVER JAMB DETAIL

Scale: 1:5



4 DOOR HEAD DETAIL

Scale: 1:5



5 DOOR JAMB DETAIL

Scale: 1:5

Toronto Building
 TESTED FOR COMPLIANCE WITH
 PREVIOUS BUILDING CODE
 24 134572 BLD 00
 ZONING Pusateri, Tina 15/Jul/2024
 O.B.C. Arfuzzaman, Shah 15/Jul/2024
 FIRE SERVICES

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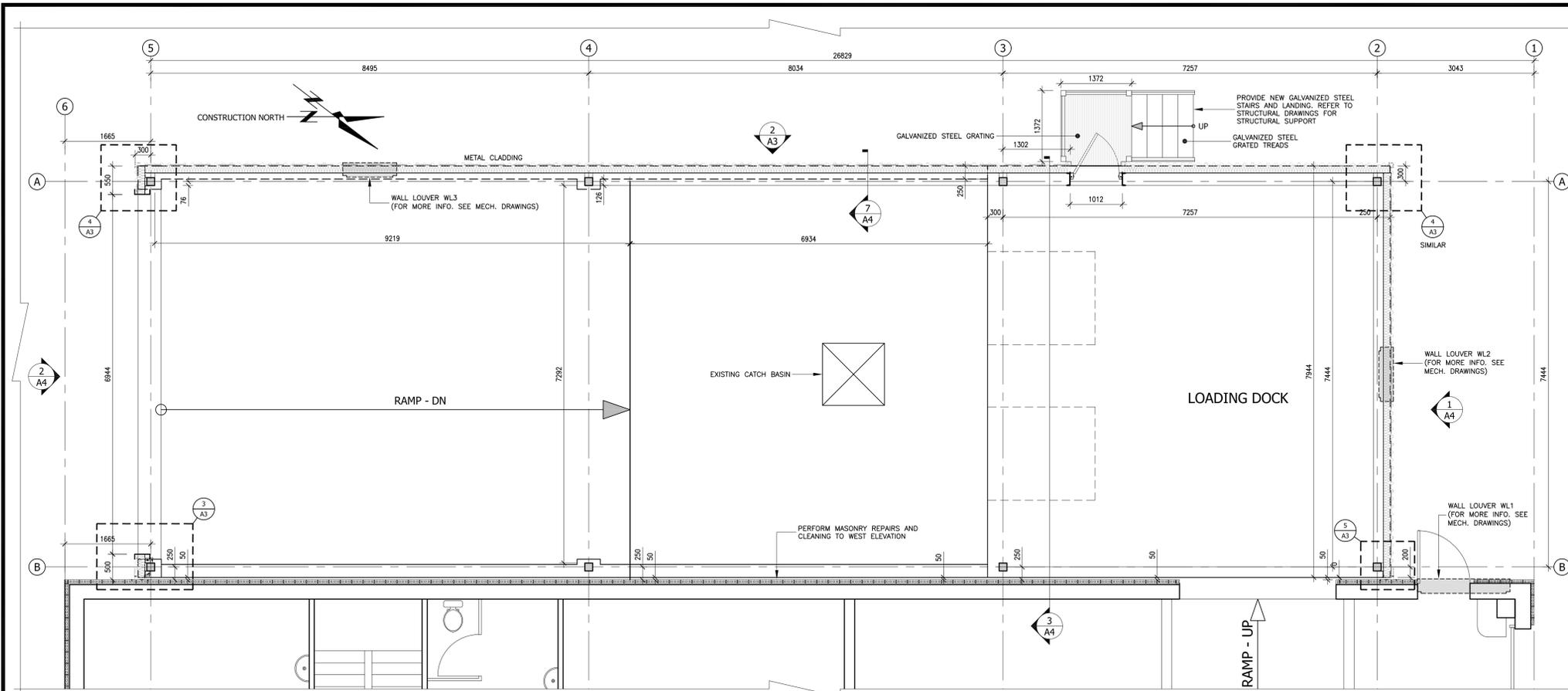
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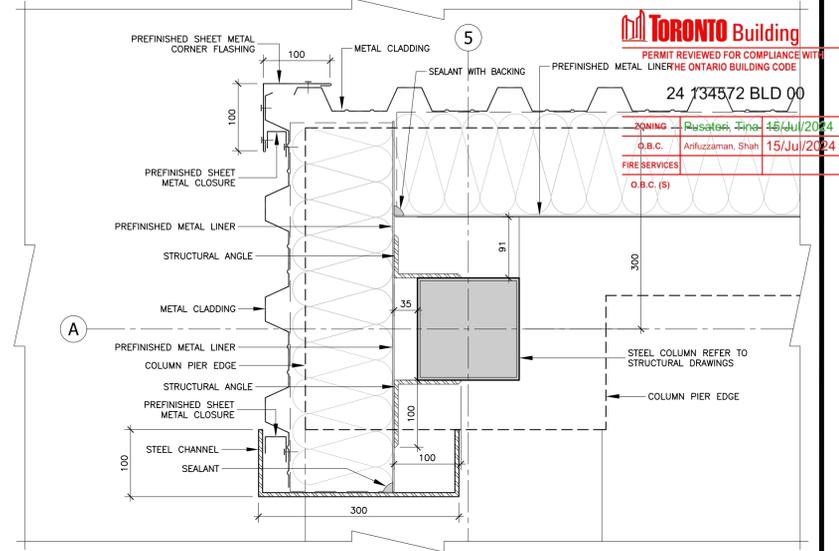
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KEY FLOOR PLAN				
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DATE:	JULY 18, 2023		DRAWING NUMBER:	1601-2023-3-3
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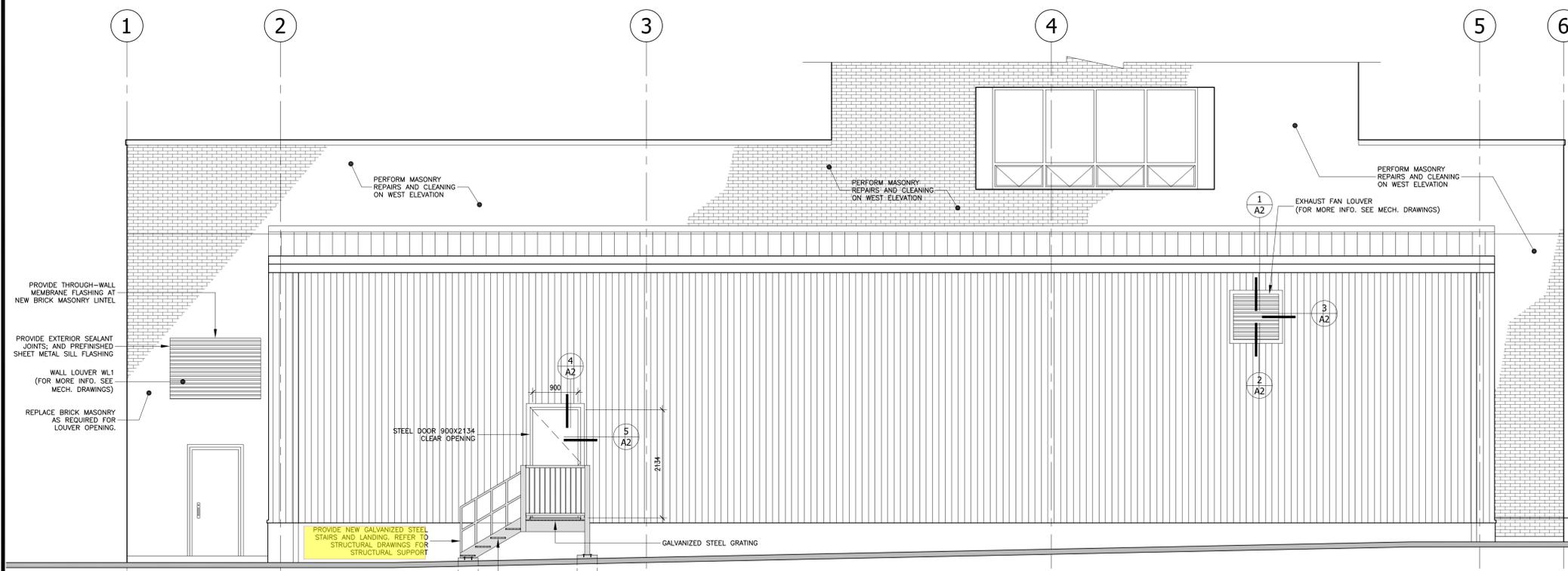
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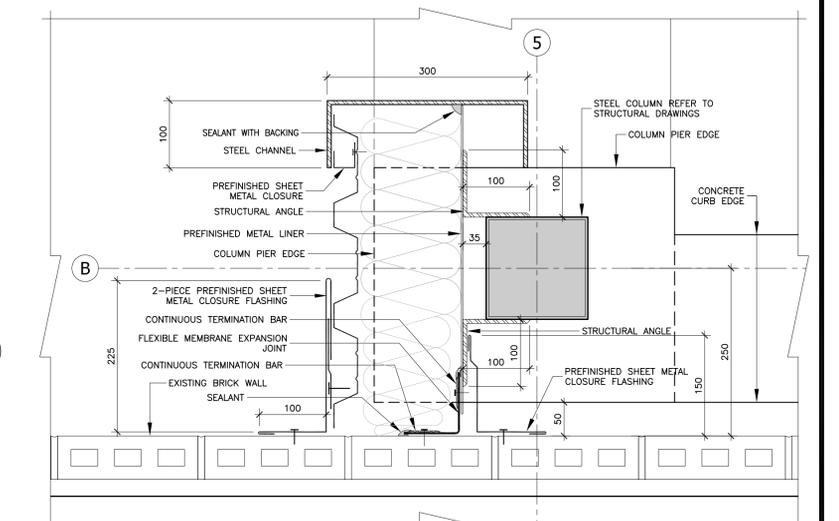
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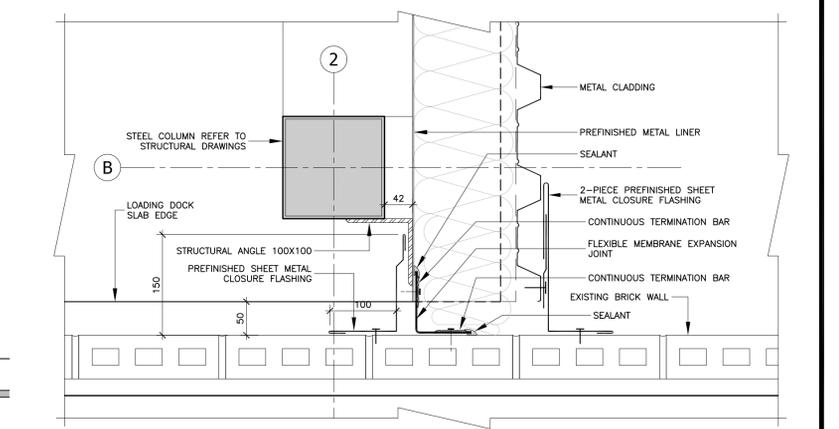
3 PLAN DETAIL - CORNER DETAIL Scale: 1:5



2 WEST ELEVATION Scale: 1:50



4 PLAN DETAIL - EXPANSION JOINT Scale: 1:5



5 PLAN DETAIL - EXPANSION JOINT Scale: 1:5

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Toronto Building

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GENERAL MANAGER
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MATTHEW CASCHERA
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INFRASTRUCTURE AND
RESOURCE MANAGEMENT

M.H. HALADUICK
L. LICENSED PROFESSIONAL ENGINEER
Mar. 8, 2024
PROVINCE OF ONTARIO

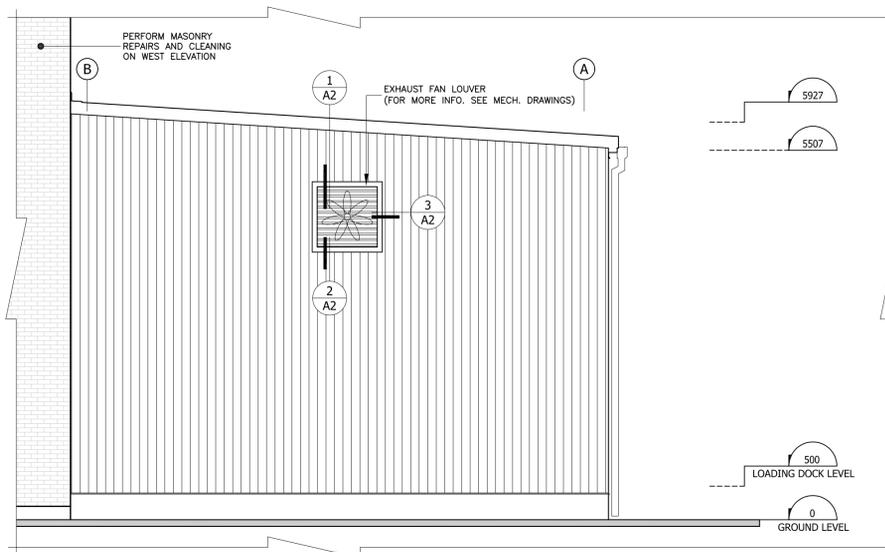
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LOADING DOCK FLOOR PLAN AND ELEVATION

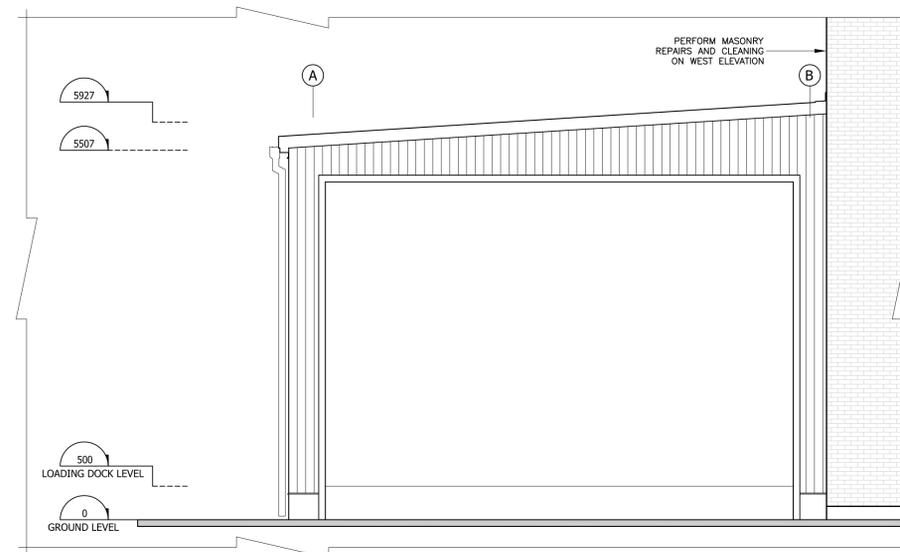
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DATE:	JULY 18, 2023					

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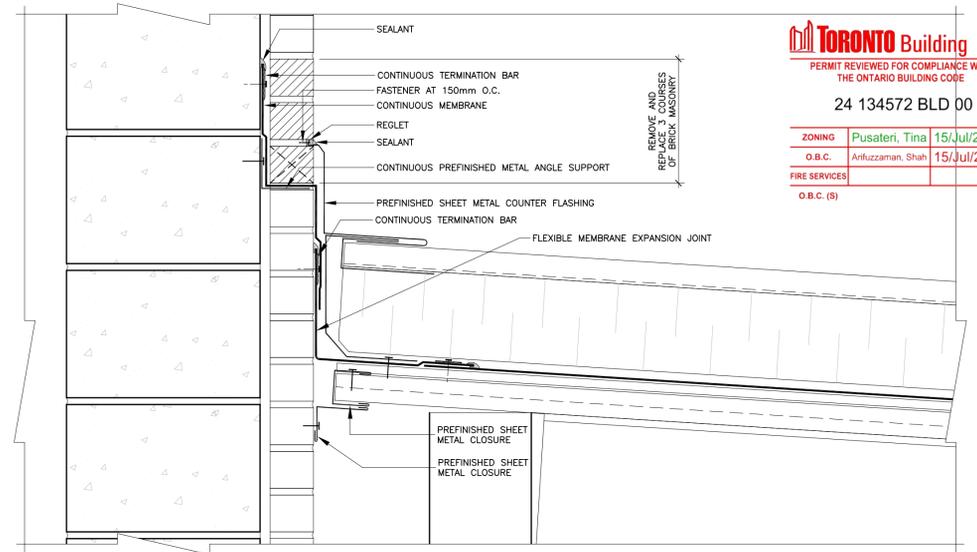
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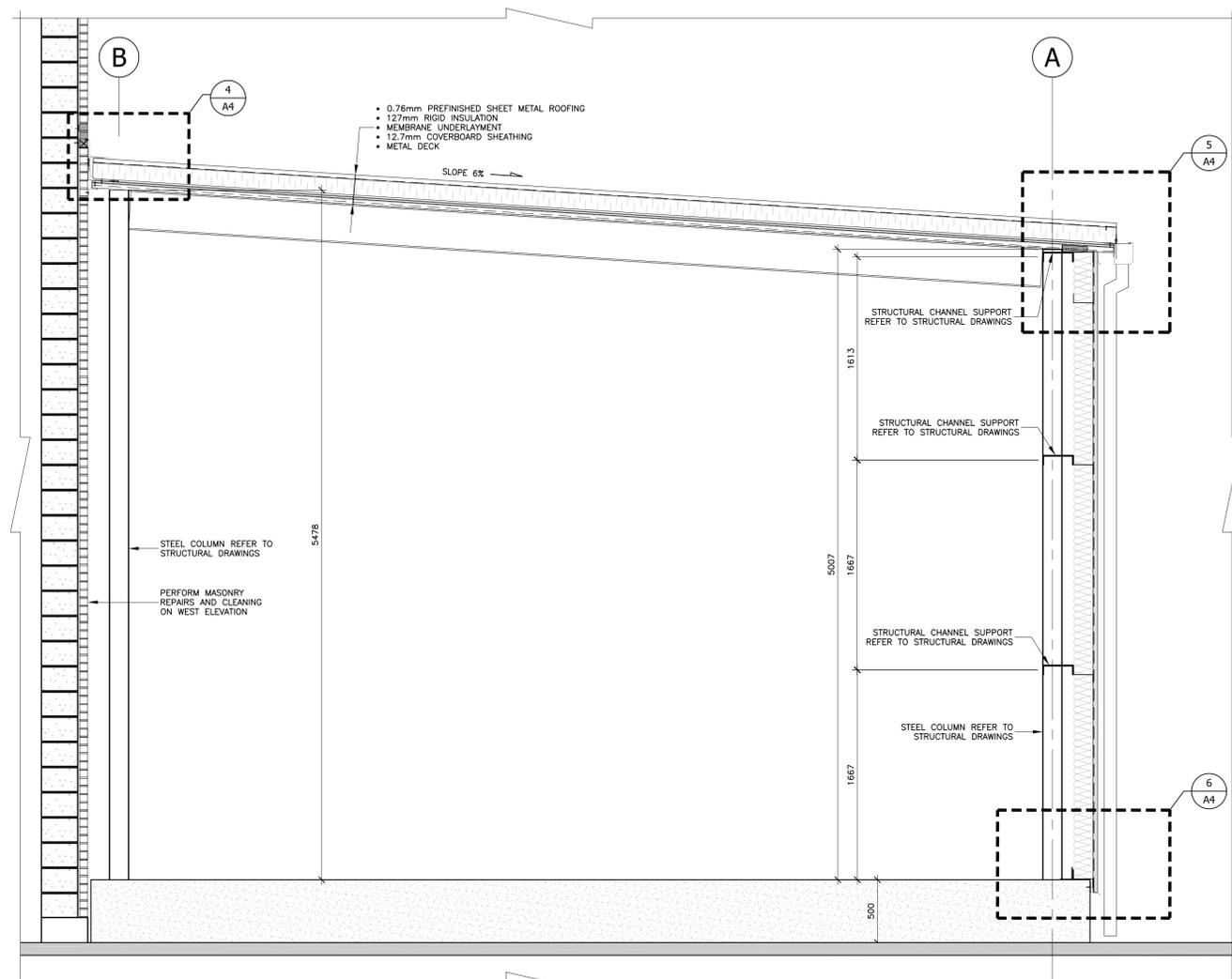
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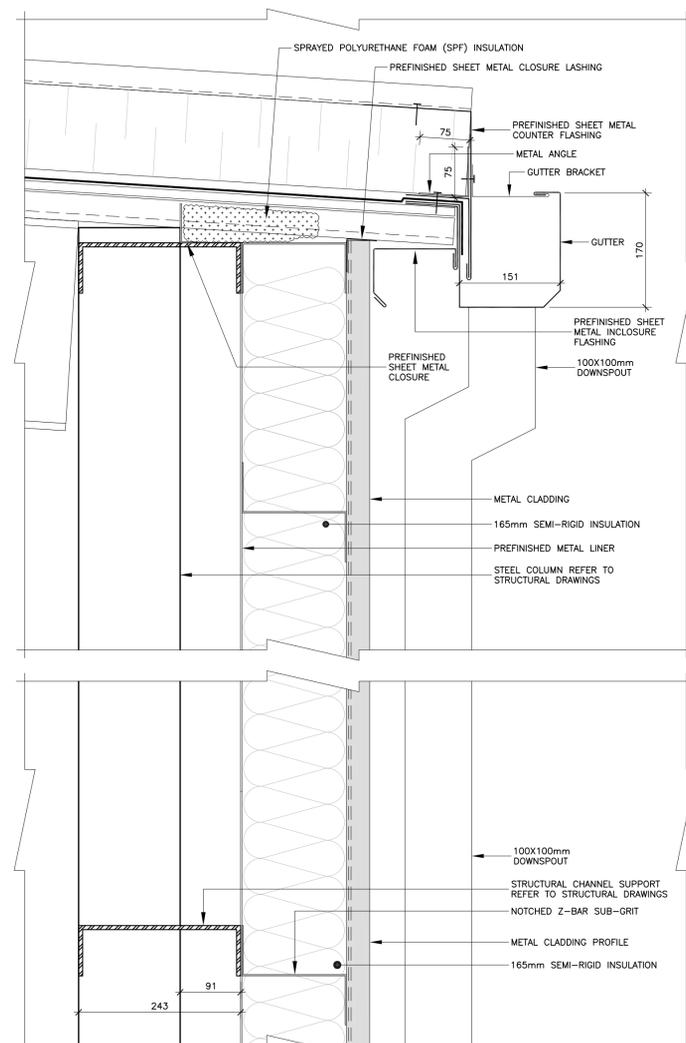
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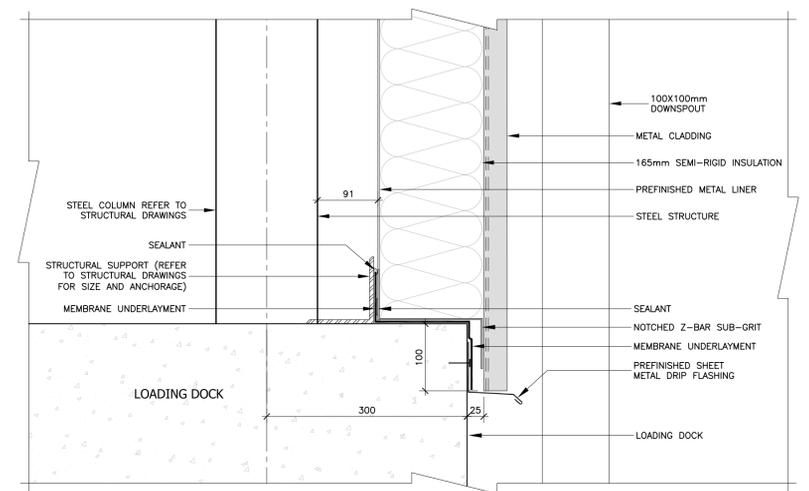
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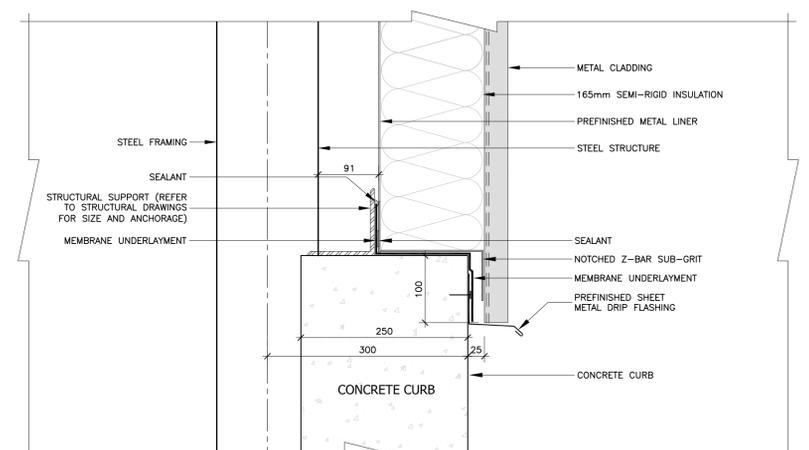
3 CROSS SECTION
 Scale: 1:25



5 SECTION DETAIL
 Scale: 1:5



6 SECTION DETAIL
 Scale: 1:5



7 SECTION DETAIL
 Scale: 1:5

B:\BIBN\2202009\4000 EXECUTIVES DRAWINGS\CLADDING CAD DRAWINGS\BR4-2202009-AL.DWG (A4)

SOLID WASTE MANAGEMENT SERVICES

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No.	DATE	REVISIONS	INITIAL	SIGNED
5				
4	NOV. 16, 2023	100% DRAFT DESIGN SUBMISSION	PJP	
3	OCT. 20, 2023	70% DESIGN SUBMISSION - CLIENT COMMENTS	PJP	
2	OCT. 3, 2023	70% DESIGN SUBMISSION - CLIENT COMMENTS	PJP	
1	JULY 18/23	70% DESIGN SUBMISSION	PJP	

Toronto SOLID WASTE MANAGEMENT SERVICES

M.H. HALADUICK
 LICENSED PROFESSIONAL ENGINEER
 Mar. 8, 2024
 PROVINCE OF ONTARIO

MATT KELIHER
 GENERAL MANAGER
 SOLID WASTE MANAGEMENT SERVICES

MATTHEW CASCHERA
 DIRECTOR
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COMMISSIONERS TRANSFER STATION
 BUILDING UPGRADE
 400 COMMISSIONER STREET, TORONTO, ONTARIO M4M 3K2

ELEVATION, CROSS SECTION AND SECTION DETAILS

DESIGN:	DRAFTING:	A.M.S.	CHECK:	P.J.P.	CONTRACT No.	23SW-IRM-026CDU
SCALE:	AS NOTED		DRAWING NUMBER:	1601-2023-3-5		
DATE:	JULY 18, 2023		A4			

RECEIVED 15/Jul/2024

ZONING	Art/Urban, Shah	15/Jul/2024
O.B.C.		
FIRE SERVICES		
O.B.C. (S)		

FOUNDATION NOTES	GN-005CS
<p>THE FOLLOWING NOTES ARE IN ADDITION TO THE GENERAL NOTES, THE SPECIFICATION AND PLAN NOTES.</p> <ol style="list-style-type: none"> SEE FOUNDATION PLAN NOTES FOR ASSUMED BEARING CONDITIONS. IF ACTUAL SITE OR SOIL CONDITIONS VARY FROM THOSE ASSUMED, OBTAIN WRITTEN INSTRUCTIONS FROM THE CONTRACT ADMINISTRATOR BEFORE PROCEEDING WITH THE WORK. CARRY EXTERIOR FOOTINGS DOWN MINIMUM 1200 mm (4') BELOW FINISHED GRADE. PROTECT FOOTINGS EXPOSED TO FROST DURING CONSTRUCTION WITH 1200 mm (4') OF EARTH OR ITS EQUIVALENT TO PREVENT FREEZING OF SOIL UNDER FOOTINGS. DO NOT PLACE FOOTINGS ON FROZEN SOIL. KEEP EXCAVATIONS CONTINUOUSLY DRY BEFORE CONCRETE IS PLACED. IF SOIL IS SOFTENED BY WATER, EXTEND EXCAVATION BELOW SOFTENED MATERIAL AND LOWER FOOTINGS TO SUIT. DO NOT EXCEED A RISE OF 7 IN RUN OF 10 IN THE LINE OF SLOPE BETWEEN ADJACENT EXCAVATIONS. FOUND NEW FOOTINGS WHICH ARE LOCATED IMMEDIATELY ADJACENT TO EXISTING FOOTINGS AT THE SAME ELEVATION AS THE EXISTING FOOTING UNLESS NOTED OTHERWISE. AT LOCATIONS WHERE MECHANICAL SERVICES INTERFERE WITH FOOTINGS ESTABLISH TOP OF FOOTING A MINIMUM 200 mm (8") BELOW INVERT ELEVATION. REFER TO MECHANICAL DRAWINGS FOR LOCATION OF SERVICES. CAP DEPTHS GIVEN ARE FOR ASSUMED SUBSOIL CONDITIONS. RAISE OR LOWER FOOTING BASES AND ADJUST CAP DEPTHS IF ACTUAL CONDITIONS VARY, IN ACCORDANCE WITH THE FOLLOWING: <ol style="list-style-type: none"> MINIMUM CAP DEPTH IS 300 mm (12"), BUT NOT LESS THAN: <ol style="list-style-type: none"> UNDER STEEL COLUMN: TWICE THE HORIZONTAL PROJECTION OF THE CAP BEYOND THE COLUMN BASE PLATE. UNDER CONCRETE COLUMN, THE GREATER OF: <ol style="list-style-type: none"> TWICE THE GREATER HORIZONTAL PROJECTION OF THE CAP BEYOND THE COLUMN. COMPRESSION DEVELOPMENT LENGTH OF COLUMN DOWEL PLUS 75 mm MINUS DEPTH OF FOOTING BASE. WHERE FOUNDATION CONDITIONS REQUIRE LOWERING FOOTING BASES TO THE EXTENT THAT THE CAP DEPTH EXCEEDS 3 TIMES ITS LEAST DIMENSION, OBTAIN CAP REINFORCEMENT FROM THE CONSULTANT. PLACE BASEMENT AND GROUND (FIRST) FLOOR SLABS AND WAIT UNTIL CONCRETE HAS REACHED 100% OF DESIGN STRENGTH BEFORE BACKFILLING AGAINST WALLS. PROVIDE SUPPORT AT TOP AND BOTTOM OF WALLS WHERE SLABS CANNOT BE POURED UNTIL BACKFILL HAS BEEN PLACED. WHERE BACKFILL IS PLACED ON EACH SIDE OF FOUNDATION WALLS, DO NOT EXCEED A GRADE DIFFERENCE OF 600 mm (24"). 	

EXCAVATION AND BACKFILL	GN-004CS
<p>1 GENERAL</p> <p>1.1 THE FOLLOWING REFERENCE STANDARDS SHALL GOVERN THE WORK OF THIS SECTION:</p> <ol style="list-style-type: none"> OPSS 1010, MATERIAL SPECIFICATION FOR AGGREGATES - BASE, SUBBASE, SELECT SUBGRADE AND BACKFILL MATERIALS <p>2 PRODUCTS:</p> <p>2.1 MATERIAL</p> <ol style="list-style-type: none"> TO OPSS GRANULAR B TYPE II GRANULAR UNDERBED FOR SLABS-ON-GRADE (Selected 1 or 2) <ol style="list-style-type: none"> 20 mm CLEAR LESTONE. 20 mm CRUSHER RUN LESTONE TO OPSS 1010 GRANULAR A, BUT WITH 100% PASSING 19 mm SIEVE. <p>3 EXECUTION</p> <ol style="list-style-type: none"> EXCAVATE TO FOOTING ELEVATIONS INDICATED ON DRAWINGS AND OBTAIN VERIFICATION FROM INSPECTION AND TESTING COMPANY THAT BEARING MATERIAL IS AS ANTICIPATED. REMOVE UNSUITABLE MATERIAL AS INSTRUCTED. BACKFILL <ol style="list-style-type: none"> PLACE GRANULAR MATERIAL SPECIFIED IN 2.1.1.1 PLACE BACKFILL IN 150 mm (6") LAYERS AND COMPACT TO 95% SPMD. GRANULAR UNDERBED FOR SLAB-ON-GRADE <ol style="list-style-type: none"> OBTAIN GEOTECHNICAL CONSULTANT'S WRITTEN CONFIRMATION THAT PREPARED SUBGRADE IS ACCEPTABLE FOR PLACEMENT OF GRANULAR UNDERBED. PLACE GRANULAR MATERIAL SPECIFIED IN PER 2.1.2.1 PLACE 150 mm (6") THICK UNDERBED AND COMPACT TO 100% SPMD. <p>4 FIELD QUALITY CONTROL</p> <ol style="list-style-type: none"> INSPECTION AND TESTING COMPANY SHALL PERFORM: <ol style="list-style-type: none"> VERIFICATION OF FOUNDATION BEARING MATERIAL; TESTING OF GRANULAR MATERIALS TO CONFIRM THEY MEET GRADING AND COMPACTION REQUIREMENTS. 	

DESIGN LOAD	GN-002CS
<ol style="list-style-type: none"> UNIT FLOOR AND ROOF LOADINGS, SOIL BEARING PRESSURES AND FOUNDATION LOADS GIVEN ON PLANS ARE UNFACTORED. MEMBER FORCES GIVEN ON DRAWINGS ARE FACTORED. GRAVITY LOADS: SUPERIMPOSED DEAD LOADS AND LIVE LOADS ARE GIVEN ON PLANS. SNOW LOAD PARAMETERS, OBC - TORONTO, ONTARIO <ul style="list-style-type: none"> S_s = 0.9 S_r = 0.4 S_l ULS = 1 S_l SLS = 0.9 RAIN LOAD PARAMETER, OBC - TORONTO, ONTARIO <ul style="list-style-type: none"> ONE DAY RAINFALL = 97mm WIND LOAD PARAMETERS, OBC - TORONTO, ONTARIO <ul style="list-style-type: none"> q (110) = 0.34 kPa q (150) = 0.44 kPa W ULS = 1 W SLS = 0.75 WIND LOAD APPLIED AS PER OBC AND NBCC COMMENTARY FIGURE 4.1.7.6.A FACTORED HORIZONTAL FORCE AT BASE IN NORTH-SOUTH DIRECTION, V_y = 50 kN FACTORED HORIZONTAL FORCE AT BASE IN EAST-WEST DIRECTION, V_x = 150 kN SEISMIC LOAD PARAMETERS, OBC - TORONTO, ONTARIO <ul style="list-style-type: none"> S_a (0.2) = 0.249 S_a (0.5) = 0.0071 S_a (0.9) = 0.126 S_a (1.0) = 0.0028 S_a (1.0) = 0.063 PGA = 0.160 S_a (2.0) = 0.0290 PGV = 0.099 SITE CLASSIFICATION = E I_s = 1 F_a = 1.53 F_v = 2.61 I_fF_aS_a(0.2) = 0.38 	

GENERAL NOTES	GN-003CS
<p>1 GENERAL</p> <ol style="list-style-type: none"> CHECK DIMENSIONS ON STRUCTURAL DRAWINGS AGAINST ARCHITECTURAL DRAWINGS AND EXISTING SITE CONDITIONS. REPORT INCONSISTENCIES TO CONSULTANT BEFORE PROCEEDING WITH THE WORK. READ DRAWINGS IN CONJUNCTION WITH SPECIFICATIONS. DO NOT EXCEED DURING CONSTRUCTION DESIGN LOADS SHOWN ON PLANS REDUCED AS NECESSARY UNTIL MATERIALS REACH DESIGN STRENGTH. DO NOT SCALE DRAWINGS. DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ELEVATIONS ARE IN METRES UNLESS NOTED OTHERWISE. <p>2 DESIGN</p> <ol style="list-style-type: none"> ALL REFERENCED STANDARDS LISTED SHALL BE THE CURRENT PUBLISHED EDITION OR THE EDITION REFERENCED BY THE APPLICABLE BUILDING CODE IN FORCE AT THE DATE NOTED ON THE STRUCTURAL DRAWINGS FOR THE BUILDING PERMIT APPLICATION. DESIGN IS IN ACCORDANCE WITH THE ONTARIO BUILDING CODE. DESIGN STANDARDS CONCRETE MEMBERS ARE DESIGNED IN ACCORDANCE WITH CSA STANDARD A23.3. STRUCTURAL STEEL IS DESIGNED IN ACCORDANCE WITH CSA STANDARD S16. MASONRY IS DESIGNED IN ACCORDANCE WITH CSA STANDARD S304. TIMBER IS DESIGNED IN ACCORDANCE WITH CSA STANDARD CAN/CSA 086. <p>3 MATERIALS</p> <ol style="list-style-type: none"> CONCRETE: SEE SCHEDULE OF CONCRETE PROPERTIES AND SPECIFICATION. STRUCTURAL STEEL: UNLESS NOTED OTHERWISE TO CSA G40 20/G40 21 OR ASTM STANDARD A992/A992M OR ASTM A572 W AND S SHAPES: ASTM A992 OR ASTM A572 GRADE 50, F_y=345 MPa PLATES: CSA G40 21 GRADE 50 W CHANNELS AND ANGLES: CSA G40 21 GRADE 50 W HOLLOW STRUCTURAL SECTIONS: CSA G40 21 GRADE 50W CLASS C OR ASTM STANDARD A1085 ANCHOR RODS: ASTM F1554 GRADE 36 REINFORCING STEEL: TO CONFORM TO CSA G30-18 GRADE 400W UNLESS NOTED OTHERWISE REINFORCING BAR AREAS ARE 100, 200, 300, 500, 700, 1000, 1500 AND 2500 SQ. MM FOR BAR DESIGNATIONS 10M, 15M, 20M, 25M, 30M, 35M, 45M AND 55M RESPECTIVELY. STRENGTH: <ul style="list-style-type: none"> DEFORMED REINFORCING BARS: 400 MPa. WELDED WIRE FABRIC: 440 MPa. 	

