ITEM	ONTARIO BUILDING CODE DATA MATRIX PARTS 3 & 9											OBC REFERENCE	
1	PROJECT DESCRIPTION: WAREHOUSE FIT-UP **ADDITION OF 1 GARAGE BAY TO EXISITNG REPAIR GARAGE**				☐ NEW ■ ADDITION ☐ CHANGE OF USE		☐ ALTERATION		☐ PART 11 11.1 TO 11.4			☐ PART 3	☐ PART 9 **1.1.2.4 [A]**
2	MAJOR OCCUPANCY(S) **F2- REPAIR GARAGE**												**1.4.1.2 [A]**
3	BUILDING AREA (m2)		EXISTING: **410.45**		NEW: **92.80**		TOTAL: **503.25**						9.10.2
4	GROSS AREA		EXISTING: **484.68**		NEW: **92.80**		TOTAL: **577.48**						1.4.1.2.[A]
5	NUMBER OF STOREYS		ABOVE GRADE: **2**				BELOW GRADE: **0**						**1.4.1.2. [A] & 9.10.4**
6	HEIGHT OF BUILDING (m): **5.71m**												2.1.1.3
7	NUMBER OF STREETS/ACCESS ROUTES:												**9.10.20**
8	BUILDING CLASSIFICATION: **F2**												**9.10.2**
9	SPRINKLER SYSTEM PROPOSED				☐ ENTIRE BUILDING (EXIST) ☐ BASEMENT ONLY ☐ IN LIEU OF ROOF RATING ■ NOT REQUIRED								9.10.8
10	STANDPIPE REQUIRED				☐ YES		■ NO						**N/A**
11	FIRE ALARM REQUIRED				☐ YES		■ NO						**9.10.18**
12	WATER SERVICE/SUPPLY IS ADEQUATE				■ YES		☐ NO						**N/A**
13	HIGH BUILDING				☐ YES		■ NO						**N/A**
14	PERMITTED CONSTRUCTION ACTUAL CONSTRUCTION				■ COMBUSTIBLE ■ COMBUSTIBLE		☐ NON COMBUSTIBLE ☐ NON COMBUSTIBLE		☐ BOTH ☐ BOTH				9.10.6
15	MEZZANINE(S) AREA m2: N/A												9.10.4.1
16	OCCUPANT LOAD BASED ON BASEMENT: OCCUPANCY 1ST FLOOR: OCCUPANCY **F2** 2ND FLOOR: OCCUPANCY **F2**				☐ m2 / PERSON				☐ DESIGN OF BUILDING LOAD **N/A** PERSONS LOAD **11** PERSONS LOAD **2** PERSONS				9.9.1.3
17	BARRIER FREE DESIGN				■ YES		☐ NO		EXPLAIN:				9.5.2
18	HAZARDOUS SUBSTANCES				☐ YES		☐ NO						9.10.1.3
19	REQUIRED FIRE RESISTANCE RATING (FRR)	HORIZONTAL ASSEMBLIES FRR (HOURS)							LISTED DESIGN NO. OR DESCRIPTION (SG-2)				9.10.8 9.10.9
		FLOORS **45** MIN											
		ROOF **N/A** HOURS											
		MEZZANINE **N/A** HOURS											
		FRR OF SUPPORTING MEMBERS							LISTED DESIGN NO. OR DESCRIPTION (SG-2)				
		FLOORS **45** HOURS											
		ROOF **N/A** HOURS											
		MEZZANINE **N/A** HOURS											
20	PLUMBING FIXTURE REQUIREMENTS												
	MALE / FEMALE COUNT @ 50% / 50% EXEPT AS NOTED OTHERWISE				OCCUPANT LOAD		BC TABLE NUMBER		FIX. REQ'D		FIX. PROV'D		
	WOMEN				**7**		**3.7.4.9**		**1**		**1**		
	MEN				**7**		**3.7.4.9**		**1**		**2**		
	BARRIER FREE												
21	SPATIAL SEPARATION - CONSTRUCTION OF EXTERIOR WALLS												9.10.14
	WALL	AREA OF EBF (m2)	L.D. (m)	L/H OR H/L	PERMITTED MAX % OF OPENINGS	PROPOSED % OF OPENINGS	FRR (HOURS)	LISTED DESIGN OR DESCRIPTION	COMB. CONST	COMB. CONST. NONC. CLADDING	NON-COMBST. CONSTR.		
	NORTH	**5.48**	**123.46**		**N/A**		**N/A**		■				
	EAST	**3.81**	**N/A**		**N/A**		**N/A**		■				
	SOUTH	**108.60**	**66.55**		**N/A**		**N/A**		■				
	WEST	**2.14**	**26.25**		**N/A**		**N/A**		■				
22	OTHER - DESCRIBE												

NOTE: RENDERINGS FOR VISUAL REPRESENTATION ONLY. REFER TO FLOOR LAYOUTS AND ELEVATIONS FOR FINAL.

