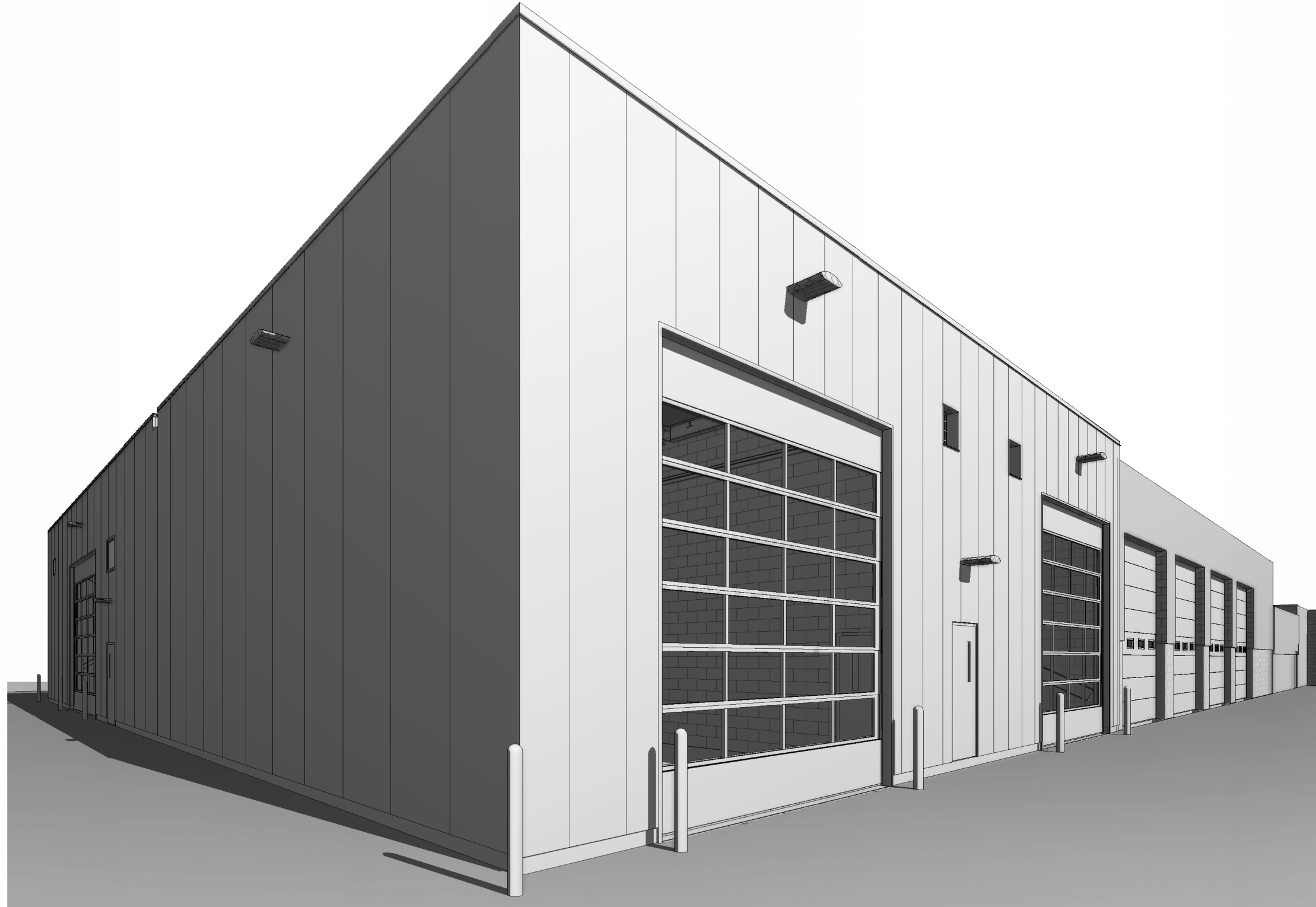


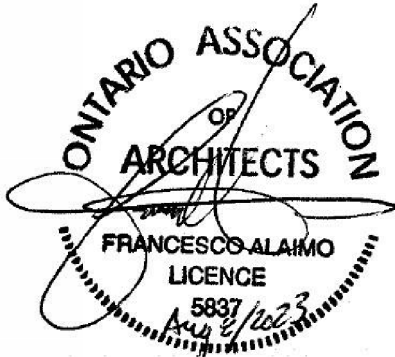
# ORANGEVILLE OPERATIONS CENTRE EXPANSION 500 C LINE, ORANGEVILLE, ONTARIO L9W 4Z3

**ISSUED FOR TENDER**



SHEET	SHEET TITLE	SHEET	SHEET TITLE	SHEET	SHEET TITLE	SHEET	SHEET TITLE	SHEET	SHEET TITLE
<b>ARCHITECTURAL</b>									
A-000	COVER	<b>STRUCTURAL</b>		<b>MECHANICAL</b>		<b>ELECTRICAL</b>		<b>CIVIL</b>	
A-100	MATRIX, KEYPLAN, & GENERAL NOTES	S1.1	GENERAL NOTES & LATERAL LOADS SCHEDULE/ DIAGRAMS	M0	COVER	E0	COVER	C1	GENERAL NOTES, TYPICAL DETAILS, KEY PLAN & SITE SERVICE PLAN
A-101	SITE PLAN	S1.2	TYPICAL DETAILS	M1	MECHANICAL SPECIFICATIONS	E1	ELECTRICAL SPECIFICATIONS		
A-102	FOUNDATION PLAN	S1.3	SCHEDULES & DETAILS	M2	HVAC PLAN	E2	ELECTRICAL SLD., LEGEND AND SCHEDULES		
A-103	GROUND FLOOR PLAN & MILLWORK	S2.0	ANCHOR BOLTS LAYOUT & BASE PLATE DETAILS	M3	PLUMBING PLAN	E3	ELECTRICAL DEMOLITION PLAN		
A-104	MEZZANINE	S2.1	FOUNDATION PLAN	M4	MECHANICAL SCHEDULES & DETAILS	E4	PROPOSED POWER PLAN - GROUND FLOOR		
A-105	ROOF	S2.2	FOUNDATION SECTIONS	M5	MECHANICALS DETAILS	E5	PROPOSED CEILING PLAN - GROUND FLOOR		
A-106	DOOR SCHEDULE	S3.1	ROOF FRAMING PLAN			E6	PROPOSED POWER PLAN - MEZZANINE		
A-300	ELEVATIONS	S3.2	ROOF SECTIONS			E7	PROPOSED CEILING PLAN - MEZZANINE		
A-400	BUILDING SECTIONS	S4.1	STRUCTURAL STEEL ELEVATIONS			E8	ELECTRICAL DETAILS		
A-401	WALL SECTIONS	S5.1	MEZZANINE FRAMING PLAN & SECTIONS						

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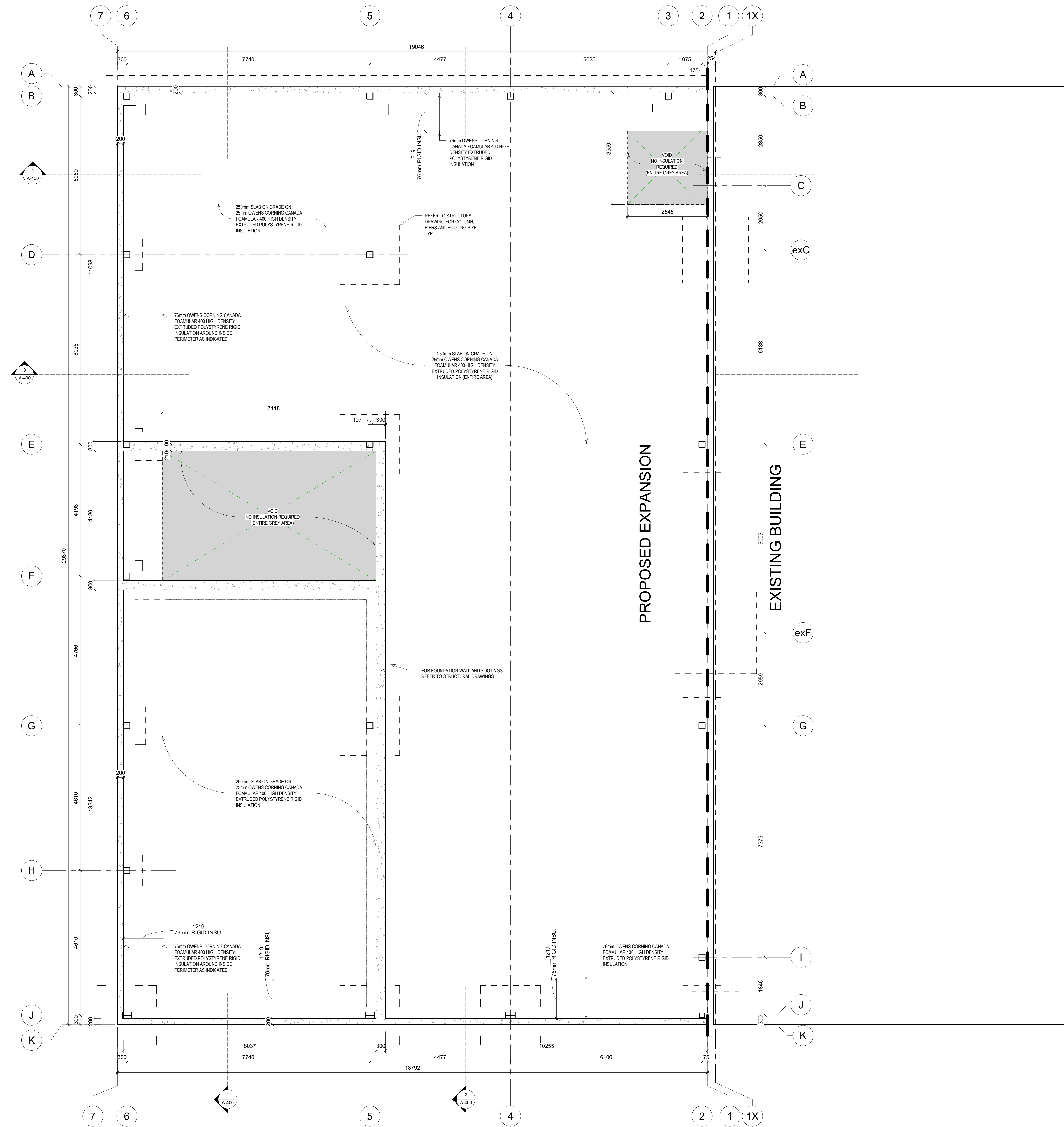


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1 FOUNDATION PLAN  
1:50

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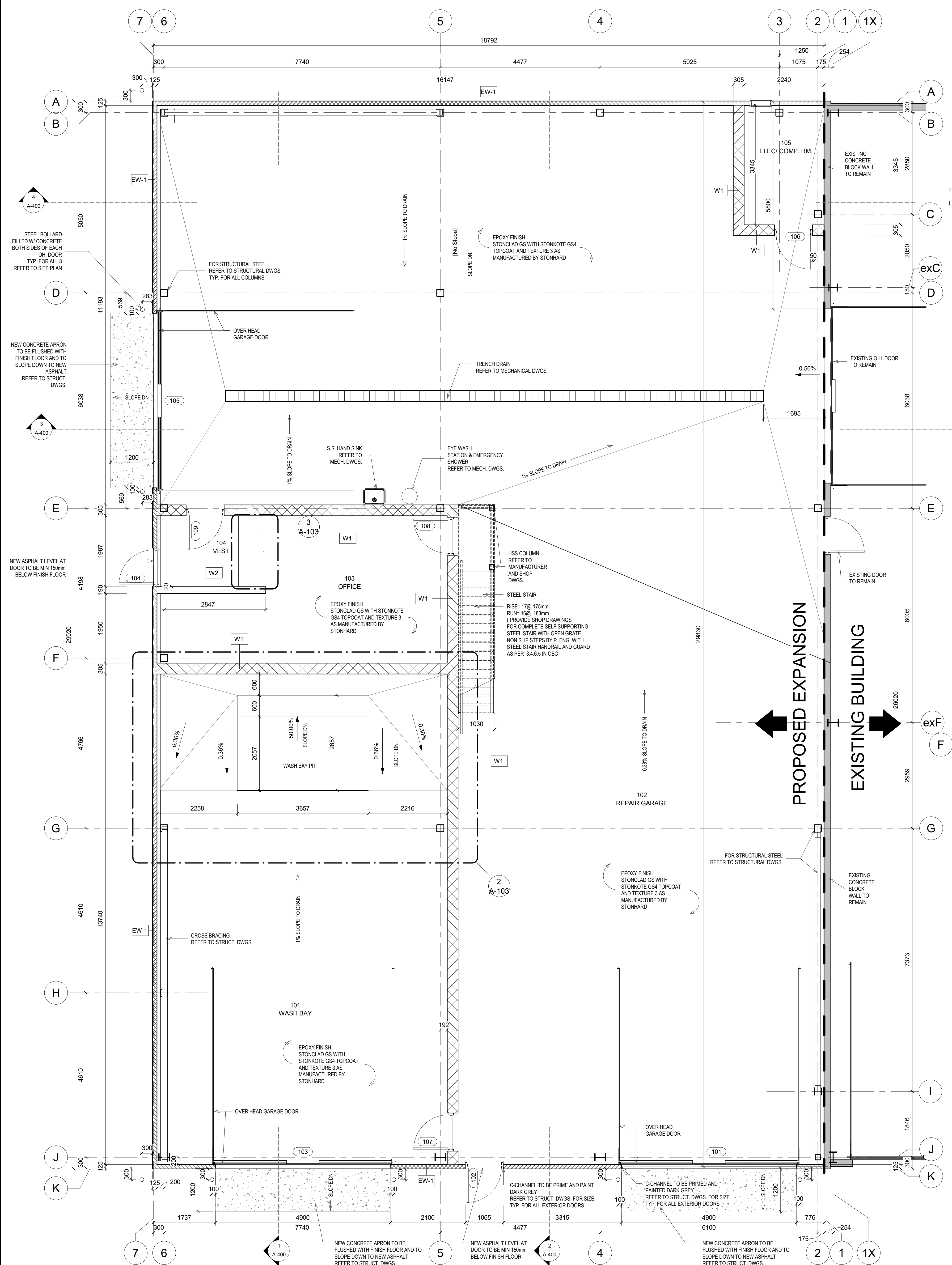


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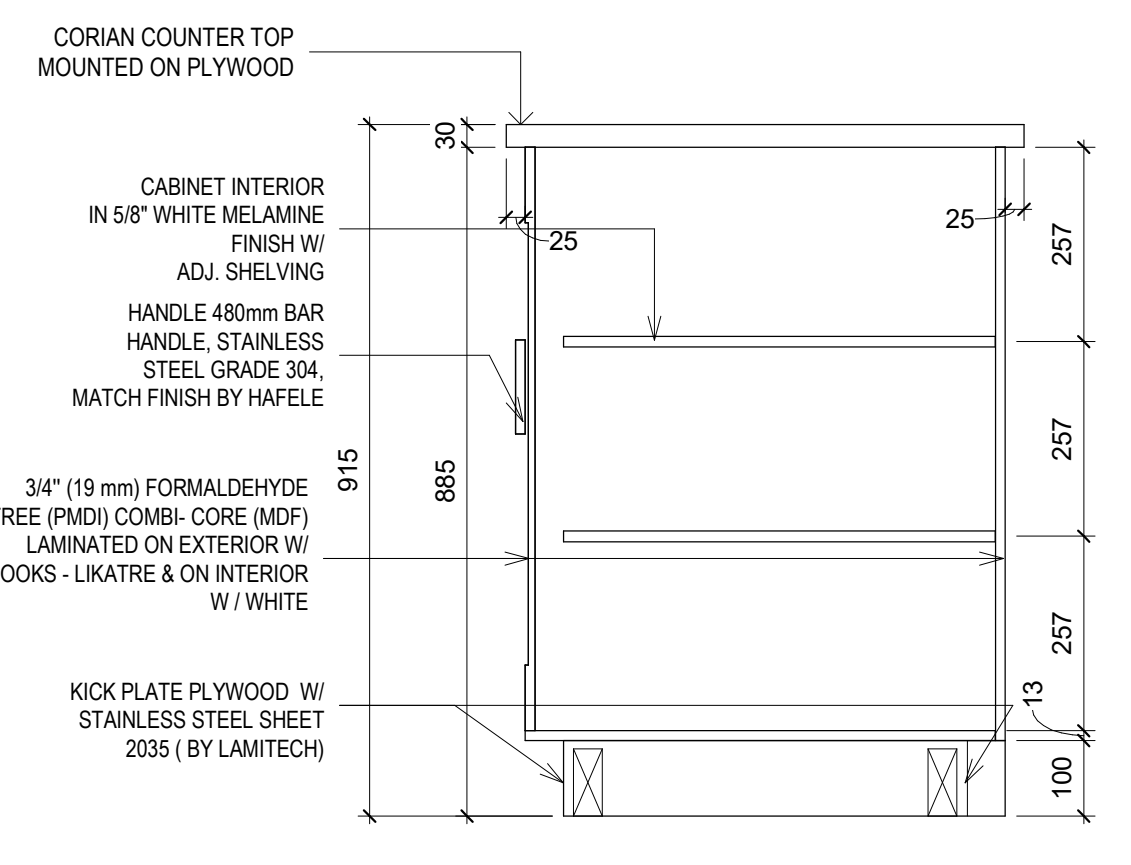
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**FOUNDATION PLAN**

Project  
**ORANGEVILLE OPERATIONS CENTRE EXPANSION**  
500 C Line, Orangeville, ONTARIO L9W 4Z3

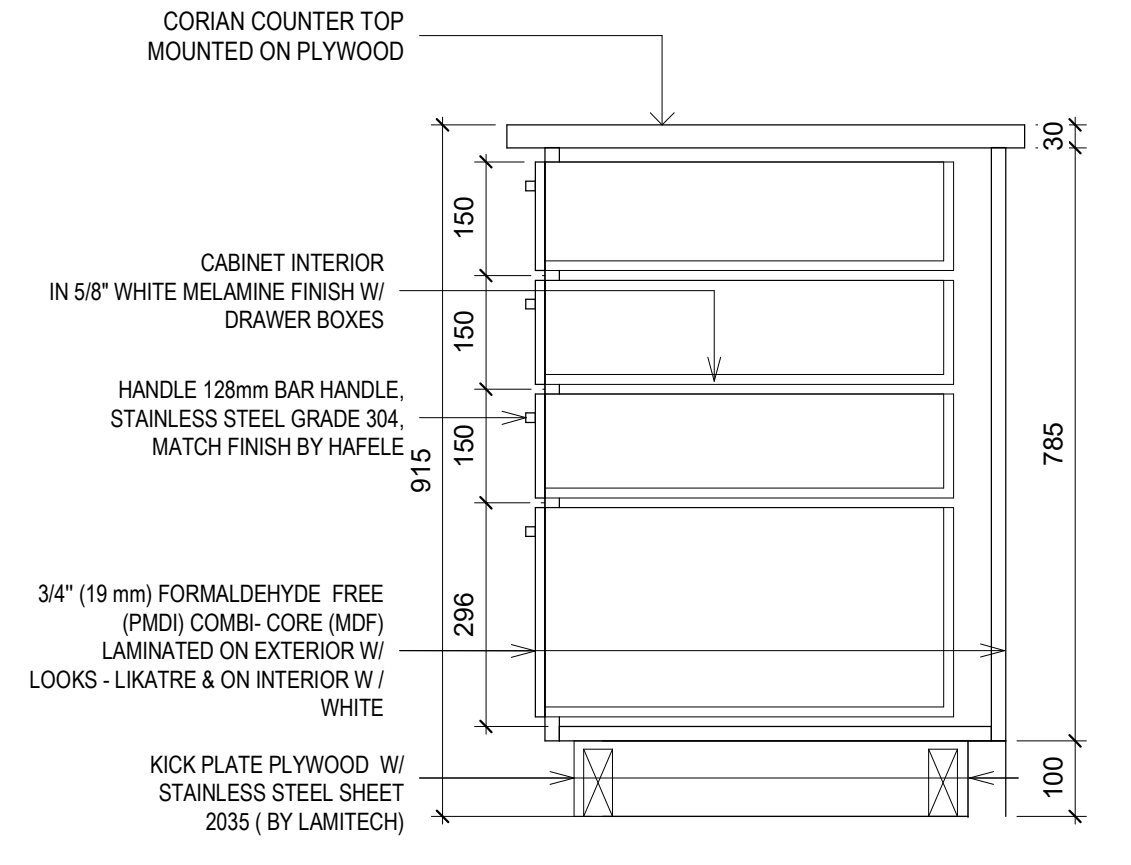
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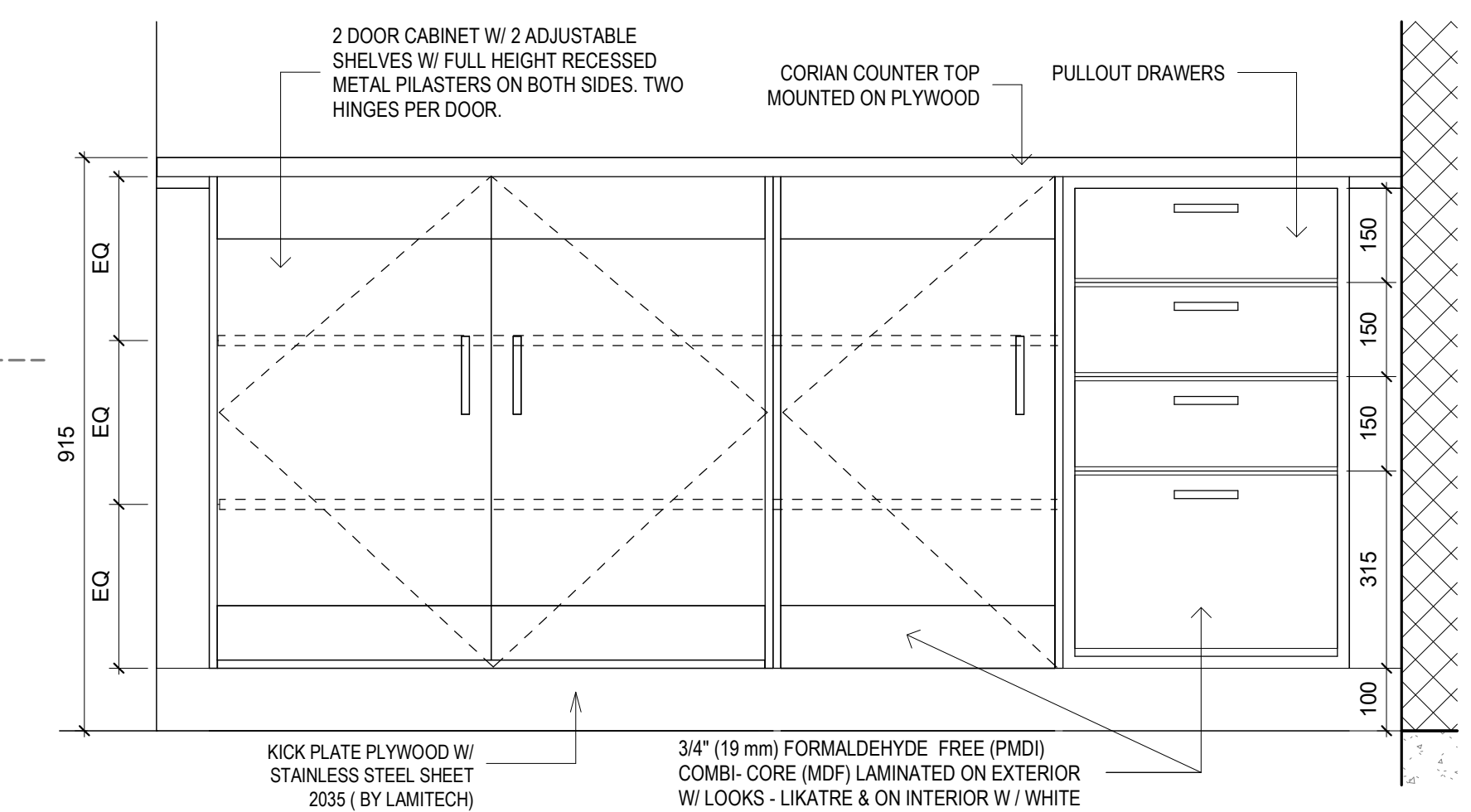
1 GROUND FLOOR PLAN  
1 : 50



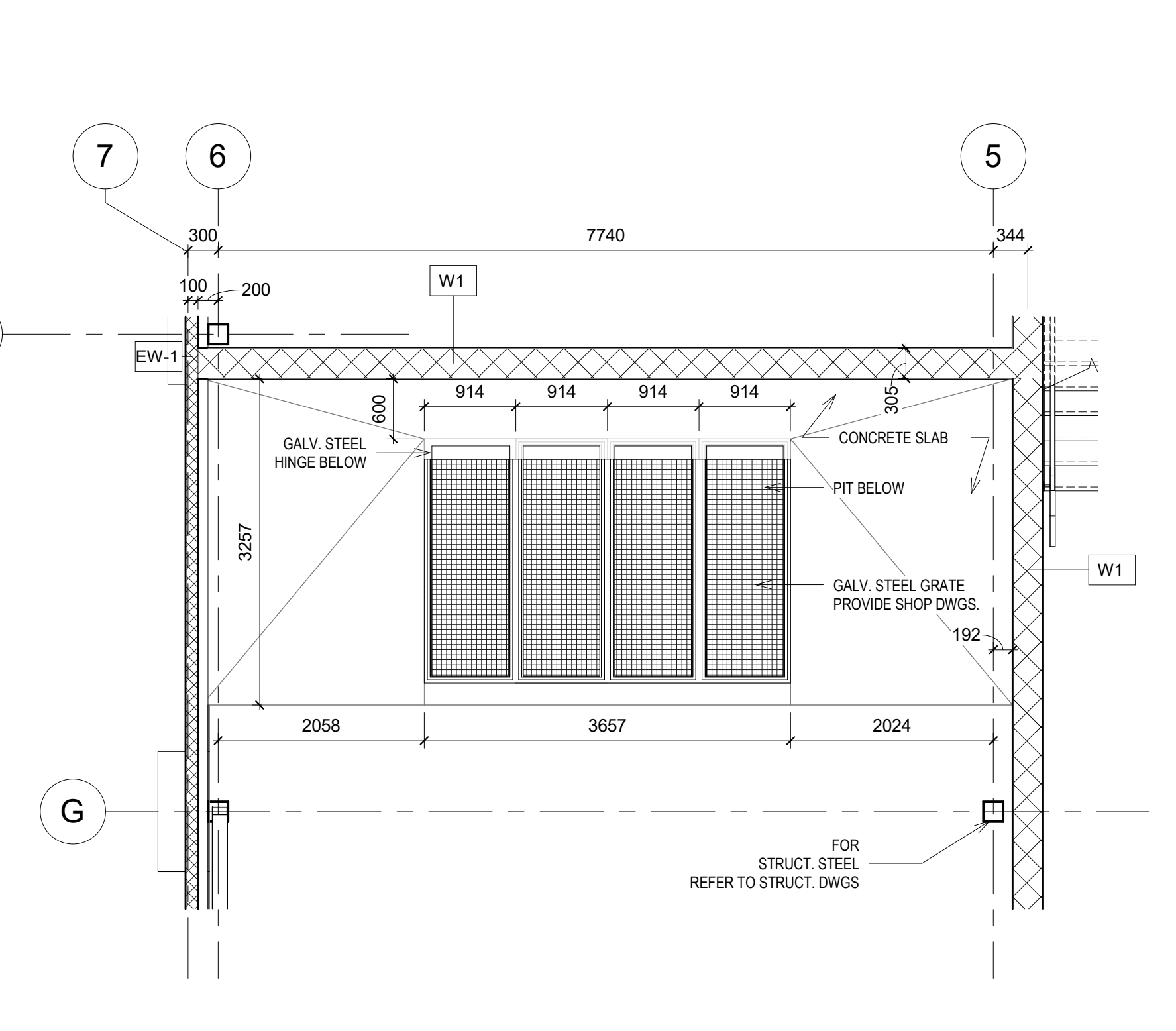
5 COUNTER SECTION  
1 : 10



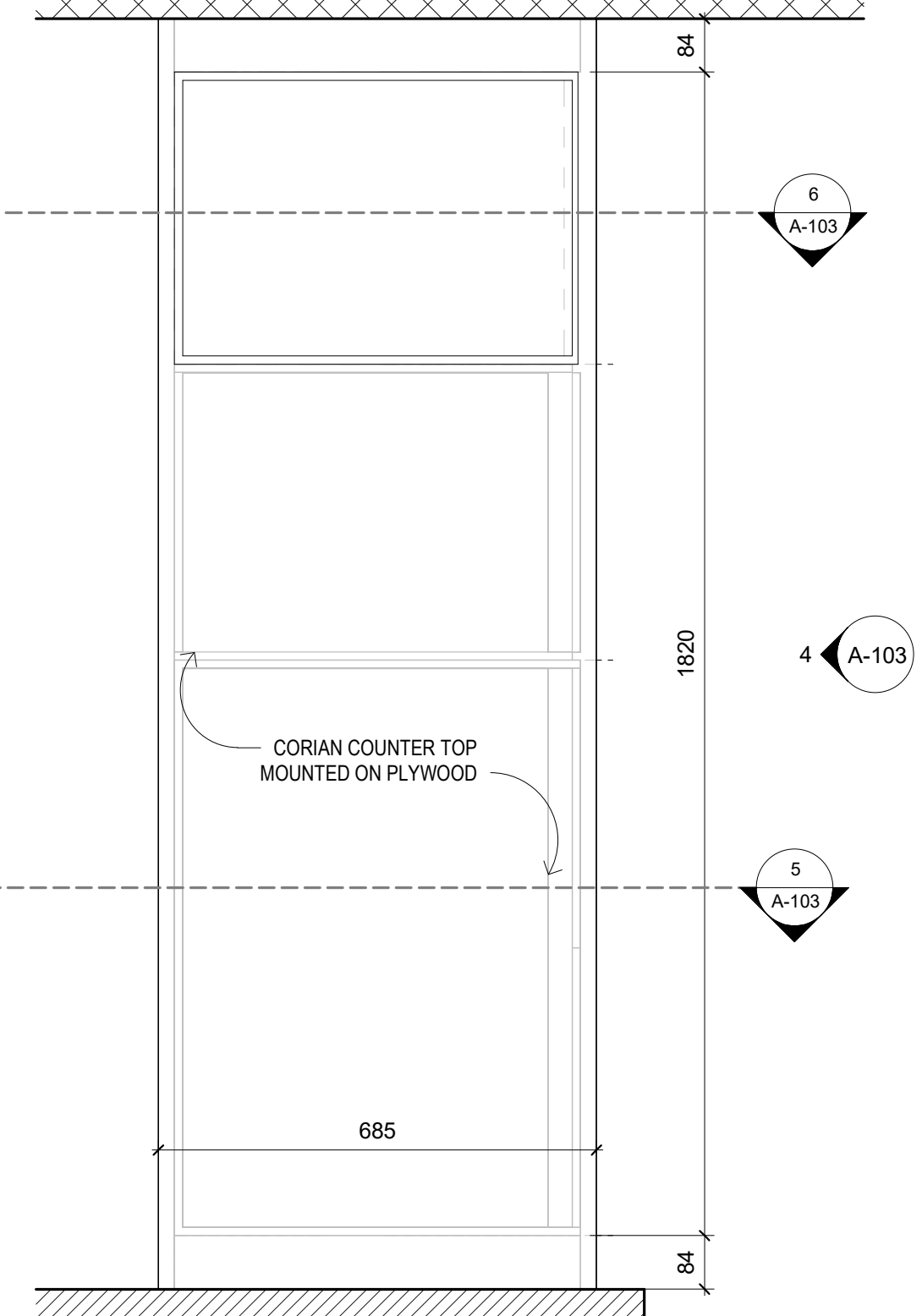
6 PULLOUT DRAWER SECTION  
1 : 10



4 COUNTER ELEVATION  
1 : 10



2 GROUND FLOOR PLAN - PIT  
1 : 50



3 COUNTER PLAN  
1 : 10

NOTE FOR DOOR SCHEDULE REFER TO A-106

EXTERIOR WALL TYPES

EW-1 125mm (5) INSULATED METAL PANEL  
EXTERIOR FACE 22 ga  
PROFILE - NORBEC MICRORIB  
COLOUR- RIGEL 2 GREY (OC 9789)

INTERIOR FACE 24 ga  
PROFILE - NORBEC SMP SMOOTH  
COLOUR- BRIGHT WHITE  
EFFECTIVE R VALUE= 37.05

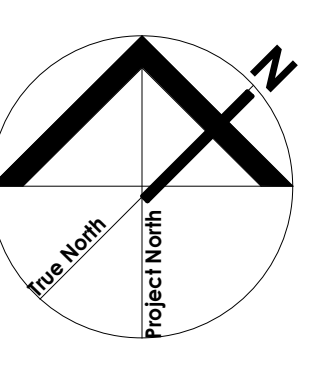
INTERIOR WALL TYPES

W1 200mm CONCRETE BLOCK MASONRY  
FROM T10 CONCRETE FLOOR TO US OF DECK  
FIT AROUND O.W.S.J. & STRUCTURAL ELEMENTS  
W/ SOLID CEMENT BRICKS USE TO FILL GAPS.  
(REFER TO STRUCTURAL DRAWINGS)  
CONCRETE BLOCK WALL TO BE PAINTED "OFF WHITE"  
EPOXY PAINT (FLOOR TO US OF DECK)

W2 190mm CONCRETE BLOCK MASONRY  
FROM T10 CONCRETE FLOOR TO US OF DECK  
FIT AROUND O.W.S.J. & STRUCTURAL ELEMENTS  
W/ SOLID CEMENT BRICKS USE TO FILL GAPS.  
(REFER TO STRUCTURAL DRAWINGS)  
CONCRETE BLOCK WALL TO BE PAINTED "OFF WHITE"  
EPOXY PAINT (FLOOR TO US OF DECK)

GENERAL NOTES:		MILLWORK MATERIAL FINISHES SCHEDULE	
<ul style="list-style-type: none"> <li>GRAIN DIRECTION FOR THE MATERIAL VERTICAL.</li> <li>ALL SMALL DRAWERS: 117.05.610 HANDLE 128 mm HAFELE</li> <li>LARGE DOORS: 117.05.650 HANDLE 480 mm HAFELE</li> <li>RECESSED S.S. PILASTER &amp; CLIPS FOR ALL SHELVES ON CABINET GABLE</li> <li>CABINET GABLES, TOP, BOTTOM AND SHELVES ARE FORMALDEHYDE FREE 5/8" (16 mm) WHITE MELAMINE</li> <li>ALL UNITS TO HAVE FORMALDEHYDE FREE (PMDF) COMBI-CORE LAMINATED W/ LOOKS - LIKATRE &amp; ON INTERIOR W/ WHITE</li> <li>MILLWORK CONTRACTOR TO PROVIDE SHOP DRAWINGS</li> <li>MILLWORK SHOP DRAWINGS TO BE REVIEWED AND APPROVED BY THE ARCHITECT</li> </ul>		ITEM	DESCRIPTION
		DOOR DRAWER	3/4" (19 mm) FORMALDEHYDE FREE (PMDF) COMBI-CORE (MDF) LAMINATED ON EXTERIOR W/ LOOKS - LIKATRE & ON INTERIOR W/ WHITE
		DOOR EDGE BAND	0.018" THICK PANOLAM LOOKS- LIKATRE EDGE
		EXPOSED ENDS	3/4" (19 mm) FORMALDEHYDE FREE (PMDF) COMBI-CORE (MDF) LAMINATED W/ LOOKS LIKATRE
		INTERIOR	5/8" (16 mm) WHITE MELAMINE FORMALDEHYDE FREE
		COUNTER TOP	CORIAN ENDURA, COLOUR: SMOKY MARBLE FOR COUNTER
		HINGES	BLUM (SOFT CLOSE)
		HANDLES	HAFELE- 117.05.610 HDL STA ST MATT M4 10/ CTC 128 mm ( HORIZONTAL ) HAFELE- 117.05.650 HDL STA ST MATT M4 10/ CTC 480 mm ( VERTICAL )
		KICK	PLYWOOD W/ STAINLESS STEEL SHEET 2035 ( LAMITECH )
MILLWORK SPEC. & ITEMS			

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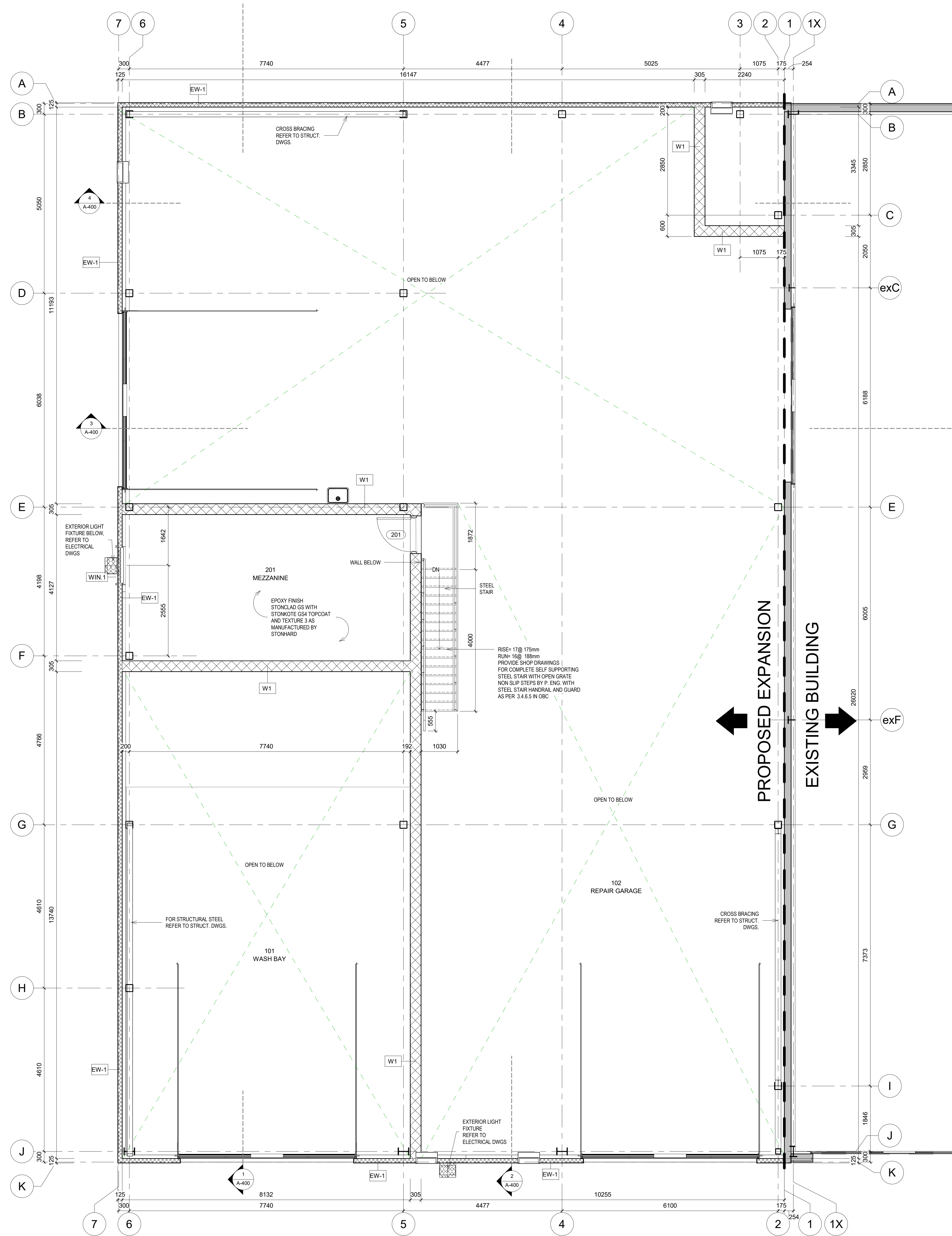
GROUND FLOOR PLAN & MILLWORK

Project  
ORANGEVILLE OPERATIONS  
CENTRE EXPANSION

500 C Line, Orangeville, ONTARIO L9W 4Z3

As indicated  
D.C.  
2022-008  
30.06.2023

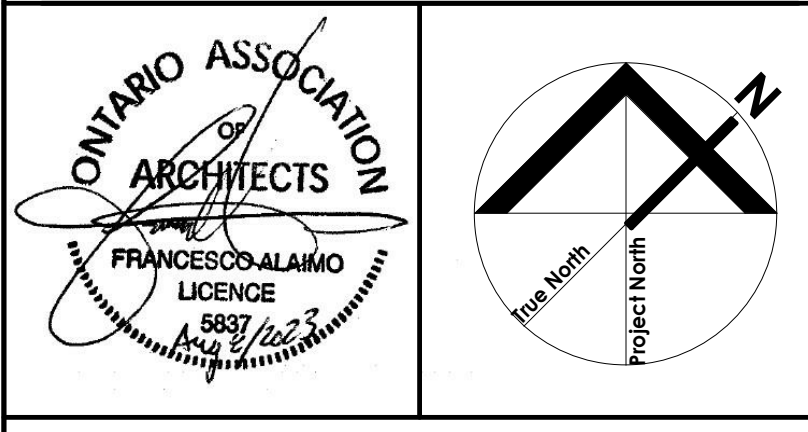
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Plot Date



NOTE: FOR DOOR SCHEDULE REFER TO A-106

- EXTERIOR WALL TYPES**
- EW-1** 125mm (5") INSULATED METAL PANEL  
EXTERIOR FACE 22 ga  
PROFILE - NORBEC MICRORIB  
COLOUR- RIGEL 2 GREY (GC 9789)  
  
INTERIOR FACE 24 ga  
PROFILE - NORBEC SMP SMOOTH  
COLOUR- BRIGHT WHITE  
EFFECTIVE R VALUE= 37.05  
  
G.C. & SUB-TRADE SHALL HAVE SHOP DRAWINGS FOR SEISMIC & WIND LOADING CONSIDERATION PREPARE & SEALED BY P. ENG. LICENSED TO PRACTICE IN THE PROVINCE OF ONTARIO FOR REVIEW BY PROJECT ENG. & ARCHITECT.  
NOREX-L SUPPLIED BY NORBEC, QUEBEC, CANADA
- INTERIOR WALL TYPES**
- W1** 290mm CONCRETE BLOCK MASONRY FROM T/O CONCRETE FLOOR TO U/S OF DECK FIT AROUND O.W.S.J. & STRUCTURAL ELEMENTS W/ SOLID CEMENT BRICKS USE TO FILL GAPS. (REFER TO STRUCTURAL DRAWINGS); CONCRETE BLOCK WALL TO BE PAINTED "OFF WHITE" EPOXY PAINT (FLOOR TO U/S OF DECK)
  - W2** 190mm CONCRETE BLOCK MASONRY FROM T/O CONCRETE FLOOR TO U/S OF DECK FIT AROUND O.W.S.J. & STRUCTURAL ELEMENTS W/ SOLID CEMENT BRICKS USE TO FILL GAPS. (REFER TO STRUCTURAL DRAWINGS); CONCRETE BLOCK WALL TO BE PAINTED "OFF WHITE" EPOXY PAINT (FLOOR TO U/S OF DECK)

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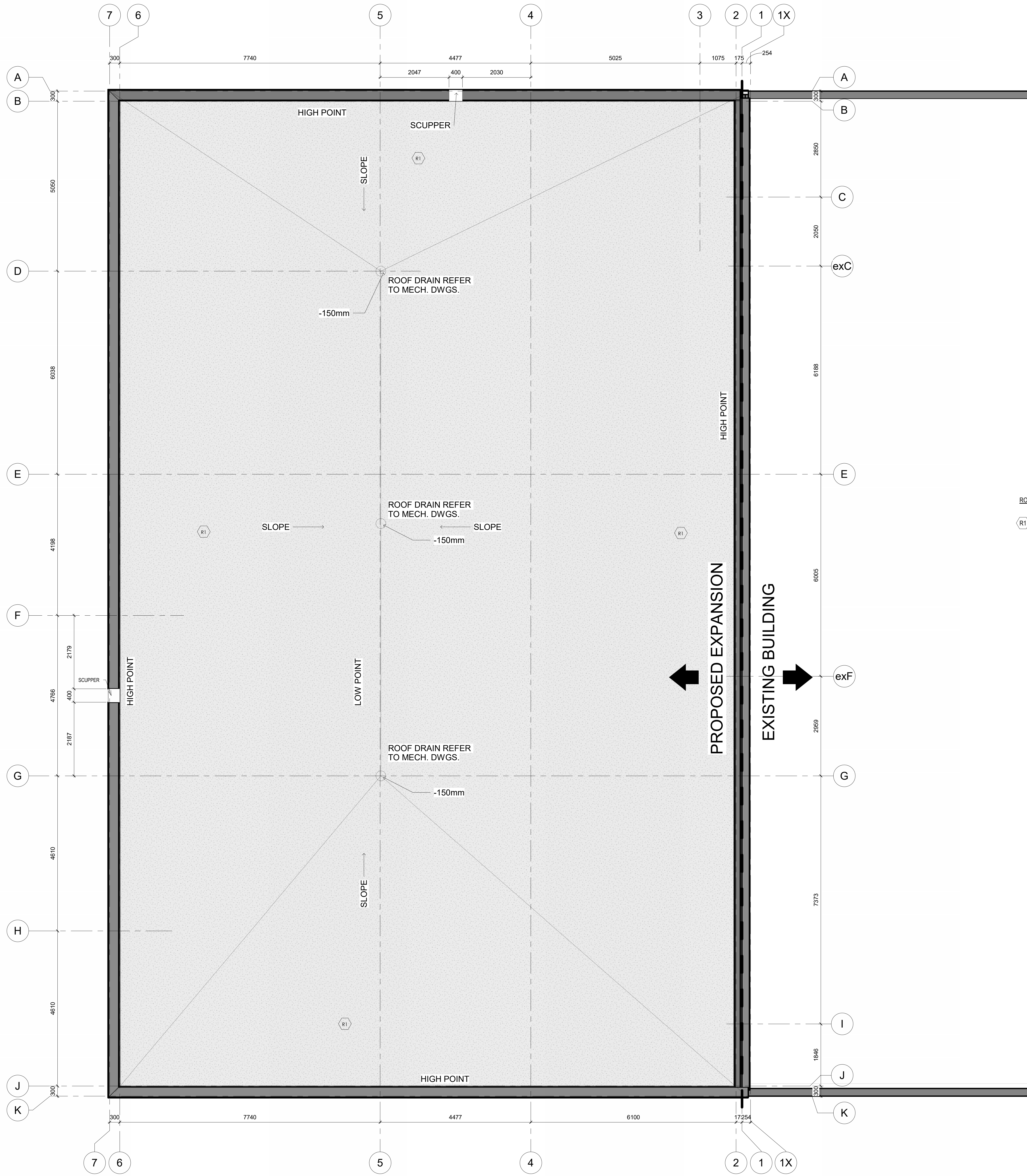


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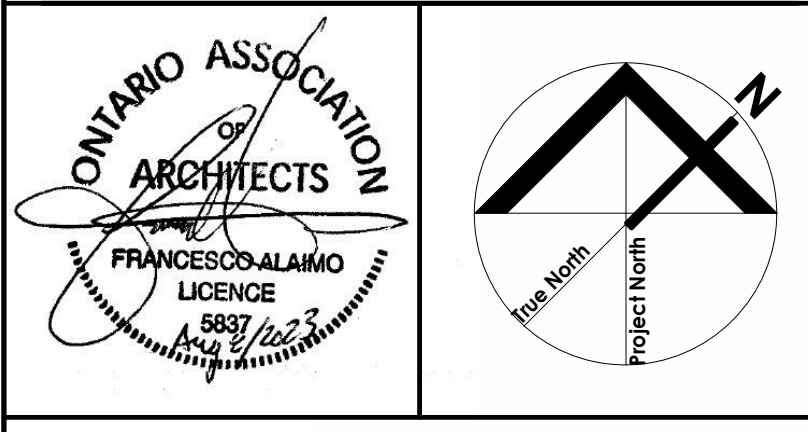
Drawing Title  
**MEZZANINE**

Project  
**ORANGEVILLE OPERATIONS CENTRE EXPANSION**  
500 C Line, Orangeville, ONTARIO L9W 4Z3

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**ROOF TYPES**  
 (R1) HOT APPLIED 2 PLY ASPHALT ROOFING (REFER TO SPECS) R VALUE MINIMUM R32  
 1/2" DENSDECK PRIME MECHANICALLY FASTENED TO DECK  
 2 PILES OF TYPE 4 ORGANIC FELTS  
 2 LAYERS OF 2 1/2" ATLAS AC FOAM POLYISOCYANURATE INSULATION  
 1/2" HIGH DENSITY, ASPHALT COATED FIBERBOARD INSULATION  
 1 PLY OF STRESS BASE 80 IN HOT ASPHALT  
 1 PLY OF STRESS PLY MAX. SBS MODIFIED MEMBRANE IN HOT ASPHALT  
 TOP COAT WITH HOT ASPHALT (TYPE III AT EVT)  
 USE GARLAND CANADA INC. STANDARD DETAILS FOR ALL ROOF RELATED APPLICATIONS & CONDITIONS.

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Drawing Title  
**ROOF**

Project  
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Scale  
**1 : 50**  
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**2022-008**  
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**30.06.2023**

1 ROOF  
 1 : 50

Door No.	LOCATION		DOOR DATA			FRAME DATA			HARDWARE DATA														Comments		
	FROM	TO	Panel Width (mm)	Height (mm)	Door Material Type	Frame Material Type	Jamb Depth (mm)	Bulls Type A - 1-1/2 Pair B - 2 Pair C - Cont. Hinge	Passage Set / Latch Set	Privacy Set	Lockset / Deadlatch	Cylinder Lock	Exit Device	Push Plate & Pull	Closer Type A - Low Force B - Normal Force	Floor or Wall Mounted Door Stop	Overhead Stop	Sweep	Weather Stripping or Gas Seal	Threshold	Kick Plate 200mm High	EDO with Actuator Buttons		Electric Door Strike with Card Reader	
101	EXTERIOR	REPAIR GARAGE	4880	4880	AL	AL																			O.H.D. - D2
102	EXTERIOR	REPAIR GARAGE	965	2135	HM	HM	125	B			X	X			B		X	X	X	X				X	INSULATED - D1
103	EXTERIOR	WASH BAY	4880	4880	AL	AL																			O.H.D. - D2
104	EXTERIOR	REPAIR GARAGE	965	2135	HM	HM	125	B			X	X			B		X	X	X	X				X	INSULATED - D1
105	EXTERIOR	VEST	4880	4880	AL	AL																			O.H.D. - D2
106	REPAIR GARAGE	ELEC/COMP RM.	965	2135	HM	HM	125	B			X										X				D1
107	REPAIR GARAGE	WASH BAY	965	2135	HM	HM	125	B	X								X		X	X					D1
108	REPAIR GARAGE	OFFICE	965	2135	HM	HM	175	B			X				B		X				X				
109	REPAIR GARAGE	VEST	965	2135	HM	HM	125	B	X						B		X				X				D1
201	STAIR	MEZZANINE	965	2135	HM	HM	175	B			X				B						X				
EX1																									EXISTING TO REMAIN
EX2																									EXISTING TO REMAIN
EX3																									EXISTING TO REMAIN
EX4																									EXISTING TO REMAIN
EX5																									EXISTING TO REMAIN
EX6																									EXISTING TO REMAIN
EX7																									EXISTING TO REMAIN
EX8																									EXISTING TO REMAIN
EX9																									EXISTING TO REMAIN
EX10																									EXISTING TO REMAIN

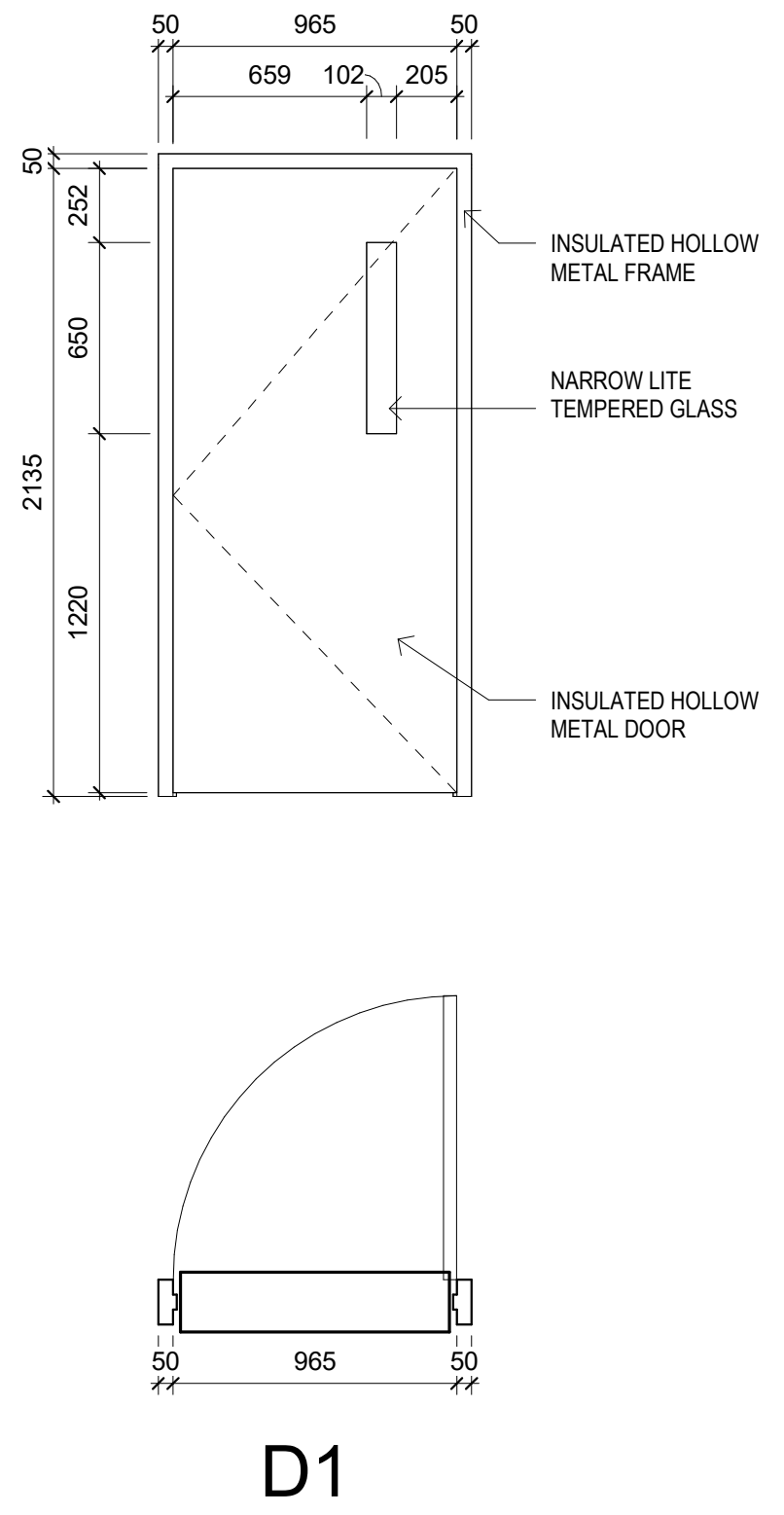
**ABBREVIATION LEGEND:**

EXT	EXTERIOR DOOR	AL	ALUMINUM
INT	INTERIOR DOOR	HM	HOLLOW METAL
FFD	FOUR FOLD DOOR	DHM	DOUBLE HOLLOW METAL
OHD	OVER HEAD DOOR	FR	FIRE RATED
DSD	DOUBLE SLIDING DOOR	ALTB	ALUMINUM THERMALLY BROKEN
WD	WOOD DOOR	PFM	PRE FINISHED METAL

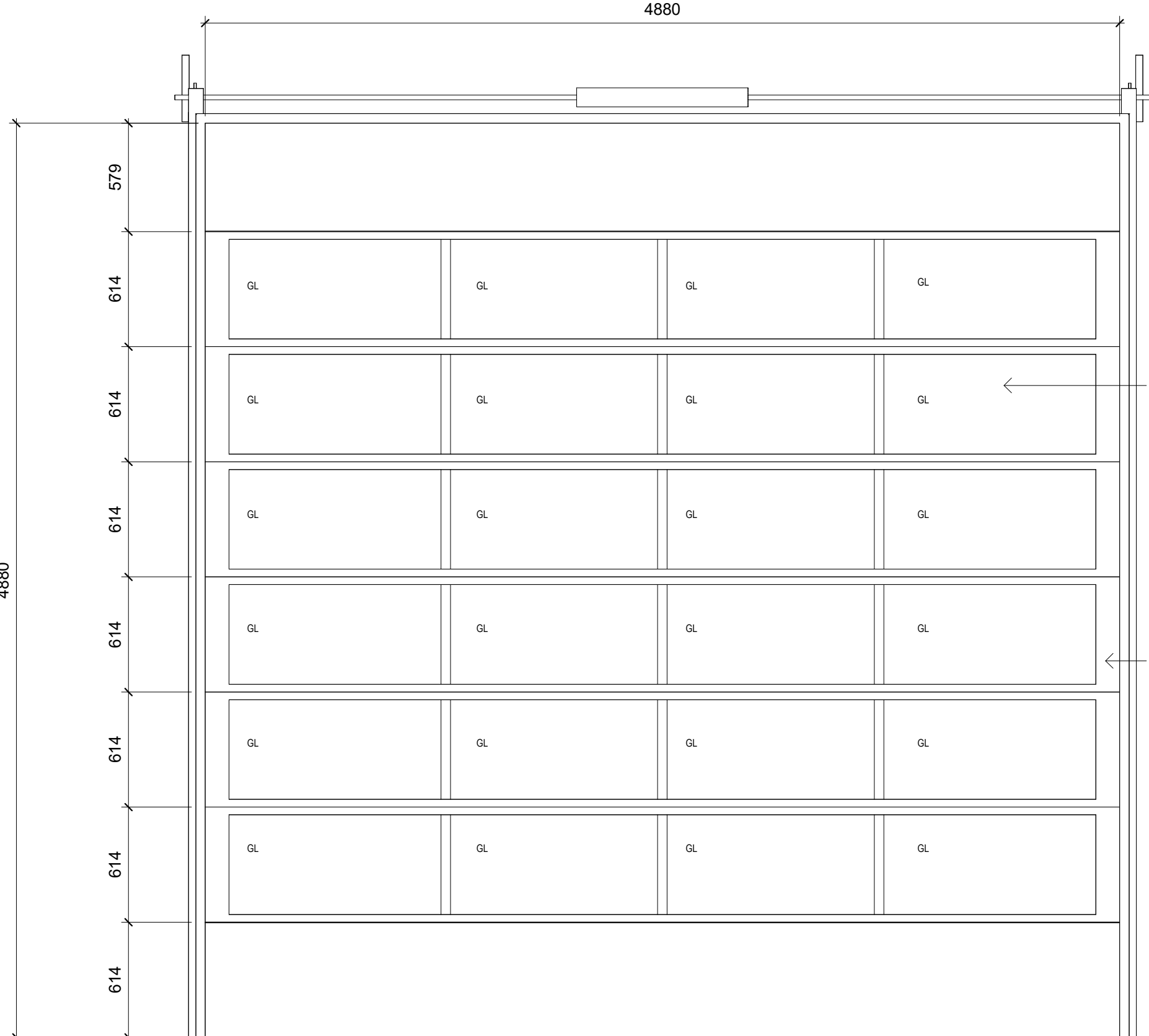
- GENERAL HARDWARE NOTES:**
1. ALL HARDWARE TO BE MORTISE TYPE
  2. ALL DOORS & FRAMES TO BE FACTORY PREPARED TO RECEIVE SPECIFIED HARDWARE
  3. CO-ORDINATE HARDWARE SCHEDULE WITH OWNER & UNDER THE CASH ALLOWANCE
  4. ALL HARDWARE TO BE SUPPLIED & INSTALLED UNDER THIS CONTRACT
  5. ALSO CO-ORDINATE WITH MECHANICAL & ELECTRICAL DRAWINGS
  6. HARDWARE SCHEDULE TO BY PROVIDED BY G.C. AND APPROVED BY OWNER.