STRUCTURAL STEEL NOTES	GN-006CS
<p>1 GENERAL</p> <ol style="list-style-type: none"> THE FOLLOWING REFERENCE STANDARDS SHALL GOVERN THE WORK OF THIS SECTION: <ol style="list-style-type: none"> ASTM A108, SPECIFICATION FOR STEEL BAR, CARBON AND ALLOY, COLD FINISHED CSA S16, DESIGN OF STEEL STRUCTURES CSA S136, NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS CSA W7.1, CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL CSA W89, WELDED STEEL CONSTRUCTION CSA W178.1, CERTIFICATION OF WELDING INSPECTION ORGANIZATIONS CSA W178.2, CERTIFICATION OF WELDING INSPECTORS DESIGN OF CONNECTIONS SHALL BE BY A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO. DESIGN CRITERIA <ol style="list-style-type: none"> AXIAL LOADED MEMBERS THAT MEET AT A JOINT SHALL HAVE THEIR CENTROIDAL AXES INTERSECT AT A COMMON POINT UNLESS SHOWN OTHERWISE. DESIGN AND DETAIL ALL CONNECTIONS AS FLEXIBLE EXCEPT WHERE NOTED OTHERWISE ON THE DRAWINGS. CONNECTIONS MAY BE WELDED OR BOLTED. PROVIDE CONNECTIONS ADEQUATE TO RESIST REACTION OF BEAM, WHEN IT IS LOADED TO MAXIMUM FLEXURAL CAPACITY UNDER UNIFORMLY DISTRIBUTED LOAD, UNLESS REACTION OR CONNECTION DETAIL IS SHOWN ON DRAWINGS. FOR COMPOSITE BEAM CONSTRUCTION, USE FLEXURAL CAPACITY OF COMPOSITE SECTION BASED ON 100 PERCENT SHEAR CONNECTION OF BEAM TO SLAB. WHERE MOMENT CONNECTIONS ARE CALLED FOR BUT DESIGN FORCES ARE NOT INDICATED, DESIGN MOMENT CONNECTION FOR THE FULL MOMENT CAPACITY OF THE WEAKER MEMBER, JOINED. FOR BOLTED CONNECTIONS USE SNUG TIGHT HIGH STRENGTH BOLTS, ASTM F1259/F1259M (A325 OR A490) EXCEPT USE PRETENSIONED HIGH STRENGTH BOLTS IN LOCATIONS SPECIFIED IN CSA-S16 CLAUSE 22.2.2 <ol style="list-style-type: none"> SLIP-CRITICAL CONNECTIONS WHERE SLIPPAGE CANNOT BE TOLERATED; SHEAR CONNECTIONS PROPORTIONED IN ACCORDANCE WITH SEISMIC REQUIREMENTS; ALL ELEMENTS RESISTING GRAVE LOADS; CONNECTIONS SUBJECT TO IMPACT OR CYCLIC LOADING; CONNECTIONS WHERE THE BOLTS ARE SUBJECT TO TENSILE LOADING; CONNECTIONS USING OVERSIZE OR LONG SLOTTED HOLES (UNLESS SPECIFICALLY DESIGNED TO ACCOMMODATE MOVEMENT) PROVIDE CONNECTIONS FOR MEMBERS THAT ARE PART OF THE LATERAL LOAD RESISTING SYSTEM ADEQUATE TO RESIST FORCES SHOWN ON DRAWINGS, WHERE SEISMIC DESIGN GOVERNS, THE FORCES HAVE BEEN ADJUST TO MEET THE REQUIREMENTS OF CLAUSE 27. SUBMITTALS <ol style="list-style-type: none"> SUBMIT STRUCTURAL SHOP DRAWINGS. <ol style="list-style-type: none"> EACH SHOP DRAWING SUBMITTED SHALL BEAR THE SIGNATURE AND SEAL OF THE PROFESSIONAL ENGINEER RESPONSIBLE FOR CONNECTION DESIGN. <p>2 PRODUCTS</p> <p>2.1 MATERIAL</p> <ol style="list-style-type: none"> PROVIDE NEW MATERIALS IN ACCORDANCE WITH REFERENCE STANDARDS, OF STRENGTH AND QUALITY NOTED IN GENERAL NOTES. STUDS: ASTM A108 GALVANIZING: ASTM A123/A123M, STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS. GALVANIZING: HOT-DIP TO ASTM A153 / A153M-16 STANDARD SPECIFICATION FOR ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE. PAINT: <ol style="list-style-type: none"> INTERIOR: SHOP COAT FOR STEEL THAT WILL NOT RECEIVE A FINISH COAT: TO CISC/CPMA STANDARD 1-73A, A QUICK-DRYING ONE-COAT PAINT FOR USE ON STRUCTURAL STEEL INTERIOR: PRIME PAINT: TO MEET THE REQUIREMENTS OF CISC/CPMA STANDARD 2-75, A QUICK-DRYING PRIMER FOR USE ON STRUCTURAL STEEL EXTERIOR: ZINC-RICH PAINT READY MIX TO SPPC-PAINT 20 STANDARD <p>3 EXECUTION</p> <ol style="list-style-type: none"> PROVIDE WELDED STIFFENER PLATES MINIMUM 10 mm THICK ON BOTH SIDES OF WEB OF BEAMS AT POINTS OF CONCENTRATED LOADS INCLUDING BEAMS SUPPORTING COLUMNS OR BEAMS SUPPORTED ON TOP OF COLUMNS. ALL EXPOSED WELDS SHALL BE CONTINUOUS AND GROUND SMOOTH. PROVIDE STRUCTURAL STEEL FOR LATERAL SUPPORT OF MASONRY WALLS. CLEAN STEEL IN ACCORDANCE WITH PAINT SYSTEM SPECIFIED. ZINC-RICH PAINT REQUIRES CLEANING TO SSPC-SP6, COMMERCIAL BLAST CLEANING. PAINTING <ol style="list-style-type: none"> PAINT INTERIOR STEEL SURFACES WITH INTERIOR PAINT SPECIFIED PAINT EXTERIOR STEEL SURFACES WITH EXTERIOR PAINT SPECIFIED. DO NOT PAINT: <ol style="list-style-type: none"> SURFACES AND EDGES WITHIN 50 mm OF FIELD WELDS SURFACES ENCASED IN OR IN CONTACT WITH CONCRETE SURFACES TO BE SPRAY FIREPROOFED AFTER ERECTION IS COMPLETE GIVE ONE COAT TOUCH-UP PAINT TO FIELD BOLTS, FIELD CONNECTIONS, BURNT AREAS AND DAMAGED AREAS. USE SAME PAINT AS SHOP PAINT. GALVANIZE LINTELS, BRICK SUPPORT ANGLES, ARCHITECTURAL BLOCK SUPPORT ANGLES AND OTHER MEMBERS INDICATED AS GALVANIZED ON DRAWINGS AFTER SHOP WELDING IS COMPLETE. COMPLY WITH THE REQUIREMENTS OF REFERENCE STANDARDS AND REQUIREMENTS OF REGULATORY AUTHORITIES IN ERECTION OF STRUCTURAL STEEL. PROVIDE MINIMUM BEARING FOR ALL STEEL BEAMS: <ol style="list-style-type: none"> 200 mm (8") ON CONCRETE AND MASONRY 100 mm (4") ON STEEL <p>4 FIELD QUALITY CONTROL</p> <ol style="list-style-type: none"> INSPECTION AND TESTING COMPANY RETAINED BY THE CONTRACTOR, SHALL PERFORM: <ol style="list-style-type: none"> INSPECTION OF ERECTION AND FIT-UP INCLUDING PLACING, PLUMBING AND LEVELLING; INSPECTION OF BOLTED CONNECTIONS INCLUDING VERIFICATION OF BOLT GRADE AND FIT SNUG TIGHT AND PRETENSIONED BOLTS HAVE BEEN USED APPROPRIATELY; INSPECTION OF WELDED JOINTS; GENERAL INSPECTION OF FIELD CUTTING AND ALTERATIONS; GENERAL INSPECTION OF COATING TOUCH-UP. 	

CONCRETE & REINFORCING STEEL & FORMWORK	GN-003CS
<p>1 GENERAL</p> <ol style="list-style-type: none"> THE FOLLOWING REFERENCE STANDARDS SHALL GOVERN THE WORK OF THIS SECTION: <ol style="list-style-type: none"> CSA A23.1, CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION CSA A23.2, METHODS OF TEST FOR CONCRETE CSA A3000, CEMENTITIOUS MATERIALS COMPENDIUM ASTM A1064/A1064M STANDARD SPECIFICATION FOR CARBON-STEEL WIRE AND WELDED WIRE REINFORCEMENT, PLAIN AND DEFORMED, FOR CONCRETE. CSA G30-18, CARBON STEEL BARS FOR CONCRETE REINFORCEMENT CSA W188, WELDING OF REINFORCING BARS IN REINFORCED CONCRETE CONSTRUCTION ASTM D3963/D3963M, STANDARD SPECIFICATION FOR FABRICATION AND JOBSITE HANDLING OF EPOXY-COATED STEEL REINFORCEMENT BARS ACI 315, MANUAL OF ENGINEERING AND PLACING DRAWINGS FOR REINFORCED CONCRETE STRUCTURES RSIC REINFORCING STEEL MANUAL OF STANDARD PRACTICE, 2006 ACI 117, STANDARD SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS AND COMMENTARY CSA S269.1, FALSEWORK AND FORMWORK SUBMITTALS <ol style="list-style-type: none"> SUBMIT CONCRETE MIX DESIGNS SUBMIT REINFORCING STEEL SHOP DRAWINGS <ol style="list-style-type: none"> PREPARE PLACING DRAWINGS AND BAR LISTS INDICATING REINFORCING, DOWELS, CONCRETE COVER, CONSTRUCTION JOINTS <p>2 PRODUCTS</p> <ol style="list-style-type: none"> PLYWOOD: DOUGLAS FIR, MINIMUM THICKNESS 17 mm TO CSA O121, FINISHED ONE SIDE, FABRICATED SPECIALLY FOR USE AS CONCRETE FORM PANELS WITH SEALED EDGES. ROUND COLUMN FIBRE FORMS: TO PRODUCE SMOOTH SURFACE WITHOUT FINIS VOIDFORM: HONEYCOMB CELLULAR CORE STRUCTURE MANUFACTURED FROM KRAFT FIBRE. REINFORCING BARS: TO CAN/CSA-G30-18, GRADE 400W WELDED WIRE FABRIC: TO ASTM A1064/A1064M AND IN FLAT SHEETS NOT ROLLS EPOXY COATED REINFORCEMENT: FROM MINISTRY OF TRANSPORTATION APPROVED SOURCES TO ASTM D3963/D3963M CEMENTITIOUS MATERIALS <ol style="list-style-type: none"> PORTLAND CEMENT: TO CSA A3000 TYPE GU OR GUL CEMENTITIOUS HYDRAULIC SLAG AND FLY ASH: TO CSA A3000 AGGREGATE <ol style="list-style-type: none"> FINE AGGREGATE FOR SLABS ON GRADE: FINENESS MODULUS BETWEEN 2.6 AND 3.1 COARSE AGGREGATE: 20 mm TO 5 mm UNLESS OTHERWISE SPECIFIED CORROSION INHIBITOR: CALCIUM NITRITE MEETING THE REQUIREMENTS OF CSA S413, APPENDIX C VAPOUR BARRIER FOR SLABS ON GRADE: POLYETHYLENE MEMBRANE, 0.25 MM THICK TO ASTM E1745 CONTROL JOINT FILLER: SEMI-RIGID JOINT FILLER <ul style="list-style-type: none"> OWIKJOINT UVR, BY EUCLID CANADA INC., TORONTO, ON. LOADFLEX, BY SIKKA CANADA INC., MISSISSAUGA, ON. PLANIBOND JF, BY MAPEI INC., BRAMPTON, ON. PREMIXED GROUT: DRYPACK NON-SHRINK NON-METALLIC <p>3 EXECUTION</p> <ol style="list-style-type: none"> ALL REINFORCEMENT SHALL BE SECURELY HELD IN PROPER POSITION WHILE PLACING CONCRETE. PROVIDE CHAIRS, TIES, SPACERS, ADDITIONAL SUPPORT BARS AND STIRRUPS AS MAY BE REQUIRED. PROVIDE OPENINGS IN SLABS AND WALLS AS SHOWN ON STRUCTURAL DRAWINGS OR OTHERWISE REQUIRED BY VARIOUS TRADES. OBTAIN CONTRACT ADMINISTRATOR'S APPROVAL FOR LOCATIONS AND SIZES OF OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS. FOR ALL OPENINGS BEFORE CONCRETE IS PLACED, DO NOT CUT OR CORE ANY OPENINGS AFTER CONCRETING UNLESS APPROVED BY THE CONTRACT ADMINISTRATOR. PROVIDE SLEEVES IN SLABS AND WALLS FOR MECHANICAL PIPING WHEREVER POSSIBLE; AVOID CREATING OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS. OBTAIN CONTRACT ADMINISTRATOR'S APPROVAL FOR ALL SLEEVES. SUBMIT SLEEVING DRAWINGS FOR APPROVAL A MINIMUM TWO WEEKS PRIOR TO PLACING CONCRETE. ELECTRICAL CONDUIT IN SLABS, BEAMS, WALLS AND COLUMNS SHALL BE APPROVED BY THE CONTRACT ADMINISTRATOR BEFORE PROCEEDING WITH THE WORK. REFER TO TYPICAL DETAILS FOR GUIDELINES. CONSTRUCTION JOINTS FOR SLABS, BEAMS AND WALLS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE APPROVED BY THE CONTRACT ADMINISTRATOR BEFORE CONSTRUCTION. REFER TO TYPICAL DETAILS. COORDINATE AND INSTALL ALL REQUIRED EMBEDDED ITEMS, SLEEVES, INSERTS, FASTENING DEVICES ETC, BEFORE PLACING CONCRETE. INSTALL THESE ITEMS IN A MANNER THAT DOES NOT IMPAIR THE STRUCTURAL STRENGTH OF THE SYSTEM. DO NOT CUT OR BEND OR DISPLACE REINFORCEMENT OTHER THAN SHOWN ON THE STRUCTURAL DRAWINGS. 	

CONCRETE WALLS	GN-003CS																							
<ol style="list-style-type: none"> REINFORCEMENT OF CONCRETE WALLS NOT SHOWN BY SECTION, PLAN OR SCHEDULE SHALL BE AS FOLLOWS: <table border="1"> <thead> <tr> <th>WALL THICKNESS</th> <th>HORIZONTAL</th> <th>VERTICAL</th> <th>LOCATION</th> </tr> </thead> <tbody> <tr> <td>100 TO 150 (4' TO 6')</td> <td>15M@300 (12")</td> <td>10M@000 (12")</td> <td>CENTRE</td> </tr> <tr> <td>200 (8')</td> <td>10M@225 (9")</td> <td>10M@450 (18")</td> <td>EACH FACE</td> </tr> <tr> <td>250 (10')</td> <td>15M@300 (12")</td> <td>10M@450 (18")</td> <td>EACH FACE</td> </tr> <tr> <td>300 (12')</td> <td>15M@325 (13")</td> <td>10M@400 (16")</td> <td>EACH FACE</td> </tr> <tr> <td>>300 (12')</td> <td>15M@300 (12")</td> <td>10M@400 (16")</td> <td>EACH FACE</td> </tr> </tbody> </table> ADD 2-15M HORIZONTAL TOP AND BOTTOM CONTINUOUS FOR 200 (8") WALLS ADD 2-20M HORIZONTAL TOP AND BOTTOM CONTINUOUS FOR 250 (10") WALLS OR THICKER UNLESS SHOWN OTHERWISE BY SECTION, PLAN OR SCHEDULE, ADD 2-15M HORIZONTAL BARS ABOVE AND BELOW OPENINGS IN HEAD AND SILL. EXTEND BARS 600 mm (24") PAST OPENING. ADD 1" BARS SAME SIZE AND SPACING AS VERTICAL BARS. UNLESS SHOWN OTHERWISE BY SECTION, PLAN OR SCHEDULE, ADD 2-15M VERTICAL BARS IN JAMBS OF OPENING AND EDGE TIES SAME SIZE AND SPACING OF HORIZONTAL BARS. WALL DOWELS INTO SLAB NOT SHOWN BY SECTION, PLAN OR SCHEDULE SHALL BE SAME SIZE AND SPACING AS VERTICAL BARS. DO NOT LOCATE HORIZONTAL JOINTS BETWEEN FLOORS UNLESS SHOWN ON DRAWINGS. LEAVE CHASES IN WALLS FOR SLABS, BEAMS AND CONCRETE STAIRS. MINIMUM REINFORCING FOR ANY SUSPENDED SLAB SHALL BE TEMPERATURE BARS BOTTOM EACH WAY AS SHOWN IN TYPICAL DETAIL C-006 SLAB-ON-GRADE SEE FOUNDATION PLAN NOTES FOR BEARING CONDITIONS. WHERE FLOOR DEPRESSIONS OCCUR MAINTAIN SLAB THICKNESS SPECIFIED ON THE FOUNDATION PLANS. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND AREAS. EACH FOUR SHALL BE CONTAINED BY A VERTICAL BULKHEAD OR ABUTTING CONSTRUCTION JOINT. REFER TO TYPICAL DETAILS FOR CONSTRUCTION JOINTS AND CONTROL JOINTS. DO NOT PLACE CONCRETE ON FROZEN SUBGRADE OR ON SUBGRADE CONTAINING FROZEN MATERIAL. ASCERTAIN THAT FORMS, REINFORCING STEEL AND ADJACENT CONCRETE SURFACES ARE ENTIRELY FREE OF FROST, SNOW AND ICE BEFORE PLACING CONCRETE. BEFORE PLACING SLAB-ON-GRADE VERIFY THAT: <ol style="list-style-type: none"> SUBGRADE HAS BEEN COMPACTED TO THE REQUIREMENTS OF THE GEOTECHNICAL REPORT; TRENCHES, HOLES ETC. THAT WERE DUG AFTER THE PREPARATION OF THE SUBGRADE HAVE BEEN FILLED WITH NEW GRANULAR MATERIAL AND COMPACTED TO THE REQUIREMENTS OF THE GEOTECHNICAL REPORT; REINFORCING STEEL IS PROPERLY CHAIRED AND HELD SECURELY IN PLACE; ALL EQUIPMENT FOR THE FINISHING OF CONCRETE AND THE SAW CUTTING OF CONTROL JOINTS IS ON SITE AND WORKING PROPERLY; USE EARLY ENTRY SAW (SOFF-CUT, BY HUSOVARNA) COMMENCE SAWCUTTING AS SOON AS CONCRETE CAN SUPPORT WEIGHT OF SAW AND OPERATOR WITHOUT MARRING CONCRETE SURFACE AND WITHIN 2 HOURS OF COMPLETION OF FINAL FINISHING; FLOOR FINISH: HARD, SMOOTH, DENSE TROWELED SURFACE FREE FROM BLEMISHES. <p>4 FIELD QUALITY CONTROL</p> <ol style="list-style-type: none"> INSPECTION AND TESTING COMPANY RETAINED BY THE CONTRACTOR, SHALL PERFORM: <ol style="list-style-type: none"> SAMPLING, INSPECTION AND TESTING IN ACCORDANCE WITH CSA A23.2 AND TO INCLUDE: <ol style="list-style-type: none"> MAKING STANDARD SLUMP TESTS; OBTAINING OF THREE STANDARD SPECIMENS FOR STRENGTH TESTS FROM EACH 100 CUBIC METRES OF CONCRETE, OR FRACTION THEREOF, OF EACH MIX DESIGN OF CONCRETE PLACED IN ANY ONE DAY; MAKING COMPRESSION TESTS OF EACH SET OF THREE SPECIMENS, ONE AT 7 DAYS AND TWO AT 28 DAYS; VERIFICATION OF AIR CONTENT OF AIR-ENTRAINED CONCRETE; VERIFICATION THAT CONCRETE CONTAINS CORROSION INHIBITOR WHERE SPECIFIED; DETERMINE CHLORIDE ION CONTENT IN ACCORDANCE WITH CSA STANDARD A23.2 TEST METHOD 4B. INSPECTION OF TOLERANCES. 	WALL THICKNESS	HORIZONTAL	VERTICAL	LOCATION	100 TO 150 (4' TO 6')	15M@300 (12")	10M@000 (12")	CENTRE	200 (8')	10M@225 (9")	10M@450 (18")	EACH FACE	250 (10')	15M@300 (12")	10M@450 (18")	EACH FACE	300 (12')	15M@325 (13")	10M@400 (16")	EACH FACE	>300 (12')	15M@300 (12")	10M@400 (16")	EACH FACE
WALL THICKNESS	HORIZONTAL	VERTICAL	LOCATION																					
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<p>exp Services Inc. t: +1.905.793.9800 f: +1.905.793.0641 1595 clark Boulevard Brampton, ON L6T 4V1 Canada</p> <p>• BUILDINGS • EARTH & ENVIRONMENT • ENERGY • • INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •</p>	<p>3 2023.10.27 ISSUED FOR 100% REVIEW</p> <p>1 2023.10.20 REISSUED FOR 70% CD</p>	<p>No. DATE REVISIONS INITIAL SIGNED</p>		<p>SOLID WASTE MANAGEMENT SERVICES</p> <p>MATT KELHER GENERAL MANAGER SOLID WASTE MANAGEMENT SERVICES</p>	<p>COMMISSIONERS TRANSFER STATION</p> <p>MRF BUILDING UPGRADES 400 COMMISSIONERS STREET, TORONTO, ONTARIO M4M 3K2</p>	<p>GENERAL NOTES</p> <p>DESIGN: CONTRACT No. 23SWM-IRM-026CDU</p> <p>SCALE: DRAWING NUMBER: 1601-2023-3-6 S1</p> <p>DATE: RECEIVED 15/Jul/2024</p>
	<p>C. IN. BROWN 100223732 2024-03-19 PROVINCE OF ONTARIO</p>	<p>MATTHEW CASCHERA DIRECTOR INFRASTRUCTURE AND RESOURCE MANAGEMENT</p>				

RENOVATION AND EXISTING CONDITIONS **GN-013**

THE FOLLOWING NOTES ARE IN ADDITION TO THE GENERAL NOTES, THE SPECIFICATION, AND PLAN NOTES.

- EXISTING CONDITIONS AS SHOWN ON THE STRUCTURAL DRAWINGS ARE BASED UPON THE INFORMATION AVAILABLE AT THE TIME THAT DRAWINGS WERE PREPARED.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE FULLY KNOWLEDGEABLE OF THE SITE CONDITIONS INCLUDING: THE STRUCTURE, LOCATION OF INTERFERENCES, CONDUITS, PIPES, EQUIPMENT ETC.
- FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS NECESSARY FOR THE PROPER CONSTRUCTION AND ALIGNMENT OF THE NEW PORTIONS OF THE WORK TO THE EXISTING WORK. REPORT INCONSISTENCIES TO THE CONSULTANT BEFORE PROCEEDING WITH THE WORK.
- PRIOR TO FABRICATION OF ANY STRUCTURAL MEMBERS, THE CONTRACTOR SHALL COMPLETE THEIR SITE REVIEW OF CRITICAL "TIE-IN" DIMENSIONS AND CONFIRM ALL DIMENSIONS TO ENSURE PROPER FIT OF NEW WORK TO EXISTING WORK.
- PROVIDE ALL NECESSARY BRACING, SHORING AND OTHER SAFEGUARDS TO MAINTAIN ALL PARTS OF THE EXISTING WORK IN A SAFE CONDITION DURING THE PROCESS OF DEMOLITION AND CONSTRUCTION AND TO PROTECT FROM DAMAGE THOSE PORTIONS OF THE EXISTING WORK WHICH ARE TO REMAIN.
- TEMPORARY SHORING AND SUPPORT OF EXISTING STRUCTURE
 - BE AWARE THAT THE EXTENT OF TEMPORARY SHORING AND SUPPORT OF STRUCTURE SHOWN ON THE STRUCTURAL DRAWINGS IS CONCEPTUAL ONLY AND THE MINIMUM EXPECTED NECESSARY TO PROVIDE SHORING AND SUPPORT DURING THE REPAIR OF EXISTING STRUCTURE, OR THE DEMOLITION OF EXISTING STRUCTURE AND CONSTRUCTION OF NEW STRUCTURE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE MEANS AND EXTENT OF REQUIRED TEMPORARY SHORING AND SUPPORT OF EXISTING STRUCTURE NECESSARY TO COMPLETE THE WORK SHOWN ON THE STRUCTURAL DRAWINGS.
 - DESIGN, DETAILING AND SPECIFICATION OF INSTALLATION PROCEDURE FOR ALL REQUIRED TEMPORARY SHORING OF EXISTING STRUCTURE TO PERMIT CONSTRUCTION OF STRUCTURAL REPAIRS, OR THE DEMOLITION OF EXISTING STRUCTURE AND CONSTRUCTION OF NEW STRUCTURE AS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE UNDERTAKEN BY A PROFESSIONAL ENGINEER EXPERIENCED IN THE DESIGN OF TEMPORARY SHORING AND SUPPORT OF EXISTING STRUCTURE AND LICENSED IN THE PROVINCE OF ONTARIO. ENGINEER MUST BE INSURED AGAINST PROFESSIONAL LIABILITY IN ACCORDANCE WITH SECTION 74 SUB-SECTION (1) OF REGULATION 841 OF THE ONTARIO PROFESSIONAL ENGINEERS ACT. SUBMIT PROOF OF TEMPORARY SHORING DESIGN ENGINEER'S PROFESSIONAL LIABILITY INSURANCE.
 - BE AWARE THAT THE TEMPORARY SHORING DESIGN ENGINEER IS THE ENGINEER OF RECORD FOR THE TEMPORARY SHORING AND SUPPORT WORK WITH THE RESPONSIBILITY FOR THE DESIGN, PREPARATION AND REVIEW OF SHOP DRAWINGS AND FIELD REVIEW OF TEMPORARY SHORING AND SUPPORT WORK.
 - TEMPORARY SHORING AND SUPPORT DESIGN ENGINEER SHALL SEAL ALL SHOP DRAWINGS FOR TEMPORARY SHORING AND SUPPORT SYSTEM(S). SUBMIT TO CONSULTANT FOR REVIEW SHOP DRAWINGS FOR TEMPORARY SHORING AND SUPPORT SYSTEM(S). DO NOT BEGIN INSTALLATION OF TEMPORARY SHORING AND SUPPORT SYSTEM(S) UNTIL ALL CONSULTANT COMMENTS ON SUBMITTED SHOP DRAWINGS HAVE BEEN ADDRESSED.
 - TEMPORARY SHORING AND SUPPORT DESIGN ENGINEER SHALL CONDUCT FIELD REVIEW OF SHORING SYSTEM AS REQUIRED TO ENSURE PROPER INSTALLATION OF TEMPORARY SHORING AND SUPPORT SYSTEM(S), AND NOT LESS THAN AT WEEKLY INTERVALS UNTIL TEMPORARY SHORING AND SUPPORT SYSTEM IS REMOVED. PROVIDE A SEALED FIELD REVIEW LETTER OR REPORT DOCUMENTING EACH FIELD REVIEW VISIT.
 - BE AWARE THAT REVIEW OF SHOP DRAWINGS AND ANY PERIODIC REVIEW OF TEMPORARY SHORING SYSTEM BY CONSULTANT IS FOR GENERAL CONFORMITY TO DESIGN CONCEPT AND GENERAL ARRANGEMENT ONLY AND THAT TEMPORARY SHORING AND SUPPORT DESIGN ENGINEER RETAINS RESPONSIBILITY AS ENGINEER OF RECORD AND THAT CONTRACTOR RETAINS RESPONSIBILITY FOR QUALITY CONTROL, ERRORS OR OMISSIONS, AND CONFORMANCE WITH THE REQUIREMENTS OF CONTRACT DOCUMENTS AND REGULATORY AUTHORITIES. CONNECTIONS OF NEW STRUCTURAL STEEL FRAMING TO EXISTING STRUCTURAL STEEL SHALL BE ACHIEVED THROUGH WELDED CONNECTIONS UNLESS OTHERWISE NOTED.
 - OBTAIN A REPORT FROM MATERIAL TESTING COMPANY COMMENTING ON CHEMICAL COMPOSITION AND WELDABILITY OF EXISTING STEEL. MODIFY WELDING PROCEDURES TO SUIT CHEMICAL COMPOSITION OF EXISTING STEEL.
 - PAINT ON EXISTING STRUCTURAL STEEL MAY CONTAIN LEAD. REFER TO DESIGNATED SUBSTANCE SURVEY OR IF NO REPORT EXISTS OBTAIN A REPORT FROM MATERIAL TESTING COMPANY COMMENTING ON HAZARDOUS MATERIAL. MAKE ALL NECESSARY SAFETY PRECAUTIONS.
 - WELDING TO AND WITHIN AN EXISTING FACILITY PRESENTS POTENTIAL HAZARDS
 - PROTECT AGAINST FIRE:
 - PROTECT EXISTING COMBUSTIBLES PRIOR TO WELDING. KEEP A SEPARATE WATCHMAN AND SEVERAL FIRE EXTINGUISHERS ON HAND.
 - DO NOT LEAVE THE SITE UNTIL SATISFIED THAT NO FIRE HAZARD EXISTS.
 - PROTECT AGAINST STRUCTURAL LIQUEFACTION DUE TO WELDING ACROSS THE FULL SECTION OF STRUCTURAL STEEL MEMBERS.
 - WELD IN SHORT INCREMENTS. ALLOW WELDS TO COOL BEFORE CONTINUING TO THE NEXT INCREMENT.
- CONNECTIONS OF NEW STRUCTURAL STEEL TO EXISTING CONCRETE SHALL BE ACHIEVED BY CONCRETE ANCHORS. REFER TO DRAWINGS AND SPECIFICATION.
- DRILL AND SITE MEASURE HOLES FOR ANCHORS IN EXISTING STRUCTURE PRIOR TO FABRICATING STEEL CONNECTION PLATES. HOLE LOCATIONS MAY HAVE TO BE MOVED TO AVOID CUTTING EXISTING REINFORCING OR TO AVOID OTHER SITE CONDITIONS. OBTAIN CONSULTANT'S APPROVAL BEFORE MODIFYING CONNECTION PLATES.

NON-STRUCTURAL ELEMENTS **GN-011CS**

- "NON-STRUCTURAL" OR "SECONDARY STRUCTURAL" ELEMENTS ARE NOT PART OF THE STRUCTURAL DESIGN SHOWN ON THESE DRAWINGS. SUCH ELEMENTS ARE DESIGNED, DETAILED AND REVIEWED IN THE FIELD BY OTHERS. THEY APPEAR ON DRAWINGS OTHER THAN THESE STRUCTURAL DRAWINGS BY exp. WHERE STRUCTURAL ENGINEERING RESPONSIBILITY IS REQUIRED FOR THESE ELEMENTS, THIS SHALL BE PROVIDED BY SPECIALTY STRUCTURAL ENGINEERS, WHO SHALL ALSO PROVIDE ANY DOCUMENTATION REQUIRED BY BUILDING PERMIT AUTHORITIES.
- EXAMPLES OF NON-STRUCTURAL ELEMENTS INCLUDE, BUT ARE NOT LIMITED TO:
 - ARCHITECTURAL COMPONENTS SUCH AS GUARDRAILS, HANDRAILS, MISCELLANEOUS STEEL STAIRS, FLAG POLES, CANOPIES, CEILING, MILLWORK, ETC.
 - LANDSCAPE ELEMENTS SUCH AS BENCHES, LIGHT POSTS, PLANTERS, ETC.
 - CLADDING, GLAZING, WINDOW MULLIONS, INTERIOR STUD WALLS AND EXTERIOR STUD WALLS.
 - ARCHITECTURAL PRECAST, PRECAST CLADDING.
 - SKYLIGHTS.
 - MECHANICAL AND ELECTRICAL EQUIPMENT, COMPONENTS, AND THEIR ATTACHMENT DETAILS, CONNECTIONS DESIGNED SEISMIC RESTRAINT ACCORDING TO OBC 2012 CLAUSE 4.1.8.18.
 - WINDOW WASHING EQUIPMENT, FALL ARREST ANCHORS AND THEIR ATTACHMENTS.
 - ESCALATORS, ELEVATORS, AND CONVEYING SYSTEMS.
 - GLASS BLOCK AND ITS ATTACHMENTS.
 - BRICK OR BLOCK VENEERS AND THEIR ATTACHMENTS.
 - NON-LOAD BEARING MASONRY.
 - NON-STRUCTURAL CONCRETE TOPPING.
- SUBMIT SHOP DRAWINGS FOR NON-STRUCTURAL ELEMENTS WHICH MAY AFFECT THE PRIMARY STRUCTURAL SYSTEM TO exp. THESE DRAWINGS WILL BE REVIEWED ONLY FOR THE LOAD EFFECT OF THE ELEMENT ON THE PRIMARY STRUCTURAL SYSTEM.

ABBREVIATIONS **GN-010CS**

AB	ANCHOR BOLT	Fc	COMPRESSIVE STRENGTH OF CONCRETE	PCCTUM,V,RF	FACTORED LOADS
ADD	ADDITIONAL	FF	EXPOSED STRUCTURAL STEEL	P.T.C.V.M,R	UNFACTORED LOADS
ASS	ASPHALT IMPREGNATED FIBREBOARD	FL	ALTERNATIVE ANCHOR ROD	PC	PRECAST PLATE
AIFB	ASPHALT IMPREGNATED FIBREBOARD	GALV	ARCHITECTURAL	PL	PARALLEL STRAND LUMBER
ALT	ALTERNATIVE	HB	ARCHITECTURAL	PVC	POLYVINYL CHLORIDE
AR	ARCHITECTURAL	HD	ARCHITECTURAL	REIN	REINFORCEMENT
ARCH	ARCHITECTURAL	HF	ARCHITECTURAL	RE	RIGHT END
		HH	ARCHITECTURAL	RTU	ROOF TOP UNIT
B, BOTT	BOTTOM	HI	ARCHITECTURAL	S	STANDARD BEAM SECTION
BC	BOTTOM ELEVATION OF CAISSON	HL	ARCHITECTURAL	SECT	SECTION
		HOF	ARCHITECTURAL	SP	SPRAY FIRE PROOFED
BEW	BOTTOM EACH WAY FACE	HOR	ARCHITECTURAL	SFD	STEP FOOTING DOWN
BL	BOTTOM LOWER LAYER BEAM	HP	ARCHITECTURAL	SFU	STEP FOOTING UP
BLM	BENDING MOMENT BAR	HSC	ARCHITECTURAL	SM	SIMILAR
BPL	BEARING BASE PLATE	HSS	ARCHITECTURAL	SJ	STEEL JOIST
BRG	BEARING	IF	ARCHITECTURAL	SL	SLAB
BSMT	BASEMENT	ID	ARCHITECTURAL	SOG	SLAB ON GRADE
BUL	BOTTOM UPPER LAYER	IF	ARCHITECTURAL	SPANDREL	SPRUCED
		IP	ARCHITECTURAL	SPF	STRIP
		IS	ARCHITECTURAL	ST	STRAIGHT
C	STANDARD CHANNEL	KB	ARCHITECTURAL	STRIR	STIRRUP
C/C	CENTRE TO CENTRE	KN	ARCHITECTURAL	STRUCT	STRUCTURAL
CW	COMPLETE WITH	KPa	ARCHITECTURAL		
CA	COLUMN ABOVE	L	ARCHITECTURAL		
CB	COLUMN BELOW	LB	ARCHITECTURAL		
CANTICANTL	CANTILEVER	LC	ARCHITECTURAL		
CF	CONCRETE	LE	ARCHITECTURAL		
		LF	ARCHITECTURAL		
		LG	ARCHITECTURAL		
		LL	ARCHITECTURAL		
		LLV	ARCHITECTURAL		
		LLH	ARCHITECTURAL		
		LP	ARCHITECTURAL		
		LSSJ	ARCHITECTURAL		
		LVL	ARCHITECTURAL		
DET	DETAIL	MAX	ARCHITECTURAL		
D FR	DOUGLAS FIR	MC	ARCHITECTURAL		
DIA	DIAMETER	MD	ARCHITECTURAL		
DM	DIMENSION	MECH	ARCHITECTURAL		
DL	DEAD LOAD	MN	ARCHITECTURAL		
DP	DEEP	m	ARCHITECTURAL		
DWG	DRAWING	m2	ARCHITECTURAL		
DWL	DOWEL	mm	ARCHITECTURAL		
DB	BAR DIAMETER	mm2	ARCHITECTURAL		
EA	EACH	MECH	ARCHITECTURAL		
ECR	EPOXY COATED REINFORCEMENT	MPa	ARCHITECTURAL		
EE	EACH END	NBC	ARCHITECTURAL		
EF	EACH FACE	NCB	ARCHITECTURAL		
EL EXP JT	EXPANSION JOINT	NF	ARCHITECTURAL		
EL ELEV	ELEVATION	NIC	ARCHITECTURAL		
ELECT	ELECTRICAL	No	ARCHITECTURAL		
EMBED	EMBEDMENT	NTS	ARCHITECTURAL		
EQ	EQUAL	OC	ARCHITECTURAL		
EW	EACH WAY	OD	ARCHITECTURAL		
EX, EXIST	EXISTING	OF	ARCHITECTURAL		
		OPNG	ARCHITECTURAL		
FN	FINISHED	OWSJ	ARCHITECTURAL		
FL	FLOOR				
FTG	FOOTING				
FMC	FULL MOMENT CONNECTION				
Fy	YIELD STRENGTH				

STEEL DECK NOTES

- GENERAL**
 - THE FOLLOWING REFERENCE STANDARDS SHALL GOVERN THE WORK OF THIS SECTION:
 - CSA S136 PACKAGE, COLD-FORMED STEEL STRUCTURAL MEMBERS
 - CSA S136 STANDARD FOR STEEL ROOF DECK
 - CSA S136 STANDARD FOR COMPOSITE STEEL DECK
 - ASTM A108, SPECIFICATION FOR STEEL BAR, CARBON AND ALLOY, COLD FINISHED
 - ASTM A653/A653M, STEEL SHEET, ZINC-COATED (GALVANIZED) OR ZINC-IRON COATED (GALVANNEALED) BY HOT-DIP PROCESS
 - CSA W47.1, CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL
 - CSA W59, WELDED STEEL CONSTRUCTION
 - CSA W178.1, CERTIFICATION OF WELDING INSPECTION ORGANIZATIONS
 - CSA W178.2, CERTIFICATION OF WELDING INSPECTORS
 - DESIGN OF STEEL DECK SHALL BE BY A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO EXPERIENCED IN THE DESIGN OF METAL DECK.
 - DESIGN CRITERIA:
 - WHEREVER STRUCTURAL FRAMING PERMITS, DESIGN AND FABRICATE DECK TO SPAN OVER AT LEAST 4 SUPPORTS (3 SPANS).
 - ROOF DECK
 - DESIGN ROOF DECK IN ACCORDANCE WITH CSSBI 10M FOR GRAVITY LOADS NOTED ON PLANS, CONCENTRATED LOADS NOTED IN OBC AND WIND UPLIFT. MINIMUM FACTORED UNIFORM GRAVITY LOAD FOR STRENGTH IS 3.5 kPa (75 psf).
 - MAXIMUM DEFLECTION SHALL NOT EXCEED OF 1/40 OF SPAN UNDER UNIFORM LIVE OR SNOW LOAD BUT NOT LESS THAN 1.9 kPa (40 psf).
 - DESIGN DECK AND FASTENING TO RESIST DIAPHRAGM SHEARS NOTED ON DRAWINGS.
 - FLOOR DECK
 - DESIGN FLOOR DECK IN ACCORDANCE WITH CSSBI 12M FOR LOADING INDICATED ON DRAWINGS INCLUDING CONCENTRATED LOADS NOTED IN OBC.
 - MAXIMUM DEFLECTION OF COMPOSITE FLOOR SHALL NOT EXCEED 1/360 OF SPAN UNDER LIVE LOAD.
 - DO NOT SUSPEND CEILING, LIGHTS, DUCTS, PIPES OR ANY OTHER ITEMS FROM STEEL DECK.
 - SUBMITALS
 - SUBMIT STEEL DECK SHOP DRAWINGS
 - EACH SHOP DRAWING SUBMITTED SHALL BEAR THE SIGNATURE AND SEAL OF THE PROFESSIONAL ENGINEER RESPONSIBLE FOR DECK DESIGN.
 - INDICATE DESIGN LOADING, DECK PROFILE, THICKNESS, STEEL GRADE, ZINC COATING, LAYOUT OF UNITS, SIZE AND SPACING OF FASTENINGS TO MEET UPLIFT AND DIAPHRAGM REQUIREMENTS.
- PRODUCTS**
 - MATERIAL: ASTM A653/A653M, GRADE 230 MIN, MINIMUM ZINC COATING ZF75, MINIMUM THICKNESS 0.76 mm.
 - SHEET STEEL ANGLES, COVER PLATES, CLOSURES, FLASHINGS, AND REINFORCING SHALL BE OF SIMILAR MATERIAL AND ZINC COATING AS DECK.
 - PRIME PAINT FOR TOUCH-UP: ZINC-RICH PAINT READY MIX TO SPP-CANT 20 STANDARD
 - STUDS: ASTM108.
 - REINFORCEMENT FOR OPENINGS:
 - REINFORCE OPENINGS 150 mm TO 300 mm (6" TO 12") (IF FLOOR) 450 mm (18") (IF ROOF) ACROSS FLUTES, WITH 51 X 51 X 6.4 (2 X 2 X 1/4) STRUCTURAL STEEL ANGLES IN DIRECTION PERPENDICULAR TO FLUTES EXTENDING 450 mm (18") PAST OPENING. WELD TO DECK WITH 25 mm (1") LONG WELDS AT 150 mm (6") CENTRES.
- EXECUTION**
 - PLACEMENT:
 - MINIMUM BEARING ON STRUCTURAL STEEL SUPPORTS: 45 mm (1 1/2")
 - LAP ENDS OF PANELS NOT LESS THAN 45 mm (1 1/2")
 - FASTENING:
 - WELD FLUTES TO STEEL SUPPORTS WITH 20 mm (3/4") DIAMETER WELD AT MAXIMUM 300 mm (12") CENTRES.
 - PROVIDE WELD AT END LAPS AT 400 mm (16") CENTRES MAXIMUM.
 - SECURE PANELS TO EACH OTHER BY BUTTON PUNCHING AT 600 mm (24") CENTRES MAXIMUM.
 - WELD STUD SHEAR CONNECTORS THROUGH DECK WHERE INDICATED ON DRAWINGS.
 - INSTALL SHEET STEEL COVER PLATES AS MAY BE REQUIRED TO SUPPORT GANTS, INSULATION AND OTHER ROOFING COMPONENTS. SECURE WITH WELDS OR CORROSION RESISTANT SHEET METAL SCREWS.
 - CLEAN AND WIRE BRUSH WELDS, SCRATCHES AND OTHER DAMAGED AREAS AND APPLY TWO COATS OF PRIME PAINT.
 - WHERE MECHANICAL EQUIPMENT IS SUPPORTED ON TIMBER SLEEPERS OR CURBS DIRECTLY ON ROOF DECK, PROVIDE WEDGES IN FLUTES OF DECK UNDER SLEEPER AT STRUCTURAL SUPPORT (BEAMS, JOISTS, WALLS).
- FIELD QUALITY CONTROL**
 - INSPECTION AND TESTING COMPANY RETAINED BY THE CONTRACTOR, SHALL PERFORM:
 - VERIFICATION OF MATERIAL THICKNESS, DEPTH, PROFILE AND ZINC COATING;
 - VERIFICATION OF ERECTION AND FASTENING;
 - GENERAL INSPECTION OF COATING TOUCH-UP.