1 / A.0 SITE LOCATION MAP
SCALE: N.T.S.

240 COUNTY ROAD 4, BATH, ONTARIO K0H 1G0

DRAWING LIST

ARCHITECTURAL

A.0	COVER SHEET
A.0a	GENERAL NOTES
A.0b	STANDARD DETAILS
A.1	SITE PLAN
D.1	DEMOLITION PLAN
A.2	FOOTING/ FOUNDATION PLAN
A.3	MAIN FLOOR/ UPPER FLOOR PLAN
A.3.1	REFLECTED CEILING PLANS
A.4	ROOF PLAN/ WINDOW ELEVATIONS
A.5	BUILDING SECTIONS
A.6	ELEVATIONS

CIVIL

C1	SITE SERVICING PLAN
C2	EXISTING & PROPOSED SEPTIC SYSTEMS
C3	GRADING PLAN
C4	EROSION SEDIMENT CONTROL PLAN
C5	NOTES AND DETAILS
C6	DETAILS
C7	POST-DEVELOPMENT DRAINAGE PLANS

STRUCTURAL

S001	GENERAL NOTES & DESIGN CRITERIA
S002	GENERAL NOTES & DESIGN CRITERIA
S003	GENERAL NOTES & DESIGN CRITERIA
S101	PLANS & TYPICAL DETAILS
S201	SECTION DETAILS

ELECTRICAL

E-1	ELECTRICAL LEGENDS AND DETAILS
E-2	GROUND FLOOR DEMOLITION & NEW WORK
E-3	ELECTRICAL SPECIFICATIONS

MECHANICAL

M-1	MECHANICAL LEGEND, EGENERAL NOTES, KEY PLAN & DRAWING LIST
M-2	MECHANICAL - PLUMBING
M-3	MECHANICAL - HVAC SYSTEMS
M-4	MECHANICAL SPECIFICATIONS

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PERMIT SET

NOTES:
REFER TO GENERAL NOTES FOR ALL TYPICAL CONSTRUCTION NOTES & DETAILS. WHEN DRAWINGS OR NOTES REFERENCE O.B.C. IN ALL CASES PLEASE REFER TO THE LATEST VERSION OF THE ONTARIO BUILDING CODE 2024.

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH EACH OTHER, SPECIFICATIONS & OTHER CONTRACT DOCUMENTS

LEGEND:
(1) EXTERIOR DOOR & WINDOW TAG (SEE SCHEDULE)
(1) INTERIOR DOOR TAG (SEE SCHEDULE)
W1 EXTERIOR WALL TYPE (SEE A.0.a)
P1 INTERIOR PARTITION WALL TYPE (SEE A.0.a)

LEGEND:
F1 FLOOR TYPE (SEE A.0.a)
R1 ROOF TYPE (SEE A.0.a)
P1 POST TYPE (SEE A.0.a)
L1 LINTEL TYPE (SEE A.0.a)
F1 PAD FOOTING TYPE (SEE A.0.a)
WF1 WALL FOOTING TYPE (SEE A.0.a)
(1) CONSTRUCTION NOTE

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613-629-6088
+ 120 Terence Matthews Cres.
Unit B1, Ottawa, ON K2M 1P7
613-831-9688
+ info@bell.ca
bellarchitecture.ca

VERSION NO. 2

SEAL:

NOTES:
- ALL CONTRACTORS MUST COMPLY WITH ALL CODES & BYLAWS HAVING JURISDICTION
- IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK & VERIFY ALL DIMENSIONS ON SITE & REPORT ALL ERRORS AND/OR OMISSIONS TO THE DESIGNER PRIOR TO COMMENCEMENT
- DO NOT SCALE DRAWINGS.
- DRAWINGS MAY NOT BE USED FOR CONSTRUCTION UNTIL NOTED AS ISSUED FOR CONSTRUCTION.