**PAINT SCHEDULE:**

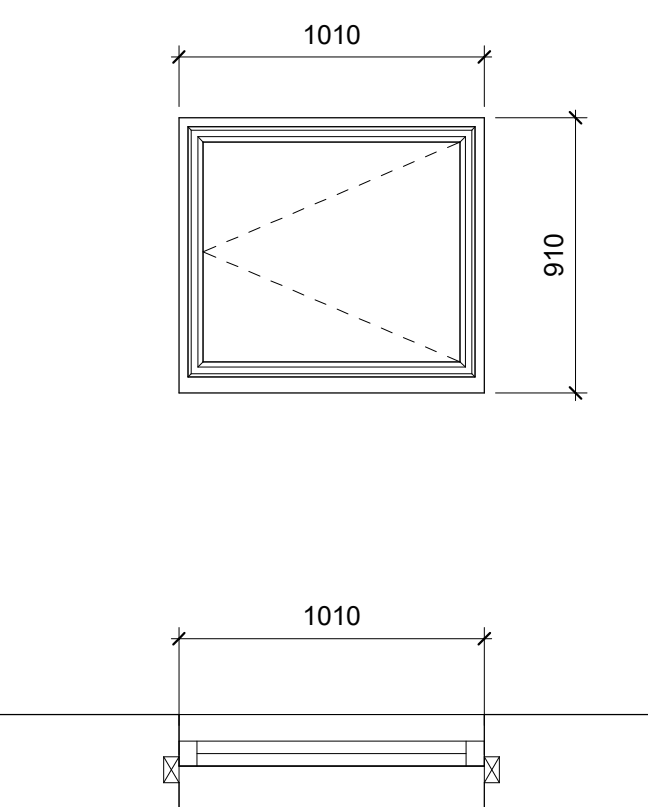
- EXTERIOR: FOR DOORS D102, D104
  - HM DOOR FRAME COLOUR - ST.BONIFACE #P2150-02 BY PARA PRINT
  - HM DOOR COLOUR - MENNONITE GREY TINT 1 #P2111-04 BY PARA PRINT
- INTERIOR: FOR DOORS D106, D107, D108, D109, D201
  - HM DOOR FRAME COLOUR - SING TIME # P5221-34D BY PARA PRINT
  - HM DOOR COLOUR - SNAPPY DRESSER #P5221-24 BY PARA PRINT



D1



D2



WIN.1

Door Legend  
1 : 25

Window Legend  
1 : 25

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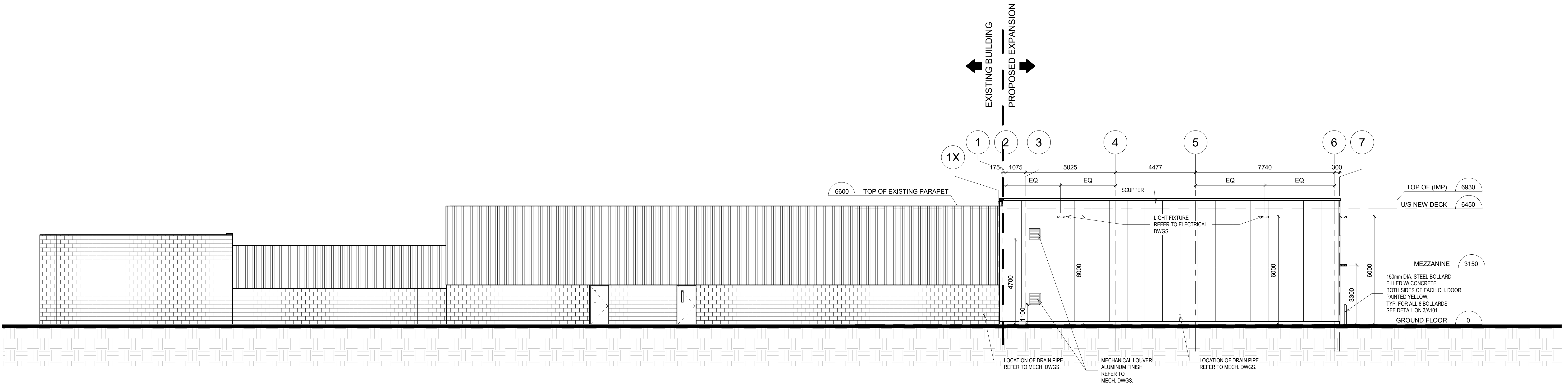
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Drawing Title  
**DOOR SCHEDULE**

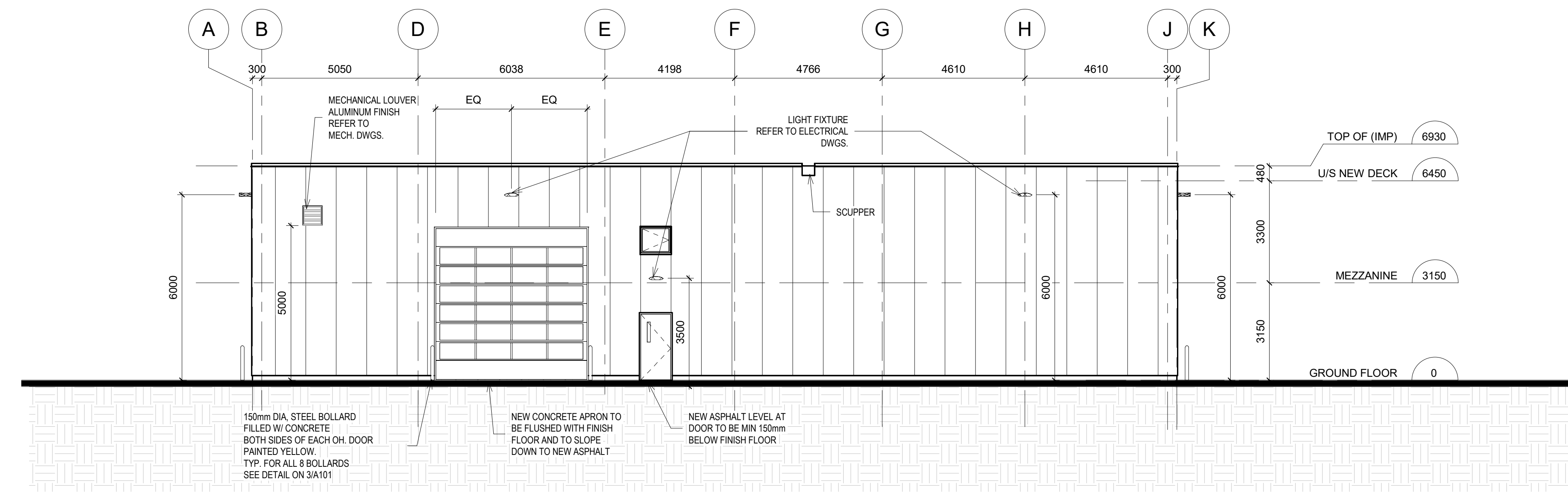
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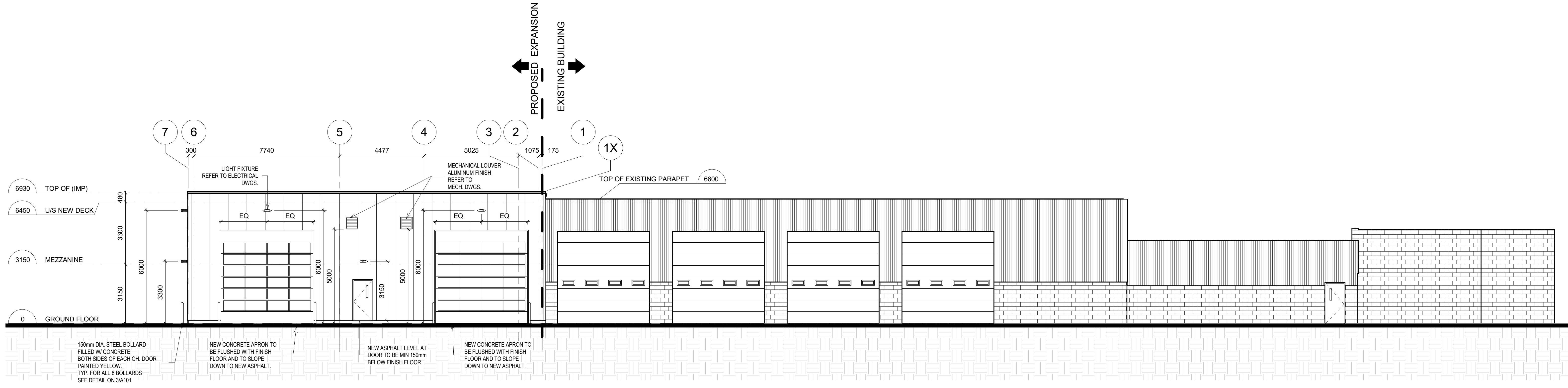




3 NORTH ELEVATION  
1:100



2 WEST ELEVATION  
1:100



1 SOUTH ELEVATION  
1:100

**EXTERIOR WALL TYPES**

**EW-1** 125mm (5") INSULATED METAL PANEL  
 EXTERIOR FACE 22 ga  
 PROFILE - NORBEC MICRORIB  
 COLOUR- RIGEL 2 GREY (QC 9789)  
 INTERIOR FACE 24 ga  
 PROFILE - NORBEC SMP SMOOTH  
 COLOUR- BRIGHT WHITE  
 EFFECTIVE R VALUE= 37.05  
 G.C. & SUB-TRADE SHALL HAVE SHOP DRAWINGS FOR SEISMIC & WIND LOADING CONSIDERATION PREPARE & SEALED BY P. ENG. LICENSED TO PRACTICE IN THE PROVINCE OF ONTARIO FOR REVIEW BY PROJECT ENG. & ARCHITECT  
 NOREX-L SUPPLIED BY NORBEC, QUEBEC, CANADA

**INTERIOR WALL TYPES**

**W1** 200mm CONCRETE BLOCK MASONRY  
 FROM TO CONCRETE FLOOR TO U/S OF DECK  
 FIT AROUND O.W.S.J. & STRUCTURAL ELEMENTS  
 W/ SOLID CEMENT BRICKS USE TO FILL GAPS.  
 (REFER TO STRUCTURAL DRAWINGS)  
 CONCRETE BLOCK WALL TO BE PAINTED "OFF WHITE"  
 EPOXY PAINT (FLOOR TO U/S OF DECK)  
**W2** 150mm CONCRETE BLOCK MASONRY  
 FROM TO CONCRETE FLOOR TO U/S OF DECK  
 FIT AROUND O.W.S.J. & STRUCTURAL ELEMENTS  
 W/ SOLID CEMENT BRICKS USE TO FILL GAPS.  
 (REFER TO STRUCTURAL DRAWINGS)  
 CONCRETE BLOCK WALL TO BE PAINTED "OFF WHITE"  
 EPOXY PAINT (FLOOR TO U/S OF DECK)

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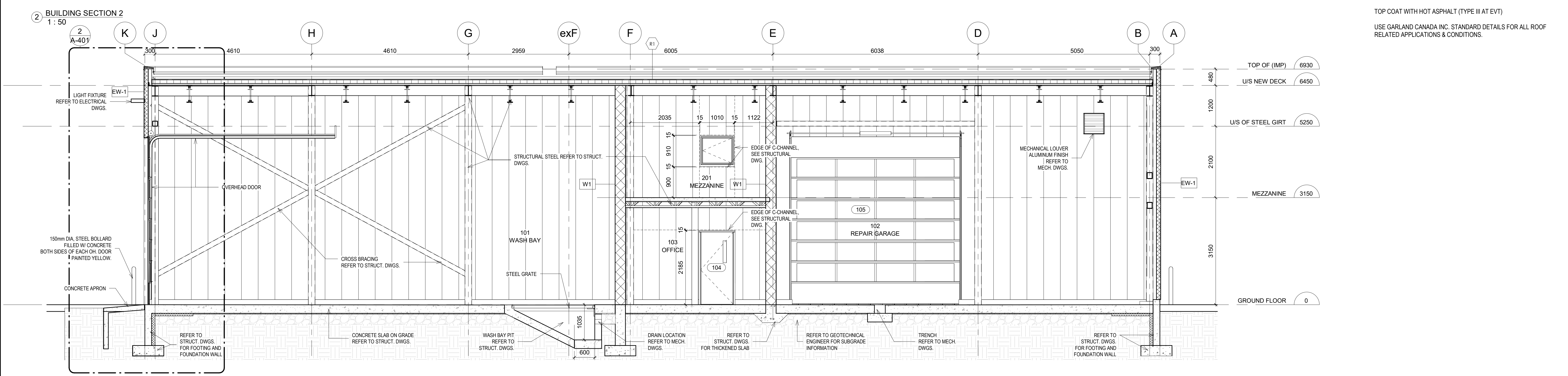
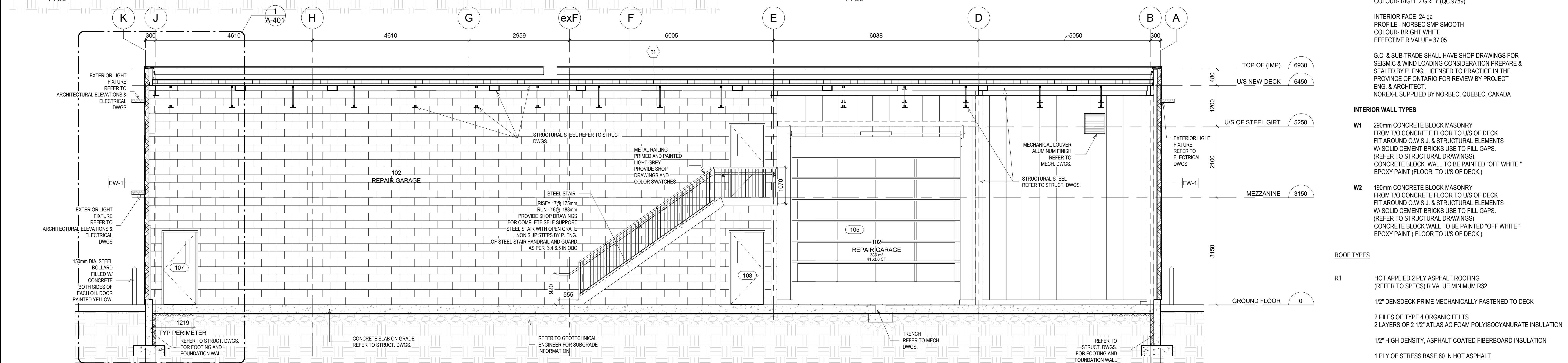
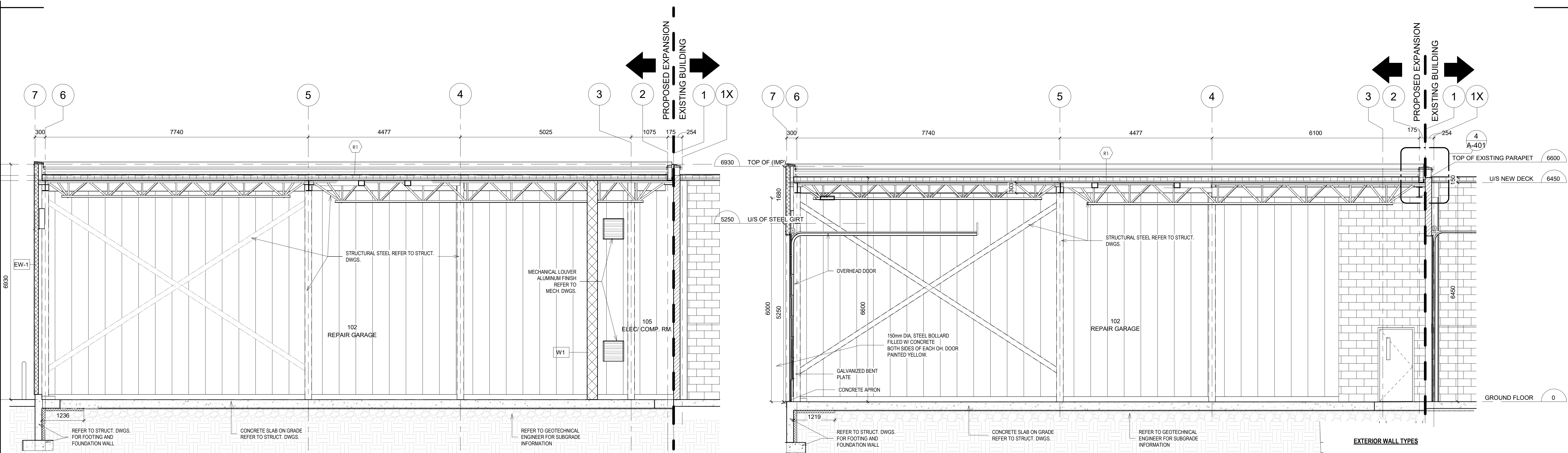
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Drawing Title  
**ELEVATIONS**

Project  
ORANGEVILLE OPERATIONS  
CENTRE EXPANSION  
500 C Line, Orangeville, ONTARIO L9W 4Z3

Scale  
As indicated  
Issued by  
D.C.  
2022-008  
File No.  
2022-008  
Plot Date  
30.06.2023



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**ISSUED FOR TENDER**

No.	Issued For	Date
1	ISSUED FOR BUILDING PERMIT	2023-08-08
2	ISSUED FOR TENDER	2025-01-20

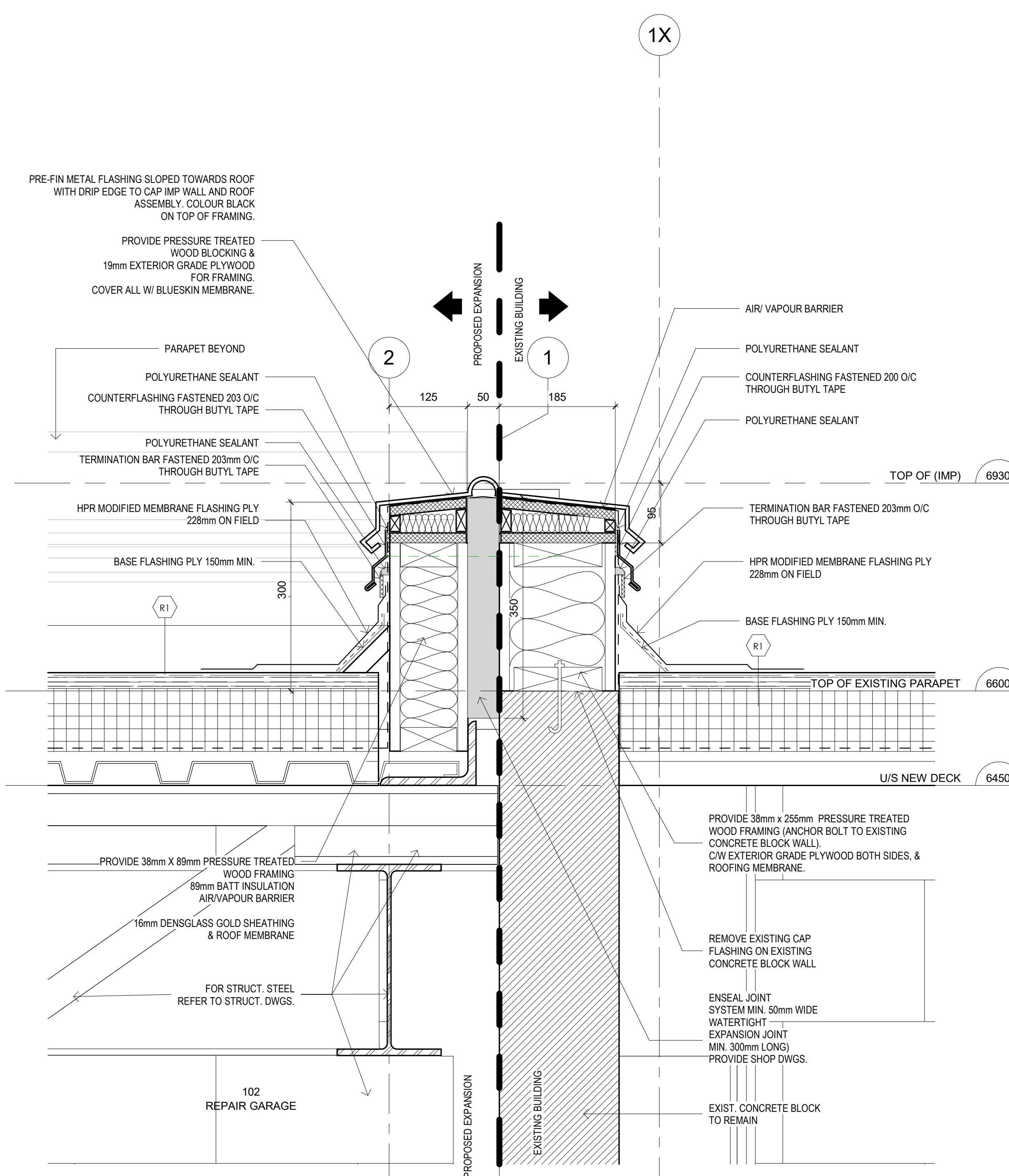


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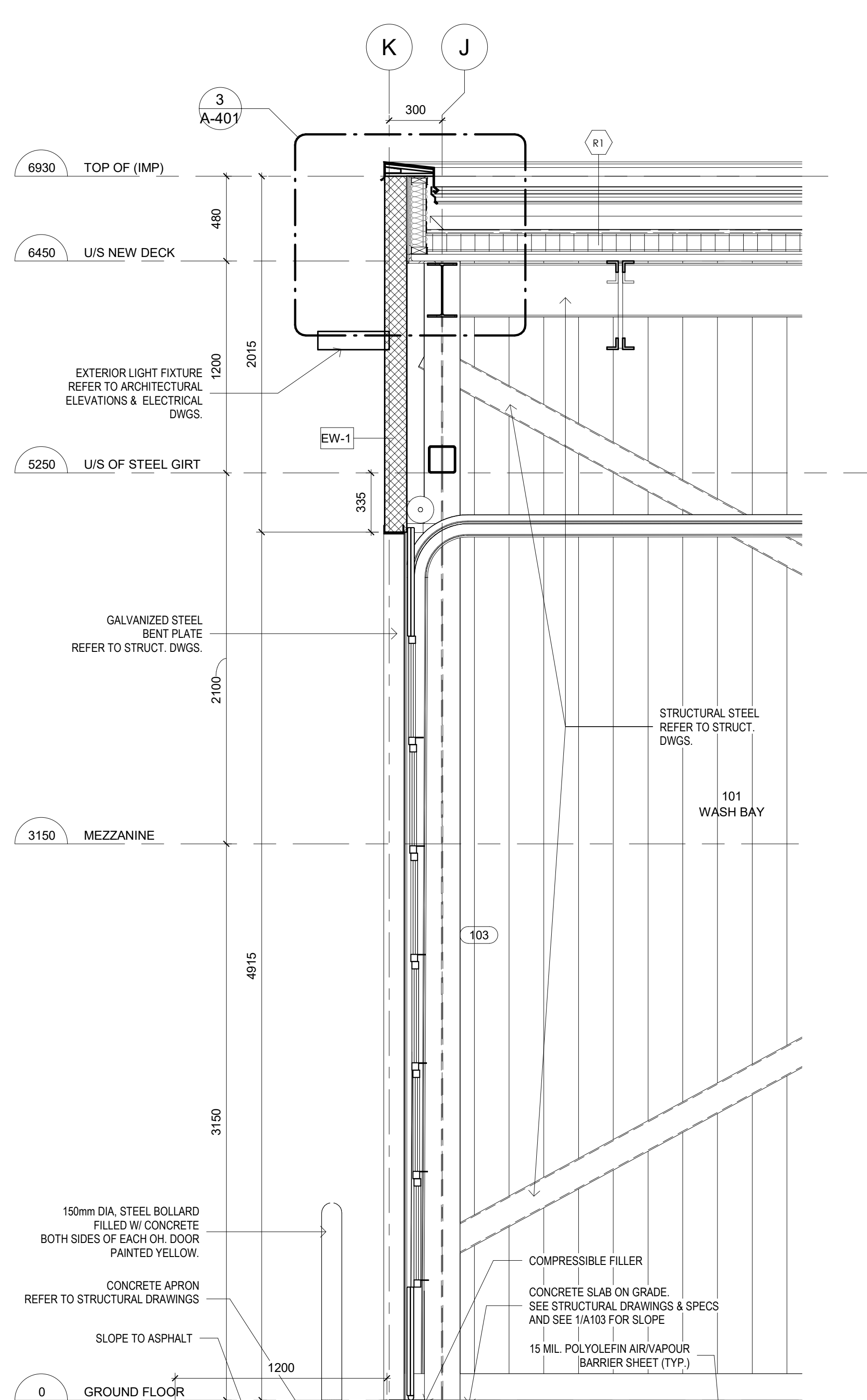
**BUILDING SECTIONS**

Project  
**ORANGEVILLE OPERATIONS CENTRE EXPANSION**  
500 C Line, Orangeville, ONTARIO L9W 4Z3

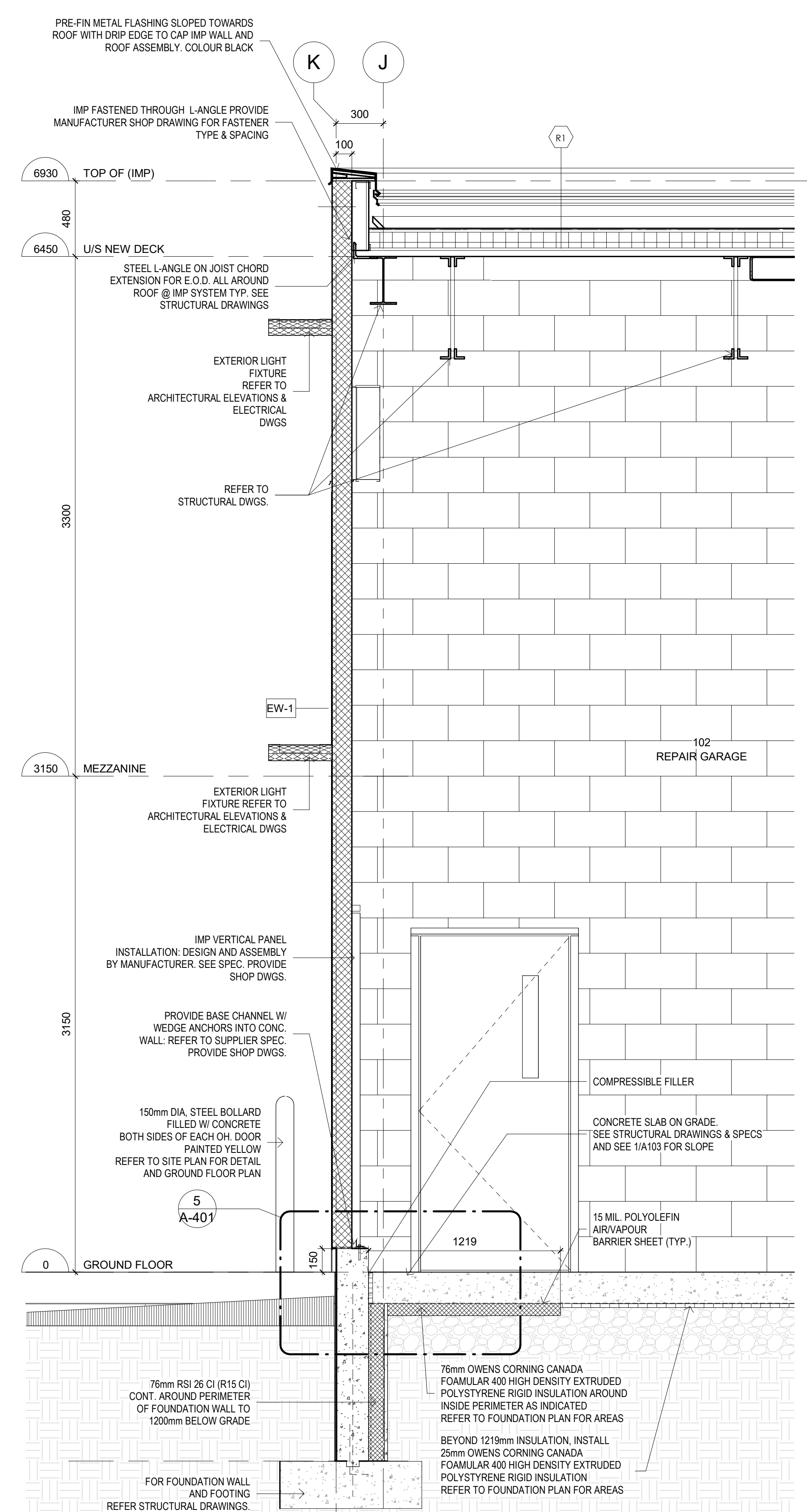
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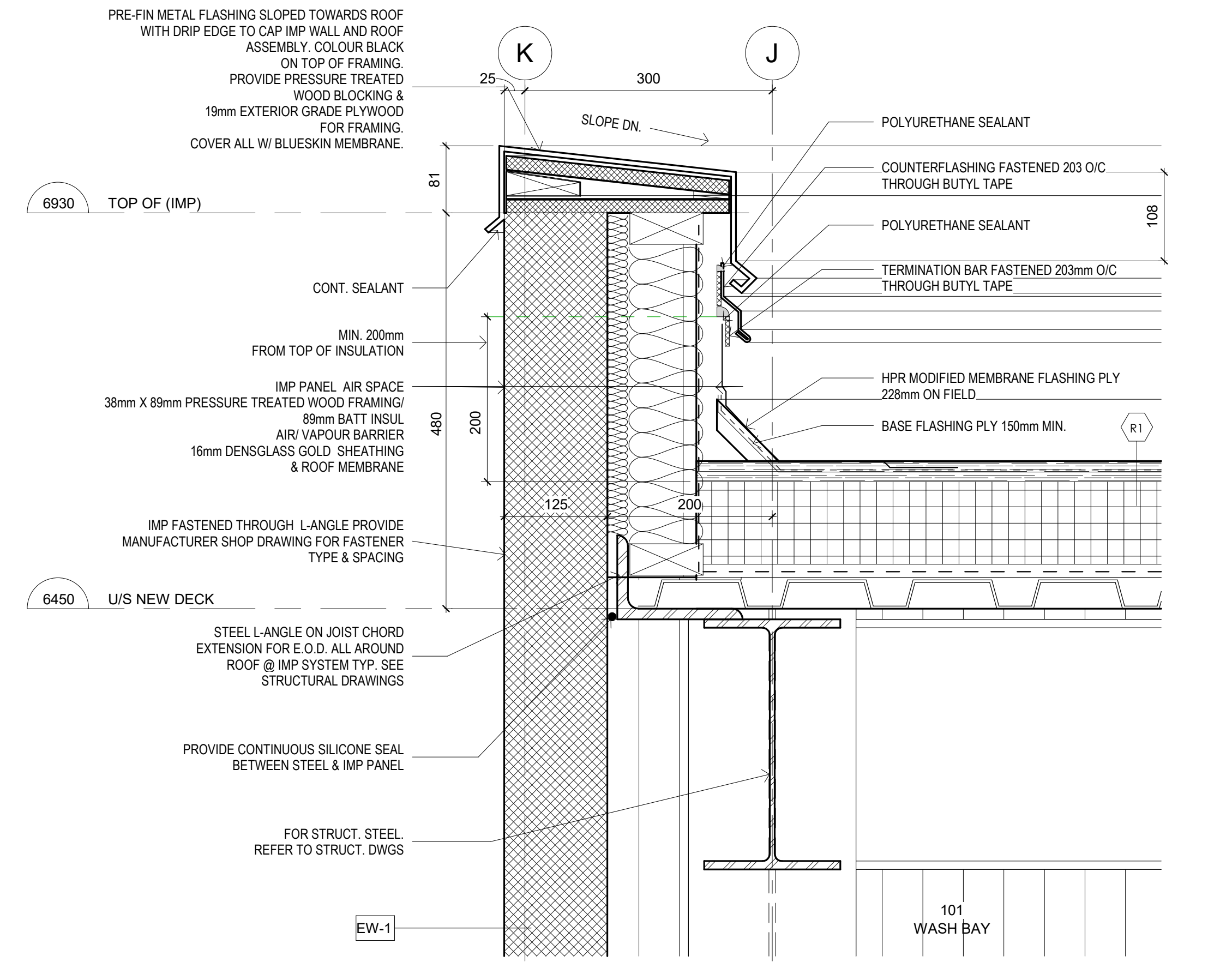
4 EXPANSION JOINT BETWEEN EXISTING BUILDING & PROPOSED EXPANSION  
1 : 5



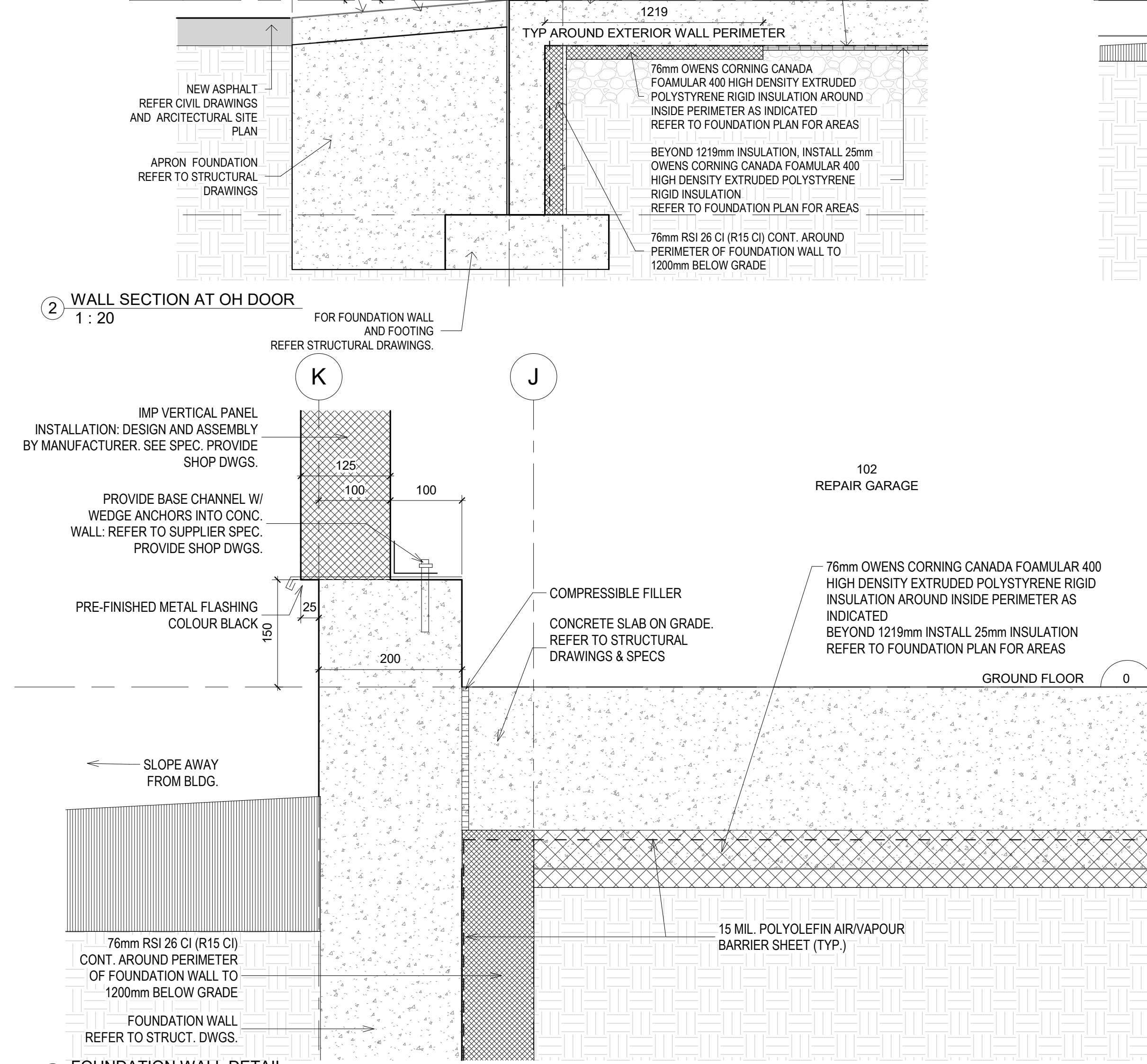
2 WALL SECTION AT OH DOOR  
1 : 20



1 WALL SECTION AT INSULATED METAL PANEL  
1 : 20



3 SECTION DETAIL AT PARAPET TYPICAL  
1 : 5



5 FOUNDATION WALL DETAIL  
1 : 5

- ROOF TYPES**
- R1 HOT APPLIED 2 PLY ASPHALT ROOFING (REFER TO SPECS) R VALUE MINIMUM R32
- 1/2" DENSDECK PRIME MECHANICALLY FASTENED TO DECK
- 2 PILES OF TYPE 4 ORGANIC FELTS
- 2 LAYERS OF 2 1/2" ATLAS AC FOAM POLYISOCYANURATE INSULATION
- 1/2" HIGH DENSITY, ASPHALT COATED FIBERBOARD INSULATION
- 1 PLY OF STRESS BASE 80 IN HOT ASPHALT
- 1 PLY OF STRESS PLY MAX. SBS MODIFIED MEMBRANE IN HOT ASPHALT
- TOP COAT WITH HOT ASPHALT (TYPE III AT EV1)
- USE GARLAND CANADA INC. STANDARD DETAILS FOR ALL ROOF RELATED APPLICATIONS & CONDITIONS.

- EXTERIOR WALL TYPES**
- EW-1 125mm (5") INSULATED METAL PANEL
- EXTERIOR FACE 22 ga PROFILE - NORBEC MICRORIB COLOUR- RIGEL 2 GREY (QC 9789)
- INTERIOR FACE 24 ga PROFILE - NORBEC SMP SMOOTH COLOUR- BRIGHT WHITE EFFECTIVE R VALUE= 37.05
- G.C. & SUB-TRADE SHALL HAVE SHOP DRAWINGS FOR SEISMIC & WIND LOADING CONSIDERATION PREPARE & SEALED BY P. ENG. LICENSED TO PRACTICE IN THE PROVINCE OF ONTARIO FOR REVIEW BY PROJECT ENG. & ARCHITECT
- NOREX-L SUPPLIED BY NORBEC, QUEBEC, CANADA
- INTERIOR WALL TYPES**
- W1 290mm CONCRETE BLOCK MASONRY FROM T/O CONCRETE FLOOR TO U/S OF DECK FIT AROUND O.W.S.J. & STRUCTURAL ELEMENTS W/ SOLID CEMENT BRICKS USE TO FILL GAPS. (REFER TO STRUCTURAL DRAWINGS) CONCRETE BLOCK WALL TO BE PAINTED 'OFF WHITE' EPOXY PAINT (FLOOR TO U/S OF DECK)
- W2 190mm CONCRETE BLOCK MASONRY FROM T/O CONCRETE FLOOR TO U/S OF DECK FIT AROUND O.W.S.J. & STRUCTURAL ELEMENTS W/ SOLID CEMENT BRICKS USE TO FILL GAPS. (REFER TO STRUCTURAL DRAWINGS) CONCRETE BLOCK WALL TO BE PAINTED 'OFF WHITE' EPOXY PAINT ( FLOOR TO U/S OF DECK )

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**WALL SECTIONS**

Project  
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CENTRE EXPANSION

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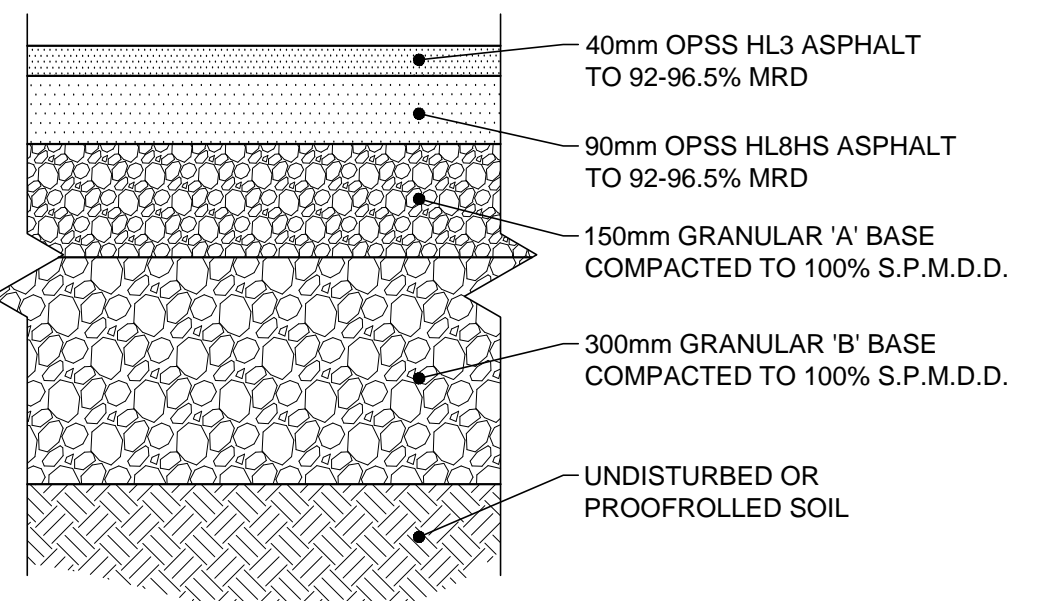
**GEODETTIC BENCHMARK INFORMATION**

ELEVATIONS ARE BASED ON GPS OBSERVATIONS TO PERMANENT REFERENCE STATIONS IN THE NAD83 (CSRS-2010) COORDINATE SYSTEM AND HAVE BEEN CORRECTED TO ORTHOMETRIC ELEVATIONS ON THE CGVD28 DATUM (1978 ADJUSTMENT) WITH GEOID MODEL HTV2.0, AS SUPPLIED BY NATURAL RESOURCES CANADA.

- SITE BM1: NE CORNER OF CONCRETE TRANSFORMER PAD, 453.57m.
- SITE BM2: NAIL IN HYDRO POLE, 453.91m
- SITE BM3: TOP OF POST, 454.98m.
- SITE BM4: NAIL IN STUMP, 454.05m.

**GENERAL NOTES:**

1. READ ALL CIVIL DRAWINGS IN CONJUNCTION WITH ALL CONTRACT DOCUMENTS, INCLUDING ARCHITECTURAL, STRUCTURAL, ELECTRICAL, MECHANICAL, LANDSCAPE AND VENDOR DRAWINGS AS APPLICABLE.
2. THE CONTRACTOR FOR ANY PORTION OF WORK SHALL VISIT THE SITE AND SHALL BE THOROUGHLY FAMILIAR WITH ALL THE PHYSICAL FEATURES THAT MAY AFFECT THE WORK IN ANY WAY.
3. THE CONTRACTOR MUST FIELD CHECK AND VERIFY ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS AND REPORT ANY DISCREPANCIES TO THE CONSULTANT PRIOR TO COMMENCEMENT OF ANY WORK.
4. THE CONTRACTOR SHALL KEEP WORK SITES CLEAN AND FREE OF ALL CONSTRUCTION DEBRIS DURING THE PROCESS OF CONSTRUCTION AND LEAVE THE SITE CLEAN UPON COMPLETION OF WORK OR PORTIONS OF THE WORK.
5. THE CONTRACTOR SHALL OBTAIN APPROVED SERVICE CONNECTION PERMITS FROM THE TOWN OF ORANGEVILLE PUBLIC WORKS BEFORE CONNECTING TO EXISTING SEWER.
6. CONSULTANT MUST APPROVE ALL DEVIATIONS FROM THE WORKING DRAWINGS. THE CONTRACTOR MUST KEEP AN ACCURATE RECORD OF ALL CHANGES FROM THE ORIGINAL INFORMATION SHOWN ON THE CONSTRUCTION DRAWINGS.
7. FEATURES OF CONSTRUCTION NOT FULLY SHOWN ARE OF THE SAME CHARACTER AS THOSE NOTED FOR SIMILAR CONDITIONS.
8. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING:
  - OCCUPATIONAL HEALTH AND SAFETY ACT
  - ONTARIO REGULATION 213/91 - CONSTRUCTION PROJECTS
  - THE ONTARIO BUILDING CODE AND THE NATIONAL BUILDING CODE
  - THE ONTARIO PROVINCIAL STANDARD SPECIFICATIONS / DRAWINGS
9. ALL ELEVATIONS AND DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE.
10. ALL BUILDING ELEVATIONS (MAIN FINISHED FLOOR, TOP OF FOUNDATION, BASEMENT FINISHED FLOOR) TO BE COORDINATED WITH ARCHITECTURAL DRAWINGS.
11. ALL NEW GRADING AFFECTING EXISTING SITE FEATURES (TREES, FENCES, LANDSCAPING, FOUNDATION WALLS, RETAINING WALLS, SLABS, BELL PEDESTALS, UTILITY POLES ETC.) TO BE COORDINATED WITH ARCHITECTURAL, STRUCTURAL, ELECTRICAL, MECHANICAL, LANDSCAPE AND VENDOR DRAWINGS AS APPLICABLE.
12. PROVIDE APPROPRIATE SHORING FOR TRENCH EXCAVATION IN ACCORDANCE WITH THE LATEST REVISION OF THE OHSA GUIDELINE FOR CONSTRUCTION PROJECTS.
13. MINIMUM HORIZONTAL SEPARATION BETWEEN WATER MAINS AND SEWERS SHALL BE 2.5m. MINIMUM VERTICAL CLEARANCE BETWEEN SEWERS AND WATER MAINS WHICH CROSS IS 500mm.
14. RIGID PIPE TRENCH EXCAVATION AS PER OPSD 802.030 FOR EARTH EXCAVATION AND OPSD 802.033 FOR ROCK EXCAVATION, AS APPLICABLE.
15. FLEXIBLE PIPE TRENCH EXCAVATION AS PER OPSD 802.010 FOR EARTH EXCAVATION AND OPSD 802.013 FOR ROCK EXCAVATION, AS APPLICABLE.
16. ALL SANITARY SEWER CONNECTIONS SHALL BE WITH PRE-MANUFACTURED TEES AND SHALL BE INSTALLED AT A MINIMUM GRADE OF 2% UNLESS NOTED OTHERWISE.
17. BUILDING SERVICES SHALL TERMINATE AT 1.5m FROM THE FACE OF THE BUILDING. SITE SERVICES CONTRACTOR TO COORDINATE, WITH THE MECHANICAL CONTRACTOR, THE CONNECTION OF THE SEWER TO THE INTERNAL SERVICES.
18. GRADING IS NOT TO ADVERSELY AFFECT ADJACENT PROPERTIES.
19. ALL WORK WITHIN MUNICIPAL RIGHT-OF-WAYS REQUIRES ROAD OCCUP. PERMIT.
20. THE CONTRACTOR SHALL ENSURE ALL NEW AND EXISTING MANHOLES / CATCHBASINS / VALVES AND ANY OTHER APPURTENANCE WITHIN THE CONSTRUCTION AREA, TO MATCH FINISHED GRADE, AS REQUIRED.
21. NEW MAINTENANCE HOLES TO CONFORM TO OPSD 701.010 - 701.015 AS APPROPRIATE, WITH TYPICAL MAINTENANCE HOLE BENCHING AS PER OPSD 701.021.
22. PRE-CONSTRUCTION SURVEY TO BE COMPLETED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.
23. REMOVAL OF EXISTING FEATURES OF THE SITE ARE TO BE CARRIED OUT IN ACCORDANCE WITH OPS 510 AS APPLICABLE.
24. ROAD, PAVED AREAS AND GRASSED AREAS TO BE RESTORED TO THEIR ORIGINAL CONDITION OR AS PER THE TOWN OF ORANGEVILLE STANDARDS FOR ROAD RESTORATION IF EXISTS. TRENCH BACKFILLS WITHIN MUNICIPAL ROADWAYS TO BE WITH FULL DEPTH GRANULAR 'A'.
25. ASPHALT AND GRANULAR CROSS SECTION TO BE CONFIRMED BY GEOTECHNICAL ENGINEER. IF CHANGES TO THE ASPHALT CROSS SECTIONS ARE REQUIRED BASED ON GEOTECHNICAL CONSIDERATIONS, THE CONSULTANT SHALL BE NOTIFIED PRIOR TO COMMENCEMENT OF ANY WORK.
26. SEALED COMPACTION TEST REPORTS TO BE PROVIDED BY THE CONTRACTOR THROUGH A THIRD PARTY TESTING AGENCY.



**HEAVY DUTY ASPHALT DETAIL**  
SCALE: 1:10

**LEGEND**

— 0W —	EXIST. ELEVATION
— X —	OVERHEAD WIRES
— SAN —	FENCE
— —	EX. SANITARY SEWER
— —	PR. SANITARY SEWER
— ST —	EX. STORM SEWER
— w —	EX. WATER MAIN
X X	ABANDONED MAIN
---	PROPERTY LINE
⊠	EXIST. CATCHBASIN
⊕	EXIST. MANHOLE
●	PROP. MANHOLE
⊗	EXIST. VALVE
⊠	CAPPED SERVICE
⊕	FIRE HYDRANT
▲	GUY WIRE ANCHOR
○	UTILITY POLE
⊙	LIGHT STANDARD
⊕	GAS METER
▼	BUILDING ENTRANCE

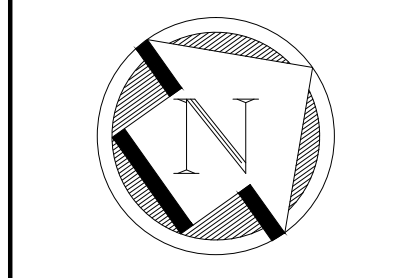
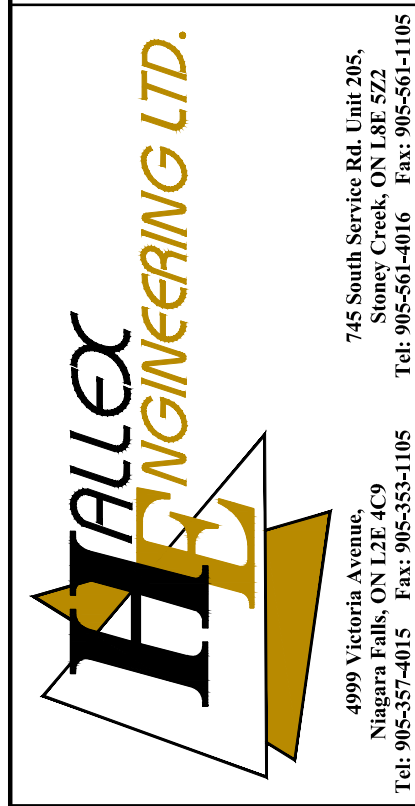
DISTURBED SURFACES, INCLUDING ASPHALT PAVEMENT, CONCRETE BARRIER CURB & GRASS BOULEVARD TO BE RESTORED AS PER TOWN OF ORANGEVILLE STANDARDS

GENERAL CONTRACTOR TO ENGAGE LOCATE COMPANY TO IDENTIFY ALL BURIED SERVICES BEFORE ANY CONSTRUCTION BEGINS. ANY CONFLICT WITH EXISTING UTILITIES ARE TO BE COMMUNICATED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.

ANY DEVIATIONS FROM THE PLANS (I.E. SERVICE DIAMETER, MATERIAL) SHALL BE NOTED ON THE AS CONSTRUCTED DRAWINGS AND PROVIDED TO THE ENGINEER

CONTRACTOR TO FIELD VERIFY ALL EX. MANHOLE AND CATCHBASIN INVERTS.