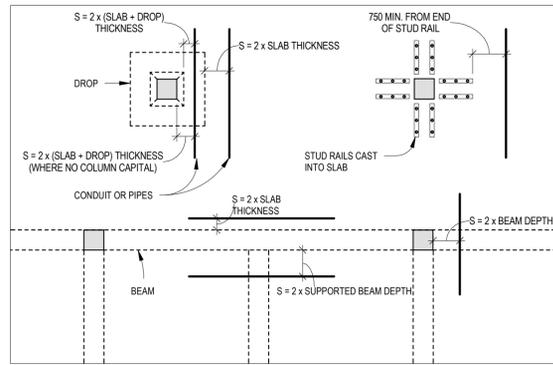
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O.B.C. (S)			

<p>exp Services Inc. t: +1.905.793.9800 f: +1.905.793.0641 1595 clark Boulevard Brampton, ON L6T 4V1 Canada</p>	<p>3</p> <p>2 2023.10.27 ISSUED FOR 100% REVIEW</p> <p>1 2023.10.20 REISSUED FOR 70% CD</p>	<p>ISSUED FOR 100% REVIEW</p> <p>REISSUED FOR 70% CD</p>	<p>REVISIONS</p>	<p>INITIAL</p>	<p>SIGNED</p>	<p>15/Jul/2024</p>	<p>RECEIVED 15/Jul/2024</p>	<p>CONTRACT No. 23SWM-IRM-026CDU</p>	<p>DRAWING NUMBER: 1601-2023-3-7</p>	<p>S2</p>	<p>GENERAL NOTES</p>	<p>COMMISSIONERS TRANSFER STATION</p> <p>MRF BUILDING UPGRADES 400 COMMISSIONERS STREET, TORONTO, ONTARIO M4M 3K2</p>		<p>SOLID WASTE MANAGEMENT SERVICES</p> <p>MATT KELIHER GENERAL MANAGER SOLID WASTE MANAGEMENT SERVICES</p>		<p>MATTHEW CASCHERA DIRECTOR INFRASTRUCTURE AND RESOURCE MANAGEMENT</p>							
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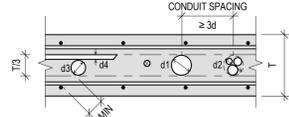
EMBEDDED CONDUITS AND PIPES IN CONCRETE SLAB (NON-PARKING STRUCTURES)

C-026



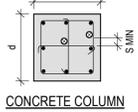
PLAN

- NOTES:
1. PLACE CONDUITS AND PIPES IN CONCRETE SLABS AND WALLS IN ACCORDANCE WITH CSA STANDARD A23.1 CLAUSE 6.7.5.
 2. DO NOT RUN CONDUITS LONGITUDINALLY IN A BEAM WITHOUT STRUCTURAL CONSULTANT'S APPROVAL.
 3. PASS CONDUITS THROUGH A BEAM AT RIGHT ANGLES TO THE SPAN OF THE BEAM.
 4. DO NOT PLACE CONDUITS CLOSER THAN SPACING 'S', AS DEFINED ABOVE, FROM COLUMNS, DROPS, AND BEAMS.



SLAB

- NOTES:
1. OUTSIDE DIAMETER OF ONE CONDUIT (d1) OR BUNDLE OF CONDUITS (d2) OR CROSSING CONDUITS (d3-d4) SHALL NOT EXCEED T/3.
 2. PLACE CONDUITS IN MIDDLE THIRD OF SLAB THICKNESS. PROVIDE ADDITIONAL CHAIRS FOR CONDUITS AS REQUIRED.
 3. DO NOT ALLOW CONDUIT TO LAY DIRECTLY ON REINFORCING STEEL. SECURE CONDUITS IN PLACE TO PREVENT DISPLACEMENT DURING PLACEMENT OF CONCRETE.
 4. PLACE CONDUIT MINIMUM 3d APART WHERE d EQUALS LARGER OF ADJACENT PARALLEL CONDUIT DIAMETERS.
 5. PLACE CONDUIT GREATER THAN 1.4 d AND 30 (1 1/4"), S MIN. FROM ADJACENT PARALLEL REINFORCING BARS.

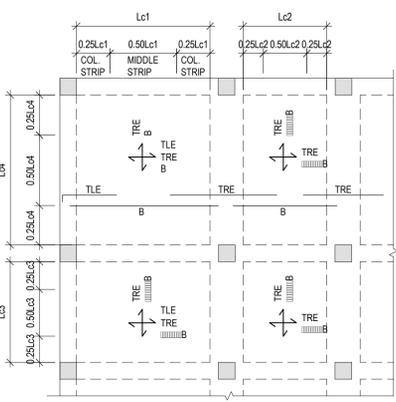


CONCRETE COLUMN

- NOTES:
1. TOTAL AREA OF CONDUITS SHALL NOT EXCEED 1% OF THE GROSS AREA OF COLUMN (s x d).
 2. SECURE CONDUITS TO COLUMN TIES TO PREVENT DISPLACEMENT DURING PLACEMENT OF CONCRETE. PLACE CONDUIT GREATER THAN 1.4 d AND 30 (1 1/4"), S MIN. FROM ADJACENT PARALLEL REINFORCING BARS.

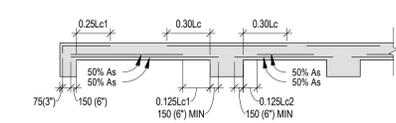
TWO-WAY SLAB SYSTEM (CONFORMING TO CSA A23.3 ANNEX B)

C-006



NOTES:

1. PROVIDE MINIMUM 2-15M SPACER BARS SUPPORTED BY CHAIRS AT 1800 (6'-0") MAXIMUM FOR TOP BARS. PROVIDE CHAIRS IN ACCORDANCE WITH REINFORCED STEEL MANUAL OF STANDARD PRACTICE.
2. AREAS OF STEEL GIVEN ON PLAN ARE REINFORCEMENT WITHIN MIDDLE STRIPS. SEE PLAN FOR ORDER OF PLACING REINFORCING STEEL.
3. EXCEPT FOR TOP BARS, AREA OF REINFORCEMENT IN COLUMN STRIPS MAY BE REDUCED TO 75% OF MIDDLE STRIP REINFORCEMENT BUT NOT LESS THAN THAT REQUIRED FOR TEMPERATURE REINFORCEMENT NOR SPACED AT MORE THAN 3 TIMES SLAB THICKNESS OR 450 (18").
4. AT OUTER EDGE, EXTEND TOP BARS TO 75% OF OUTER EDGE OF CONSTRUCTION AND TERMINATE IN STANDARD 90 DEGREE HOOK. WHERE BEAM DEPTH DOES NOT ACCOMMODATE 90 DEGREE HOOK, USE 180 DEGREE HOOK.
5. EXTEND TOP STEEL 900 (36") INTO ADJACENT BUT DISCONTINUOUS SLAB UNLESS NOTED OTHERWISE ON PLAN.
6. AT DISCONTINUOUS EDGE, EXTEND BOTTOM BARS MINIMUM 150 (6") INTO SUPPORT. WHERE STRAIGHT EMBEDMENT IS NOT POSSIBLE, PROVIDE STANDARD 90 DEGREE HOOK LAID FLAT, AT SPANDREL BEAMS WIDER THAN SUPPORT COLUMN. EXTEND ALTERNATE BOTTOM BARS TO 75% OF OUTER EDGE.
7. PROVIDE ADDITIONAL TOP AND BOTTOM REINFORCEMENT AS REQUIRED AT EXTERIOR CORNERS AND EDGES WHERE SUPPORT WALLS OR STIFF BEAMS INTERSECT. SEE TYPICAL DETAIL C-009.
8. DIMENSIONS ARE MILLIMETRES, EXCEPT DIMENSIONS IN BRACKETS ARE INCHES.



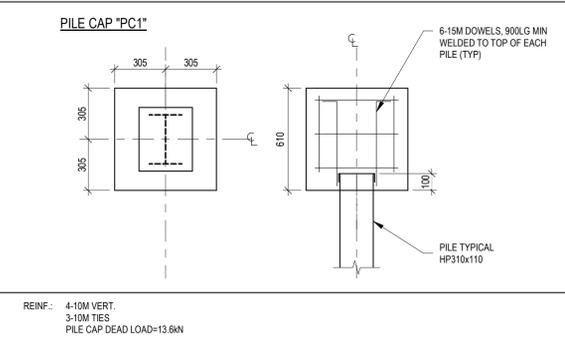
1. Lc IS GREATER OF TWO ADJACENT SPANS
2. ALTERNATE LONG AND SHORT BOTTOM BARS

MINIMUM CONCRETE COVER TO LONGITUDINAL REINFORCEMENT

C-002

ELEMENT	BAR SIZE	EXPOSURE CLASS											
		N, N-CF				F-1, F-2, S-1, S-2				C-XL, C-1, C-3, A-1, A-2, A-3			
		FIRE RATING (HRS)											
SLABS (TOP) NON-PARKING STRUCTURE	≤25M	3	4	3	4	3	4	3	4	3	4	3	4
	30M	3	4	3	4	3	4	3	4	3	4	3	4
	35M	3	4	3	4	3	4	3	4	3	4	3	4
SLABS (BOTTOM) NON-PARKING STRUCTURE AND WALLS EXPOSED TO FIRE ON ONE SIDE ONLY	≤25M	25	35	40	40	25	35	40	40	25	35	40	40
	30M	30	35	40	40	30	35	40	40	30	35	40	40
	35M	35	35	40	55	35	35	40	55	35	35	40	70
BEAMS	≤30M	50	50	50	50	50	50	50	50	50	50	50	50
	35M	50	50	50	50	50	50	50	50	50	50	50	50
	45M	50	50	50	50	50	50	50	50	50	50	50	50
COLUMNS AND WALLS POTENTIALLY EXPOSED TO FIRE SIMULTANEOUSLY ON BOTH FACES	≤30M	50	50	65	65	50	50	65	65	60	60	65	65
	35M	50	50	65	65	55	55	65	65	70	70	70	70
	45M	50	50	65	65	75	70	70	90	90	90	90	90
MEMBERS CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	≤35M	75				75				75			

DRIVEN PILE CAP SCHEDULE



TENSION DEVELOPMENT LENGTH AND TENSION LAP SPLICES (Fy=400 MPa AND 500 MPa)

C-017

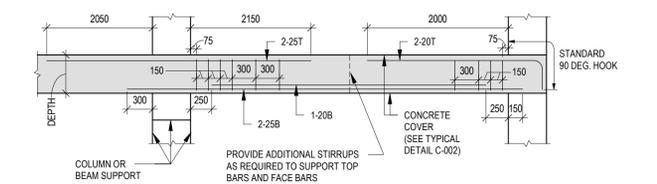
CONCRETE	25 MPa		30 MPa		35 MPa		40 MPa		45 MPa		50 MPa		CONCRETE
	CLASS A OR Ld	CLASS B = 1.3Ld	CLASS A OR Ld	CLASS B = 1.3Ld	CLASS A OR Ld	CLASS B = 1.3Ld	CLASS A OR Ld	CLASS B = 1.3Ld	CLASS A OR Ld	CLASS B = 1.3Ld	CLASS A OR Ld	CLASS B = 1.3Ld	
UNCOATED, OTHER THAN TOP BARS													
10M	300 (12)	380 (15)	300 (12)	350 (14)	300 (12)	320 (13)	300 (12)	300 (12)	300 (12)	300 (12)	300 (12)	300 (12)	10M
15M	440 (18)	570 (23)	400 (16)	520 (21)	370 (15)	480 (19)	350 (14)	450 (18)	430 (17)	420 (17)	310 (12)	400 (16)	15M
20M	580 (23)	750 (30)	530 (21)	690 (28)	490 (20)	640 (26)	460 (19)	600 (24)	430 (17)	560 (23)	410 (16)	530 (21)	20M
25M	900 (36)	1170 (47)	830 (33)	1070 (43)	760 (30)	990 (39)	720 (29)	930 (37)	670 (27)	880 (35)	640 (26)	830 (33)	25M
30M	1080 (43)	1410 (56)	990 (39)	1290 (51)	920 (37)	1190 (47)	860 (34)	1110 (44)	810 (32)	1050 (42)	770 (31)	1000 (40)	30M
35M	1260 (50)	1640 (65)	1150 (46)	1500 (60)	1070 (43)	1390 (55)	1000 (40)	1300 (52)	940 (38)	1220 (49)	890 (36)	1160 (46)	35M
UNCOATED, TOP BARS													
10M	380 (15)	490 (20)	350 (14)	450 (18)	320 (13)	420 (17)	300 (12)	390 (16)	300 (12)	370 (15)	300 (12)	350 (14)	10M
15M	570 (23)	730 (29)	520 (21)	670 (27)	480 (19)	620 (25)	450 (18)	580 (23)	420 (17)	550 (22)	430 (17)	520 (21)	15M
20M	750 (30)	980 (39)	690 (28)	890 (36)	640 (26)	830 (33)	600 (24)	770 (31)	560 (23)	730 (29)	530 (21)	690 (28)	20M
25M	1170 (47)	1530 (61)	1070 (43)	1390 (55)	990 (39)	1290 (51)	930 (37)	1210 (48)	880 (35)	1140 (45)	830 (33)	1080 (43)	25M
30M	1410 (56)	1830 (73)	1290 (51)	1670 (66)	1190 (47)	1550 (62)	1110 (44)	1450 (58)	1050 (42)	1360 (54)	1000 (40)	1290 (51)	30M
35M	1640 (65)	2130 (84)	1500 (60)	1950 (77)	1390 (55)	1800 (71)	1300 (52)	1690 (67)	1220 (49)	1590 (63)	1160 (46)	1510 (60)	35M

1. USE TABULATED TENSION LAP SPLICE LENGTHS UNLESS NOTED OTHERWISE ON DRAWINGS.
2. TENSION DEVELOPMENT LENGTHS, Ld DENOTED AS TENSION LAP SPLICE CLASS A.
3. TOP BARS ARE BARS WITH MORE THAN 300 (12") OF CONCRETE BELOW.
4. CLEAR COVER NOT LESS THAN 40. CLEAR SPACING NOT LESS THAN 1.4 d.
5. FOR REINFORCEMENT WITH Fy = 500 MPa, INCREASE TABULATED LENGTHS BY 25%.
6. FOR STRUCTURAL LOW-DENSITY CONCRETE, INCREASE TABULATED LENGTHS BY 30%.
7. FOR STRUCTURAL SEMI-LOW DENSITY CONCRETE, INCREASE TABULATED LENGTHS BY 20%.
8. DIMENSIONS ARE MILLIMETRES, EXCEPT DIMENSIONS IN BRACKETS ARE INCHES.

CONCRETE BEAM

C-010

BEAM MARK	BEAM SIZE	REINFORCEMENT			SUPPORT			SUPPORT			REMARKS
		NO.	SIZE	LAYER	mm	mm	mm	mm	mm	mm	
BM 101 SE	350x600	2	25	TUL	2050	2150					
		2	20	TUL			2000				
		1	20	BUL		250	250				
		2	25	BLL	300			150			
		10	SC	STIRR	1@75, 3@150, 2@300						
		10	SC	STIRR	1@75, 2@150, 1@300						
		15	SC	HANGER	9 PLACED IN SUPPORTING BEAM (SEE TYP. DETAIL C-011 CONC. BEAM HANGER STIRR)						



SAMPLE BEAM 101 - 350 x 600 (WIDTH x DEPTH)

- BEAM SUPPORT TYPES
- W=WALL
 - E=EXTERIOR
 - S=SLAB BEYOND
 - C=CONTINUOUS
 - O=NO SUPPORT
- DETAIL OF BEAM SCHEDULE
1. DIMENSIONS ARE GIVEN LOOKING AT PLAN FROM BOTTOM OR RIGHT HAND BORDER. SEE 'BEAM SUPPORT TYPES' FOR CONDITIONS AT SUPPORT. STIRRUP SPACING GIVEN STARTING FROM FACE OF SUPPORT.
 2. FIRST LETTER IN SCHEDULE INDICATES CONDITION AT LEFT SUPPORT, SECOND LETTER RIGHT SUPPORT.
 3. EXAMPLE IS IN METRIC UNITS. SIMILAR DETAILS APPLY TO IMPERIAL SCHEDULED BEAMS.
 4. WHERE '---' SHOWN IN SCHEDULE, PROVIDE TENSION LAP SPLICE AT MID SPAN FOR TOP BARS AND AT FACE OF SUPPORT FOR BOTTOM BARS, UNLESS NOTED OTHERWISE.
 5. WHERE 'L1' SHOWN IN SCHEDULE, LOWER INDICATED TOP BARS BELOW THE TOP BARS SPECIFIED IN CROSS BEAM.

SCHEDULE OF CONCRETE PROPERTIES

Toronto Building

STRUCTURAL ELEMENTS	ENVIRONMENT	LOCATION	CLASS OF EXPOSURE	PERMIT REVIEWED FOR COMPLIANCE WITH THE ONTARIO BUILDING CODE
BASEMENT WALLS	CORROSIVE	ADJACENT TO PARKING RAMPS, LOADING DOCKS, SIDEWALKS	C1	35
	NON-CORROSIVE		F2	25
FOUNDATION WALLS	CORROSIVE	ADJACENT TO SIDEWALKS, PARKING, ROADWAYS	C1	35
	NON-CORROSIVE		F2	25
CAISSONS, PILES	CORROSIVE	AREAS NOT SUBJECT TO DEPOSIT OF CHLORINE LADEN WATER FROM VEHICLES	N	25
	NON-CORROSIVE		C1	35
FOOTINGS, FOOTING CAPS, CAISSON AND PILE CAPS	CORROSIVE	PARKING GARAGE, ADJACENT TO RAMPS, LOADING DOCK, SALLY PORT	C1	35
	NON-CORROSIVE	AREAS NOT SUBJECT TO DEPOSIT OF CHLORINE LADEN WATER FROM VEHICLES	N	25
RAFT SLAB	CORROSIVE	PARKING GARAGE	C1	35
	NON-CORROSIVE	AREAS NOT SUBJECT TO DEPOSIT OF CHLORINE LADEN WATER FROM VEHICLES	N	25
TIE BEAMS	CORROSIVE	PARKING GARAGE	C1	35
	NON-CORROSIVE	AREAS NOT SUBJECT TO DEPOSIT OF CHLORINE LADEN WATER FROM VEHICLES	N	25
SLAB-ON-GRADE	CORROSIVE	REINFORCED	C1	35
	NON-CORROSIVE	UNREINFORCED	C2	32
PITS AND TRENCHES BELOW ROADS	CORROSIVE	OUTSIDE HEATED BUILDING ENVELOPE, REINFORCED	F2	25
	NON-CORROSIVE	OUTSIDE HEATED BUILDING ENVELOPE, UNREINFORCED	C2	32
SKIM (MLD) SLABS	CORROSIVE	COMPLETELY WITHIN HEATED BUILDING ENVELOPE	N-CF	25
	NON-CORROSIVE		C1	35
UNSHRINKABLE FILLS	CORROSIVE		N	15
	NON-CORROSIVE		N	0.7
COLUMNS	CORROSIVE	PARKING GARAGE, ADJACENT TO ROADS, SIDEWALKS	C1	35
	NON-CORROSIVE	OUTSIDE HEATED BUILDING ENVELOPE	F2	25
STAIRS AND STAIR LANDINGS	CORROSIVE	COMPLETELY WITHIN HEATED BUILDING ENVELOPE	N	25
	NON-CORROSIVE		C1	35
STAIRS AND STAIR LANDINGS	CORROSIVE	PARKING GARAGE	C1	35
	NON-CORROSIVE	OUTSIDE HEATED BUILDING ENVELOPE	F2	25
STAIRS AND STAIR LANDINGS	CORROSIVE	COMPLETELY WITHIN HEATED BUILDING ENVELOPE	N	25
	NON-CORROSIVE		N	25

- NOTES:
1. THIS SCHEDULE IS A PERFORMANCE-BASED SPECIFICATION IN ACCORDANCE WITH CSA A23.1, TABLE 5 ALTERNATIVE (1). NOTHING ON THE DRAWINGS OR SCHEDULES SHALL BE CONSTRUED OR INTERPRETED AS RENDERING THE SPECIFICATION TO BE ALTERNATIVE.
 2. READ THIS SCHEDULE IN CONJUNCTION WITH THE SPECIFICATIONS. FOR EXPOSURE CLASSIFICATION OF BUILDING ELEMENTS NOT SHOWN IN SCHEDULE AND FOR OTHER CONCRETE PROPERTIES AND REQUIREMENTS INCLUDING BUT NOT LIMITED TO SUPPLEMENTARY CEMENTITIOUS MATERIALS AND AGGREGATE SIZE, REFER TO THE SPECIFICATIONS.
 3. CONCRETE STRENGTHS SHOWN ARE MINIMUMS. PROVIDE THE GREATER OF THE STRENGTH SHOWN ABOVE AND THE STRENGTHS SHOWN ON PLANS AND OTHER SCHEDULES ON DRAWINGS.
 4. WHERE ELEMENTS OF DIFFERENT EXPOSURE CLASSIFICATIONS, STRENGTHS, CORROSION INHIBITOR DOSAGES, AND SHRINKAGE LIMITS ARE PLACED MONOLITHICALLY, USE THE MOST SEVERE EXPOSURE CLASSIFICATION, AND RESPECTIVE STRENGTH AND CORROSION INHIBITOR DOSAGE.

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• BUILDINGS • EARTH & ENVIRONMENT • ENERGY •
 • INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

No.	DATE	REVISIONS	INITIAL	SIGNED
3				
2	2023.10.27	ISSUED FOR 100% REVIEW		
1	2023.10.20	REISSUED FOR 70% CD		

Toronto

SOLID WASTE MANAGEMENT SERVICES

MATT KELHER
 GENERAL MANAGER
 SOLID WASTE MANAGEMENT SERVICES

MATTHEW CASCHERA
 DIRECTOR
 INFRASTRUCTURE AND RESOURCE MANAGEMENT

exp

COMMISSIONERS TRANSFER STATION

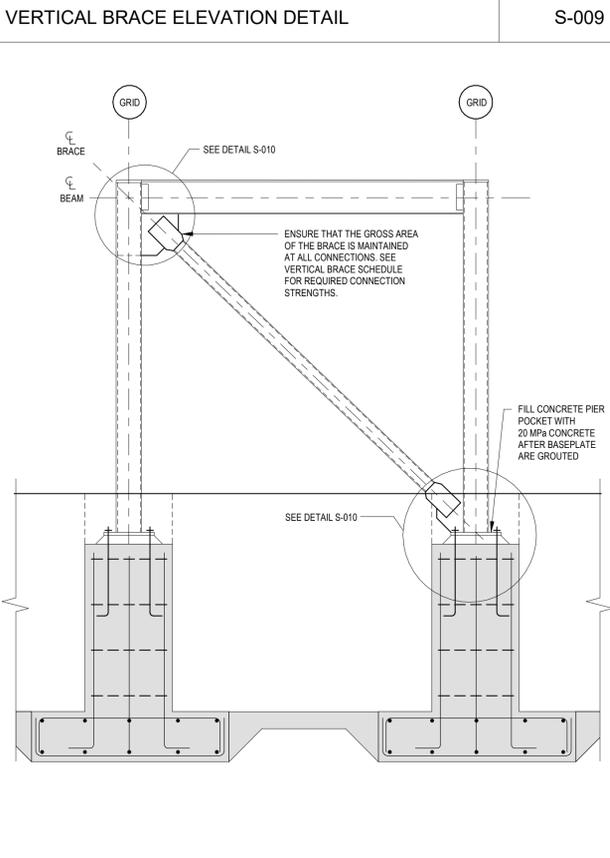
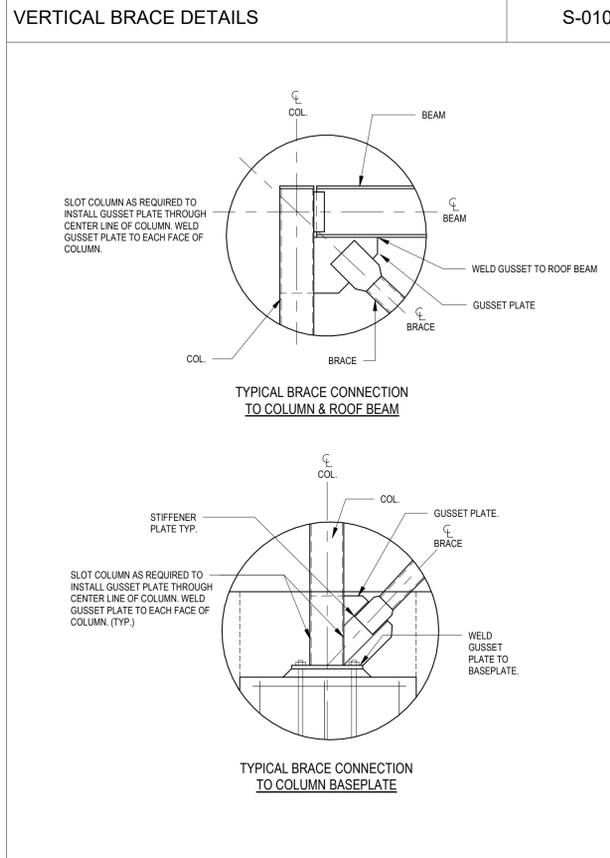
MRF BUILDING UPGRADES
 400 COMMISSIONERS STREET, TORONTO, ONTARIO M4M 3K2

SCHEDULES

DESIGN: DATE: DRAFTING: CHECK: CONTRACT No. 23SW-IRM-026CDU

SCALE: DRAWING NUMBER: 1601-2023-3-8 S3

DATE: RECEIVED 15/Jul/2024



LINTEL SCHEDULE AND NOTES M-002

NON-LOAD BEARING PARTITIONS

BLOCK LINTELS	MAX CLEAR SPAN	140 BLOCK		190 BLOCK		240 BLOCK		290 BLOCK	
		b	d	b	d	b	d	b	d
UP TO 1200	140	190	1-10 T&B	190	190	1-10 T&B	240	190	1-10 T&B
1201 TO 1800	140	390	1-10 T&B	190	390	1-15 T&B	240	390	1-15 T&B
1801 TO 2300	140	390	1-15 T&B	190	390	1-20 T&B	240	390	1-20 T&B
> 2300	USE STEEL LINTEL								

NOTES:
 1. CONCRETE FILL: 20 MPa MIN. STRENGTH WITH 150 SLUMP
 2. BEARING LENGTH: 200 MIN. AT EACH END.

STEEL LINTELS

MAX CLEAR SPAN	140 BLOCK		190 BLOCK		240 BLOCK		290 BLOCK	
	BEAM	PLATE	BEAM	PLATE	BEAM	PLATE	BEAM	PLATE
2300 TO 2600	S200x27	130x10	S200x27	180x10	S200x27	230x10	S200x27	280x10

NOTES:
 1. BEARING LENGTH: 150 MIN. EACH END. BEAR PLATE ON BUTTER COAT OF CEMENT MORTAR EACH END.

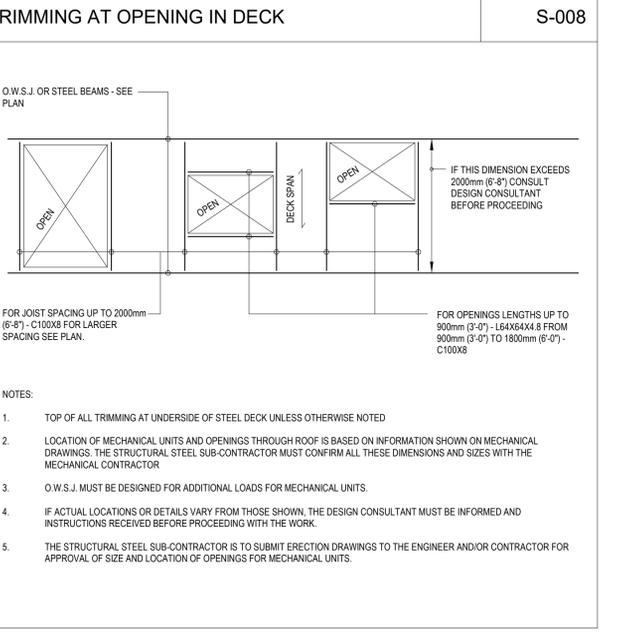
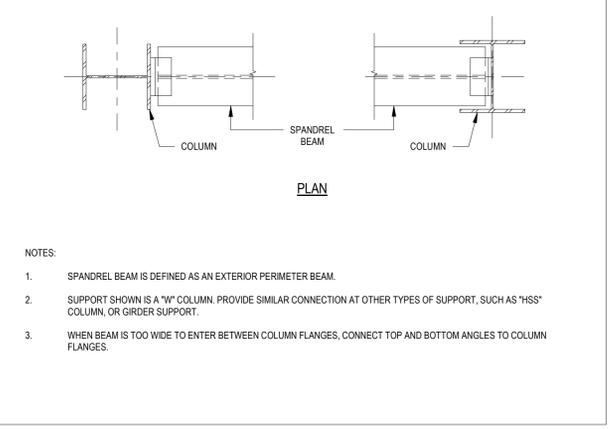
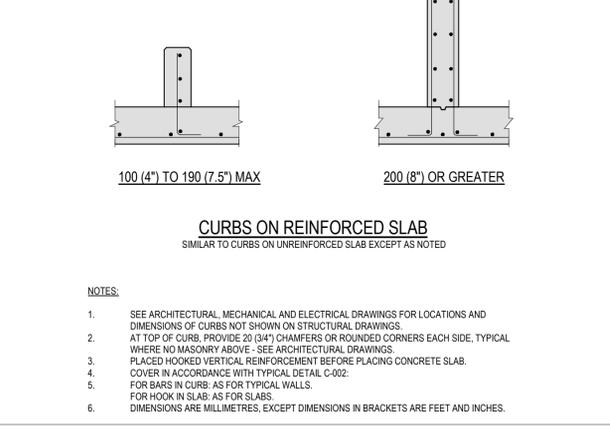
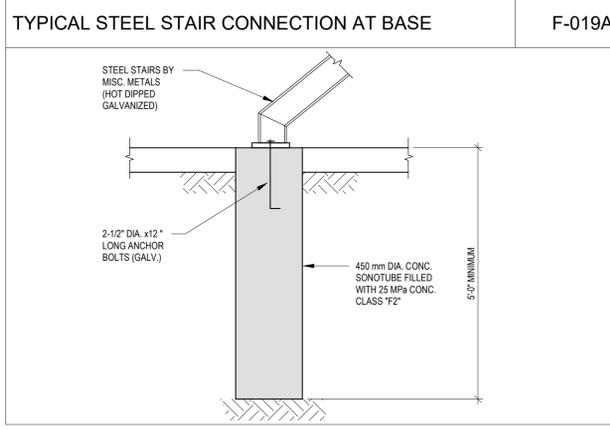
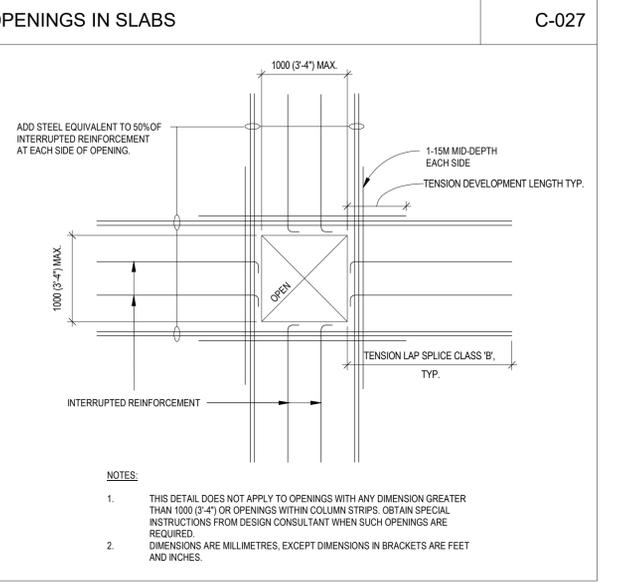
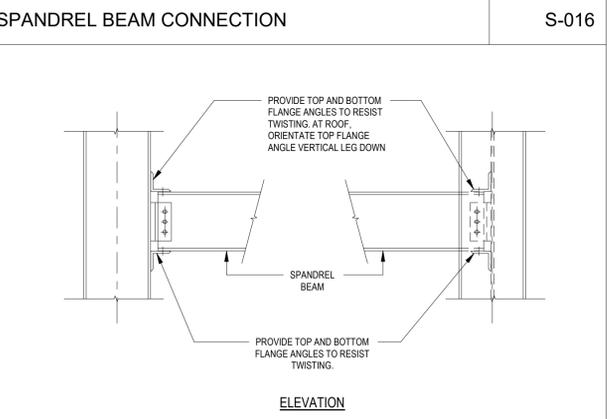
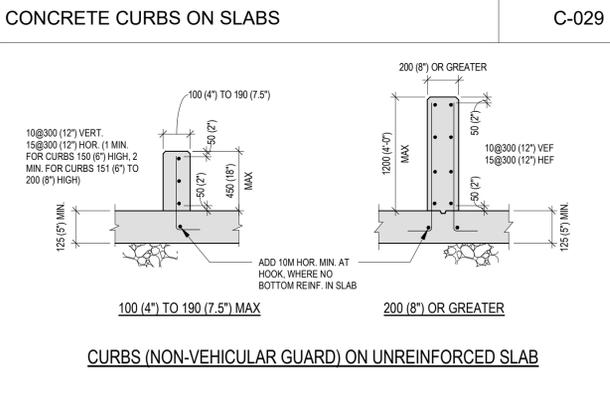
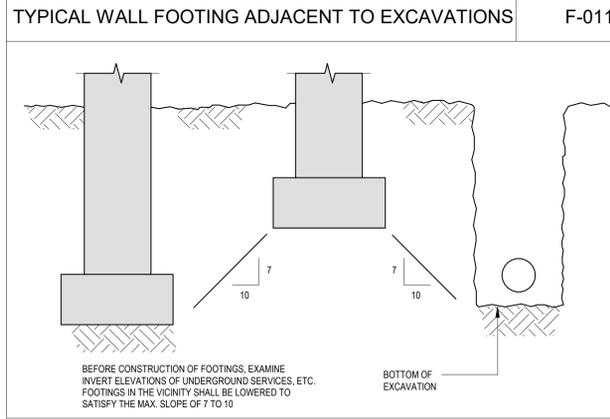
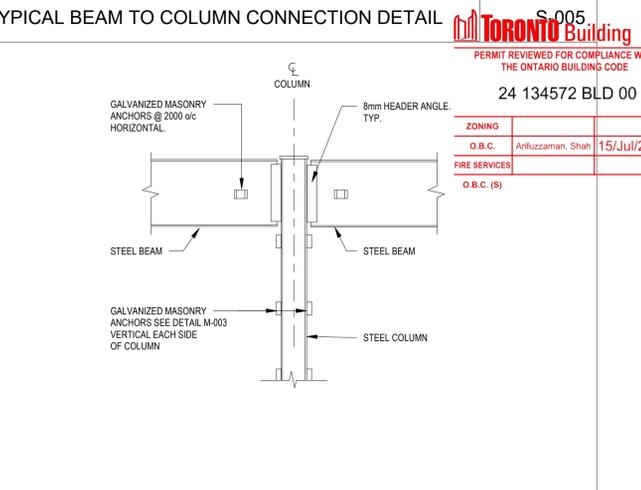
BRICK AND BLOCK WYTHES

MAX CLEAR SPAN	1-100 THICK WYTH		2-100 THICK WYTH		3-100 THICK WYTH		4-100 THICK WYTH		5-100 THICK WYTH	
	L	U	L	U	L	U	L	U	L	U
UP TO 1500	L 189x89x7.9	U 189x89x7.9								
1501 TO 2300	L 1127x89x7.9	U 1127x89x7.9								
2301 TO 2600	L 1152x89x7.9	U 1152x89x7.9								

NOTES:
 1. LONG LEGS VERTICAL
 2. BEARING LENGTH 150 MIN. EACH END. SET STEEL ANGLE LINTELS WITH ENDS WRAPPED WITH 6mm POLYETHYLENE SHEET ON HIGH CALV. STEEL PLATES ON MASONRY EA. END.
 3. CONNECT ANGLES BACK TO BACK AT 600 o/c BY WELDING OR BOLTING ANGLES GREATER THAN 1800 LONG. USE 16 DIA. BOLTS.
 4. FOR LOCATIONS & SIZES OF OPENINGS. SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS.

LINTEL CONNECTION TO CONCRETE OR STEEL STRUCTURE

REIN. IN MASONRY LINTEL HOOKED, 150 TYP. (6"), MASONRY OR STEEL ANGLE LINTEL, 1L-152x102x7.9 LLV WITH 2-20M (3/4") ANCHOR RODS + 40x4x300 (1 1/2" x 3'16"x12") STRAP ANCHORS WELDED TO ANGLE. (STRAP ANCHORS FOR MASONRY LINTELS ONLY) FOR CONNECTION TO EXISTING CONC. STRUCTURES USE 2-20M (3/4") HTL1 KWIK BOLT 3. FOR CONNECTION TO STEEL STRUCTURE USE 6 (1/4") WELD.