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REVISIONS

NO	ITEM	DATE
1	ISSUED FOR 25%	31/10/2023
2	ISSUED FOR 50%	07/12/2023
3	ISSUED FOR FINAL REVIEW	15/05/2024
4	ISSUED FOR PERMIT	05/19//2026

PROJECT
240 COUNTY ROAD 4, BATH, ON K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN GARAGE STORAGE EXPANSION

DRAWING
COVER SHEET

SCALE	AS INDICATED
DRAWN BY	ETV
DATE	SEPT. 12, 2023
CHKED BY	TJG
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO. A.0

GENERAL NOTES

1. THE DESIGN & CONSTRUCTION OF THIS PROJECT IS TO CONFORM TO THE REQUIREMENTS OF THE NATIONAL BUILDING CODE OF CANADA (2015), ONTARIO BUILDING CODE (2024) & THE CSA STANDARDS INDICATED THEREIN. THE LATEST REVISIONS TO ALL STANDARDS WILL GOVERN.
2. THE CONTRACTOR & SUB CONTRACTOR SHALL CHECK & VERIFY ALL CONDITIONS & MEASUREMENTS AT THE SITE AND REPORT ANY DISCREPANCIES OR UNSATISFACTORY CONDITIONS WHICH MAY ADVERSELY AFFECT THE PROPER COMPLETION OF THE WORK IMEDIATELY TO THE ENGINEER AND/OR PROJECT CO-ORDINATOR PRIOR TO PROCEEDING WITH THE WORK. WHEN IN DOUBT, THE ARCHITECTURAL DRAWINGS WILL GOVERN.
3. THE CONTRACTORS SHALL BE RESPONSIBLE FOR ANY DEWATERING REQUIRED TO UNDERTAKE THE WORK.
4. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATIONS & OTHER CONTRACT DOCUMENTS.
5. NOTIFY BELL + ASSOCIATES ARCHITECTURE IMMEDIATELY UPON DISCOVERY OF ANY DISCREPANCIES WITH DIMENSIONS, ELEVATIONS ANGLES & WORK POINTS.
7. DO NOT SCALE DRAWINGS.
8. MECHANICAL VENTILATION TO CONFORM TO O.B.C. 2024 9.32.3
9. GROUT ALL BEAM POCKETS SOLID WITH NON SHRINK GOUT
10. CARRY ALL POST LOAD DOWN TO FOUNDATION OR SUITABLE BEARING PROVIDE SOLID WOOD BLOCKING WHERE REQUIRED.
11. ALL BEAMS SECURED TO COLUMNS
12. SECURE ALL HOT WATER TANKS TO STRUCTURE.
13. PROVIDE TRAP SEAL PRIMER IN ALL BASEMENT FLOOR DRAINS.
14. GUARDS AND RAILS TO BE MIN 36" OR 42" ABOVE FLOOR/NOSING AS PER OBC 9.8.8/9B-7.