**ISSUED FOR TENDER**



DATE
JUL 27, 2023
AUG 02, 2023
AUG 09, 2023

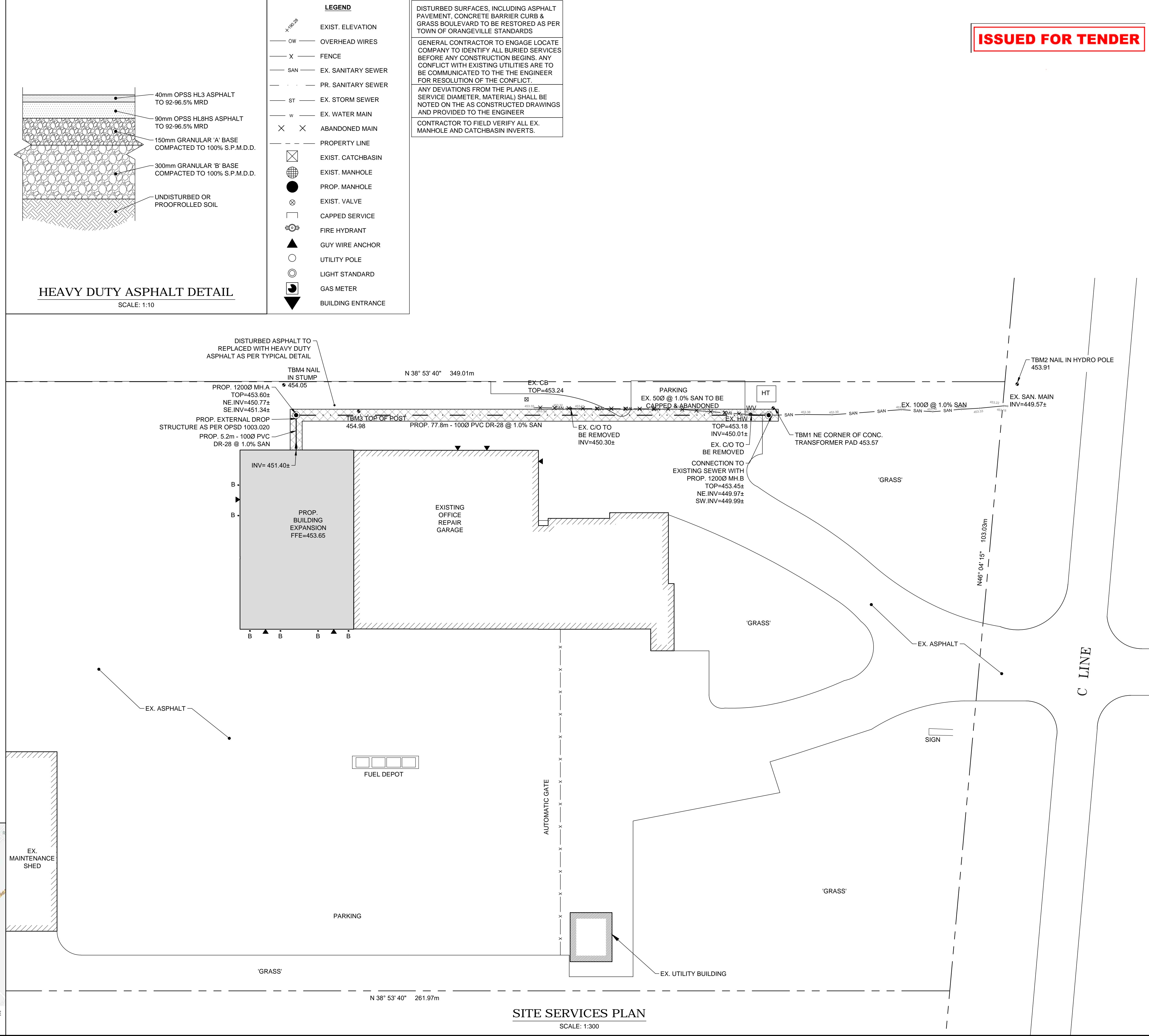
REV.	DRAWING REVISION
0	ISSUED FOR PERMIT
1	ISSUED FOR PERMIT
2	ISSUED FOR PERMIT

**CLIENT:**  
ALAMO ARCHITECTURE INC.  
202-8551 WESTON ROAD  
WOODBRIDGE, ON

**PROJECT:**  
ORANGEVILLE OPERATION CENTRE - SANITARY SEWER EXTENSION  
500 C LINE,  
ORANGEVILLE, ON

**SHEET TITLE:**  
GENERAL NOTES,  
TYPICAL DETAILS, KEY PLAN  
& SITE SERVICES PLAN

<b>DATE:</b>	JUNE 2023
<b>SCALE:</b>	AS SHOWN
<b>DR. BY:</b>	JF
<b>CH. BY:</b>	JS/JH
<b>JOB No.:</b>	230607
<b>DWG.</b>	C1
<b>REV.</b>	2



**KEY PLAN**  
SCALE: NTS  
ORANGEVILLE OPERATION CENTRE  
300 C LINE, ORANGEVILLE, ON

**SITE SERVICES PLAN**  
SCALE: 1:300

# ORANGEVILLE OPERATION CENTRE

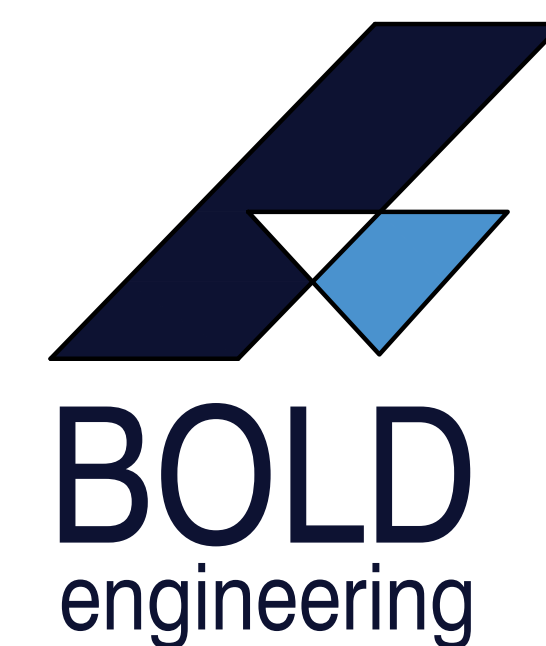
500 C LINE, ORANGEVILLE, ON

## EXPANSION

PROJECT NO.: B22-367.32

### DRAWING LIST

- E1 ELECTRICAL SPECIFICATIONS
- E2 ELECTRICAL SLD, LEGEND AND SCHEDULES
- E3 ELECTRICAL DEMOLITION PLAN
- E4 PROPOSED POWER PLAN - GROUND FLOOR
- E5 PROPOSED CEILING PLAN - GROUND FLOOR
- E6 PROPOSED POWER PLAN - MEZZANINE
- E7 PROPOSED CEILING PLAN - MEZZANINE
- E8 ELECTRICAL DETAILS



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[www.boldengineering.ca](http://www.boldengineering.ca)

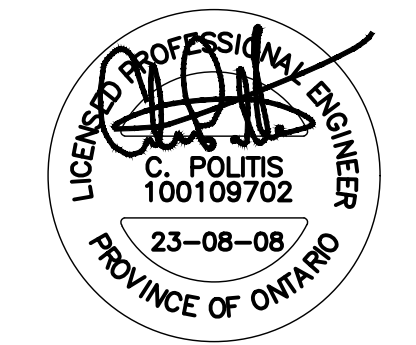
SPECIFICATIONS

ELECTRICAL SPECIFICATIONS		CONTRACTOR'S NAME.	TO THE EXISTING SERVICES. THE EXISTING BUILDING MUST BE KEPT IN OPERATION AT ALL TIMES. ARRANGE WORK IN SUCH A MANNER THAT INTERRUPTIONS IN SERVICES OCCUR ONLY AT SCHEDULED TIMES. INTERRUPTIONS SHALL BE SCHEDULED WITH THE ARCHITECT/DESIGN CONSULTANT PRIOR TO COMMENCING WORK. OVERTIME WORK THAT MAY BE REQUIRED TO TIE-IN SERVICES AT NIGHT OR ON WEEKENDS SHALL BE INCLUDED IN THE TENDER AMOUNT.	MOTORS, MINIMUM 1M (3') LENGTH.
<b>PART A – GENERAL</b>				
1.1.1.	THE ENGINEER HAS NOT SUBMITTED THE CONTRACT DRAWINGS TO THE ELECTRICAL SAFETY AUTHORITY FOR APPROVAL. ESA COMMENTS SHALL BE IN-CORPORATED IN THE PROJECT USING NORMAL CONTRACT PROCEDURES. CO-ORDINATE WITH THE AUTHORITIES AND PROVIDE ADDITIONAL INFORMATION AS REQUIRED.	11. CLOSE-OUT DOCUMENTS		3.11 ALL CONDUITS FOR COMMUNICATION WIRING SHALL BE INSTALLED WITH BUSHINGS AT EACH END. CONDUITS SHALL BE TERMINATED ON EQUIPMENT RACK, BACKBOARD OR CABLE TRAY WITHIN THE ROOM.
1.2.	THE ELECTRICAL CONTRACTOR SHALL ACT AS THE OWNER'S AGENT IN ACCORDANCE WITH SECTION 2 OF THE O.E.S.C. AND SHALL IMMEDIATELY UPON AWARD OF THE CONTRACT, SUBMIT TO ELECTRICAL INSPECTION DEPARTMENT, THE NECESSARY NUMBER OF DOCUMENTATION FOR EXAMINATION, INSPECTION AND APPROVAL PRIOR TO THE COMMENCEMENT OF WORK. PAY ALL COSTS AND ASSOCIATED FEES.	12.1 AFTER COMPLETION OF THE PROJECT, PROVIDE THE FOLLOWING DOCUMENTS TO THE BUILDING OWNER – FULL SIZE AS-BUILT DRAWINGS ALONG WITH DISK(S) – HYDRO / ESA ELECTRICAL INSPECTION REPORT. – FIRE ALARM VERIFICATION REPORT AND CERTIFICATE. – WRITTEN WARRANTY.	15. DEFECT OR INTERFERENCE	4. RECEPTACLES
1.3.	PROVIDE CERTIFICATE(S) OF ACCEPTANCE FROM THE AUTHORITY HAVING JURISDICTION, UPON COMPLETION OF WORK.	<b>PART B – EXECUTION</b>	15.1 EXAMINE THE WORK OF THE OTHER TRADES, AS THEY AFFECT THIS DIVISION. REPORT AT ONCE TO THE ARCHITECT/DESIGN CONSULTANT ANY DEFECT OR INTERFERENCE THAT MAY AFFECT THE WORK OF THIS DIVISION OR THE GUARANTEE OF THIS WORK.	4.1 DUPLEX RECEPTACLES SHALL BE 120 VOLT, 15 AMP, 5–15R AND SPECIFICATION GRADE UNLESS OTHERWISE NOTED. VERIFY EXACT LOCATION, MOUNTING HEIGHT AND COLOUR WITH ARCHITECT/DESIGN CONSULTANT PRIOR TO INSTALLATION.
1.4.	THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ARCHITECT / DESIGNERS' DRAWINGS FOR DIMENSIONS, MOUNTING HEIGHTS, CONSTRUCTION DETAILS, FINISHES AND COLOURS.	1. WORKMANSHIP	16. MODIFICATIONS TO EXISTING ELECTRICAL SERVICES	4.2 MANUFACTURER: – LUTRON FOR SCREWLESS COVERPLATES (UNLESS OTHERWISE NOTED)
2.	BUILDING STANDARDS	1.1 ALL WORK SHALL BE CARRIED OUT AND PERFORMED IN A WORKMANLIKE MANNER TO THE SATISFACTION OF THE ARCHITECT/DESIGN CONSULTANT. ANY UNSATISFACTORY WORK BY THIS DIVISION SHALL BE REPLACED WITHOUT EXTRA COST TO THE OWNER.	16.1 VISIT THE SITE, EXAMINE THE EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE EXTENT OF THE NECESSARY REMOVAL, RELOCATION, RECONNECTING AND RE-ROUTING OF ELECTRICAL EQUIPMENT AND WIRING AS REQUIRED FOR THE COMPLETION OF THE PROJECT. REVIEW AND CONFIRM WITH THE ARCHITECT'S DRAWINGS FOR THE COMPLETE EXTENT OF DEMOLITION AND ALTERATION.	5. COVERPLATES
2.1	COMPLETE ALL ELECTRICAL WORK IN ACCORDANCE WITH THE RELEVANT SECTIONS OF THE BASE BUILDING SPECIFICATIONS, DRAWINGS, AND STANDARDS TO THE SATISFACTION OF THE CONSULTANT AND/OR THE BUILDING OWNER. THE AVAILABLE BASE BUILDING DOCUMENTS WILL BE MADE AVAILABLE FOR REVIEW BY THE BUILDING OWNER IF SO REQUIRED.	1.2 THE CONSTRUCTION SITE SHALL BE KEPT CLEAN AND ANY DEBRIS AND CONSTRUCTION MATERIAL SHALL BE REMOVED FROM THE SITE THROUGHOUT THE CONSTRUCTION PERIOD AND ON COMPLETION OF THE WORK.	16.2 THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISCONNECTING AND REMOVING ALL ELECTRICAL EQUIPMENT FROM AREAS BEING ALTERED OR DEMOLISHED. WIRING, CONDUIT AND EQUIPMENT WHICH IS REQUIRED TO MAINTAIN SERVICE IN OTHER PARTS OF THE BUILDING SHALL BE TEMPORARILY SUPPORTED, REROUTED, SERVICED OR RELOCATED AS REQUIRED.	5.1 EXPOSED COVERPLATES SHALL BE MANUFACTURER OF LUTRON SCREWLESS, FINISH COLOUR AS PER AKB SPECIFICATIONS UNLESS OTHERWISE NOTED.
2.2	ALL ELECTRICAL WORK TO BE DONE IN ACCORDANCE WITH UP TO DATE ONTARIO ELECTRICAL SAFETY CODE.	1.3 PROVIDE TOOLS AND CLEAN UP EQUIPMENT. OBTAIN OWNER'S PERMISSION FOR THE USE OF BASE BUILDING'S ELECTRICAL PLUMBING AND DRAINAGE OUTLETS. PROVIDE DAILY CLEAN UP AND PROPER DISPOSAL OF DEBRIS GENERATED BY THIS DAILY OPERATION.	16.3 EQUIPMENT TO BE RELOCATED SHALL BE VERIFIED FOR WORKING CONDITION. PROVIDE NEW IF NECESSARY AND FEASIBLE. EXTEND WIRING/CONDUIT AND RECONNECT TO SUIT.	6. FIRE ALARM SYSTEMS
3.	SITE VISIT	2. DEMOLITION	16.4 OBSOLETE CONDUITS AND CABLES SHALL BE DISCONNECTED FROM THEIR SOURCE OF SUPPLY, CUT BACK AS FAR AS POSSIBLE, AND SHALL BE REMOVED. ALL EXISTING WIRING NOT REMOVED SHALL BE DISCONNECTED, BLANKED-OFF AND MADE SAFE.	6.1 EXISTING FIRE ALARM SYSTEM TO REMAIN.
3.1	THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE ALL DRAWINGS CAREFULLY TO DETERMINE THE EXTENT OF WORK AFFECTING THE EXISTING BUILDING. DETERMINE AND INCLUDE IN THE TOTAL PRICE, THE TOTAL COST OF LABOUR AND MATERIAL TO DISCONNECT, REMOVE, RELOCATE, BLANK OFF, REROUTE OR MAKE SAFE ALL EXISTING SERVICES, CONDUITS, WIRE, BOXES, LUMINAIRES AND EQUIPMENT AS REQUIRED.	2.1 VISIT THE SITE. EXAMINE THE EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE EXTENT OF THE NECESSARY REMOVAL, RELOCATION, RECONNECTING, AND REROUTING OF ELECTRICAL EQUIPMENT AND WIRING AS NECESSARY FOR THE COMPLETION OF THE PROJECT.	16.5 UNLESS OTHERWISE ADVISED, ALL BASE BUILDING LUMINAIRES, TRANSFORMERS, PANELBOARDS AND DISCONNECT SWITCHES WHICH ARE REMOVED SHALL BE HANDED OVER TO THE BUILDING OWNER.	6.2 SUPPLY AND INSTALL NEW FIRE ALARM DEVICES AS SHOWN ON DRAWINGS. CONSULT WITH BASE BUILDING FIRE ALARM SYSTEM MANUFACTURER.
3.2	NO CLAIM FOR EXTRA PAYMENT SHALL BE MADE FOR EXTRA WORK MADE NECESSARY BY CIRCUMSTANCES ENCOUNTERED DUE TO CONDITIONS WHICH WERE VISIBLE UPON, OR REASONABLY INFERRABLE FROM AN EXAMINATION OF THE SITE PRIOR TO SUBMISSION OF THE BID PRICE. THIS SHALL INCLUDE THE EXISTING SERVICES ABOVE CEILING	2.2 REMOVE ALL EXISTING ELECTRICAL COMPONENTS, WIRES AFTER HYDRO METER.	16.6 ALL REMOVED EQUIPMENT AND MATERIALS WHICH ARE NO LONGER REQUIRED, UNLESS OTHERWISE NOTED, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE UPON COMPLETION OF THE WORK.	6.3 RETAIN THE SERVICES OF THE BASE BUILDING FIRE ALARM CONTRACTOR TO PROGRAM MAIN FIRE ALARM PANEL, TEST AND VERIFY NEW EQUIPMENT.
4.	PERMITS & INSPECTIONS	2.3 REMOVE ALL DATA AND VOICE LINE EXCEPT INCOMING CABLE AT ELECTRICAL ROOM.	17. WORK IN AREAS WITHOUT CEILINGS / EXPOSED CEILING STRUCTURAL	7 SURFACE MOUNTED RACEWAYS
4.1	THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS AS REQUIRED OR REQUESTED.	3. COMPLETION OF CONTRACT	17.1 ALL CONDUITS AND RACEWAYS MUST BE INSTALLED NEATLY IN APPEARANCE, RUNNING PARALLEL TO BUILDING LINES, AND AS HIGH AS POSSIBLE. PROVIDE PROPER BENDS AND/OR FITTINGS WHERE EQUIPMENT CROSSES BEAMS, DUCTWORKS, PIPES, ETC.	7.1 SURFACE MOUNTED RACEWAYS SHALL BE EXTRUDED ALUMINUM, SATIN ANODIZED FINISH, LOW PROFILE, WITH A NOMINAL THICKNESS OF 0.06" (1.5mm).
4.2	ONCE THE ELECTRICAL WORK HAS BEEN COMPLETED AND ACCEPTED BY THE OWNER, THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE OWNER WITH CERTIFICATES VERIFYING THAT THE WORK HAS BEEN COMPLETED IN ACCORDANCE WITH ALL CODES, BUILDING STANDARDS AND ALL AUTHORITIES HAVING JURISDICTION.	3.1 ALL THE INSTALLED EQUIPMENT MUST BE CLEANED AND TESTED BEFORE FINAL ACCEPTANCE BY OWNER. PROVIDE WRITTEN WARRANTY FOR ONE YEAR FOR ALL SYSTEMS AS REQUIRED.	17.2 MOUNTING HEIGHT OF SUSPENDED LUMINAIRES TO BE COORDINATED WITH ARCHITECT/DESIGN CONSULTANT, SITE CONDITIONS, AND ALL TRADES PRIOR TO ORDERING LUMINAIRES AND WORK. MOUNTING HEIGHT OF EXIT SIGNS SHALL BE AS HIGH AS POSSIBLE AND TO MEET CODE. PROVIDE CONDUIT STEM MOUNT AS REQUIRED. EXIT SIGNS ARE TO BE VISIBLE FROM THE EXIT APPROACH AND NOT OBSTRUCTED BY ANY ELEMENTS, INCLUDING LUMINAIRES, SIGNAGES, BULKHEADS, DUCTWORK, ETC. MOUNTING HEIGHT OF EMERGENCY HEADS SHALL BE MAXIMUM 9'-0" A.F.F. PROVIDE CONDUIT STEM MOUNT AS REQUIRED. ENSURE HEADS ARE FREE FROM OBSTRUCTION AND ILLUMINATION INTERFERENCE.	7.2 RACEWAY SHALL BE SINGLE CHANNEL COMPLETE WITH TWO CIRCUITS, WITH ALTERNATING RECEPTACLE ARRANGEMENT.
5.	INSURANCE	3.2 INCORPORATE ALL CHANGES AND DEVIATIONS FROM THE TENDER DRAWINGS, SUBMIT A SET OF PRINTS TO THE CONSULTANT FOR REVIEW AND APPROVAL. MODIFY THE AS-BUILT DRAWINGS AS PER COMMENTS FROM THE ENGINEERS FOR PRESENTATION TO OWNER.	17.3 ENSURE THAT ALL EXISTING AND NEW CEILING MOUNTED EQUIPMENT, INCLUDING JUNCTION BOXES, RECEPTACLES, SPEAKERS, FIRE ALARM DEVICES, ETC. ARE PROPERLY SUPPORTED AND SECURED TO THE STRUCTURE. PROVIDE NEW BLANK COVERPLATE TO EXISTING JUNCTION BOXES AS REQUIRED.	
5.1	PROVIDE INSURANCE FOR THE DURATION OF THE PROJECT TO PROTECT THE BUILDING OWNER, TENANT, AND TRADES FROM ALL CLAIMS. SUBMIT, AT THE TIME OF THE BID, PROOF OF AN AMOUNT ACCEPTABLE TO BUILDING OWNER AND TENANT IN ACCORDANCE WITH FRONT END REQUIREMENTS OF THE SPECIFICATIONS.	4. SCHEDULING	<b>PART C – MATERIAL 1</b>	
6.	CONTRACT DOCUMENTS	4.1 ALL WORK SHALL BE SCHEDULED AND COORDINATED TO AVOID ANY CONFLICTS WITH OTHER TRADES, BUILDING OWNER AND TENANT(S) DURING OR AFTER CONSTRUCTION. ALLOW FOR ALL NECESSARY PREMIUM TIME, ALL ALLOWANCE FOR THIS SHALL BE INCLUDED IN THE TENDER PRICE.	1. GENERAL	
6.1	THE DRAWINGS ARE DIAGRAMATIC ONLY. DO NOT SCALE OR MEASURE DRAWINGS, BUT OBTAIN INFORMATION REGARDING ACCURATE DIMENSIONS, LENGTHS, ETC. BY SITE MEASUREMENTS.	5. DELIVERY OF EQUIPMENT	1.1 ALL MATERIALS AND EQUIPMENT SHALL BE NEW, C.S.A. CERTIFIED AND MANUFACTURED TO THE STANDARDS SPECIFIED. WHERE THERE IS NO ALTERNATIVE TO SUPPLYING EQUIPMENT WHICH IS NOT C.S.A. CERTIFIED, OBTAIN SPECIAL APPROVAL FROM LOCAL ELECTRICAL SAFETY AUTHORITY.	
6.2	REPORT ANY DISCREPANCIES BETWEEN THE ARCHITECTURAL DRAWINGS, ELECTRICAL DRAWINGS AND BUILDING CONDITIONS AFFECTING PRICE OR INSTALLATION TO THE ENGINEER PRIOR TO SUBMITTING BID.	5.1 DELIVERY SCHEDULE OF ALL MAJOR ITEMS OF EQUIPMENT SUPPLIED UNDER THIS CONTRACT SHALL BE SUBMITTED IN WRITING TO THE GENERAL CONTRACTOR AT THE START OF THE PROJECT. FAILURE TO IDENTIFY DELIVERY PROBLEMS MAY RESULT IN DELAY CLAIMS.	2. WIRE AND CABLE	
6.3	CO-OPERATE WITH OTHER TRADES, CONTRACTORS IN LAYING OUT OF WORK SO AS NOT TO CONFLICT WITH THE WORK OF OTHERS.	6. TEMPORARY POWER	2.1 ALL WIRE AND CABLES FOR ELECTRICAL DISTRIBUTION / POWER SHALL BE COPPER, MINIMUM #12 GAUGE, NO. 12 AND NO.10 SOLID, NO.8 AND LARGER STRANDED, WITH RWD INSULATION, 600 VOLT RATING UNLESS OTHERWISE NOTED. BX RUN IN CEILING SPACE SHALL NOT EXCEED 10 FT IN LENGTH.	
6.4	IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS THAT THE CONTRACTOR PROVIDES COMPLETE AND OPERATIONAL SYSTEMS AS REQUIRED. WHERE DIFFERENCES OCCUR, THE MAXIMUM CONDITIONS SHALL GOVERN.	6.1 PROVIDE TEMPORARY ELECTRICAL POWER FOR THE WORK OF THIS TRADE AND OTHER TRADES AS REQUIRED BY THE GENERAL CONTRACTOR OR THE TENANT.	2.2 SIZE ALL WIRE FOR MAXIMUM 2% VOLTAGE DROP AT THE OUTLETS.	
6.5	ANY MISCELLANEOUS ITEMS, HARDWARE, DEVICES, FIRE ALARM TESTING OR FACTORY PROGRAMMING, CIRCUIT CONTROL, RELAY MODULES, POWER OFF RELAY, WIRING, ETC NOT SPECIFICALLY DESCRIBED, BUT REQUIRED FOR THE OPERATION OF THE SYSTEM, MUST BE PROVIDED AND INCLUDED AS PART OF THE BID PRICE.	7. ROUTING OF EQUIPMENT	2.3 PROVIDE FIRE RATED WIRING FOR ALL NEW FIRE ALARM CONNECTIONS IN ACCORDANCE WITH THE LATEST BUILDING CODE REQUIREMENTS AND AS REQUIRED BY THE LOCAL AUTHORITIES HAVING JURISDICTION.	
6.6	WHENEVER DIFFERENCES OCCUR BETWEEN PLANS AND DIAGRAMS, SCHEMATICS, AND BETWEEN SPECIFICATIONS AND DRAWINGS, THE MAXIMUM CONDITION SHALL GOVERN AND THE TENDER SHALL BE BASED ON WHICHEVER IS THE GREATER AMOUNT.	7.1 NEW CONDUITS AND OTHER NEW SERVICES SHALL BE CAREFULLY ROUTED SO THAT THEY DO NOT INTERFERE WITH ANY EXISTING INSTALLATIONS. ROUTING OF EQUIPMENT IN BUILDING COMMON AREAS AND RISER ROOMS SHALL BE REVIEWED AND APPROVED BY BUILDING OWNER PRIOR TO INSTALLATION. ANY EXISTING CONDUITS, CABLE TRAYS, BUS DUCTS OR OTHER SERVICES THAT INTERFERE WITH THE NEW INSTALLATION SHALL BE RELOCATED UNDER THIS CONTRACT.	2.4 MEGGER ALL POWER CIRCUIT FEEDERS. IF GROUND RESISTANCE ON ANY CIRCUIT IS LESS THAN THAT REQUIRED BY CSA, SUCH CIRCUIT IS TO BE CONSIDERED DEFECTIVE AND MUST BE REPLACED.	
7.	RECORD DRAWINGS	8. CUTTING AND PATCHING	3. CONDUIT, CONDUIT FITTINGS AND BOXES	
7.1	KEEP A RECORD SET OF DRAWINGS ON THE SITE ON WHICH SHALL BE CLEARLY INDICATED, THE EXACT LOCATION OF ALL OUTLETS, FIXTURES, FEEDER RUNS, PANELS, CONDUITS, JUNCTION BOXES, PULL BOXES, ETC. INFORMATION ON THESE DRAWINGS SHALL BE INCORPORATED IN THE AS-BUILT DRAWINGS UPON COMPLETION OF THE PROJECT.	8.1 ALL CUTTING AND PATCHING REQUIRED TO THE BUILDING STRUCTURE FOR THE WORK SHALL BE INCLUDED AS PART OF THIS CONTRACT, UNLESS OTHERWISE ADVISED BY THE GENERAL CONTRACTOR. OBTAIN APPROVAL FROM OWNER PRIOR TO ANY CUTTING.	3.1 INSTALL CONDUITS TO CONSERVE HEADROOM, PARALLEL AND PERPENDICULAR TO BUILDING LINES. DO NOT CADDIE CLIP CONDUITS TO CEILING HANGERS. PROVIDE SEPARATE INDEPENDENT SUPPORTS. ALL EMPTY CONDUITS SHALL BE COMPLETE WITH NYLON PULL STRING.	
8.	WARRANTY	8.2 WHERE CONDUITS PASS THROUGH FIRE RATED WALLS OR FLOORS, PROVIDE PROPER FIRE STOPPING MATERIAL THAT BEARS LABEL OF CSA AND ULC, AND MAINTAIN FIRE RATING. ALL SEALANT SHALL BE OF RE-ENTRANT TYPE WHERE APPLICABLE.	3.2 JUNCTION BOXES AND PULL BOXES SHALL BE SUITABLE FOR SURFACE MOUNTING AND BE OF WELDED STEEL CONSTRUCTION WITH SCREW-ON FLAT COVERS.	
8.1	THE CONTRACTOR SHALL PROVIDE THE TENANT WITH A WRITTEN ONE-YEAR WARRANTY, COMMENCING ON THE DATE OF ACCEPTANCE. THE WARRANTY SHALL COVER THE COMPLETE ELECTRICAL INSTALLATION. THE ELECTRICAL CONTRACTOR SHALL REPAIR AND/OR REPLACE ANY DEFECTS IN MATERIALS OR WORKMANSHIP THAT OCCUR DURING THE WARRANTY PERIOD AT A TIME CONVENIENT TO THE TENANT/BUILDING OWNER, AND AT NO EXTRA COST.	9. ACCESS PANEL	3.3 INSTALL JUNCTION BOXES AND PULL BOXES IN INCONSPICUOUS BUT ACCESSIBLE LOCATIONS.	
9.	AS-BUILTS	9.1 ACCESS PANELS SHALL BE PROVIDED IN CEILINGS WHERE JUNCTION BOXES AND OTHER ELECTRICAL EQUIPMENT CAN NOT BE LOCATED IN ACCESSIBLE LOCATIONS PROVIDED THAT APPROVAL HAS BEEN OBTAINED FROM THE ARCHITECT/DESIGN CONSULTANT.	3.4 A MINIMUM OF ONE PULL BOX SHALL BE INSTALLED FOR EVERY 30M OF CONDUIT. NO MORE THAN TWO (2) 90 DEG. BENDS SHALL BE INSTALLED BETWEEN ANY TWO ADJACENT PULL BOXES.	
9.1	PROVIDE AS-BUILT DRAWINGS OF THE ACTUAL INSTALLATION AS SCANNED COPIES OF RED-LINE MARKUPS.	10. NOISE & VIBRATION	3.5 OUTLET BOXES SHALL BE ELECTRO-GALVANIZED STEEL, SIZED AS REQUIRED BY CODE. PROVIDE EACH LIGHT SWITCH, RECEPTACLE, FIRE ALARM DEVICE AND OTHER ELECTRICAL DEVICE WITH AN OUTLET BOX. INSTALL PLUMB AND TRUE.	
9.2	AS-BUILT DRAWINGS SHALL INCORPORATE ALL CHANGES AND DEVIATIONS FROM TENDER DRAWINGS, INCLUDING ALL MAIN CONDUIT RUNS, CABLE TRAYS, JUNCTION BOXES, AND INFORMATION RECORDED ON RECORD DRAWINGS DURING CONSTRUCTION.	10.1 CARRY OUT THE WORK WITH A MINIMUM OF NOISE, DUST AND DISTURBANCE. ALL ELECTRICAL EQUIPMENT SHALL OPERATE WITHOUT OBJECTIONABLE NOISE OR VIBRATION TO THE OWNER'S SATISFACTION.	3.6 PROVIDE BLANK COVERPLATES FOR BOXES WITHOUT WIRING DEVICES.	
9.3	ENGINEER'S STAMP AND COMPANY LOGO SHALL BE REMOVED FROM DRAWINGS. DRAWINGS SHALL BE MARKED "AS-BUILT" ALONG WITH ELECTRICAL	11. GROUNDING	3.7 TWO OR MORE OUTLET BOXES THAT INSTALLED AT THE SAME LOCATION SHALL BE GANGED TOGETHER IN THE SAME COVERPLATE UNLESS NOTED OTHERWISE.	
		11.1 ALL GROUNDING SHALL CONFORM TO THE ELECTRICAL SAFETY CODE AND LOCAL AUTHORITY REQUIREMENTS.	3.8 CONDUIT IN CEILINGS AND PARTITIONS SHALL BE IN EMT CONDUIT WITH STEEL SETSCREW COUPLING AND CONNECTORS.	
		12.2 PROVIDE SEPARATE GREEN INSULATED GROUND CONDUCTOR IN EVERY POWER CONDUIT TO ALL DEVICES, LUMINAIRES, EQUIPMENT, AND WITH ALL FEEDERS.	3.9 CONDUIT INSTALLED IN SLABS SHALL BE IN RIGID PVC CONDUIT.	
		13. DIRECTORY	3.10 PROVIDE FLEXIBLE METAL CONDUIT FOR CONNECTION TO TRANSFORMERS AND	
		13.1 PROVIDE TYPEWRITTEN DIRECTORIES FOR NEW AND EXISTING PANELBOARDS WITHIN THE AREA OF WORK, TO REFLECT THE LATEST REVISIONS. LABELING TO BE BASED ON ROOM NUMBERS AND/OR LOCATION AND LOAD TYPES.		
		14. INTERRUPTION OF SERVICES		
		14.1 THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DISRUPTION		

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No.	Revision	Date	By
4.	ISSUED FOR BUILDING PERMIT & SPA	23 AUG. 08	CP
3.	ISSUED FOR PERMIT & TENDER	23 AUG. 04	CP
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1.	ISSUED FOR REVIEW	22 DEC. 12	DB



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Project Name  
**ORANGEVILLE OPERATION CENTRE EXPANSION**

500 C LINE, ORANGEVILLE, ON L9W 4Z3

Sheet Title  
**ELECTRICAL SPECIFICATIONS**

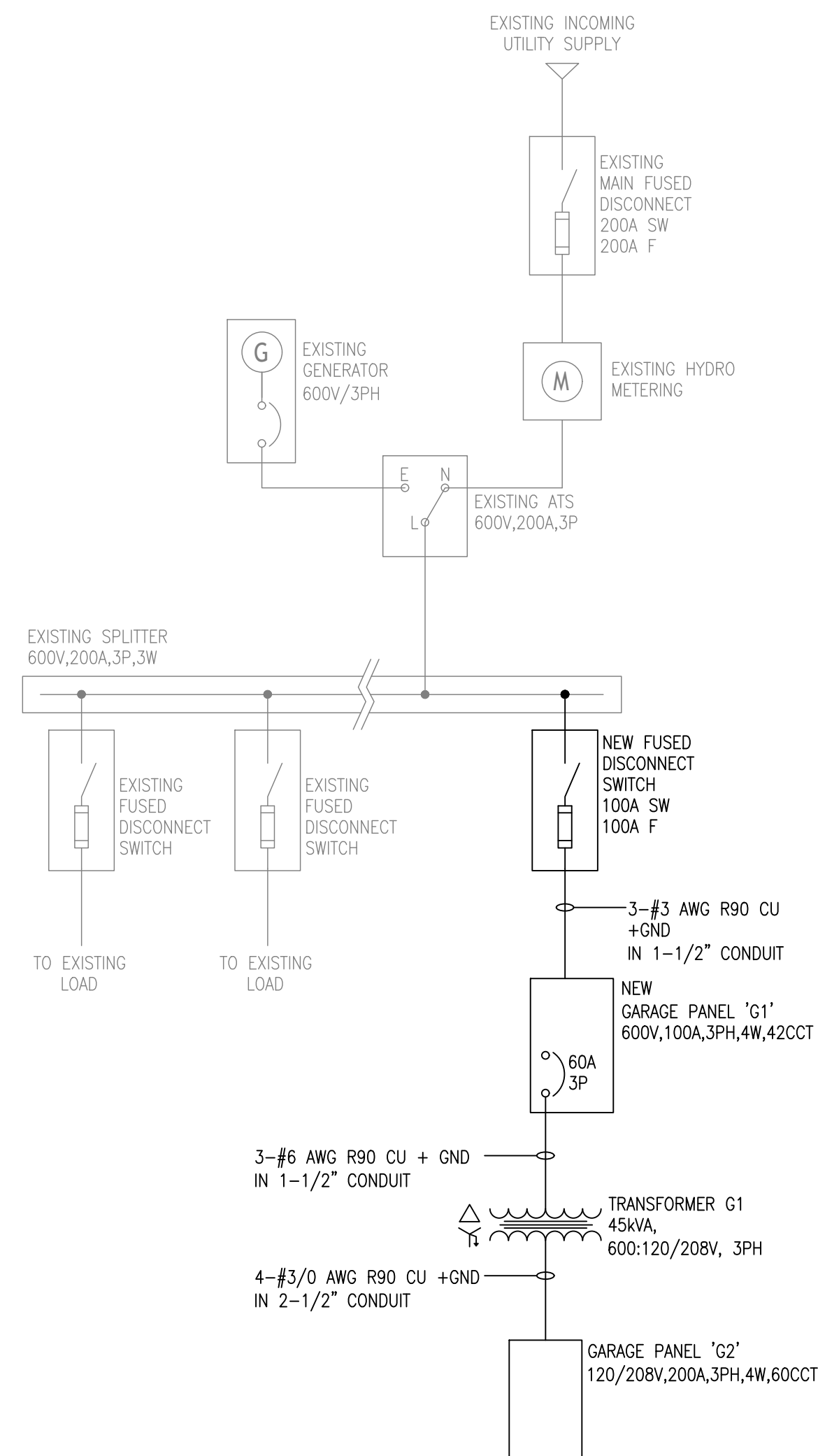
Drawn By JW Scale As Shown  
Designed By JW Date December 9, 2022  
Project Number **B22-367.32**

Sheet Number Revision  
**E1 1**

ELECTRICAL LEGEND	
	BASE BUILDING FLUORESCENT LUMINAIRE
	FLUORESCENT LUMINAIRE
	CEILING MOUNTED LUMINAIRE
	WALL MOUNTED LUMINAIRE
	WALL WASHER LUMINAIRE
	CEILING SUSPENDED LUMINAIRE
'A'	LUMINAIRE DESIGNATOR LETTER DEMOTES TYPE REFER TO LUMINAIRE SCHEDULE
	WALL MOUNTED EMERGENCY LIGHTING REMOTE HEAD(S)
	CEILING MOUNTED EMERGENCY LIGHTING REMOTE HEAD(S)
	WALL MOUNTED EMERGENCY LIGHTING BATTERY UNIT WITH HEAD(S)
	CEILING MOUNTED EXIT SIGN DIRECTIONAL ARROW(S) AND WALL FACE(S) AS SHOWN
	WALL MOUNTED EXIT SIGN DIRECTIONAL ARROW(S) AND WALL FACE(S) AS SHOWN
	EXIT SIGNS WITH BATTERIES
	TOGGLE SWITCH - 120V
	GANGED TOGGLE SWITCHES, 2, 3, 4 GANG
	DIMMER SWITCH
	3 - WAY SWITCH
	WALL MOUNTED SINGLE RECEPTACLE (15A, 120V UNLESS OTHERWISE NOTED)
	WALL MOUNTED DUPLEX RECEPTACLE
	WALL MOUNTED SPLIT CIRCUIT RECEPTACLE
	WALL MOUNTED DEDICATED RECEPTACLE
	WALL MOUNTED QUAD RECEPTACLE (15A, 120V UNLESS OTHERWISE NOTED)
	WALL MOUNTED VOICE OUTLET
	WALL MOUNTED DATA OUTLET
	WALL MOUNTED DATA/VOICE OUTLET
	WALL FEED FOR POWER AND COMMUNICATIONS TO SYSTEM FURNITURE
	FLOOR FEED FOR POWER AND COMMUNICATIONS TO SYSTEM FURNITURE
	JUNCTION BOX
	DIRECTION CONNECTION OUTLET
	MOTOR CONNECTION
	DISCONNECT SWITCH - UNFUSED
	DISCONNECT SWITCH - FUSED
	SURFACE MOUNTED PANEL BOARD
	TRANSFORMER
	FIRE ALARM PULL STATION
	FIRE ALARM HORN/STROBE COMBINATION UNIT
	OCCUPANCY SENSOR
	SMOKE DETECTOR
	SMOKE ALARM
	CARBON MONOXIDE DETECTOR
	DUCT TYPE SMOKE DETECTOR W/ REMOTE INDICATION
	HEAT DETECTOR - 135° FIXED TEMPERATURE TYPE - CEILING, WALL MOUNTED
	CARD READER
	DOOR CONTACT
	ELECTRIC STRIKE
	SECURITY KEYPAD
EX	EXISTING TO REMAIN
R	EXISTING TO REMOVED OR RELOCATED
RL	EXISTING IN RELOCATED POSITION
AFF	ABOVE FINISHED FLOOR
NL	NIGHT LIGHT CIRCUIT

LIGHTING SCHEDULE									
TYPE	MAKE / MODEL	DESCRIPTION	VOLTAGE	LAMP DATA				MOUNTING	REMARKS
				No.	TYPE	WATTS	COLOUR		
'A'	BJ TAKE BLHW-2-20L-840-L49-MTX	WASHDOWN RATED HIGHBAY	120V	1	LED	129 W	4000K	SUSPENDED	-
'B'	BJ TAKE BLHN-2-12L-840-UNV-L16-MTX	HIGHBAY	120V	1	LED	82.9 W	4000K	SUSPENDED	-
'C'	BJ TAKE BLS-5-4-4.5L-L18-MTX	STRIP LIGHT	120V	1	LED	36 W	4000K	SURFACE	-
'C1'	BJ TAKE BLS-5-4-6.5L-L18-MTX	STRIP LIGHT	120V	1	LED	32 W	4000K	SURFACE	-
'C2'	BJ TAKE BLV-H-4-4.5L-840-L16	WALL MOUNT STRIP	120V	1	LED	31W	4000K	WALL MOUNT	SELECT KIT FOR WALL MOUNTING
'D'	EIKO CANADA FPH3-2250GP40-3-MTX-SMK22-FPHACK11	SUSPENDED 2'X2' FLAT PANEL	120V	1	LED	14W	4000K	RECESSED	-
'E'	LUMACON LDS-LFC-60-DB-T3-1-40-WM	EXTERIOR WALLPACK	120V	1	LED	60W	4000K	WALL MOUNTED	COMPLETE WITH LOCAL AUTOMATIC PHOTOCELL CONTROL
	STANPRO N SERIES	REMOTE HEAD	12VDC	1/2	LED	4W	N/A	AS SHOWN	CONNECT TO NEAREST AVAILABLE BATTERY PACK
	STANPRO SLA SERIES	REMOTE HEAD WITH BATTERY PACK	120V	2	LED	4W	N/A	AS SHOWN	BATTERY SHALL BE ABLE TO PROVIDE EMERGENCY POWER FOR MIN 45 MIN
	STANPRO PRMS SERIES	EXIT SIGN WITH REMOTE HEAD AND BATTERY PACK COMBINATION UNIT	120V	2	LED	4W	N/A	AS SHOWN	BATTERY SHALL BE ABLE TO PROVIDE EMERGENCY POWER FOR MIN 45 MIN

**2 LIGHTING SCHEDULE**  
E2 SCALE: N.T.S.



PROPOSED NOTES:

- CONTRACTOR TO SUPPLY AND INSTALL NEW 600V,100A,3P FUSED DISCONNECT WITHIN MAIN ELECTRICAL ROOM FED FROM EXISTING SPLITTER TO FEED NEW GARAGE PANEL.
- CONTRACTOR TO SUPPLY AND INSTALL NEW 600V,100A,3PH PANEL 'G1' WITHIN NEW GARAGE ELECTRICAL ROOM.
- CONTRACTOR TO SUPPLY AND INSTALL NEW 208V,200A,3PH,4W PANEL 'G2' WITHIN NEW GARAGE ELECTRICAL ROOM INCLUDING UPSTREAM 45kVA TRANSFORMER AND FEED FROM PANEL 'G1'.

**1 PROPOSED PARTIAL SINGLE LINE DIAGRAM**  
E2 SCALE: N.T.S.

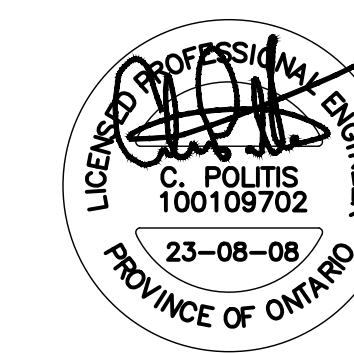
PANEL 'G1'									
VOLTAGE: 347/600V, 3PH, 4W			NEW <input checked="" type="checkbox"/> EXISTING <input type="checkbox"/>		MOUNTING: SURFACE			LOCATION: AS SHOWN	
MAINS: 100A, MLO			TYPE: POWER PANEL						
LOAD DESCRIPTION	BRKR. SIZE	CCT. No.	PHASE	CCT. No.	BRKR. SIZE	LOAD DESCRIPTION			
			A B C						
COMPRESSOR	15A	1		2	15A	FFH			
		3		4					
		5		6					
		7		8					
		9		10					
		11		12					
		13		14					
		15		16					
		17		18					
		19		20					
		21		22					
		23		24					
		25		26					
		27		28					
		29		30					
		31		32					
		33		34					
		35		36					
		37		38	60A				
		39		40					
		41		42	3P	PANEL 'G1'			

PANEL 'G2'									
VOLTAGE: 120/208V, 3PH, 4W			NEW <input checked="" type="checkbox"/> EXISTING <input type="checkbox"/>		MOUNTING: SURFACE			LOCATION: AS SHOWN	
MAINS: 200A, MLO			TYPE: POWER PANEL						
LOAD DESCRIPTION	BRKR. SIZE	CCT. No.	PHASE	CCT. No.	BRKR. SIZE	LOAD DESCRIPTION			
			A B C						
EMERGENCY LIGHTING/EXIT SIGN	15A	1		2	15A	WASH BAY LIGHTING			
ELEC RM / OFFICE / MEZZ LIGHTING	15A	3		4	15A	NIGHT LIGHTING			
REPAIR GARAGE LIGHTING	15A	5		6	15A	EXTERIOR LIGHTING			
REPAIR GARAGE LIGHTING	15A	7		8	15A	GARAGE DOOR OPERATOR			
REPAIR GARAGE TASK LIGHTING	15A	9		10	15A	GARAGE DOOR OPERATOR			
OFFICE RECEPTACLES	15A	11		12	15A	GARAGE DOOR OPERATOR			
WASHBAY / EXTERIOR RECEPTACLES	20A	13		14	15A	HOIST			
REPAIR GARAGE RECEPTACLES	20A	15		16					
REPAIR GARAGE RECEPTACLES	20A	17		18	3P				
OFFICE AC UNIT	15A	19		20	20A	POWER WASHER			
EF-1	15A	21		22	20A	POWER WASHER			
EF-2	15A	23		24	15A	TH-1 / TH-2 / TH-3 / TH-4			
EF-3	15A	25		26	20A	HOT WATER TANK			
COMPRESSOR AIR DRYER	15A	27		28	15A	SENSORS			
BBH (MEZZANINE)	15A	29		30	15A	MEZZANINE RECEPTACLES			
	2P	31		32	15A	B-1/BP-1/MOTORIZED DAMPER			
BBH (MEZZANINE)	15A	33		34	15A	FHP-1			
	2P	35		36	15A	FHP-1			
CD-1 (ROOFTOP)		37		38					
		39		40					
		41		42					
		43		44					
		45		46					
		47		48					
		49		50					
		51		52					
		53		54					
		55		56					
		57		58					
		59		60					

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3.	ISSUED FOR PERMIT & TENDER	23 AUG. 04	CP
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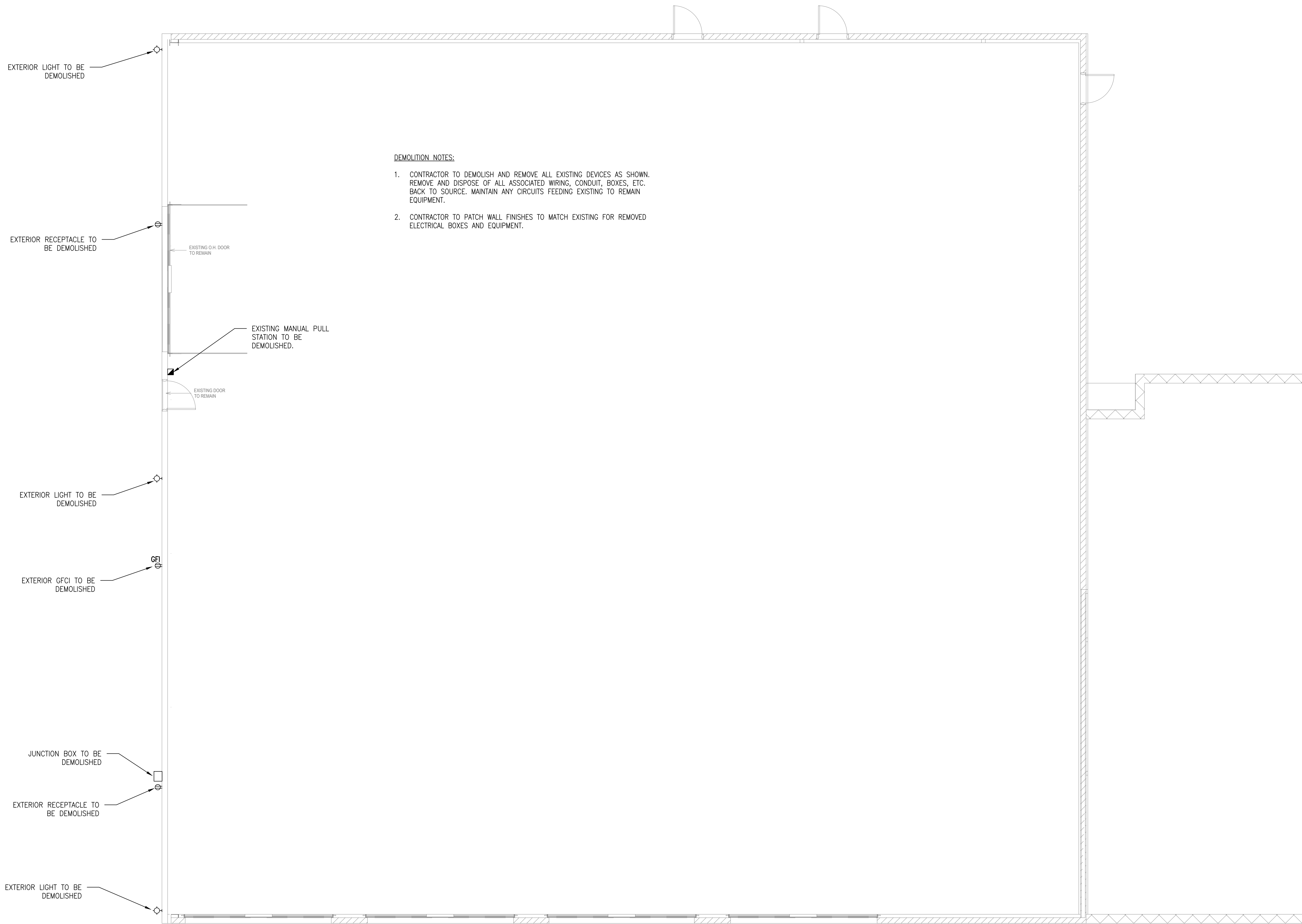
Project Name  
**ORANGEVILLE OPERATION CENTRE EXPANSION**

500 C LINE, ORANGEVILLE, ON L9W 4Z3

Sheet Title  
**ELECTRICAL LEGEND, SLD AND SCHEDULES**

Drawn By JW Scale As Shown  
 Designed By JW Date December 9, 2022  
 Project Number **B22-367.32**

Sheet Number Revision



- DEMOLITION NOTES:**
- CONTRACTOR TO DEMOLISH AND REMOVE ALL EXISTING DEVICES AS SHOWN. REMOVE AND DISPOSE OF ALL ASSOCIATED WIRING, CONDUIT, BOXES, ETC. BACK TO SOURCE. MAINTAIN ANY CIRCUITS FEEDING EXISTING TO REMAIN EQUIPMENT.
  - CONTRACTOR TO PATCH WALL FINISHES TO MATCH EXISTING FOR REMOVED ELECTRICAL BOXES AND EQUIPMENT.

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Project Name  
**ORANGEVILLE OPERATION CENTRE EXPANSION**

500 C LINE, ORANGEVILLE, ON L9W 4Z3

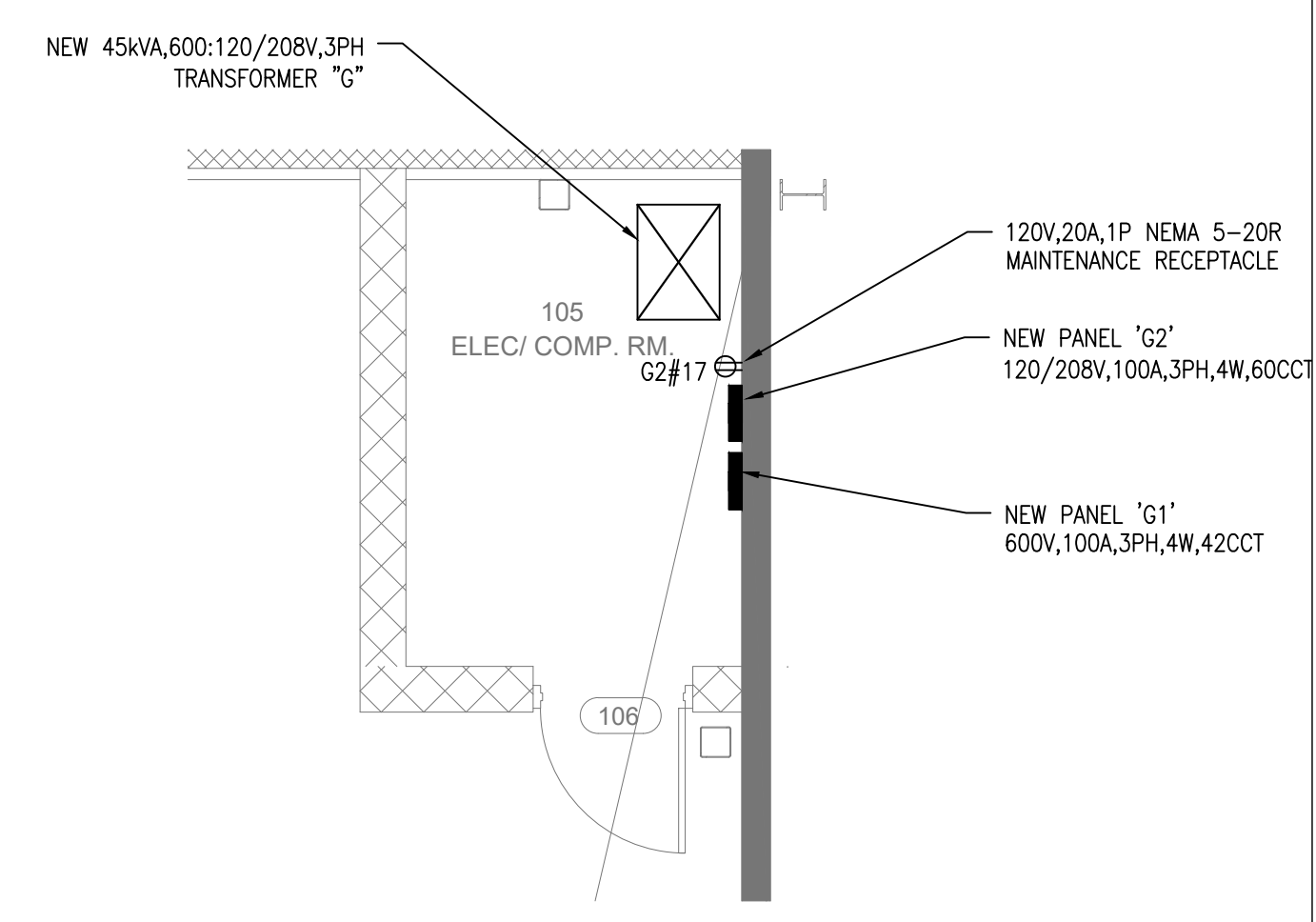
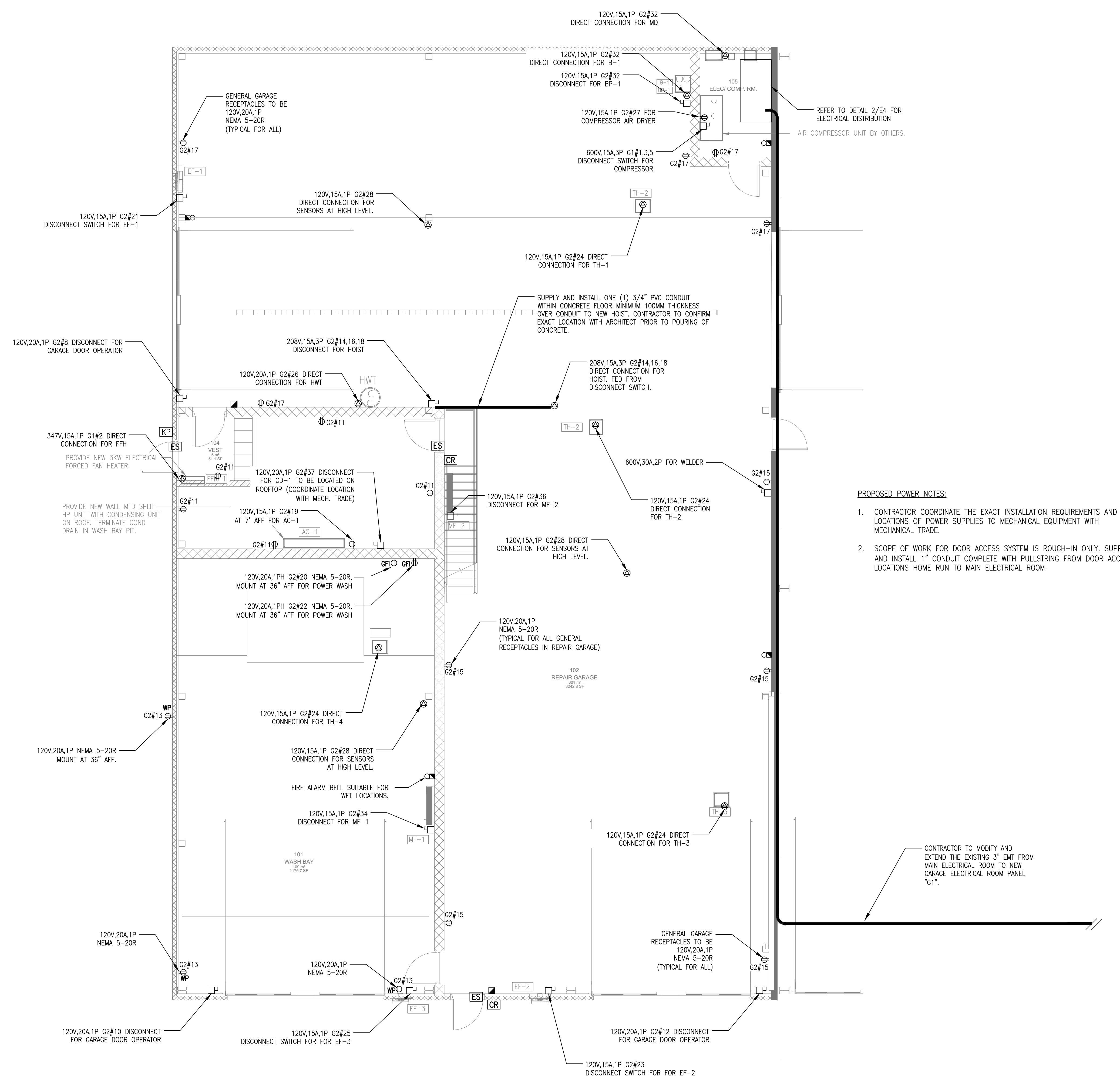
Sheet Title  
**ELECTRICAL DEMOLITION PLAN**

Drawn By JW Scale As Shown  
Designed By JW Date December 9, 2022  
Project Number **B22-367.32**

Sheet Number Revision  
**E3 1**



**1**  
**E4** GROUND FLOOR POWER PLAN  
SCALE: 3/16"=1'-0"

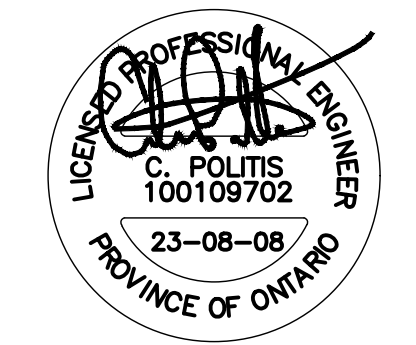


**2**  
**E4** ELECTRICAL DISTRIBUTION  
SCALE: 1/4"=1'-0"

- PROPOSED POWER NOTES:**
- CONTRACTOR COORDINATE THE EXACT INSTALLATION REQUIREMENTS AND LOCATIONS OF POWER SUPPLIES TO MECHANICAL EQUIPMENT WITH MECHANICAL TRADE.
  - SCOPE OF WORK FOR DOOR ACCESS SYSTEM IS ROUGH-IN ONLY. SUPPLY AND INSTALL 1" CONDUIT COMPLETE WITH PULLSTRING FROM DOOR ACCESS LOCATIONS HOME RUN TO MAIN ELECTRICAL ROOM.

- Drawing Notes**
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**ISSUED FOR TENDER**



No.	Revision	Date	By
4.	ISSUED FOR BUILDING PERMIT & SPA	23 AUG. 08	CP
3.	ISSUED FOR PERMIT & TENDER	23 AUG. 04	CP
2.	ISSUED FOR FINAL REVIEW	23 JAN. 16	DB
1.	ISSUED FOR REVIEW	22 DEC. 12	DB

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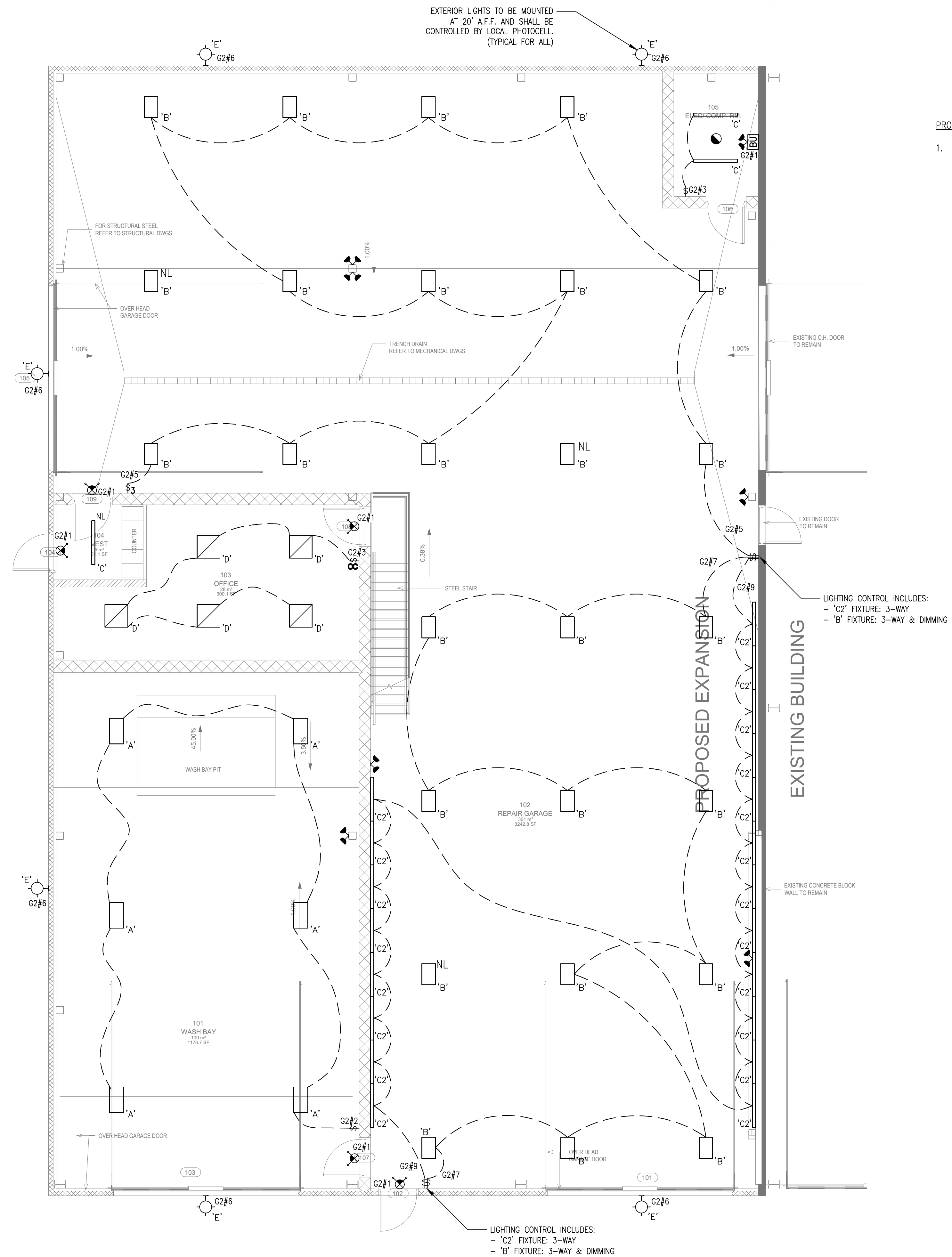
Project Name  
**ORANGEVILLE OPERATION CENTRE EXPANSION**

500 C LINE, ORANGEVILLE, ON L9W 4Z3

Sheet Title  
**PROPOSED POWER PLAN - GROUND FLOOR**

Drawn By JW Scale As Shown  
Designed By JW Date December 9, 2022  
Project Number **B22-367.32**

Sheet Number **E4** Revision **1**



EXTERIOR LIGHTS TO BE MOUNTED AT 20' A.F.F. AND SHALL BE CONTROLLED BY LOCAL PHOTOCELL (TYPICAL FOR ALL)

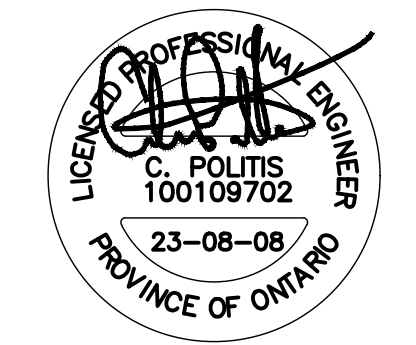
PROPOSED LIGHTING NOTES:  
 1. NIGHT LIGHT FIXTURES TO BE UNSWITCHED SUPPLIED BY G2#4.