No.	DATE	REVISIONS	INITIAL	SIGNED
3				
2	2023.10.27	ISSUED FOR 100% REVIEW		
1	2023.10.20	REISSUED FOR 70% CD		

Toronto

SOLID WASTE MANAGEMENT SERVICES

MATT KELIHER
 GENERAL MANAGER
 SOLID WASTE MANAGEMENT SERVICES

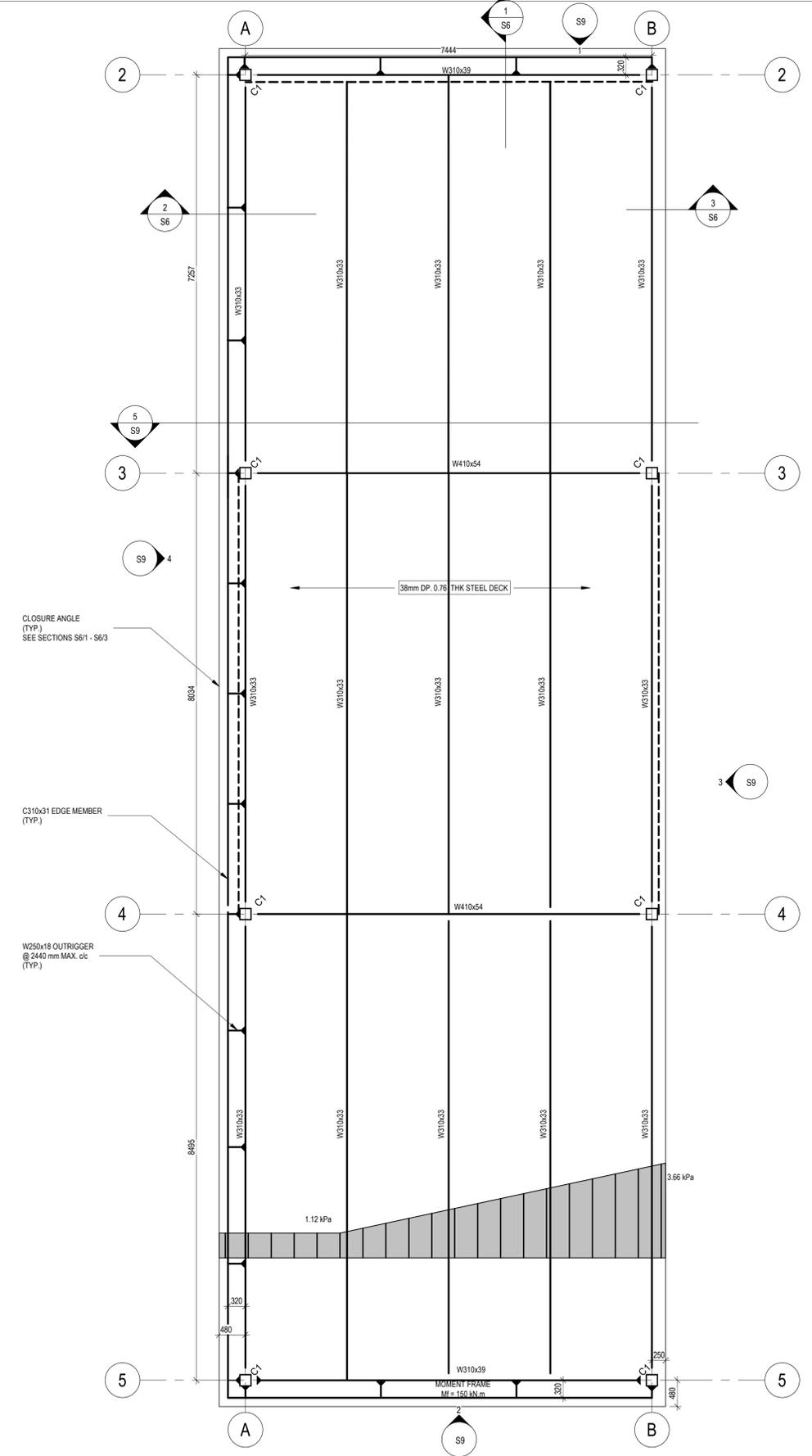
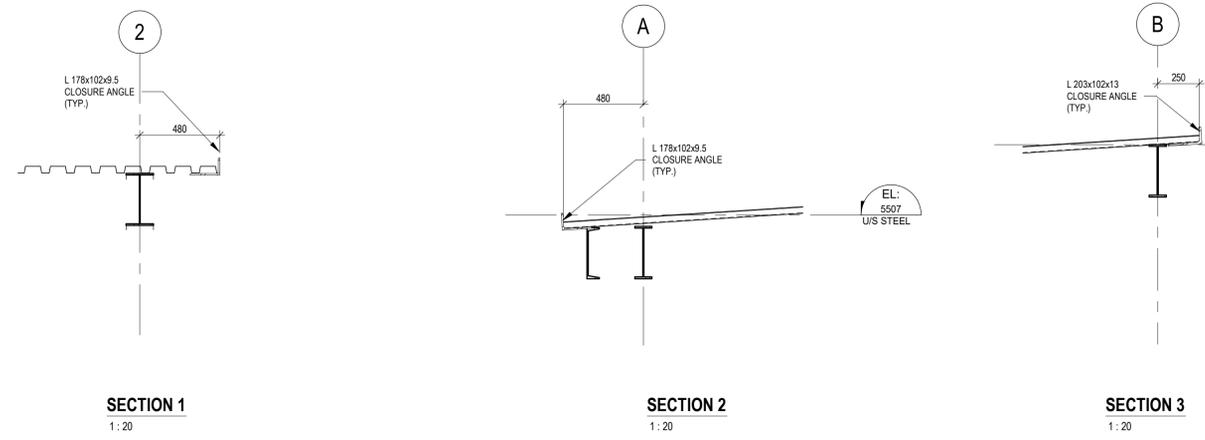
MATTHEW CASCHERA
 DIRECTOR
 INFRASTRUCTURE AND RESOURCE MANAGEMENT

LICENSED PROFESSIONAL ENGINEER
 C. No. 85701M1
 100205752
 2024-03-19
 PROVINCE OF ONTARIO

COMMISSIONERS TRANSFER STATION
 MRF BUILDING UPGRADES
 400 COMMISSIONERS STREET, TORONTO, ONTARIO M4M 3K2

TYPICAL DETAILS

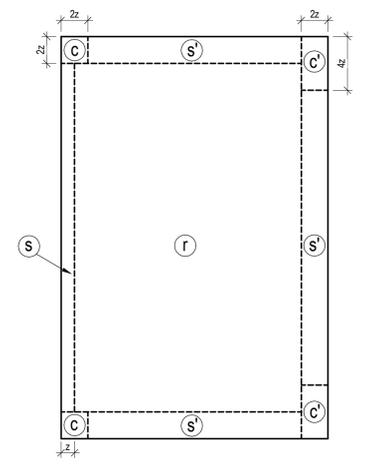
DESIGN:	DRAFTING:	CHECK:	CONTRACT No. 23SWM-IRM-026CDU
SCALE:		DRAWING NUMBER:	1601-2023-3-9 S4
DATE:			RECEIVED 15/Jul/2024



STEEL COLUMN SCHEDULE	
MARK	TYPE
C1	HSS 203x203x6.4

ROOF FRAMING PLAN
1 : 50

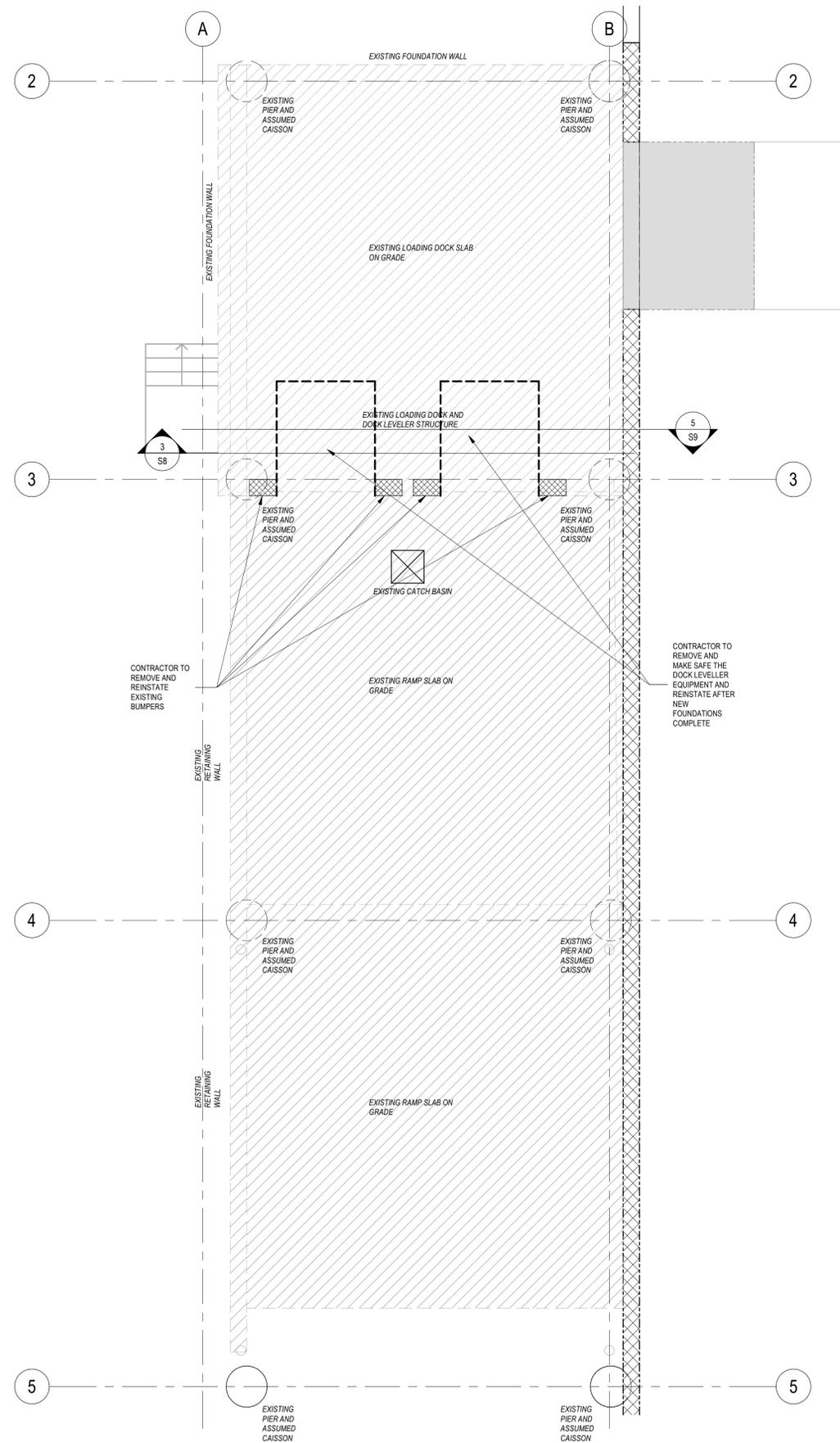
- ROOF FRAMING PLAN NOTES**
- LOADING:
 SUPERIMPOSED DEAD LOAD
 ROOFTOP EQUIPMENT = SEE PLAN
 ROOFING + CEILING + MECH/ELECT ALLOWANCE = 1 kPa
 LIVE LOAD = 1.0 kPa
 SNOW LOAD = 1.12 kPa PLUS ACCUMULATED SNOW LOAD NOTED ON PLAN
 RAIN LOAD = 0.4 kPa
 LIVE LOAD, SNOW LOADS AND RAIN LOAD NEED NOT BE CONSIDERED SIMULTANEOUSLY
 - "W" FOR ROOF DECK DENOTES SUPERIMPOSED DEAD LOAD IN kPa. DESIGN DECK FOR W₀ LIVE LOAD, SNOW LOADS, RAIN LOAD, CONCENTRATED LOAD REQUIRED BY OBC AND WIND UPLIFT GIVEN IN SPECIFICATIONS. DEAD LOAD FOR UPLIFT CALCULATION IS SHOWN IN PARENTHESES.
 - PIPES, DUCTWORK, ELECTRICAL CABLES, CEILING ETC. SHALL NOT BE HUNG FROM FLOOR ROOF DECK. ALL HANGERS SHALL BE HUNG FROM THE TOP CHORD OF JOISTS OR BEAMS.
 - STEEL DECK IS DESIGNED TO ACT AS A DIAPHRAGM. REFER TO ROOF DIAPHRAGM DETAILS ON DRAWING S-11.
 - * DENOTES FULL MOMENT CONNECTION.
 - SEE GENERAL NOTES AND TYPICAL DETAILS ON DRAWING S-01 TO S-05.



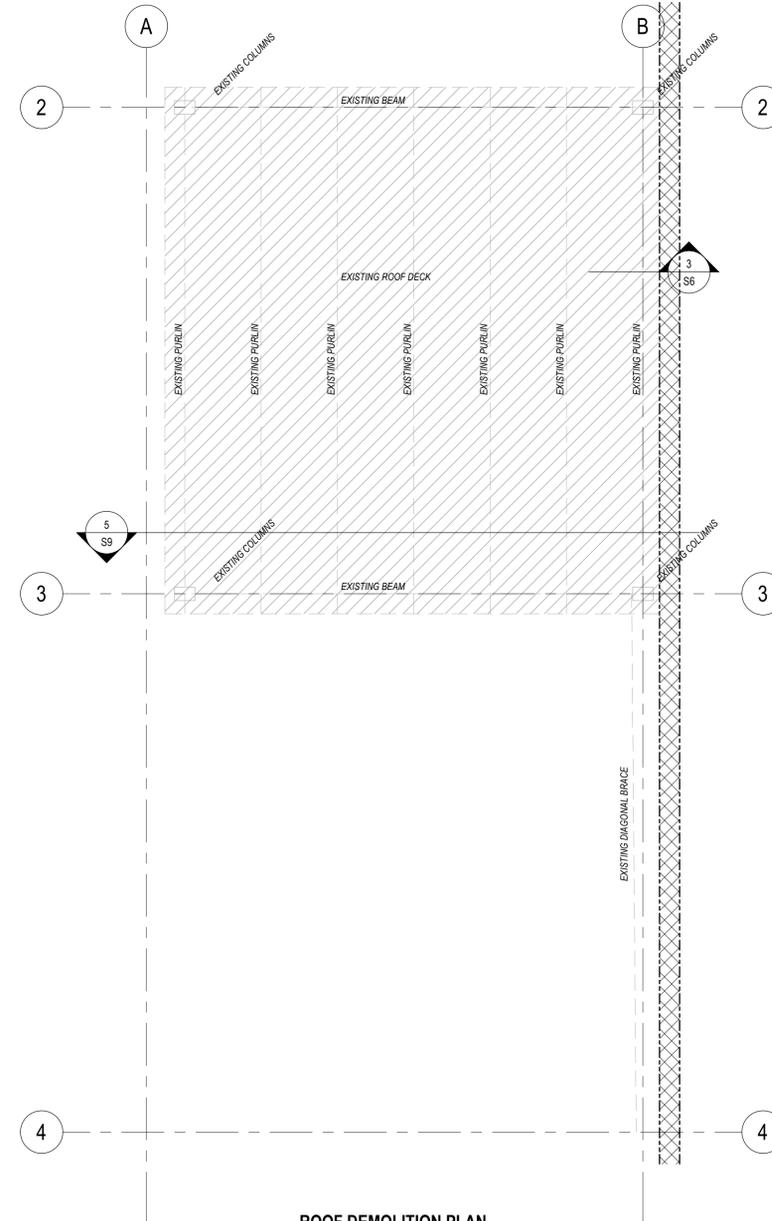
ROOF AREA	WIND LOAD
END ZONE WIDTH, z	1 M
CORNER C	-3.6 kPa
CORNER C	-2.8 kPa
EDGE S	-2.3 kPa
EDGE S	-2.5 kPa
FIELD R	-1.9 kPa

No.	DATE	REVISIONS	INITIAL	SIGNED
3				
2	2023.10.27	ISSUED FOR 100% REVIEW		
1	2023.10.20	REISSUED FOR 70% CD		

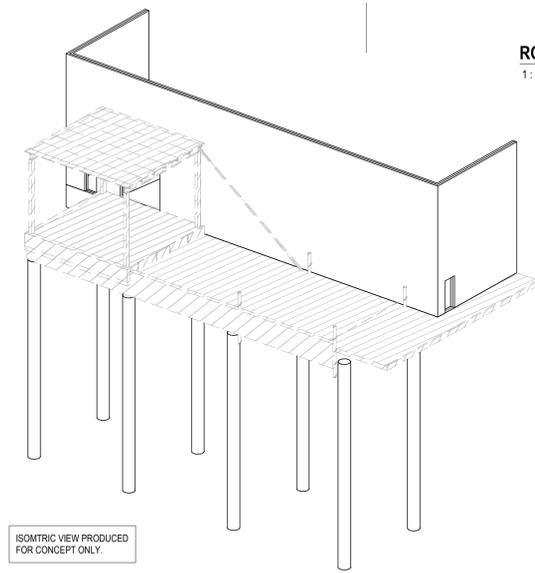
	SOLID WASTE MANAGEMENT SERVICES		COMMISSIONERS TRANSFER STATION BUILDING UPGRADES 400 COMMISSIONERS STREET, TORONTO, ONTARIO M4M 3K2	
		MATT KELIHER GENERAL MANAGER SOLID WASTE MANAGEMENT SERVICES	MATTHEW CASCHERA DIRECTOR INFRASTRUCTURE AND RESOURCE MANAGEMENT	ROOF FRAMING PLAN
	DESIGN:	DRAFTING:	CHECK:	CONTRACT No. 23SWM-IRM-026COU
	SCALE:		DRAWING NUMBER:	1601-2023-3-11 S6
	DATE:			RECEIVED 15/Jul/2024



FOUNDATION DEMOLITION PLAN
1:50



ROOF DEMOLITION PLAN
1:50



DEMOLITION GENERAL NOTES

1. ADEQUATE CARE IS TO BE USED DURING DEMOLITION TO PREVENT DAMAGE TO MATERIALS AND SERVICES. MAKE GOOD ANY DAMAGE TO EXISTING REMAINING STRUCTURE AT NO ADDITIONAL COST TO OWNER.
2. PROVIDE ADEQUATE SHORING AND REINFORCING OF EXISTING STRUCTURE AT ALL LEVELS TO EXISTING STRUCTURE BEFORE COMMENCING ANY DEMOLITION WORK.
3. VERIFY ALL EXISTING STRUCTURAL MEMBERS ON SITE BEFORE DEMOLITION. REPORT ANY DISCREPANCIES TO CONTRACT ADMINISTRATOR IMMEDIATELY FOR ADVICE.
4. CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY SHORING BEFORE AND DURING STRUCTURAL DEMOLITION.
5. PROVIDE DEMOLITION REPORT FROM DEMOLITION CONTRACTOR PRIOR TO STARTING DEMOLITION WORK.
6. DEMOLITION CONTRACTOR TO REVIEW EXISTING STRUCTURAL DRAWING: 1601-2023-3-12-S7 FOR MORE INFORMATION.
7. ALL EXISTING METAL WALLS, BEAMS, COLUMNS, ROOFING, STAIRS, ETC., TO BE DEMOLISHED / REMOVED AND DISPOSED OF BY THE CONTRACTOR.

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3				
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1	2023.10.20	REISSUED FOR 70% CD		



SOLID WASTE MANAGEMENT SERVICES

MATT KELIHER
 GENERAL MANAGER
 SOLID WASTE MANAGEMENT
 SERVICES

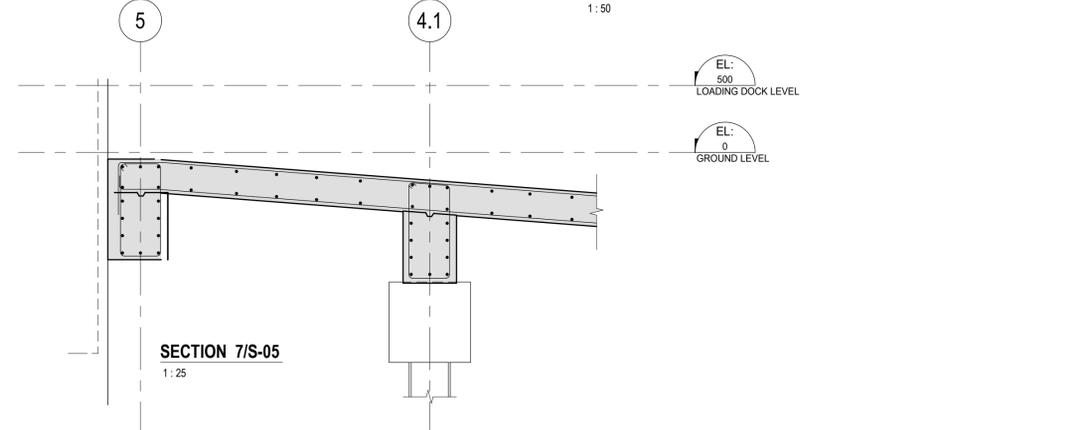
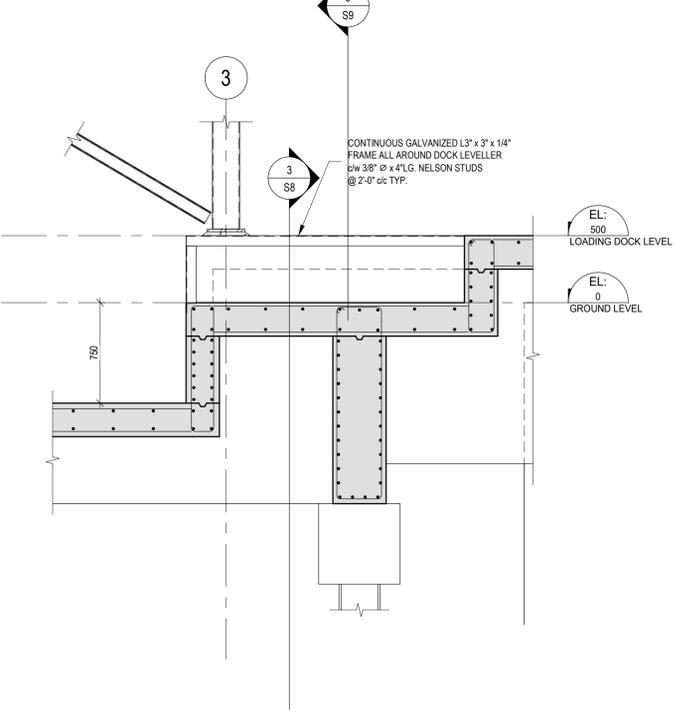
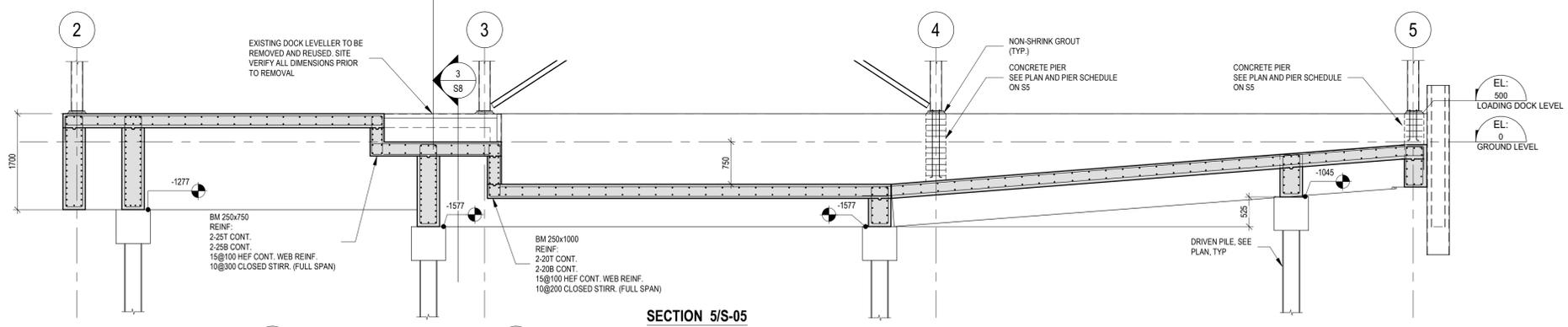
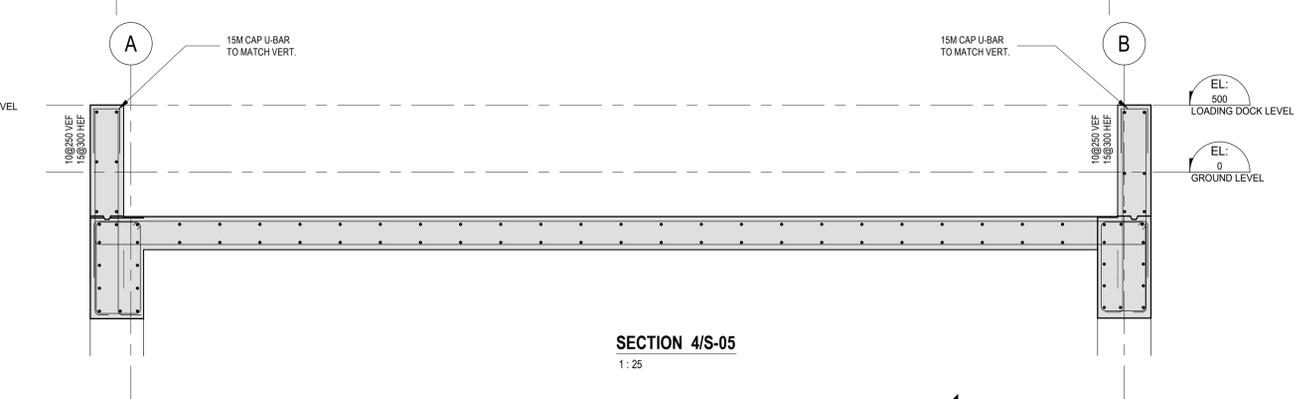
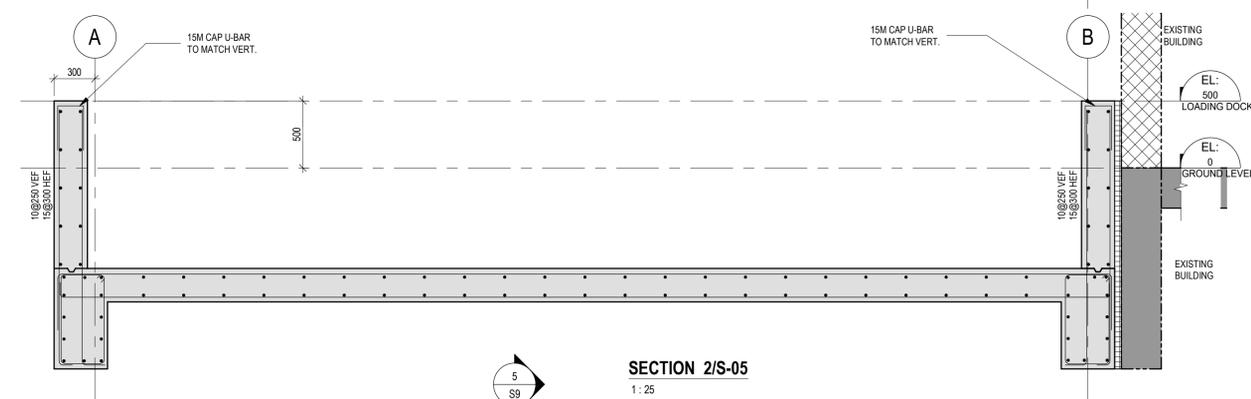
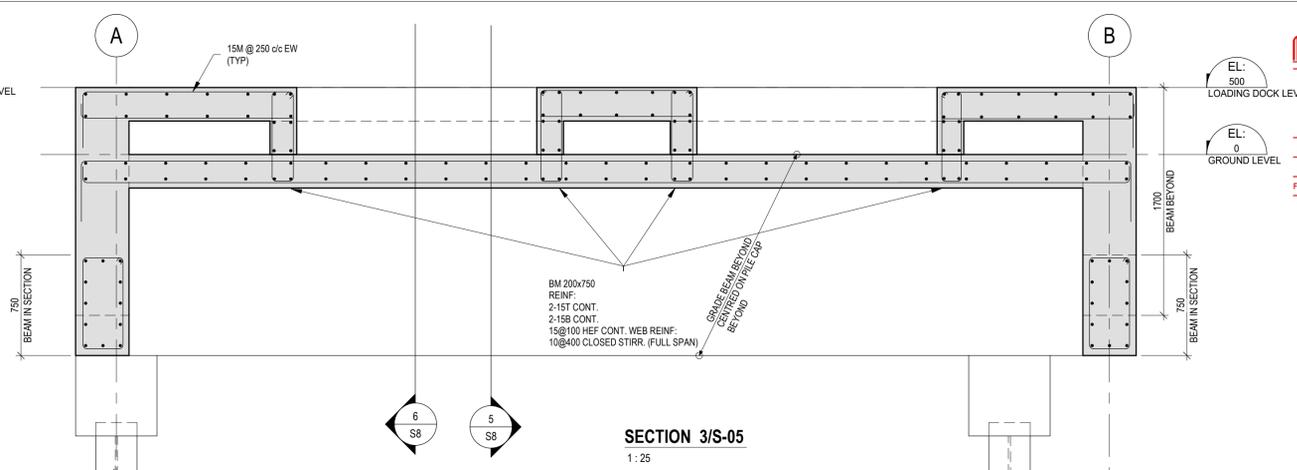
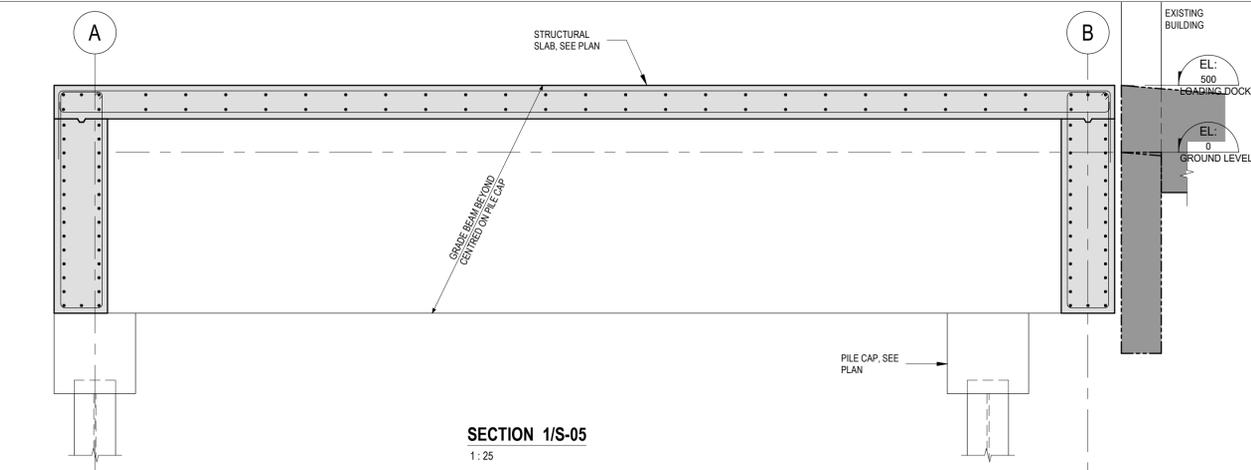
MATTHEW CASCHERA
 DIRECTOR
 INFRASTRUCTURE AND RESOURCE
 MANAGEMENT



COMMISSIONERS TRANSFER STATION

MRF BUILDING UPGRADES
 400 COMMISSIONERS STREET, TORONTO, ONTARIO M4M 3K2

DEMOLITION PLAN			
DESIGN:		DRAFTING:	
SCALE:		CHECK:	
DATE:		DRAWING NUMBER:	1601-2023-3-12 S7
			CONTRACT No. 23SWM-IRM-026CDU



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SOLID WASTE MANAGEMENT SERVICES



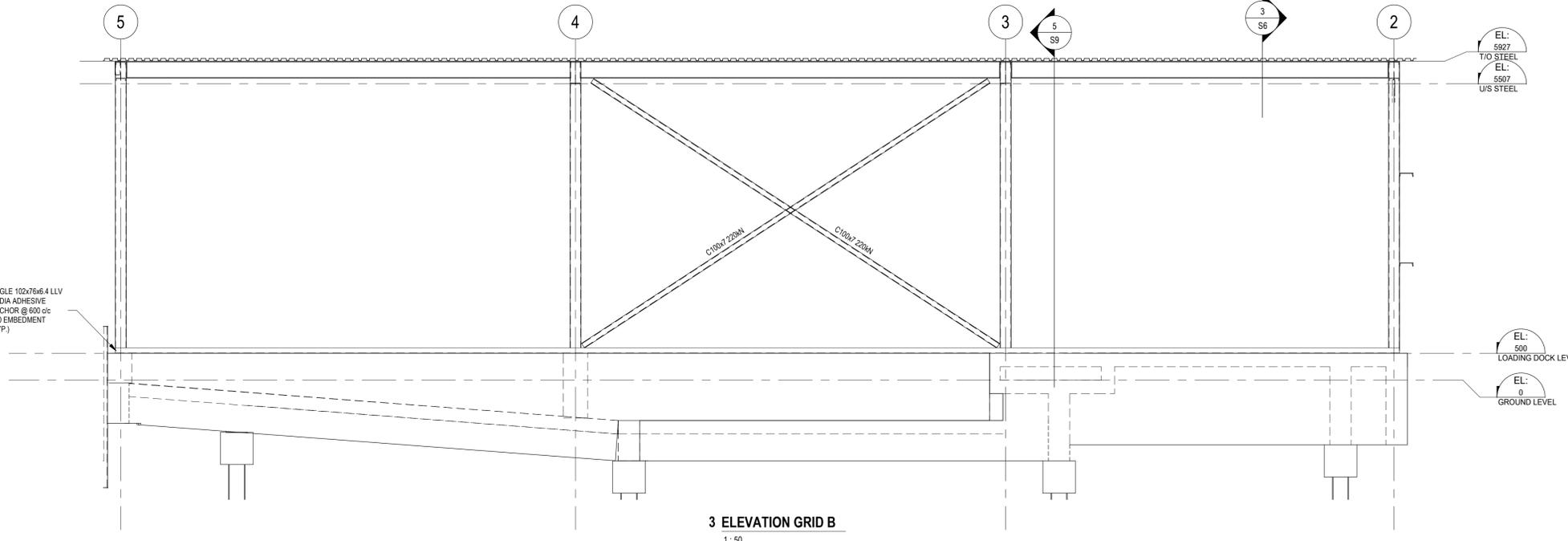
MATT KELIHER
 GENERAL MANAGER
 SOLID WASTE MANAGEMENT SERVICES

MATTHEW CASCHERA
 DIRECTOR
 INFRASTRUCTURE AND RESOURCE MANAGEMENT

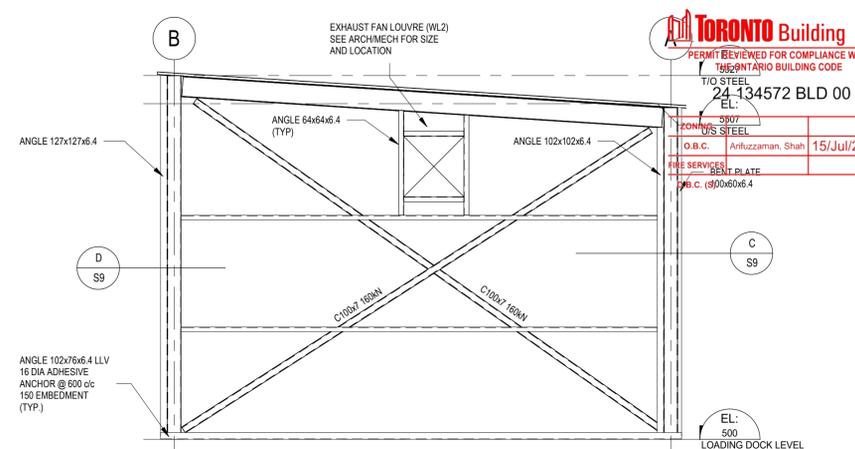
COMMISSIONERS TRANSFER STATION

MRF BUILDING UPGRADES
 400 COMMISSIONERS STREET, TORONTO, ONTARIO M4M 3K2

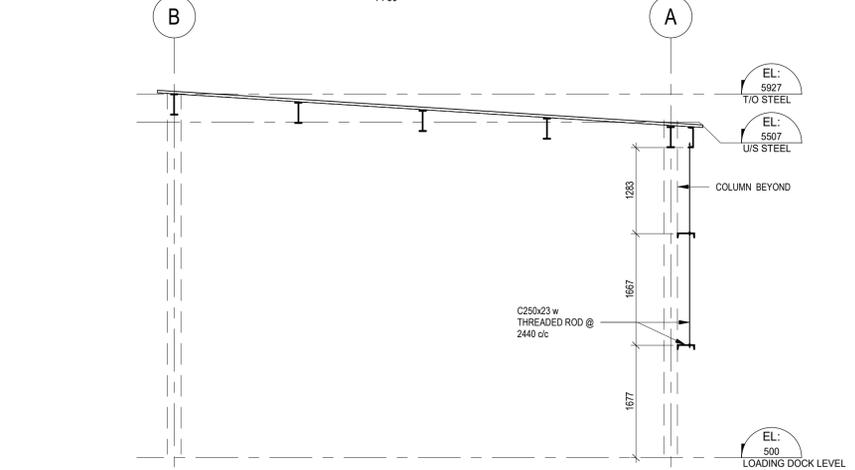
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SCALE:		DRAWING NUMBER:	1601-2023-3-13 S8
DATE:			RECEIVED 15/Jul/2024



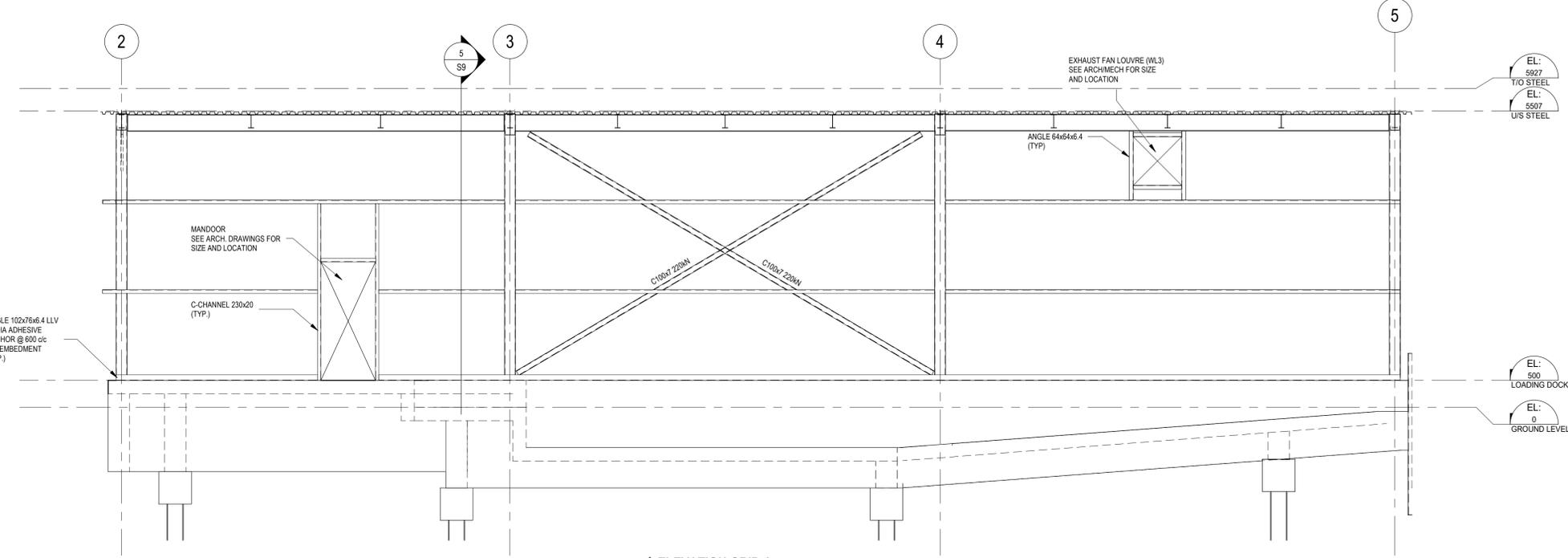
3 ELEVATION GRID B
1:50



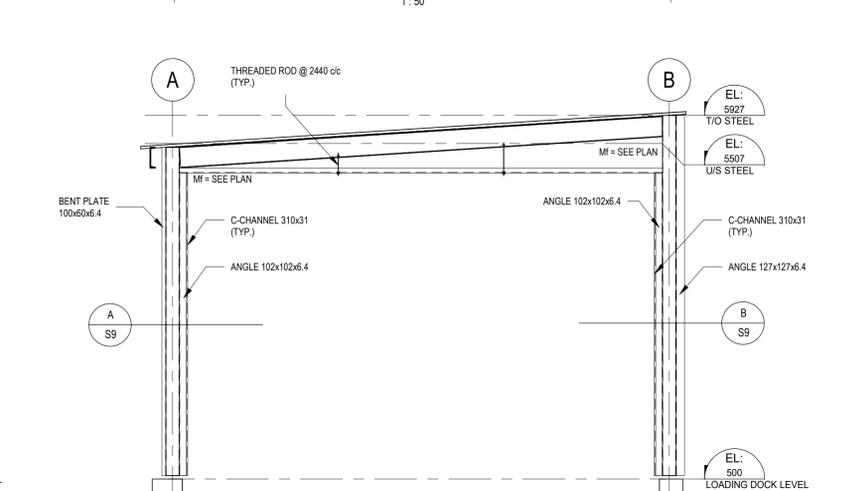
1 ELEVATION GRID 2
1:50



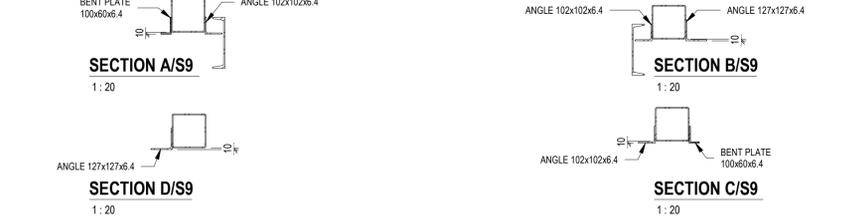
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1:50