STRUCTURAL NOTES

1. THIS STRUCTURE IS DESIGNED IN ACCORDANCE WITH PART 9 OF THE 2024 ONTARIO BUILDING CODE.
2. ALL CONSTRUCTION NOT EXPLICITLY FOUND ON DRAWINGS TO BE DONE IN ACCORDANCE WITH PART 9 O.B.C. 2024.
3. DESIGN ALLOWABLE BEARING CAPACITY ASSUMED TO BE 100kPa MIN. TO BE CONFIRMED BY OTHERS.
4. CONTRACTOR TO VERIFY ALL DIMENSIONS AND DETAILS GIVEN ON DRAWINGS AND REPORT ANY INCONSISTENCIES AND/OR DISCREPANCIES TO ENGINEER BEFORE PROCEEDING WITH WORK.
5. DRAWINGS ILLUSTRATE WORK TO BE DONE. ENGINEER IS NOT RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES OR SAFETY ASPECTS INVOLVED IN COMPLETING THE WORK.
6. ALL MATERIALS SHALL BE NEW AND MATERIAL FREE FROM DEFECTS IMPAIRING STRENGTH, DURABILITY AND/OR APPEARANCE.
7. ALL WOOD SHALL BE SPF NO. 1-2 OR BETTER
8. ALL STEEL SHALL BE GRADE 350W STEEL CONFORMING TO CSA-G40.20/G40.21 (Fy = 345 MPa)
9. PROVIDE FULL BEARING /SOLID BLOCKING UNDERNEATH ALL POINT LOADS FROM ABOVE TO STRUCTURE BELOW.
10. PROVIDE FULL LATERAL RESTRAINT TO THE TOP OF ALL WOOD AND STEEL BEAMS AND LINTELS.
11. BACKFILLING TO PROCEED SIMULTANEOUSLY ON BOTH SIDES OF FOUNDATION WALLS.
12. PROVIDE MINIMUM FROST PROTECTION OF 5'-0" TO U/S OF ALL HEATED FOOTINGS AND 6'-0" TO U/S OF ALL UNHEATED FOOTINGS
13. ALL POSTS TO BE P2 (2-2x4 or 2-2x6 SEE WALL TYPE) SPRUCE UNLESS NOTED OTHERWISE.
14. PROVIDE MIN 4"x4"x1/4" END BEARING PLATE @ TOP AND BOTTOM OF ALL STEEL POSTS.
15. SECURE ALL POSTS TO BEAMS TO PREVENT LATERAL DISPLACEMENT.
16. WELD OR BOLT STEEL POSTS TO STEEL BEAMS.
17. ANCHOR BOLTS SPACED 4'-0" MAX. UNLESS NOTED OTHERWISE ON DRAWINGS.
18. CONSULTING ENGINEERS WILL NOT BE LIABLE FOR ANY CONSTRUCTION NOT INSPECTED OR REVIEWED.

GENERAL CONSTRUCTION ASSEMBLY NOTES:

1. PROVIDE MOISTURE RESISTANT GYPSUM BOARD IN ALL WET AREAS, WASHROOM CEILINGS AND WASHROOM WALLS. CEMENT BOARD TO BE USED ON ALL TUB DECKS AND SHOWER ENCLOSURES.
2. PROVIDE TYPE S ROLL ROOFING ISOLATION MEMBRANE BETWEEN CONCRETE BELOW GRADE AND WOOD FRAMING OR INSULATION.
3. REFER TO STRUCTURAL NOTES, FOOTING SCHEDULES AND DETAILS FOR CONCRETE WALL / FOOTING REINFORCING.
4. PROVIDE CEMENT PARGING TO 12" BELOW GRADE ON ALL EXPOSED CONCRETE FOUNDATION WALLS.
5. INTERIOR WOOD FRAMED PARTITIONS USE 2"x4" STUDS UNLESS OTHERWISE NOTED. EXTERIOR WALLS USE 2"x6" STUDS UNLESS OTHERWISE NOTED. FRAMING SPACED AT 16" O.C. UNLESS OTHERWISE NOTED.
6. LAP & SEAL ALL JOINTS IN POLYETHYLENE VAPOUR BARRIER.
7. ALL GYPSUM BOARD WALLS AND CEILINGS TAPED AND SANDED FOR PAINT OR SPECIFIED INTERIOR FINISH.
8. REFER TO DRAWINGS FOR THICKNESS OF POURED CONCRETE FOUNDATION WALLS.
9. TAPE & SEAL ALL JOINTS IN AIR / MOISTURE BARRIER. PROVIDE AIR SEAL TO ALL OPENINGS IN ACCORDANCE WITH DETAILS.
10. PROVIDE BRICK TIES AND WEEP VENT HOLES IN MASONRY VENEER PER O.B.C. 9.20.13
11. REFER TO ELEVATIONS FOR ORIENTATION OF PRE-FINISHED SIDING (VERTICAL BOARD & BATTEN, HORIZONTAL SIDING, OR SHAKES).
12. ENSURE A FUME PROOF BARRIER BETWEEN GARAGE WALL AND INTERIOR SPACES.
13. CERAMIC TILE ON ALL TUB AREAS WALLS TO UNDERSIDE OF BULKHEAD.
14. PROVIDE SOILS REPORT TO INSPECTOR AT TIME OF INSPECTION STATED MIN. BEARING CAPACITY 100 KPA.