LIGHTING CONTROL INCLUDES:  
 - 'C2' FIXTURE: 3-WAY  
 - 'B' FIXTURE: 3-WAY & DIMMING

LIGHTING CONTROL INCLUDES:  
 - 'C2' FIXTURE: 3-WAY  
 - 'B' FIXTURE: 3-WAY & DIMMING

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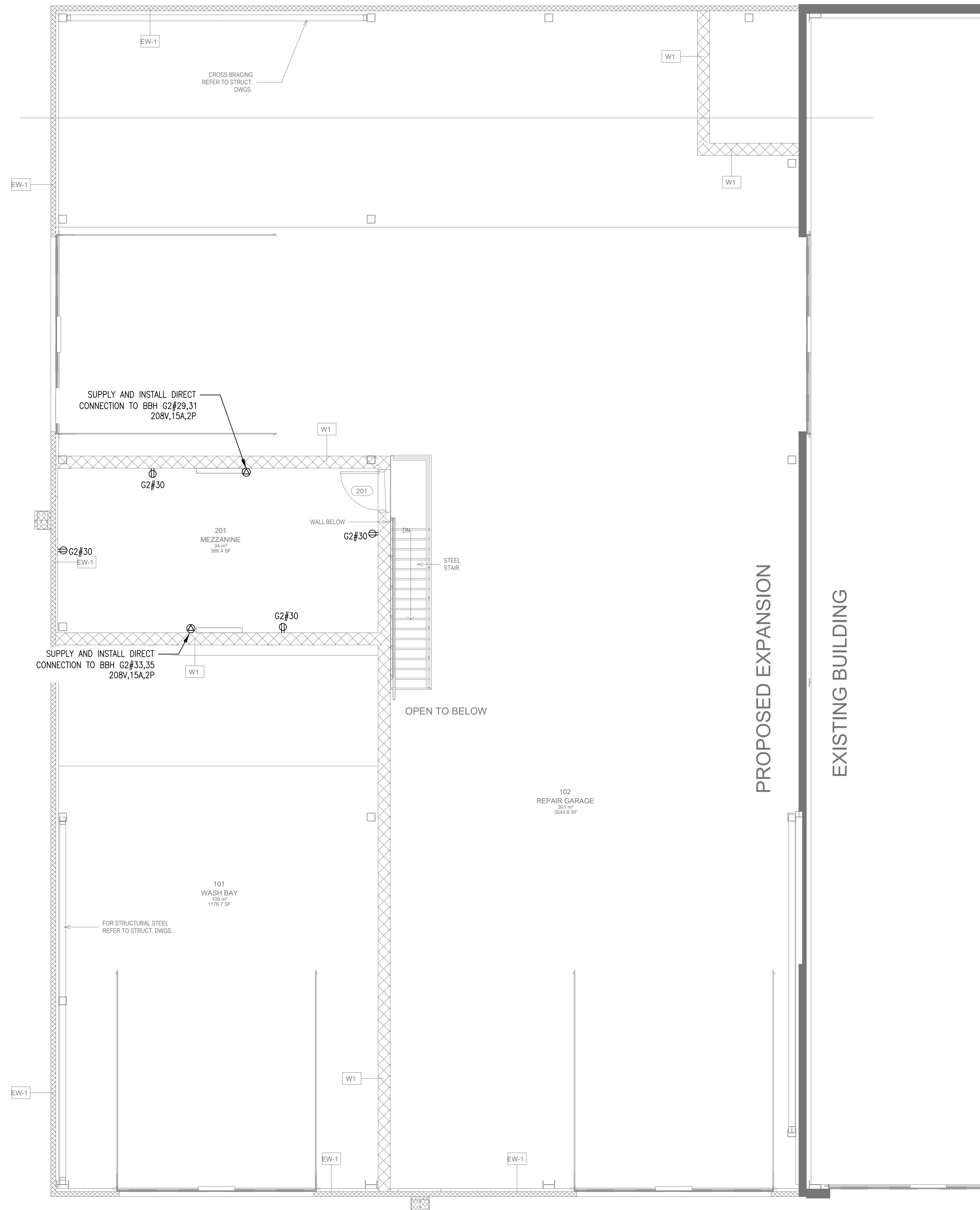
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Project Name  
**ORANGEVILLE OPERATION CENTRE EXPANSION**  
 500 C LINE, ORANGEVILLE, ON L9W 4Z3

Sheet Title  
**PROPOSED CEILING PLAN - GROUND FLOOR**

Drawn By JW Scale As Shown  
 Designed By JW Date December 9, 2022  
 Project Number **B22-367.32**

Sheet Number Revision  
**E5 1**



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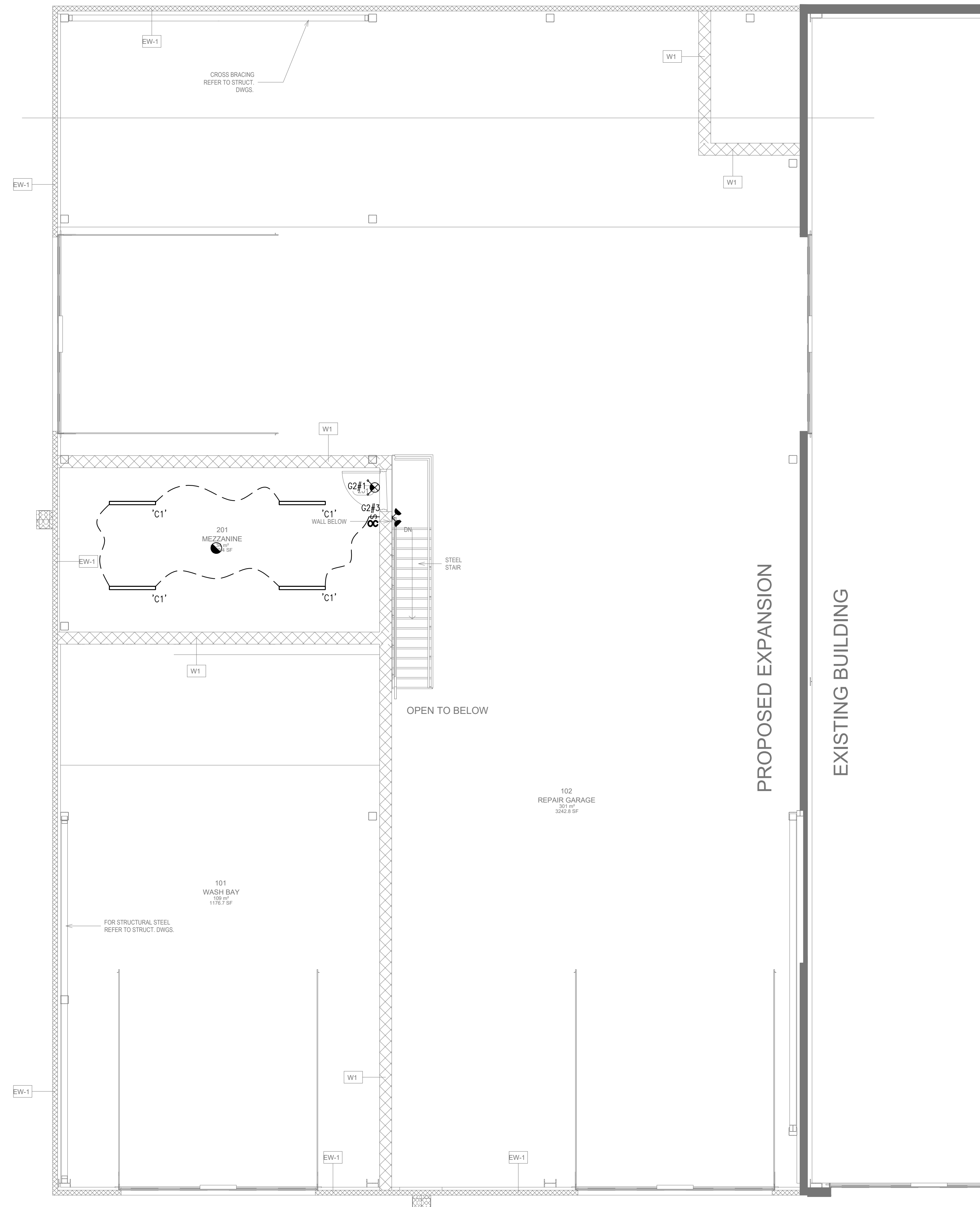
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Project Name  
**ORANGEVILLE OPERATION CENTRE EXPANSION**  
 500 C LINE, ORANGEVILLE, ON L9W 4Z3

Sheet Title  
**PROPOSED POWER PLAN - MEZZANINE**

Drawn By JW Scale As Shown  
 Designed By JW Date December 9, 2022  
 Project Number **B22-367.32**

Sheet Number **E6** Revision **1**



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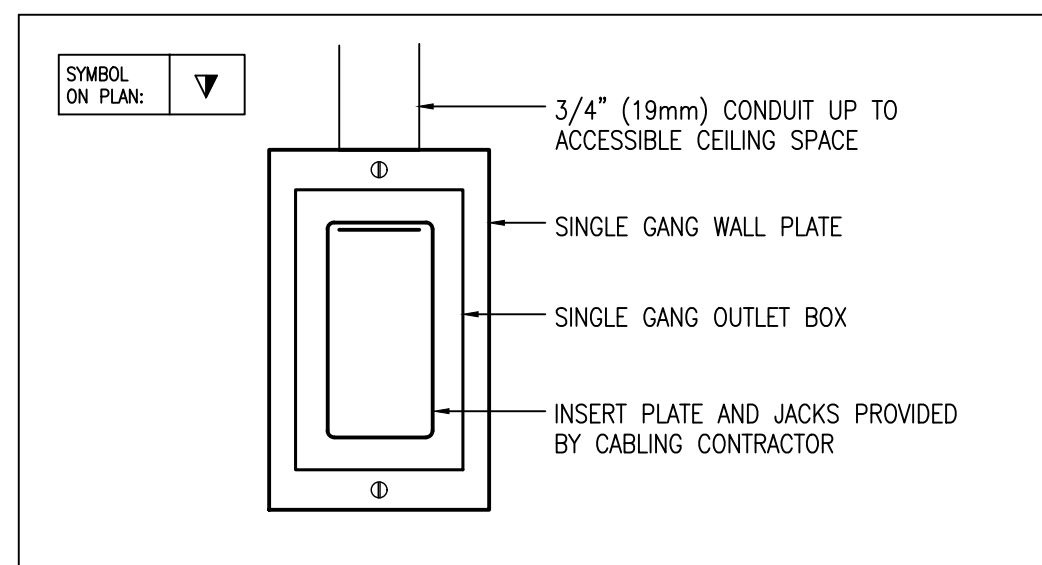
Project Name  
**ORANGEVILLE OPERATION CENTRE EXPANSION**  
 500 C LINE, ORANGEVILLE, ON L9W 4Z3

Sheet Title  
**PROPOSED CEILING PLAN - MEZZANINE**

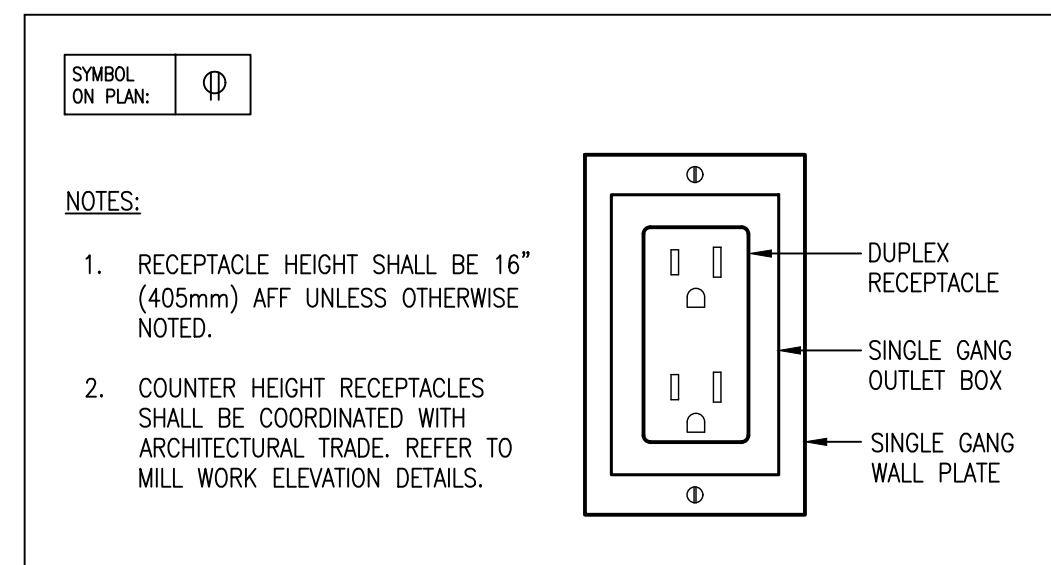
Drawn By JW Scale As Shown  
 Designed By JW Date December 9, 2022  
 Project Number **B22-367.32**

Sheet Number **E7** Revision **1**

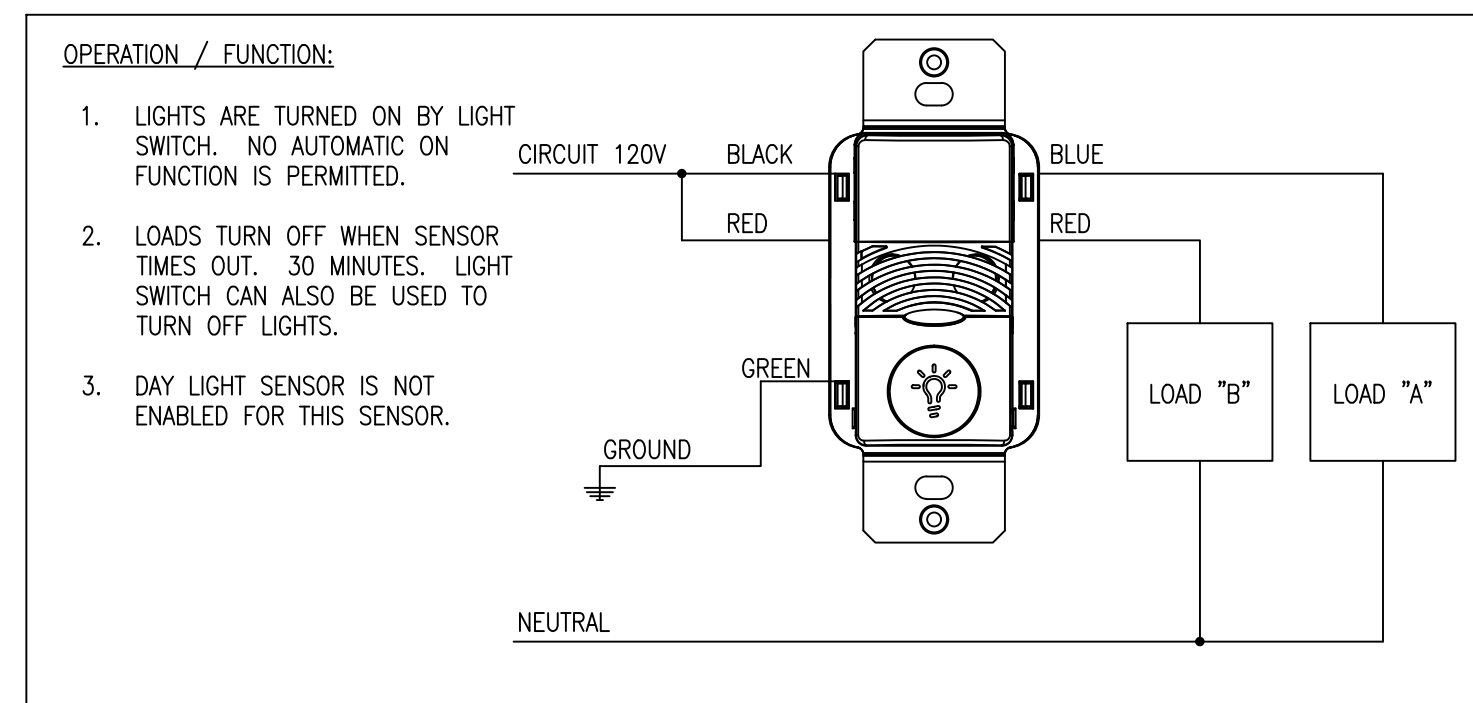
**1** MEZZANINE CEILING PLAN  
**E7** SCALE: 3/16"=1'-0"



1 SINGLE COMMUNICATION WALL OUTLET  
E8 SCALE: NTS



2 WALL RECEPTACLE  
E8 SCALE: NTS



3 WALL SWITCH WITH OCCUPANCY SENSOR  
E8 SCALE: NTS

Drawing Notes

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Project Name  
**ORANGEVILLE OPERATION  
CENTRE EXPANSION**

500 C LINE, ORANGEVILLE, ON L9W 4Z3

Sheet Title  
**ELECTRICAL DETAILS**

Drawn By JW Scale As Shown  
Designed By JW Date December 9, 2022  
Project Number **B22-367.32**

Sheet Number Revision

**E8 1**

# ORANGEVILLE OPERATION CENTRE

C LINE ORANGEVILLE ON

## EXPANSION

PROJECT NO: B

### DRAWING LIST

- M MECHANICAL SPECIFICATIONS
- M HVAC PLAN
- M PLUMBING PLAN
- M MECHANICAL SCHEDULES
- M MECHANICAL DETAILS



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SPECIFICATIONS

GENERAL NOTES:

- GENERAL SCOPE OF WORK
  - FURNISH ALL LABOUR, MATERIALS, EQUIPMENT, TOOLS AND SUPPORTS AS WELL AS SUPERVISION TO PROVIDE A COMPLETE INSTALLATION, TESTED AND IN WORKING ORDER, AS SHOWN ON THE DRAWINGS.
  - THE CONTRACTOR SHALL PERFORM THE WORK STIPULATED IN THE CONTRACT AND ANY OR ALL CONTRACT CHANGES AND CHANGE DIRECTIVES, AND SHALL FURNISH, UNLESS OTHERWISE PROVIDED IN THE CONTRACT, EVERYTHING NECESSARY FOR THE PROPER PERFORMANCE AND COMPLETION OF THE WORK.
  - ALL WORK SHALL BE FULLY TESTED, COMMISSIONED AND IN GOOD WORKING ORDER AT TIME OF HAND-OVER TO OWNER.
- CODES AND STANDARDS
  - ALL WORK SHALL CONFORM TO THE MOST RECENT ISSUES OF:
    - THE ONTARIO BUILDING CODE
    - THE ONTARIO ELECTRICAL SAFETY CODE
    - THE MINISTRY OF THE ENVIRONMENT
    - THE NATIONAL ELECTRICAL CODE
    - BYLAWS AND REGULATIONS ISSUED BY THE BUILDING AUTHORITY HAVING JURISDICTION
      - ASHRAE
      - ASME
      - SMACNA
      - NFPA
      - TSSA
      - CSA
      - CGA
- SPECIFICATIONS
  - COMPLY WITH THE GENERAL SECTIONS AND APPLICABLE SECTIONS OF THE GENERAL CONTRACT SPECIFICATIONS.
- WARRANTY
  - WARRANT ALL LABOUR AND MATERIALS INCLUDED IN THIS CONTRACT FOR A PERIOD OF TWO YEARS FROM DATE OF FINAL ACCEPTANCE OF ALL AREAS. ASSUME FULL RESPONSIBILITY FOR LAYOUT OF ALL WORK AND FOR ANY DAMAGE CAUSED TO OWNER OR OTHERS BY IMPROPER CARRYING OUT OF THE WORK.
- DRAWINGS
  - DRAWINGS SHOW GENERAL INTENT OF THE WORK AND PROPOSED ROUTING ONLY.
  - DO NOT SCALE DRAWINGS. CONTRACTOR SHALL CONFIRM ALL DIMENSIONS BY FIELD MEASURE BEFORE PROCEEDING WITH THE WORK.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING POSSIBLE INTERFERENCES AND INFORMING THE ENGINEER.
- SITE CONDITIONS
  - EXAMINE SITE CONDITIONS TO ENSURE THAT WORK CAN BE SATISFACTORILY CARRIED OUT AS SHOWN. IF SITE EXAMINATION REVEALS ANY DIFFICULTIES THAT WILL PREVENT THE WORK, FROM BEING CARRIED OUT AS DESIGNED THESE MUST BE INDICATED IN THE TENDER PRICE, AND BROUGHT TO THE ATTENTION OF THE OWNER/ REGION.
  - THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY ADDITIONAL DIFFICULTIES, INTERFERENCES AND SITE CONSTRAINTS THAT MAY BE IDENTIFIED DURING THE QUESTION PERIOD.
  - ALL NOISY WORK SHALL BE PERFORMED AFTER NORMAL BUSINESS HOURS: BETWEEN 6PM AND 7AM, MONDAY THROUGH FRIDAY; AND ON WEEKENDS, FRIDAY 6PM THROUGH MONDAY 7AM.
  - COORDINATE SITE ACCESS AND DELIVERIES WITH REGION AND/OR GENERAL CONTRACTOR.
- CLEANING
  - CLEAN PREMISES DAILY AT THE END OF EACH WORK DAY.
  - DO NOT ACCUMULATE EQUIPMENT, TOOLS, DEBRIS AND WASTE MATERIALS ON SITE. REMOVE FROM SITE DAILY.
  - COMPLETELY REMOVE ALL DEBRIS AND RUBBISH FROM SPACE ONCE WORK IS COMPLETE.
  - ALL MATERIALS TO BE DISPOSED OF CONSTRUCTION SITE IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
- OPEN FLAMES AND WELDING
  - NO OPEN FLAMES OR WELDING IS PERMITTED WITHIN THE BUILDING WITHOUT WRITTEN PERMISSION BY THE OWNER AND/OR THE ENGINEER.
  - HOT WORK PERMIT MUST BE VISIBLE AT ALL TIMES.
  - ADEQUATE NUMBER OF FIRE EXTINGUISHERS MUST BE PROVIDED DURING THE OPEN FLAME PROCESS.
- MATERIALS
  - USE ONLY NEW CSA AND ULC CERTIFIED EQUIPMENT AND MATERIALS UNLESS OTHERWISE INDICATED.
  - ONLY FIRST CLASS WORKMANSHIP WILL BE ACCEPTED WITH RESPECT TO STANDARD PRACTICES, SAFETY, ACCESSIBILITY, DURABILITY AND NEATNESS OF INSTALLATION WORK.
- SHOP DRAWINGS
  - SUBMIT 4 COPIES OF SHOP DRAWINGS, UNLESS OTHERWISE INDICATED, FOR ENGINEER'S REVIEW.
  - SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR ENGINEER'S REVIEW COVERING ALL RELEVANT DETAILS, DIMENSIONS AND PERFORMANCE.
  - SHOP DRAWINGS MUST BE REVISED, STAMPED AND SIGNED BY THE CONTRACTOR AND THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO CONSULTANT / ENGINEER FOR REVIEW.
- CUTTING, PATCHING AND PAINTING REQUIREMENTS
  - PROVIDE CUTTING, PATCHING AND PAINTING FOR ALL OPENINGS. USE QUALIFIED TRADES FOR THIS WORK. RESTORE FINISHES TO MATCH EXISTING SURROUNDINGS.
  - SUPPLY AND INSTALL APPROVED FIRESTOPS AS REQUIRED TO MAINTAIN FIRE RATINGS.
  - PIPING AND VENTS THROUGH WALL AND ROOF SHALL BE BY THE MECHANICAL DIVISION CONTRACTOR, INCLUDING ALL PATCHING.
- CORING REQUIREMENTS
  - FOR ALL CORING LESS THAN 3" DIA. CONTRACTOR SHALL BE RESPONSIBLE FOR SCANNING AREA PRIOR TO CORING THROUGH FLOORS/CEILING.
  - FOR ALL CORING GREATER THAN 3" DIA. CONTRACTOR SHALL BE RESPONSIBLE FOR X-RAYING AREA PRIOR TO CORING THROUGH FLOORS/CEILING.
- ACCESS PANELS
  - PROVIDE ACCESS PANELS FOR INSTALLATION BY THE GENERAL CONTRACTOR AND ALL SUB-TRADES WHERE REQUIRED FOR SERVICE OF CONCEALED EQUIPMENT INSTALLED BY THIS DIVISION.
  - PROVIDE 12"x12" (300x300mm) ACCESS PANEL TO ACCESS ANY CONCEALED VALVE AND FETTLING AND 24"x24" (600x600mm) TO ACCESS DUCT BALANCING BALANCING DAMPERS, SMOKE/FIRE DAMPERS ETC.
  - PROVIDE FIRE RATED ACCESS PANEL WHERE REQUIRED. RATING TO MATCH WALL OR CEILING.
- PENETRATIONS THROUGH FLOORS AND WALLS
  - UNLESS OTHERWISE SPECIFIED ON DRAWINGS, GLASS FIBRE FIRE RETARDANT INSULATION AND FIRESTOP CAULKING SHALL BE PACKED AROUND PIPE OPENINGS IN FLOORS AND WALLS AT TIME OF PIPE INSTALLATION. FIRESTOP CAULKING SHALL BE "3M FIRE BARRIER" FIRETEMP CAULK OR EQUIVALENT.
  - APPLY FIRESTOP SYSTEMS IN ACCORDANCE WITH 3M'S INSTRUCTIONS OR EQUIVALENT. ALL SYSTEMS SHALL MEET CSA F-SYSTEM RATINGS FOR THE PARTICULAR FIRE RATING OF THE PENETRATED SURFACE.
  - FIRESTOPPING CONTRACTOR MUST BE A LICENSED CERTIFIED INSTALLER (REFER TO LIST IN SPECIFICATION PACKAGE).
  - MATERIALS SHALL BE ASBESTOS-FREE ELASTOMERIC MATERIALS OR EQUIVALENT, TESTED, LISTED AND LABELED BY ULC IN ACCORDANCE WITH CAN 4-S115-MBS, AND CAN/ULC-S101-M FOR INSTALLATION IN ULC DESIGNATED FIRE STOPPING AND SMOKE SEAL SYSTEMS, TO PROVIDE A POSITIVE FIRE, WATER AND SMOKE SEAL AND A FIRE RESISTANCE RATING (FLAME, HOSE STREAM AND TEMPERATURE) NOT LESS THAN THE FIRE RATING FOR SURROUNDING CONSTRUCTION. MATERIALS SHALL BE COMPATIBLE WITH ABUTTING DISSIMILAR MATERIALS AND FINISHES.
  - PROVIDE PIPE SLEEVES FOR ALL PIPING PENETRATION THROUGH FLOOR, WALL AND SLAB. PIPE SLEEVE SHALL BE ONE SIZE LARGER THAN PIPE SIZE (MINIMUM).
- DIELECTRIC ISOLATION
  - PROVIDE ISOLATION WHEN USING DISSIMILAR MATERIALS, TO PREVENT GALVANIC ACTION.
- VIBRATION ISOLATION
  - PROVIDE AND INSTALL MINIMUM 3/4" THICK MSN ELASTOMERIC PADS W/MOUNTS UNDER FLOOR MOUNTED HVAC EQUIPMENT AS PER MANUFACTURER RECOMMENDATIONS.
- ELECTRICAL
  - ALL LOW VOLTAGE CONTROL WIRING (<50V) SHALL BE BY THIS DIVISION, TO ELECTRICAL DIVISION STANDARDS.
- PRESSURE TESTING
  - ALL PIPING SYSTEMS SHALL BE PRESSURE TESTED TO 860 kPa OR 1.5 TIMES SYSTEM OPERATING PRESSURE FOR A DURATION OF 24 HRS UNLESS OTHERWISE INDICATE.
- AS BUILT DRAWINGS
  - MAINTAIN A RECORD OF ALL REVISIONS. PREPARE RECORD DRAWINGS IN A NEAT MANNER SHOWING ALL DEVIATIONS IN WORK. ON COMPLETION OF WORK, SUBMIT TO THE ENGINEER ONE HARD COPY OF AS BUILT DRAWINGS AND ELECTRONIC FORMAT DRAWINGS (IN AUTOCAD).
- OPERATION AND MAINTENANCE MANUALS
  - SUBMIT FOUR (4) COPIES OF O&M MANUALS TO ENGINEER FOR REVIEW. ALSO INCLUDE 1 COPY IN PDF FORMAT. MANUALS SHALL INCLUDE AS BUILT DRAWINGS (CAD AND PDF FORMAT), APPROVED SHOP DRAWINGS OF ALL NEW EQUIPMENT, TEST AND BALANCING REPORTS, COMMISSIONING REPORTS, WARRANTIES, TRAINING RECORDS, AND OPERATION & MAINTENANCE PROCEDURES.
  - REMOVE ALL ABANDONED PIPES, HANGERS, INSERTS, CONDUITS, DUCTS AND SERVICES. FIRESTOP AND SEAL ALL AFFECTED AREAS.
  - SEAL AND FIRESTOP ALL WALL, FLOOR AND ROOF PENETRATIONS THROUGH FIRE RATED ASSEMBLIES.
  - CO-ORDINATE ALL DIMENSIONS WITH EQUIPMENT SHOP DRAWINGS.
  - THOROUGHLY INSPECT EXISTING STRUCTURE AND CHECK SITE CONDITIONS WITH CONDITION SHOWN ON CONTRACT DRAWINGS BEFORE PROCEEDING WITH WORK. MAKE ADJUSTMENTS TO WORK TO SUIT EXISTING CONDITION AND IN CONFORMANCE WITH DESIGN INTENT. REPORT ANY DISCREPANCIES TO THE ENGINEER.
  - WELDING SHALL BE UNDERTAKEN BY A COMPANY CERTIFIED BY CANADIAN WELDING BUREAU UNDER REQUIREMENTS OF DIVISION 1 OR DIVISION 2.1 OR W47.1.
  - MATERIALS AND WORK WHICH FAILS TO MEET SPECIFIED REQUIREMENTS WILL BE REJECTED BY THE ENGINEER WHENEVER FOUND AT ANY TIME PRIOR TO FINAL ACCEPTANCE AND REGARDLESS OF PREVIOUS INSPECTIONS. WHEN REJECTED, DEFECTIVE MATERIALS OR WORK SHALL BE PROMPTLY REMOVED, REPLACED OR REPAIRED TO THE SATISFACTION OF THE ENGINEER AT NO EXPENSE TO THE OWNER.
- PROTECTION OF THE WORK AND ADJACENT PROPERTY:
  - THE CONTRACTOR SHALL PROTECT THE WORK, THE SITE AND ANY OTHER PROPERTY ADJACENT TO THE SITE FROM DAMAGE WHICH MAY ARISE AS A RESULT OF ITS OPERATIONS UNDER THE CONTRACT AND SHALL BE LIABLE FOR ANY DAMAGES WHICH MAY BE ACCESSED; AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING GOOD SUCH DAMAGES AT ITS EXPENSE IN THE MANNER DIRECTED BY AND TO SATISFACTION OF ENGINEER.
  - THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO PROVIDE FOR AND BEAR THE COSTS OF PREVENTATIVE MEASURES TO ACCOMMODATE THE FORCES OF NATURE, WHICH CAN RESULT IN FREEZING, FLOODING, OVERHEATING, OR SIMILAR CIRCUMSTANCES, WHICH OCCUR UNTIL CONTRACT COMPLETION.
- PERMITS AND FEES:
  - THE CONTRACTOR SHALL APPLY FOR AND OBTAIN IN ITS OWN NAME, PERMITS, LICENSES, APPROVALS AND SHALL PAY FEES AND GIVE NOTICES NECESSARY PRIOR TO COMMENCING WORK AND INCIDENTAL TO THE DUE AND LAWFUL PERFORMANCE OF THE WORK, IN ACCORDANCE WITH THE SPECIFICATIONS.
  - THE CONTRACTOR SHALL ENSURE THAT THE JURISDICTIONAL AUTHORITIES ARE NOTIFIED OF THE DATE FOR THE COMMENCEMENT OF THE WORK AND THE DATES OF ACTIVITY OF THE WORK FOR WHICH MUNICIPAL INSPECTORS ARE REQUIRED TO BE PRESENT. THE CONTRACTOR SHALL SEND A COPY OF ALL CORRESPONDENCES TO THE ENGINEER.

- THE CONTRACTOR SHALL BE RESPONSIBLE SHOULD FAILURE OCCUR.
- GAS PIPING:
  - PIPE
    - STEEL PIPE: TO ASTM A53, GRADE B, SCHEDULE 40, SEAMLESS AS FOLLOWS:
      - NPS 1/2 TO 2, SCREWED.
      - NPS 2 1/2 AND OVER, PLAIN END.
      - COPPER TUBE: TO ASTM B75M.
    - JOINING MATERIAL
      - SCREWED FITTINGS: PULVERIZED LEAD PASTE.
      - WELDED FITTINGS: TO CSA W47.1.
      - FLANGE GASKETS: NONMETALLIC FLAT.
      - SOLDERED: TO ASTM B32, TIN ANTIMONY 5/5.
  - FITTINGS
    - STEEL PIPE FITTINGS, SCREWED, FLANGED OR WELDED:
      - MALLEABLE IRON: SCREWED, BANNED, CLASS 150.
      - STEEL PIPE FLANGES AND FLANGED FITTINGS: TO ANSI/ASME B16.5.
      - WELDING: BUTT-WELDING FITTINGS.
      - UNIONS: MALLEABLE IRON, BRASS TO IRON, GROUND SEAT, TO ASTM A47M.
      - BOLTS AND NUTS: TO ANSI B18.2.1.
      - NIPPLES: SCHEDULE 40, TO ASTM A53.
    - COPPER PIPE FITTINGS, SCREWED, FLANGED OR SOLDERED:
      - CAST COPPER FITTINGS: TO ANSI B16.18.
      - WROUGHT COPPER FITTINGS: TO ANSI/ASME B16.22.
  - VALVES
    - PROVINCIAL CODE APPROVED, LUBRICATED PLUG TYPE.
  - INSTALLATION
    - INSTALL IN ACCORDANCE WITH APPLICABLE PROVINCIAL CODES.
    - INSTALL IN ACCORDANCE WITH CAN/CGA B149.1.
    - ASSEMBLE PIPING USING FITTINGS MANUFACTURED TO ANSI STANDARDS.
    - CONNECT TO EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION UNLESS OTHERWISE INDICATED.
    - SLOPE PIPING DOWN IN DIRECTION OF FLOW TO LOW POINTS.
    - INSTALL DRIP POINTS:
      - AT LOW POINTS IN PIPING SYSTEM.
      - AT EACH CONNECTION TO EQUIPMENT.
    - USE ECCENTRIC REDUCERS AT PIPE SIZE CHANGE INSTALLED TO PROVIDE POSITIVE DRAINAGE.
    - PROVIDE CLEARANCE FOR ACCESS AND FOR MAINTENANCE.
    - REAM PIPES, CLEAN SCALE AND DIRT, INSIDE AND OUT.
    - INSTALL PIPING TO MINIMIZE PIPE DISMANTLING FOR EQUIPMENT REMOVAL.
    - INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL UNLESS OTHERWISE APPROVED BY ENGINEER.
    - INSTALL VALVES AT BRANCH TAKE-OFFS TO ISOLATE EACH PIECE OF EQUIPMENT, AND AS INDICATED.
  - TESTING
    - TEST SYSTEM IN ACCORDANCE WITH CAN/CGA B149.1 AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
    - PURGE AFTER PRESSURE TEST IN ACCORDANCE WITH CAN/CGA B149.1
- SPW-JZ LOW INTENSITY TUBE HEATER FOR CAR WASH AND HARSH ENVIRONMENT APPLICATIONS
  - RADIANT TUBE HEATERS
    - CSA INTERNATIONAL APPROVED NATURAL OR PROPANE GAS FIRED RADIANT TUBE HEATERS AS MANUFACTURED BY SCHWANK INC. OR EQUIVALENT HEATER SIZE(S) AND CAPACITY(S) AS NOTED ON DRAWING OR SCHEDULE.
    - THE RADIANT TUBE HEATER SHALL CONSIST OF A WEATHER RESISTANT POWDER COATED CONTROL BOX CONTAINING A BURNER ASSEMBLY, DUAL PRESSURE SWITCHES, ELECTRONIC IGNITION CONTROL, GAS VALVE, CONTROL TRANSFORMER AND BURNER STATUS INDICATOR LIGHTS; AND ADDITIONALLY SHALL CONSIST OF ALUMINIZED STEEL RADIANT TUBING AND REFLECTORS, HANGERS, TUBE COUPLERS AND ELBOWS, AND/OR TURBULATORS AND TEES AS NEEDED.
    - THE BURNER SHALL BE OF THE FIXED AIR PRESSURIZED TYPE WITH INDEPENDENT OPERATING CONTROLS CAPABLE OF OPERATING SINGLY OR IN TANDEM WITH OTHER UNITS. THE BURNER HEAD SHALL HAVE THE INFRARED CERAMIC MEDIA FOR IMPROVED COMBUSTION, RESULTING IN LOWER SOUND LEVELS AND REDUCED DETRIMENTAL EMISSIONS. THE BURNER PACKAGE SHALL BE OF MODULAR CONSTRUCTION ALLOWING EASY REMOVAL FOR MAINTENANCE OR SERVICING.
    - ALL CONTROLS AND THE COMBUSTION BLOWER SHALL BE LOCATED INSIDE THE WEATHER RESISTANT POWDER COATED CABINET TO PREVENT DIRT AND MOISTURE ACCUMULATION, THEREBY REDUCING MAINTENANCE REQUIREMENTS.
    - AS STANDARD EQUIPMENT, THE BURNER ASSEMBLY SHALL HAVE TWO SEPARATE FACTORY-SET AND SEALED AIR SAFETY SWITCHES, ONE TO MONITOR INLET AIR PRESSURE AND ONE TO MONITOR FLOW PRESSURE (IN THE EVENT OF A BLOCKED AIR INTAKE OR BLOCKED EXHAUST VENT, THE SYSTEM WILL SHUT OFF). THE BURNER ASSEMBLY SHALL HAVE STATUS LIGHTS VISIBLE FROM THE FLOOR, TO INDICATE THE STATUS OF THE BURNER OPERATION, A FACTORY MOUNTED IGNITER, AND A FLAME OBSERVATION PORT.
    - THE RADIANT COMBUSTION CHAMBER TUBING (FIRST 10 FT.) SHALL BE 16 GAUGE ELECTRIC RESISTANCE WELDED ALUMINIZED STEEL (ALUMATHERM STEEL ON 175 AND 200 MBTUH HEATERS) WITH 1.05 FT.2 OF RADIATING SURFACE PER RUNNING FOOT.
    - THE RADIANT HEAT EXCHANGER (10 FT., 20 FT., 30 FT., 40 FT., 50 FT. OR 60 FT. DOWNSTREAM OF THE 10 FT COMBUSTION CHAMBER TUBE) SHALL BE 16 GAUGE WELDED ALUMINIZED STEEL.
    - ALL RADIANT TUBING WILL HAVE SWAGED ENDS FOR EASE AND CONTINUITY OF ASSEMBLY AND TO INCREASE THE MECHANICAL INTEGRITY OF THE SYSTEM. AN ALUMINIZED STEEL COUPLING SHALL BE USED AT EACH JOINT OF TUBES TO ENSURE CONSISTENT EXPANSION WITH TUBES AND MINIMIZE LEAKAGE.
    - THE REFLECTORS SHALL HAVE END PLATE HANGERS AND EXTEND BELOW THE RADIANT TUBE TO ENTRAP CONVECTION HEAT AND PROVIDE HIGHER RADIANT EFFICIENCY. THE REFLECTOR / TUBE SYSTEM SHALL HAVE INTERMEDIATE WEBBED HANGERS THAT PROMOTE FREE PASSAGE OF ENTRAPPED CONVECTION HEAT ALONG THE LENGTH OF THE SYSTEM, THEREBY PROVIDING INCREASED AND MORE UNIFORM INFRARED HEAT OUTPUT.
    - THE STANDARD CONFIGURATION SHALL BE COMPRISED OF END PLATE HANGERS FASTENED TO THE REFLECTORS AT EACH END OF STRAIGHT TUBE RUN. WEBBED HANGERS SHALL BE LOCATED AT THE END OF EACH REFLECTOR TO SUPPORT THE REFLECTORS AND TUBES.
    - ALL INTERNAL BURNER ELECTRICAL CONNECTIONS SHALL BE COATED TO PROVIDE MOISTURE RESISTANCE, AND THE DIRECT SPARK IGNITION CONTROL SHALL BE COMPLETELY POTTED TO PROTECT ELECTRONICS FROM CONDENSING MOISTURE.

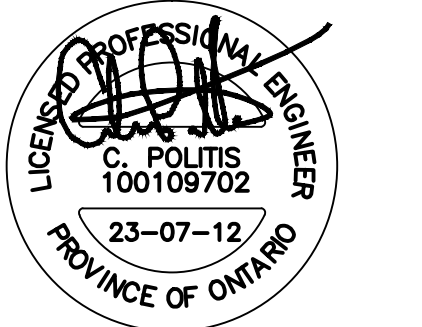
- CO/NO2 DETECTION SYSTEM:
- TRANSMITTERS: HONEYWELL ANALYTICS E3SM-E3SC0 & E3SM-E3NO2
- PROVIDING CONTINUOUS MONITORING IN AMBIENT AIR OF TWO FACTORY-SET ALARM LEVELS AND OUTPUTS.
  - THE TRANSMITTER WILL BE CAPABLE OF OPERATING ON A FULLY-ADDRESSABLE MODBUS RS-485 DIGITAL NETWORK IN A DAISY-CHAIN CONFIGURATION. COMMUNICATION 3000FT MAX PER CHANNEL AND POWER 24VAC 1000FT MAX PER CHANNEL.
  - TRANSMITTER WILL HAVE AN ONBOARD DPDT RELAY (RATED AT 5A, 30 VDC OR 250 VAC (RESISTIVE LOAD)) AND CAN BE TRIGGERED THROUGH THE PROGRAMMING ON THE CONTROL PANEL TO ACTIVATE REMOTELY LOCATED FAN STARTERS WITHOUT THE NEED FOR A SEPARATE RELAY PACK.
  - SENSOR CELL SHALL HAVE A CONTINUOUS SELF-TEST TO ENSURE OPERATION AND TO PROVIDE EOL NOTIFICATION.
  - THE TRANSMITTER SHALL HAVE A PLUG-IN CAPABILITY FOR A FIELD REPLACEABLE GAS CARTRIDGE. THE REPLACEABLE GAS CARTRIDGE SHALL BE FACTORY CALIBRATED AND CERTIFIED TO THE TARGET GAS READY FOR OPERATION WITHOUT THE REQUIREMENT FOR SITE CALIBRATION.
  - TRANSMITTER WILL BE CAPABLE OF OPERATING WITHIN RELATIVE HUMIDITY RANGES OF 5-95% NON-CONDENSING AND TEMPERATURE RANGES OF -4° F TO 104° F (-20° C TO 40° C).
  - ALL SENSORS IN MAINTENANCE BAYS TO BE OUTFITTED FOR WATER INGRESS PROTECTION.
- CONTROL PANEL: HONEYWELL ANALYTICS 301C-D1C
- THE CONTROL PANEL MUST BE CAPABLE OF COMMUNICATING DIGITALLY WITH THE NETWORKED GAS DETECTION MONITORS ON THREE SEPARATE RS-485 MODBUS COMMUNICATION CHANNELS.
  - THE CONTROLLER WILL HOUSE FOUR INTERNAL DPDT RELAYS AT FULLY PROGRAMMABLE ALARM LEVELS (AND WITHIN PROGRAMMABLE TIME DELAYS). THE RELAY RATING WILL BE NO LOWER THAN 5 A, 30 VDC OR 250 VAC (RESISTIVE LOAD).
  - THE CONTROLLER MUST INCLUDE A SELF-TEST FUNCTION THAT ALLOWS FOR THE ACTIVATION/DEACTIVATION OF ALL THE PROGRAMMED OUTPUTS BY SIMULATING A CONTINUOUS 5% INCREASE/DECREASE VALUE UNTIL THE MAXIMUM/MINIMUM VALUE IS REACHED.
  - THE CONTROLLER MUST INCLUDE A REAL-TIME CLOCK THAT ENABLES OPERATION OF THE OUTPUTS FOR A SPECIFIC TIME-FRAME.
  - THE CONTROLLER MUST ALSO INCLUDE AN ENERGY SAVING FEATURE THAT ALLOWS FOR OUTPUT OPERATION ON ALARMS SET AT THE MAX, MIN OR AVERAGE VALUE OF A SPECIFIC GROUP OF TRANSMITTERS. THIS FEATURE MUST ALSO ALLOW FOR THE ACTIVATION OF OUTPUTS UPON A CERTAIN NUMBER OF A SPECIFIC GROUP (¼, ½, ¾ AND ¾) OF TRANSMITTERS REACHING THEIR ALARM LEVELS.
  - THE CONTROLLER WILL INDICATE THE EXACT CONCENTRATION OF GAS, THE GAS DETECTED, AND THE LOCATION OF THE SENSOR BY SWEEPING THROUGH THE NETWORK AND DISPLAYING THE DETECTED LEVELS AT EACH POINT ON A GRAPHIC LCD DISPLAY.
  - INTEGRATE STROBE/HORN, 120V, 85DB @ 10FT MINIMUM WITH BLUE LENS.
  - RATINGS AND CERTIFICATIONS
    - CONFORMS TO INTERNATIONAL MECHANICAL AND ELECTRICAL CODES
    - EM/RFI COMPLIES WITH EMC DIRECTIVE 89/336/EEC
    - CSA CERTIFICATION
- SEQUENCE OF OPERATION
- | SENSOR LOCATION             | FIRST ALARM (TWA) |     | SECOND ALARM (STEL) |                          |
|-----------------------------|-------------------|-----|---------------------|--------------------------|
|                             | CO                | NO2 | CO                  | NO2                      |
| CARBON MONOXIDE (CO) A.F.F. | 25 PPM            |     | 100 PPM             | 1200MM                   |
| NITROGEN DIOXIDE (NO2) IN   | .72 PPM           |     | 2 PPM               | AS PER OBC 1500MM A.F.F. |
| BREATHING ZONE              |                   |     |                     |                          |
- WHEN FIRST ALARM LEVEL IS ACHIEVED RELAY IS ENERGIZED TO ACTIVATE THE EXHAUST FAN AND OPEN CORRESPONDING DAMPER. PROGRAM A RELAY DELAY-OFF OF 2 MINUTES TO ALLOW GAS TIME TO CLEAR.
  - WHEN SECOND ALARM LEVEL IS ACHIEVED STROBE/HORN WILL ACTIVATE.
- INSTALLATION & VERIFICATION
- INSTALL HAZARDOUS GAS MONITORING EQUIPMENT INCLUDING SENSORS AND CONTROL PANEL AS SHOWN ON CONTRACT DRAWINGS.
  - INSTALL CONDUIT AND WIRING FROM SENSORS TO CONTROL PANEL AND TO THE FAN STARTERS. COMMUNICATION WIRING 24 GAUGE SHIELDED TWISTED PAIR BELDEN 9841 OR EQUIVALENT; 2000FT MAX PER CHANNEL FROM CONTROLLER. POWER IS 24VAC, 14 GAUGE; 1000FT MAX FROM THE CONTROLLER.
  - TEST TO DEMONSTRATE OPERATION OF FUNCTIONS DESCRIBED ABOVE UNDER SEQUENCE OF OPERATION TO BE PERFORMED BY MANUFACTURER'S CERTIFIED TECHNICIAN. CERTIFICATE OF COMMISSIONING TO BE PRESENTED TO FACILITY OPERATORS.

LEGEND	
	DIFFUSER/GRILLE
	TRANSFER GRILL
	SPIN ON CONNECTION COMPLETE WITH BALANCING DAMPER
	DIRECTION OF AIR FLOW
	OPEN-ENDED RETURN AIR DUCT WITH ACOUSTIC LINING
	EXISTING PIPING, DUCTWORK, EQUIPMENT
	NEW PIPING, DUCTWORK, EQUIPMENT
	DOMESTIC COLD WATER (DCW)
	DOMESTIC HOT WATER (DHW)
	HUNG SANITARY DRAIN
	BURIED SANITARY DRAIN
	HUNG STORM DRAIN
	BURIED STORM DRAIN
	VENT (PLUMBING)
	NATURAL GAS LINE (MEDIUM PRESSURE 2 PSI)
	NATURAL GAS LINE (LOW PRESSURE 7" WC)
	SPRINKLER MAIN
	PIPE CUT
	PIPE UP
	PIPE DOWN
	UNION
	CAP OR PLUG
	SHUT-OFF VALVE
	NON-RETURN VALVE (CHECK VALVE)
	NON-RETURN VALVE (CHECK VALVE) WITH BALL DRIP
	PRESSURE REDUCING VALVE OR REGULATOR
	SUPERVISED VALVE
	PRESSURE SWITCH
	FLOW SWITCH
	PRESSURE GAUGE COMPLETE WITH SHUT-OFF VALVE
	FLOOR DRAIN
	ROOF DRAIN
	TRAP
	CLEAN OUT
	BACKFLOW PREVENTER
	GAS OR WATER METER
	NON-FREEZE HOSE BIBB
	PUMP (SCHEMATIC)
	SIAMESE CONNECTION
	FIRE EXTINGUISHER
	MOTORIZED DAMPER
	THERMOSTAT
	STARTER
	DIRECTION OF AIR FLOW
	ROOF FAN
	CEILING MOUNTED EXHAUST FAN

Drawing Notes

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**ISSUED FOR TENDER**



2.	ISSUED FOR PERMIT & TENDER	JUL 12,23	MK
1.	ISSUED FOR 99% REVIEW	DEC.12,22	CB
No.	Revision	Date	By

**BOLD** engineering

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Project Name  
**ORANGEVILLE OPERATION CENTRE EXPANSION**

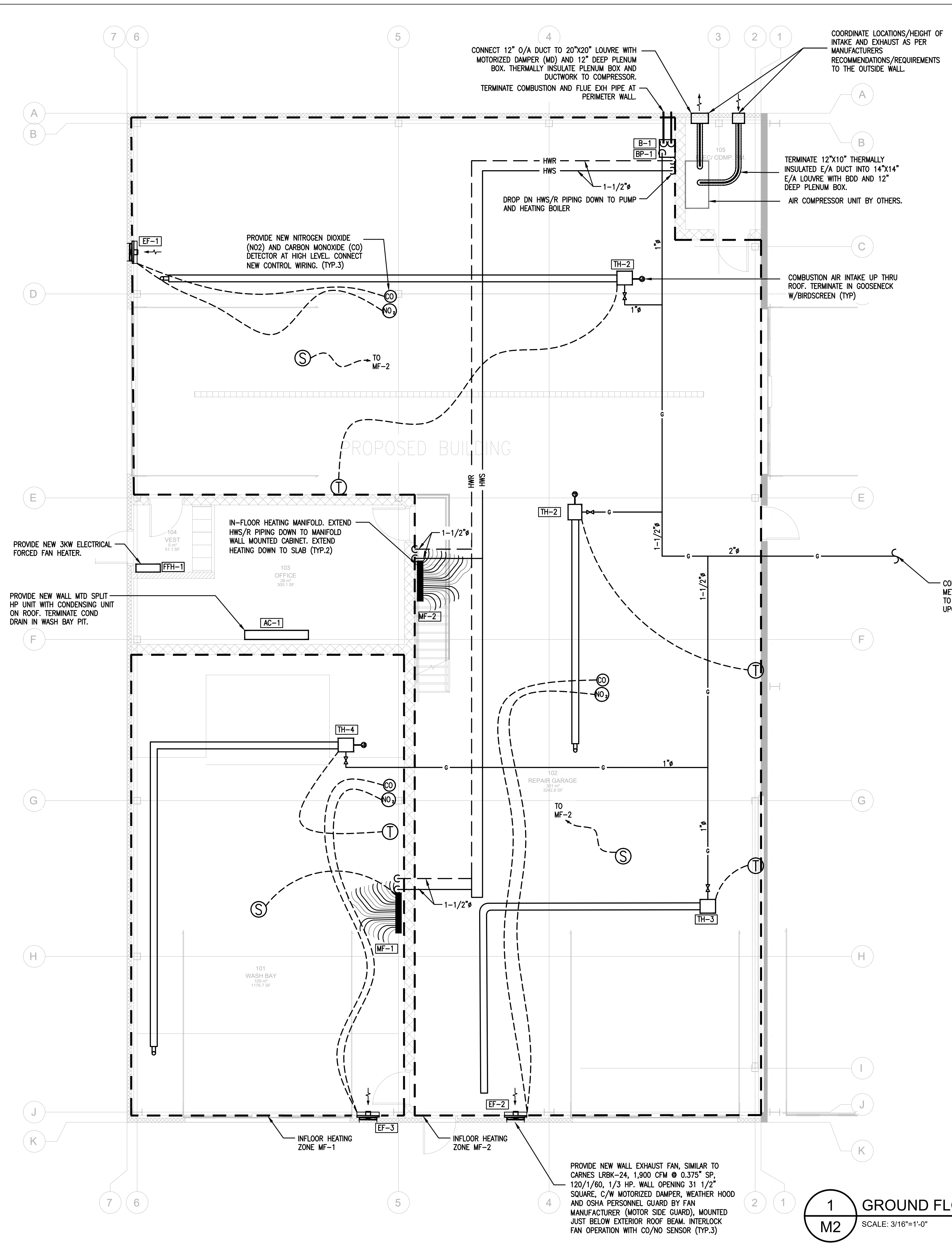
500 C LINE, ORANGEVILLE, ON L9W 4Z3

Sheet Title  
**MECHANICAL SPECIFICATIONS**

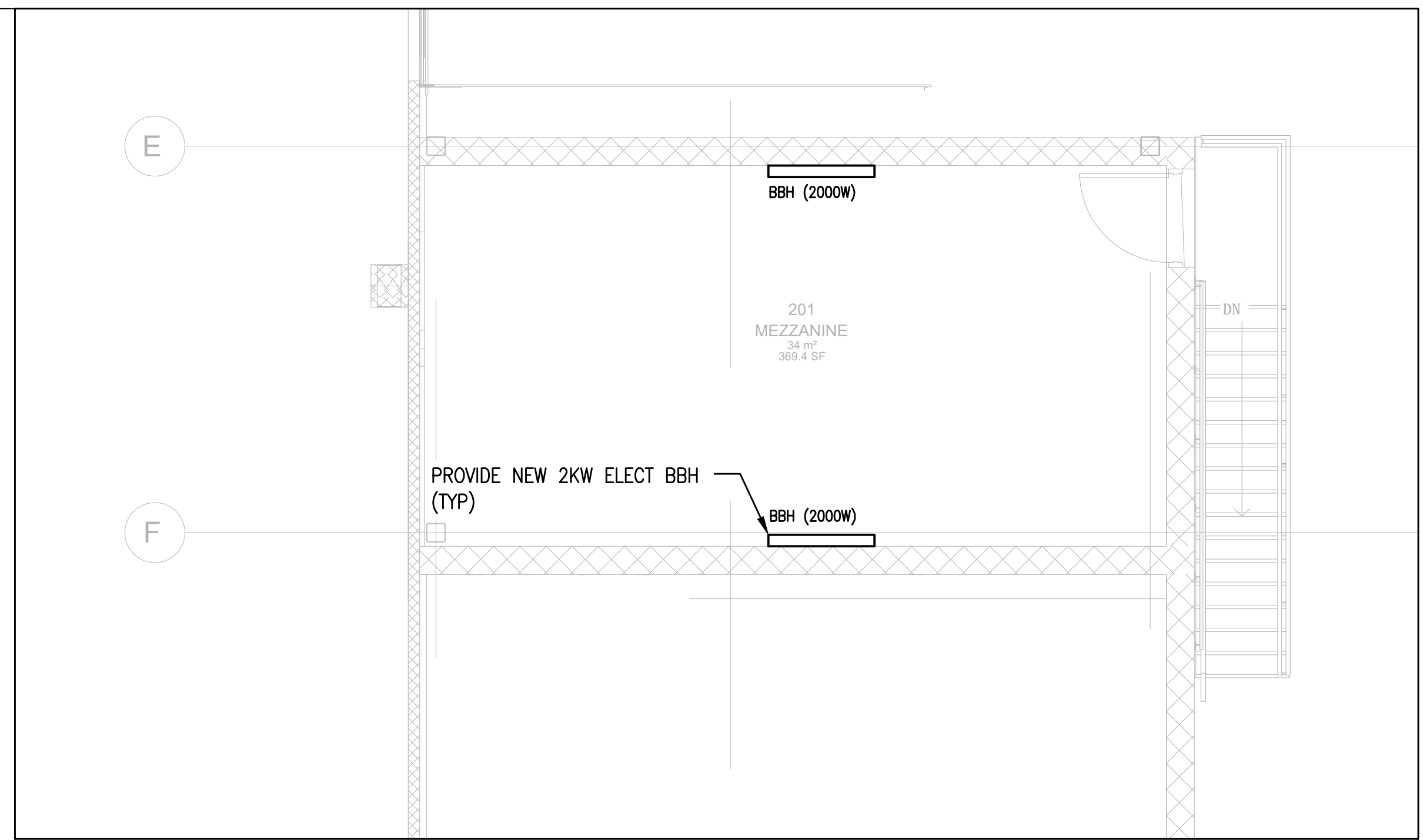
Drawn By **MK** Scale  
Designed By **MK** Date **January 06, 2023**

Project Number **B-1000000**

Sheet Number **M** Revision **0**



**1 GROUND FLOOR HVAC PLAN**  
SCALE: 3/16"=1'-0"



**2 MEZZANINE HVAC PLAN**  
SCALE: 1/4"=1'-0"

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2.	ISSUED FOR PERMIT & TENDER	JUL 12,23	MK
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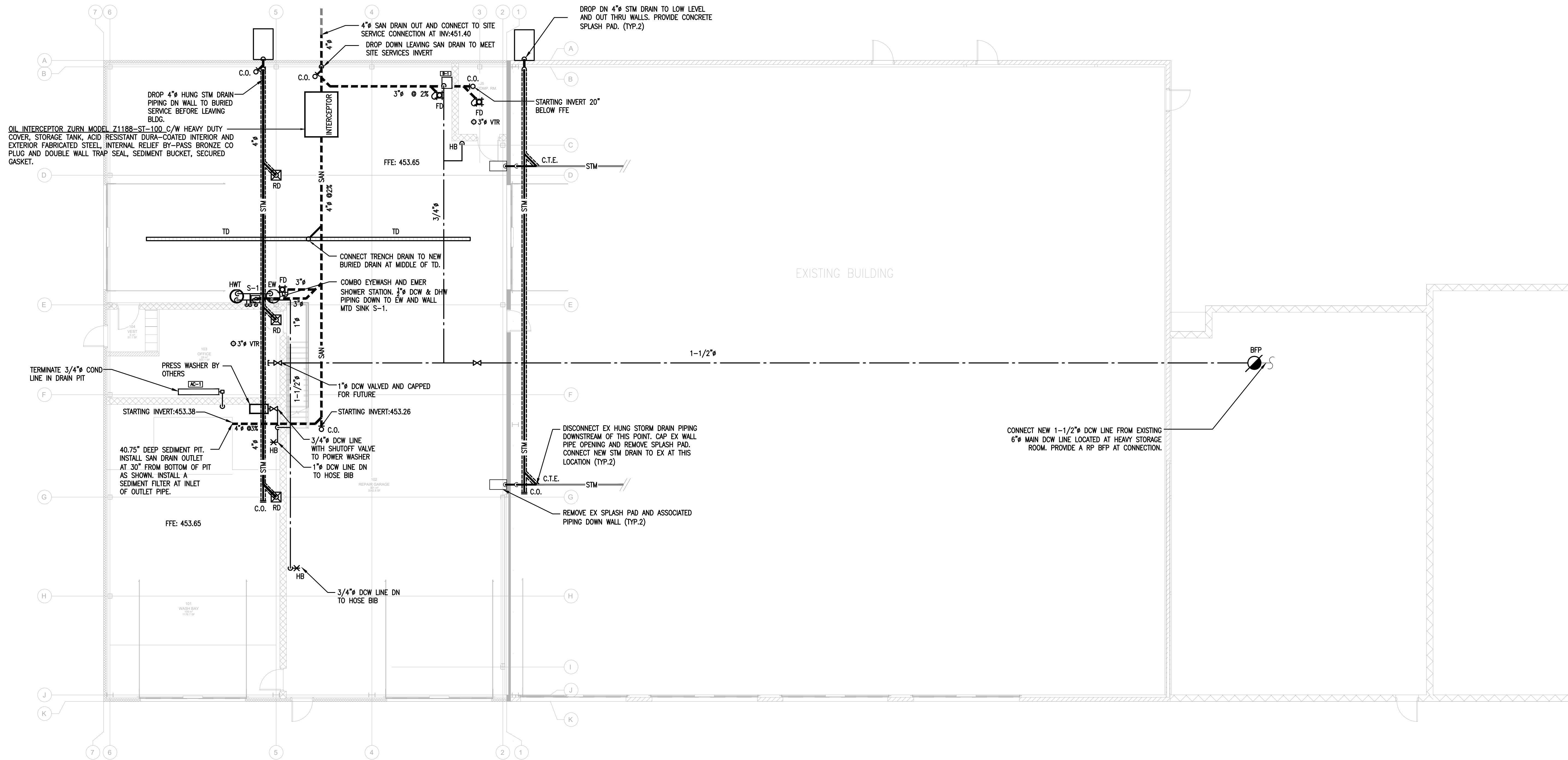
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Project Name  
**ORANGEVILLE OPERATION CENTRE EXPANSION**  
 500 C LINE, ORANGEVILLE, ON L9W 4Z3

Sheet Title  
**HVAC PLAN**

Drawn By MK Scale 3/16"=1'-0"  
 Designed By MK Date January 06, 2023  
 Project Number B: [ ] [ ] [ ] [ ] [ ] [ ]  
 Sheet Number [ ] Revision [ ]

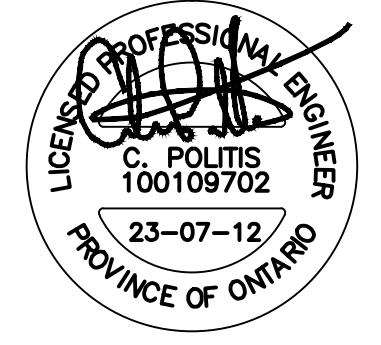




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**ISSUED FOR TENDER**



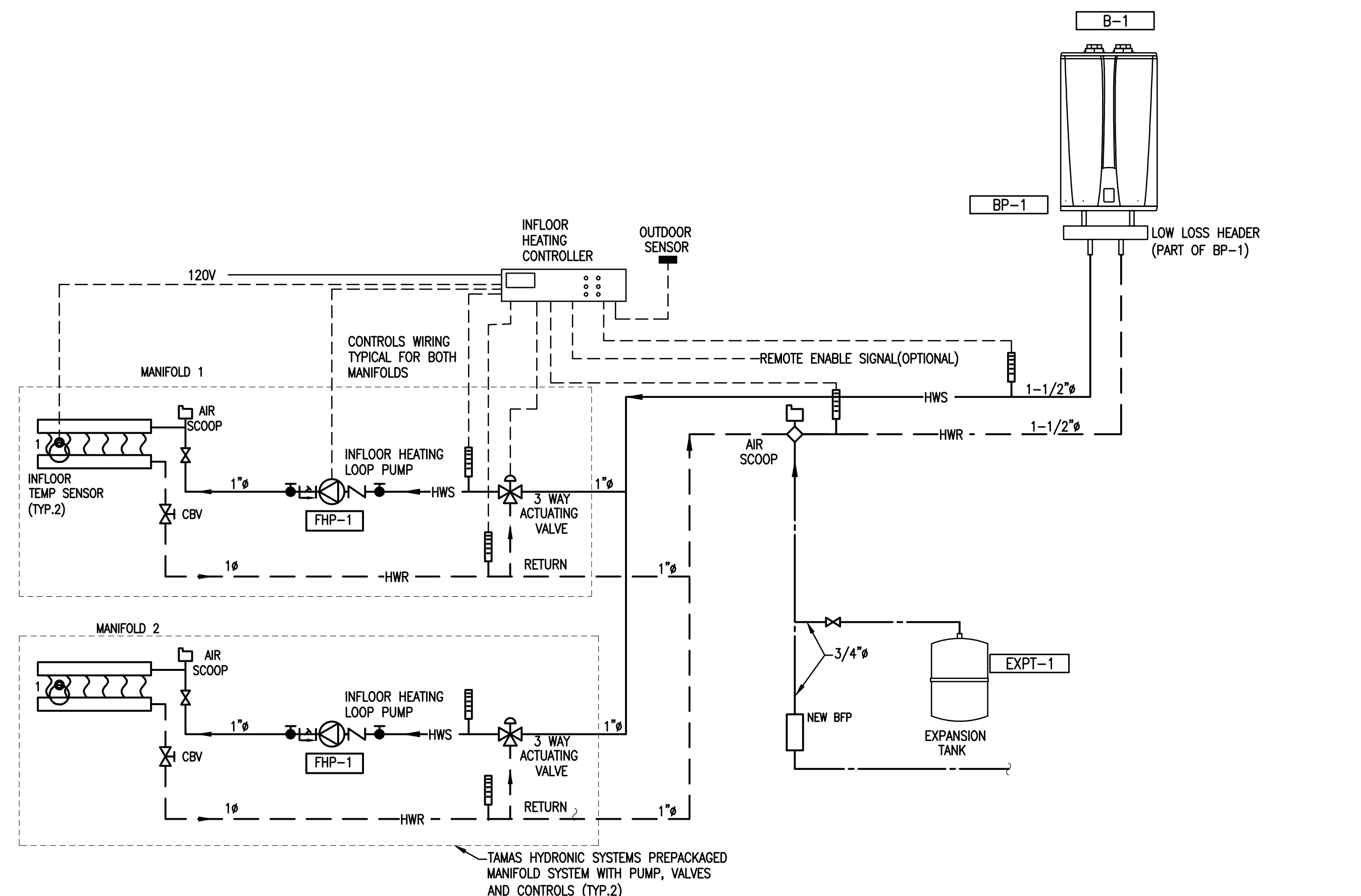
No.	Revision	Date	By
2.	ISSUED FOR PERMIT & TENDER	JUL 12,23	MK
1.	ISSUED FOR 99% REVIEW	DEC.12,22	CB

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Project Name  
**ORANGEVILLE OPERATION CENTRE EXPANSION**  
 500 C LINE, ORANGEVILLE, ON L9W 4Z3

Sheet Title  
**PLUMBING PLAN**

Drawn By MK Scale 1/8"=1'-0"  
 Designed By MK Date January 06, 2023  
 Project Number B-11111111  
 Sheet Number **M** Revision



IN-FLOOR HEATING PIPING SCHEMATIC

TAG	MAKE/MODEL	LOCATION	WATTS	VOLTAGE	REMARKS
BBH	OUELLET OFM1502-2128	MEZZANINE	1500	208/1/60	ELEC BASEBOARD HEATER, COLOR WHITE, 84" LENGTH, 15 LBS. INSTALL BBH ON WALL AT FFE.