4 ELEVATION GRID A
1:50

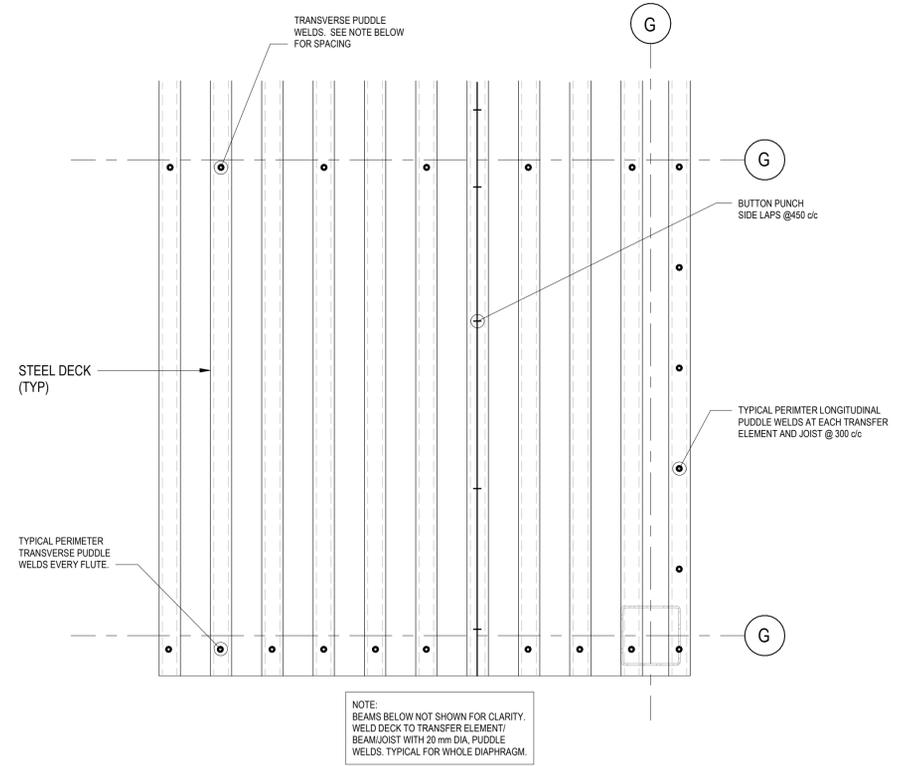


2 ELEVATION GRID 5
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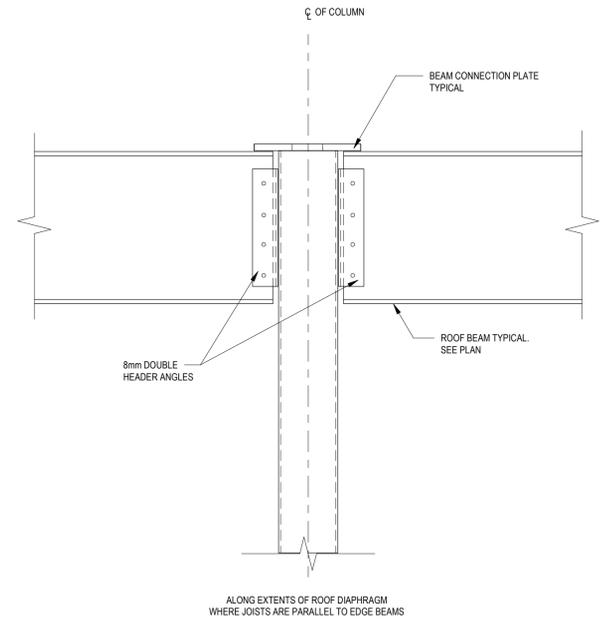


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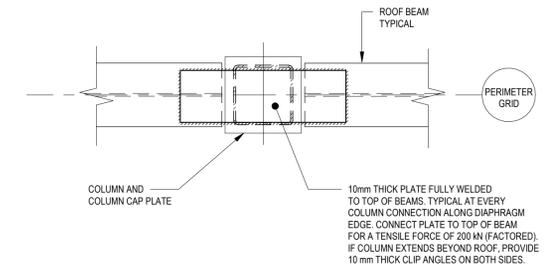
ZONING		
O.B.C.	Arifuzzaman, Shah	15/Jul/2024
FIRE SERVICES		
O.B.C. (S)		



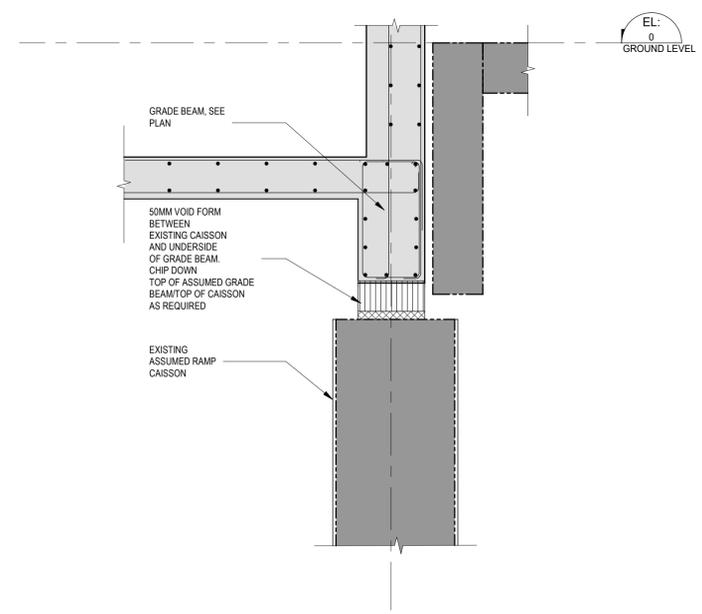
1 DIAPHRAGM PLAN DETAIL
NTS



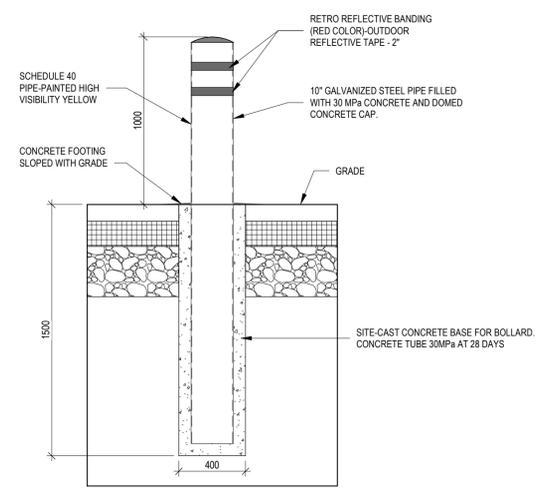
2 COLUMN CONNECTION DETAIL
NTS



3 PERIMETER PLATE CONNECTION DETAIL
NTS



4 GRADE BEAM OVER ASSUMED EXISTING CAISSON DETAIL 4/S-05
NTS



5 10" BOLLARD DETAIL
NTS

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		SOLID WASTE MANAGEMENT SERVICES		COMMISSIONERS TRANSFER STATION MRF BUILDING UPGRADES 400 COMMISSIONERS STREET, TORONTO, ONTARIO M4M 3K2	
			MATT KELIHER GENERAL MANAGER SOLID WASTE MANAGEMENT SERVICES	MATTHEW CASCHERA DIRECTOR INFRASTRUCTURE AND RESOURCE MANAGEMENT	DETAILS DESIGN: DRAFTING: CHECK: CONTRACT No. 23SWM-IRM-026CDU SCALE: DRAWING NUMBER: 1601-2023-3-15 S10 DATE: RECEIVED 15/Jul/2024



WORK AREA

CONSTRUCTION STAGING AREA

CONCRETE JERSEY BARRIERS

TRAFFIC CONTROL AREA DURING FOUNDATION WORK

CONTRACTOR TO PROVIDE TEMPORARY MOBILE RAMP PRIOR TO STARTING CONSTRUCTION. DURA-RAMP MODEL NO. DR-M30 OR APPROVED EQUAL. RAMP TO BE TURNED OVER TO CITY OF TORONTO AFTER CONSTRUCTION FOR THEIR FUTURE USE.

CONCEPTUAL STAGING DIAGRAM

NTS

NOTE: THE CONSTRUCTION STAGING PLAN IS CONCEPTUAL ONLY. THE CONTRACTOR TO SUBMIT THEIR STAGING PLAN TO THE APPROVAL OF CONTRACT ADMINISTRATOR AND OWNER AFTER COORDINATION WITH THE TRANSFER STATION OPERATIONS TEAM.

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SOLID WASTE MANAGEMENT SERVICES

MATT KELIHER
 GENERAL MANAGER
 SOLID WASTE MANAGEMENT SERVICES

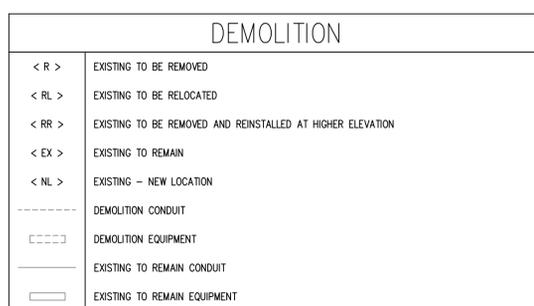
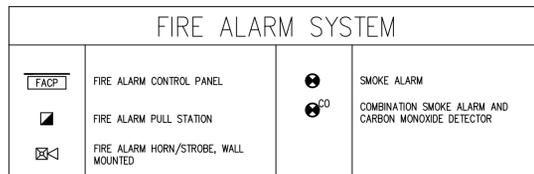
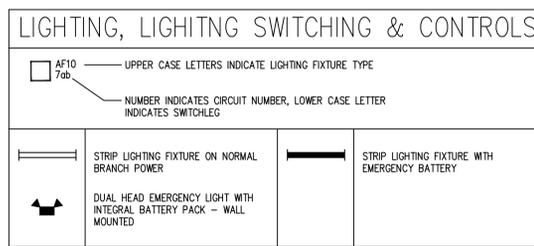
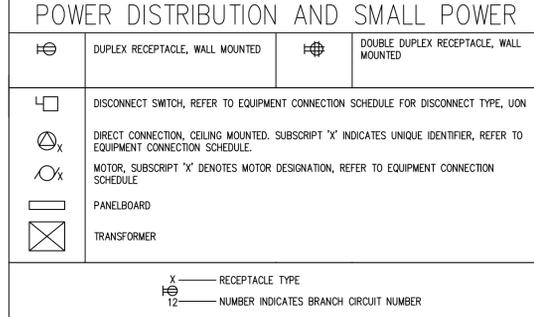
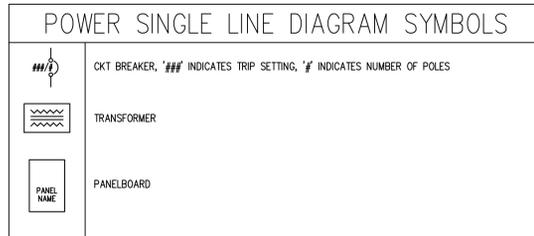
MATTHEW CASCHERA
 DIRECTOR
 INFRASTRUCTURE AND RESOURCE MANAGEMENT

COMMISSIONERS TRANSFER STATION

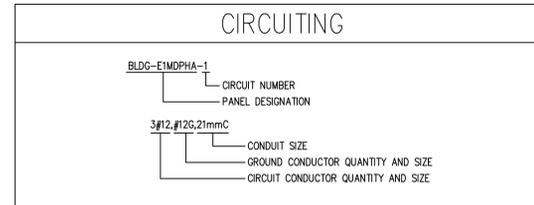
MRF BUILDING UPGRADES
 400 COMMISSIONERS STREET, TORONTO, ONTARIO M4M 3K2

CONCEPTUAL STAGING PLAN

DESIGN:	DRAFTING:	CHECK:	CONTRACT No.	23SWM-IRM-026CDU
SCALE:		DRAWING NUMBER:	1601-2023-3-16 S11	
DATE:			RECEIVED 15/Jul/2024	

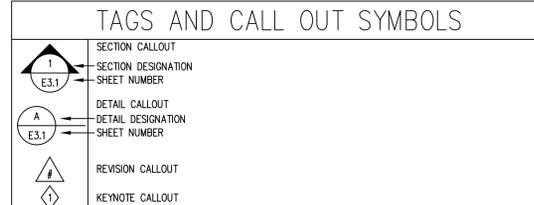


- ### GENERAL NOTES
- ALL DRAWINGS ARE DIAGRAMMATIC ONLY. REFER TO ARCHITECTURAL & STRUCTURAL DRAWINGS FOR DIMENSIONS, EXACT LOCATIONS AND MOUNTING HEIGHTS OF DEVICES AND EQUIPMENT.
 - THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER DRAWINGS, INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL AND EQUIPMENT DRAWINGS.
 - ALL EXISTING ELECTRICAL SYSTEMS, INCLUDING BUT NOT LIMITED TO EQUIPMENT DEVICES AND CONNECTIONS, SHALL REMAIN UNLESS SPECIFICALLY NOTED TO BE REMOVED.
 - DURING CONSTRUCTION IF REQUIRED/IMPACTED BY OTHER WORKS, CONTRACTOR TO TEMPORARILY REMOVE/RELOCATE ELECTRICAL SYSTEMS AND/OR PROVIDE TEMPORARY CONNECTIONS ON SITE TO ALLOW OTHERS' WORKS.
 - EXISTING ELECTRICAL SYSTEM NOT WITHIN SCOPE OF WORK ARE TO REMAIN FUNCTIONAL DURING THE CONSTRUCTION.
 - MAINTAIN EXISTING FIRE ALARM, EXIT SIGNS AND EMERGENCY LIGHTS IN FULL OPERATION DURING THE ENTIRE CONSTRUCTION STAGE. WHERE DISRUPTION TO LIFE SAFETY SYSTEM ARE REQUIRED, REPORT TO CONTRACT ADMINISTRATOR. PROVIDE CONTINUOUS MONITORING DURING SHUT DOWN PERIOD AND ENSURE THAT ALL SYSTEMS ARE REACTIVATED PRIOR TO LEAVING THE SITE AT THE END OF EACH WORKING DAY.
 - ALL OPENINGS, IF APPLICABLE, SHALL BE SEALED WITH APPROVED FIRE STOP MATERIAL. ANY FIREPROOFING MATERIAL REMOVED WILL BE REPLACED WITH A SUITABLE AND APPROVED FIREPROOFING MATERIAL, AND SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS TO APPLICABLE BUILDING AND FIRE CODES.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REFINISHING OF DAMAGED BUILDING AREAS AND FINISHES AFFECTED BY THE WORK AS OUTLINED UNDER SCOPE OF WORK OF THIS PROJECT. SHOULD ANY EXISTING SYSTEM BE DAMAGED, MAKE FULL REPAIR/REPLACES WITHOUT EXTRA COST, AND TO THE SATISFACTION OF THE OWNER. ASSET TAGGING WILL ALSO BE REQUIRED AS PER SWMS STANDARDS.
 - CONTRACTOR TO PROVIDE WRITTEN NOTICE TO OWNER FOR ANY SHUTDOWN REQUIRED. MINIMUM FIVE(S) WORKING DAYS NOTICE SHALL BE PROVIDED.
 - CONTRACTOR IS RESPONSIBLE FOR STORAGE AND PROTECTION OF ALL EXISTING ITEMS WHICH WILL BE RELOCATED/REUSED IN THIS PROJECT.
 - THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND DISTRIBUTION OF TEMPORARY POWER AND LIGHTING WITHIN THE PREMISES DURING THE CONSTRUCTION PERIOD. EXPOSED ELECTRICAL CORDS OUTSIDE THE LEASED PREMISES SHALL NOT BE PERMITTED.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL THE WORK WITH ALL OTHER TRADES, CONSULTANTS, AND THE OWNER. ALL WORK SHALL BE SCHEDULED AND CARRIED OUT BY THE CONTRACTOR IN A MANNER TO ENSURE CONTINUED AND NON-INTERRUPTED OPERATION OF EXISTING FACILITY.
 - CONTRACTOR SHALL IDENTIFY AND LABEL CLEARLY ALL CIRCUITS, WIRING, SERVICES, JUNCTION BOXES, PULLBOXES, DEVICES AND EQUIPMENT INSTALLED AND CONNECTED UNDER THE SCOPE OF WORK OF THIS PROJECT. IDENTIFICATION SHALL BE AS PER OWNER'S REQUIREMENTS AND ALL MARKINGS SHALL BE OF NON-ERASEABLE LAMACOD TYPE. COORDINATE ALL LABELING WITH THE OWNER AND CONSULTANT.
 - CONTRACTOR TO INCLUDE FOR PAYMENT OF REQUIRED PERMITS, FEES, LICENSES, CERTIFICATES OF INSPECTION ETC, IF REQUIRED.
 - CONTRACTOR TO REPORT BACK TO THE CONTRACT ADMINISTRATOR AND OWNER ON ANY ELECTRICAL AND COMMUNICATION SYSTEM FAILURES THAT OCCUR DURING THE CONSTRUCTION PHASE.
 - PHASING AND SCHEDULING OF THE WORK IS REQUIRED IN ORDER TO MAINTAIN EXISTING BUILDING OPERATIONS. INCLUDE COSTS FOR "OFF-HOURS" WORK. REFER TO PHASING SEQUENCE AND COORDINATE ALL WORK.
 - EXISTING LUMINAIRES TO REMAIN UNLESS OTHERWISE NOTED. REMOVE AND REINSTALL LIGHTING AT SAME LOCATIONS IF IMPACTED BY THE DEMOLITION WORK. PROVIDE NEW SUPPORT CHAIN FOR ALL AFFECTED LUMINAIRES. SUPPORT ALL LUMINAIRES DIRECTLY TO CEILING SLAB STRUCTURE, NOT TO CEILING HANGERS, DUCTWORK, PIPING, CABLE TRAYS, ROOF DECK, ETC.
 - FOR ALL LUMINAIRES THAT EXCEED 150V SHOWN, SUPPLY AND INSTALL NEW LUMINAIRES DISCONNECT THAT COMPLY WITH RECOMMENDATION SPECIFIED IN THE ONTARIO ELECTRICAL SAFETY CODE, RULE 30-308(4). ALL NEW RELOCATED FIXTURES (THAT EXCEED 150V) SHALL BE MARKED IN A CONSPICUOUS LEGIBLE AND PERMANENT MANNER ADJACENT TO THE CONNECTING MEANS, IDENTIFYING THE SPECIFIC PURPOSES.



Maintain adequate Fire Alarm system coverage per OBC 3.2.4 and CAN/ULC-S524 requirements

New fire alarm components shall be compatible with remaining devices. Upon completion of work all existing ancillary systems, devices, smoke control and exhaust systems shall be reconnected and shall function and operate as originally designed to operate.



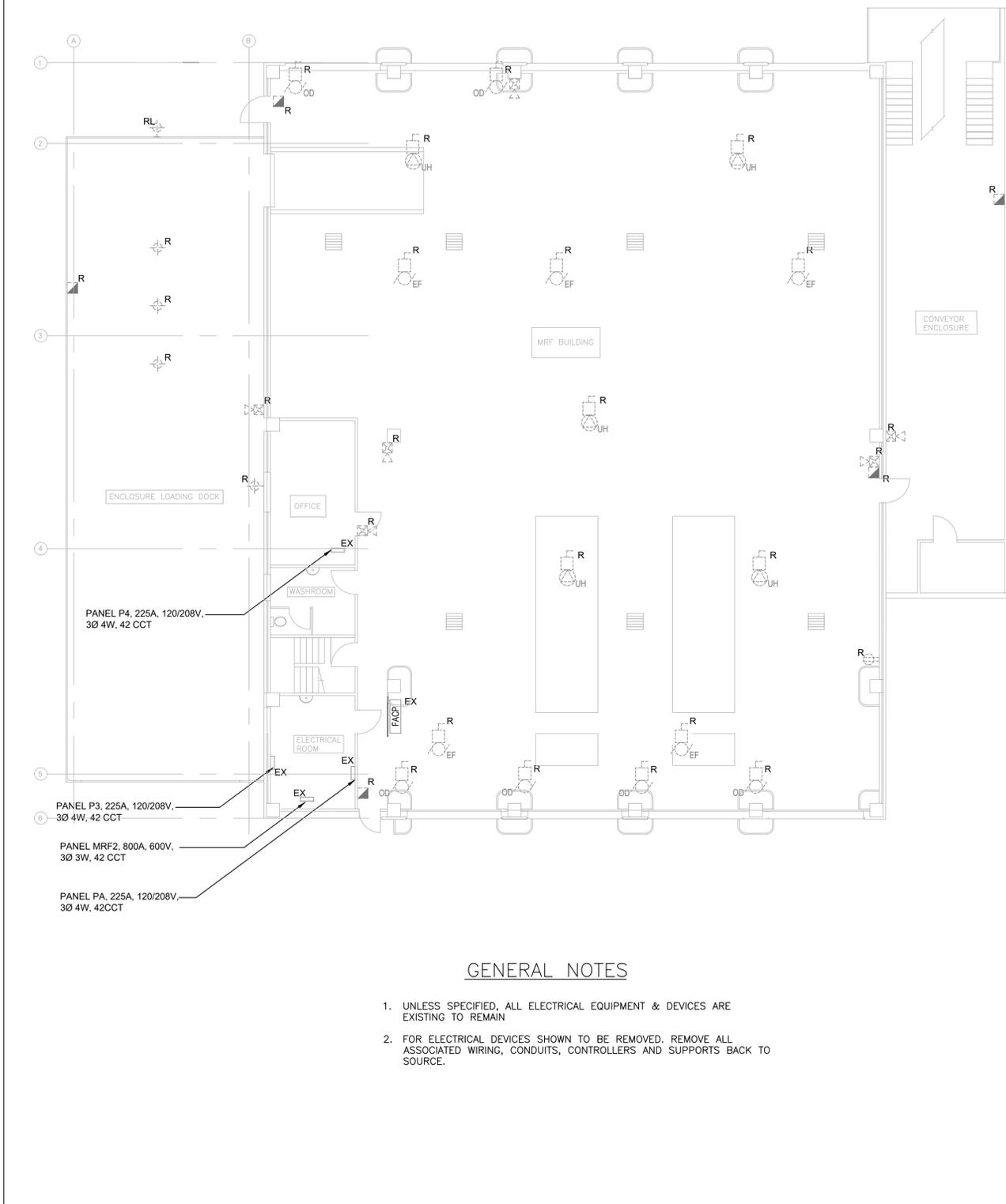
ABBREVIATIONS

A	ANALOG	MCC	MAIN CIRCUIT BREAKER
AFCI	ARC FAULT CIRCUIT INTERRUPTOR	MCC	MOTOR CONTROL CENTER
AFF	ABOVE FINISHED FLOOR	MD	MOTORIZED DAMPER
ATS	AUTOMATIC TRANSFER SWITCH	MH	MOUNTING HEIGHT
CK	CLOCK HANGER	NC	NORMALLY CLOSED
CL	CEILING MOUNTED	NO	NORMALLY OPEN
EMT	ELECTRICAL METALLIC TUBING	OC	OVER THE COUNTER
EP	EXPLOSION PROOF	PTZ	PAN, TILT, ZOOM
F	FURNITURE OR MILLWORK MOUNTED	ST	SHUNT TRIP
FL	FLOOR MOUNTED	TP	TAMPER PROOF
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	WP	WEATHER PROOF
GFI	GROUND FAULT INTERRUPTER	UH	UNIT HEATER
EF	EXHAUST FAN	WL	WEATHER LOUVRE

SOLID WASTE MANAGEMENT SERVICES exp Services Inc. t: +1.905.793.9800 f: +1.905.793.0641 1595 clark Boulevard Brampton, ON L6T 4V1 Canada www.exp.com • BUILDINGS • EARTH & ENVIRONMENT • ENERGY • • INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •	4 NOV 20/23 100% DESIGN SUBMISSION CC	 SOLID WASTE MANAGEMENT SERVICES MATT KELIHER GENERAL MANAGER SOLID WASTE MANAGEMENT SERVICES MATTHEW CASCHERA DIRECTOR INFRASTRUCTURE AND RESOURCE MANAGEMENT	COMMISSIONERS TRANSFER STATION MRF IMPROVEMENTS 400 COMMISSIONER STREET, TORONTO, ONTARIO M4M 3K2 GENERAL NOTES AND ABBREVIATIONS
	3 OCT 28/23 REISSUED 70% DESIGN SUBMISSION CC 1 JULY 18/23 70% DESIGN SUBMISSION CC		

EXP-DATA\BURNBURN\202309-2024\06\EXECUTION\46 DRAWINGS_ELECTRICAL.DWG (E-01)

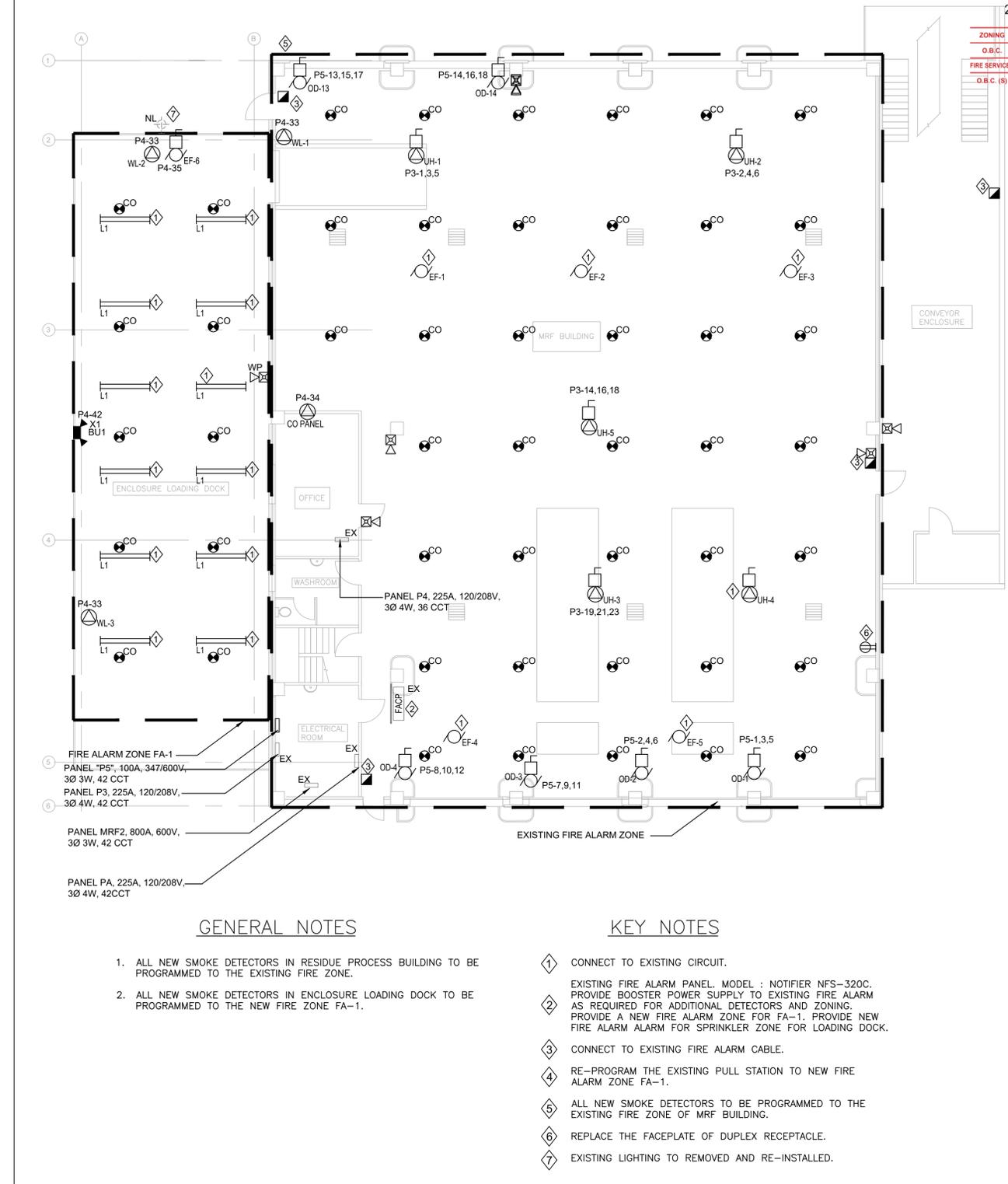
ZONING		
O.B.C.	Amuzaman, Shah	15/Jul/2024
FIRE SERVICES		
O.B.C. (B)		



GENERAL NOTES

- UNLESS SPECIFIED, ALL ELECTRICAL EQUIPMENT & DEVICES ARE EXISTING TO REMAIN
- FOR ELECTRICAL DEVICES SHOWN TO BE REMOVED, REMOVE ALL ASSOCIATED WIRING, CONDUITS, CONTROLLERS AND SUPPORTS BACK TO SOURCE.

1 GROUND FLOOR PLAN
ELECTRICAL DEMOLITION PLAN
E-02 1:100



GENERAL NOTES

- ALL NEW SMOKE DETECTORS IN RESIDUE PROCESS BUILDING TO BE PROGRAMMED TO THE EXISTING FIRE ZONE.
- ALL NEW SMOKE DETECTORS IN ENCLOSURE LOADING DOCK TO BE PROGRAMMED TO THE NEW FIRE ZONE FA-1.

KEY NOTES

- CONNECT TO EXISTING CIRCUIT.
- EXISTING FIRE ALARM PANEL, MODEL : NOTIFIER NFS-320C. PROVIDE BOOSTER POWER SUPPLY TO EXISTING FIRE ALARM AS REQUIRED FOR ADDITIONAL DETECTORS AND ZONING. PROVIDE A NEW FIRE ALARM ZONE FOR FA-1. PROVIDE NEW FIRE ALARM ALARM FOR SPRINKLER ZONE FOR LOADING DOCK.
- CONNECT TO EXISTING FIRE ALARM CABLE.
- RE-PROGRAM THE EXISTING PULL STATION TO NEW FIRE ALARM ZONE FA-1.
- ALL NEW SMOKE DETECTORS TO BE PROGRAMMED TO THE EXISTING FIRE ZONE OF MRF BUILDING.
- REPLACE THE FACEPLATE OF DUPLEX RECEPTACLE.
- EXISTING LIGHTING TO REMOVED AND RE-INSTALLED.

2 GROUND FLOOR PLAN
ELECTRICAL NEW PLAN
E-02 1:100

SOLID WASTE MANAGEMENT SERVICES

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1595 clark Boulevard
Brampton, ON L6T 4V1
Canada
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BUILDINGS • EARTH & ENVIRONMENT • ENERGY • INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY

No.	DATE	REVISIONS	INITIAL	SIGNED
4				CC
3	NOV 20/23	100% DESIGN SUBMISSION		CC
2	OCT 28/23	REISSUED 70% DESIGN SUBMISSION		CC
1	JULY 18/23	70% DESIGN SUBMISSION		CC

TORONTO Building

SOLID WASTE MANAGEMENT SERVICES

MATT KELIHER
GENERAL MANAGER
SOLID WASTE MANAGEMENT SERVICES

MATTHEW CASCHERA
DIRECTOR
INFRASTRUCTURE AND
RESOURCE MANAGEMENT

M. W. WICKHAM
LICENSED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

COMMISSIONERS TRANSFER STATION
MRF IMPROVEMENTS
400 COMMISSIONER STREET, TORONTO, ONTARIO M4M 3K2

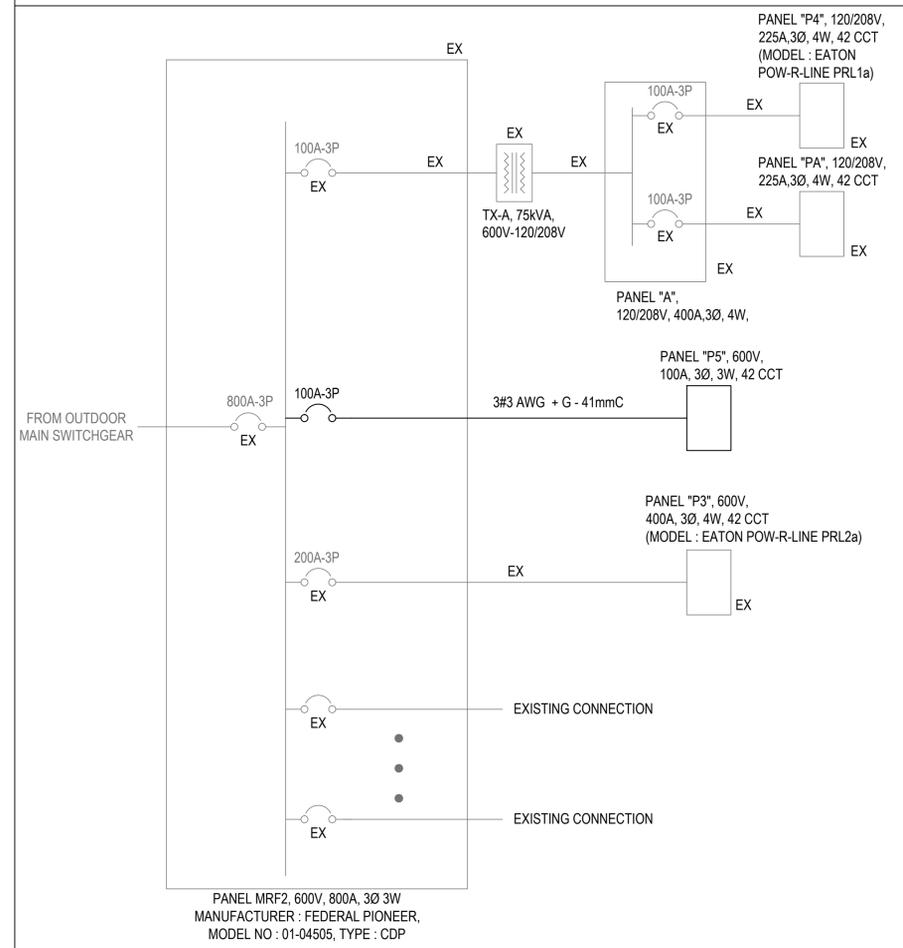
GROUND FLOOR PLAN - ELECTRICAL DEMO & NEW PLAN

DESIGN:	CC	DRAFTING:	CC	CHECK:	DL	CONTRACT No.	23SWM-IRM-026CDU
SCALE:	AS NOTED		DRAWING NUMBER:	1601-2023-3-18			
DATE:	JULY 18, 2023			E2			

RECEIVED 15/Jul/2024

EXP/24/134572/BLD/230809-04/05/ELECTRICAL/DEMOLITION/165 DRAWINGS_ELECTRICAL DEMO (E-02)

ELECTRICAL SINGLE LINE DIAGRAM



LUMINAIRES SCHEDULE

TYPE	BASE MANUFACTURER (AS SPECIFIED)	CATALOGUE NUMBER	CEILING MOUNTED		WALL MOUNTED		WATTAGE	COLOUR TEMP.	VOLTAGE		REMARKS
			SURFACE	RECESSED	SURFACE	RECESSED			120V	347V	
L1	PEERLUX	AP4-4-50-40K-P5	•				37W 5000 LUMENS	3500K	•		
X1	READY-LITE	RHP-1275-2-L10			•		20W		•		REMOTE HEAD WITH BUILT-IN 30 MINUTES BATTERY UNIT BU1, 120V AC INPUT, 12V OUTPUT, 75W WATTAGE

MECHANICAL SCHEDULE(FOR REFERENCE ONLY)

JOB NAME: COMMISSIONERS TS MRF BUILDING UPGRADE JOB No. BRM-22028009-A0							
MECHANICAL SCHEDULE - ELECTRIC UNIT HEATER SCHEDULE							
DWG. DESIGN-NATION	MODEL	DUCT SIZE	CFM	KW	VOLT/Ø	STAGES	REMARKS
UH-1	CHROMALOX HVH	-	1500	20	575/3	-	VERTICAL THROW, HUNG FROM STRUCTURE.
UH-2	CHROMALOX HVH	-	1500	20	575/3	-	VERTICAL THROW, HUNG FROM STRUCTURE.
UH-3	CHROMALOX HVH	-	1500	20	575/3	-	VERTICAL THROW, HUNG FROM STRUCTURE.
UH-4	CHROMALOX HVH	-	850	7.5	575/3	-	VERTICAL THROW, HUNG FROM STRUCTURE.
UH-5	CHROMALOX HVH	-	850	7.5	575/3	-	VERTICAL THROW, HUNG FROM STRUCTURE.

JOB NAME: COMMISSIONERS TS MRF BUILDING UPGRADE JOB No. BRM-22028009-A0								
MECHANICAL SCHEDULE - FANS								
FAN No.	SYSTEM AND FAN LABEL	SPEC TYPE	MODEL	SIZE	CFM ESP "W.G.	RPM ARR	HP VAC/Ø	REMARKS
EF-1	MEF BUILDING EXHAUST	ADF	COOK ACRUB	150 RH3B	950 0.50	1300	1/4 120/1	INTERCONNECT TO WL-1
EF-2	MEF BUILDING EXHAUST	ADF	COOK ACRUB	150 RH3B	950 0.50	1300	1/4 120/1	INTERCONNECT TO WL-1
EF-3	MEF BUILDING EXHAUST	ADF	COOK ACRUB	150 RH3B	950 0.50	1300	1/4 120/1	INTERCONNECT TO WL-1
EF-4	MEF BUILDING EXHAUST	ADF	COOK ACRUB	150 R4B	1900 0.50	1200	1/3 120/1	INTERCONNECT TO WL-1
EF-5	MEF BUILDING EXHAUST	ADF	COOK ACRUB	150 R4B	1900 0.50	1200	1/3 120/1	INTERCONNECT TO WL-1
EF-6	ENCLOSURE LOADING DOCK	PF	COOK AWD	20 A17D	1700 0.50	1700	1/4 120/1	INTERCONNECT TO WL-2

NOTE 1. USE HIGH EFFICIENCY MOTORS. SEE SECTION 15010.