FOUNDATIONS

1. ALL FOOTINGS TO BEAR ON SOUND & UNDISTURBED SOIL WITH AN ALLOWABLE BEARING VALUE OF 100 kPa MIN. BEARING SURFACE TO BE APPROVED BY GEOTECHNICAL ENGINEER BEFORE PLACING CONCRETE.
2. PROTECT SUB-GRADE FROM WATER & FREEZING ADJACENT TO & BELOW ALL FOOTINGS AT ALL TIMES DURING CONSTRUCTION.
3. PROVIDE 1500mm (5'-0") MINIMUM FROST COVER (FINISHED GRADE TO U/S FOOTING) FOR HEATED FOOTINGS. CONSULT SOIL REPORT NOTED FOR ADDITIONAL REQUIREMENTS.
4. BACKFILLING TO PROCEED SIMULTANEOUSLY ON BOTH SIDES OF FOUNDATION WALLS (EXCEPT WHERE TEMPORARY SUPPORT FOR THE WALL IS PROVIDED), & COMPACTED IN LAYERS AS SPECIFIED BY GEOTECHNICAL ENGINEER.
5. CONSULT GEOTECHNICAL ENGINEER FOR COMPOSITION & COMPACTION OF FILL SUPPORTING SLAB ON GRADE

CONCRETE

1. THE DESIGN AND CONSTRUCTION OF CONCRETE IS TO CONFORM TO THE REQUIREMENTS OF THE FOLLOWING STANDARDS (INCLUDING LATEST REVISIONS):
   - CONCRETE MATERIALS & METHODS OF CONCRETE CONSTRUCTION CAN3-A23.1-94
   - METHODS OF TEST FOR CONCRETE: CAN3-A23.2-94
   - CODE FOR DESIGN OF CONCRETE STRUCTURES FOR BUILDINGS CAN3-A23.3-M84
   - BILLET STEEL BARS FOR CONCRETE REINFORCEMENT Fy = 400MPa TO CSA G30.18-92
   - QUALIFICATION CODES FOR TESTING LABORATORIES CSA A283-90
   - AIR ENTRAINING ADMIXTURES FOR CONCRETE CAN3-A266.1-M78
   - CHEMICAL ADMIXTURES FOR CONCRETE CAN3-A266.2-M78
   - GUIDELINES FOR THE USE OF ADMIXTURES IN CONCRETE CAN3 A266.4 M78

2. CONCRETE STRENGTH (AFTER 28 DAYS) SHALL BE AS FOLLOWS (OR AS STATED ON ENGINEER DRAWINGS):

FOOTINGS & FOUNDATION WALL	20 MPa
SLAB-ON-GRADE	25 MPa
GARAGE SLAB	32 MPa
EXTERIOR FLAT WORK	32 MPa

WOOD FRAMING

1. ALL TIMBER CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE 2015 N.B.C., LATEST REVISIONS.
2. ALL STRUCTURAL FRAMING LUMBER IS TO BE SPF NO. 2 GRADE OR BETTER, UNLESS NOTED. 'STUD' GRADE IS NOT ACCEPTABLE FOR BEARING WALLS, LINTELS AND POSTS.
3. ALL BEARING WALLS ARE TO HAVE HORIZONTAL BLOCKING AT MID HEIGHT.
4. ALL LOAD BEARING WALLS OVER 9'-0" TO 11'-10" MAX. TO HAVE CONTINUOUS HORIZONTAL BLOCKING AT MID POINT. ALL LOAD BEARING WALLS OVER 12'-0" TO HAVE CONTINUOUS HORIZONTAL BLOCKING AT THIRD POINTS & STRUCTURAL ENGINEERS APPROVAL.
5. PROVIDE SOLID BLOCKING WALL REINFORCEMENT FOR GRAB BARS AS PER 9.5.2.3. OF O.B.C.
6. ALL BEAMS REQUIRE RESTRAINT AGAINST LATERAL DISPLACEMENT & ROTATION AT THE POINTS OF BEARING.
7. ALL BEAMS REQUIRE MIN. OF 3 1/2" END BEARING & BEAM WIDTH TO HAVE FULL BEARING SUPPORT.
8. FOR BUILT-UP BEAMS, IT IS ASSUMED THAT EACH PLY IS A SINGLE CONTINUOUS MEMBER, FASTENED TOGETHER SECURELY AT INTERVALS NOT EXCEEDING 4 TIMES THE DEPTH & THAT EACH PLY IS EQUALLY LOADED.
9. BUILT-UP RECTANGULAR COMPRESSION MEMBERS SHALL CONSIST OF INDIVIDUAL MEMBERS OF EQUAL LENGTH FASTENED TOGETHER USING NAILS, LAG SCREWS OR BOLTS.
10. WHEN USED, NAILS SHALL PENETRATE THROUGH AT LEAST 3/4 OF THE THICKNESS OF THE LAST INDIVIDUAL PIECE. THE NAILS SHALL BE DRIVEN FROM EITHER FACE OF THE BUILT-UP MEMBER ALONG THE LENGTH.