TAG	MAKE/MODEL	LOCATION	GAS CONN	FLOW RATE	CAPACITY	EFFICIENCY	ELECT VOLT	MAX LOAD	MAX FUSE	VENTING COMB AIR	WEIGHT	REMARKS
B-1	BUDERUS GB162-80	GARAGE	1"		IN:290 MBH OUT:260 MBH	94%	115/1/60	349W	15A	CAT IV 4" O/A 4" E/A	200 LBS (OPERATING)	TANKLESS WALL HUNG CONDENSING WATER HEATER C/W ALUMINUM HEAT EXCHANGER, INTEGRAL CONTROLLER, LOW LOSS HEADER, GRUNDFOS PUMP (UP26-99) FLOW CHECK, PRESS GAUGE, SHUT-OFF VALVE, PRESS RELIEF VALVE, GAS SHUT-OFF VALVE, COMBUSTION & VENT PIPING AS PER MANUFACTURERS STANDARD, AND CONDENSATE NEUTRALIZER KIT. INTERLOCK WATER HEATERS WITH BAS, ADD CONTROLS POINT IN BAS PANEL TO MONITOR DHW SYSTEM.

PUMP NO.	PUMP NAME	LOCATION	MAKE/MODEL	QTY	FLOW GPM	HEAD FT	VOLT & PHASE	VFD	MAGNETIC STARTER	MOTOR SIZE HP	REMARKS
BP-1	BOILER CIRCULATOR	IN BOILER	GRUNDFOS UP26-99	1	18 GPM	9	115/1/60	YES	---	349w	① ② ③ ④ ⑤ ⑥
FHP-1	INFLOOR HEAT PUMP	MANIFOLD 1	TAMAS UPS 15-58	1	4	6	120/1/60	ECM	---	---	② ③ ④
FHP-1	INFLOOR HEAT PUMP	MANIFOLD 2	TAMAS UPS 26-99FC	1	12	7.5	120/1/60	ECM	---	1/6	② ③

TAG	AREA SQ.FT	SERVICE	CONSTRUCTION	HEATING TYP	RH CIRCUITS	TUBE SPACING	TUBING IN RM	MANIFOLD	FLOWRATE GPM	HEAD LOSS (CIRCUIT ONLY)	RH LOAD	FLUID TYPE	SURFACE TEMP	FLUID TEMP	REMARKS
MF-1	1212	WASHBAY	EMBEDDED SLAB	RH	12	9"	1616 FT	1	3.64	3.0	36 MBH	WATER	82-85°F	119°F	COMMERCIAL S/S 1-1/2" WITH FLOW METER & BALL VALVE, 5/8" HEATING TUBING
MF-2	4219	REPAIR GARAGE	EMBEDDED SLAB	RH	5	12"	4081 FT	1	12.03	5.5	120 MBH	WATER	82-85°F	119°F	COMMERCIAL S/S 1-1/2" WITH FLOW METER & BALL VALVE, 5/8" HEATING TUBING

TAG	MANU.	MODEL	CAPACITY US GAL	ELEMENT (KW)	QTY.	POWER V/Ph/Hz	REMARKS
HWT	SPACE SAVER	SS19LSEB1	19	1.5	1	120/1/60	WATER HEATER SHALL HAVE THE ULC SEAL OR CERTIFICATION AND BE FACTORY EQUIPPED WITH AGA/ASME RATED TEMPERATURE AND PRESSURE RELIEF VALVE. TANK SHALL HAVE A WORKING PRESSURE RATING OF 150 PSI. WATER HEATER SHALL BE EQUIPPED WITH SURFACE MOUNTED THERMOSTAT WITH AN INTEGRAL, MANUAL RESET, HIGH LIMIT CONTROL. OR APPROVED EQUAL.

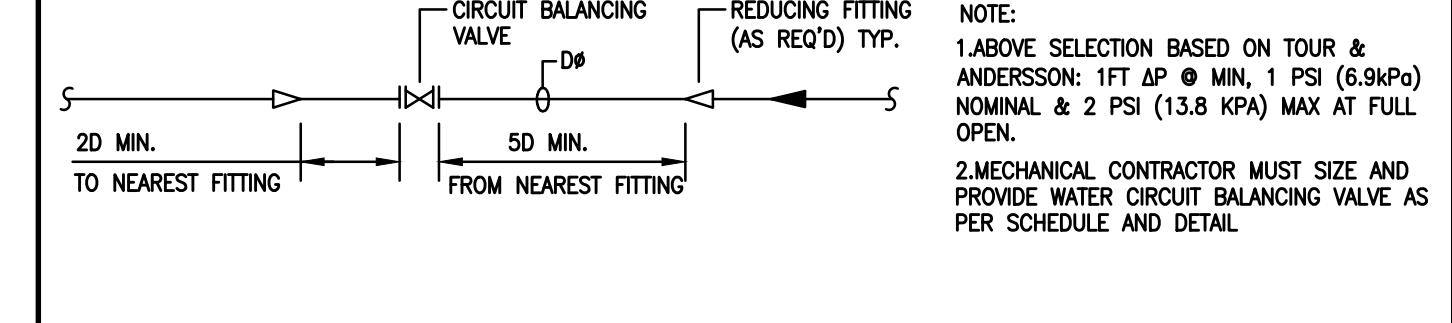
UNIT NO.	LOCATION	MAKE/MODEL	CFM	VOLTAGE AND PHASE	FAN MOTOR F.L.A.	MIN. CIRC. AMPACITY	COOLING CAPACITY	REMARKS
AC-1	OFFICE RM	MISTSUBISHI MS-A09WA	335	115/1/60	0.95	1.2	9,000	MR SLIM WALL MOUNTED INDOOR UNIT COMPLETE WITH THERMOSTAT.
CD-1	ROOF	MISTSUBISHI MU-A09WA	-	115/1/60	0.63	14	9,500	MR SLIM OUTDOOR UNIT, (R-410A REFRIGERANT).

MARK	MAKE/MODEL	HEATING CAPACITY	VOLTS/PHASE	CFM	COMMENTS
FFH-1	OUELLET OCA03007-T	3 KW	347/1/60	500	WALL MTD UNIT WITH B1 TYPE CONFIGURATION. UNIT TO BE STD WHITE, 18 GAUGE STEEL, HIGH LIMIT TEMP CONTROL WITH AUTO RESET.

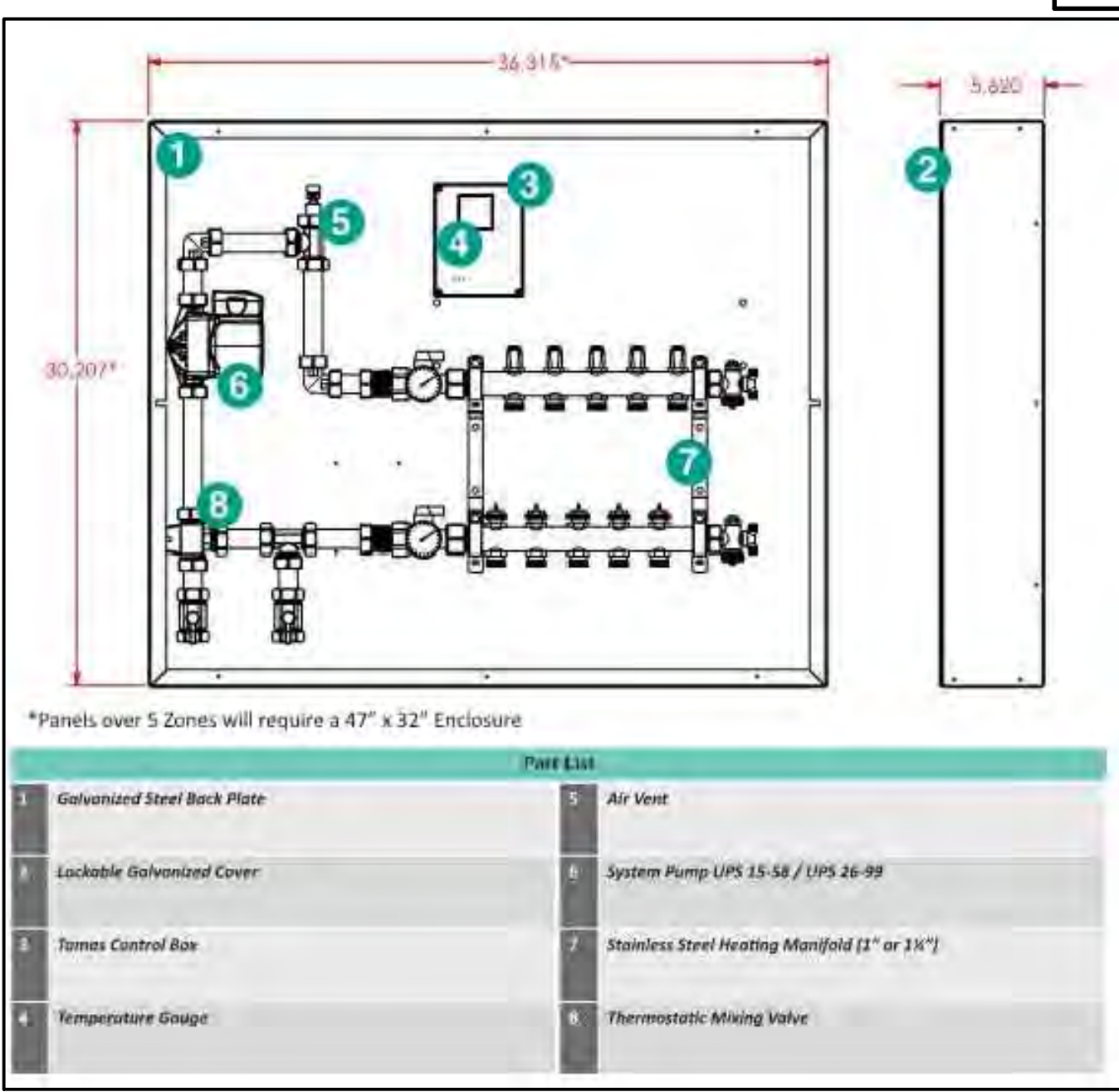
TAG	MAKE/MODEL	QTY	OPERATING TEMP (DEG F)	POWER RECD (AC)	POWER RECD (DC)	AUDIBLE ALARM	ACCURACY	DIMENSION H x W x D
CO	HONEYWELL E3SM + E3SCO (CO SENSOR)	8	-4 TO 122	24 Vdc	24 Vdc	85 dBA at 3 ft	+/- 3% AT 25 C	8.09 x 5.87 x 2.65"
NO2	HONEYWELL E3SM + E3NO2 (NO2 SENSOR)	9	-40 TO 122	24 Vdc	24 Vdc	85 dBA at 3 ft	+/- 3% AT 25 C	8.09 x 5.87 x 2.65"

SIZE	NOM FLOW (GPM)	MAX. GPM	SIZE	NOM FLOW (L/S)	MAX. L/S
1/2"	UP TO 3.1	4.3	15	UP TO 0.20	0.27
3/4"	3	6.9	20	0.19	0.44
1"	6.8	10.1	25	0.43	0.64
1 1/4"	10.2	16.2	32	0.64	1.02
1 1/2"	15	24	x	0.95	1.51
2"	25	40	50	1.58	2.52
2 1/2"	40	100	65	2.52	6.3
3"	95	145	75	5.99	9.1
4"	145	235	100	9.15	15
5"	230	320	125	14.51	20
6"	320	490	150	20.19	31
8"	500	900	200	31.55	57

SIZE	NOM FLOW (GPM)	MAX. GPM	SIZE	NOM FLOW (L/S)	MAX. L/S
1/2"	UP TO 3.1	4.3	15	UP TO 0.20	0.27
3/4"	3	6.9	20	0.19	0.44
1"	6.8	10.1	25	0.43	0.64
1 1/4"	10.2	16.2	32	0.64	1.02
1 1/2"	15	24	x	0.95	1.51
2"	25	40	50	1.58	2.52
2 1/2"	40	100	65	2.52	6.3
3"	95	145	75	5.99	9.1
4"	145	235	100	9.15	15
5"	230	320	125	14.51	20
6"	320	490	150	20.19	31
8"	500	900	200	31.55	57



CIRCUIT BALANCING VALVE DETAIL & SCHEDULE N.T.S.



INFLOOR HEATING MANIFOLD CABINET (TAMAS) N.T.S.

Drawing Notes

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**ISSUED FOR TENDER**



No.	Revision	Date	By
2.	ISSUED FOR PERMIT & TENDER	JUL 12,23	MK
1.	ISSUED FOR 99% REVIEW	DEC.12,22	CB

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Project Name  
**ORANGEVILLE OPERATION CENTRE EXPANSION**

500 C LINE, ORANGEVILLE, ON L9W 4Z3

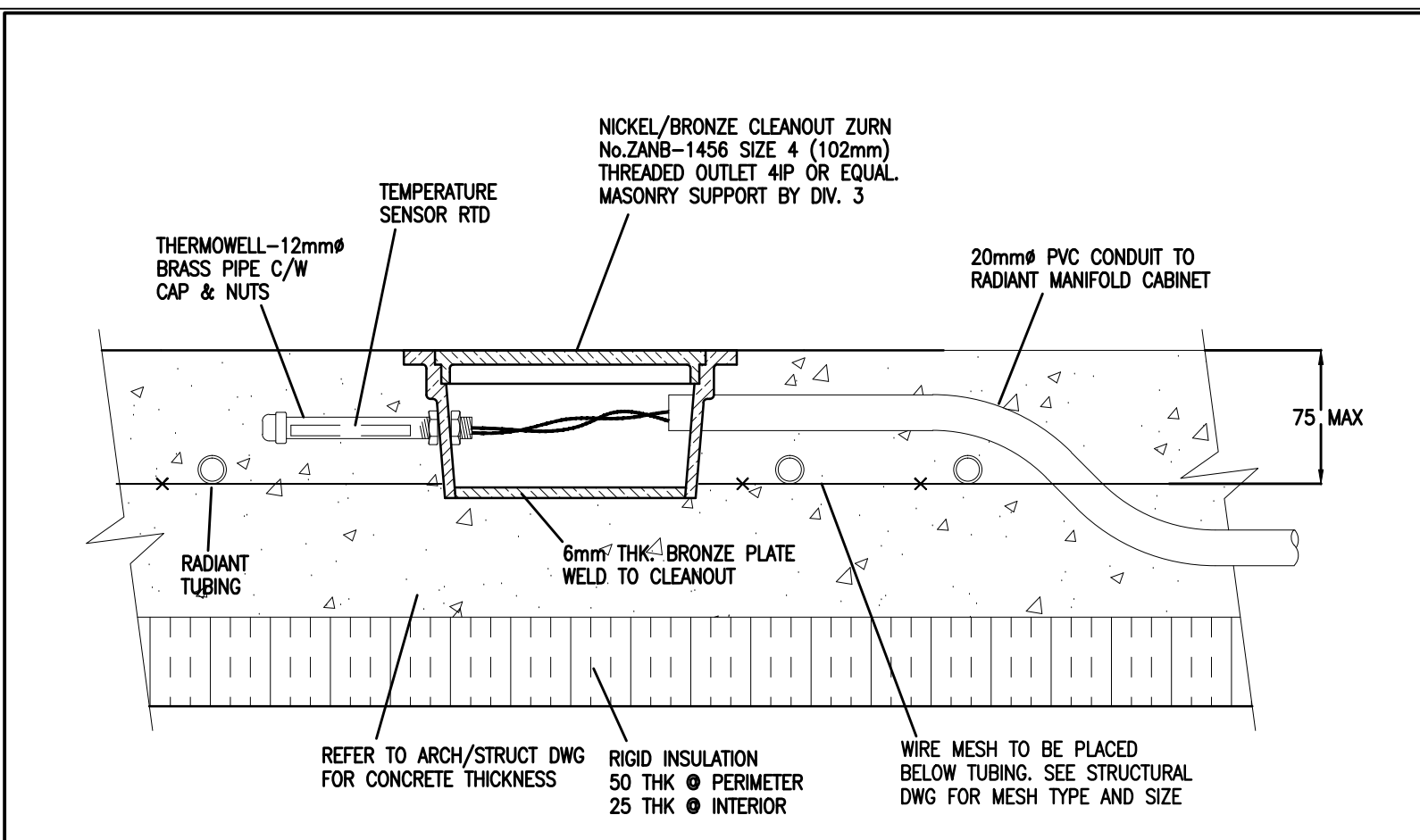
Sheet Title  
**MECHANICAL SCHEDULES**

Drawn By MK Scale  
 Designed By MK Date January 06, 2023

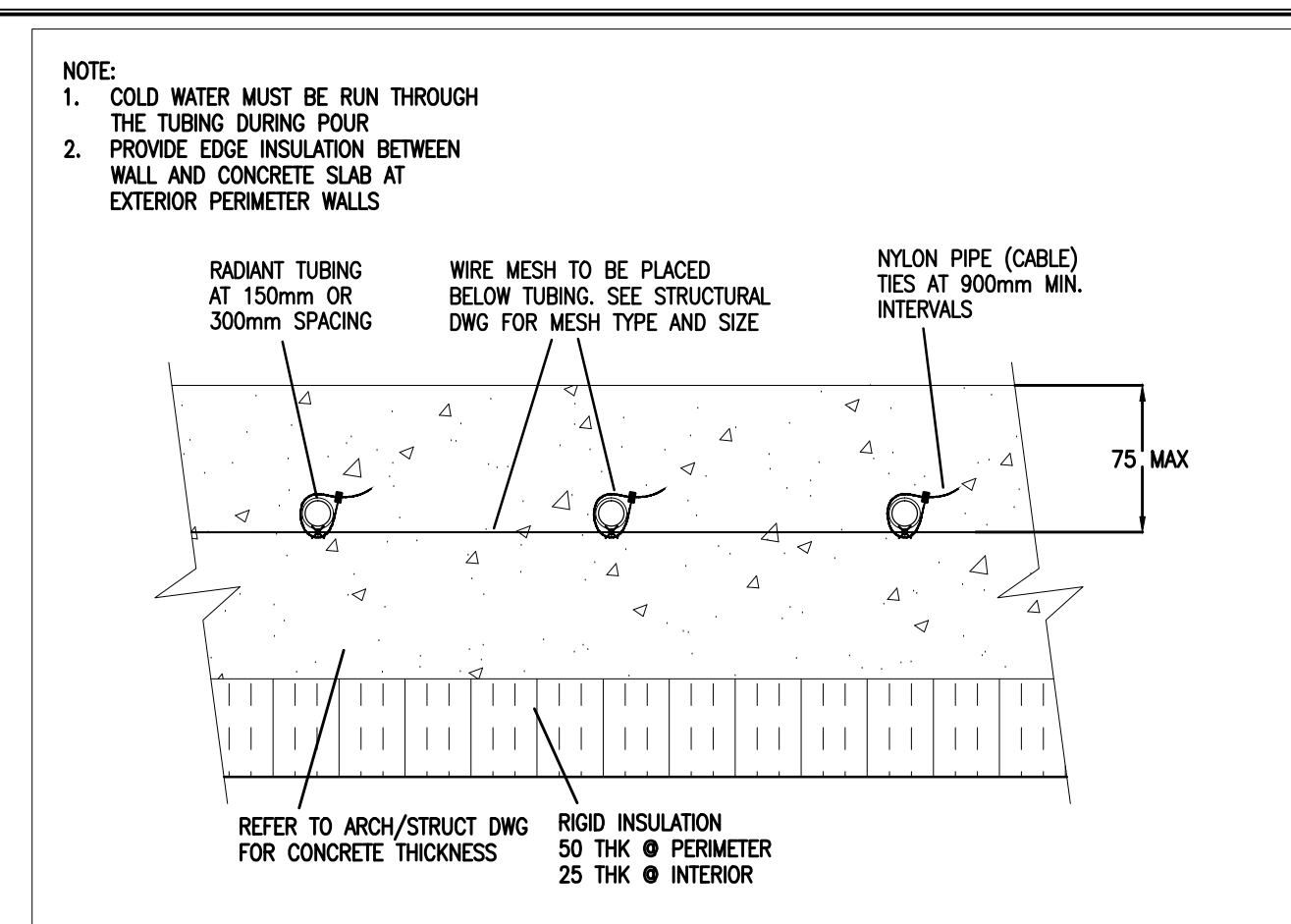
Project Number B-11111111

Sheet Number Revision

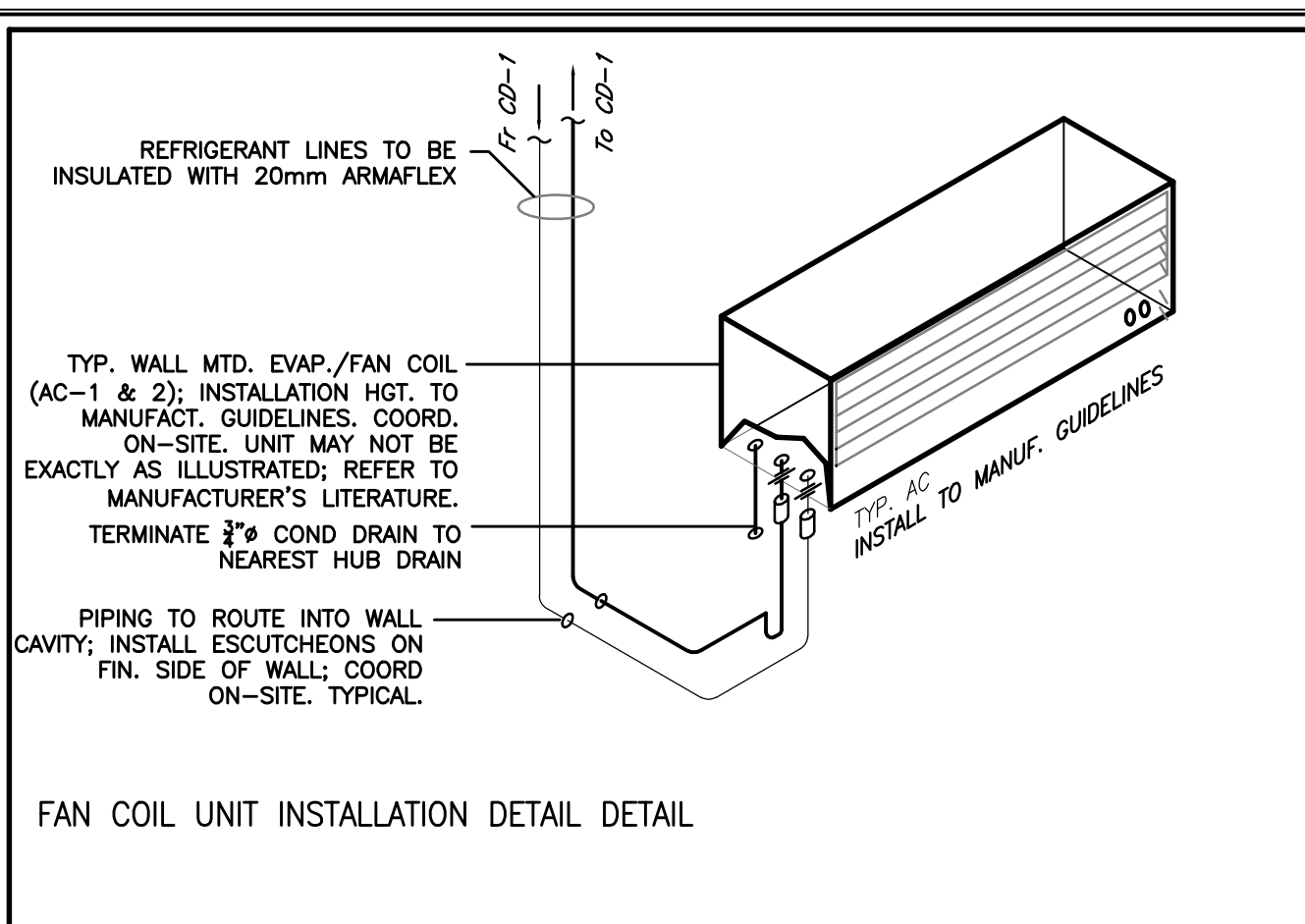
M □ □



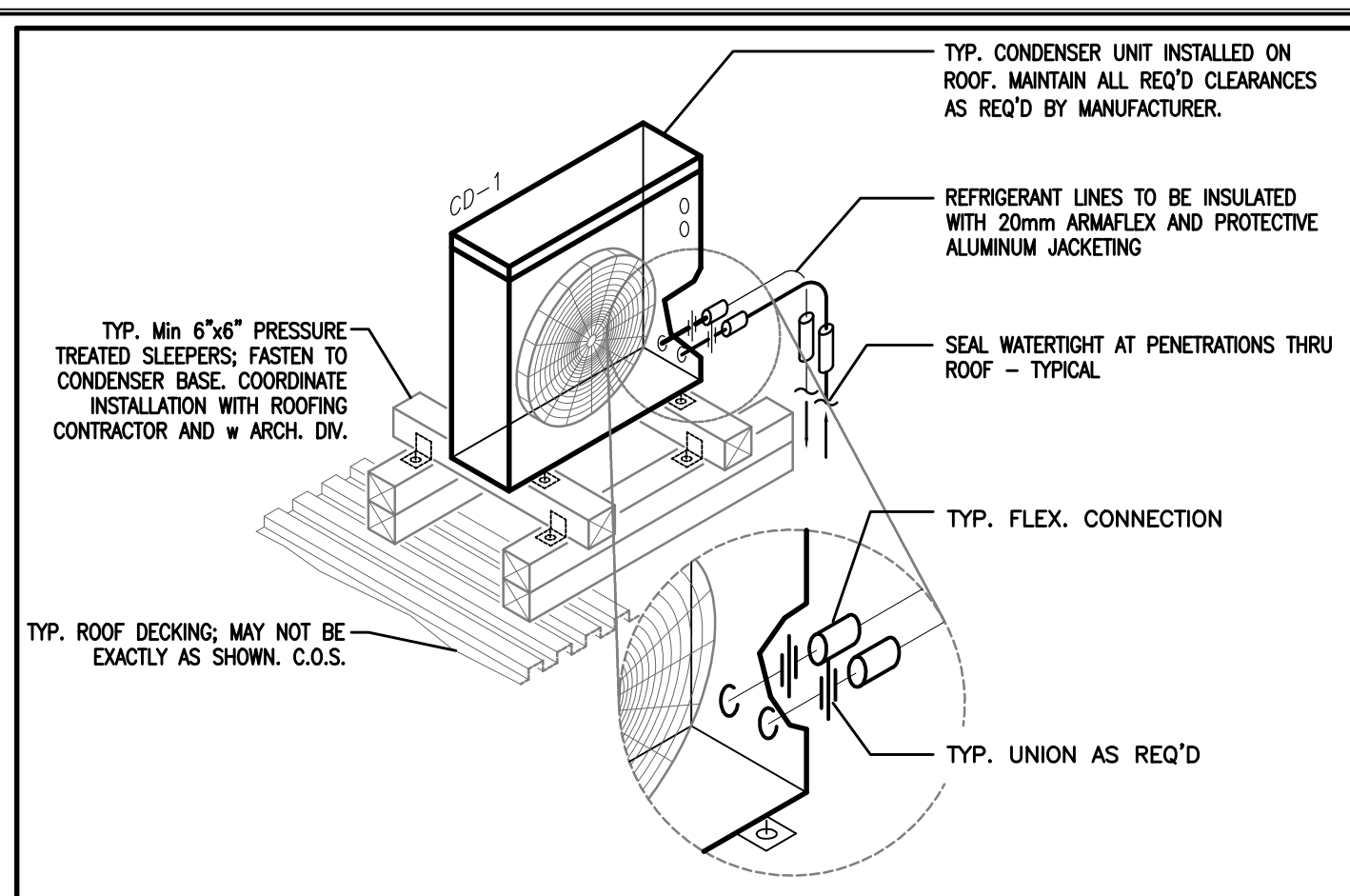
IN-FLOOR RADIANT TEMPERATURE SENSOR THERMOWELL  
N.T.S.



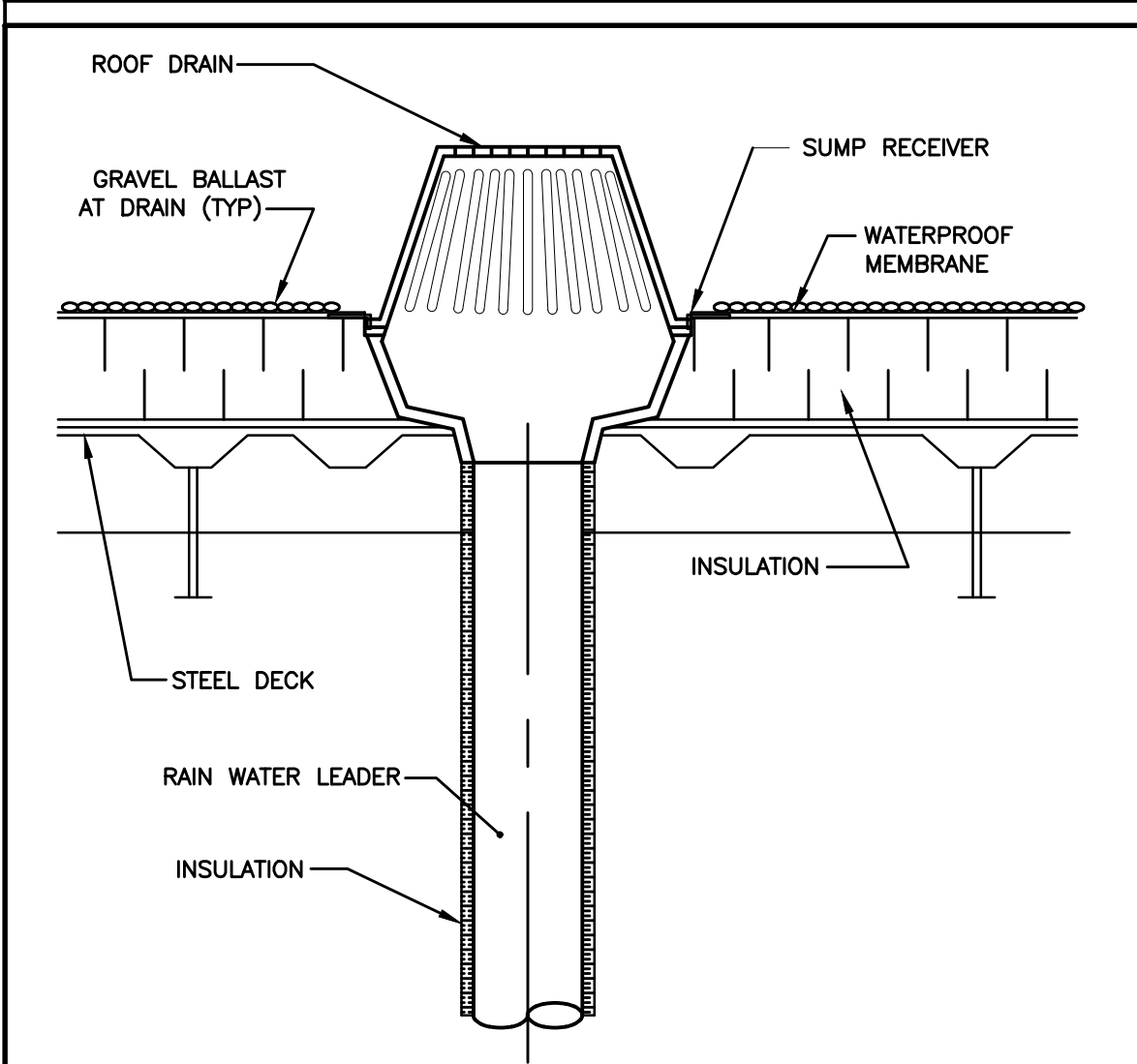
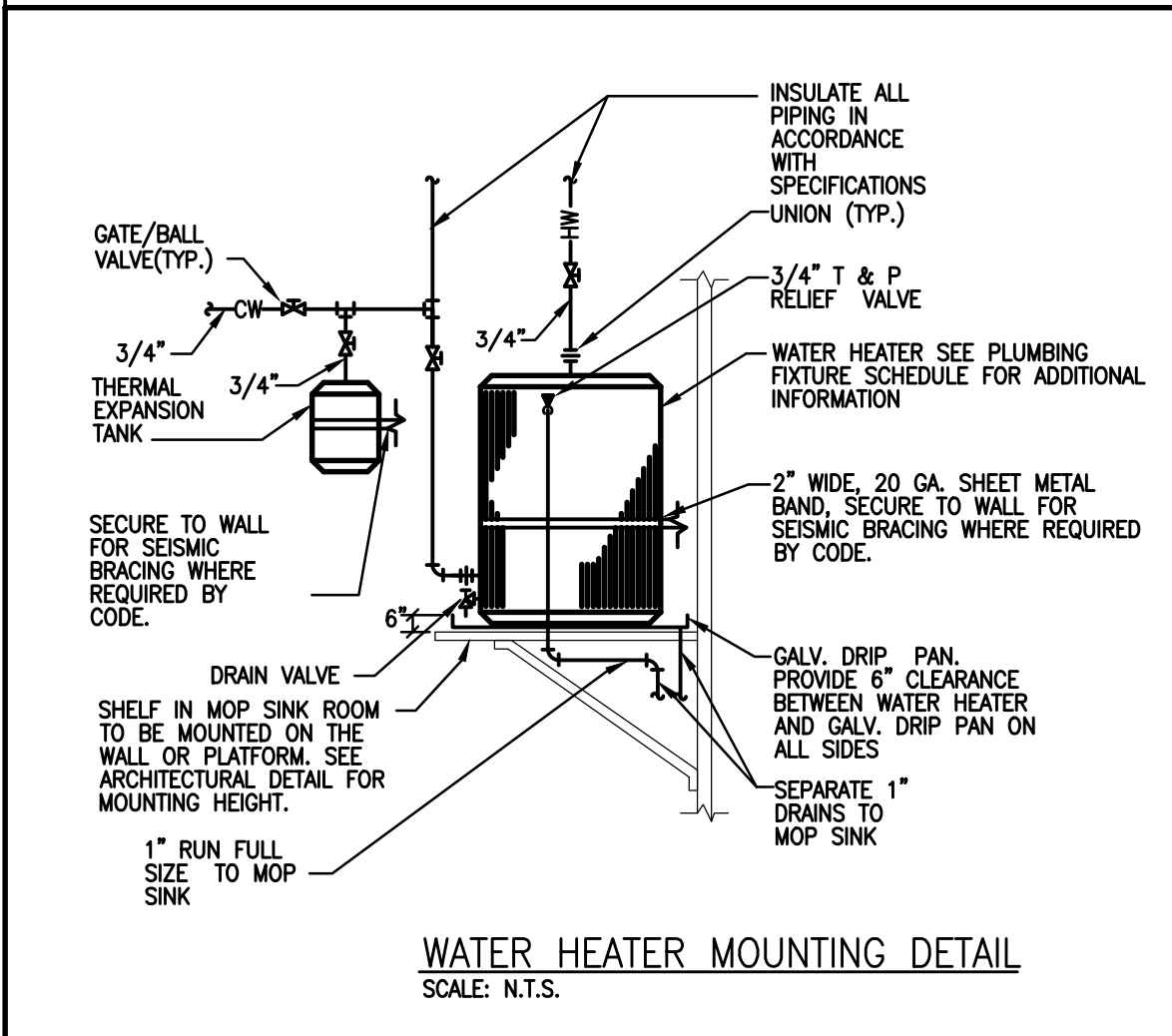
IN-FLOOR RADIANT TUBING INSTALLATION  
N.T.S.



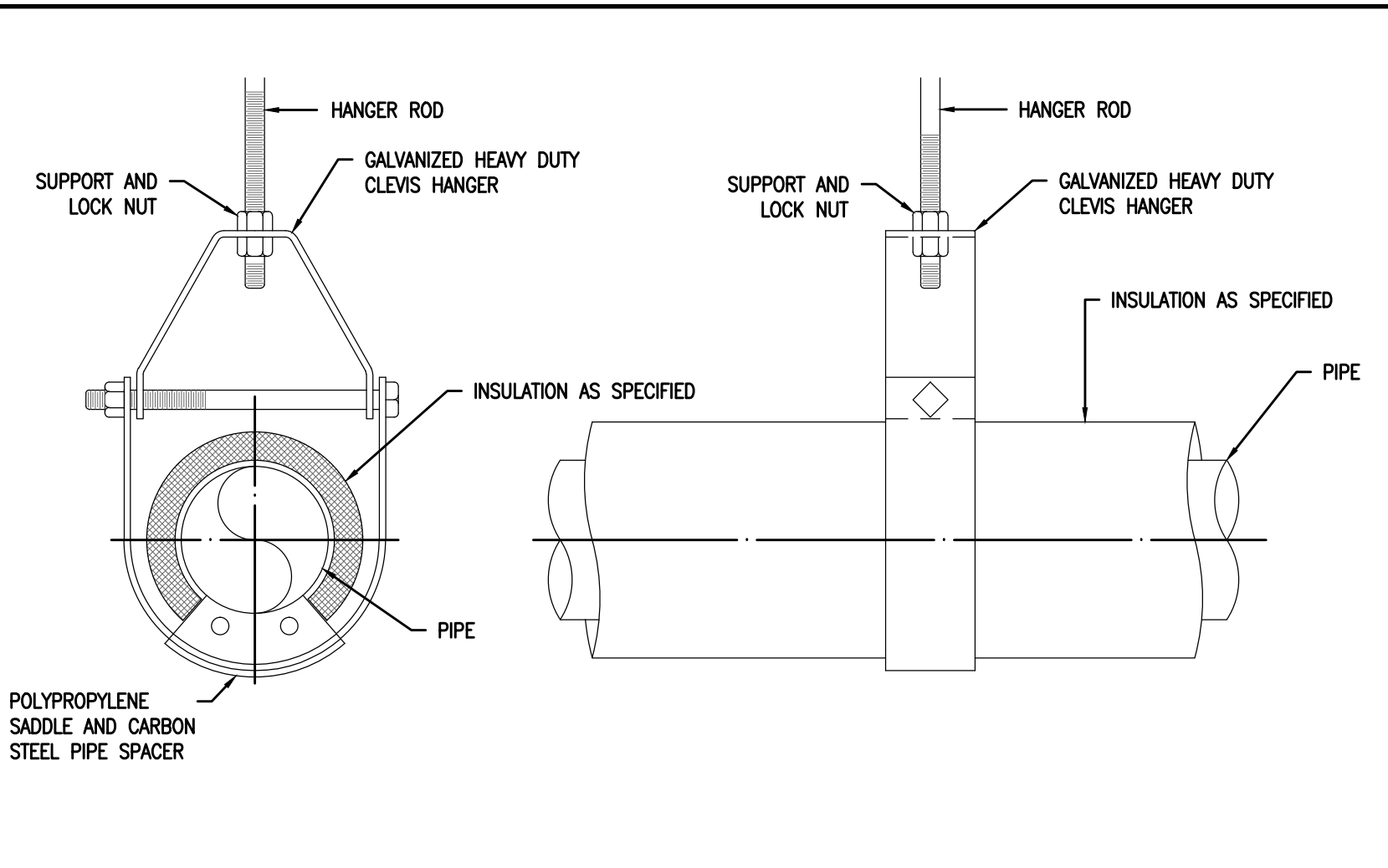
FAN COIL UNIT INSTALLATION DETAIL  
N.T.S.



CONDENSING UNIT DETAIL  
N.T.S.



ROOF DRAIN DETAIL  
N.T.S.



HANGER ROD SIZES				
PIPE SIZE	UP TO 2"	2 1/2" - 3"	4" - 5"	6" - 12"
HANGER ROD DIAMETER	3/8"	1/2"	5/8"	3/4"

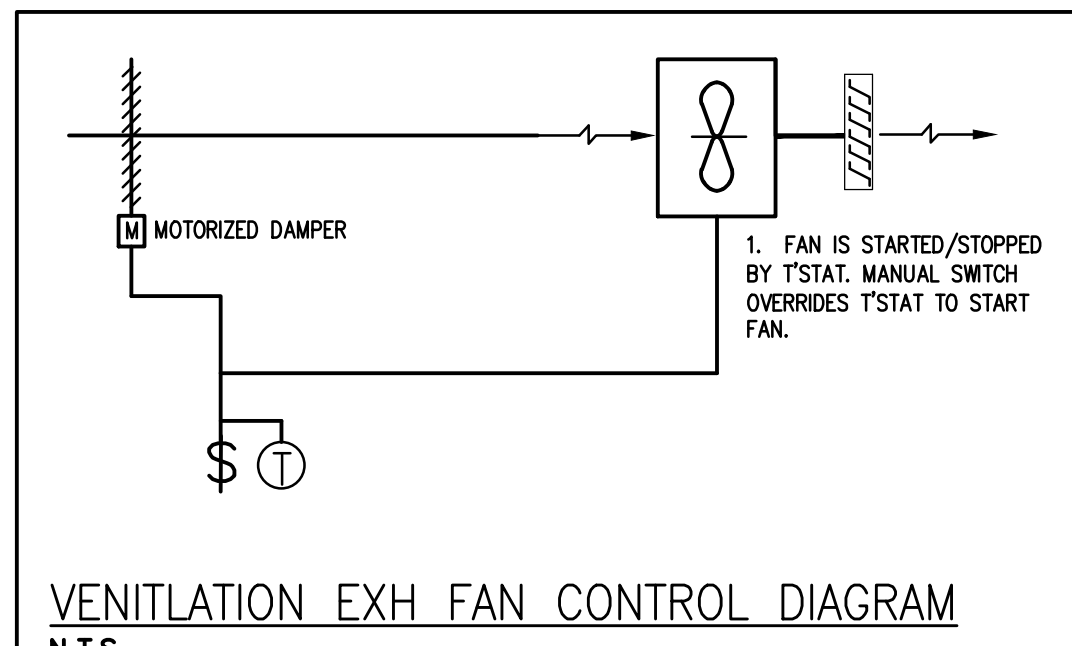
  

HANGER SPACING												
PIPE SIZE	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
MAXIMUM SPACING	7'	8'	9'	10'	11'	12'	14'	16'	17'	19'	22'	23'

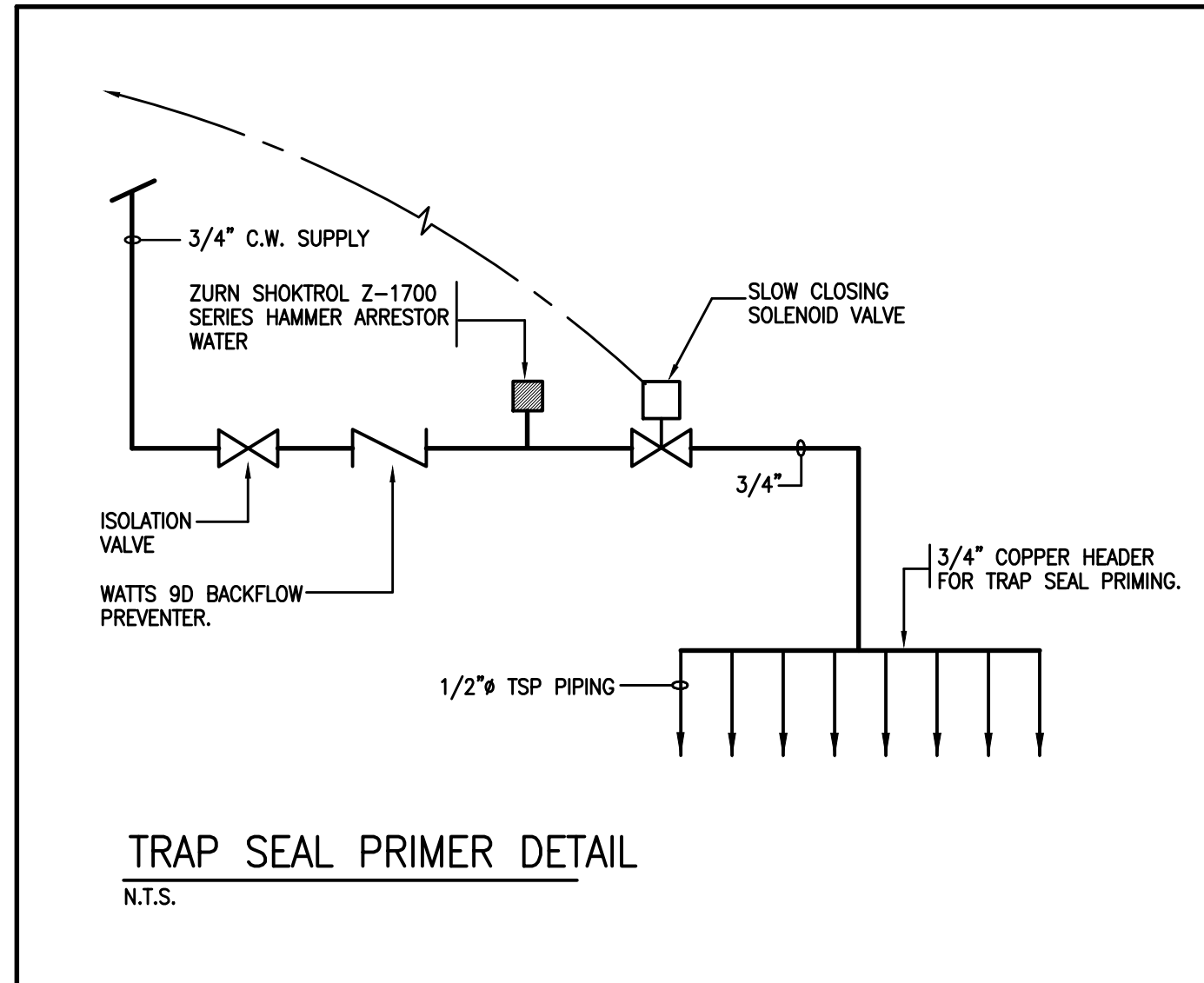
UNIT: IMPERIAL

PIPE HANGER DETAIL  
N.T.S.

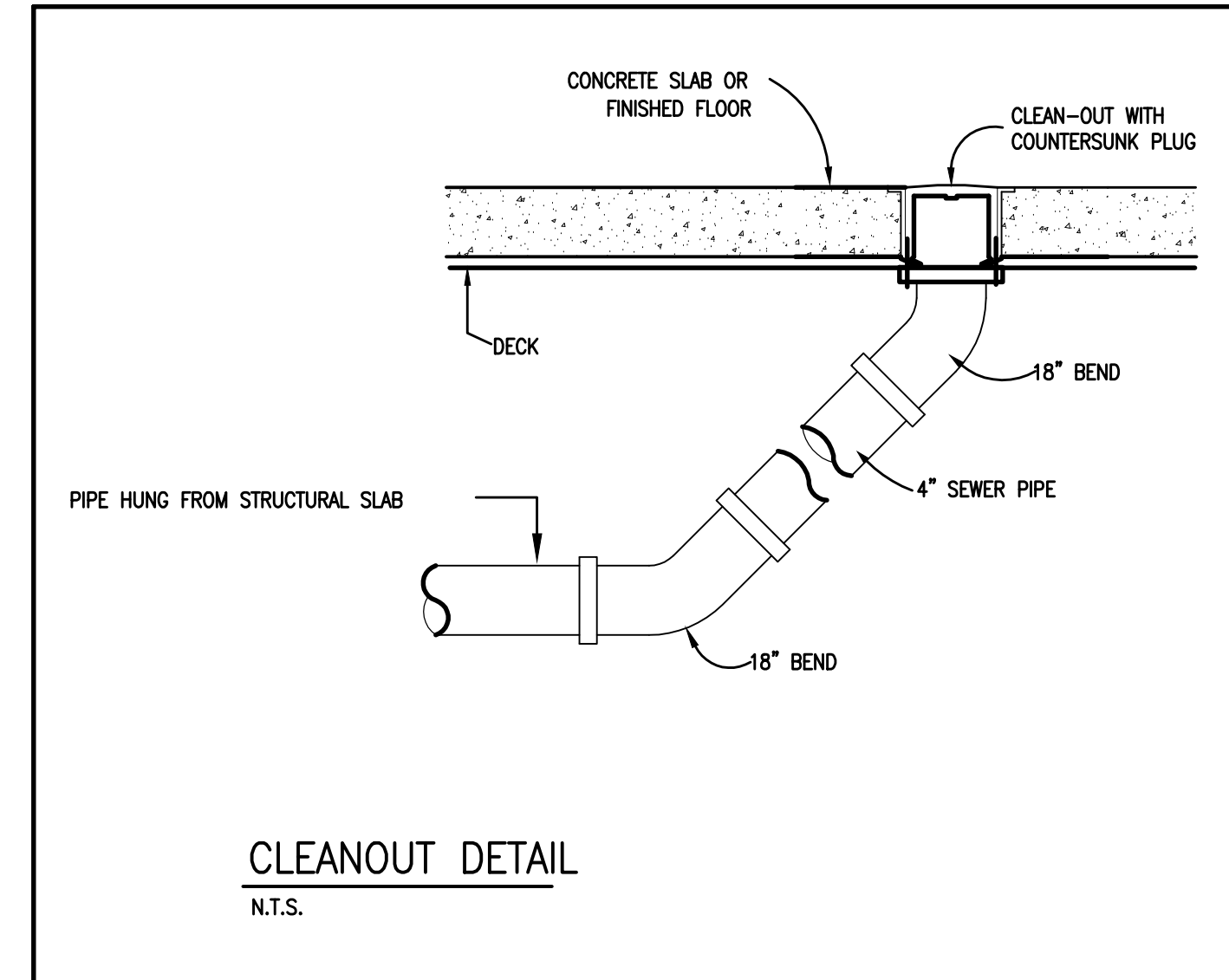
- ABBREVIATIONS**
- AC AIR CONDITIONING UNIT
  - BBH ELECTRIC BASEBOARD HEATER
  - BDD BACK DRAFT DAMPER
  - CIE CONNECT TO EXISTING
  - CFM CUBIC FEET PER MINUTE
  - CO CLEAN OUT
  - CD CONDENSING UNIT
  - CUH CABINET UNIT HEATER
  - EAT ENTERING AIR TEMPERATURE
  - EC ELECTRICAL CONTRACTOR
  - EF EXHAUST FAN
  - E/A EXHAUST AIR
  - ESP EXTERNAL STATIC PRESSURE
  - ET EXPANSION TANK
  - EWT ENTERING WATER TEMPERATURE
  - EWV ELECTRIC WATER COOLER
  - F/D FIRE DAMPER
  - FLR FLOOR
  - FTR FINNED TUBE RADIATION
  - GC GENERAL CONTRACTOR
  - GPM GALLONS PER MINUTE
  - MTD MOUNTED
  - MO MOTOR OPERATED DAMPER
  - NIC NOT IN CONTRACT
  - OA OUTSIDE AIR
  - OAT OUTSIDE AIR TEMPERATURE
  - OC ON CENTER
  - OBDD OPPOSED BLADE DAMPER
  - RA RETURN AIR
  - RAG RETURN AIR GRILLE
  - RCP REFLECTED CEILING PLAN
  - RHC REHEAT COIL
  - SA SUPPLY AIR
  - SD SMOKE DAMPER
  - SF SUPPLY FAN
  - SP STATIC PRESSURE
  - TYP TYPICAL
  - UH UNIT HEATER
  - VTR VENT THRU ROOF



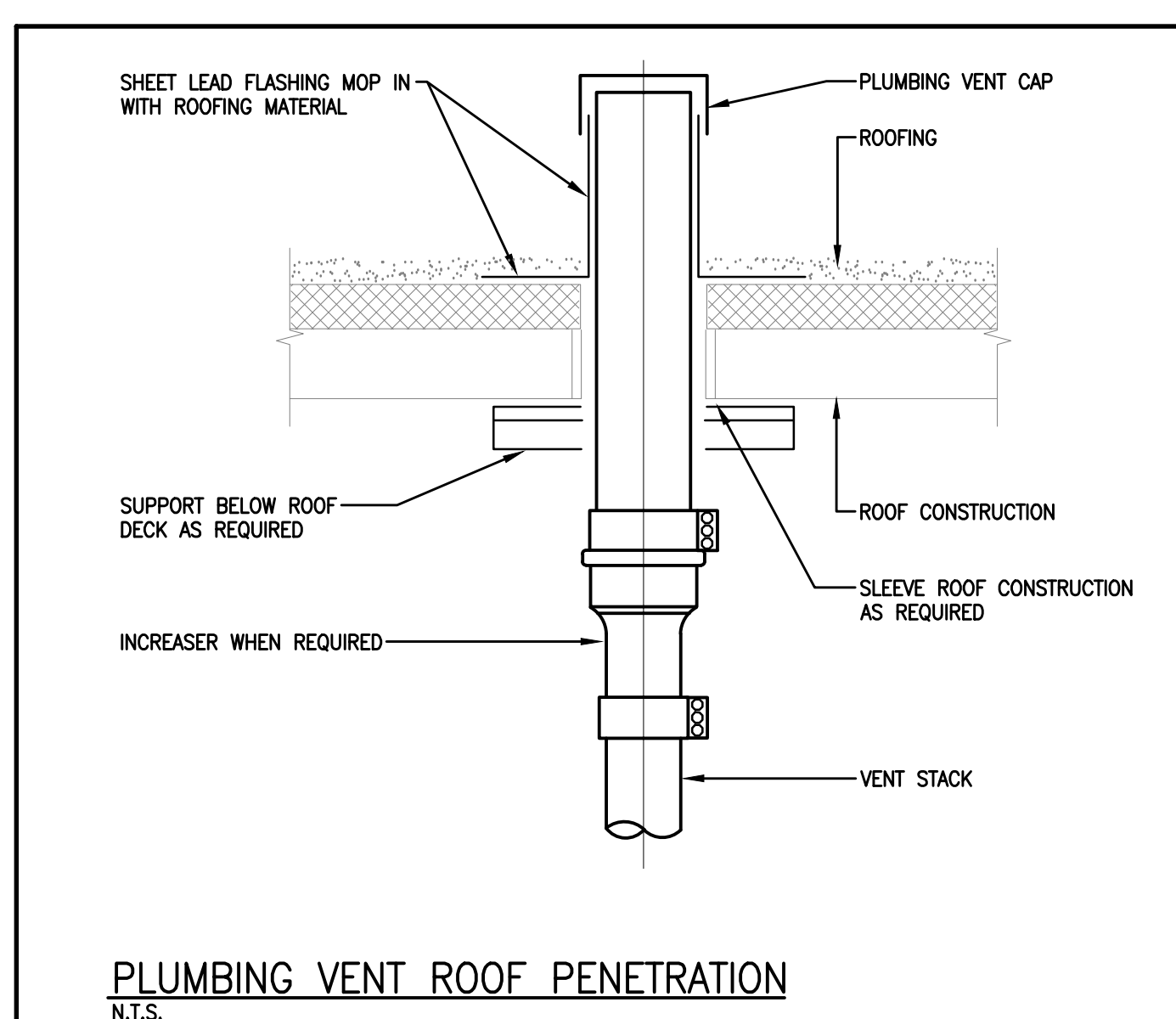
VENTILATION EXH FAN CONTROL DIAGRAM  
N.T.S.