REMARK: THIS SCHEDULE IS FOR REFERENCE ONLY. PLEASE REFER TO MECHANICAL DRAWINGS FOR EXACT INFORMATION.

PANEL SCHEDULES

Existing Panel P3

LOCATION:	Electrical room	VOLTS:	347/600V	A.I.C. RATING:	
SUPPLY FROM:	Panel MRF2	PHASES:	3Ø	MAIN TYPE:	
MOUNTING:	SURFACE	WIRES:	4W	MAINS RATING:	400 A
ENCLOSURE:				MCB RATING:	N/A

DESCRIPTION	BKR	CCT	CCT	BKR	DESCRIPTION
20kW Heater(UH-1)*	30 A	1 A	2	20 A	Existing Circuit
		3 B	4		
		5 C	6		
		7 A	8		
20kW Heater(UH-2)*	30 A	9 B	10	15 A	Existing Circuit
		11 C	12		
		13 A	14		
Existing Circuit	15 A	15 B	16	15 A	7.5kW Heater(UH-5)**
		17 C	18		
		19 A	20		
20kW Heater(UH-3)*	30 A	21 B	22	15 A	7.5kW Heater(UH-4)**
		23 C	24		
Space		25 A	26		Space
Space		27 B	28		Space
Space		29 C	30		Space
Space		31 A	32		Space
Space		33 B	34		Space
Space		35 C	36		Space
Space		37 A	38		Space
Space		39 B	40		Space
Space		41 C	42		Space

NOTES:
 *: Remove existing breaker and install new breaker, rating as shown.
 **: Existing breaker to be kept and re-use.

Existing Panel P4

LOCATION:	Office	VOLTS:	120/208V	A.I.C. RATING:	
SUPPLY FROM:	Panel A	PHASES:	3Ø	MAIN TYPE:	
MOUNTING:	SURFACE	WIRES:	4W	MAINS RATING:	225 A
ENCLOSURE:				MCB RATING:	N/A

DESCRIPTION	BKR	CCT	CCT	BKR	DESCRIPTION
Existing Circuit		1 A	2		Existing Circuit
Existing Circuit		3 B	4		Existing Circuit
Existing Circuit		5 C	6		Existing Circuit
Existing Circuit		7 A	8		Existing Circuit
Existing Circuit		9 B	10		Existing Circuit
Existing Circuit		11 C	12		Existing Circuit
North west roof exhaust fan**	15 A	13 A	14		Existing Circuit
North middle roof exhaust fan**	15 A	15 B	16		Existing Circuit
North east roof exhaust fan**	15 A	17 C	18	15 A	Screen floor roof exhaust fan**
Existing Circuit		19 A	20	15 A	South roof exhaust fan**
Existing Circuit		21 B	22		Existing Circuit
Existing Circuit		23 C	24		Existing Circuit
Existing Circuit		25 A	26		Existing Circuit
Existing Circuit		27 B	28		Existing Circuit
Existing Circuit		29 C	30		Existing Circuit
Existing Circuit		31 A	32		Existing Circuit
Existing Circuit		33 B	34		Existing Circuit
Existing Circuit		35 C	36		Existing Circuit
Existing Circuit		37 A	38		Existing Circuit
Motorized Dampers*	15 A	39 B	40	15 A	CO2 Panel*
EF-6*	15 A	41 C	42	15 A	REMOTE HEAD*

NOTES:
 *: Provide a new breaker, rating as shown.
 **: Existing breakers for exhaust fans to be re-used, contractor shall verify on-site.

New Panel P5

LOCATION:	Electrical room	VOLTS:	347/600V	A.I.C. RATING:	
SUPPLY FROM:	Panel MRF2	PHASES:	3Ø	MAIN TYPE:	
MOUNTING:	SURFACE	WIRES:	4W	MAINS RATING:	100 A
ENCLOSURE:				MCB RATING:	N/A

DESCRIPTION	BKR	CCT	CCT	BKR	DESCRIPTION
Overhead door(OD-1)	15 A	1 A	2	15 A	Overhead door(OD-2)
		3 B	4		
		5 C	6		
		7 A	8		
Overhead door(OD-3)	15 A	9 B	10	15 A	Overhead door(OD-4)
		11 C	12		
		13 A	14		
Overhead door(OD-13)	15 A	15 B	16	15 A	Overhead door(OD-14)
		17 C	18		
SPACE		19 A	20		SPACE
SPACE		21 B	22		SPACE
SPACE		23 C	24		SPACE
SPACE		25 A	26		SPACE
SPACE		27 B	28		SPACE
SPACE		29 C	30		SPACE
SPACE		31 A	32		SPACE
SPACE		33 B	34		SPACE
SPACE		35 C	36		SPACE
SPACE		37 A	38		SPACE
SPACE		39 B	40		SPACE
SPACE		41 C	42		SPACE

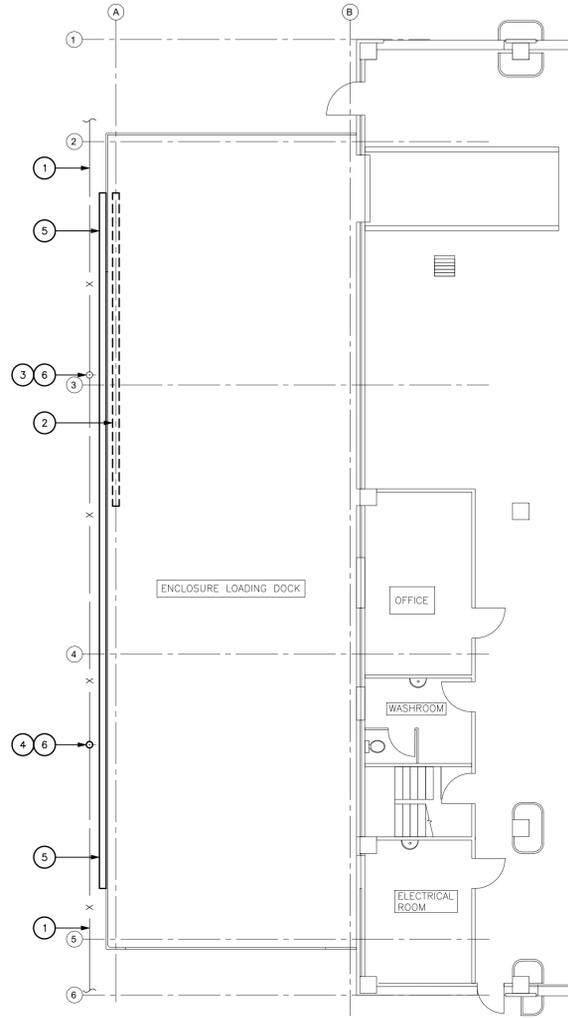
NOTES:

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ELECTRICAL SPECIFICATIONS

1. SCOPE OF WORK	ADMINISTRATOR . ALL SUBMITTED DRAWINGS SHALL BE OF THE SAME QUALITY AS ORIGINAL DRAWINGS.	VOLTS, UNLESS OTHERWISE NOTED.	20.7. EQUIP PANELBOARDS WITH SUITABLE LUGS OR PROVISIONS TO ACCOMMODATE MAIN AND BRANCH CONDUCTORS SCHEDULED.	PROTECTIVE DEVICES BEING INSTALLED IN DISTRIBUTION SYSTEM PROVIDE SATISFACTORY COORDINATION.	CERTIFICATION WORK, SUBJECT TO CONDITIONS HEREIN, SHALL BE SUBJECT TO APPROVAL OF CONTRACT ADMINISTRATOR .
1.1. SUPPLY LABOUR, TOOLS, SERVICES AND EQUIPMENT, AND PROVIDE MATERIALS REQUIRED TO COMPLETE WORK IN ACCORDANCE WITH THIS SPECIFICATION AND DRAWINGS. COMPLY WITH LAWS, REGULATIONS AND CODES OF AUTHORITIES HAVING JURISDICTION. CONFORM TO REQUIREMENTS OF TENDER DOCUMENTS AND DIVISION 1. PERFORM WORK IN ACCORDANCE WITH LOCAL APPLICABLE GOVERNING CODES AND AUTHORITIES INCLUDING THE ONTARIO BUILDING CODE AND ONTARIO ELECTRICAL SAFETY CODE (OESC).	11.4. UPDATE OWNER'S DISTRIBUTION RISER DIAGRAMS POSTED IN ELECTRICAL ROOMS.	15.8. COLOUR CODE CONDUCTORS THROUGHOUT TO IDENTIFY PHASES, NEUTRALS AND GROUND BY MEANS OF SELF-LAMINATING COLOURED TAPE, COLOURED CONDUCTOR INSULATION, OR PROPERLY SECURED COLOURED PLASTIC DISCS. COLOURS, UNLESS OTHERWISE NOTED, TO BE AS FOLLOWS:	20.8. GROUND AND BOND EQUIPMENT AS PER LOCAL GOVERNING ELECTRICAL CODE AND INSPECTION AUTHORITY REQUIREMENTS. REFER ALSO REQUIREMENTS OF SECTION ENTITLED - GROUNDING AND BONDING.	23.2.6.6. DOCUMENT TESTING, COORDINATION STUDY AND ARC FLASH ANALYSIS IN A REPORT SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE PLACE OF WORK AND AUTHORIZED BY TESTING COMPANY. INCLUDE FOR MINIMUM 3 HARD COPIES AND ELECTRONIC COPY OF REPORT TO BE SUBMITTED TO CONTRACT ADMINISTRATOR FOR REVIEW. REPORT TO INCLUDE TEST RESULTS WITH PROPERLY PLOTTED CURVES. IDENTIFIED TROUBLE AREAS OF COORDINATION, EXTENSIVE COMMENTS REGARDING TEST RESULTS AND RECOMMENDATIONS ON BEST COURSE OF REMEDIAL ACTION.	25.6. TEST AND VERIFY THAT AUDIBLE SIGNALS ARE AT LEVEL CAPABLE AS PER LOCAL FIRE AUTHORITY AND THAT BATTERIES OF SUFFICIENT CAPACITY AS PER OBC. PROVIDE CERTIFICATE OF LIABILITY INSURANCE REGISTERED FOR THIS PROJECT TO SHOW SATISFACTORY PROOF OF MANUFACTURER'S AND TESTING COMPANY'S LIABILITY COVERAGE FOR BOTH HIS PRODUCT AND PERSONNEL. CONDUCT WORK IN ACCORDANCE WITH LATEST EDITION OF CAN/ULC 5524, 5534, 536, 5537, S1001-11 AND OBC 2012. ALL TESTS TO BE CONDUCTED IN PRESENCE OF OWNER AND/OR CONTRACT ADMINISTRATOR.
2. EXAMINATION OF SITE AND DOCUMENTS	12. SHOP DRAWINGS AND OPERATING/MAINTENANCE INSTRUCTION MANUALS	15.8.1. PHASE A - RED;	20.9. IDENTIFY PANELBOARD BREAKERS IN A PERMANENT MANNER, AND COMPLETE TYPED PANELBOARD CIRCUIT DIRECTORIES IDENTIFYING CIRCUIT NUMBER AND TYPE AND LOCATION OF LOADS SUPPLIED FROM EACH BREAKER TO CONTRACT ADMINISTRATOR'S APPROVAL.	23.3. SHOCK AND ARC FLASH PROTECTION	25.7. PROVIDE TO CONTRACT ADMINISTRATOR MINIMUM 3 COPIES OF TEST REPORT WITH DETAILED SCHEDULES OF TESTED DEVICES. REPORTS SHALL BE SIGNED BY AUTHORIZED CERTIFIED TESTING TECHNICIAN. A DIGITAL COPY OF THE REPORT SHALL ALSO BE PROVIDED IN COMPATIBLE FORMAT CONFORMED WITH CONTRACT ADMINISTRATOR.
2.1. PRIOR TO SUBMITTING BID, CAREFULLY EXAMINE CONDITIONS AT SITE WHICH WILL OR MAY AFFECT WORK, DRAWINGS, AND SPECIFICATIONS, AND BECOME FAMILIAR WITH BUILDING CONSTRUCTION, FINISHES AND OTHER WORK ASSOCIATED WITH WORK IN ORDER THAT BID INCLUDES FOR EVERYTHING NECESSARY FOR COMPLETION OF WORK.	12.1.1. SPECIAL RECEPTACLES AND SWITCHES;	15.8.2. PHASE B - BLACK;	20.10. INCLUDE FOR SPACES FOR FUTURE BREAKERS, SPARE BREAKERS AND ADDITIONAL BREAKERS FOR MISCELLANEOUS MECHANICAL LOADS ARE INCLUDED AS PER SCHEDULES AND AS SPECIFIED.	23.3.1. PROVIDE FOR ELECTRIC SHOCK AND ARC FLASH PROTECTION AS REQUIRED BY LOCAL GOVERNING ELECTRICAL CODE AND LOCAL GOVERNING AUTHORITIES. SCOPE OF WORK TO BE FOR ADDITIONAL AND REVISED EQUIPMENT AND FIRST LEVEL OF UPSTREAM DEVICES.	25.8. OBTAIN FROM LOCAL FIRE AUTHORITY, APPROVAL CERTIFICATE AND SUBMIT TO CONTRACT ADMINISTRATOR WITH REPORTS.
3. PERMITS, CERTIFICATES AND FEES	12.1.2. DISTRIBUTION EQUIPMENT;	15.8.3. PHASE C - BLUE;	21. DISCONNECTS	23.3.2. DETERMINE SEVERITY OF POTENTIAL EXPOSURE, PLANNING SAFE WORK PRACTICES AND SELECTING PERSONAL PROTECTIVE EQUIPMENT UNDER GENERAL GUIDELINES OF GOVERNING EDITION OF CSA 2462.	25.9. THE TESTING COMPANIES MUST EMPLOY TECHNICIANS CERTIFIED BY CANADIAN FIRE ALARM ASSOCIATION AND/OR ONTARIO FIRE MARSHALL, AS APPLICABLE.
3.1. PAY FOR AND OBTAIN PERMITS TO COMPLETE WORK. WHEN WORK IS COMPLETE, SUPPLY AND TURN OVER INSPECTION CERTIFICATES FROM GOVERNING AUTHORITIES TO CONTRACT ADMINISTRATOR. PAY FEES AND CHARGES LEVIED BY MUNICIPALITY AND OTHER GOVERNING AUTHORITIES FOR PERMITS, INSPECTIONS AND CERTIFICATES. KEEP COPY OF SUCH PERMITS AND CERTIFICATES, ETC., ON JOB SITE.	12.1.3. LUMINAIRES;	15.8.4. GROUND - GREEN;	21.1. THE DISCONNECT SWITCHES SHALL HAVE THE OPERATING HANDLE INTERLOCKED WITH THE SWITCH COVER SO THAT IT CAN ONLY BE OPENED WHEN THE SWITCH IS IN THE "OFF" POSITION, AND THE HANDLE CANNOT BE PUT IN THE "ON" POSITION UNLESS THE COVER IS CLOSED.	23.3.3. DESIGN SAFETY SIGNS AND LABELS FOR APPLICATIONS TO EQUIPMENT UNDER GENERAL GUIDELINES OF ANSI Z535.4.	26. CLOSEOUT DOCUMENTS
4. CO-ORDINATION AND CO-OPERATION	12.1.4. EXIT SIGN;	15.8.5. NEUTRAL - WHITE;	21.2. THE FUSED SWITCHES SHALL HAVE STEEL REINFORCED CLIPS AND FUSES SHALL BE EASILY REMOVABLE WHEN THE SWITCH IS IN THE "OFF" POSITION.	23.3.4. DETERMINE ARC FLASH HAZARD DISTANCE AND INCIDENT ENERGY THAT WORKERS MAY BE EXPOSED TO FROM ELECTRICAL EQUIPMENT UNDER GENERAL GUIDELINES OF IEEE 1584.	26.1. FOLLOWING DOCUMENTS ARE TO BE PROVIDED:
4.1. COORDINATE ALL WORK WITH OTHER TRADES TO ENSURE A PROPER AND COMPLETE INSTALLATION. NOTIFY ALL TRADES CONCERNED OF REQUIREMENT FOR OPENINGS, SLEEVES, INSERTS AND OTHER HARDWARE NECESSARY IN THEIR WORK FOR INSTALLATION OF YOUR WORK, AND, WHERE YOUR WORK IS TO BE INTEGRATED WITH WORK OF OTHER TRADES OR IS TO BE INSTALLED IN CLOSE PROXIMITY WITH WORK OF OTHER TRADES, CAREFULLY COORDINATE WORK PRIOR TO AND DURING INSTALLATION.	12.2. PROPERLY IDENTIFY SHOP DRAWINGS FOR REVIEW AND SHOW IN DETAIL EQUIPMENT AND MATERIALS. ENDORSE EACH DRAWING, INCLUDE COMPANY NAME AND SUBMITTAL DATE. PROVIDE MANUALS AS INDEXED, IDENTIFIED HARD COVER 3-RING BINDERS COMPLETE WITH:	15.8.6. CONTROL - ORANGE.	21.3. SWITCHES SHALL HAVE AMPLE OUTER SPACE FOR TOP OR BOTTOM WIRING AND SHALL HAVE FULLY VISIBLE BLADES WHEN IN THE "OFF" POSITION. QUICK-MAKE, QUICK-BREAK, MECHANISM AND BE HORSE-POWER RATED. SWITCHES USED OUTDOORS SHALL BE IN A WEATHERPROOF ENCLOSURE. SWITCHES USED OUTDOORS SHALL BE SPRINKLER PROOF, NEMA 3R.	23.3.5. INCORPORATE DOCUMENTATION WITH DISTRIBUTION SYSTEM AND COORDINATION STUDY REPORT.	26.1.1. AS-BUILT DRAWINGS COMPLETE WITH CAD FILE DRAWINGS; ENSURE MAIN BRANCH CONDUITS, JUNCTION BOXES, AND ASSOCIATED ARE SHOWN ON AS BUILT DRAWINGS.
4.2. EXACT LOCATION AND ROUTING OF SERVICES MUST BE PROPERLY PLANNED, COORDINATED AND ESTABLISHED WITH ALL AFFECTED TRADES PRIOR TO INSTALLATION SUCH THAT THEY WILL CLEAR EACH OTHER AS WELL AS ANY OBSTRUCTIONS. GENERALLY, PIPING REQUIRING UNIFORM PITCH SHALL BE GIVEN RIGHT OF WAY, WITH OTHER SERVICES LOCATED AND ARRANGED TO SUIT.	12.2.1. TITLE SHEET AND LIST OF CONTENTS;	15.9. USE 300V RATING FOR FIRE ALARM, SECURITY AND OTHER LOW VOLTAGE CIRCUITS, 600V RATING FOR 120/208V CIRCUITS, 1000V RATING FOR 347/600V CIRCUITS.	21.4. PULLBOXES AND JUNCTION BOXES: PROVIDE GALVANIZED OR PRIME COATPLATED STEEL, SUITABLE IN ASPECTS FOR APPLICATION AND COMPLETE WITH SCREW ON OR HINGED COVERS AS REQUIRED, AND CONNECTORS SUITABLE FOR CONNECTED CONDUIT.	23.3.6. PROVIDE LABELS AS REQUIRED ON EQUIPMENT, MEETING APPLICABLE STANDARDS AND CODES TO SATISFACTION OF CONTRACT ADMINISTRATOR.	26.1.2. APPROVED AND STAMPED SHOP DRAWINGS;
5. NOISE CONTROL	12.2.2. A COPY OF EACH "REVIEWED" SHOP DRAWING;	15.10. CONDUCTORS SHALL BE OVERSIZED TO ENSURE VOLTAGE DROP IS 2% MAXIMUM AT PANEL LOCATION OR 5% AT LOAD.	21.5. SWITCHES SHALL HAVE PROVISION FOR PADLOCKING IN THE "OFF" POSITION AND INTERLOCK DEFEAT.	24. LIGHTING	26.1.3. MAINTENANCE MANUALS CONTAINING DATA SHEETS, BROCHURE, OPERATING AND MAINTENANCE INFORMATION, LAMPING SPECIFICATIONS, RECOMMENDED SPARE PARTS LIST FOR ALL INSTALLED ELECTRICAL EQUIPMENT;
5.1. WORK WHICH MAY CAUSE NOISE DISTURBANCES MUST BE SCHEDULED AT TIMES APPROVED BY CONTRACT ADMINISTRATOR. COORDINATE WORK WITH TRADES TO MINIMIZE NOISE DISTURBANCES.	12.2.3. EXPLANATIONS OF OPERATING PRINCIPLES AND SEQUENCES;	16. OUTLET BOXES, PULLBOXES AND JUNCTION BOXES	21.6. ALL MOTORS SHALL BE PROVIDED WITH A DISCONNECT SWITCH UNLESS OTHERWISE NOTED.	24.1. PROVIDE LUMINAIRES AS NOTED ON LUMINAIRE SCHEDULE, COMPLETE WITH ELECTRONIC BALLASTS. CONFIRM FINISHES WITH CONTRACT ADMINISTRATOR AND OWNER PRIOR TO ORDERING.	26.1.4. APPROVED AND STAMPED SHOP DRAWINGS;
6. CLEANING UP	12.2.4. PART LISTS WITH NUMBERS;	16.1. OUTLET BOXES: PROVIDE CSA APPROVED STAMPED GALVANIZED STEEL OUTLET BOX FOR EACH LUMINAIRE, FIRE ALARM DEVICE, ETC. REFER TO DRAWINGS FOR LOCATIONS OF OUTLETS. CONFIRM EXACT LOCATIONS PRIOR TO ROUGHING-IN. BOXES FOR RIGID STEEL CONDUITS SHALL BE CAST FS/FD TYPES.	22. GROUNDING AND BONDING	24.2. LED LAMPS SHALL BE CSA APPROVED AND ULC LISTED AND LABELLED.	26.1.5. COPY OF TYPED PANEL BOARD SCHEDULES FOR NEW AND EXISTING PANELS WITHIN SCOPE OF WORK;
6.1. DURING CONSTRUCTION, KEEP SITE REASONABLY CLEAR OF RUBBISH AND WASTE MATERIAL RESULTING FROM WORK ON DAILY BASIS. AFTER COMPLETION OF WORK, REMOVE RUBBISH AND DEBRIS, ARRANGE AND PAY FOR REPAIR OF DAMAGES CAUSED AND LEAVE PREMISES AND WORK IN GOOD ORDER.	12.2.5. RECOMMEND MAINTENANCE PRACTICES AND PRECAUTIONS;	16.2. PULLBOXES AND JUNCTION BOXES: PROVIDE GALVANIZED OR PRIME COATPLATED STEEL, SUITABLE IN ASPECTS FOR APPLICATION AND COMPLETE WITH SCREW ON OR HINGED COVERS AS REQUIRED, AND CONNECTORS SUITABLE FOR CONNECTED CONDUIT.	22.1. PROVIDE REQUIRED GROUNDING AND BONDING WORK IN ACCORDANCE WITH DRAWINGS, LOCAL GOVERNING ELECTRICAL AUTHORITY, GOVERNING AUTHORITIES HAVING JURISDICTION AND LOCAL GOVERNING ELECTRICAL INSPECTION AUTHORITY. PROVIDE LOCAL GOVERNING ELECTRICAL UTILITY'S GROUNDING REQUIREMENTS FOR STATIONS, VAULTS AND ELECTRICAL ROOMS, AS APPLICABLE. CONFIRM REQUIREMENTS WITH LOCAL GOVERNING ELECTRICAL UTILITY.	24.3. LEDS HAVE THE MOST ADVANCED AND TECHNICALLY PROVEN AND SUCCESSFULLY TESTED LED TECHNOLOGY AT THE TIME OF INSTALLATION.	26.1.6. FIRE ALARM VERIFICATION REPORT;
7. PROTECTION OF EQUIPMENT AND MATERIAL	12.2.6. COPIES OF INSPECTION CERTIFICATES ISSUED BY GOVERNING AUTHORITIES;	16.3. PROVIDE PULLBOXES AND JUNCTION BOXES WHEREVER NECESSARY TO FACILITATE CONDUIT/CONDUIT INSTALLATIONS. GENERALLY, PROVIDE CONDUIT RUNS EXCEEDING 100' (30 m) IN LENGTH, OR WITH MORE THAN 3 - 90 DEGREE BENDS WITH PULLBOX INSTALLED AT CONVENIENT AND SUITABLE INTERMEDIATE ACCESSIBLE LOCATION. PROVIDE JUNCTION BOXES AND PULLBOXES SIZED IN ACCORDANCE WITH CODE TO SUIT NUMBER AND SIZE OF CONDUITS AND CONDUCTORS. BOXES MUST BE ACCESSIBLE AFTER WORK IS COMPLETE.	22.2. GROUND AND BOND OTHER EQUIPMENT SUCH AS TRANSFORMERS, SWITCHBOARDS, PANELBOARDS, AND SIMILAR METAL WORK TO PERIMETER GROUND BUS. PROVIDE MINIMUM NO. 3/0 INSULATED GROUND WIRE FROM GROUND BUS IN ELECTRICAL ROOMS TO SWITCHBOARDS, TRANSFORMERS, STRUCTURE, FLOOR, ETC.	24.4. LED FEATURES TO INCLUDE:	26.1.7. EMERGENCY LIGHTING CONFIRMATION LETTER
7.1. PROPERLY PROTECT AND STORE ALL EQUIPMENT AND MATERIALS ON SITE FROM DAMAGE. CONTRACTOR SHALL BE RESPONSIBLE FOR SAFE STORAGE OF ALL EQUIPMENT AND GOODS TO BE RELOCATED AND SHALL REPAIR OR REPLACE DAMAGED EQUIPMENT AND GOODS AT DISCRETION OF OWNER.	12.2.7. WIRING AND CONNECTION DIAGRAMS;	16.4. SIZE, ARRANGEMENT AND TYPE OF BOXES MUST BE SUITABLE FOR APPLICATION. CLEARLY IDENTIFY MAIN PULL AND/OR JUNCTION BOXES BY SPRAY PAINTING COVERS AGREED UPON WITH OWNER AND SHALL BE CONFIRMED ON SITE. WHERE REQUIRED, SUPPLY ACCESS DOORS OF MINIMUM NO. 12 GAUGE. PRIME COATED STEEL COMPLETE WITH HINGES AND FRAMES TO GIVE ACCESS TO BOXES AND CONDUCTOR JOINTS AND OTHER SIMILAR ELECTRICAL WORK WHICH MAY NEED MAINTENANCE OR REPAIR, BUT WHICH IS CONCEALED IN INACCESSIBLE CONSTRUCTION. CONFIRM FINISHES WITH OWNER.	23. GENERAL ELECTRICAL WORK TESTING	24.4.1. LEDS TO BE SELECTED FROM SAME COLOUR BIN SIZE FOR CONSISTENCY AND CHROMATICITY AND MEET ANSI C78 377A AS A MINIMUM.	26.2. PROVIDE 3 SETS CLOSEOUT DOCUMENTS BOUND IN HARD COVERS WITH "OPERATING AND MAINTENANCE MANUAL" TITLE ON COVER, AFTER SUBSTANTIAL COMPLETION OF THE PROJECT.
8. INSPECTION OF WORK	12.2.8. COPIES OF ADDITIONAL AND REVISED PANELBOARD DIRECTORIES.	16.5. WHERE REQUIRED, SUPPLY ACCESS DOORS OF MINIMUM NO. 12 GAUGE. PRIME COATED STEEL COMPLETE WITH HINGES AND FRAMES TO GIVE ACCESS TO BOXES AND CONDUCTOR JOINTS AND OTHER SIMILAR ELECTRICAL WORK WHICH MAY NEED MAINTENANCE OR REPAIR, BUT WHICH IS CONCEALED IN INACCESSIBLE CONSTRUCTION. CONFIRM FINISHES WITH OWNER.	23.1. GENERAL	24.4.2. GENERALLY, COLOUR TEMPERATURE RANGE TO BE FROM 2700K TO 6500K; SPECIFIC TEMPERATURE REQUIREMENTS TO BE IDENTIFIED ON LUMINAIRE SCHEDULE.	
8.1. CONTRACT ADMINISTRATOR SHALL AT ALL TIMES HAVE ACCESS TO WORK AND SHALL BE NOTIFIED AT AGREED UPON TIMES OF STAGES OF WORK.	12.2.9. PROVIDE 2 SETS OF MANUALS.	17. RECEPTACLES, SWITCHES AND FACEPLATES	23.1.1. IN ADDITION TO TESTS REQUIRED BY GOVERNING AUTHORITIES AND REGULATIONS, TEST WORK TO ENSURE THERE ARE NO GROUNDS OR CROSSES. ENSURE DEVICES ARE COMMISSIONED AND OPERABLE. CONNECT CIRCUITS TO PANELBOARDS SO AS TO BALANCE ACTUAL LOADS (WATTAGE) WITHIN 5% IF REQUIRED, TRANSPOSE CIRCUITS WHEN WORK IS COMPLETE TO MEET THIS REQUIREMENT.	24.5. DRIVER (BALLAST) FEATURES TO INCLUDE:	
8.2. WHERE STANDARDS OF WORK ARE SPECIFIED OR IMPLIED AND WORK DOES NOT COMPLY WITH PERFORMANCE SPECIFIED OR IMPLIED, SUCH DEFICIENCY SHALL BE CORRECTED AS DIRECTED BY CONTRACT ADMINISTRATOR. ANY SUBSEQUENT TESTING TO VERIFY PERFORMANCE SHALL BE DONE AT CONTRACTOR'S EXPENSE. ANY CHARGES FOR OWNER'S STAFF, CONTRACT ADMINISTRATOR OR OTHER PERSONNEL RELATED TO SUCH RETESTING SHALL ALSO BE AT EXPENSE OF CONTRACTOR.	13. GENERAL CONDUIT AND CONDUCTOR INSTALLATION REQUIREMENTS	17.1. PROVIDE CSA APPROVED, HEAVY DUTY, SPECIFICATION GRADE, 347V, WHITE ROCKER STYLE LOW VOLTAGE SWITCHES THAT SHALL BE COMPATIBLE WITH THE EXISTING BASE BUILDING LIGHTING CONTROL SYSTEM.	23.2. COORDINATION STUDY AND SHORT CIRCUIT CALCULATION	24.5.1. PERATE FROM 60 HZ INPUT SOURCE OF 120 OR 347 VAC WITH SUSTAINED VARIATIONS OF ± 10% (VOLTAGE AND FREQUENCY) WITH NO DAMAGE TO DRIVER;	
9. PRODUCTS	13.1. INSTALL CONDUIT AND CONDUCTORS CONCEALED TO DEGREE MADE POSSIBLE BY FINISHES AND PROVIDE INSTALLATIONS IN ACCORDANCE WITH OBC AND LOCAL GOVERNING AUTHORITIES. PLAN AND COORDINATE LOCATIONS AND ROUTING OF SERVICES, WITH TRADES PRIOR TO INSTALLATION. IN AREAS WHERE A MULTIPLICITY OF SERVICES OCCURS, PREPARE DETAIL DRAWINGS AND SUBMIT TO CONTRACT ADMINISTRATOR FOR REVIEW PRIOR TO START OF AFFECTED WORK.	17.2. PROVIDE CSA APPROVED HEAVY DUTY, PREMIUM QUALITY DUPLEX CONSTRUCTION U-GROUND, 15A-125V, 3W AND EQUAL TO HUBBELL SPECIFICATION GRADE RECEPTACLES. DEVICES SHALL BE BACK AND SIDE WIRE. PROVIDE IMPACT RESISTANT THERMOPLASTIC FACEPLATES WITH MATCHING SCREWS. CONFIRM TYPE AND FINISH OF DEVICES WITH CONTRACT ADMINISTRATOR OR/AND OWNER PRIOR TO ORDERING. THESE TYPE AND FINISH SHOULD BE SPECIFIED AND OF STANDARD MATERIALS/COLORS.	23.2.1. SUBMIT ELECTRICAL DISTRIBUTION SYSTEM COORDINATION STUDY AND SHORT CIRCUIT CALCULATIONS REPORTS PRIOR TO OR WITH PROPOSED SHOP DRAWINGS OF MAIN ELECTRICAL DISTRIBUTION EQUIPMENT. ALLOW IN SHOP DRAWING PROCESS SUFFICIENT TIME FOR CONTRACT ADMINISTRATOR TO REVIEW AND MAKE COMMENTS AND FOR CONTRACTOR AND EQUIPMENT VENDORS TO INCORPORATE CONTRACT ADMINISTRATOR COMMENTS, NECESSARY REVISIONS AND RESULTS OF REPORTS INTO EQUIPMENT SHOP DRAWINGS. DO NOT ORDER EQUIPMENT UNTIL SHOP DRAWINGS ARE ACCEPTABLE TO CONTRACT ADMINISTRATOR. TIME FOR THIS SHOP DRAWING REVIEW PROCESS WILL BE AT CONTRACT ADMINISTRATOR'S DISCRETION, BUT TYPICALLY ALLOW FOR 15 WORKING DAYS FOR INITIAL REVIEW SUBMISSION WITH ADDITIONAL 10 WORKING DAYS ADD TO ACCOMMODATE EACH RESUBMISSION.	24.5.2. OUTPUT REGULATED TO ±5% ACROSS LOAD RANGE;	
9.1. PRODUCTS LISTED AND/OR SPECIFIED ON CONTRACT DOCUMENTS ARE SELECTED TO ESTABLISH DESIGN STANDARDS. IN MOST CASES, ACCEPTABLE MANUFACTURERS ARE LISTED. BASE YOUR BID PRICE ON BASE SPECIFIED PRODUCTS OR PRODUCTS SUPPLIED FROM ACCEPTABLE MANUFACTURERS. ENSURE PRODUCTS SUPPLIED FROM MANUFACTURERS OTHER THAN BASE SPECIFIED MANUFACTURERS ARE EQUIVALENT TO SPECIFIED PRODUCTS. CHANGES TO MANUFACTURERS OF PRODUCTS MAY BE PROPOSED TO CONTRACT ADMINISTRATOR FOR ACCEPTANCE PRIOR TO CLOSING OF BIDS. LISTING IN EACH CASE CORRESPONDING CREDIT. CONTRACT ADMINISTRATOR HAS SOLE DISCRETION IN ACCEPTING ANY PROPOSED SUBSTITUTION. INCLUDE IN BID PRICE ANY ADDITIONAL COSTS FOR CHANGES TO ASSOCIATED OR ADJACENT WORK RESULTING FROM PROVISION OF PRODUCTS SUPPLIED BY MANUFACTURER OTHER THAN BASE SPECIFIED MANUFACTURER. ANY PROPOSED CHANGES INITIATED BY CONTRACTOR AFTER AWARD OF CONTRACT MAY BE CONSIDERED BY THE CONTRACT ADMINISTRATOR. AT CONTRACT ADMINISTRATOR'S DISCRETION, WITH COSTS FOR SUCH CHANGES IF APPROVED BY CONTRACT ADMINISTRATOR, AND COSTS OF SUCH REVIEW BY THE CONTRACT ADMINISTRATOR TO BE PAID FOR BY THE CONTRACTOR.	13.2. WHERE CONDUIT AND/OR CONDUCTORS ARE EXPOSED, ARRANGE SAME TO AVOID INTERFERENCE WITH OTHER WORK AND PARALLEL TO BUILDING LINES WHERE HORIZONTAL CONDUITS AND/OR CONDUCTORS ARE EXPOSED, INSTALL AS HIGH AS POSSIBLE. DO NOT INSTALL CONDUIT AND/OR CONDUCTORS WITHIN 6" (150 mm) OF "HOT" PIPES OR EQUIPMENT UNLESS CONDUIT AND/OR CONDUCTORS ARE ASSOCIATED WITH EQUIPMENT.	17.3. COVER PLATES SHALL BE METAL WITH WHITE COLOUR, BLACK FOR ALL FLOOR BOX LOCATIONS.	23.2.2. PREPARE COORDINATION STUDY AND SHORT CIRCUIT CALCULATIONS (AVAILABLE FAULT CURRENTS) OF SYSTEM. PERFORM WORK TO STANDARDS OF APPLICABLE LOCAL GOVERNING AUTHORITIES, LOCAL ELECTRICAL INSPECTION AUTHORITY AND CSA STANDARDS.	24.5.3. POWER FACTOR GREATER THAN 0.90;	
10. WARRANTY	13.3. IDENTIFY CONDUIT RUNS. (I.E.: TAG BOTH ENDS OF CONDUIT RUNS).	17.4. IDENTIFY CIRCUIT NUMBERS ON RECEPTACLE DESIGNATED LABELLING SPACES. PROVIDE PERMANENTLY LABELLED, SELF ADHESIVE, IDENTIFICATION TAPE ON OUTSIDE OF EACH DEVICE OUTLET, IDENTIFYING LOCATION FROM WHERE EACH DEVICE IS FED.	23.2.3. REVIEW AND SURVEY EXISTING SYSTEMS AND/OR OBTAIN WHERE AVAILABLE, COORDINATION STUDY OF EXISTING SYSTEMS TO USE IN DETERMINING BEST COORDINATION FOR ADDITIONAL AND REVISED EQUIPMENT WITH EXISTING SYSTEMS. WHERE EXISTING STUDIES ARE NOT AVAILABLE, SURVEY EXISTING SYSTEMS AND PREPARE ADDITIONAL COORDINATION STUDIES AS REQUIRED TO PROVIDE A FULL AND PROPER COORDINATION OF ENTIRE EXISTING, REVISED AND ADDITIONAL SYSTEMS.	24.5.4. TOTAL HARMONIC DISTORTION LESS THAN 20%;	
10.1. WARRANTY WORK TO BE IN STRICT ACCORDANCE WITH CONTRACT DOCUMENTS AND FREE FROM DEFECTS FOR 2 YEAR PERIOD FROM DATE OF WRITTEN ACCEPTANCE BY CONTRACT ADMINISTRATOR. REPAIR AND/OR REPLACE ANY SUCH DEFECTS WHICH APPEAR IN WORK WITHIN WARRANTY PERIOD, ORDINARY WEAR AND TEAR AND WILFUL DAMAGE BY, OR CARELESSNESS OF OWNER'S STAFF OR AGENTS EXCEPTED, WITHOUT ADDITIONAL EXPENSE TO OWNER. WHERE SUCH DEFECTS OCCUR, BE RESPONSIBLE FOR COSTS INCURRED IN MAKING DEFECTIVE WORK GOOD, INCLUDES REPAIR OR REPLACEMENT OF BUILDING FINISHES, OTHER MATERIALS, OR DAMAGE TO OTHER EQUIPMENT CAUSED BY SUCH DEFECTS, OR BY SUBSEQUENT REPLACEMENT OR REPAIRS.	13.4. AT NO EXTRA COST, ALLOW FOR FINAL RELOCATIONS OF DEVICES UP TO 10' (3M) TO SUIT FINAL COORDINATED DEVICE LOCATIONS, PRIOR TO INSTALLATION OF WALL COVERINGS.	18. FASTENING AND SECURING HARDWARE	23.2.4. SUBMIT COORDINATION STUDY AND SHORT CIRCUIT CALCULATIONS REPORTS AS PART OF SHOP DRAWING SUBMISSION AS REQUIRED. ENSURE THAT RESULTS AND CONTRACT ADMINISTRATOR'S REVIEW COMMENTS FROM THESE REPORTS ARE INCORPORATED INTO ELECTRICAL DISTRIBUTION EQUIPMENT SHOP DRAWINGS.	24.5.5. CLASS A SOUND RATING;	
11. RECORD DRAWINGS (AS-BUILTS)	13.5. GENERALLY, CONDUCTORS AND CONDUIT ARE SIZED ON DRAWINGS, BUT IN ABSENCE OF DIRECTION IN TYPE AND SIZING, TYPE AND SIZE REQUIRED QUANTITY IN ACCORDANCE WITH THE INTENDED APPLICATION, TO APPLICABLE OESC REQUIREMENTS. SIZES SHOWN ARE MINIMUM SIZES AND SHALL NOT BE REDUCED UNLESS APPROVED BY CONTRACT ADMINISTRATOR.	18.1. PROVIDE PROPER FASTENERS AND SIMILAR HARDWARE REQUIRED FOR CONDUIT, CONDUCTORS, AND FOR EQUIPMENT HANGER AND/OR SUPPORT MATERIAL UNLESS OTHERWISE NOTED. EXPLOSIVE POWDER ACTUATED FASTENERS WILL NOT BE PERMITTED UNLESS SPECIFIC WRITTEN APPROVAL FOR THEIR USE AND TYPE HAS BEEN OBTAINED FROM CONTRACT ADMINISTRATOR UNDER NO CIRCUMSTANCES USE CEILING SUSPENSION HANGERS OR GRIDS FOR SUSPENSION OF CONDUIT AND CONDUCTORS.	23.2.5. PROTECTIVE SYSTEM DEVICES HAVE BEEN SELECTED SUCH THAT PROTECTION IS ADEQUATE AND GOOD COORDINATION IS POSSIBLE, HOWEVER, SINCE DIFFERENCES DO EXIST BETWEEN MANUFACTURERS, SOME CHANGES IN TRIP RATINGS OR RELAY SETTINGS MAY BE NECESSARY AND ARE TO BE CARRIED OUT. OBTAIN LOCAL ELECTRICAL UTILITY INFORMATION ON THEIR PROTECTIVE DEVICES AND INCLUDE REQUIREMENTS AS NECESSARY.	24.5.6. COMPLY WITH ANSI C62.41 CATEGORY A FOR TRANSIENT PROTECTION.	
11.1. DRAWINGS FOR THIS PROJECT HAVE BEEN PREPARED ON A CAD SYSTEM. THE SOFTWARE USED IS AUTOCAD RELEASE 2010. COPIES OF DRAWINGS ON DISKS FOR USE IN PREPARING AS-BUILTS, MAY BE REQUESTED FROM CONTRACT ADMINISTRATOR.	14. CONDUIT	19. IDENTIFICATION NAMEPLATES	23.2.6. PROVIDE AND CARRY OUT FOLLOWING:	24.5.7. LAMP CURRENT CREST FACTOR NOT GREATER THAN 1.7;	
11.2. WHEN WORK BEGINS AT SITE, CLEARLY AND ACCURATELY MARK ON A BOUND SET OF WHITE PRINTS OF DRAWINGS, ON A DAILY BASIS, ALL CHANGES AND DEVIATIONS FROM ROUTING OF AND LOCATIONS OF EQUIPMENT SHOWN ON DRAWINGS, CHANGES AND DEVIATIONS INCLUDING THOSE MADE BY ADDENDA, CHANGE ORDERS, AND SITE INSTRUCTIONS, AND CHANGES AND DEVIATIONS INDICATED ON SUPPLEMENTAL DRAWINGS ISSUED WITH ADDENDA, CHANGE ORDERS, AND SITE INSTRUCTIONS. MAINTAIN "AS-BUILT" WHITE PRINTS AT SITE FOR PERIODIC INSPECTION BY CONTRACT ADMINISTRATOR THROUGHOUT DURATION OF WORK. PAY PARTICULAR ATTENTION TO ACCURATELY DIMENSIONING LOCATION OF ALL CONCEALED SERVICES TERMINATED FOR FUTURE EXTENSION, ALL BURIED WORK AND SERVICES, AND WORK CONCEALED WITHIN BUILDING IN INACCESSIBLE LOCATIONS.	14.1. PROVIDE CONDUIT FOR CONDUCTORS. INTERIOR CONDUIT TO BE EMT (THINWALL) GALVANIZED, ELECTRICAL METALLIC TUBING TO CSA C22.2 NO. 83, COMPLETE WITH FACTORY MADE BENDS WHERE SITE BENDING IS NOT POSSIBLE, AND JOINTS AND TERMINATIONS MADE WITH SET SCREW TYPE CONNECTORS WITH INSULATED THROATS, AND CONCRETE TIGHT WHERE REQUIRED.	19.1. FOR EACH PIECE OF ELECTRICAL DISTRIBUTION EQUIPMENT FROM ELECTRICAL SOURCE OF SUPPLY UP TO AND INCLUDING PANELBOARDS, PROVIDE ENGRAVED LAMACOID IDENTIFICATION NAMEPLATES SECURED TO APPARATUS WITH STAINLESS STEEL SCREWS, WORDING TO INDICATE SOURCE OF ELECTRICAL SUPPLY AND SIZE TO SUIT EQUIPMENT FOR WHICH IT IS PROVIDED. REFER TO CITY'S ASSET TAGGING STANDARD IN THE TENDER PACKAGE.	23.2.6.1. PREPARE A SET OF COORDINATION CURVES ON K.E. NO. 336E TIME CURRENT CHARACTERISTIC GRAPH PAPER;	24.5.8. FREQUENCY OF OPERATION BETWEEN 20 KHZ MINIMUM TO 60 KHZ MAXIMUM, BUT NOT BETWEEN 30 KHZ AND 42 KHZ; LAMPS SHALL OPERATE WITHOUT VISIBLE FLICKER;	
11.3. WHEN WORK ENDS AT SITE, UPDATE A COMPUTER FILE COPY OF DRAWING SET SO THAT IT REFLECTS ALL DEVIATIONS FROM ORIGINAL DRAWINGS, THIS FORMING A TRUE "AS-BUILT" DRAWING DISK SET. PROVIDE A SET OF REPRODUCIBLE MYLAR PRINTS OF DRAWINGS PRODUCED FROM TRUE "AS-BUILT" DRAWING SET. SUBMIT "AS-BUILT" DRAWING COMPACT DISKS WITH WHITE PRINTS AND CAD PRODUCED "AS-BUILT" MYLAR PRINTS TO CONTRACT	14.2. FOR SHORT BRANCH CIRCUIT CONNECTORS TO MOTORIZED EQUIPMENT AND TRANSFORMERS (MINIMUM LENGTH 18" [450 mm], MAXIMUM LENGTH 24" [600 mm] WITH 180 DEGREE LOOP WHERE POSSIBLE), PROVIDE GALVANIZED STEEL FLEXIBLE LIQUID-TIGHT METALLIC CONDUIT TO CSA C22.2 NO. 56, COMPLETE WITH IDEAL "STEEL TOUGH" LIQUID TIGHT FLEXIBLE CONDUIT CONNECTORS AT TERMINATIONS.	20. BRANCH CIRCUIT PANELBOARDS	23.2.6.2. THIS IS TO BE ACCOMPANIED BY SUPPORTING SYMMETRICAL AS WELL AS ASYMMETRICAL FAULT CURRENT CALCULATION DATA WITH TABULATIONS TO VERIFY PROTECTION OF VARIOUS ELEMENTS OF SYSTEMS UNDER MAXIMUM AND MINIMUM FAULT CONDITIONS AT VARIOUS POINTS IN SYSTEMS.	24.6. ALL LUMINAIRES SHALL HAVE A 5-YEAR FULL REPLACEMENT PARTS AND LABOUR INCLUDED WARRANTY.	
	14.3. FOR EXTERIOR LOCATIONS, PROVIDE CSA APPROVED AND LABELLED, FT-4 RATED, RIGID PLASTIC (PVC) CONDUIT COMPLETE WITH SITE MADE HEAT GUN BENDS ON CONDUIT TO 50 MM (2") DIAMETER, FACTORY MADE ELBOWS IN CONDUIT LARGER THAN 50 MM (2") DIAMETER, SOLID WELD JOINTS, FACTORY MADE EXPANSION JOINTS WHERE REQUIRED, AND TERMINATIONS MADE WITH PROPER AND SUITABLE CONNECTORS AND ADAPTORS.	20.1. EATON (OUTLER-HAMMER), "POW-R-LINE" SERIES, FACTORY ASSEMBLED DEAD FRONT PANELBOARDS AS PER SCHEDULES, MANUFACTURED TO CSA STANDARD C22.2 NO. 29 AND LOCAL GOVERNING ELECTRICAL CODE, AND DESIGNED FOR SEQUENCE PHASE CONNECTION OF BRANCH CIRCUIT BREAKERS.	23.2.6.3. PLOT TIME-CURRENT CHARACTERISTIC CURVES FOR FOLLOWING:	24.7. THOROUGHLY REVIEW CEILING TYPES, FINISHES AND CONSTRUCTION DETAILS BEFORE PLACING LUMINAIRE ORDERS AND ENSURE REQUIRED MOUNTING ASSEMBLIES, RINGS AND SIMILAR FEATURES ARE INCLUDED. INCLUDE FOR ASSEMBLY, MOUNTING AND ADJUSTING OF LUMINAIRES, COMPLETE WITH WIRING, CONNECTIONS, HANGERS, ALIGNERS, BOX COVERS AND ACCESSORIES FOR COMPLETE, SAFE, FULLY OPERATIONAL ASSEMBLY. CAREFULLY COORDINATE LUMINAIRE INSTALLATION WITH WORK OF OTHER TRADES TO ENSURE NECESSARY RECESSING DEPTHS AND MOUNTING SPACES ARE PROVIDED. INSTALL LUMINAIRES IN ACCORDANCE WITH APPLICABLE ARCHITECTURAL REFLECTED CEILING PLANS AND/OR WALL ELEVATIONS. CONFIRM LUMINAIRE LOCATIONS PRIOR TO ROUGHING-IN.	
	14.4. SUPPORT AND SECURE CONDUIT AT SPACING IN ACCORDANCE WITH CODE REQUIREMENTS BY MEANS OF GALVANIZED PIPE STRAPS, CONDUIT CLIPS, RING BOLT TYPE HANGERS, OR BY OTHER PROPER MANUFACTURED DEVICES. PROVIDE CONDUIT FITTINGS CONSTRUCTED OF SAME MATERIALS AS CONDUIT AND SUITABLE FOR APPLICATION. SQUARE AND PROPERLY REAM ENDS OF SITE CUT CONDUIT. GENERALLY, CONDUIT IS SIZED ON DRAWINGS. SIZE CONDUIT NOT SIZED ON DRAWINGS IN ACCORDANCE WITH CODE. BEND CONDUIT AT FULL CONDUIT DIAMETER WITH NO KINKING AND NO FLAKING OR CRACKING OF FINISHES.	20.2. PANELBOARDS TO BE EQUIPPED WITH ONE (1) CONTINUOUS BUS BAR PER PHASE. EACH BUS BAR TO HAVE QUANTITATIVELY PHASED BRANCH CIRCUIT CONNECTORS LIMITED TO BOLT-ON BRANCH CIRCUIT BREAKERS. BUSSING TO BE FULLY RATED AND OF PLATED COPPER CONSTRUCTION.	23.2.6.3.1. MAIN AND FEEDER PROTECTIVE DEVICES AT VOLTAGE LEVELS USED IN DISTRIBUTION SYSTEM;	24.8. SUPPORT LUMINAIRES DIRECTLY BY CEILING SLAB STRUCTURE AND NOT TO FORMED STEEL DECKING, CEILING HANGERS, DUCTWORK, PIPING, CABLE TRAYS, ETC.	
	14.5. PROVIDE COOPER B-LINE "DURA-BLOK" SERIES ROOFTOP SUPPORT SYSTEMS FOR CONDUIT RUNS ON ROOF. INSTALL ROOFTOP SUPPORT SYSTEM IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS TO SUIT TYPE OF RACEWAY AND ROOFING MATERIALS. USE PROPERLY SIZED CLAMPS TO SUITE CONDUIT SIZES. ENSURE THAT INSTALLATION AND USE OF SYSTEM DOES NOT INVALIDATE ROOF WARRANTY.	20.3. PANELBOARDS ARE TO BE COMPLETE WITH:	23.2.6.3.2. PROTECTIVE DEVICES ASSOCIATED WITH LARGEST MOTOR IN EACH MOTOR REFRIGERATION MACHINE COMPRESSORS AND LARGEST DEVICE IN EACH DISTRIBUTION PANEL;	24.9. CONNECT LUMINAIRES TO CIRCUITS AND LIGHTING CONTROL EQUIPMENT AS SHOWN.	
	15. CONDUCTORS	20.3.1. NEMA 2, BOX CONSTRUCTED OF CODE GAUGE GALVANIZED STEEL WITH REMOVABLE BUS ENDS, WIRING CUTTER SPACE ON SIDES; CONDUIT ENTRIES SEALED WATER-TIGHT;	23.2.6.3.3. MOTOR GENERATOR PROTECTIVE DEVICES, DAMAGE CURVES AND CURRENT DECREMENT CURVES.	25. EXISTING FIRE ALARM SYSTEM WORK	
	15.1. PROVIDE CONDUCTORS. WIRE SHALL BE INSTALLED IN CONDUIT. REFER TO DRAWINGS FOR SIZING OF CONDUCTORS. GENERALLY, BRANCH CIRCUIT CONDUCTOR SIZES ARE INDICATED ON DRAWINGS. SUCH SIZES ARE MINIMUM REQUIREMENTS AND MUST BE INCREASED, TO SUIT LENGTH OF RUN AND VOLTAGE DROP IN ACCORDANCE WITH SCHEDULE OBTAINED FROM CONTRACT ADMINISTRATOR. CONDUCTORS NOT SIZED ON DRAWINGS SHALL BE SIZED IN ACCORDANCE WITH CODE. PROVIDE CABLE SUPPORT SYSTEM ACCESSORIES WHICH ARE NOT SPECIFIED HEREIN OR SHOWN ON DRAWINGS BUT ARE REQUIRED FOR PROPER INSTALLATION.	20.3.2. DEAD-FRONT CONSTRUCTION TO SHIELD USER FROM ENERGIZED PARTS; ENCLOSURE CONSTRUCTED OF CODE GAUGE, HOT ZINC DIPPED GALVANIZED STEEL CONSTRUCTED IN ACCORDANCE WITH UL 50 REQUIREMENTS; TRIM FOR FLUSH OR SURFACE WALL MOUNTING AS SHOWN; FRONT PANEL TO NOT BE REMOVABLE WITH THE DOOR LOCKED;	23.2.6.4. COOPERATE WITH AND OBTAIN FROM OTHER MANUFACTURERS A LIST OF EQUIPMENT REQUIRING PROTECTIVE DEVICES TO BE USED IN DISTRIBUTION SYSTEM AND PREPARE COORDINATION CURVES AS SOON AS POSSIBLE. BE RESPONSIBLE, ALONG WITH OTHER MANUFACTURERS' EQUIPMENT CONNECTED TO DISTRIBUTION SYSTEM, TO ENSURE THAT PROPER CONTROL AND PROTECTIVE DEVICES ARE SELECTED SUCH THAT THEY COORDINATE WITH PROTECTIVE DEVICES.	25.1. WHERE SHOWN ON DRAWINGS, DISCONNECT, RELOCATE AND RECONNECT REQUIRED DEVICES. NEW WORK TO BE AN EXTENSION OF EXISTING SYSTEM. PROVIDE ADDITIONAL DEVICES WHERE SHOWN, CONDUCTORS IN CONDUIT AND END OF LINE RESISTORS. PROVIDE ULC LISTED DEVICES TO MATCH EXISTING DEVICES AND BE COMPLETELY COMPATIBLE WITH EXISTING SYSTEM. PERFORM WORK IN ACCORDANCE WITH LATEST EDITION OF CAN/ULC 5524. SEQUENCE OF OPERATION OF NEW WORK TO FUNCTION AS PER EXISTING SYSTEM. UNLESS OTHERWISE NOTED, CONNECT ADDITIONAL DEVICES TO EXISTING ZONES SERVING AREA, AS PER SYSTEM MANUFACTURER INSTRUCTIONS, TO EXISTING STANDARDS AND AS APPROVED BY LOCAL FIRE AUTHORITY. PROVIDE WIRING OF MINIMUM NO. 16 AWG IN CONDUIT AND AS PER OESC REQUIREMENTS. ALARM INITIATING CIRCUITS SHALL BE RUN IN SEPARATE CONDUITS FROM ALARM SIGNALING CIRCUITS.	
	15.2. INTERIOR CONDUCTORS TO BE "RW90" SINGLE CONDUCTOR TO CSA C22.2 NO. 38, 600/1000 VOLTS, MAXIMUM 90° (194°F) CONDUCTOR TEMPERATURE, -40° (-40°F) MINIMUM INSTALLATION TEMPERATURE, X-LINK POLYETHYLENE (XLPE) INSULATION, COLOUR CODED.	20.3.3. 200% SIZED NEUTRALS FOR PANELS EQUIPPED WITH SPD UNITS AND FOR PANELS AS SCHEDULED;	23.2.6.5. IT IS RESPONSIBILITY OF EQUIPMENT MANUFACTURERS TO EXAMINE PLANS AND SPECIFICATIONS TO ENSURE THAT RELAYS AND	25.2. ADDITIONAL DEVICES SHALL MATCH BASE BUILDING STANDARDS. INCLUDE REQUIRED ACCESSORIES FOR PROPER OPERATION AND INSTALLATION. RE-PROGRAM SYSTEM TO ACCOMMODATE ADDITIONS AND MODIFICATIONS. RE-BURN SOFTWARE AS REQUIRED BY LOCAL FIRE AUTHORITY. MODIFY ANNUNCIATORS AS REQUIRED TO INCORPORATE ALL REVISIONS AND ADDITIONS. AUDIBLE DEVICES SHALL BE PROVIDED AND ADJUSTED TO SOUND AT LEVELS AS PER LOCAL FIRE AUTHORITY REQUIREMENTS. PROVIDE ADDITIONAL DEVICES AS REQUIRED TO ACHIEVE SOUND LEVEL STANDARDS.	
	15.3. EXTERIOR CONDUCTORS SHALL BE "RW90" CSA CERTIFIED, SINGLE COPPER CONDUCTOR TO CSA C22.2 NO 38, MAXIMUM 90° (194°F) CONDUCTOR TEMPERATURE, -40° (-40°F) MINIMUM INSTALLATION TEMPERATURE, EXTRA THICKNESS X-LINK POLYETHYLENE (XLPE) INSULATION SUITABLE FOR WET AND BURIED INSTALLATIONS, COLOUR CODED.	20.3.6. DRIP SHIELD FOR SURFACE MOUNTED PANELBOARDS;		25.3. DURING WORK TO THE EXISTING FIRE ALARM SYSTEM THE TIME AND DURATION OF INTERRUPTION SHALL BE APPROVED BY THE OWNER AND ONLY 1 ZONE SHALL BE INTERRUPTED AT ANY 1 TIME. IN ALL AREAS WHERE THE RENOVATION WORK REQUIRES SHUTDOWN OF ANY PART OF THE FIRE ALARM PROTECTION SYSTEM, PROVIDE MANUAL FIRE ALARM PROTECTION (FIRE WARDEN) BY MEANS OF SUPERVISING THE AREA AS APPROVED BY GOVERNING AUTHORITY. AT NO TIME SHALL THE FIRE ALARM SYSTEM OR ANY 1 ZONE BE LEFT INOPERATIVE. PERMITS PROVIDE ALL REQUIRED BYPASS WIRING AND TEMPORARY WIRING AS MAY BE REQUIRED TO MAINTAIN ALL PARTS OF THE FIRE ALARM SYSTEM OPERATIVE DURING CONSTRUCTION AND ALTERATIONS.	
	15.4. DO NOT USE "BX" TYPE CABLING. ALL CIRCUITS SHALL BE CONDUCTORS IN CONDUIT.	20.3.7. COPPER NEUTRAL BARS;		25.4. COVER EXISTING DETECTORS TO PROTECT FROM DEMOLITION/CONSTRUCTION DUST. REMOVE COVERS WHEN ALTERNATIVE FIRE ALARM PROTECTION IN AREA IS NOT AVAILABLE OVERNIGHT.	
	15.5. CONDUCTORS UP TO AND INCLUDING NO. 10 AWG SHALL BE SOLID. CONDUCTORS IN SIZES LARGER THAN NO. 10 AWG SHALL BE STRANDED. PROVIDE CONDUCTORS CONSTRUCTED OF 98% CONDUCTIVE COPPER AND APPROVED FOR 600V. PROVIDE IDI ELECTRIC "IDEAL" NO. 451, NO. 452 AND NO. 453 "WING-NUT" CSA CERTIFIED 600V RATED PRESSURE TUBE CONNECTORS.	20.3.8. 200% SIZED NEUTRALS FOR PANELS EQUIPPED WITH SPD UNITS AND FOR PANELS AS SCHEDULED;		25.5. WHEN FIRE ALARM SYSTEM WORK IS COMPLETE AND READY FOR ACCEPTANCE, PROVIDE AND ARRANGE FOR INDEPENDENT TESTING COMPANY TO INSPECT, TEST, VERIFY AND CERTIFY THE WORK AND EQUIPMENT, INCLUDING INITIATING DEVICES, SIGNALING DEVICES, CONTROL DEVICES AND WIRING. IN ADDITION, WHERE OWNERS EXISTING FIRE ALARM MAINTENANCE CONTRACTOR OR EXISTING SYSTEM MANUFACTURER HAS NOT PERFORMED THE INSTALLATION WORK OF THIS CONTRACT, SUCH COMPANIES MAY ALSO BE UTILIZED FOR TESTING AND	
	15.6. WHEN PULLING WIRES INTO CONDUIT, USE IDI ELECTRIC "IDEAL YELLOW 77" LUBRICANT. ENSURE WIRES ARE KEPT STRAIGHT AND ARE NOT TWISTED OR ABRASD.	20.3.11. PHASE-TO-PHASE BY HIGH DIELECTRIC STRENGTH THERMOPLASTIC; FILLER PLATES COVERING UNUSED MOUNTING SPACE;			
	15.7. DO NOT USE CONDUCTORS SMALLER THAN NO. 12 AWG IN SYSTEMS OVER 30	20.3.12. NON-AUTOMATIC AND AUTOMATIC MAIN BREAKER TO FUNCTION AS AN ISOLATING SWITCH, WHERE SHOWN AND AS REQUIRED;			
		20.4. PANELS, DOORS AND TRIM ARE TO BE FACTORY PAINTED WITH ANSI GREY ENAMEL FINISH. RECESSED BACKBOXES (TUBS) NEED NOT BE FINISHED PAINTED.			
		20.5. PROVIDE FACTORY ASSEMBLED BRANCH CIRCUIT PANELBOARDS AND INSTALL INTO LOCATIONS AND CONNECT COMPLETE. ENSURE ADEQUATE CLEARANCE IS PROVIDED AS PER CODE REQUIREMENTS AND AS REQUIRED FOR ACCESS FOR OPERATION AND MAINTENANCE. LOAD PANELS WITH BREAKERS AS SCHEDULED. SUPPORT CABINETS AND ENCLOSURES INDEPENDENT OF CONNECTING CONDUIT, AND ACCURATELY INSTALL WITH REFERENCE TO WALL FINISHES.			