STRUCTURAL STEEL

1. THE DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL IS TO CONFORM TO THE REQUIREMENTS OF THE FOLLOWING STANDARDS (INCLUDING LATEST REVISIONS):
   - GENERAL REQUIREMENTS FOR ROLLED OR WELDED STRUCTURAL QUALITY STEEL CAN/CSA G40.21-92
   - STRUCTURAL QUALITY STEELS CAN/CSA-G40.20/G40.21-92
   - LIMIT STATES DESIGN OF STEEL STRUCTURES CAN3-S16.1-94
   - CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES CSA-W47.1-92ODE STILECTST
   - ELECTRODE STANDARDS: CSA-W48.1 TO CSA-W48.7
   - WELDED STEEL CONSTRUCTION (METAL ARC WELDING) CSA-W59-M1989
2. STEEL STRENGTHS SHALL BE AS FOLLOWS:
   - STRUCTURAL STEEL GRADE G40.21M 350W, Fy = 345 MPa FOR W SHAPES
   - HSS GRADE G40.21M 350W, CLASS H, Fy = 350 MPa
   - BOLTS A325/A325M, ANCHOR BOLTS A307/A307M U/N
3. PROVIDE MINIMUM 4"x4"x1/4" END BEARING PLATE @ TOP & BOTTOM OF ALL STEEL POSTS, SECURE ALL POSTS TO BEAMS TO PREVENT LATERAL DISPLACEMENT. WELD OR BOLT STEEL POSTS TO STEEL BEAMS, BOLTS SPACED @ 6" O.C. MAX.
4. ALL SHOP CONNECTIONS SHALL BE WELDED. ALL FIELD CONNECTIONS SHALL BE WELDED OR BOLTED, USING HIGH TENSILE BOLTS BEARING TYPE. CONNECTION SHALL BE C.I.S.C. DOUBLE ANGLE BEAM CONNECTIONS FOR A325 BOLTS & E70XX FILLET WELDS, MINIMUM SIZE OF BOLTS 3/4" (20 mm) DIA.
5. SHOP PAINT SHALL BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
6. PROVIDE ALL TEMPORARY BRACING DURING CONSTRUCTION.
7. MIN. COVER TO REINFORCING BARS SHALL BE AS FOLLOWS:
   FOOTINGS: 75mm u/n
   FOUNDATION WALLS: 40mm u/n
8. AIR ENTRAINED CONCRETE WITH 5% TO 7% AIR CONTENT SHALL BE USED FOR ALL WORK.
9. DETAIL BEND, SUPPORT AND PLACE REINFORCING STEEL TO CONFORM WITH R.S.I.O. MANUAL OF STANDARD PRACTICE.
10. PROVIDE 36 BAR-DIAMETER LAP SPLICES FOR ALL REINFORCING STEEL UNLESS OTHERWISE NOTED ON DRAWINGS.
11. WHERE THE FOUNDATION WALLS DO NOT CONFORM TO THE REQUIREMENTS OF O.B.C. 2024, SECTION 9.15.4., THE CONCRETE FOUNDATION WALLS SHALL BE REINFORCED IN TWO (2) DIRECTIONS (VERTICALLY & HORIZONTALLY) USING 15M BARS SPACED AT NO MORE THAN 16" (400mm) O.C. WHERE THE WALLS ARE TO BE REINFORCED, DOWELS ARE REQUIRED FROM THE FOOTING TIN THE WALLS USING THE SAME SIZE OF REINFORCING AND AT EQUAL SPACING THE VERTICAL WALL REINFORCING. COORDINATE WITH GRADING PLAN.