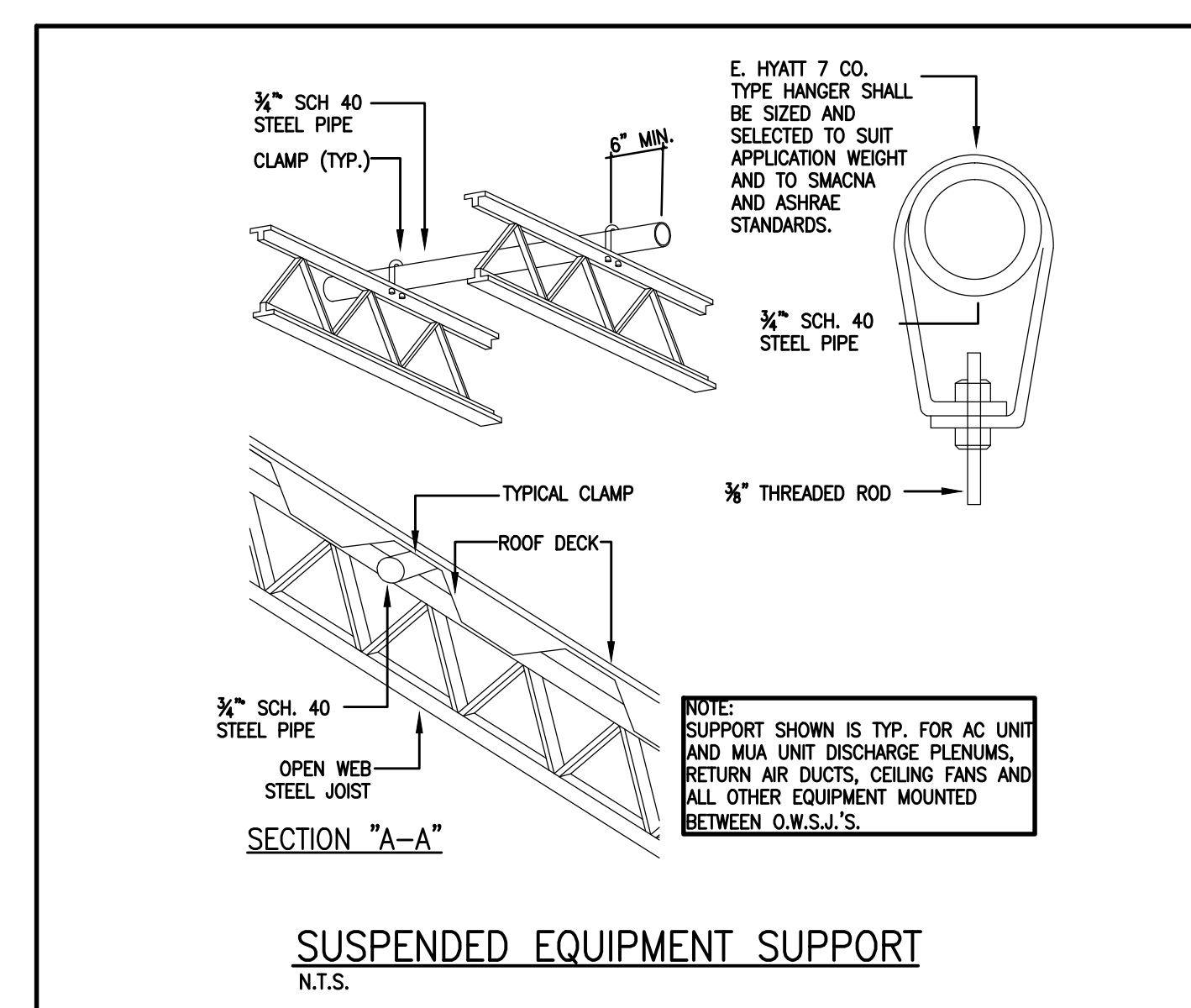
TRAP SEAL PRIMER DETAIL  
N.T.S.



CLEANOUT DETAIL  
N.T.S.



PLUMBING VENT ROOF PENETRATION  
N.T.S.



SUSPENDED EQUIPMENT SUPPORT  
N.T.S.

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Project Name  
**ORANGEVILLE OPERATION CENTRE EXPANSION**

500 C LINE, ORANGEVILLE, ON L9W 4Z3

Sheet Title  
**MECHANICAL DETAILS**

Drawn By MK Scale  
Designed By MK Date January 06, 2023  
Project Number B-11111111  
Sheet Number Revision

**GENERAL**

- THESE DRAWINGS SHOW THE COMPLETE STRUCTURE. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO CHOOSE CONSTRUCTION METHODS AND CARRY OUT THE WORK BASED ON SITE CONDITIONS.
- REAR STRUCTURE DRAWINGS IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS AND OTHER CONTRACT DOCUMENTS. CHECK ALL DIMENSIONS AND REPORT ANY INCONSISTENCIES BEFORE PROCEEDING WITH THE WORK.
- DESIGN LIVE LOADS FOR EACH PORTION OF THE STRUCTURE ARE SHOWN. DO NOT EXCEED THESE LOADS DURING CONSTRUCTION. ALL LOADS GIVEN ARE UNFACTORED (WORKING) LOADS.
- CONFORM TO THE REQUIREMENTS OF THE (ONTARIO BUILDING CODE), (MOST RECENT EDITION), AND ANY APPLICABLE LOCAL BY-LAWS.
- THE BUILDING IS DESIGNED FOR THE LOADS SHOWN ON THE DRAWINGS AND THESE LOADS DURING CONSTRUCTION. FIELD REVIEWS SHALL BE CONDUCTED STRICTLY IN ACCORDANCE WITH THE GENERAL LAYOUT PLANS AND DETAIL DRAWING & ANY OTHER SPECIFICATIONS SUPPLIED WITH THE CONTRACT DOCUMENTS. NO PORTIONS OF THE BUILDING SHALL BE CHANGED OR MODIFIED UNLESS THE WORK INVOLVED IS EXECUTED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL ENGINEER. WRITTEN NOTICE AND DETAILS OF ANY SUCH CHANGES OR MODIFICATIONS SHALL BE GIVEN TO THE ENGINEER PRIOR TO SUCH WORK BEING EXECUTED.
- THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND DETAILS IN FIELD AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES AND INCOMPATIBILITIES. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY SUPPORTS, FORMWORK, AND ALL SAFETY ASPECTS OF THE CONSTRUCTION.
- DO NOT CUT OR DRILL INTO ANY STRUCTURAL MEMBERS OR CUT REBAR PROJECTIONS WITHOUT THE ENGINEER'S APPROVAL. THE CONTRACTOR IS RESPONSIBLE FOR LABOUR, MATERIALS & EQUIPMENT FOR THE EXECUTION AND QUALITY CONTROL OF THE WORK SHOWN IN THE CONTRACT DOCUMENTS. INCLUDED ALL WORK OF SUB-CONTRACTORS. FIELD REVIEWS SHALL NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY FOR THE PROPER PERFORMANCE OF HIS WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ANY ERRORS AND/OR OMISSIONS IN THE WORK SHALL BE REPORTED TO THE ENGINEER FOR REVIEW.

**CONCRETE**

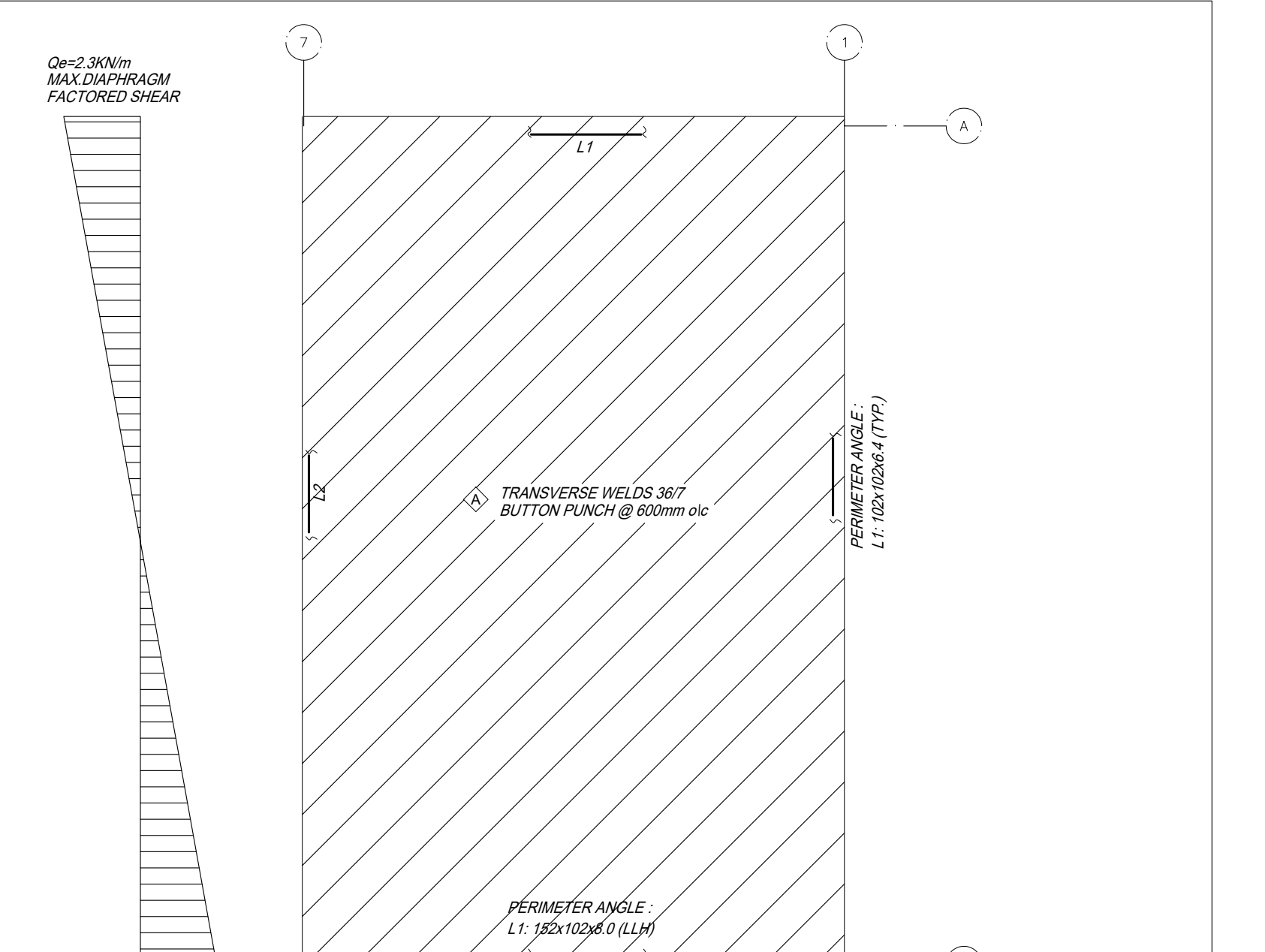
- MINIMUM 28-DAY STRENGTH OF CONCRETE TO BE 25 MPa, UNLESS NOTED ON PLAN.
- CONFORM TO CSA STANDARD CAN-23.1 & 2 FOR MATERIALS AND METHOD OF CONSTRUCTION UNLESS NOTED OTHERWISE.
- TO CLERANCES:
  - FOR TOPS OF FINISHED SLABS, TOPPING AND WALLS - WITHIN 6mm (1/4") OR ANY 6000mm (20'-0") SQUARE AREA, AND WITHIN 6mm (1/4") UNDER ANY 3000mm (10'-0") STRAIGHT EDGE.
  - FOR SLABS UNDER APPLIED FINISHED FLOORING MATERIALS - WITHIN 3mm (1/8") OF ESTABLISHED ELEVATION IN ANY 6000mm (20'-0") SQUARE AREA, AND WITHIN 3mm (1/8") UNDER ANY 3000mm (10'-0") STRAIGHT EDGE.
  - FOR FOOTINGS - 2% OF FOOTING WIDTH AND 25mm (1") MAXIMUM ON MISPLACEMENT OR ECCENTRICITY, AND 5% MAXIMUM REDUCTION IN THICKNESS.
  - FOR PIERS - WITHIN 3mm (1/8") IN 3000mm (10'-0") AND 12mm (1/2") MAXIMUM ON PLUMBNESS AND LOCATION.
- PRODUCTS:
  - CONCRETE - TO MEET SPECIFIED REQUIREMENTS OF CAN-23.1, READY-MIXED, WATER-REDUCING ADMIXTURE IN ACCORDANCE WITH CAN-23.1.
  - WATER-REDUCING ADMIXTURE TO MEET SPECIFIED REQUIREMENTS OF CAN-23.1 TYPE WN.
  - AIR ENTRAINING ADMIXTURE TO MEET SPECIFIED REQUIREMENT OF CAN-23.1.
  - REINFORCEMENT TO MEET REQUIREMENTS OF CSA G30.12 GRADE 400MPa (58 KSI).
  - REINFORCEMENT MESH TO MEET REQUIREMENTS OF CSA G30.5.
  - FLOOR HARDENER - EMER-CURE TYPE 'B' BY STERNSON LIMITED, APPLIED AT THE RATE OF 3 TO 4 KG PER SQUARE METRE.
  - CURING AND SEALING COMPOUND FOR CONCRETE FLOORS - FLORSEAL BY STERNSON LTD.
  - SAVOUR FILLER FOR CONCRETE FLOORS - LOAD-LEKX BY STERNSON LIMITED ON CANADIAN ISLANDS OF CANADA.
  - GROUT UNDER COLUMN BASE PLATES - MASTERFLOW 713 BY MASTER BUILDERS LTD., OR M-85 BY STERNSON LIMITED.
  - CURE ALL CONCRETE SURFACES WITH SPECIFIED CURING COMPOUND.
  - FINISH CONCRETE SLAB WITH A STEEL TROWELLED FINISH WHERE LOCATED IN INTERIOR OF BUILDING AND EXPOSED TO VIEW UNDER FINISH FLOOR INSTALLATIONS UNLESS SPECIFIED OTHERWISE, AND ON TOP OF SLABS.
  - GROUT UNDER BASE PLATES AS REQUIRED BY OTHER SECTIONS.

**ROOF METAL DECK**

- WORK TO BE IN ACCORDANCE WITH THE CANADIAN SHEET STEEL BUILDING INSTITUTE STANDARDS, UNLESS NOTED.
- WELDING TO BE TO CSA W59.1 UNLESS NOTED.
- METAL DECKING TO RESIST ALL LOADS INCLUDING UPLIFT FORCES AS INDICATED IN THE ONTARIO BUILDING CODE, WITHOUT EXCEEDING THE ALLOWABLE MATERIAL STRESSES, LIMIT LIVE LOAD DEFLECTION TO 1/80TH OF THE SPAN.
- SUBMIT SHOP DRAWINGS CLEARLY INDICATING DECKING PLAN, PROFILE, DIMENSIONS, CORE THICKNESS, ANCHORAGES, SUPPORTS, PROJECTIONS, OPENINGS, AND REINFORCEMENT DETAILS AND ACCESSORIES.
- PRODUCTS:
  - METAL TO MEET REQUIREMENTS OF ASTM A446 GALVANIZED STEEL SHEET WITH WIPED ZINC COATING, GRADE A MINIMUM STEEL QUALITY.
  - COVER PLATES, CELL CLOSURES AND FLASHINGS: GALVANIZED SHEET STEEL WITH A MINIMUM CORE THICKNESS OF 0.914 (3/64) 20 GA.) TYP. UNLESS OTHERWISE NOTED.
  - PRIMER: ZINC-RICH, READY MIX TO CGSB.
  - ROOF DECK: SINGLE FLUTED ELEMENTS WITH A MINIMUM CORE THICKNESS OF .914mm (0.036" 20 GA.), MAXIMUM DEPTH OF 40 (1.57) AND MAXIMUM RB SPACING OF 200 (8").
  - ERECT METAL DECK TO MANUFACTURER'S REQUIREMENTS. READ METAL DECK FASTENING NOTES FOR LONGITUDINAL, SIDE LAPS, TRANSVERSE WELDS, NUMBER, SPACING & DETAILS.
  - IMMEDIATELY AFTER BEARING IS SECURED IN PLACE, WHERE GALVANIZED SURFACE IS BURNED BY WELDING, TOUCH UP WITH PRIMER.
  - GENERAL CONTRACTOR SHALL SUBMIT METAL DECK SHOP DRAWINGS SEALED BY P.ENG. PRIOR TO INSTALLATION.

**METAL DECK FASTENING NOTES:**

- D1** ON ROOF FRAMING PLAN 1/5.1 DENOTES 38mm (1 1/2") DEEP x 31mm (1 1/4") DIA METAL ROOF DECK CONT'S OVER MINIMUM (3) THREE SPANS BRIDGING SHALL CONFORM TO CLAUSE 16 OF CAN-23.1-19.
- SEE PLAN 3/5.1 ON THIS DRAWING FOR FASTENING DETAILS:
- THROUGHOUT ROOF AREA PROVIDE PROVIDE SIDE-LAPS WITH BUTT JUNCTION @ 600mm o.c.
  - (REGION A) PROVIDE 19mm TRANSVERSE PUDDLE WELDS EVERY OTHER FLUTE (3/84 PATTERN).
  - INSTALL 2-19mmØ BOLTS TO CONNECT ROOF METAL DECK AT EACH JOIST SPACE. EVERYWHERE ELSE PROVIDE 19mmØ LONGITUDINAL WELDS @ 300mm o.c. MAX.
- DIAPHRAGM & THEIR CONNECTIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH NBC15, 08C12 ART. 4.1.8.15 & CSA S16-14 REQUIREMENTS.



**3 ROOF METAL DECK - FASTENING DETAILS**  
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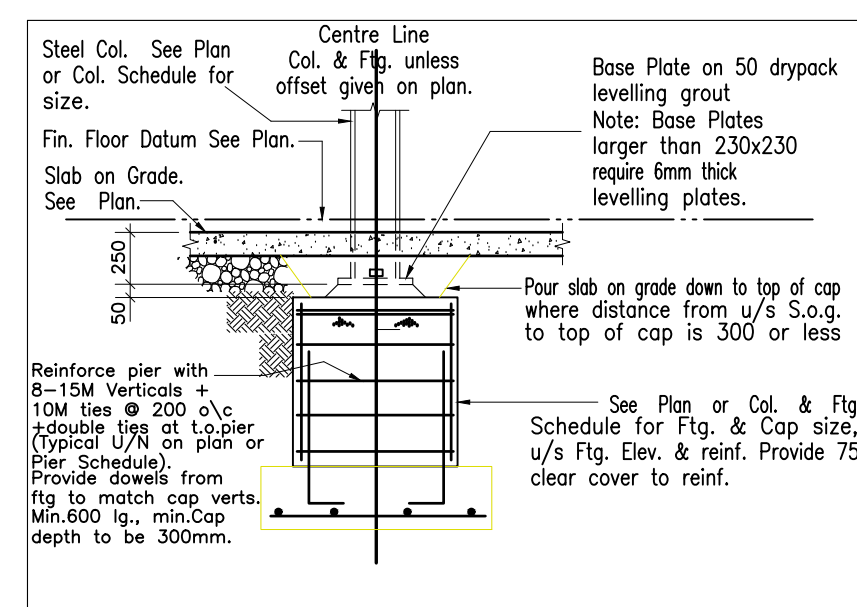
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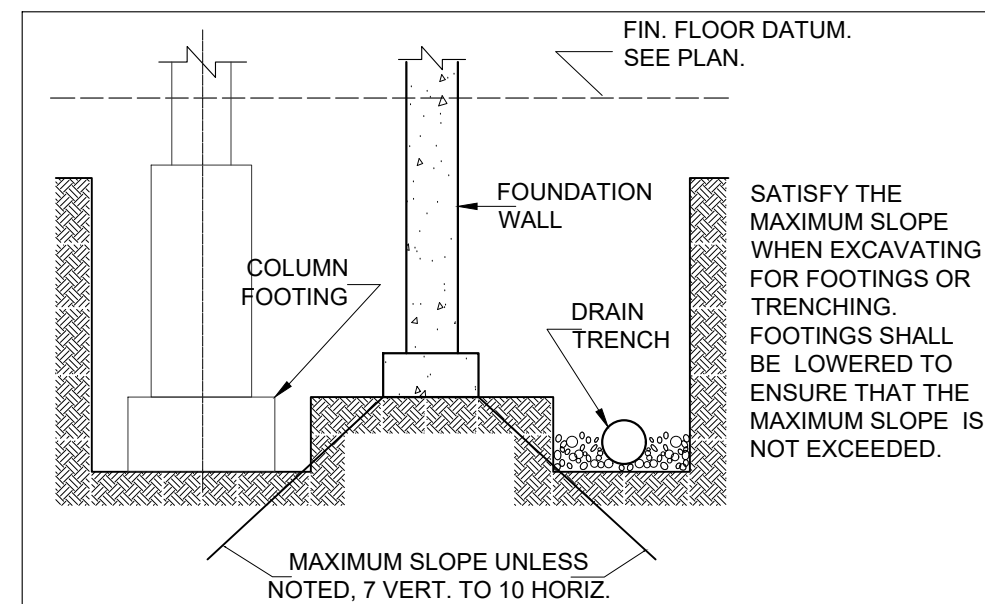
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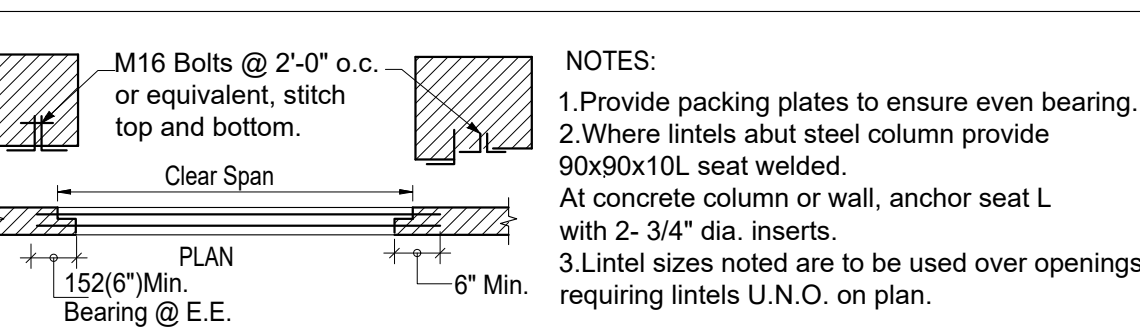
N.T.S.



**TD-1 (S1.2) SPREAD FOOTING UNDER STEEL COLUMNS WITH PIER**  
(N.T.S.)



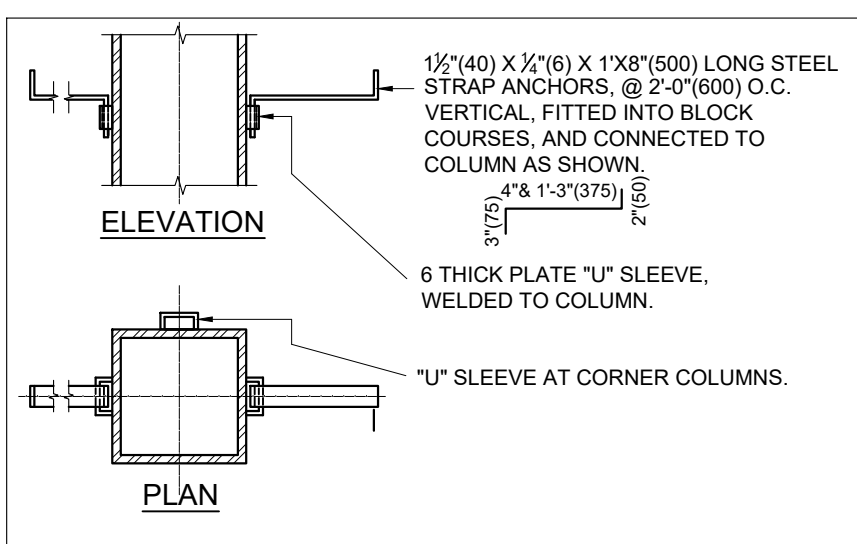
**TD-2 (S1.2) ELEVATIONS OF ADJACENT FOOTINGS EXCAVATIONS**  
(N.T.S.)



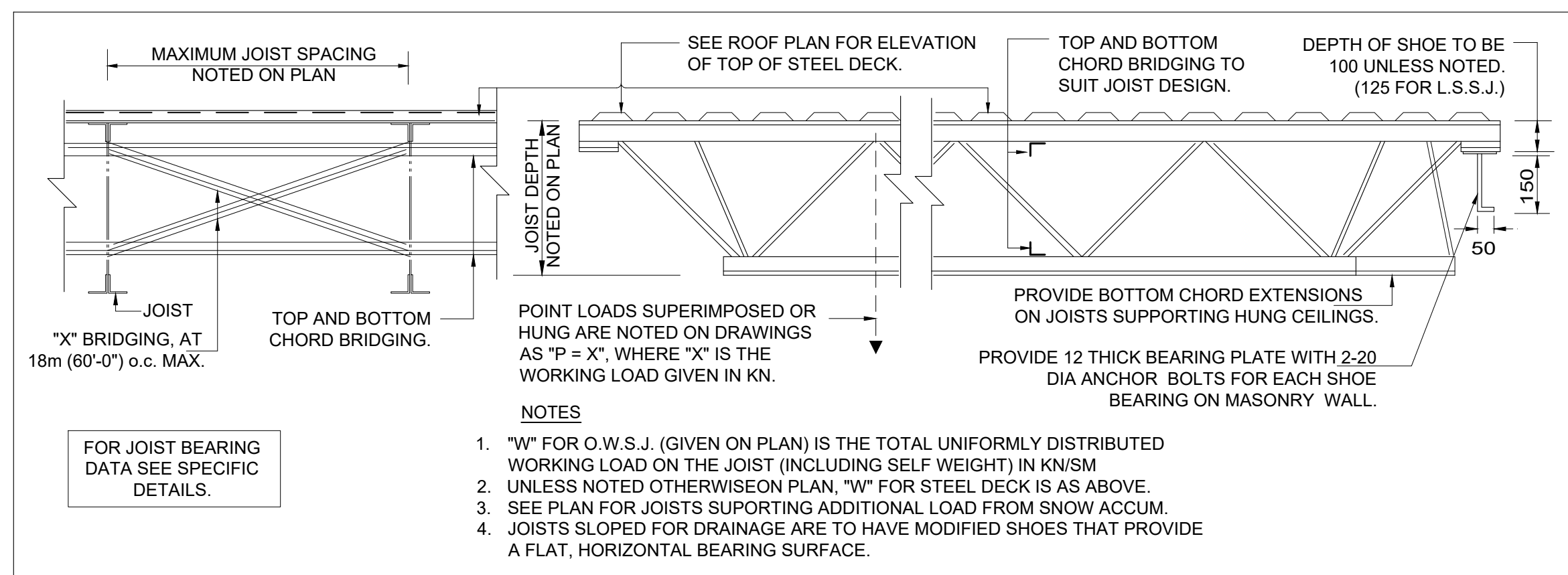
CLEAR SPAN	190mm WALL		240mm WALL		290mm WALL	
	Type	Material	Type	Material	Type	Material
Up to 1220 (4'-0")	J	2 J.L's 90x90x8	J	2 J.L's 100x100x8	J	3 J.L's 90x90x8
1220 to 1830mm (4'-0" to 6'-0")	J	2 J.L's 125x90x8	J	2 J.L's 150x100x8	J	3 J.L's 125x90x8
1830 to 2135mm (6'-0" to 7'-0")	J	2 J.L's 125x90x10	J	2 J.L's 150x100x10	J	3 J.L's 125x90x10

For clear spans greater than 2135mm (7'-0") use W8 x 18 with continuous 6mm (1/4") thick bottom plate (Width 1" less than wall thickness) Unless noted otherwise on plans.

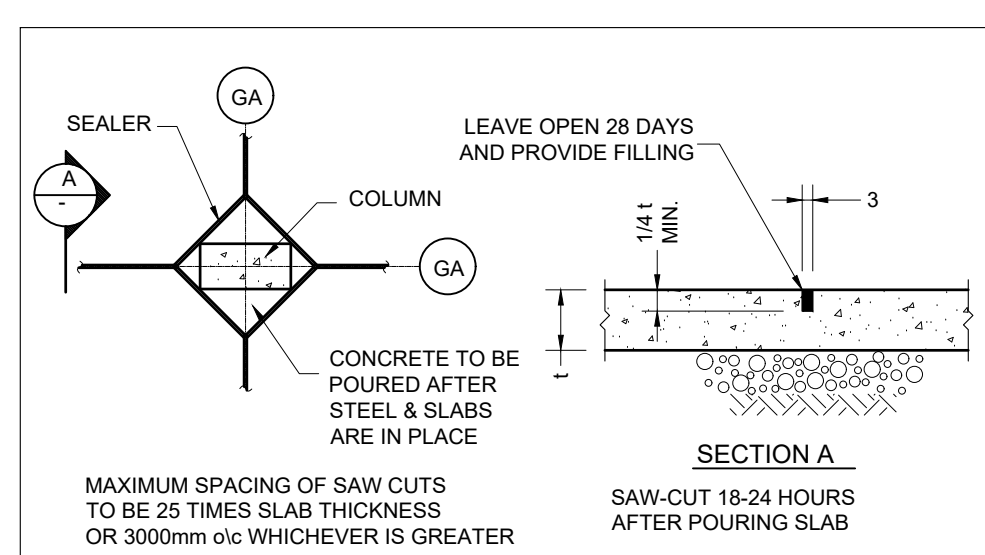
**TD-3 (S1.2) STEEL LINTEL DETAILS (FOR MASONRY WALLS)**  
(N.T.S.)



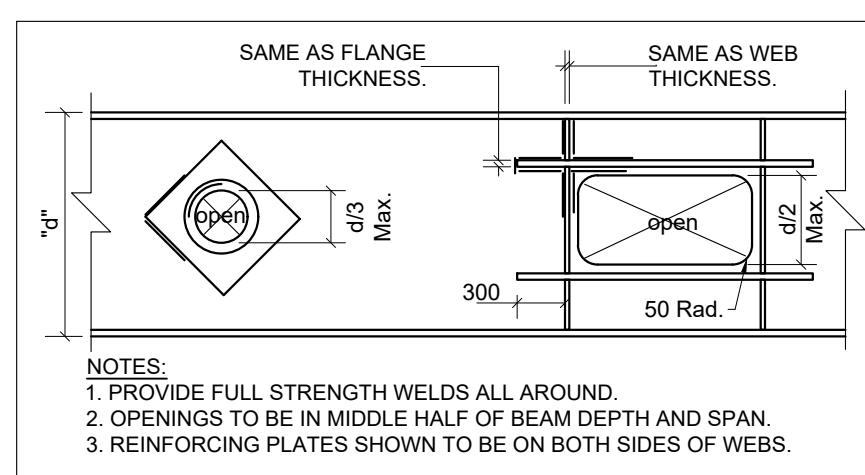
**TD-4 (S1.2) ANCHORAGE OF MASONRY WALLS TO STEEL COLUMNS**  
(N.T.S.)



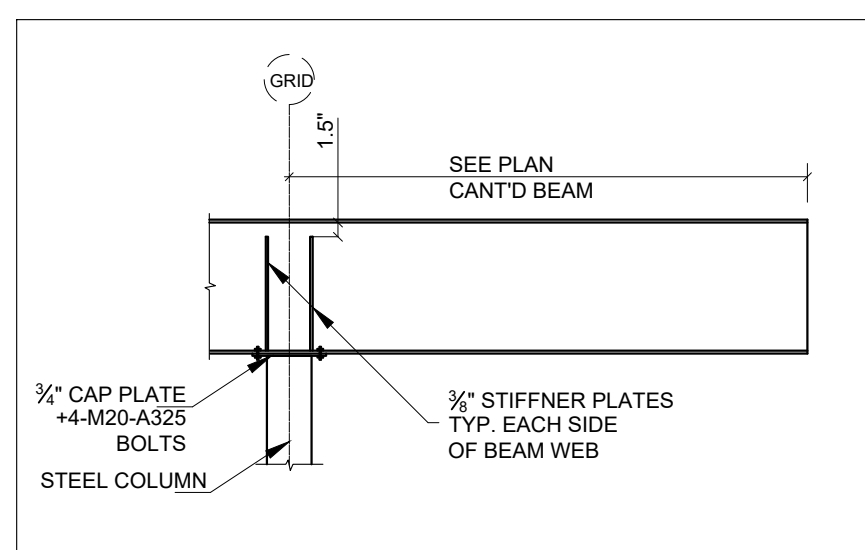
**TD-5 (S1.2) OPEN WEB STEEL JOISTS SUPPORTING STEEL ROOF DECK**  
(N.T.S.)



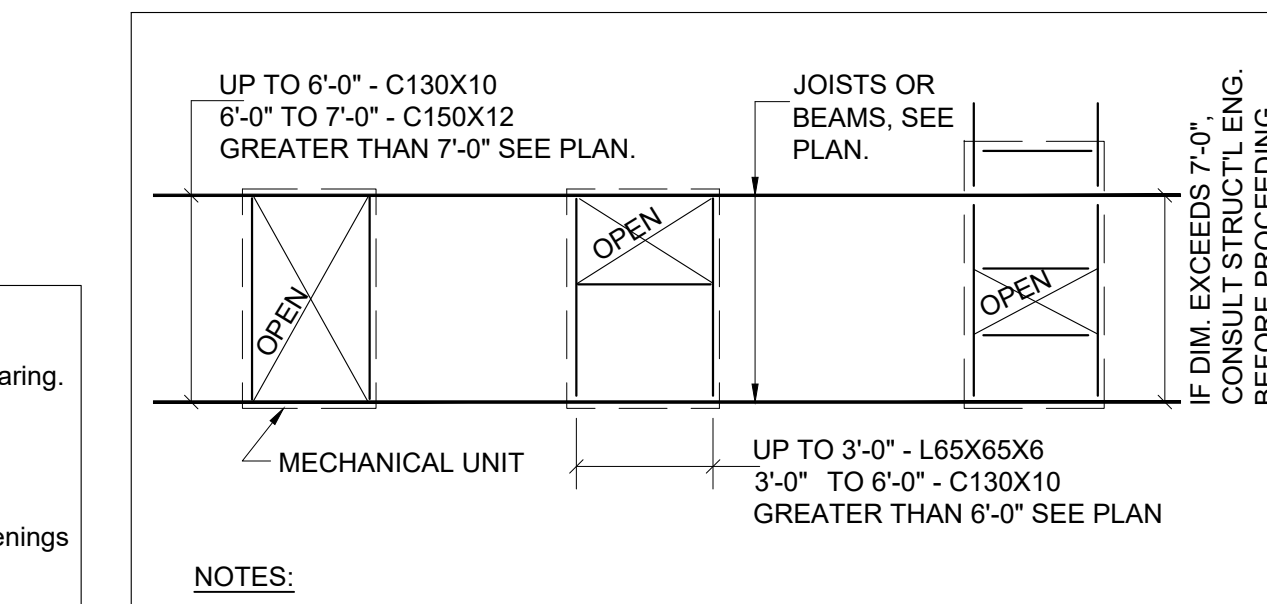
**TD-6 (S1.2) SLAB ON GRADE CONTROL JOINT**  
(N.T.S.)



**TD-7 (S1.2) REINFORCING FOR HOLES THROUGH WEBS OF STEEL BEAMS**  
(N.T.S.)



**TD-8 (S1.2) TYPICAL CANTILEVERED STEEL BEAM**  
(N.T.S.)

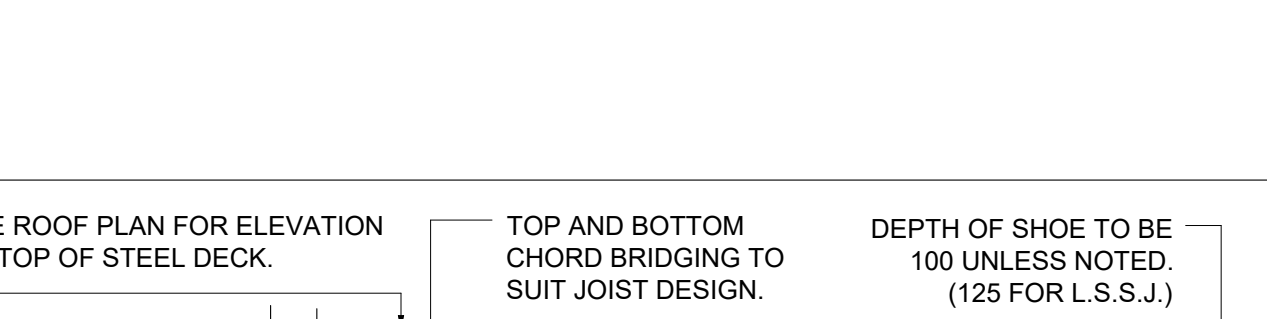


**TD-9 (S1.2) OPENINGS THROUGH STEEL DECK & SUPPORT FOR ROOF MECHANICAL UNIT**  
(N.T.S.)

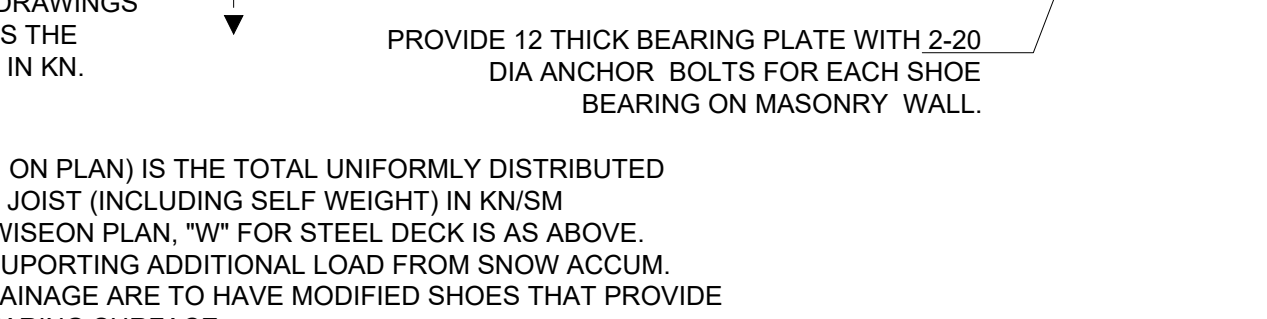
**TD-10 (S1.2) SERVICE PIPES BELOW FOOTING ELEVATIONS, TRENCH FOOTING**  
(N.T.S.)



**TD-11 (S1.2) CONCRETE WALLS: VERTICAL CONSTRUCTION JOINTS**  
(N.T.S.)



**TD-12 (S1.2) WALL REINFORCEMENT COVER**  
(N.T.S.)



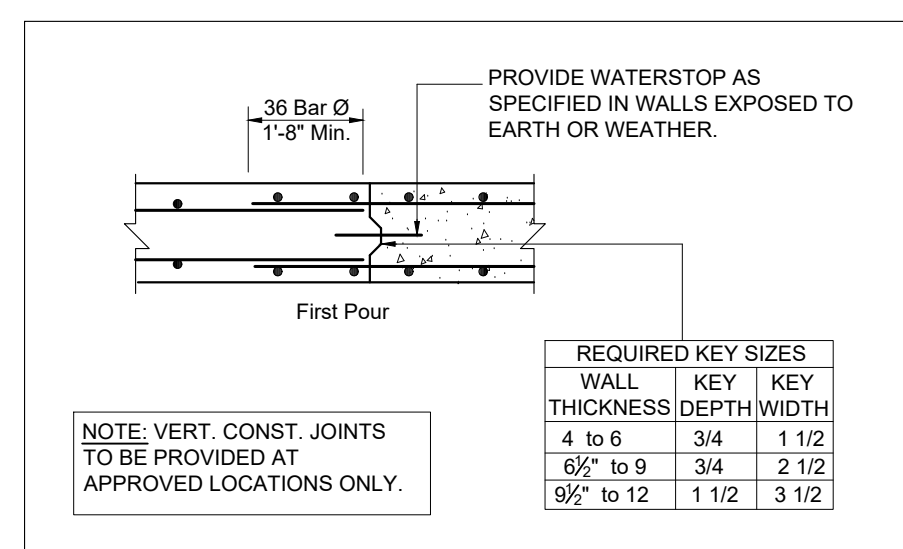
**TD-13 (S1.2) CONCRETE WALL JOINTS**  
(N.T.S.)



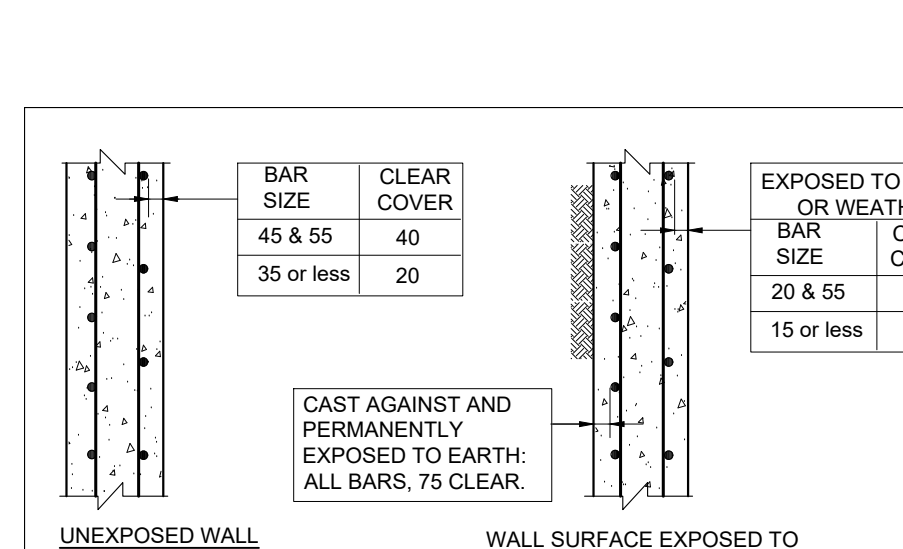
**TD-14 (S1.2) WALL REINFORCEMENT: DOWELLING & LAPS**  
(N.T.S.)



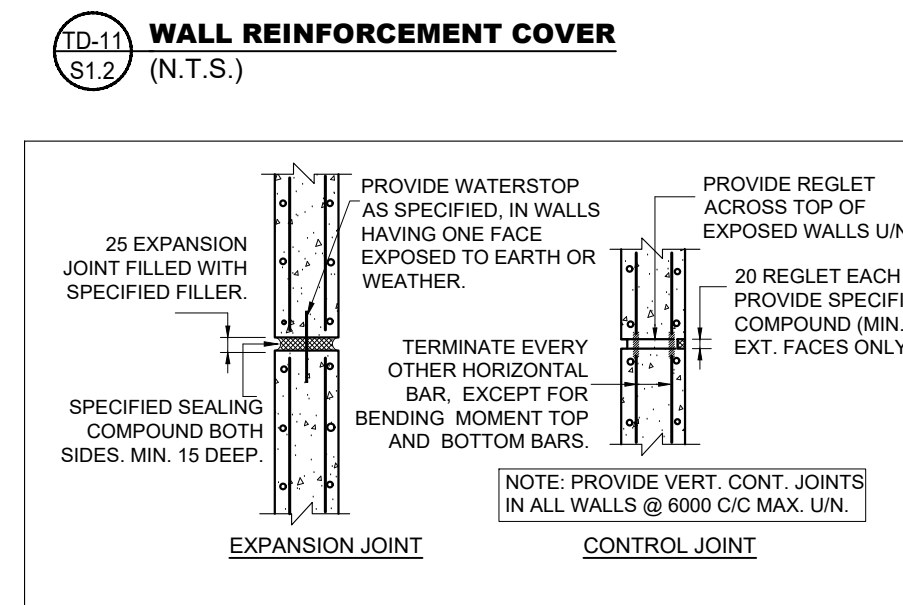
**TD-15 (S1.2) LATERAL SUPPORT OF NON-LOAD BEARING MASONRY PARTITION WALLS**  
(N.T.S.)



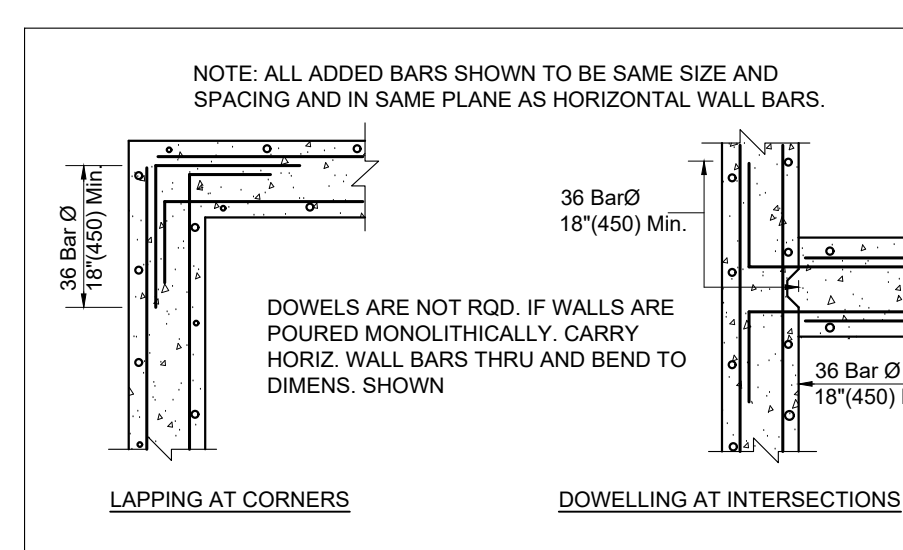
**TD-16 (S1.2) TYPICAL STEPPED WALL FOOTING DETAIL**  
(N.T.S.)



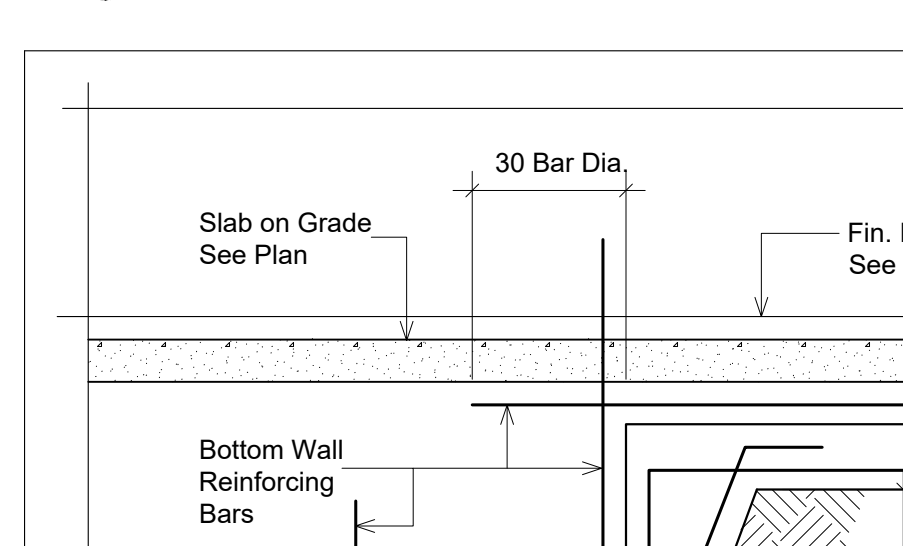
**TD-17 (S1.2) SERVICE PIPES BELOW FOOTING ELEVATIONS, TRENCH FOOTING**  
(N.T.S.)



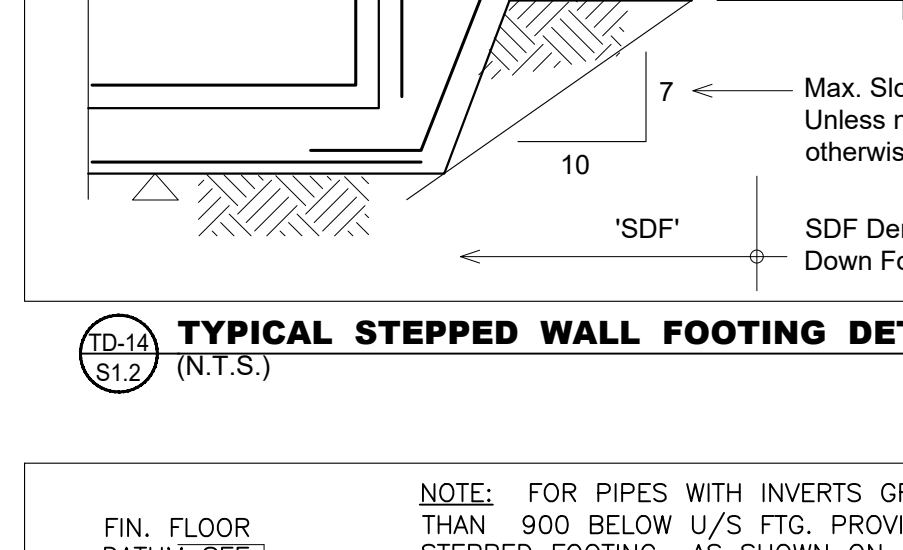
**TD-18 (S1.2) CONCRETE WALLS: REINFORCING AT OPEN'S & STEPS**  
(N.T.S.)



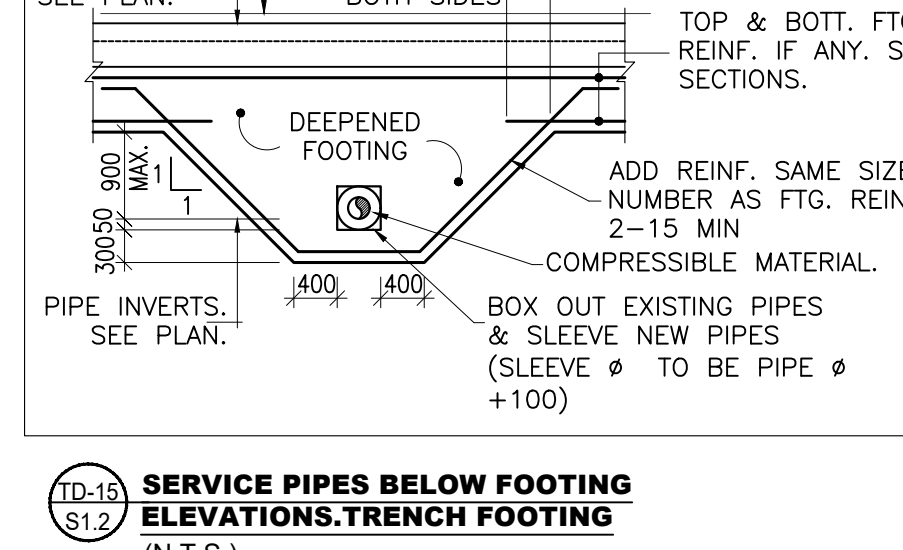
**TD-19 (S1.2) SLAB ON GRADE CONTROL JOINT**  
(N.T.S.)



**TD-20 (S1.2) TYPICAL CURB SECTION**  
(N.T.S.)



**TD-21 (S1.2) CONCRETE WALLS: REINFORCING AT OPEN'S & STEPS**  
(N.T.S.)



**TD-22 (S1.2) SLAB ON GRADE CONTROL JOINT**  
(N.T.S.)

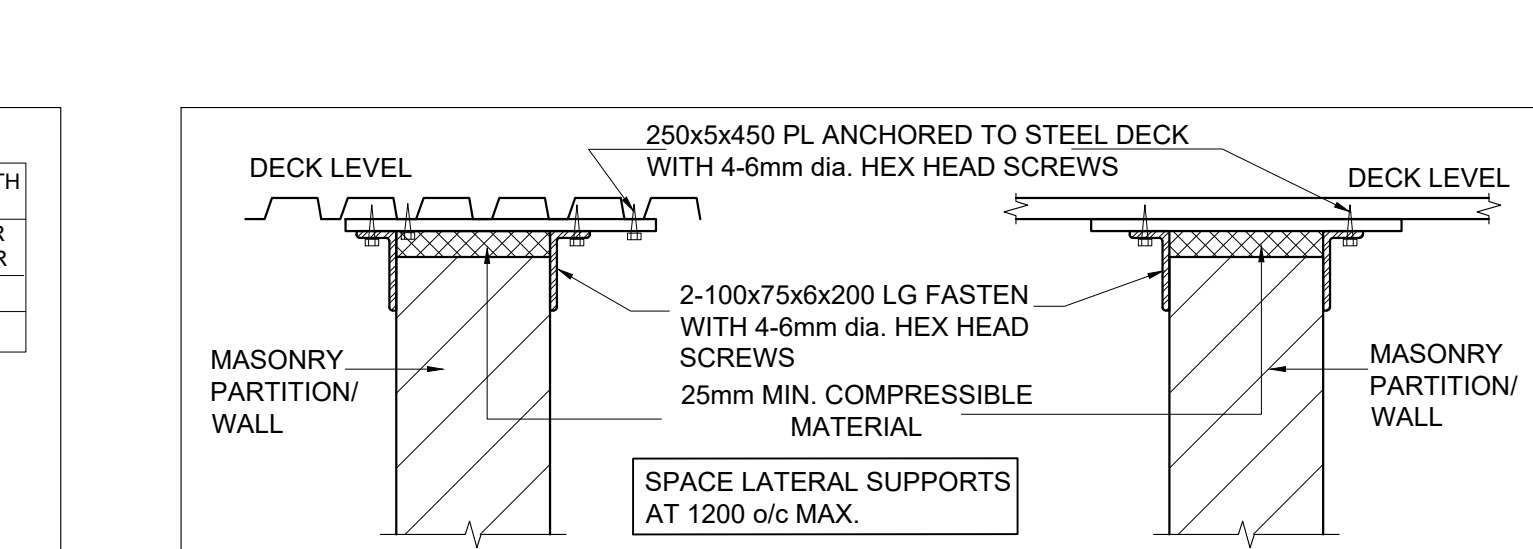


**TD-23 (S1.2) TYPICAL CURB SECTION**  
(N.T.S.)

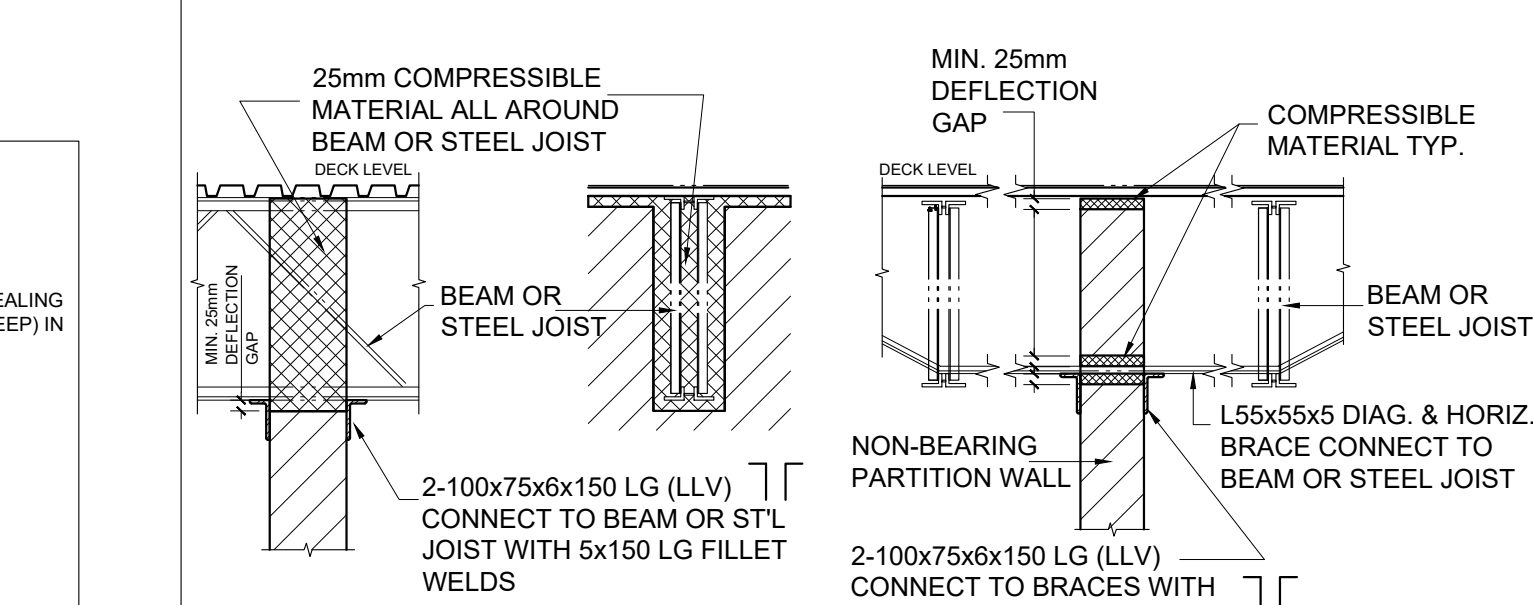
**TD-24 (S1.2) CONCRETE WALLS: REINFORCING AT OPEN'S & STEPS**  
(N.T.S.)



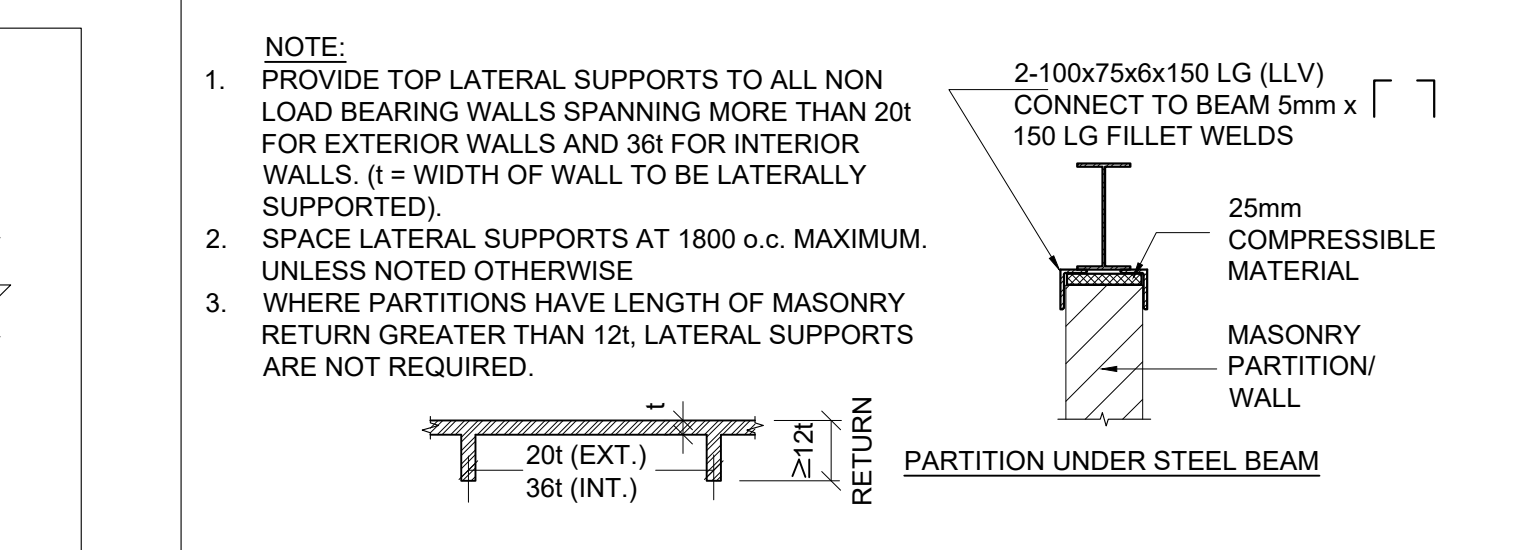
**TD-24 (S1.2) CONCRETE WALLS: REINFORCING AT OPEN'S & STEPS**  
(N.T.S.)