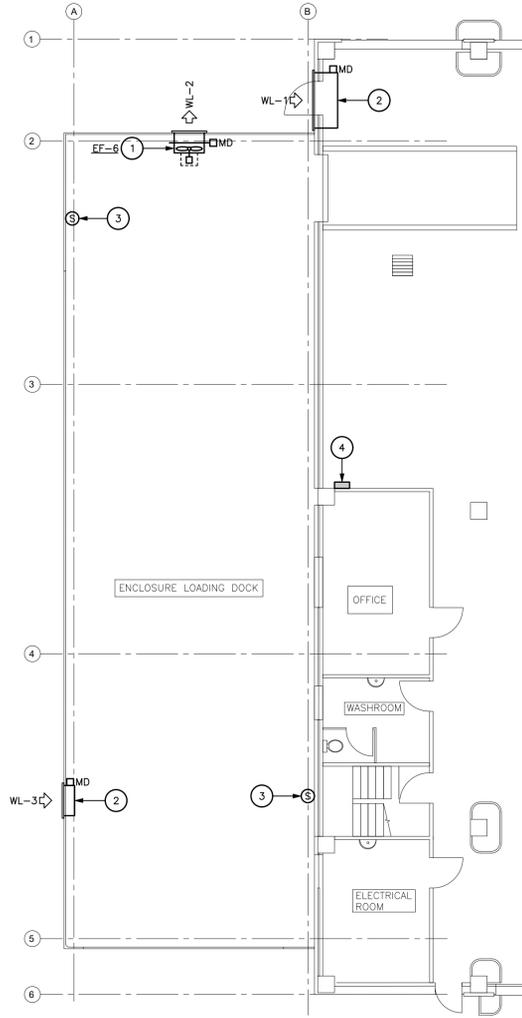
<p>exp Services Inc. t: +1 905.793.9800 f: +1 905.793.0641 1595 clark Boulevard Brampton, ON L6T 4V1 Canada www.exp.com</p>			<p>SOLID WASTE MANAGEMENT SERVICES</p> <p>MATT KELHER GENERAL MANAGER SOLID WASTE MANAGEMENT SERVICES</p> <p>MATTHEW CASCHERA DIRECTOR INFRASTRUCTURE AND RESOURCE MANAGEMENT</p>			<p>COMMISSIONERS TRANSFER STATION</p> <p>MRF IMPROVEMENTS</p> <p>400 COMMISSIONER STREET, TORONTO, ONTARIO M4M 3K2</p>		
<p>DESIGN: CC DRAFTING: CC CHECK: DL CONTRACT No. 23SWM-IRM-026CDU</p>			<p>SCALE: AS NOTED DRAWING NUMBER: 1601-2023-3-20 E4</p>			<p>DATE: JULY 18, 2023</p>		
<p>No. DATE REVISIONS INITIAL SIGNED</p>			<p>4 NOV 20/23 100% DESIGN SUBMISSION CC CC</p>			<p>3 OCT 28/23 REISSUED 70% DESIGN SUBMISSION CC CC</p>		
<p>2 JULY 18/23 70% DESIGN SUBMISSION CC CC</p>			<p>1 NOV 20/23 100% DESIGN SUBMISSION CC CC</p>			<p>1 OCT 28/23 REISSUED 70% DESIGN SUBMISSION CC CC</p>		



PART GROUND FLOOR PLAN - PLUMBING
 SCALE - 1:100
 BAR SCALE - 1:100

DRAWING NOTES

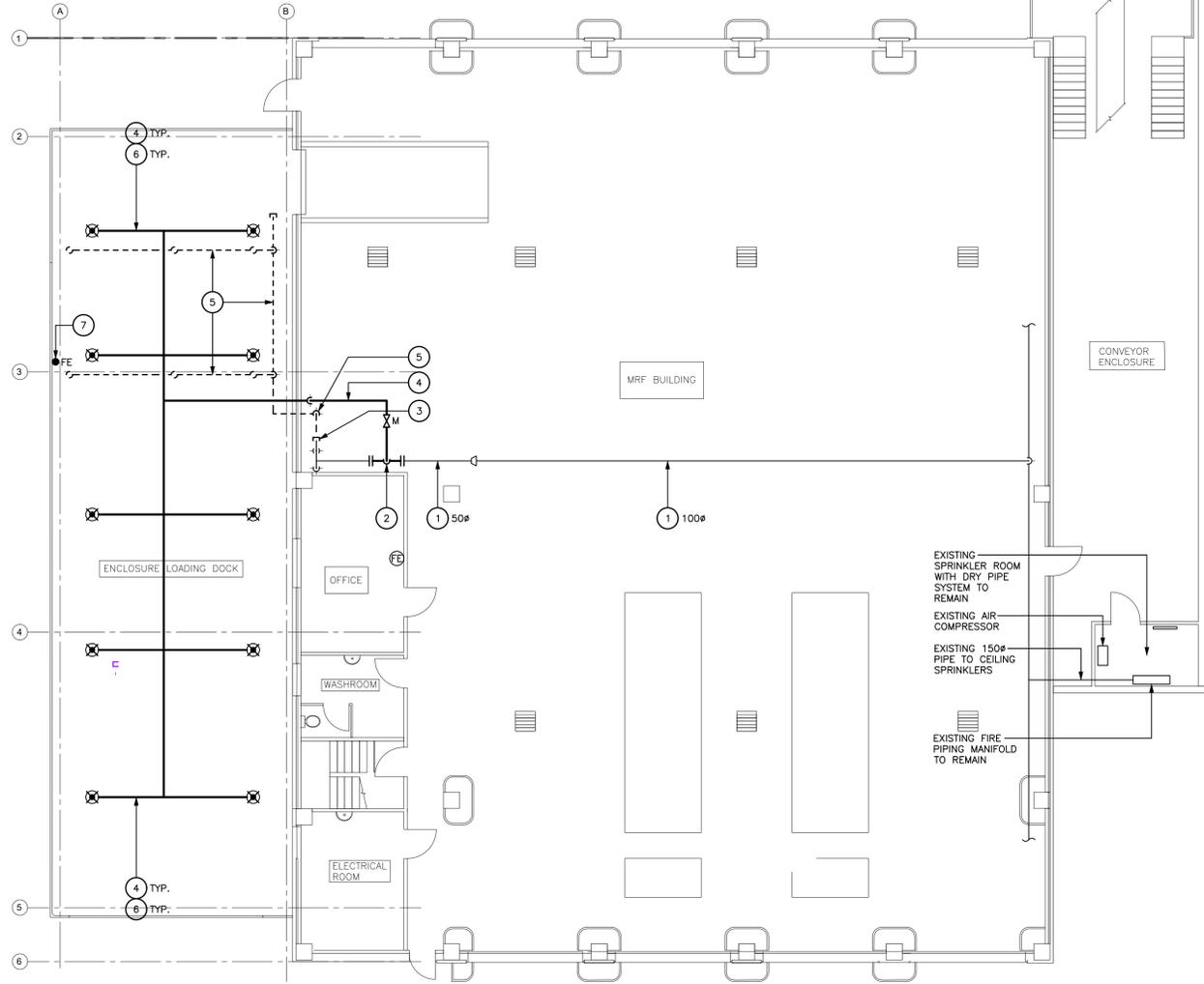
- EXISTING BURIED STORM SEWER TO REMAIN.
- EXISTING ROOF GUTTER AND ASSOCIATED RAINWATER LEADERS TO BE REMOVED FROM SITE.
- EXISTING STORM WATER PIPE RISER TO REMAIN AND BE USED IN THE NEW ROOF GUTTER SYSTEM.
- SUPPLY AND INSTALL NEW STORM WATER PIPE RISER TO CONNECT TO NEW ROOF GUTTER SYSTEM AND EXISTING BURIED STORM SEWER.
- SUPPLY AND INSTALL NEW 200mm WIDE ALUMINUM ROOF GUTTER, SECURED TO ROOF FACIA. COLOUR TO MATCH WALL CLADDING.
- SUPPLY AND INSTALL NEW 100mm x 100mm ALUMINUM RAINWATER LEADER BY GENERAL CONTRACTOR. REFER TO ARCHITECTURAL DRAWING A4



PART GROUND FLOOR PLAN - VENTILATION
 SCALE - 1:100
 BAR SCALE - 1:100

DRAWING NOTES

- SUPPLY AND INSTALL NEW EXHAUST AIR LOUVRE AT HIGH LEVEL. LOUVRE TO BE COMPLETE WITH 900mm x 900mm x 600mm DEEP SHEET METAL EXHAUST PLENUM COMPLETE WITH MOTORIZED DAMPER AND 600mm x 300mm ACCESS DOOR. FLOOR OF PLENUM TO SLOPE DOWN TO LOUVRE. PLENUM TO BE COMPLETE WITH ACOUSTIC DUCT LINING. UNDERSIDE OF PLENUM TO BE 4300mm ABOVE FINISHED LOADING DOCK FLOOR.
- SUPPLY AND INSTALL NEW INTAKE SUPPLY AIR MOTORIZED LOUVRE AT HIGH LEVEL. UNDERSIDE OF LOUVRE TO BE 4800mm ABOVE FINISHED GRADE.
- CO/NO₂ SENSOR TO BE MOUNTED EXPOSED ON WALL.
- CO/NO₂ GAS DETECTOR PANEL TO BE MOUNTED ON WALL. UNDERSIDE OF PANEL TO BE APPROXIMATELY 1500mm ABOVE FINISHED FLOOR.



PART GROUND FLOOR PLAN - SPRINKLERS
 SCALE - 1:100
 BAR SCALE - 1:100

DRAWING NOTES

- EXISTING SPRINKLER PIPE TO REMAIN.
- CONNECT NEW SPRINKLER PIPE TO EXISTING SPRINKLER PIPE SYSTEM.
- SUPPLY AND INSTALL NEW CAPPED END CONNECTION.
- NEW SPRINKLER PIPE TO RUN EXPOSED AT HIGH LEVEL HUNG FROM EXISTING ROOF STRUCTURE.
- PORTION OF EXISTING SPRINKLER PIPE TO BE REMOVED FROM SITE.
- NEW SPRINKLER PIPE TO BE GALVANIZED SCHEDULE 40 STEEL PIPE.
- NEW FIRE EXTINGUISHER TO BE MOUNTED EXPOSED ON WALL COMPLETE WITH WALL BRACKET.

Add or relocate sprinkler heads to provide sufficient coverage per NFPA-13

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No.	DATE	REVISIONS	INITIAL	SIGNED
5				MWW
4	JAN 10/24	ISSUED FOR FINAL APPROVAL		MWW
3	NOV 20/23	100% DESIGN SUBMISSION		MWW
2	OCT 26/23	REISSUED 70% DESIGN SUBMISSION		MWW
1	JULY 18/23	70% DESIGN SUBMISSION		MWW



SOLID WASTE MANAGEMENT SERVICES

MATT KELIHER
 GENERAL MANAGER
 SOLID WASTE MANAGEMENT SERVICES

MATTHEW CASCHERA
 DIRECTOR
 INFRASTRUCTURE AND
 RESOURCE MANAGEMENT

COMMISSIONERS TRANSFER STATION

MRF BUILDING UPGRADES
 400 COMMISSIONER STREET, TORONTO, ONTARIO M4M 3K2

PART GROUND FLOOR PLANS - PLUMBING, VENTILATION AND SPRINKLERS							
DESIGN:	EK	DRAFTING:	DGC	CHECK:	MWW	CONTRACT No.	23SWM-IRM-026CDU
SCALE:	AS NOTED				DRAWING NUMBER:	1601-2023-3-21 M1	
DATE:	JULY 18, 2023				RECEIVED 13/06/2024		

JOB NAME: COMMISSIONERS TS MRF BUILDING UPGRADE JOB No. BRM-22028009-A0
 MECHANICAL SCHEDULE - FANS

FAN No.	SYSTEM AND FAN LABEL	SPEC TYPE	MODEL	SIZE	CFM ESP "W.G.	RPM ARR	HP VAC/Ø	REMARKS
EF-1	RESIDUE PROCESS BUILDING EXHAUST	ADF	COOK ACRUB	150 RH3B	950 0.50	1300	1/4 120/1	INTERCONNECT TO WL-1
EF-2	RESIDUE PROCESS BUILDING EXHAUST	ADF	COOK ACRUB	150 RH3B	950 0.50	1300	1/4 120/1	INTERCONNECT TO WL-1
EF-3	RESIDUE PROCESS BUILDING EXHAUST	ADF	COOK ACRUB	150 RH3B	950 0.50	1300	1/4 120/1	INTERCONNECT TO WL-1
EF-4	RESIDUE PROCESS BUILDING EXHAUST	ADF	COOK ACRUB	150 R4B	1900 0.50	1200	1/3 120/1	INTERCONNECT TO WL-1
EF-5	RESIDUE PROCESS BUILDING EXHAUST	ADF	COOK ACRUB	150 R4B	1900 0.50	1200	1/3 120/1	INTERCONNECT TO WL-1
EF-6	ENCLOSURE LOADING DOCK	PF	COOK AWD	20 A17D	1700 0.50	1700	1/4 120/1	INTERCONNECT TO WL-2

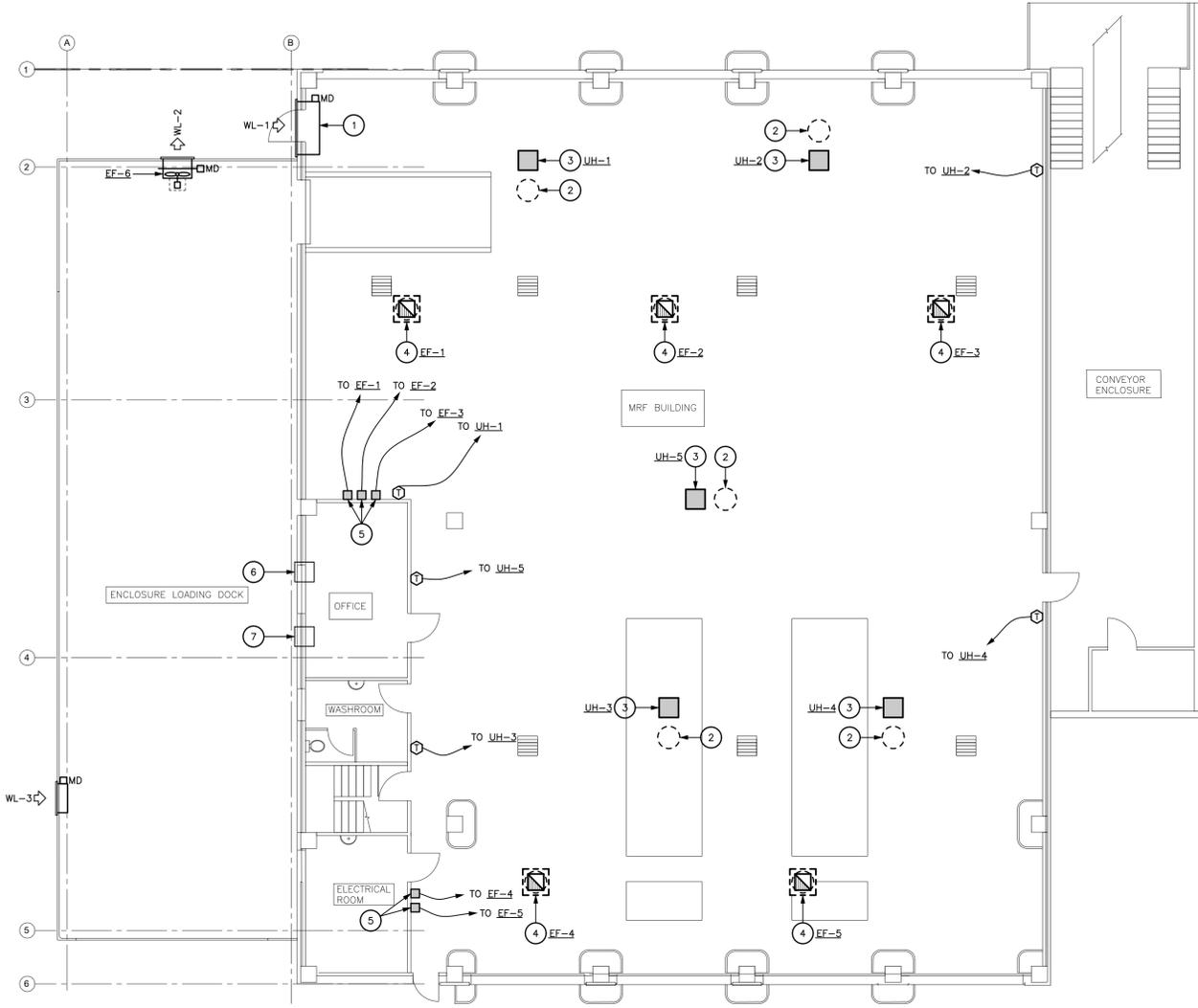
NOTE 1. USE HIGH EFFICIENCY MOTORS. SEE SECTION 15010.