POSTS (TO U/S OF LINTEL OR BEAM)

NOTE: ALL POSTS ARE P1 UNLESS NOTED OTHERWISE
P1 = REVERSED

WALL FOOTINGS

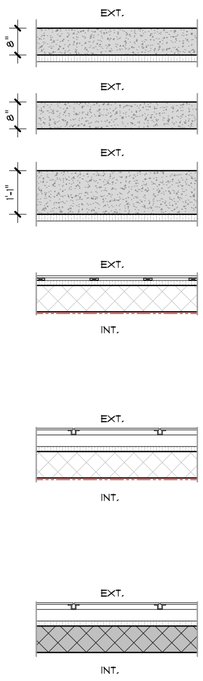
NOTE: ALL FOOTINGS TO BE WF3 UNLESS NOTED OTHERWISE. UNLESS SOIL CONDITIONS REQUIRE LARGER FOOTINGS, TO BE CONFIRMED ON SITE BY GEOTECHNICAL ENGINEER.
WF1 = 29" WIDE X 12" DEEP C/W 3-15M EQ. SP. BOT. LONGI. & 15M @ 16" o.c. TRANSV.
WF2 = 20" WIDE X 18" DEEP C/W 2-15M EQ. SP. BOT. LONGI. & 15M @ 16" o.c. TRANSV. EPOXY 6" INTO EX. FTG's
WF3 = 24" WIDE X 12" DEEP C/W 2-15M EQ. SP. BOT. LONGI. & 15M @ 16" o.c. TRANSV.

PAD FOOTING

F1 = RESERVED

MASONRY LINTELS

ML1 = SEE STRUCTURAL FOR DETAILS
ML2 = SEE STRUCTURAL FOR DETAILS



EXTERIOR WALL ASSEMBLIES

NOTE:
1. REPLACE 1/2" GYPSUM BOARD WITH 1/2" MOISTURE RESISTANT GYPSUM BOARD IN ALL WET AREAS.
2. AT ALL WALL ENDS/INTERSECTIONS/CORNERS/INTERSECTIONS /OPENINGS/POINTS LOADS PROVIDE 2-15M VERTICAL.

W1 - FOUNDATION WALL
PARGING TO 12" BELOW GRADE
8" CONCRETE BLOCK REINFORCED FOUNDATION WALL C/W REBAR (SEE STRUCTURAL)
R10 (2") RIGID INSULATION

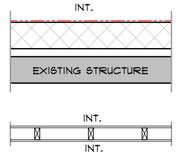
W2 - FOUNDATION WALL
8" CONCRETE BLOCK REINFORCED FOUNDATION WALL C/W REBAR (SEE STRUCTURAL)

W3 - FOUNDATION WALL
PARGING TO 12" BELOW GRADE
13" CONCRETE BLOCK REINFORCED FOUNDATION WALL C/W REBAR (SEE STRUCTURAL)
R10 (2") RIGID INSULATION

W4 - EXTERIOR SIDING
PRE-FINISHED METAL SIDING (REFER TO ELEVATIONS FOR TYPE & ORIENTATION, ie HORIZONTAL OR VERTICAL, SHAKE)
(COLOUR & FINISH TO BE APPROVED BY DESIGNER)
(INSTALLED AS PER MANUFACTURER INSTRUCTIONS)
1x3 STRAPPING @ 16" O.C. MAX. (ORIENTATION TO SUIT, REFER TO ELEVATIONS, STAGGERED & SLOPED TO ALLOW DRAINAGE WHERE STRAPPING IS HORIZONTAL)
1-1/2" HALO EXTERRA CONTINUOUS INSULATION, TAPE ALL JOINTS
8" CONCRETE BLOCK
VAPOUR RETARDANT PAINT FINISH

W5 - METAL PANEL
ALUCOBOND CLADDING (REFER TO ELEVATIONS FOR TYPE & ORIENTATION, ie HORIZONTAL, VERTICAL)
(COLOUR & FINISH TO BE APPROVED BY DESIGNER)
(INSTALLED AS PER MANUFACTURER INSTRUCTIONS)
ALUCOBOND FACE FASTENDED JOINT RAIL
2x4 WOOD STUD STRAPPING @ 16" O.C. MAX. (ORIENTATION TO SUIT, REFER TOELEVATIONS. STAGGERED & SLOPED TO ALLOW DRAINAGE WHERE STRAPPING IS HORIZONTAL)
1-1/2" HALO EXTERRA CONTINUOUS INSULATION (OR APPROVED EQUAL), TAPE ALL JOINTS
8" CONCRETE BLOCK
VAPOUR RETARDANT PAINT FINIS