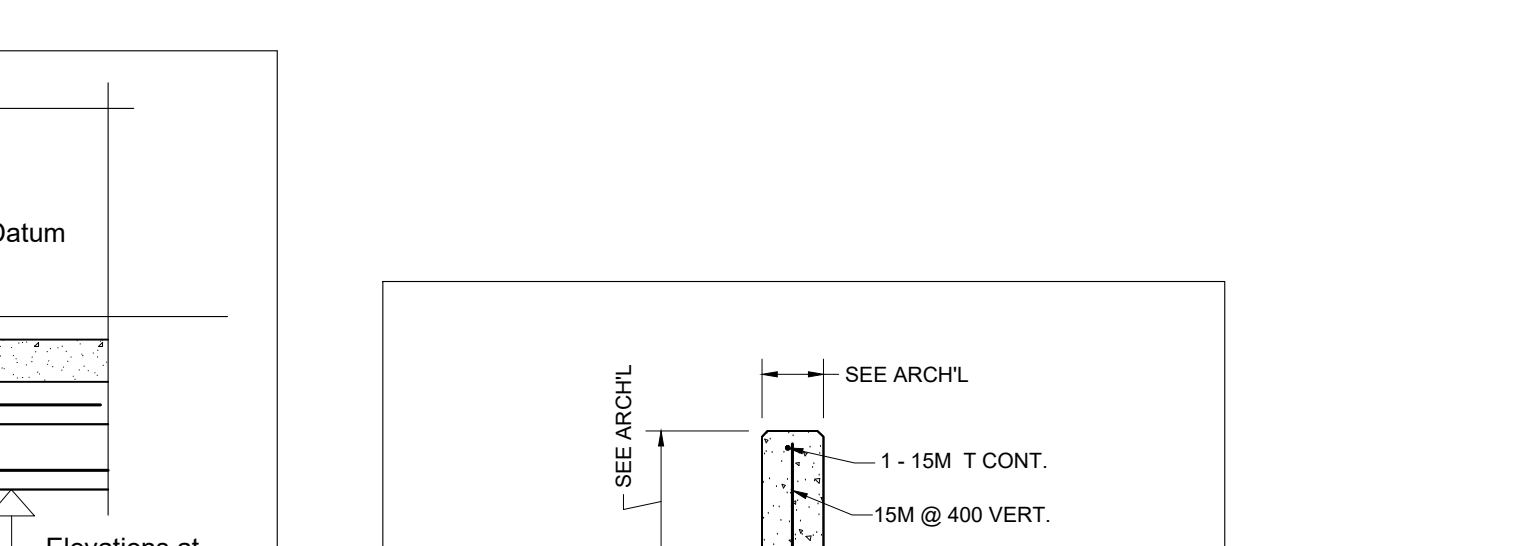
**TD-25 (S1.2) SLAB ON GRADE CONTROL JOINT**  
(N.T.S.)



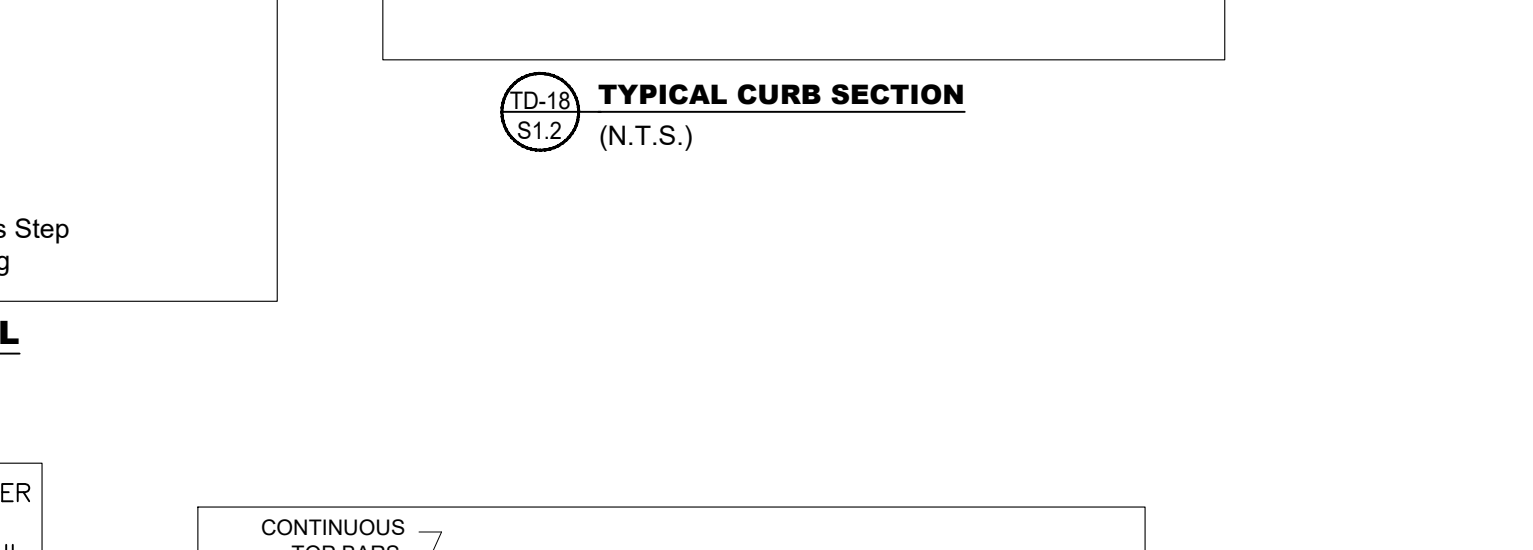
**TD-26 (S1.2) TYPICAL CURB SECTION**  
(N.T.S.)



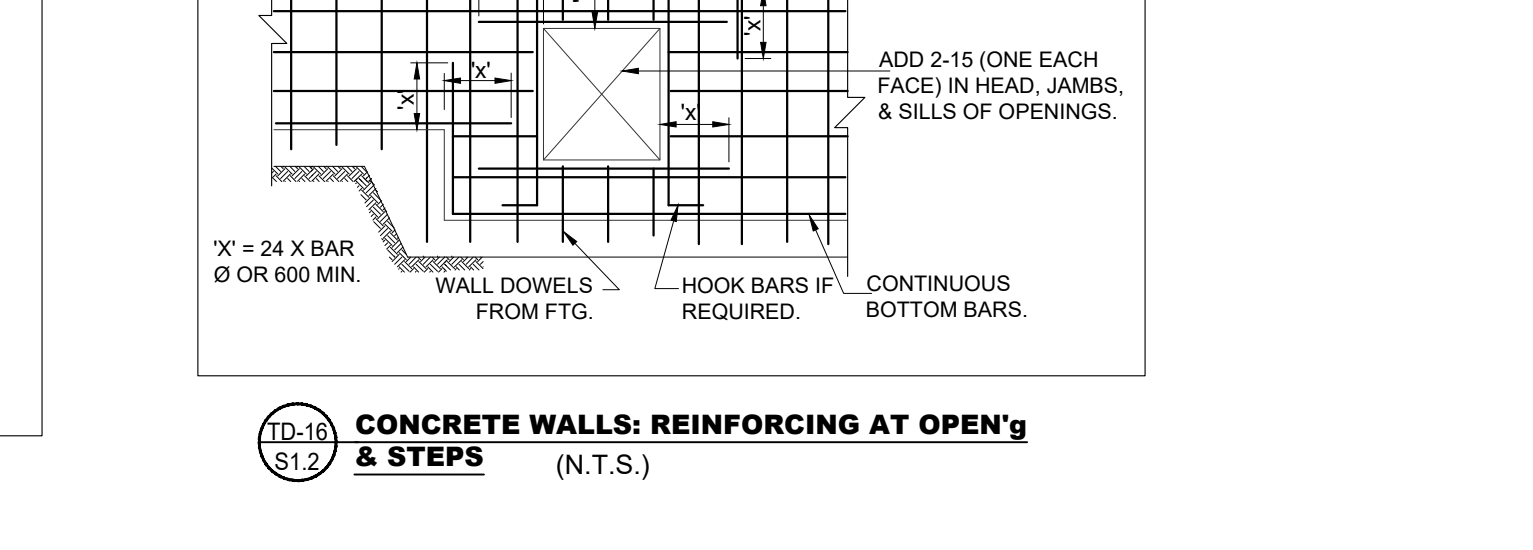
**TD-27 (S1.2) CONCRETE WALLS: REINFORCING AT OPEN'S & STEPS**  
(N.T.S.)



**TD-28 (S1.2) SLAB ON GRADE CONTROL JOINT**  
(N.T.S.)



**TD-29 (S1.2) TYPICAL CURB SECTION**  
(N.T.S.)



**TD-30 (S1.2) CONCRETE WALLS: REINFORCING AT OPEN'S & STEPS**  
(N.T.S.)



**TD-31 (S1.2) SLAB ON GRADE CONTROL JOINT**  
(N.T.S.)

**TD-32 (S1.2) TYPICAL CURB SECTION**  
(N.T.S.)

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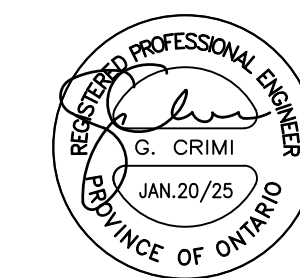
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1	FOR COORDINATION	DEC.10, 2022
2	FOR FINAL COORDINATION	DEC.16, 2022
3	FOR FINAL COORDINATION	AUG.01, 2023
4	FOR BUILDING PERMIT & SPA	AUG.08, 2023
5	FOR TENDER	JAN.20, 2025

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Drawing Title

**TYPICAL DETAILS**

PROJECT NAME

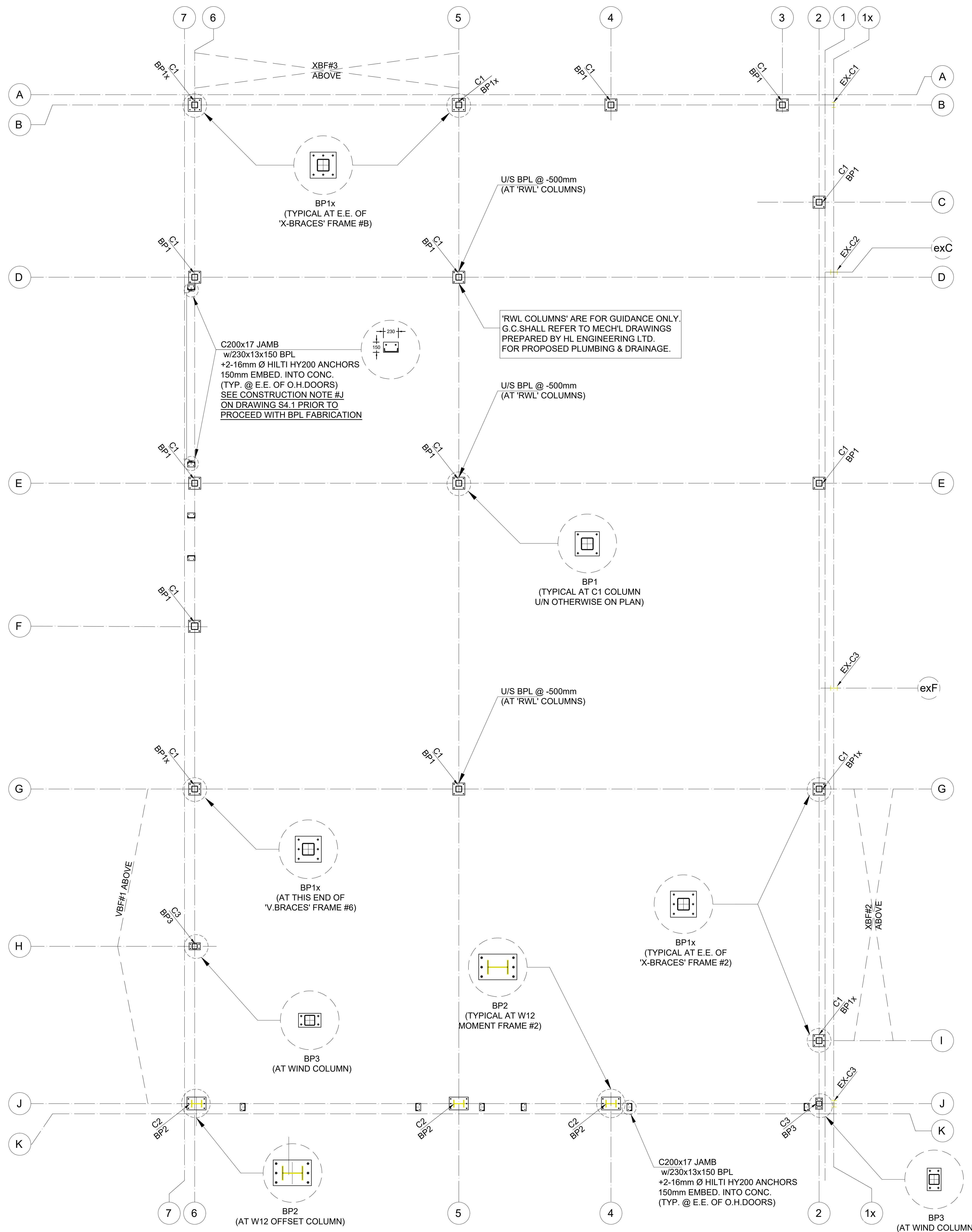
**ORANGEVILLE OPERATION CENTRE EXPANSION**  
**500C LINE, ORANGEVILLE, ONTARIO L9W 4Z3**

Scale	As Noted	Sheet Number
Issued by	JC	S1.2
Project No	22036	
Date	AUG/08/2023	

Rev. No 1

'ARCH E1' SIZE

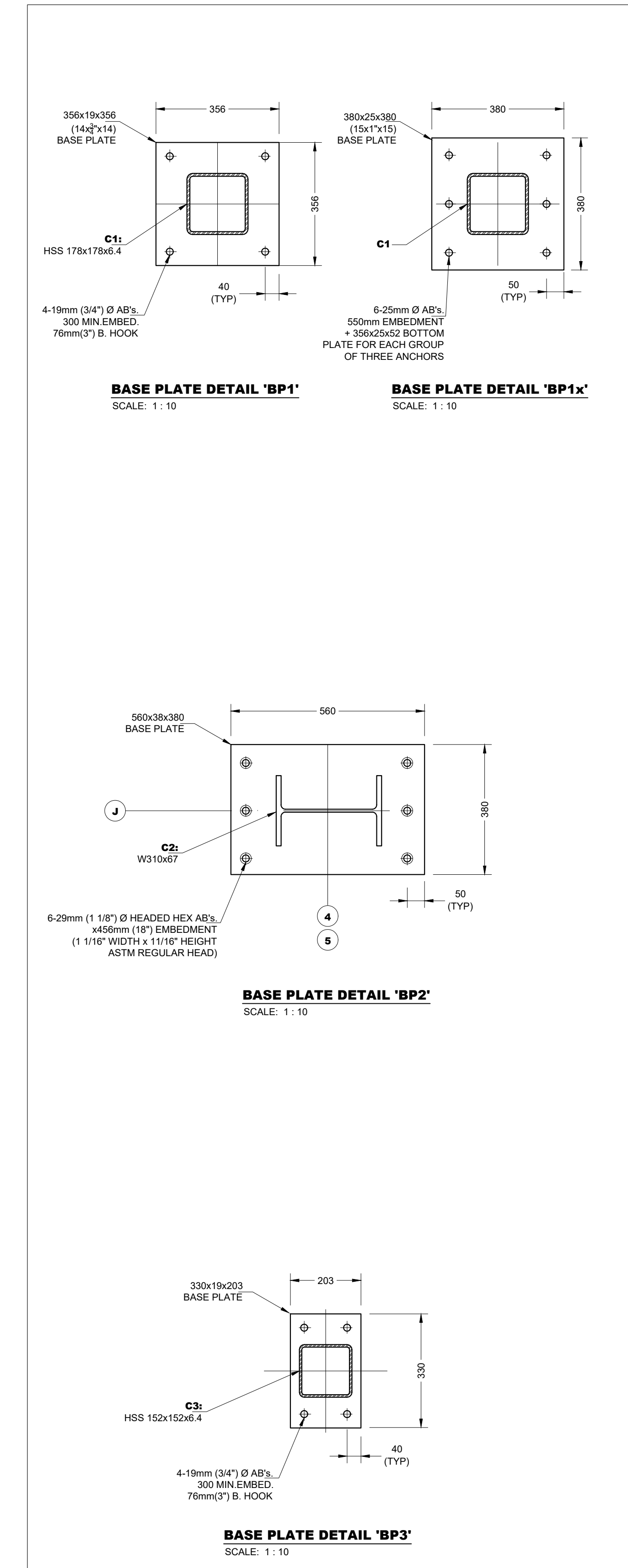




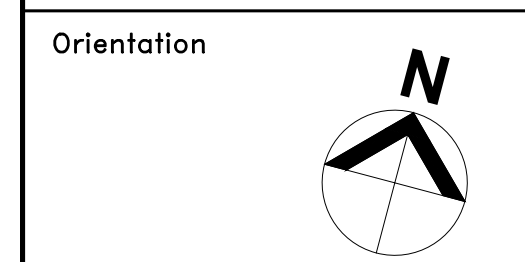
**1 ANCHOR BOLTS & BASE PLATES LAYOUT**  
SCALE: 1 : 50

U/S BPL @ MIN. -350mm FROM FFE  
(TYPICAL U/N OTHERWISE ON PLAN)

**CONSTRUCTION NOTE # 1**  
THESE DRAWINGS SHOW THE COMPLETE STRUCTURE.  
IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO CHOOSE CONSTRUCTION METHODS AND CARRY OUT THE WORK BASED ON SITE CONDITIONS.



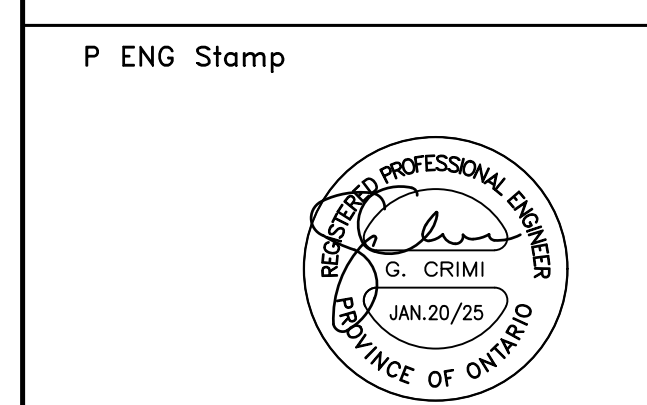
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CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND ELEVATIONS AND BE RESPONSIBLE FOR SAME.  
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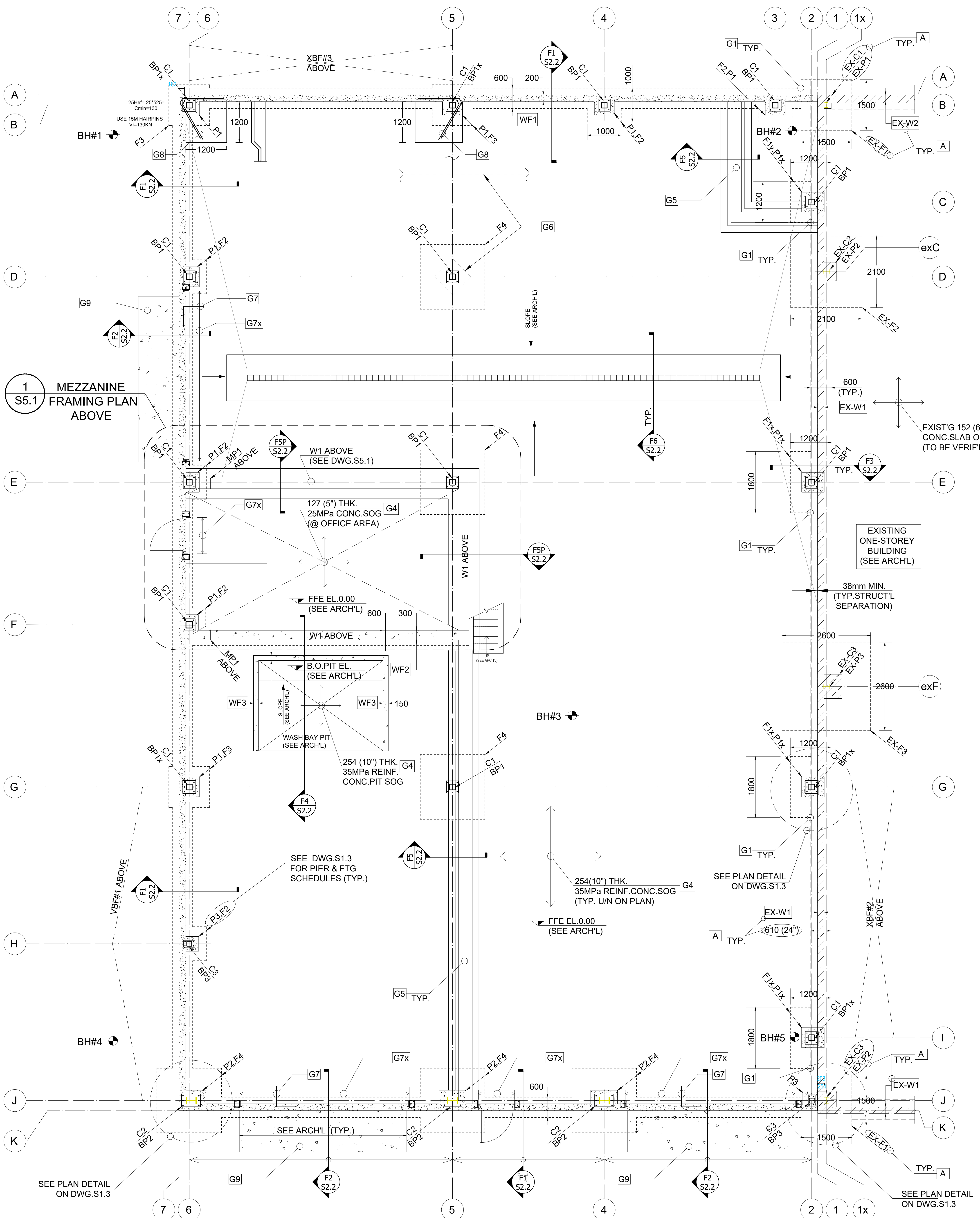
**EXSEN ENGINEERING LTD.**  
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Ph. (416) 712-0970  
exseng11@gmail.com

Drawing Title  
**ANCHOR BOLTS LAYOUT & BASE PLATE DETAILS**

PROJECT NAME  
**ORANGEVILLE OPERATION CENTRE EXPANSION**  
**500C LINE, ORANGEVILLE, ONTARIO L9W 4Z3**

Scale	As Noted	Sheet Number
Issued by	JC	S2.0
Project No	22036	
Date	AUG/08/2023	
		Rev. No 1

'ARCH E1' SIZE



**FOUNDATION PLAN**  
SCALE: 1 : 50

**FOUNDATION NOTES (PART 4 OBC'12 & NBC'15):**

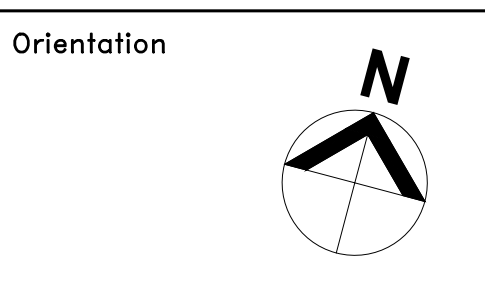
- THIS SYMBOL BH# ON PLAN DENOTES APPROXIMATE LOCATION OF BOREHOLES AS PER SOIL REPORT# 36304 PREPARED BY THURBER ENGINEERING LTD. ON JUNE 28, '23.
- FOUND ALL FOOTINGS ON NATIVE UNDISTURBED SOIL WITH BEARING CAPACITY OF 100KPa @ 'SLS' AND 150KPa AT 'ULS' AT 1.4m DEPTH (APPROX. EL. 416.0m). IT SHALL BE NOTED THAT LOWER FOUNDING ELEVATIONS INTO NATIVE COMPACT SAND OR VERY STIFF SILTY CLAY TO CLAYEY SILT (AT 2.2m DEPTH EL. 415.2) SET THE POTENTIAL NEED FOR DEWATERING. THEREFORE HIGHER FOUNDING ELEVATIONS (AT APPROX. 1.4m DEPTH EL. 416.0m) ARE PREFERRED FROM A CONSTRUCTION POINT OF VIEW AS SPECIFIED ON PAR.7.1 OF SOIL REPORT#36304 PREPARED BY THURBER ENGINEERING LTD.;
- PROVIDE 75mm SKIM SLAB OVER THE FOUNDING SURFACE IF CONCRETE FOR FOUNDATIONS CANNOT BE POURED WITHIN 24 HOURS FROM EXCAVATIONS;
- ALL FOOTINGS EXPOSED TO FREEZING GROUND CONDITIONS MUST BE PROVIDED WITH A MINIMUM OF 1400mm OF SOIL COVER OR EQUIVALENT THICKNESS OF THERMAL INSULATION IN ACCORDANCE WITH PAR.7.1 OF AFOREMENTIONED SOIL REPORT;
- G.C. SHALL RETAIN A GEOTECHNICAL ENGINEER TO CONFIRM THE AFOREMENTIONED SOIL BEARING PRESSURE VALUES PRIOR TO POURING CONCRETE FOR FOUNDATIONS;
- G.C. SHALL REFER TO PAR.7.5 "EXCAVATION AND GROUNDWATER CONTROL" OF SOIL REPORT #36304 PREPARED BY THURBER ENGINEERING LTD. FOR EXCAVATION AND DEWATERING PROVISIONS;
- G.C. SHALL COORDINATE ON SITE WITH A GEOTECHNICAL ENGINEER FOR BACKFILLING REQUIREMENTS, SUBGRADE PROVISIONS, DRAINAGE AND ANY SOIL RELATED ISSUE;
- G.C. SHALL ALSO COMPLY WITH "FOUNDATION NOTES" AS SHOWN ON DRAWING S1.1.

**CONSTRUCTION NOTES**

- G1 CONSTRUCTION NOTE #G1 (TYPICAL AT NEW - EXISTING FOOTING INTERFACE):**
- DRILL & GROUT 15M HORIZONTAL DOWELS 300mm LONG MINIMUM 150mm EMBEDMENT INTO EXISTING CONCRETE FOOTING AT 200 o/c;
  - UNDERSIDE OF NEW FOOTING ELEVATION SHALL MATCH UNDERSIDE OF EXISTING FOOTING ELEVATION (DEPTH TO BE SITE VERIFIED BY GENERAL CONTRACTOR).
  - G.C. SHALL NEVER UNDERMINE ANY EXISTING FOOTING AND COMPLY WITH 7 TO 10 SLOPE REQUIREMENT FOR ADJACENT FOOTINGS AND EXCAVATION AS PER TYPICAL DETAIL TD-2/S1.2.
  - ANY EXCAVATION WORK IN PROXIMITY OF EXISTING FOUNDATIONS SHALL BE PERFORMED UNDER FULL TIME SUPERVISION OF A GEOTECHNICAL CONSULTANT HIRED BY GENERAL CONTRACTOR.
- G2 CONSTRUCTION NOTE #G2 (UNDERSIDE OF FOOTING ELEVATIONS):**
- UNDERSIDE OF FOOTING ELEVATION SHALL BE AT MINIMUM 1400mm DEPTH FROM GRADE LEVEL. GENERAL CONTRACTOR SHALL REFER TO ARCH'L DRAWINGS FOR PROPOSED GRADING DATA AND COORDINATE ON SITE WITH A GEOTECHNICAL ENGINEER FOR FINAL FOOTING ELEVATION. GENERAL CONTRACTOR SHALL COMPLY WITH "FOUNDATION NOTES" SHOWN ON DRAWING S1.1.
- G3 CONSTRUCTION NOTE #G3 (GRIDLINES & PLAN DIMENSIONS):**
- GENERAL CONTRACTOR SHALL REFER TO ARCH'L DRAWINGS FOR GRIDLINES/COL'S LOCATION AND PLAN DIMENSIONS. REFER TO ARCH'L FOR FOUNDATION WALL LOCATION ON PLAN (I.E. OFFSET FROM GRIDLINES). GENERAL CONTRACTOR SHALL USE THIS DRAWING FOR GUIDANCE ONLY.
- G4 CONSTRUCTION NOTE #G4 (SLAB ON GRADE CONSTRUCTION):**
- AT OFFICE AREA ONLY (SEE ARCH'L FOR EXTENT): PROVIDE 127mm (5") THICK 25MPa CONCRETE SLAB ON GRADE REINFORCED WITH WWV 6x6 @ 610 (24") CLOSE TO TOP OF SLAB. AT WASH BAY PIT PROVIDE 254mm (10") THICK 35MPa CLASS C-1 CONCRETE SLAB ON GRADE REINFORCED WITH WWV 6x6 @ +15M AT 300 o/c BOTTOM EACH WAY. EVERYWHERE ELSE PROVIDE 254mm (10") THICK 35MPa CLASS C-1 CONCRETE SLAB ON GRADE REINFORCED WITH WWV 6x6 @ +15M AT 400 o/c TOP AND BOTTOM EACH WAY (SEE TYPICAL IN-FLOOR RADIANT SLAB SECTION SG1/S2.2). GENERAL CONTRACTOR SHALL REFER TO ARCH'L DRAWINGS FOR FLOOR ELEVATION DATA, DEPRESSIONS, RECESSES AND USE THIS DRAWING FOR GUIDANCE ONLY. PROVIDE 2" THICK X 4'-0" WIDE 'FOAMULAR 400 HIGH DENSITY INSULATION' AROUND PERIMETER OF SLAB AND 1" THICK 'FOAMULAR 400 HIGH DENSITY INSULATION' FOR REMAINDER OF INTERIOR AREAS. GENERAL CONTRACTOR SHALL REFER TO PAR.7.4 OF SOIL REPORT #36304 PREPARED BY THURBER ENGINEERING LTD. FOR SUBGRADE PROVISIONS.
- G5 CONSTRUCTION NOTE #G5 (MASONRY PARTITIONS):**
- SEE ARCH'L FOR THICKNESS, LOCATION ON PLAN OF CONCRETE BLOCK PARTITIONS AND USE THIS DRAWING FOR GUIDANCE ONLY. REFER TO "MASONRY NOTES" ON DRAWING S1 FOR SPECIFICATIONS. PROVIDE SLAB ON GRADE THICKENING AT BOTTOM OF WALLS.
- G6 CONSTRUCTION NOTE #G6 (SAW-CUT CONTROL JOINTS):**
- PROVIDE SAW-CUT CONTROL JOINTS IN ACCORDANCE WITH TYPICAL DETAIL TD-9/S1.2. LAYOUT AS SHOWN ON PLAN IS FOR GUIDANCE ONLY.
- G7 CONSTRUCTION NOTE #G7 (REQUIREMENT FOR DOWELS TO SLAB ON GRADE):**
- PROVIDE 10M DWL'S AT 600o/c (600H+600V) FROM FOUNDATION WALL TO SLAB ON GRADE (TYP. AT O.H.DOOR AREA)
- G7x CONSTRUCTION NOTE #G7x (TOP OF FOUNDATION WALL ELEVATION):**
- FOUNDATION WALLS SHALL BE DROPPED AT O.H.DOOR AND MANDOOK LOCATIONS (SEE ARCH'L FOR EXTENT AND TOP OF WALL ELEVATION)
- G8 CONSTRUCTION NOTE #G8 (REQUIREMENT FOR HAIRPINS):**
- PROVIDE 2-20M HAIRPINS (2600mm LONG) AT LINES # B - 5 & 6. BARS SHALL BE INSTALLED AROUND ANCHOR RODS AND EMBEDDED INTO 1200mm SQ.x200 DP. SLAB ON GRADE THICKENING (SEE DETAIL HD1/S1.3).
- G9 CONSTRUCTION NOTE #G9 (CLSM BACKFILL):**
- PROVIDE CONTROLLED LOW-STRENGTH CONCRETE BACKFILL WITH 13MPa COMPRESSIVE STRENGTH AT 28 DAYS FROM U/S OF CONCRETE APRON DOWN TO MINIMUM 1400mm BELOW GRADE (SEE ARCH'L FOR O.H.DOOR LOCATION AND CONCRETE POUR EXTENT).

- WF#** THIS SYMBOL DENOTES PROPOSED REINFORCED CONCRETE FOUNDATION WALLS (SEE DRAWING S1.3 FOR REINFORCING DETAILS)
- EX-W#** THESE SYMBOLS DENOTES PROPOSED REINFORCED CONCRETE PIERS 'P#' AND FOOTINGS 'F#' SEE DRAWING S1.3 FOR SCHEDULES
- A DESIGN NOTE #A (REQUIREMENT FOR SITE VERIFICATIONS):**
- SEE SCHEDULE S1.3 FOR EXISTING ADJACENT BUILDING FOUNDATION WALLS (EX-W#), CONCRETE FOOTINGS (EX-F#), CONCRETE PIERS (EX-P#) AND STEEL COLUMNS (EX-C#).
- ANY INFORMATION ON THE EXISTING BASE BUILDING SHOWN ON THESE DRAWINGS WERE TAKEN FROM DESIGN PREPARED IN 1987 BY J D MC AULEY ARCHITECT INC. (REF. DRAWING 8721-S1 -STAMPED ON DEC. 16, '87) AND SHALL BE TAKEN FOR GUIDANCE ONLY. GENERAL CONTRACTOR SHALL SITE VERIFY ALL THESE DATA AND REPORT TO STRUCTURAL ENGINEER ANY DISCREPANCY PRIOR TO COMMENCING ANY WORK.

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Drawing Title

**FOUNDATION PLAN**

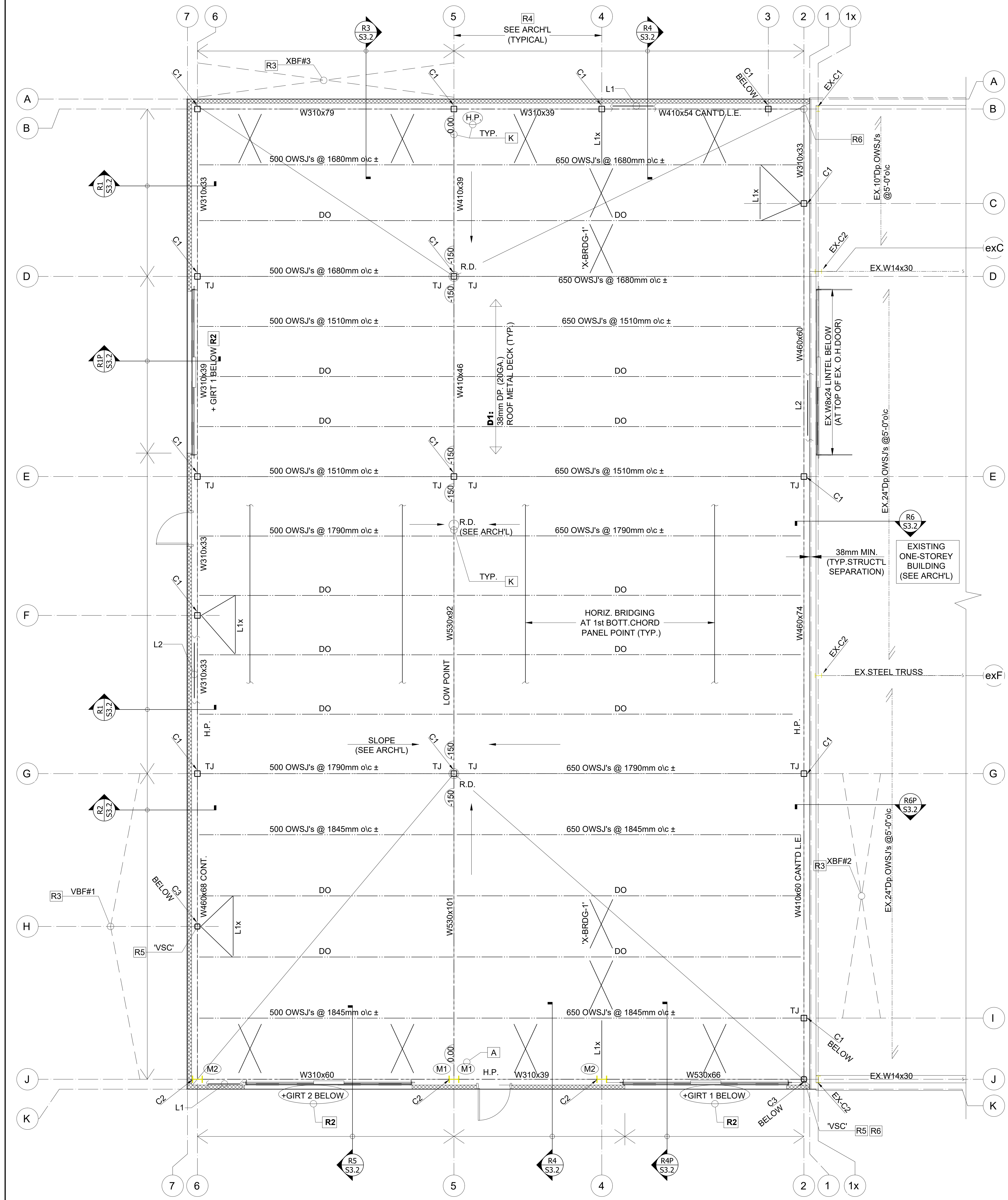
PROJECT NAME  
**ORANGEVILLE OPERATION CENTRE EXPANSION**  
**500C LINE, ORANGEVILLE, ONTARIO L9W 4Z3**

Scale	As Noted	Sheet Number
Issued by	JC	<b>S2.1</b>
Project No	22036	
Date	AUG/08/2023	
		Rev. No 1

'ARCH E1' SIZE







**1 ROOF FRAMING PLAN**  
 S3.1 SCALE: 1:50

**ROOF FRAMING DESIGN NOTES (NBC'15 & OBC'12-PART 4):**

- SEE ALSO ROOF FRAMING & DECK GENERAL NOTES ON DRAWING S1.1;
- ALL OWSJ SHALL HAVE 100mm DEEP JOIST SHOES;
- DESIGN LIVE LOAD IS 2.24 KPa (46.8PSF) AS PER Ss=2.30KPa, Sr= 40KPa (ORANGEVILLE NBC'15) Cb=80 AND Is=1.0;
- SEE "ROOF FRAMING NOTES" ON DRAWING S1.1 FOR WATER RETENTION ASSESSMENT;
- THE ROOF FRAMING HAS BEEN DESIGNED FOR A SUPERIMPOSED DEAD LOAD OF 1.25 KPa (26.1PSF);
- "D1" ON PLAN DENOTES 38mm DP x .91mm (20GA.) ROOF METAL DECK (TYP./U/N OTHERWISE ON PLAN);
- SEE ALSO "ROOF DECK NOTES" ON DRAWING S1.1 FOR FASTENING DETAILS;
- "TJ" ON PLAN DENOTES TIE JOISTS. EXTEND BOTTOM CHORD AND CONNECT TO STEEL COLUMN;
- ALL STEEL JOISTS TO BE DESIGNED BY A PROFESSIONAL ENGINEER IN ADDITION OF THE DEAD AND LIVE LOADS INDICATED, THE JOISTS SHALL BE DESIGNED TO RESIST THE WIND FORCES RESULTING IN UPLIFT CONDITIONS, IN ACCORDANCE WITH THE NBC. SEE ALSO UPLIFT FORCE DIAGRAM ON DRAWING S1.1;
- DESIGN JOISTS FOR A MAXIMUM LIVE LOAD DEFLECTION OF L/360;
- AN INDEPENDENT TESTING COMPANY IS TO INSPECT THE STRUCTURAL STEEL IN THE FIELD FOR WELDING, CONNECTIONS, BOLT TORQUES AND GENERAL CONFORMANCE WITH STRUCT'L DRAWINGS;
- STEEL DECK TO BE INSTALLED IN ACCORDANCE WITH RECOMMENDATIONS OF THE CANADIAN SHEET STEEL BUILDING INSTITUTE.

**LEGEND - MISCELLANEOUS METAL MEMBERS**

L1x:  
 ON PLAN DENOTES L-76x76x6.4 COLUMN TIES TO TOP CHORD OF OWSJ.  
 IF PERPENDICULAR TO OWSJ's, PROVIDE X-BRIDGING OVER MINIMUM TWO SPANS (SEE LOCATIONS AS SHOWN ON PLAN)

L1:  
 ON PLAN DENOTES L-152x102x8.0 (LLH) CONTINUOUS CLOSURE ANGLE

L2:  
 ON PLAN DENOTES L-102x102x6.4 CONTINUOUS CLOSURE ANGLE (SEE ARCH'L FOR EDGE OF DECK)

CONSTRUCTION NOTE:  
 GENERAL CONTRACTOR SHALL COORDINATE INSTALLATION OF THESE MEMBERS WITH STEEL AND JOIST SUPPLIER PRIOR TO COMMENCING ANY WORK.  
 GENERAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SEALED BY P ENG FOR REVIEW AND APPROVAL PRIOR TO COMMENCING ANY WORK.

**CONSTRUCTION NOTES**

CONSTRUCTION NOTE # 1  
 THESE DRAWINGS SHOW THE COMPLETE STRUCTURE. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO CHOOSE CONSTRUCTION METHODS AND CARRY OUT THE WORK BASED ON SITE CONDITIONS.

R1 **CONSTRUCTION NOTE #R1 (PROPOSED EXTERIOR WALLS):**  
 GENERAL CONTRACTOR SHALL REFER TO ARCH'L DRAWINGS FOR PROPOSED EXTERIOR WALLS ASSEMBLY, TOP OF PARAPET ELEVATION AND DETAILS AND USE THESE DRAWINGS FOR GUIDANCE ONLY.

R2 **CONSTRUCTION NOTE #R2 (PROPOSED GIRTS BELOW):**  
 SEE ELEVATION DRAWING S4.1 FOR GIRT SIZE, EXTENT AND DETAILS. GENERAL CONTRACTOR SHALL REFER TO ARCH'L DRAWINGS FOR TOP OF STEEL ELEVATION, OFFSET FROM GRIDLINES AND USE THESE DRAWINGS FOR GUIDANCE ONLY.

R3 **CONSTRUCTION NOTE #R3 (PROPOSED VERTICAL BRACES):**  
 'XBF#' ON PLAN DENOTES CONCENTRICALLY (TENSION ONLY) VERTICAL 'X-BRACES'.  
 'VBF#' ON PLAN DENOTES CONCENTRICALLY (TENSION & COMPRESSION) INVERTED 'V-BRACES'.  
 'SEE ELEVATION DRAWINGS S4.1 FOR BRACE SIZE, EXTENT AND DETAILS. GENERAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SEALED "FOR CONNECTIONS" BY P ENG PRIOR TO COMMENCING ANY WORK.

R4 **CONSTRUCTION NOTE #R4 (PLAN DIMENSIONS):**  
 GENERAL CONTRACTOR SHALL REFER TO ARCH'L DRAWINGS FOR ANY PLAN DIMENSION, GRIDLINES LOCATION, EXTERIOR WALLS OFFSET. THIS PLAN SHALL BE USED FOR GUIDANCE ONLY.

R5 **CONSTRUCTION NOTE #R5 (VERTICAL SLOTTED CONNECTION):**  
 'VSC' ON PLAN DENOTES VERTICAL SLOTTED CONNECTION FOR 'WIND COLUMN' TO UNDERSIDE OF CONTINUOUS ROOF BEAM. GENERAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SEALED "FOR CONNECTIONS" BY P ENG PRIOR TO COMMENCING ANY WORK.

R6 **CONSTRUCTION NOTE #R6 (SHEAR CONNECTION AT CANT'D END):**  
 PROVIDE SHEAR CONNECTION FOR ROOF BEAM ONTO CANT'D END SUPPORT. SEE NOTES CN1 & CN2 ON DRAWING S4.1 FOR DETAILS. GENERAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SEALED "FOR CONNECTIONS" BY P ENG PRIOR TO COMMENCING ANY WORK.

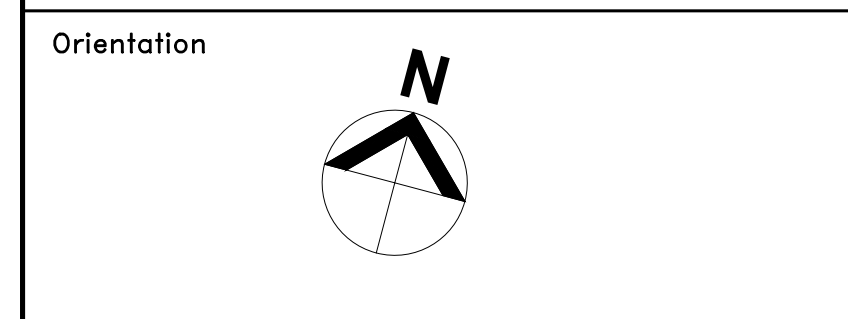
A **DESIGN NOTE #A (MOMENT CONNECTIONS):**

(M#)  
 THIS SYMBOL ON PLAN DENOTES BEAM TO COLUMN MOMENT CONNECTION FOR THE FOLLOWING FACTORED VALUES:  
 M1= 80KNm; M2= 50KNm.  
 G.C. SHALL SUBMIT STRUCTURAL STEEL SHOP DRAWINGS SEALED "FOR CONNECTIONS" BY P.ENG. IN ONTARIO PRIOR TO FABRICATION/ERECTION (SEE "STRUCTURAL STEEL NOTES" ON DRAWING S1.1 FOR DETAILS).  
 G.C. SHALL HIRE AN INDEPENDENT TESTING AGENCY TO SITE VERIFY ALL BOLTED AND WELDED CONNECTIONS. A FIELD REVIEW REPORT SEALED AND PREPARED BY P ENG IN ONTARIO SHALL CERTIFY COMPLIANCE WITH DESIGN DRAWINGS, CURRENT CODES AND REGULATIONS.

K **CONSTRUCTION NOTE #K:**

(x.xx)  
 THIS SYMBOL ON PLAN DENOTES TOP OF STEEL BEAM ELEVATION (0.00 REFERENCE ELEVATION IS HIGH POINT AT U/S DECK LEVEL). MAXIMUM ROOF SLOPE TO DRAIN LOCATIONS SHALL NOT EXCEED 150mm. GENERAL CONTRACTOR SHALL REFER TO ARCH'L ROOF PLAN FOR ROOF SLOPES, DRAIN LOCATIONS AND HIGH/LOW POINTS ELEVATIONS. G.C. SHALL COORDINATE WITH ARCHITECT AND STEEL DETAILER TO DETERMINE TOP OF STEEL ELEVATIONS AND USE THIS DRAWING FOR GUIDANCE ONLY.

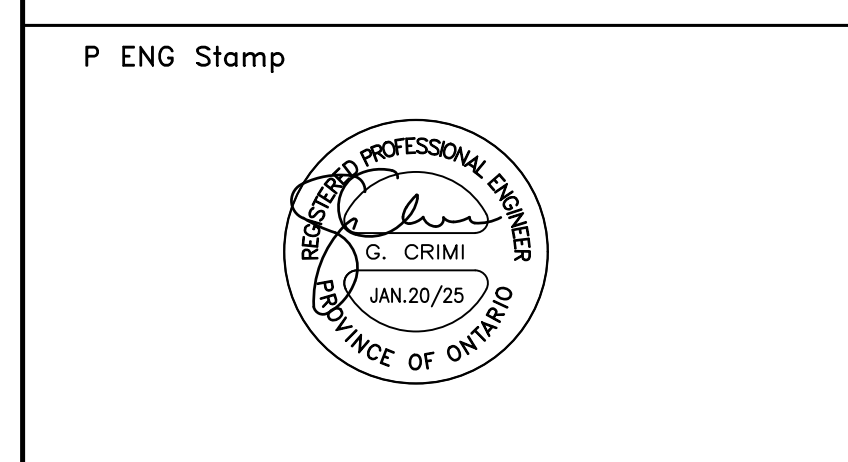
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 PRINTS ARE NOT TO BE SCALED.



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NO.	DESCRIPTION	DATE
1	FOR COORDINATION	DEC.10, 2022
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Drawing Title

**ROOF FRAMING PLAN**

PROJECT NAME

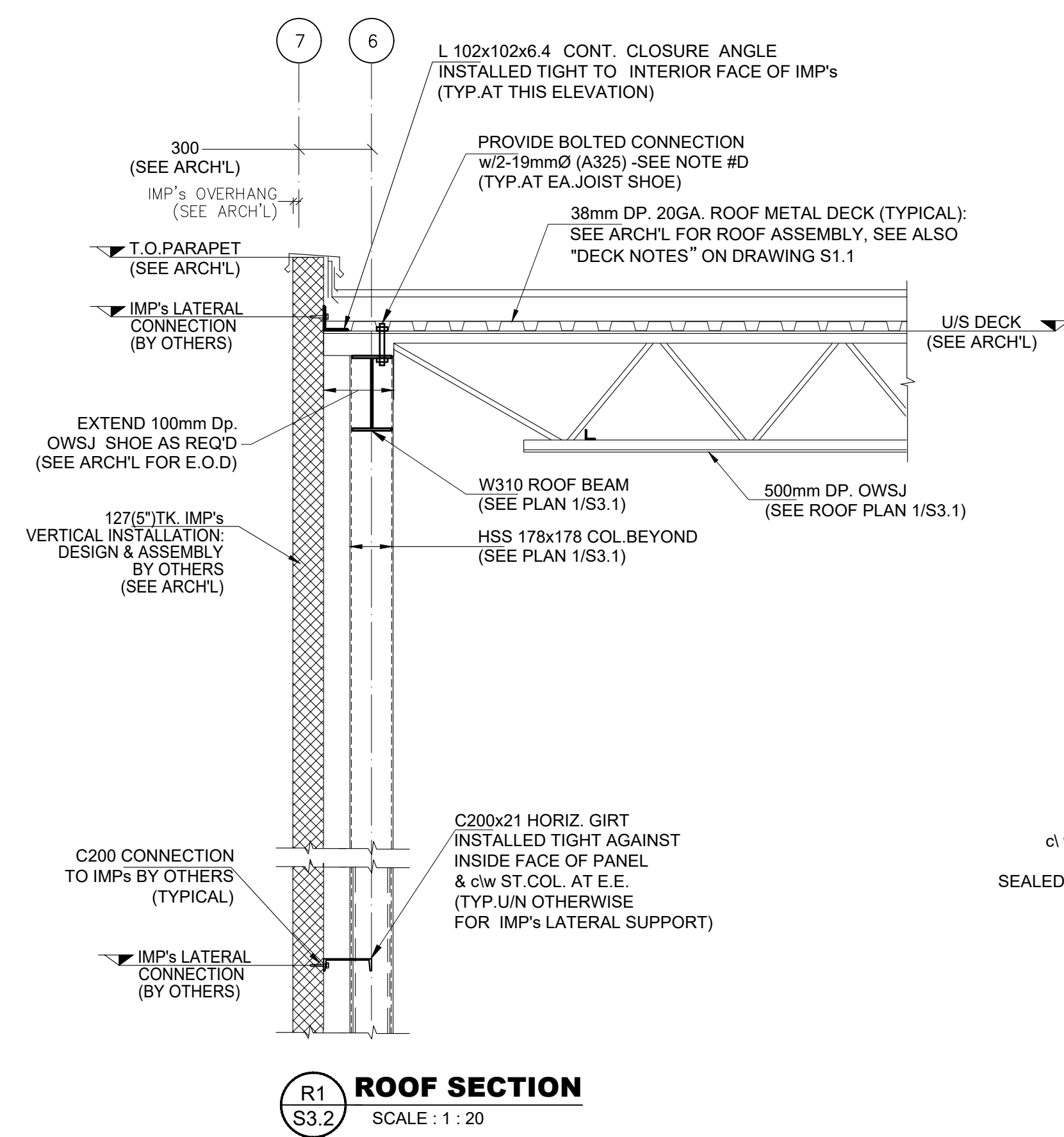
**ORANGEVILLE OPERATION CENTRE EXPANSION**  
**500C LINE, ORANGEVILLE, ONTARIO L9W 4Z3**

Scale	As Noted	Sheet Number
Issued by	JC	S3.1
Project No	22036	
Date	AUG/08/2023	
		Rev. No 1

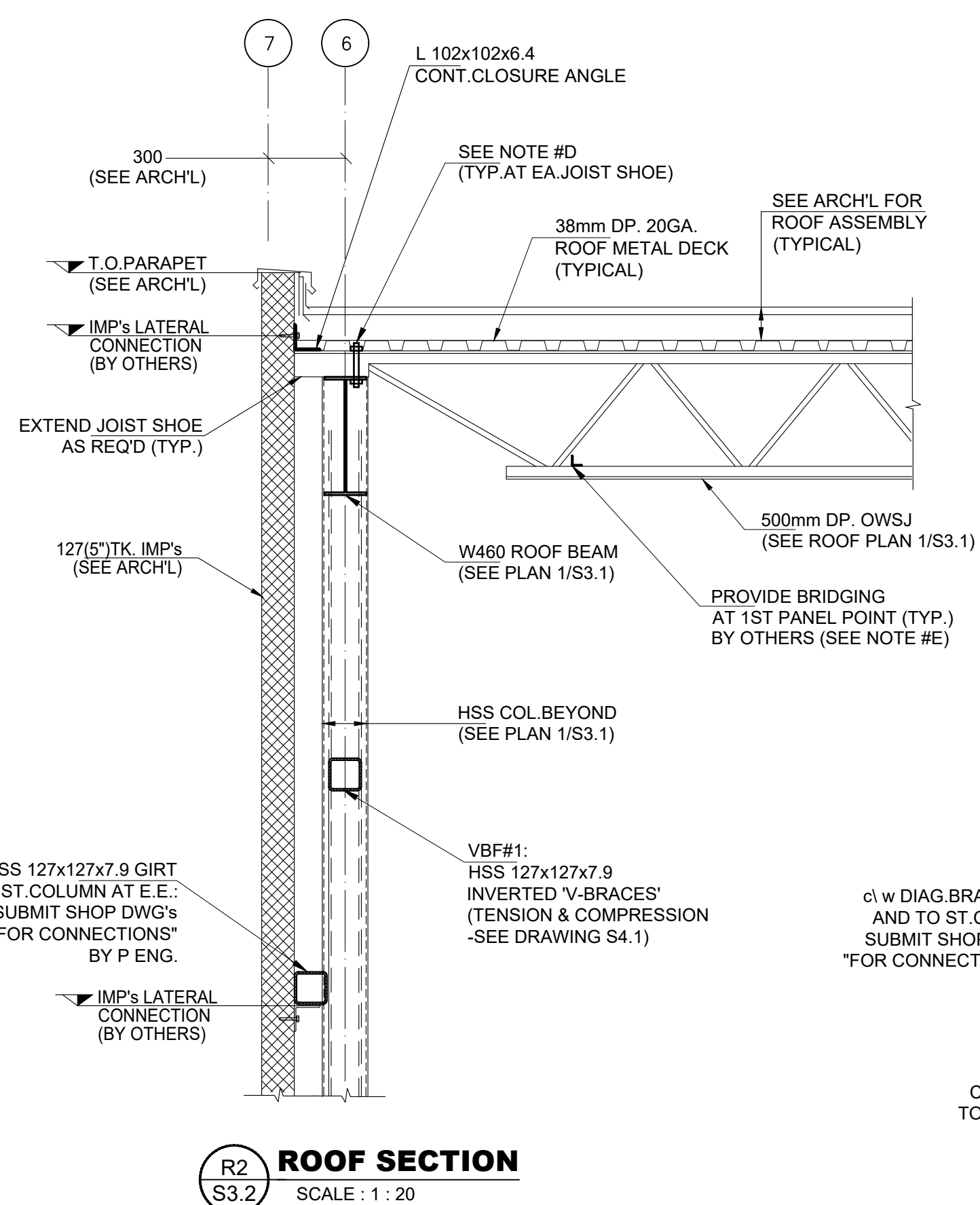
'ARCH E1' SIZE

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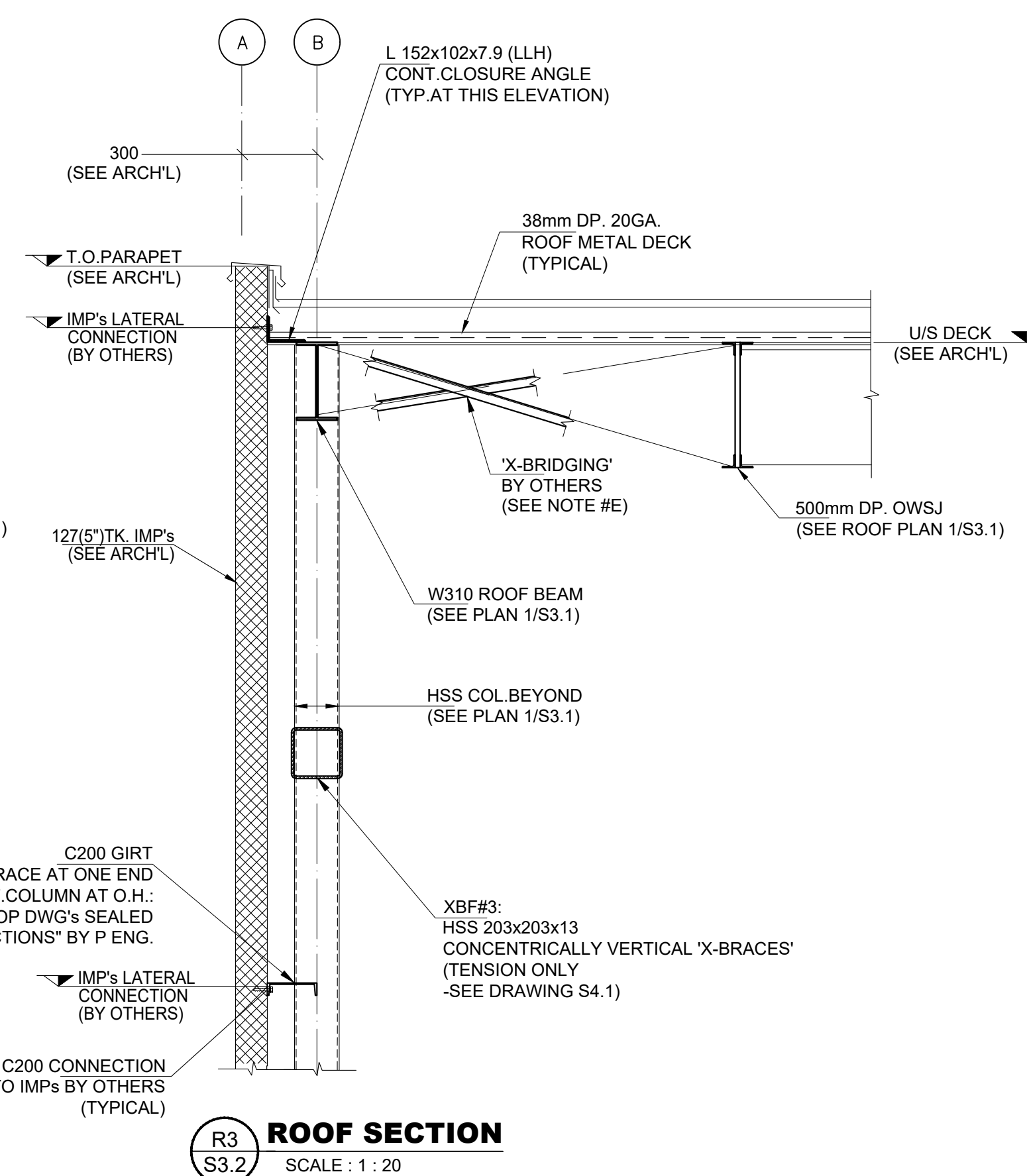
**ISSUED FOR TENDER**