JOB NAME: COMMISSIONERS TS MRF BUILDING UPGRADE JOB No. BRM-22028009-A0
 MECHANICAL SCHEDULE - ELECTRIC UNIT HEATER SCHEDULE

DWG. DESIGNATION	MODEL	DUCT SIZE	CFM	KW	VOLT/Ø	STAGES	REMARKS
UH-1	CHROMALOX HVH	-	1500	20	575/3	-	VERTICAL THROW. HUNG FROM STRUCTURE.
UH-2	CHROMALOX HVH	-	1500	20	575/3	-	VERTICAL THROW. HUNG FROM STRUCTURE.
UH-3	CHROMALOX HVH	-	1500	20	575/3	-	VERTICAL THROW. HUNG FROM STRUCTURE.
UH-4	CHROMALOX HVH	-	850	7.5	575/3	-	VERTICAL THROW. HUNG FROM STRUCTURE.
UH-5	CHROMALOX HVH	-	850	7.5	575/3	-	VERTICAL THROW. HUNG FROM STRUCTURE.

JOB NAME: COMMISSIONERS TS MRF BUILDING UPGRADE JOB No. BRM-22028009-A0
 MECHANICAL SCHEDULE - LOUVRES

DWG. DESIGNATION	MODEL NO.	WIDTH(MM)	SIZE X HEIGHT(MM)	REMARKS
WL-1	CS 4830	1800	1800 x 1200	COLOUR TO MATCH WALL CLADDING
WL-2	CS A4097	900	900 x 900	COLOUR TO MATCH WALL CLADDING
WL-3	CS 4830	900	900 x 900	COLOUR TO MATCH WALL CLADDING



PART GROUND FLOOR PLAN - HEATING AND VENTILATION
 SCALE - 1:100
 BAR SCALE - 1:100

- DRAWING NOTES**
- SUPPLY AND INSTALL NEW RELIEF AIR MOTORIZED LOUVRE IN EXISTING WALL ABOVE EXISTING DOOR. TOP OF LOUVRE TO MATCH LOUVRE WL-2 SERVING LOADING DOCK.
 - EXISTING ELECTRIC UNIT HEATER COMPLETE WITH ACCESSORIES TO BE REMOVED FROM SITE.
 - SUPPLY AND INSTALL NEW ELECTRIC UNIT HEATER AT HIGH LEVEL HUNG FROM EXISTING ROOF STRUCTURE. NEW HEATER TO BE IN SAME LOCATION AS THE EXISTING HEATER BEING REMOVED FROM THE SITE. SUPPLY AND INSTALL ADDITIONAL STEEL MEMBERS AS REQUIRED FOR NEW INSTALLATION.
 - REMOVE EXISTING OUTDOOR ROOF MOUNTED EXHAUST FAN AND ALL ACCESSORIES AND REPLACE WITH NEW FAN TO MATCH EXISTING CAPACITY AND DIMENSIONS. FIELD VERIFY NEW OUTDOOR ROOF EXHAUST FAN WILL FIT ONTO EXISTING CURB AND ROOF OPENING.
 - EXISTING EXHAUST FAN STARTER TO BE REPLACED WITH NEW MANUAL STARTER. SEE ELECTRICAL DRAWINGS.
 - EXISTING WINDOW AIR CONDITIONING UNIT AT LOW LEVEL TO REMAIN.
 - EXISTING WALL AIR CONDITIONING UNIT AT HIGH LEVEL TO REMAIN.

BRM-22028009-A000 EXECUTIVE DRAWINGS, MECHANICAL SCHEDULES, HEATING AND VENTILATION, MECHANICAL SCHEDULES, DWG. M2

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No.	DATE	REVISIONS	INITIAL	SIGNED	

Toronto		SOLID WASTE MANAGEMENT SERVICES	
		MATT KELIHER GENERAL MANAGER SOLID WASTE MANAGEMENT SERVICES	
		MATTHEW CASCHERA DIRECTOR INFRASTRUCTURE AND RESOURCE MANAGEMENT	

COMMISSIONERS TRANSFER STATION			
MRF BUILDING UPGRADES			
400 COMMISSIONER STREET, TORONTO, ONTARIO M4M 3K2			
PART GROUND FLOOR PLAN - HEATING AND VENTILATION, MECHANICAL SCHEDULES			
DESIGN:	EK	DRAFTING:	DGC
SCALE:	AS NOTED		CHECK:
DATE:	JULY 18, 2023		MWW
DRAWING NUMBER:		CONTRACT No. 23SWM-IRM-026CDU	
1601-2023-3-22		M2	

MECHANICAL SPECIFICATIONS

- GENERAL CONDITIONS**
 - THE WORK SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE ONTARIO BUILDING CODE, THE ONTARIO WATER RESOURCES ACT, THE MINISTRY OF LABOUR, THE CITY OF TORONTO, THE ONTARIO GAS CODE, AND ALL CODES HAVING JURISDICTION, WHICH ARE TO BE CONSIDERED AN INTEGRAL PART OF THESE SPECIFICATIONS.
 - SCOPE OF WORK: ALL LABOUR, MATERIALS, EQUIPMENT, FEES, PERMITS AND CHARGES TO PERFORM THE OPERATIONS FOR THE COMPLETE INSTALLATION OF THE PLUMBING, GAS HEATING, VENTILATING AND SHEETMETAL WORK AND SPRINKLERS (DRY SYSTEM), AS INDICATED ON THE DRAWINGS.
 - SLEEVES, CUTTING & PATCHING:**
 - INSTALL SLEEVES AND FRAMES FOR PIPING, DUCTS, FANS, AND SIMILAR EQUIPMENT TO BE BUILT INTO THE BUILDING AS THE CONSTRUCTION PROGRESSES. IF THESE ARE NOT INSTALLED AT THE TIME OF CONSTRUCTION, THE COST OF CUTTING AND PATCHING AT A LATER DATE, WILL BE AT THE EXPENSE OF THIS CONTRACTOR.
 - THE CONTRACTOR IS RESPONSIBLE FOR THE CUTTING AND PATCHING OF ALL HOLES AND OPENINGS UP TO AND INCLUDING 6" (150 mm) DIAMETER.
 - THE CONTRACTOR IS TO LOCATE THE EXACT POSITIONS AND DIMENSIONS OF LARGER OPENINGS FOR CUTTING.
 - EXTENT OF THE WORK:**
 - THE CONTRACT INCLUDES ALL DRAINAGE LINES, PRESSURE PIPING, NATURAL GAS SYSTEMS, AND SPRINKLERS AS SHOWN AND AS NOTED IN DRAWINGS.
 - THE SHEET METAL WORK INCLUDES ALL SHEETMETAL SYSTEMS, FANS, CONTROLS, LOUVRES, DAMPERS AND ASSOCIATED VENTS AND FLASHINGS.
 - BALANCING, IDENTIFICATION & START-UP**
 - IDENTIFICATION IS TO BE CARRIED OUT BY THE RESPECTIVE TRADE WITH NAME TAGS IDENTIFYING THE USE OR SERVICE OF ALL MAIN VALVES.
 - CLEAN ALL EQUIPMENT AND OTHER INSTALLATIONS.
 - PROVIDE MAINTENANCE INSTRUCTIONS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 - PROVIDE TWO (2) BOUND COPIES OF THE AIR BALANCING REPORT TO THE CONTRACT ADMINISTRATOR.
 - AIR BALANCING SHALL BE DONE BY A PROFESSIONAL TESTING AND BALANCING FIRM. THE AIR BALANCING REPORT SHALL SHOW THE QUANTITIES, VELOCITIES AND AREA OF EACH OUTLET, TYPE AND MODEL NUMBER OF FANS AND MOTORS INSTALLED, ACTUAL AIR DELIVERED BY THE FAN WITH TOTAL STATIC PRESSURE AND VOLTAGE DRAWN BY THE MOTORS. ADJUST AND RETEST TO THE SYSTEMS TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.
 - SUBMIT TWO (2) COPIES OF MANUFACTURER MAINTENANCE MANUALS TO THE OWNER FOR ALL NEW EQUIPMENT.
 - VISIT JOB SITE: THE CONTRACTOR SHALL VISIT THE JOB SITE AND EXAMINE ALL EXISTING CONDITIONS WHICH AFFECT THE WORK.
 - CO-ORDINATION: CO-ORDINATE WITH OTHER TRADES REGARDING THE LOCATION OF EQUIPMENT, CONTROL DEVICES, PIPING, AND DUCTWORK. THIS INCLUDES SUPPLYING WIRING DIAGRAMS TO THE ELECTRICAL TRADE FOR CONNECTIONS.
 - GUARANTEE:**
 - GUARANTEE IN WRITING FOR THE MATERIAL AND WORKMANSHIP INCLUDING THE MANUFACTURER'S GUARANTEE FOR THE PERIOD OF TWO (2) YEAR FROM THE DATE OF ACCEPTANCE.
 - CERTIFY IN WRITING FOR ALL WORK COMPLETED IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS. SUBMIT AS-BUILT DRAWINGS SHOWING REVISIONS MADE.
 - CO-OPERATION OF TRADES:** THE PRIME MECHANICAL CONTRACTOR IS TO CO-OPERATE WITH ALL OTHER TRADES ON THE JOB SO THAT ALL EQUIPMENT CAN BE SATISFACTORILY INSTALLED, AND SO THAT NO DELAY IS CAUSED TO ANY OTHER TRADE. ANY REWORKING OF INSTALLED EQUIPMENT, PIPING, OR DUCTING TO ACCOMMODATE THE INSTALLATION OF OTHER TRADES WORK SHALL BE PERFORMED AT NO EXTRA COST.
 - WARRANTY:**
 - THE CONTRACTOR TO WARRANT PRODUCTS AND EXECUTION OF WORK UNDER THIS DIVISION AGAINST DEFECTS OF MATERIAL AND WORKMANSHIP FOR TWO (2) FULL YEARS AFTER DATE OF SUBSTANTIAL PERFORMANCE.
 - REPAIR DEFECTS THAT ARE DISCOVERED OR DEVELOP DURING THIS PERIOD AND MAKE GOOD ANY RESULTING DAMAGE TO EQUIPMENT OR BUILDING. REPAIRS TO BE CARRIED OUT AT NO COST TO OWNER.
 - PROVIDE EXTENDED WARRANTIES WHERE INDICATED IN OTHER SECTIONS OF THIS DIVISION. EXTENDED WARRANTIES TO COMMENCE ON TERMINATION OF THE STANDARD TWO YEAR WARRANTY AND TO BE AN EXTENSION OF THESE SAME PROVISIONS.
 - EXISTING SERVICES**
 - WHERE WORK INVOLVES BREAKING INTO OR CONNECTING EXISTING SERVICES, CARRY OUT WORK AT TIMES DIRECTED BY GOVERNING AUTHORITIES, WITH MINIMUM OF DISTURBANCE TO THE PREMISES AND ITS OPERATION.
 - BEFORE COMMENCING WORK, ESTABLISH LOCATION AND EXTENT OF SERVICE LINES IN AREA OF WORK AND NOTIFY CONSULTANT OF FINDING.
 - WHERE UNKNOWN SERVICES ARE ENCOUNTERED, IMMEDIATELY ADVISE CONSULTANT AND CONFIRM FINDINGS IN WRITING.
 - REMOVE ABANDONED SERVICE LINES. CAP OR OTHERWISE SEAL LINES AT CUT-OFF POINTS, IN MANNER APPROVED BY AUTHORITIES HAVING JURISDICTION OVER SERVICE.
 - RECORD LOCATIONS OF MAINTAINED, RE-ROUTED AND ABANDONED SERVICE LINES. THE CONTRACTOR SHALL PROVIDE WITH ALL NECESSARY DIMENSIONS REQUIRED TO ACCURATELY LOCATE THOSE SERVICES.
 - WHERE THE LOCATION OF ANY OF THESE UTILITIES HAS BEEN SHOWN ON THE PLANS, SUCH INFORMATION IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY LOCATIONS AND ELEVATIONS, IMMEDIATELY AFTER THEY MOVE ON THE SITE. IF FOR ANY REASON THE INFORMATION OBTAINED NECESSITATES CHANGES IN PROCEDURES OR DESIGN, THEY MUST ADVISE THE CONSULTANT AT ONCE. IF THIS VERIFICATION OF EXISTING CONDITIONS IS NOT DONE AT THE OUTSET AND ANY PROBLEMS ARISE, THE RESPONSIBILITY FOR SAME IS ENTIRELY THIS CONTRACTOR'S.
 - WHERE IT IS NECESSARY TO TEMPORARILY SHUT DOWN EQUIPMENT OR SERVICES SERVING ESSENTIAL AREAS, THIS CONTRACTOR SHALL INCLUDE PREMIUM COSTS TO ENSURE THE WORK FORCE IS SCHEDULED FOR "ROUND THE CLOCK" OPERATION IN ORDER TO MINIMIZE DISRUPTION AND EQUIPMENT DOWNTIME. NO ADDITIONAL COST SHALL BE PAID FOR THIS
 - PLACING IN OPERATION**
 - PRIOR TO ACCEPTANCE AND ON COMPLETION OF WORK MAKE A COMPLETE OPERATIONAL TEST OF SYSTEMS AND WORK CARRIED OUT BY THIS CONTRACTOR.
 - BALANCING WILL BE CARRIED OUT AND SYSTEMS SET TO DESIGNED VALUES, AND A REPORT OF FINAL ACTUAL PERFORMANCE OF ALL EQUIPMENT AND BALANCING FOR FINAL SPACE CONDITIONS ON COOLING AND HEATING TO BE CARRIED OUT WHEN RELATIVE CLIMATIC CONDITIONS EXIST.
 - DURING THE TWO (2) YEAR GUARANTEE PERIOD, MAINTAIN ALL EQUIPMENT INSTALLED AS PART OF THIS DIVISION. THIS AGREEMENT SHALL BE PART OF THE WRITTEN GUARANTEE. THIS WORK SHALL BE CARRIED OUT IN THE PRESENCE OF THE BUILDING CUSTODIAN, AND A LETTER SHALL BE SENT TO THE CONSULTANT STATING THAT THIS WORK WAS CARRIED OUT. FOUR (4) MAINTENANCE INSPECTIONS MUST BE CARRIED OUT BY THE CONTRACTOR DURING THIS TWO (2) YEAR PERIOD (SIX MONTHS, TWELVE MONTH, EIGHTEEN MONTHS, AND TWENTY FOUR MONTHS AFTER SUBSTANTIAL COMPLETION LETTER ISSUED). SUBMIT WRITTEN REPORT TO OWNER AND CONSULTANT AFTER EACH INSPECTION.
 - CLEAN-UP:** AVOID ACCUMULATION OF SCRAP AND DEBRIS RESULTING FROM THE WORKS AND AT ALL TIMES HELP MAINTAIN THE WORKING SITE IN A NEAT AND CLEAN CONDITION. ON COMPLETION OF THE CONTRACT, REMOVE ALL SCRAP AND DEBRIS RESULTING FROM THE WORKS AND CLEAN ALL EQUIPMENT INSTALLED.
 - START-UP SERVICE:**
 - PROVIDE SERVICES OF A QUALIFIED TECHNICIAN RESPONSIBLE FOR ASSISTING THE OWNER'S STAFF IN BECOMING FAMILIAR WITH OPERATING OF SYSTEMS, CO-ORDINATING WORK OF CONTROL MANUFACTURER, ACTING ON ANY COMPLAINTS FROM THE OWNERS, OR CONSULTANT REGARDING OPERATION OF ANY OF THE SYSTEMS, INSTALLED UNDER THIS DIVISION.
 - PROVIDE START-UP OF MAJOR PIECES OF MECHANICAL EQUIPMENT OR SYSTEMS, BY REPRESENTATIVE OF EQUIPMENT MANUFACTURER OR PERSON QUALIFIED AND RECOGNIZED BY THE EQUIPMENT MANUFACTURER.
 - SUBMIT START-UP REPORTS ON ALL MECHANICAL EQUIPMENT AND SYSTEMS VERIFYING CORRECT INSTALLATION AND OPERATING PARAMETERS IN ALL MODES OF OPERATION. INCLUDE SERVICE REPORTS IN OPERATING AND MAINTENANCE MANUALS.
 - NOTIFY CONSULTANT PRIOR TO START-UP ON ANY PIECE OF MECHANICAL EQUIPMENT OR SYSTEM. DEMONSTRATE OPERATION OF ALL OR ANY MECHANICAL SYSTEM OR EQUIPMENT AS DIRECTED BY THE CONSULTANT IN HIS PRESENCE.
 - TSSA INSPECTION:** THE CONTRACTOR SHALL PAY ALL FEES AND SITE VISITS IN CONNECTION WITH TSSA INSPECTION FOR ALL SERVICES.

- FIRE STOPPING:**
 - THE CONTRACTOR IS RESPONSIBLE FOR ALL FIRE STOPPING RELATED TO THE MECHANICAL WORK INCLUDING, BUT NOT LIMITED TO, THE NEW DUCTWORK, NEW PIPING AND CONTROL WIRING.
 - PROVIDE MATERIALS AND SYSTEMS CAPABLE OF MAINTAINING EFFECTIVE BARRIER AGAINST FLAME, SMOKE AND GASES.
 - COMPLY WITH THE REQUIREMENTS OF CAN4-S115-M35, AND DO NOT EXCEED OPENING SIZED FOR WHICH THEY HAVE BEEN TESTED.
 - SYSTEMS TO HAVE AN FIRE-RESISTANCE RATING NOT LESS THAN THE FIRE PROTECTION RATING REQUIRED FOR CLOSURES IN A FIRE SEPARATION.
 - THE FIRE STOPPING MATERIALS ARE NOT TO SHRINK, SLUMP OR SAG AND TO BE FREE OF ASBESTOS, HALOGENS AND VOLATILE SOLVENTS.
 - FIRESTOPPING MATERIALS ARE TO CONSIST OF A COMPONENT SEALANT APPLIED WITH A CONVENTIONAL CAULKING GUN AND TROWEL.
 - FIRE STOP MATERIALS ARE TO BE CAPABLE OF RECEIVING FINISH MATERIALS IN THOSE AREAS WHICH ARE EXPOSED AND SCHEDULED TO RECEIVE FINISHES.
 - ACCEPTABLE PRODUCTS:**
 - PYRESLEEVE INDUSTRIES INC.
 - GENERAL ELECTRIC PENSIL FIRESTOP SYSTEMS
 - INTERNATIONAL PROTECTIVE COATINGS CORP.
 - RECTORSAL CORPORATION (METACALK)
 - 3M FIRE PROTECTION SYSTEMS
- SHOP DRAWINGS:**
 - SUBMIT ELECTRONIC COPIES OF SHOP DRAWINGS FOR REVIEW FOR THE FOLLOWING:
 - GAS DETECTOR
 - ELECTRICAL UNIT HEATERS
 - FANS
 - SPRINKLER HEADS
- SITE SERVICES**
 - EXCAVATION, TRENCHING, BACKFILLING & BEDDING:**
 - EXCAVATION SHALL BE PROTECTED WITH FENCING, TIMBER SHEETING, BRACING OR SHORING AS REQUIRED BY THE ONTARIO HEALTH AND SAFETY ACT AND REGULATIONS LATEST ADDITION. PROVIDE ADEQUATE TEMPORARY CROSS-OVERS FOR PEDESTRIAN AND VEHICULAR TRAFFIC, INCLUDING GUARD RAILS, LAMPS AND FLAGS AS DIRECTED.
 - ALL PIPING AND EQUIPMENT SHALL HAVE ADEQUATE BEDDING. TRENCHES SHALL BE EXCAVATED 6" (150mm) BELOW THE INTENDED GRADE OF THE PIPING. THE PIPING SHALL BE BEDDED IN A GRANULAR "A" MATERIAL, BACKFILL BY HAND FROM THE CENTRE LINE OF THE PIPE TO 6" (150 mm) LAYERS BY TAMPING. THE SUBGRADE BENEATH THE PIPE SHALL BE WITHIN 1/4" (6 mm) OF A STRAIGHT LINE BETWEEN JOINTS. BELL HOLES SHALL BE MADE AT EACH JOINT TO PERMIT THE JOINT TO BE PROPERLY MADE. DEBRIS NO BACKFILL IS PERMITTED UNTIL THE TEST IS WITNESSED. BEDDING SHALL BE COMPACTED TO 95% MODIFIED PROCTOR TEST (AS PER ITEM BELOW).
 - OUTSIDE THE BUILDING, BACKFILLING IN UNPAVED AREAS SHALL BE DONE WITH LOOSE EARTH, FREE FROM ROCKS, DEBRIS, CINDERS, OR OTHER NON-CORROSIVE MATERIALS IN LAYERS NOT EXCEEDING 12" (300 mm) IN THICKNESS, COMPACTED TO 95% STANDARD PROCTOR DENSITY.
 - MATERIALS:**
 - PIPE MATERIALS:
 - PIPE SEWERS: CONCRETE PIPE WITH CEMENT OR RUBBER COUPLERS TO CSA A257.
 - PLUMBING & DRAINAGE**
 - PIPE MATERIALS:**
 - ALL BURIED DRAINAGE PIPING:
 - CLASS 4000 CAST IRON SHALL BE CERTIFIED TO CAN/CSA B70-M91 - MECHANICAL JOINT.
 - DWV PLASTIC PIPE ABA AND SOLVENT WELD, 4" (100 mm) AND SMALLER.
 - PVC SDR, 6" (150 mm) AND LARGER.
 - FIRE EXTINGUISHERS:**
 - SUPPLY AND INSTALL FULLY CHARGED NATIONAL FIRE EQUIPMENT LIMITED ABC-050 MULTI-PURPOSE DRY CHEMICAL FIRE EXTINGUISHERS WITH A 2A-10BC RATING COMPLETE WITH WALL BRACKET - DESIGNATED FE.
 - SPRINKLERS**
 - INSTALLATION SHALL COMPLY WITH THE BUILDING DEPARTMENT, FIRE DEPARTMENT, CUJA, OR NFPA PAMPHLET #13 AND NATIONAL BUILDING CODE, SECTION BUILDING SERVICES, FIRE PROTECTION.
 - PIPING FOR EXTENDED SPRINKLER SYSTEM SHALL BE HYDRAULICALLY CALCULATED, DESIGNED AND SUBMITTED TO APPROVING AGENCIES BY THE TRADE RESPONSIBLE FOR THE INSTALLATION.
 - SPRINKLER HEADS:**
 - SPRINKLER HEADS TO BE PENDANT VIKING VK329 MICROMATIC CHROME TYPE, WITH STANDARD BULB RATED AT 155 DEG F (68 DEG C) UNLESS NOTED OTHERWISE. USE HIGH TEMPERATURE HEADS AT HEATERS TO NFPA STANDARDS.
 - SPRINKLER HEADS IN AREAS WITH AN 8'-0" (2400 mm) OR LESS CEILING HEIGHT, SHALL HAVE VIKING VK438-HP HEADS COMPLETE WITH ROUND FLAT CEILING PLATE COVER INSTALLED FLUSH TO FINISHED CEILING. COLOUR OF CEILING PLATE TO MATCH CEILING.
 - NOTE: PROVIDE SPRINKLER CABINET CONTAINING TEN (10) ADDITIONAL HEADS AND SPRINKLER WRENCH.
 - PIPE & FITTINGS:**
 - PIPING TO BE ASTM-A-53 LIGHTWALL STEEL PIPE SCHEDULE 40 BLACK STEEL PIPE, GROOVED TO STANDARD ROLL GROOVING SPECIFICATION, COMPLETE WITH APPROVED AND LISTED MECHANICAL COUPLINGS AND FITTINGS.
 - ALL VALVES SHALL BE UNDERWRITERS' LABORATORIES OF CANADA (ULC) APPROVED, COMPLETE WITH MONITORING SWITCHES.
 - VALVES SHALL BE ALL BRASS UP TO AND INCLUDING 2" (50 mm) SIZE. LARGER SIZES SHALL BE IRON BODY. VALVES OVER 2-1/2" (65 mm) DIAMETER ARE TO HAVE GEAR OPERATORS.
 - TESTS & GUARANTEE:**
 - TEST, ADJUST AND CERTIFY SPRINKLER SYSTEM AFTER COMPLETION OF WORK.
 - FURNISH TO THE OWNER, A WRITTEN GUARANTEE COVERING MATERIALS AND WORKMANSHIP, AS PER THE GENERAL CONDITIONS.
 - AIR DISTRIBUTION**
 - ALL DUCTWORK TO 2" (500 PA) MAXIMUM STATIC PRESSURE SHALL BE FABRICATED TO SMACNA DUCT CONSTRUCTION STANDARDS, SECTION NO. 1, AND AS FOLLOWS:
 - MATERIAL & THICKNESS:**
 - DUCTWORK SHALL BE FABRICATED FROM BEST QUALITY LOCK-FORMING GALVANIZED STEEL SHEETS, OF THE FOLLOWING THICKNESS.

SIZE OF DUCT IN WIDTH OR DEPTH	GAUGE OF SHEET STEEL
12" (300 mm) OR LESS	NO. 26 U.S.
13" TO 30" (325 mm TO 750 mm)	NO. 24 U.S.
31" TO 48" (775 mm TO 1200 mm)	NO. 22 U.S.
49" TO 84" (1225 mm TO 2130 mm)	NO. 20 U.S.
 - CONSTRUCTION:**
 - LONGITUDINAL SEAMS SHALL BE MADE WITH PITTSBURGH LOCK OR BUTTON PUNCH SEAMS IN ALL SIZES. ALL DUCTWORK SHALL BE CROSS-BROKEN OR BEADED 12" (300 mm) O.C. FOR RIGIDITY.
 - EXHAUST FANS:**
 - SUPPLY AND INSTALL THE FOLLOWING EXHAUST AND RECIRCULATING FANS OF THE SIZE, TYPE, MODEL AND DESIGNATION CONTAINED IN THE FAN SCHEDULE. ACCESSORIES LISTED IN THE SPECIFICATIONS APPLY TO ALL FANS OF THE SAME DESIGNATION. SPECIAL ACCESSORIES FOR INDIVIDUAL FANS ARE DESIGNATED ON THE FAN SCHEDULE.
 - SOUND LEVEL PERFORMANCE AND FAN CURVES SHALL BE INCLUDED WITH SUBMITTAL SHOP DRAWINGS.
 - SUSPEND FANS FROM STRUCTURE THROUGH VIBRATION ISOLATORS AND CONNECT TO DUCTWORK THROUGH FLEXIBLE DUCT CONNECTIONS. MOUNT IN PLACE WITH BACKDRAFT DAMPERS AND GASKET SEALS. PROVIDE SEISMIC BRACING AS REQUIRED.

- POWER WIRING FOR FANS IS BY ELECTRICAL CONTRACTOR**
- CONTROL WIRING IS BY MECHANICAL CONTRACTOR**
- PANEL-TYPE PROPELLER FANS - TYPE PF**
 - PANEL SHALL BE MANUFACTURED OF HEAVY GAUGE STEEL WITH SPUN VENTURI INLET AND WELDED CORNERS.
 - PROPELLER BLADES SHALL BE STATICALLY AND DYNAMICALLY BALANCED.
 - BELT DRIVE MOTOR SHALL BE MOUNTED ON A BRACKET ATTACHED TO THE PANEL WITH BELT DRIVE AND SHEAVES.
 - ACCESSORIES SHALL INCLUDE BACKDRAFT DAMPER, AND WALL MOUNT BOX MOTOR SIDE GUARD, FAN SIDE GUARD.
 - DESIGN IS BASED ON COOK
 - ACCEPTABLE PRODUCTS:**
 - GREENHECK
 - PENN VENTILATOR
 - COOK
- ALUMINUM DOME FANS - TYPE ADF**
 - SUPPLY AND INSTALL ALUMINUM DOME FAN OF SIZE LISTED IN THE SCHEDULE.
 - FANS SHALL BE MANUFACTURED OF ALUMINUM COMPLETE WITH STANDARD FEATURES:
 - CENTRIFUGAL WHEEL
 - BELT DRIVE WITH 1750 RPM MOTORS OR DIRECT-DRIVE MOTOR
 - REMOVABLE TOP FOR ACCESS TO FAN AND MOTOR
 - CURB CAP AND VIBRATION ISOLATION
 - ACCESSORIES SHALL INCLUDE:
 - BACKDRAFT DAMPER
 - BIRDGUARD
 - 18" (450 MM) HIGH PRE-FABRICATED ROOF CURB (SOUND CURB)
 - DESIGN IS BASED ON COOK
 - ACCEPTABLE PRODUCTS:**
 - PENN VENTILATOR
 - COOK
 - GREENHECK
- MOTORIZED WEATHER LOUVER - DESIGNATED MWL**
 - ALL BLADES SHALL BE STORM TYPE, CENTRE PIVOTED WITH REINFORCING BOSSES AND HAVE A 1/2" (15 MM) DIAMETER PINION OPERATING IN A SELF-LUBRICATING NYLON BEARING. LOUVER BLADES SHALL HAVE VINYL GASKET TO EFFECT POSITIVE CLOSURE. MOTORIZED LOUVER SHALL BE FACTORY CONSTRUCTED OF SIZE LISTED IN THE LOUVER SCHEDULE.
 - LOUVER BLADES SHALL OPERATE BY A CONCEALED DRIVE ARM AT EACH JAMB AND BE COMPLETE WITH 110 VOLT ELECTRIC MOTOR.
 - ALL LOUVRES FURNISHED WITH 1/2" (15 MM) MESH, .063" (1.6 MM) DIAMETER WIRE SECURED TO THE EXTRUDED ALUMINUM FRAME AND WALL EXTENSION.
 - FINISH TO BE KYNAR 500 OF A COLOUR SELECTED BY THE CONSULTANT AND/OWNER.
 - ACCEPTABLE PRODUCTS:**
 - E. H. PRICE
 - CONSTRUCTION SPECIALTIES
 - RUSKIN
 - GAS DETECTION SYSTEM**
 - SUPPLY GAS DETECTION SYSTEMS AS DESCRIBED HEREIN. SPECIFICATION IS BASED ON CRITICAL ENVIRONMENT TECHNOLOGIES.
 - ACCEPTABLE PRODUCTS:**
 - CRITICAL ENVIRONMENT TECHNOLOGIES, AS SUPPLIED BY O'DELL ASSOCIATES, 905-681-3901
 - VULCAN
 - MSA CANADA
 - LOADING DOCK MULTI-ZONE SYSTEM - DESIGNATED GDS-1**
 - PROGRAMMABLE DIGITAL CONTROLLER: SUPPLY A PROGRAMMABLE, DIGITAL, FOUR (4) CHANNEL, CONTROLLER EQUAL TO CRITICAL ENVIRONMENT TECHNOLOGIES, MODEL FCS-4-M-L, CONTAINING THE FOLLOWING:
 - 120 VAC/60 HZ POWER REQUIREMENT
 - PROVIDES 24 VDC POWER TO TRANSMITTERS
 - FOUR (4) 4-20 MA INPUTS FROM ANALOG TRANSMITTERS
 - EIGHT (8) INPUTS FROM DIGITAL TRANSMITTERS
 - EIGHT (8) PROGRAMMABLE RELAY OUTPUTS RATED 5A @ 240 VAC
 - EXTENSIVE ZONING CAPABILITIES
 - PROGRAMMABLE ALARM TIME DELAYS AND MINIMUM FAN RUN TIMES
 - LED DISPLAY OF GAS CONCENTRATION AND ALARM STATUS
 - LED ALARM INDICATION (FAULT, LOW, MED, HIGH)
 - AUDIBLE ALARM RATED 90 DB @ 10 FEET
 - ACKNOWLEDGE/SILENCE BUTTON
 - COMPLETELY FIELD PROGRAMMABLE
 - AUTOMATED CALIBRATION MAINTENANCE. ONE PUSHBUTTON ACHIEVES "AUTO ZERO" AND "AUTO SPAN"
 - DIGITAL PUSHBUTTON SELECTION OF CALIBRATION GAS CONCENTRATION
 - CSA/UL AND CE CERTIFICATIONS
 - STROBE ALARM LIGHT
 - TWO (2) CET MODEL GDS-D-CO-NO2 GAS SENSOR/TRANSMITTER:
 - 4-20 MA ANALOGUE OR 0 - 10 VDC OUTPUT SIGNALS
 - COMPLETE WITH OPTIONAL PROTECTIVE GUARD
 - FACTORY CALIBRATED TO A RANGE OF 0 - 200 PPM
 - COMMUNICATES DIGITALLY WITH PDC PANEL ON 4-WIRE DAISY CHAIN NETWORK
 - INSTALLATION OF ALL CONTROL WIRING OF ALL SENSORS IS BY MECHANICAL CONTRACTOR
 - POWER WIRING TO CONTROLLER BY ELECTRICAL CONTRACTOR
 - SENSOR DETECTION SUPPLIER SHALL CALIBRATE, PROGRAM AND TEST ALL EIGHT (8) SENSORS AND BOTH CONTROLLERS. PROVIDE COMPLETE START-UP REPORT TO CONSULTANT. ASSIST ELECTRICAL CONTRACTOR IN WIRING OF SENSORS.
 - INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND ALL APPLICABLE CODES AND REGULATIONS.
 - CHECK FINAL LOCATION WITH CONSULTANT, IF DIFFERENT FROM INDICATED LOCATION, PRIOR TO INSTALLATION. SHOULD DEVIATIONS BEYOND ALLOWABLE TOLERANCES ARISE FOLLOW CONSULTANT'S DIRECTIVE.
 - PROVIDE FOR TESTING AND COMMISSIONING TO DEMONSTRATE OPERATION TO SATISFACTION OF CONTRACT ADMINISTRATOR.
 - START-UP COMMISSIONING AND CALIBRATION MUST BE CONDUCTED BY PERSONNEL AUTHORIZED BY CRITICAL ENVIRONMENT TECHNOLOGIES. REPORT SHALL BE PROVIDED.
 - PROVIDE START-UP REPORT TO CONTRACT ADMINISTRATOR
 - ELECTRIC UNIT HEATERS**
 - UNIT TO BE VERTICAL FLOW (DOWN DISCHARGE), HUNG FROM EXISTING ROOF STRUCTURE.
 - CABINET TO BE 18 GAUGE STEEL COMPLETE WITH PHOSPHATE UNDERCOAT FOR CORROSION RESISTANCE. FINISH IS A TWO-TONE GRAY POLYESTER POWDER COAT.
 - LOUVRES SHALL BE INDIVIDUALLY ADJUSTABLE.
 - HEATING ELEMENTS SHALL BE CORROSION-RESISTANT STEEL FINN. FURNACE BRAZED TO A TUBULAR HEATING ELEMENT ASSEMBLY ASSURING LONG LIFE AND SUPERIOR HEAT TRANSFER.
 - FAN MOTOR SHALL BE TOTALLY ENCLOSED AND RATED FOR CONTINUOUS DUTY WITH BUILT-IN THERMOSTAT CUT-OUT AND SHALL OPERATE ON THE SAME VOLTAGE AS THE HEATING CIRCUIT.
 - FAN SHALL BE PULL-THROUGH ACROSS HEATING ELEMENT.
 - UNIT SHALL BE COMPLETE WITH:
 - INTEGRAL 24V CONTROL TRANSFORMER
 - HEAVY DUTY MAGNETIC CONTACTORS
 - LINEAR THERMAL CUT-OUTS
 - THERMOSTAT KIT
 - DISCONNECT SWITCH KIT.
 - DESIGN IS BASED ON CHROMALOX
 - ACCEPTABLE PRODUCTS**
 - CHROMALOX
 - TRAN
 - P.M. WRIGHT
 - OUELLET

- TEMPERATURE CONTROLS**
 - GENERAL:**
 - THE SUB-CONTRACTOR UNDER THIS HEADING SHALL FURNISH ALL MATERIALS, EQUIPMENT AND SUPERVISION FOR THE PROPER INSTALLATION OF A SYSTEM OF AUTOMATIC TEMPERATURE CONTROLS. THIS INCLUDES ALL THERMOSTATS, RELAYS, AND VALVES.
 - APPROVED CONTRACTORS:**
 - LANDIS & STAFA
 - HONEYWELL
 - JOHNSON
 - SERVICE AND GUARANTEE:**
 - THE CONTROL SYSTEM SPECIFIED HEREIN SHALL BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS UNDER NORMAL USE AND SERVICE. IF WITHIN TWENTY FOUR (24) MONTHS FROM THE DATE OF ACCEPTANCE BY THE OWNER ANY OF THE EQUIPMENT HEREIN SPECIFIED IS PROVED TO BE DEFECTIVE IN WORKMANSHIP OR MATERIAL, IT WILL BE REPLACED AT NO COST TO THE OWNER.
 - AFTER COMPLETION OF THE ORIGINAL TEST OF THE INSTALLATION AND ACCEPTANCE BY THE CONTRACT ADMINISTRATOR AND OWNER, PROVIDE ANY SERVICE INCIDENTAL TO THE PROPER PERFORMANCE OF THE TEMPERATURE CONTROL SYSTEM UNDER GUARANTEE OUTLINE ABOVE FOR THE PERIOD OF TWO (2) YEAR.
 - AFTER COMPLETION OF THE INSTALLATION, REGULATE AND ADJUST ALL THERMOSTATS, CONTROL VALVES, MOTORS AND OTHER EQUIPMENT, AND PLACE THEM IN COMPLETE OPERATING CONDITION, SUBJECT TO THE APPROVAL OF THE CONSULTANT.
 - THERMOSTATS:**
 - THERMOSTATS: INSTALL WALL MOUNTED THERMOSTAT AT 5"-6" (1675 MM) ABOVE FLOOR WHERE INDICATED ON THE DRAWINGS. THERMOSTAT SHALL BE COMPLETE WITH AN INSULATED SUB-BASE REQUIRED WHERE THERMOSTATS ARE LOCATED ON EXTERIOR WALLS.
 - MECHANICAL SEQUENCE OF OPERATIONS**
 - EXHAUST FAN EF-1,2,3,4,5 / WALL LOUVER WL-1:
 - MECHANICAL CONTRACTOR TO INTERLOCK EACH OF EF-1,2,3,4 & 5 TO WALL LOUVER WL-1 SO THAT WL-1 OPENS WHEN ANY OF THE EXHAUST FANS ARE OPERATING.
 - WL-1 IS CLOSED IF NO EXHAUST FANS ARE OPERATING
 - EXHAUST FAN EF-6:
 - MECHANICAL CONTRACTOR TO INSTALL AND WIRE GAS SENSORS TO GAS DETECTOR.
 - MECHANICAL CONTRACTOR SHALL INTERLOCK EF-6, WL-2 AND WL-3 TO GAS DETECTOR. WHEN THE GAS DETECTOR DETECTS ANY UNSAFE CONDITION ABOVE 50PPM CO, EF-6 STARTS AND WL-2 & WL-3 OPENS. WHEN THE GAS DETECTOR SENSOR CO LEVELS BELOW 50 PPM, EF-6 STOPS AND WL-2 & WL-3 CLOSES.

Toronto Building
 PERMIT REVIEWED FOR COMPLIANCE WITH
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 O.B.C.
 FIRE SERVICES
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No.	DATE	REVISIONS	INITIAL	SIGNED
5				MWW
4	JAN 10/24	ISSUED FOR FINAL APPROVAL		MWW
3	NOV 20/23	100% DESIGN SUBMISSION		MWW
2	OCT 26/23	REISSUED 70% DESIGN SUBMISSION		MWW
1	JULY 18/23	70% DESIGN SUBMISSION		MWW

Toronto
 LICENSED PROFESSIONAL ENGINEER
 M. W. WICKHAM
 Apr-1972
 PROVINCE OF ONTARIO

SOLID WASTE MANAGEMENT SERVICES

MATT KELIHER
 GENERAL MANAGER
 SOLID WASTE MANAGEMENT SERVICES

MATTHEW CASCHERA
 DIRECTOR
 INFRASTRUCTURE AND
 RESOURCE MANAGEMENT

COMMISSIONERS TRANSFER STATION

MRF BUILDING UPGRADES
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MECHANICAL SPECIFICATIONS					
DESIGN:	EK	DRAFTING:	DGC	CHECK:	MWW
SCALE:	AS NOTED		DRAWING NUMBER:	1601-2023-3-23	
DATE:	JULY 18, 2023			M3	