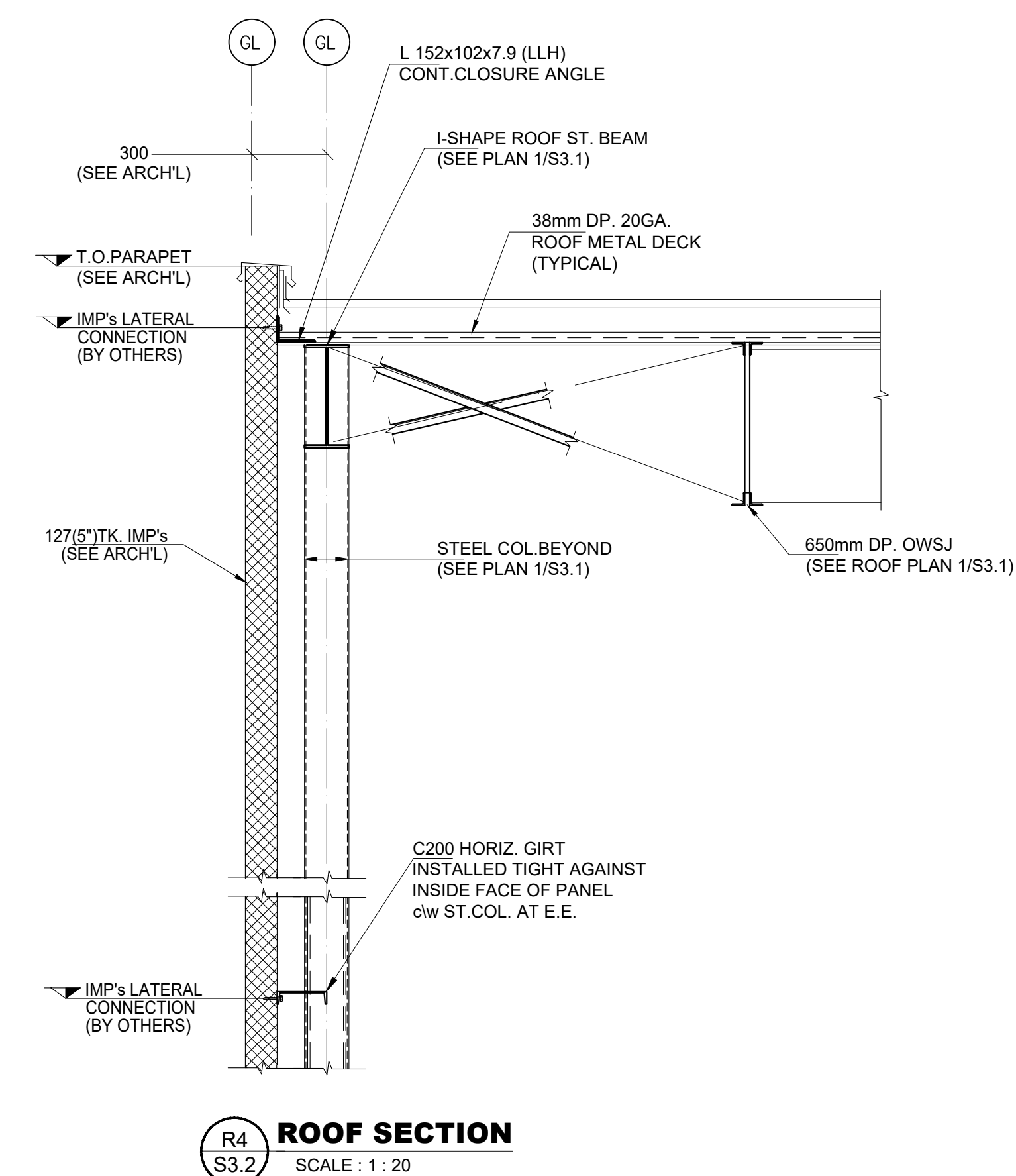
**R1 ROOF SECTION**  
SCALE: 1:20



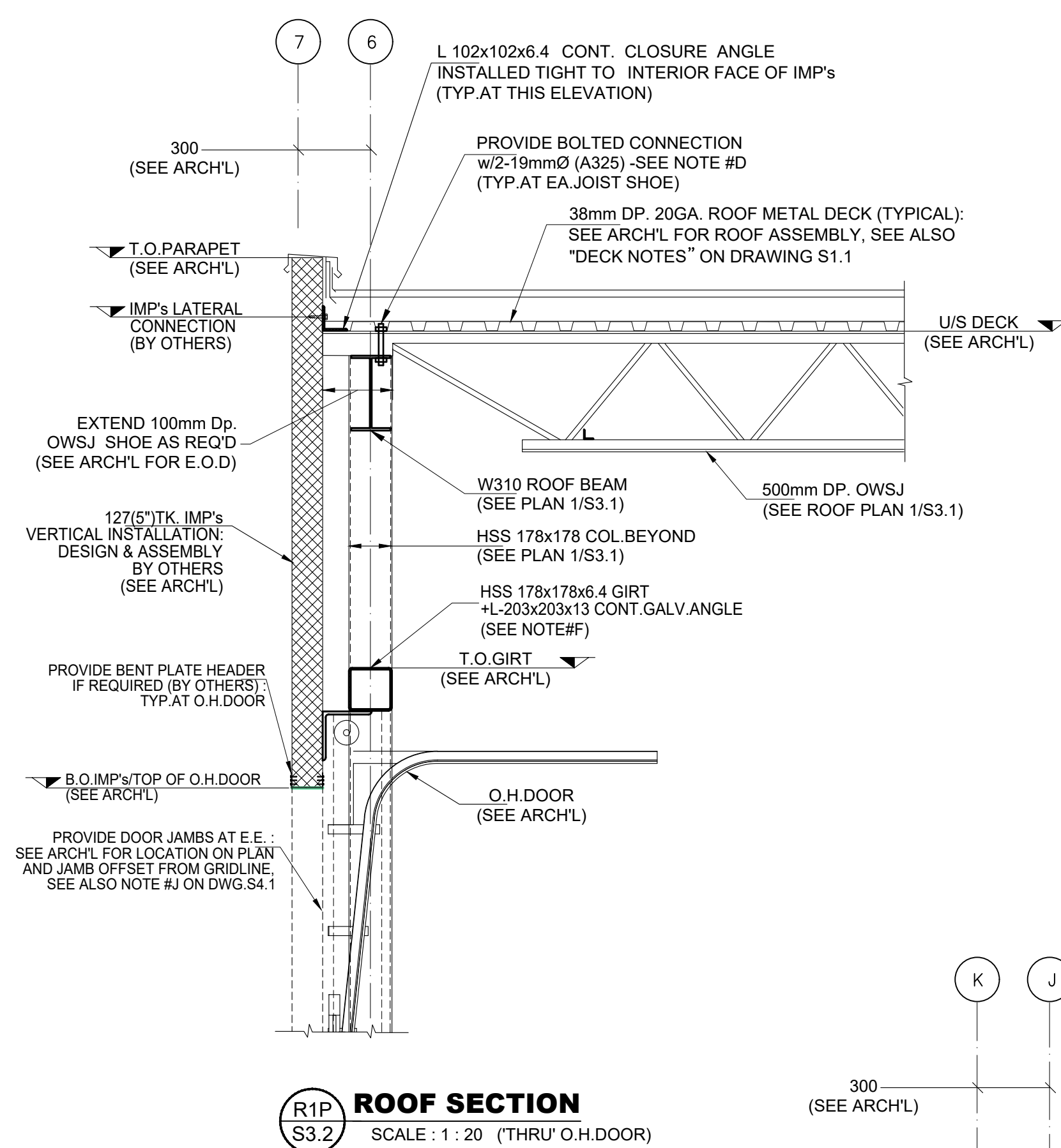
**R2 ROOF SECTION**  
SCALE: 1:20



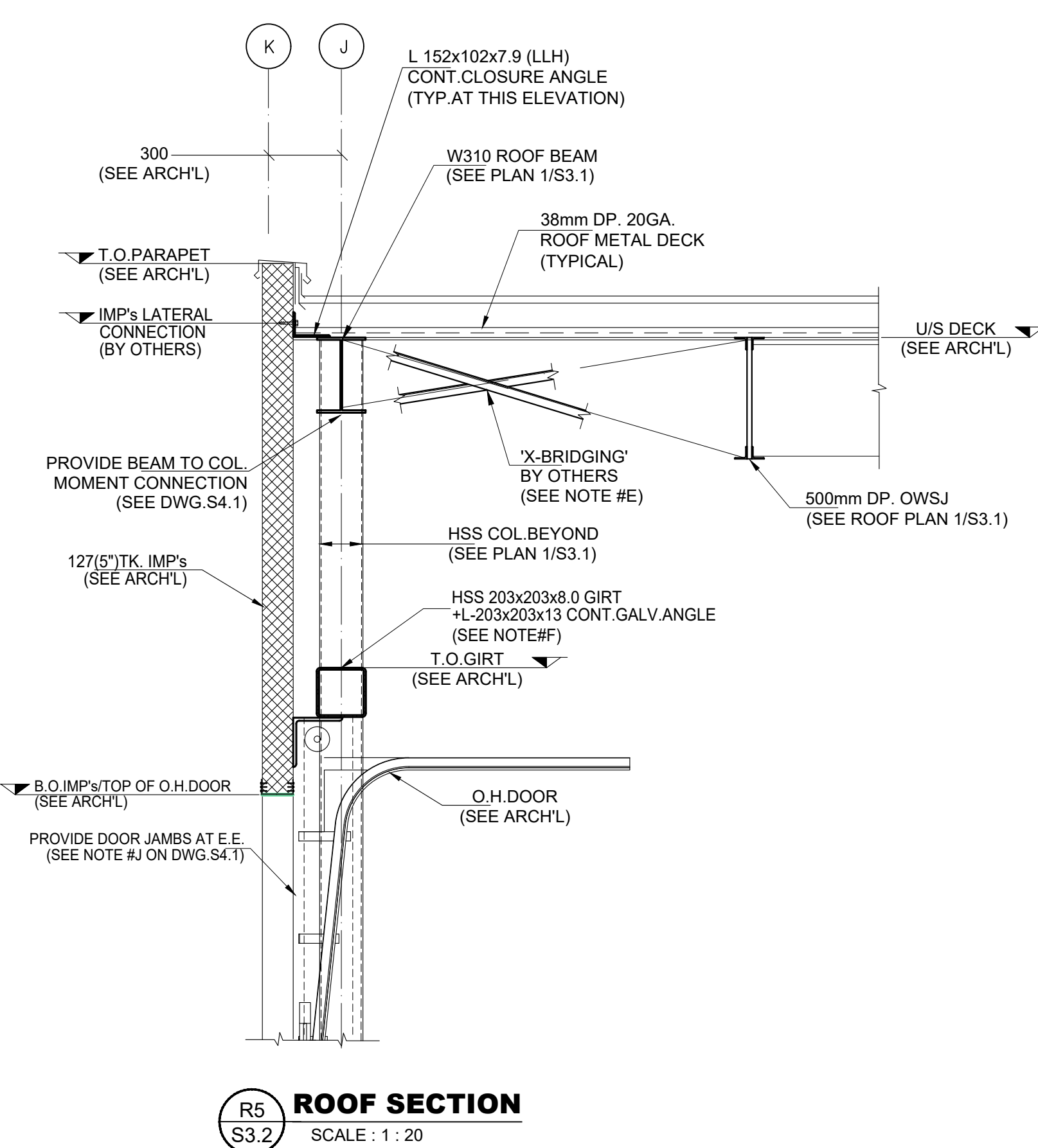
**R3 ROOF SECTION**  
SCALE: 1:20



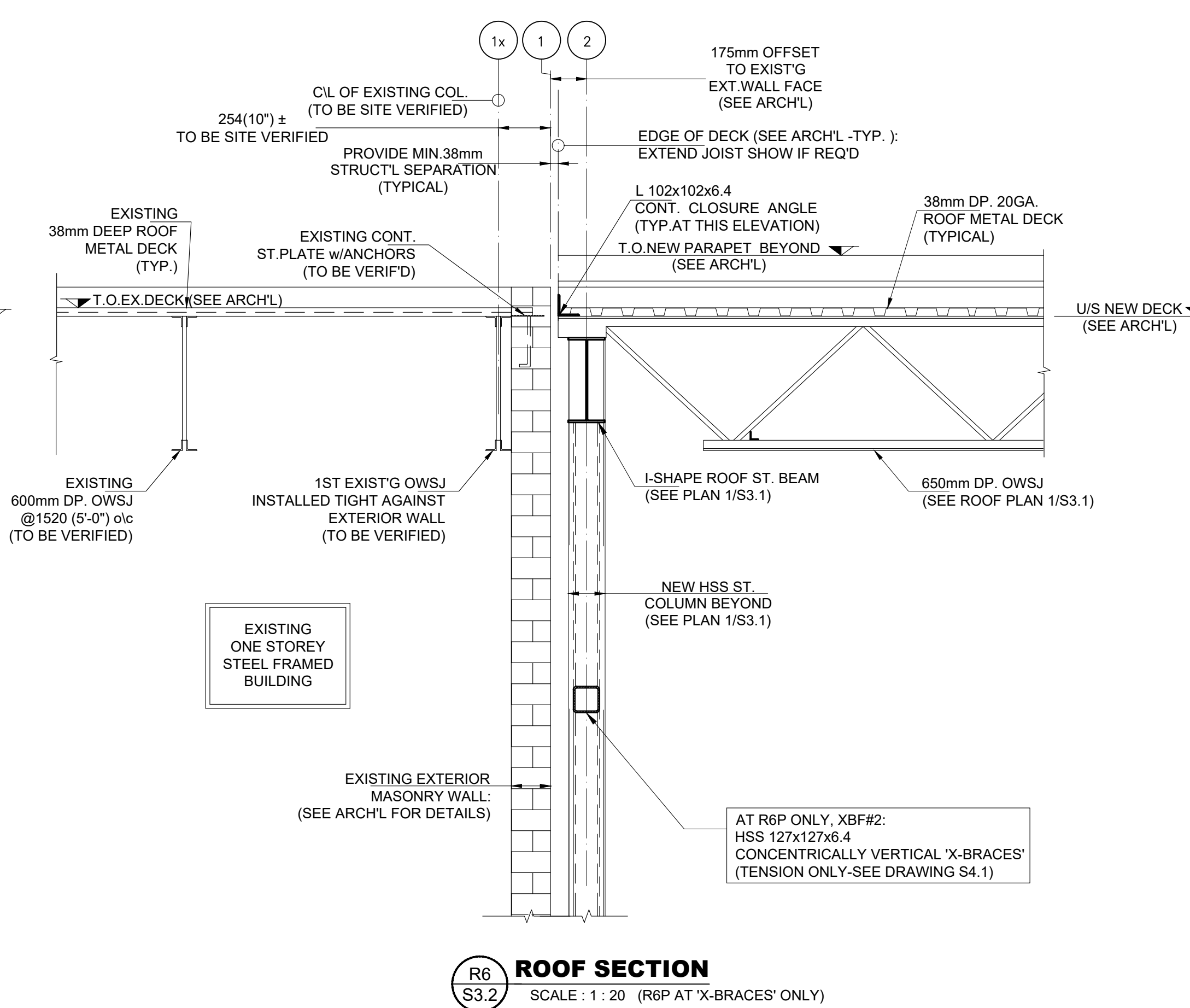
**R4 ROOF SECTION**  
SCALE: 1:20



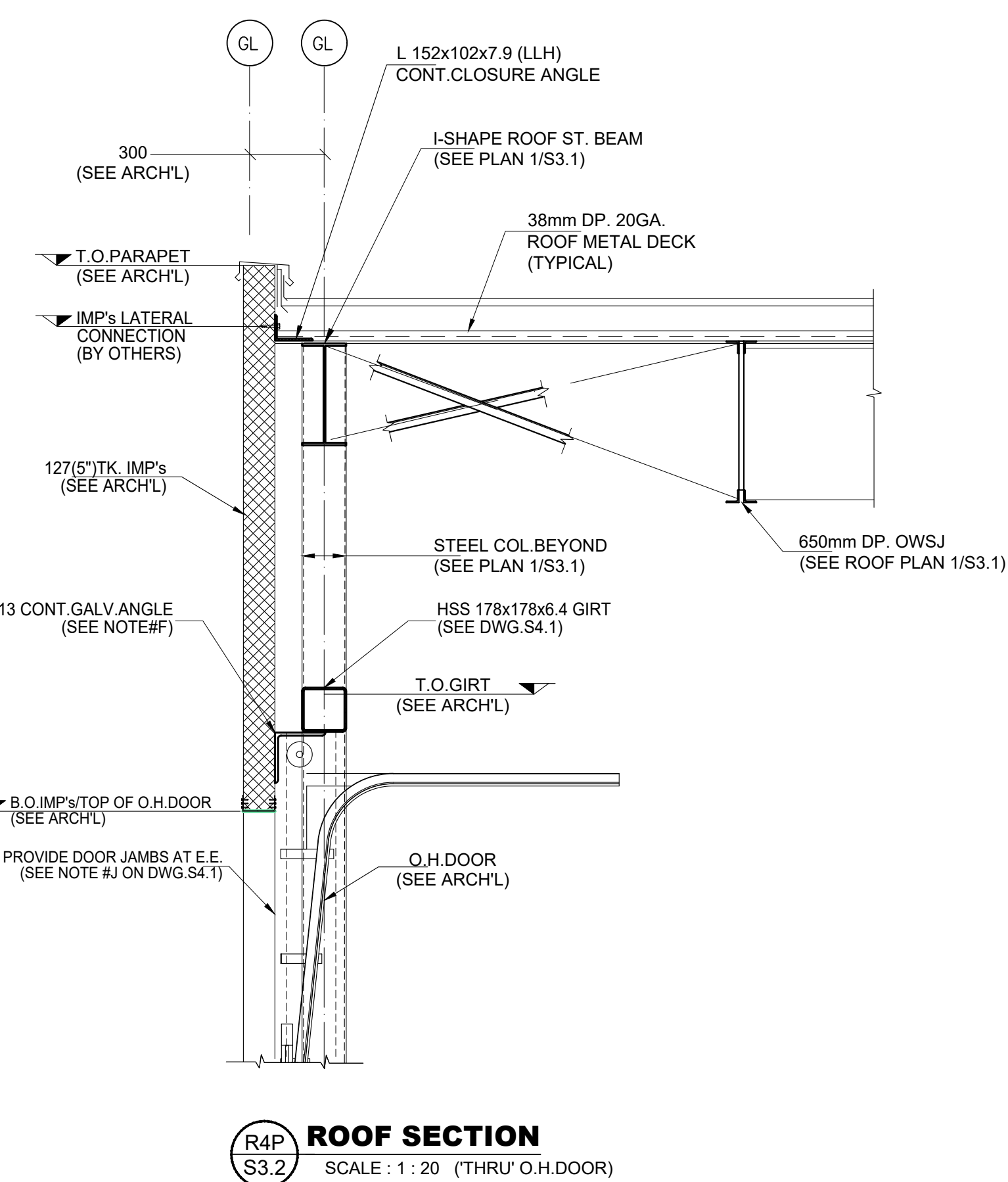
**R1P ROOF SECTION**  
SCALE: 1:20 (THRU O.H. DOOR)



**R5 ROOF SECTION**  
SCALE: 1:20



**R6 ROOF SECTION**  
SCALE: 1:20 (RIP AT X-BRACES ONLY)



**R4P ROOF SECTION**  
SCALE: 1:20 (THRU O.H. DOOR)

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**CONSTRUCTION NOTE #D:**  
CONNECT ROOF BEAM TO EACH JOIST SHOE WITH 2 - 19mm (3/4") Ø A325 BOLTS. EVERYWHERE ELSE PROVIDE LONGITUDINAL WELDS @ 900 (3'-0") c/c MAX-TYPICAL (SEE FASTENING NOTES ON DRAWING S1.1)

**CONSTRUCTION NOTE #E:**  
BRIDGING LINES AS SHOWN ON THESE DRAWINGS ARE FOR GUIDANCE ONLY. GENERAL CONTRACTOR SHALL SUBMIT OWSJ'S SHOP DRAWINGS SEALED BY P.ENG FOR REVIEW AND APPROVAL.

**CONSTRUCTION NOTE#F:**  
SIZE OF ANGLE AND LOCATION SHOWN ARE FOR GUIDANCE AND PRICING ONLY. ANGLE SIZE SHALL BE DESIGNED AND CONFIRMED BY IMP MANUFACTURER TO SUIT THEIR INSTALLATION REQUIREMENTS.

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PROVINCE OF ONTARIO

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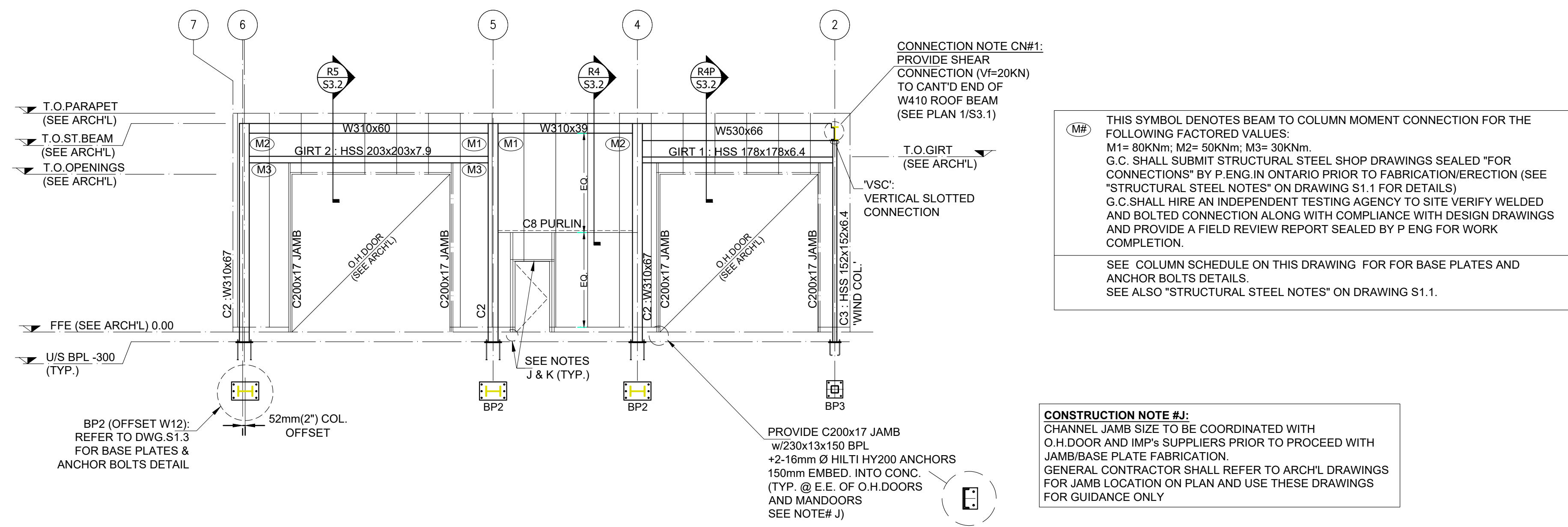
Drawing Title  
**ROOF SECTIONS**

PROJECT NAME  
**ORANGEVILLE OPERATION CENTRE EXPANSION**  
500C LINE, ORANGEVILLE, ONTARIO  
L9W 4Z3

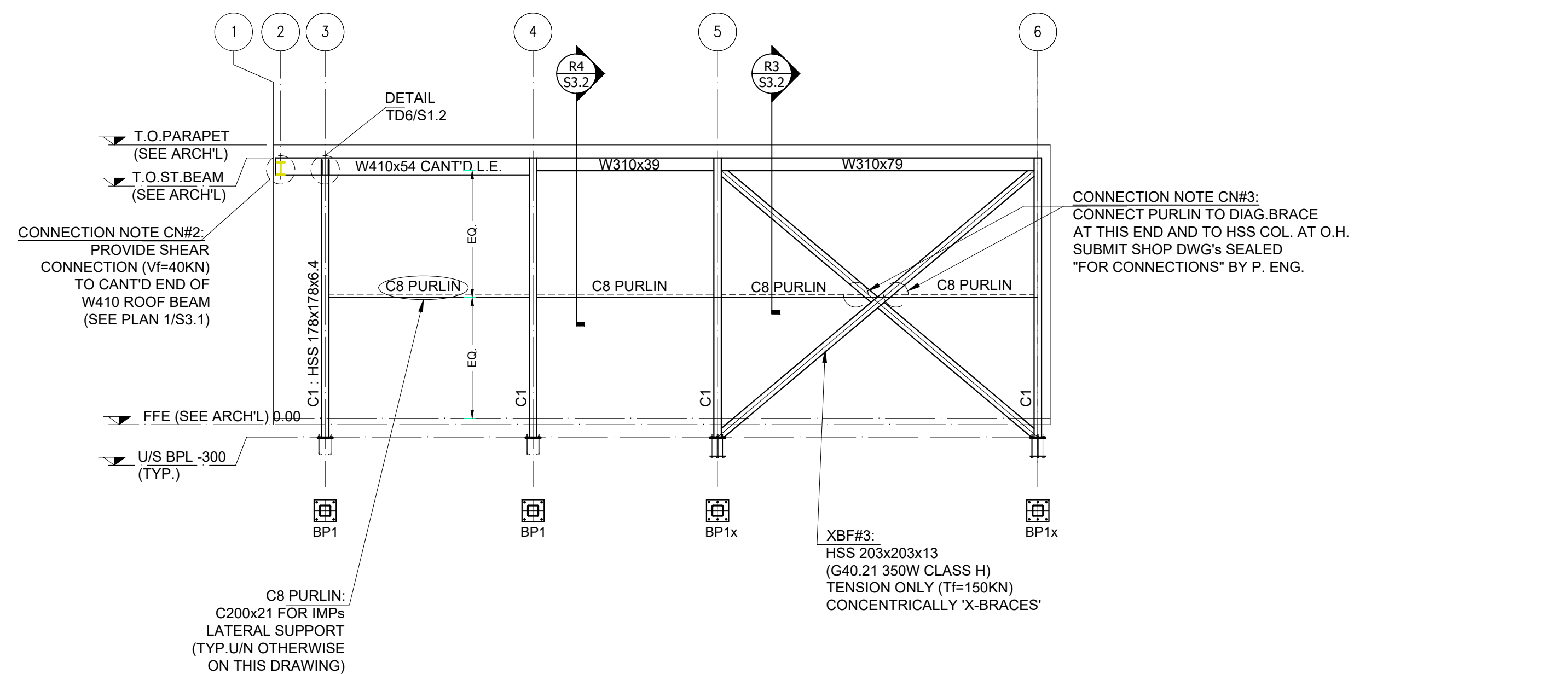
Scale	As Noted	Sheet Number
Issued by	JC	S3.2
Project No	22036	
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		Rev. No 1
'ARCH E1' SIZE		

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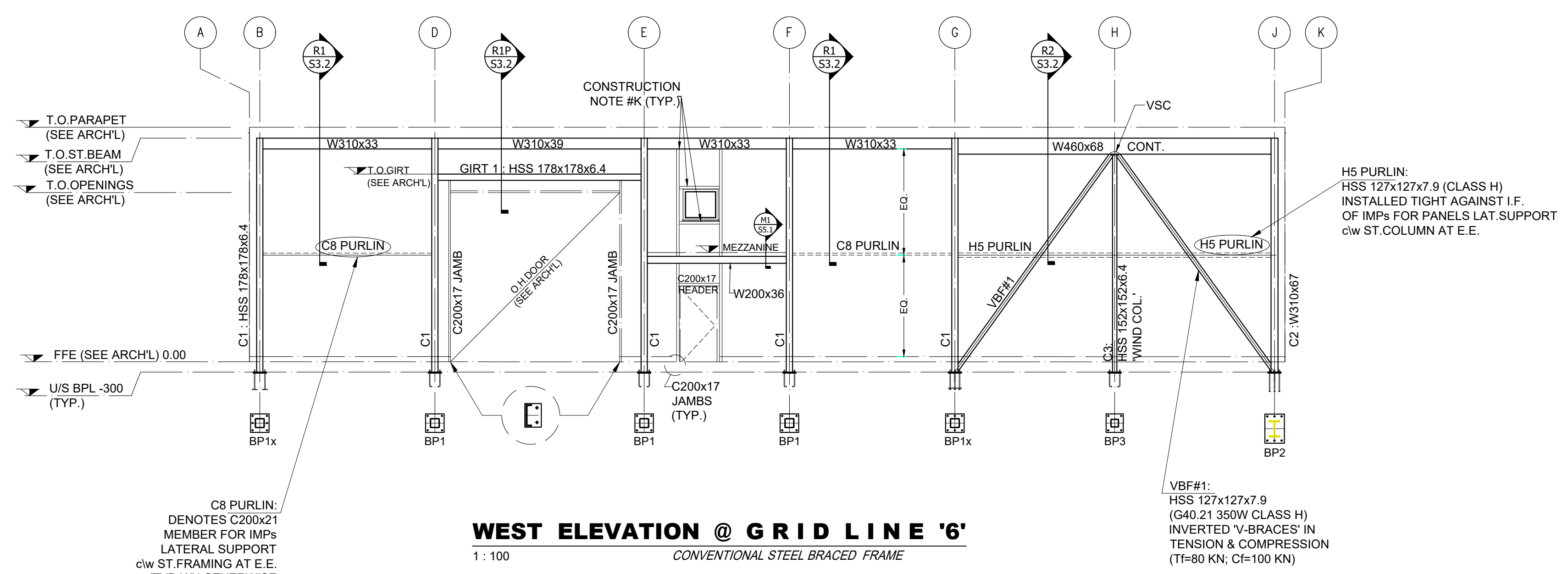
**ISSUED FOR TENDER**



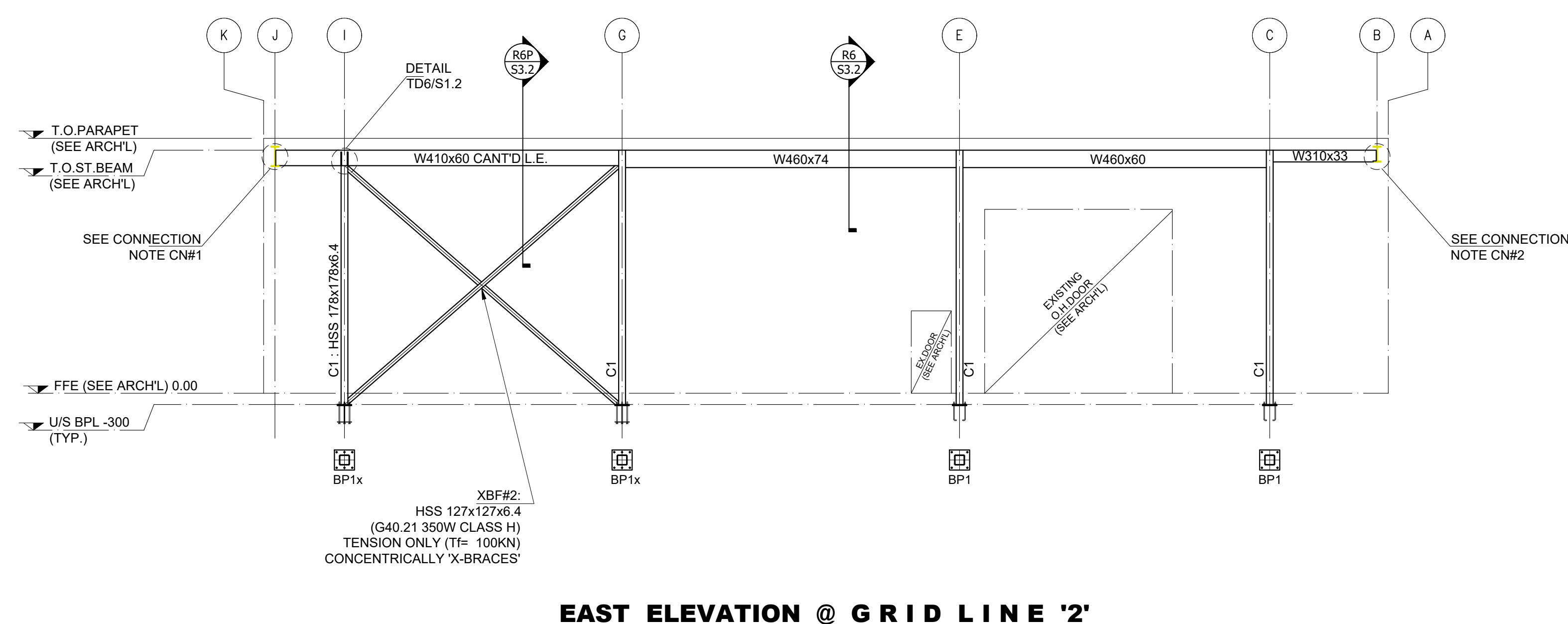
**SOUTH ELEVATION @ GRID LINE 'J'**  
 1:100  
 CONVENTIONAL STEEL MOMENT FRAME



**NORTH ELEVATION @ GRID LINE 'B'**  
 1:100  
 CONVENTIONAL STEEL BRACED FRAME



**WEST ELEVATION @ GRID LINE '6'**  
 1:100  
 CONVENTIONAL STEEL BRACED FRAME



**EAST ELEVATION @ GRID LINE '2'**  
 1:100  
 CONVENTIONAL STEEL BRACED FRAME

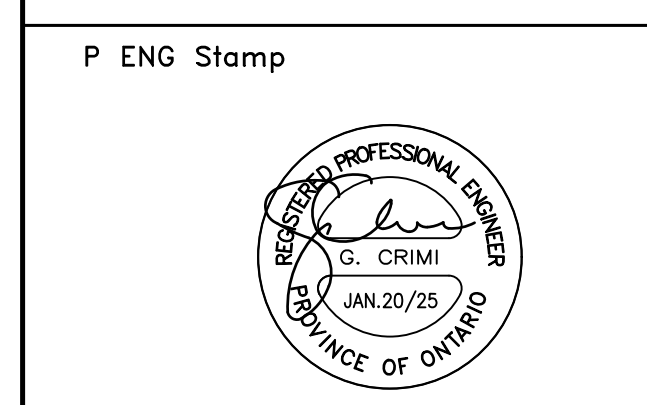
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STEEL COLUMN /BASE PLATE SCHEDULE				
MARK	COLUMN SIZE	BASE PLATE (350W)	ANCHOR BOLTS (F1554 A36)	DETAILS
C1	HSS 178x178x6.4 (HSS 7x7x1/4") G40.21 350 W CLASS C	356x19x356 (14x3/4"x14)	4-19mm Ø AB's MIN 300mm EMBEDMENT +89mm (3 1/2") BOTTOM HOOK	BP1
		380x25x380 (15x1"x15)	6-25mm Ø AB's MIN 550mm EMBEDMENT + 356x25x52 BOTTOM PLATE FOR EACH GROUP OF THREE ANCHORS	BP1x
C2	W310x67 (W12x45) G40.21 350 W	380x38x560 (15x1"12"x22)	6-29mm (1 1/8") Ø AB's x456mm (18") MIN EMBEDMENT HEADED HEX (1 1/16" WIDTH x 11/16" HEIGHT ASTM REGULAR HEAD)	BP2
C3	HSS 152x152x6.4 (HSS 6x6x1/4") G40.21 350 W CLASS C	330x19x203 (13x3/8"x8)	4-19mm Ø AB's MIN.300mm EMBEDMENT +89mm (3 1/2") BOTTOM HOOK	BP3

**CONSTRUCTION NOTES:**  
 i) US BASE PLATE ELEVATIONS AT .300mm BELOW FFE EXCEPT AS SHOWN ON PLAN.  
 G.C./STEEL MANUFACTURER SHALL COORDINATE w/ARCHITECT FOR ELEVATION DATA AND SUBMIT SHOP DRAWINGS SEALED BY P.ENG FOR REVIEW AND APPROVAL;  
 ii) PROVIDE MIN.50mm LEVELLING GROUT AT US BASE PLATES (TYP.);  
 iii) TO OBTAIN NOMINAL RODS LENGTH, ADD TO REQUIRED CONCRETE EMBEDMENT -  
 -ANCHOR PROJECTION, BASE PLATE AND LEVELLING PLATE THICKNESSES, 50mm LEVELLING GROUT.

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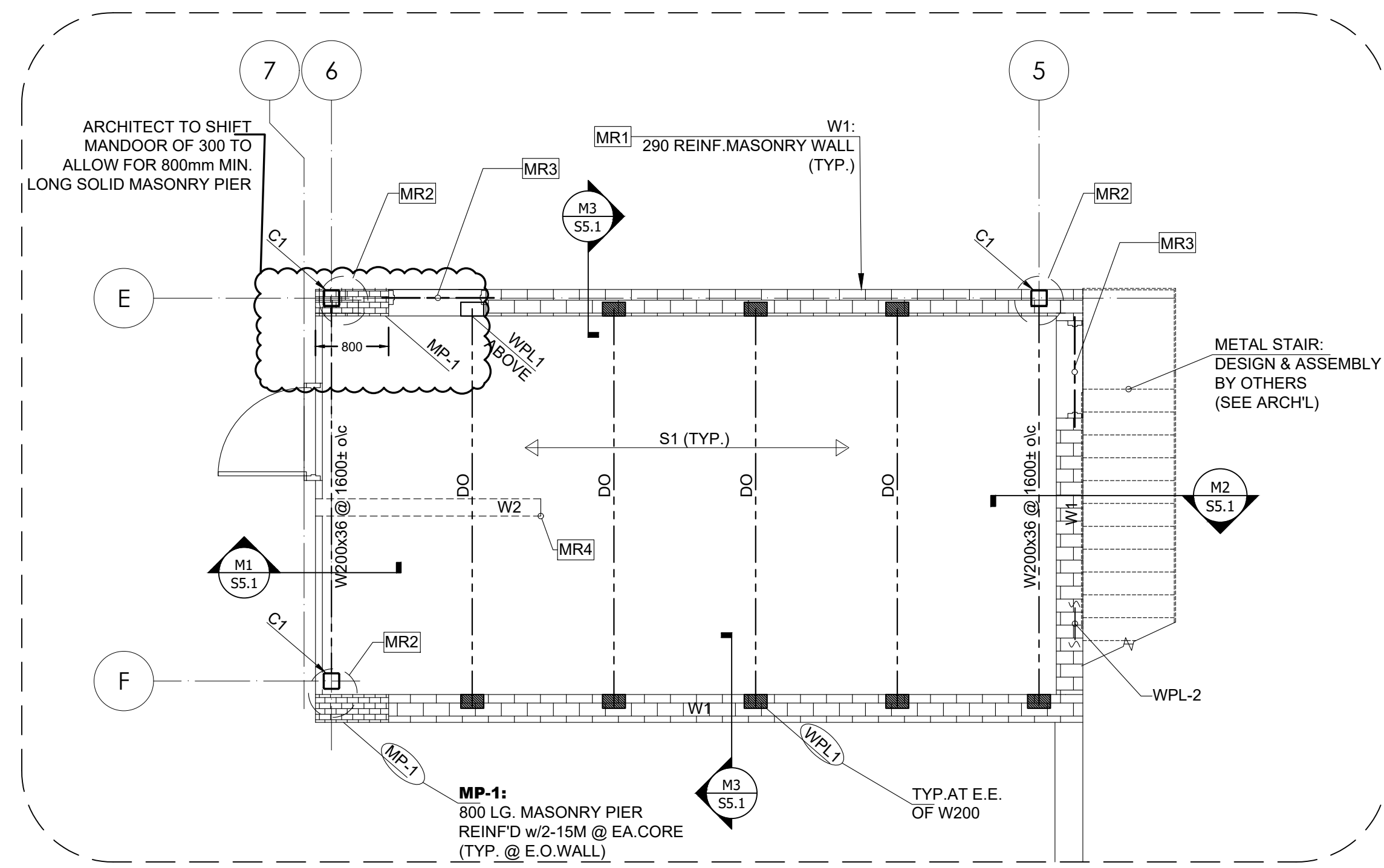


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Drawing Title  
**STRUCTURAL STEEL ELEVATIONS**

PROJECT NAME  
**ORANGEVILLE OPERATION CENTRE EXPANSION**  
**500C LINE, ORANGEVILLE, ONTARIO L9W 4Z3**

Scale	As Noted	Sheet Number
Issued by	JC	S4.1
Project No	22036	
Date	AUG/08/2023	
		Rev. No 1
ARCH E1' SIZE		



**MEZZANINE FRAMING PLAN**  
SCALE: 1:50 (SEE ARCHL FOR FFE ELEVATION)

**MEZZANINE DESIGN LOADING NOTES (OBC'12 & NBC'15-PART 4):**

- DESIGN DEAD LOAD IS 2.30kPa (48.1 PSF) AS COMPOSITE DECK SELF-WEIGHT;
- DESIGN LIVE LOAD IS 4.8kPa (100 PSF) FOR STORAGE.

**MEZZANINE DECK NOTES**

**'S1'** ON FRAMING PLAN DENOTES 76mm DEEP 25MPa CONCRETE SLAB ON 38mm (1 1/2") x 76mm (22GA.) COMPOSITE METAL DECK CONTINUOUS OVER MINIMUM (3) THREE SPANS.

PROVIDE SLAB REINFORCEMENT WITH ONE LAYER OF 152x152 pg 2/pg 2 WWM PLACED IN FLAT SHEETS 25mm FROM TOP OF SLAB.

**DIAPHRAGM FASTENING REQUIREMENTS:**  
AT DECK AREAS PROVIDE:  
TRANSVERSE WELDS EVERY OTHER FLUTE;  
BUTTON PUNCH SIDE LAPS @ 610mm (24") o/c;  
LONGITUDINAL WELDS @ 914mm (3'-0") o/c MAX.  
DIAPHRAGM & THEIR CONNECTIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH OBC'12 ART. 4.1.8.15 & CSA S16-14 REQUIREMENTS.

STEEL DECK TO BE INSTALLED IN ACCORDANCE WITH RECOMMENDATIONS OF THE CANADIAN SHEET STEEL BUILDING INSTITUTE. SUBMIT SHOP DRAWINGS SEALED BY PRIOR TO INSTALLATION (SEE ALSO 'METAL DECK NOTES' ON DRAWING S1.1 FOR SPEC'S & DETAILS).

**MR1 CONSTRUCTION NOTE #MR1 (MASONRY SHEAR WALLS):**  
a) MASONRY WALLS SHALL BE REINFORCED WITH 15M VERTICALS AT EVERY OTHER CORE AND GALVANIZED HORIZONTAL LADDER TYPE REINFORCING AT EVERY OTHER COURSE;

b) MASONRY WALLS ON PLAN SHALL FOLLOW ARCHL DRAWINGS AND EXTEND TO UNDERSIDE OF COMPOSITE METAL DECK. GENERAL CONTRACTOR SHALL PROVIDE LATERAL SUPPORT AT TOP OF WALL IN ACCORDANCE WITH TYPICAL DETAIL TD17/S1.2; (SEE NOTE # MR1 FOR REINFORCING)

c) GENERAL CONTRACTOR SHALL COMPLY WITH "MASONRY NOTES" AS SHOWN ON DRAWING S1.1;

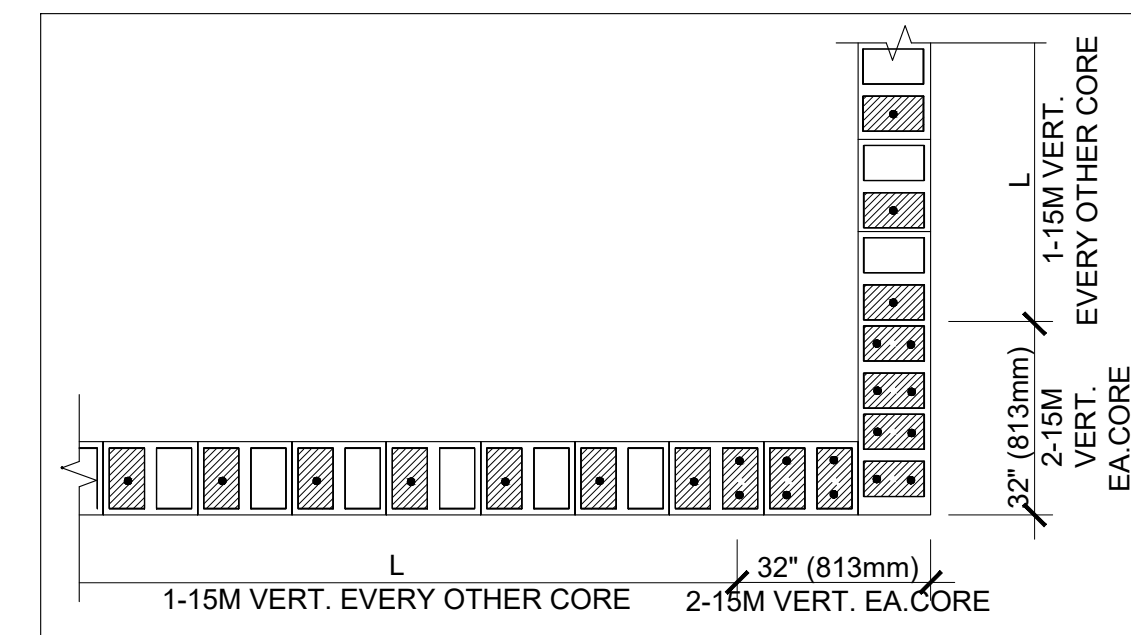
d) GENERAL CONTRACTOR SHALL REFER TO ARCHL DRAWINGS FOR TOP OF WALL ELEVATION. WALL EXTENT AS SHOWN ON THIS PLAN IS FOR GUIDANCE ONLY.

**MR2 CONSTRUCTION NOTE #MR2 (REQUIREMENT FOR METAL STRAP ANCHORS):**  
PROVIDE METAL STRAP ANCHORS AS PER TYPICAL DETAIL TD-4/S1.2 (TYPICAL AT MASONRY TO HSS STEEL COLUMN INTERFACE)

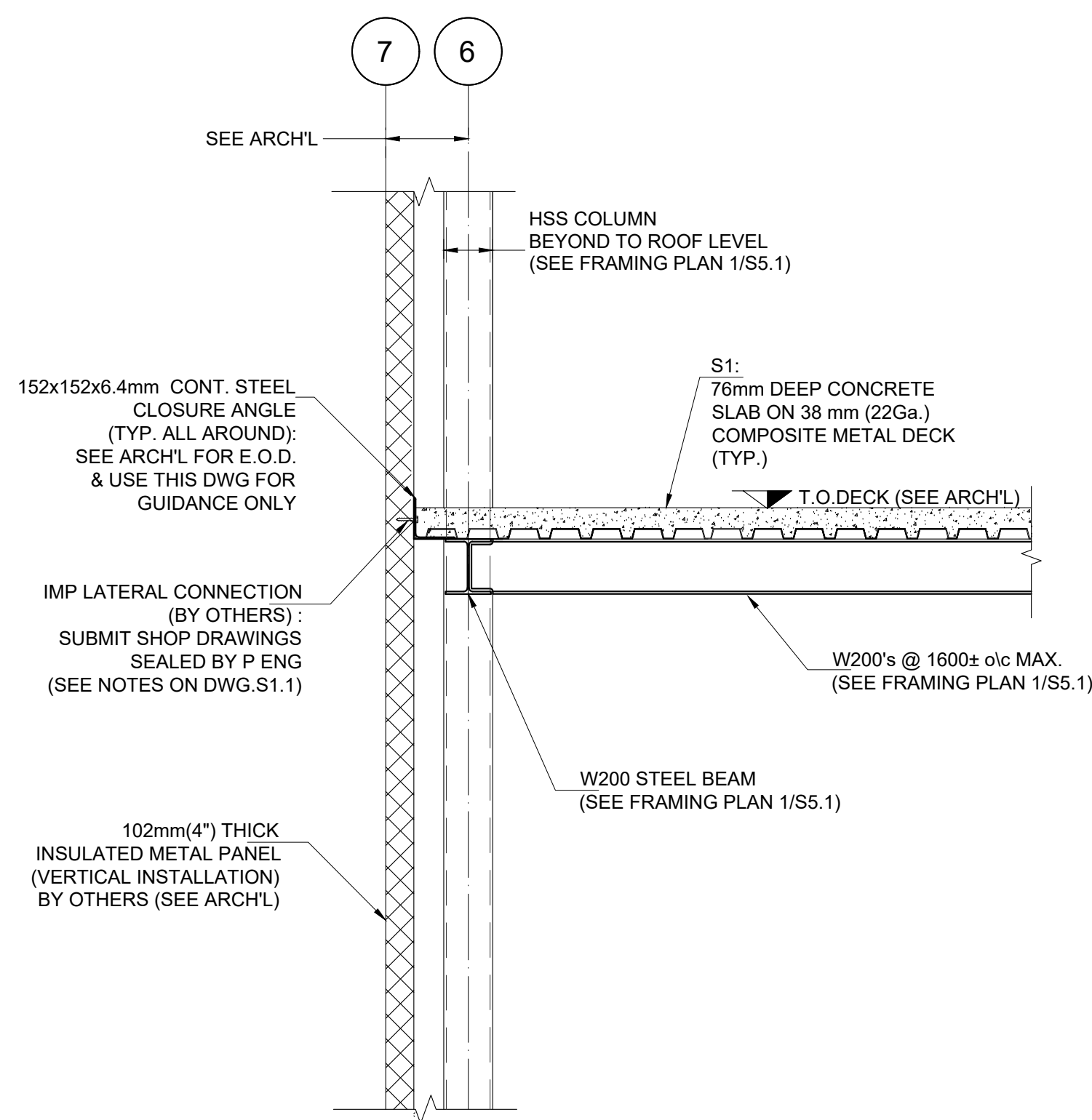
**MR3 CONSTRUCTION NOTE #MR3 (STEEL LINTEL THRU MASONRY WALL):**  
PROVIDE STEEL LINTEL AS PER TYPICAL DETAIL TD-3/S1.2 WITH MINIMUM 150mm BEARING AT EACH END.

**MR4 CONSTRUCTION NOTE #MR4 (REQUIREMENT FOR PARTITIONS TOP LATERAL CONNECTION):**  
PROVIDE CONNECTION TO U/S DECK AS PER TYPICAL DETAIL TD-17/S1.2 (TYPICAL AT MASONRY PARTITION TO U/S DECK INTERFACE)

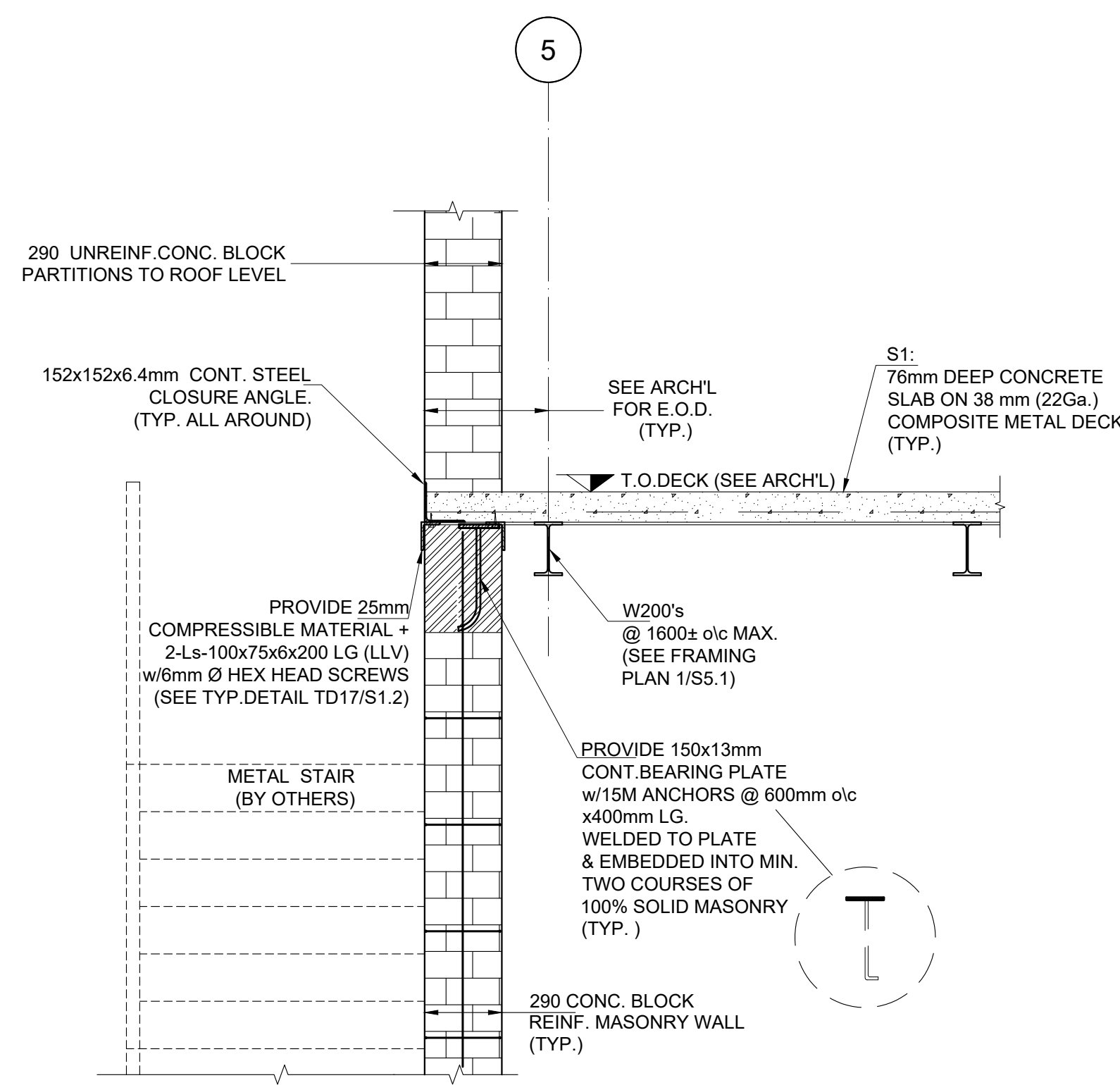
MASONRY WALL LEGEND	
	W1: 290mm CONCRETE BLOCK MASONRY SHEAR WALL TO ROOF LEVEL (SEE NOTE # MR1 FOR REINFORCING)
	W2: 190mm UNREINFORCED CONCRETE BLOCK PARTITION WALL TO U/S OF DECK LEVEL (SEE NOTE # MR4)
WALL PLATE SCHEDULE (300W)	
	WPL-1: ON PLAN DENOTES 250x19x150 WALL PLATE +2-15M WELDABLE RODS 400mm LG. ONTO MIN. TWO COURSES OF 100% SOLID MASONRY
	WPL-2: 150x13mm CONTINUOUS BEARING PLATE w/15M WELDABLE RODS @ 600mm o/c x400mm LG.



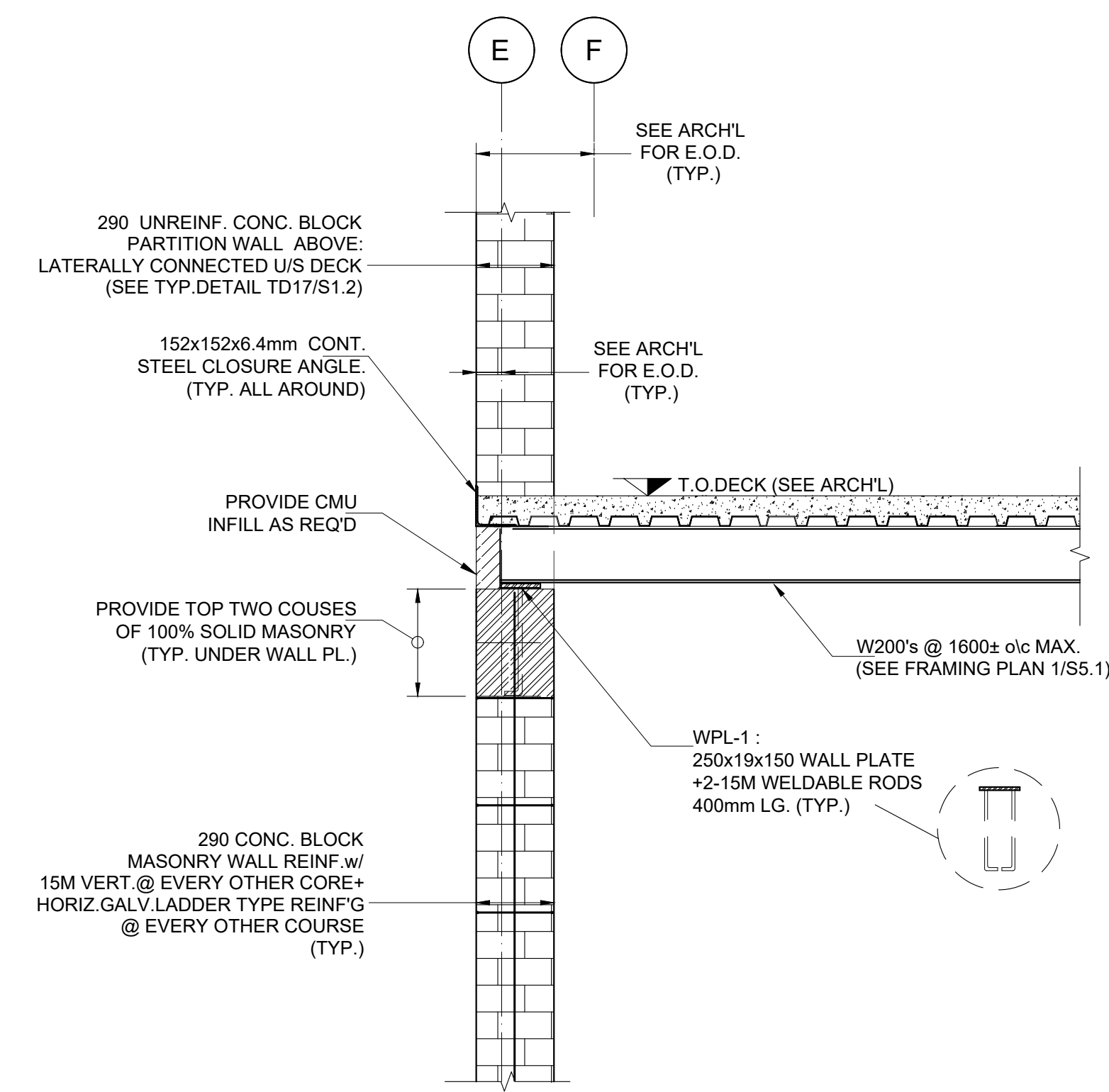
**TYPICAL REINFORCING @ CORNER WALL**  
(N.T.S.)



**SECTION M1 S5.1**  
SCALE: 1:20

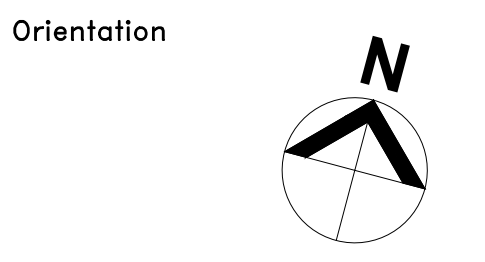


**SECTION M2 S5.1**  
SCALE: 1:20



**SECTION M3 S5.1**  
SCALE: 1:20

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Drawing Title  
**MEZZANINE FRAMING PLAN & SECTIONS**

PROJECT NAME  
**ORANGEVILLE OPERATION CENTRE EXPANSION 500C LINE, ORANGEVILLE, ONTARIO L9W 4Z3**

Scale	As Noted	Sheet Number
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Project No	22036	
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'ARCH E1' SIZE