W6 - METAL PANEL (EXISTING WALL)
ALUCOBOND CLADDING (REFER TO ELEVATIONS FOR TYPE & ORIENTATION, ie HORIZONTAL, VERTICAL)
(COLOUR & FINISH TO BE APPROVED BY DESIGNER)
(INSTALLED AS PER MANUFACTURER INSTRUCTIONS)
ALUCOBOND FACE FASTENDED JOINT RAIL
2x4 WOOD STUD STRAPPING @ 16" O.C. MAX. (ORIENTATION TO SUIT, REFER TOELEVATIONS. STAGGERED & SLOPED TO ALLOW DRAINAGE WHERE STRAPPING IS HORIZONTAL)
1-1/2" HALO EXTERRA CONTINUOUS INSULATION (OR APPROVED EQUAL), TAPE ALL JOINTS
EXISTING CONCRETE BLOCK WALL



INTERIOR WALL ASSEMBLIES

NOTE:
1. REPLACE 1/2" GYPSUM BOARD WITH 1/2" MOISTURE RESISTANT GYPSUM BOARD IN ALL WET AREAS.
2. ALL INTERIOR WALLS ARE P1 UNLESS NOTED OTHERWISE.

P1 - INTERIOR LINER WALL
VAPOUR RETARDANT PAINT FINISH
8" CONCRETE BLOCK
2 3/8" AIR SPACE
EXISTING STRUCTURE

P2 - INTERIOR PARTITION
1/2" GYPSUM BOARD FOR PAINT FINISH
2"x4" STUD WALL @ 16" O.C.
1/2" GYPSUM BOARD FOR PAINT FINISH

FLOOR ASSEMBLIES

NOTES:
1. REPLACE 1/2" GYPSUM BOARD WITH 1/2" MOISTURE RESISTANT GYPSUM BOARD IN ALL WET AREAS.
2. 2X6 & 2X8 JOISTS BASED ON O.B.C. SPAN TABLE SPRUCE LUMBER No 1 OR BETTER.
3. PROVIDE 5/8" PLYWOOD UNDERLAY WITH 1/8" GAPS WHERE CERAMIC TILE IS TO BE INSTALLED. OBC. 9.30.6.3.(8)
4. LIVING ROOM, DINING ROOM, KITCHEN, CORRIDORS, BATHROOMS, BEDROOMS, ENTRANCE VESTIBULES, STAIRS & FAMILY ROOMS SHALL BE PROVIDED WITH FINISHED FLOORING AS PER SECTION 9.30. OF THE CURRENT O.B.C.

F1 - NEW SLAB ON GRADE CONSTRUCTION
FLOOR FINISH (SEE PLANS)
6" REINFORCED CONCRETE SLAB (REFER TO STRUCTURAL)
VAPOUR BARRIER
4" RIGID INSULATION
1" COMPACTED SAND
MIN. 6" GRANULAR FILL TO O.B.C. 2024 9.16.2.1
UNDISTURBED SOIL OR COMPACTED FILL

ROOF ASSEMBLIES

NOTE:
1. ICE AND WATER SHIELD 60" UP EAVES AND 30" EITHER SIDE OF VALLEYS, UNLESS OTHERWISE NOTED. PER OBC 9.26.5

R1 - ROOF ASSEMBLY
STANDING SEAM METAL ROOF
ICE & WATER SHIELD EAVE & VALLEY PROTECTION
2" RIGID INSULATION
STEEL DECK (REFER TO STRUCTURAL)
PRE-ENGINEERED OWSJ

EXTERIOR DOOR SCHEDULE

NOTE: CONFIRM ALL R.O.'S WITH MANUFACTURER

NO.	SIZE WIDTH	SIZE HEIGHT	TYPE	METAL DOOR	PRESSED STEEL FRAME	PAINT FINISH	HINGES	LOCK SET	KICK PLATE	PRIVACY SET	JANITOR SET	DOOR CLOSURE	ELEC. OPENER	WALL STOP/FLR STOP	CONT. OPAQUE STRIP	REMARKS
1	14'-0"	12'-0"	OH	●	●											REMARKS
2	8'-0"	8'-0"	RU	●	●											
3	3'-0"	6'-8"	A	●	●		●	●	●		●	●		●	●	
4	3'-0"	6'-8"	A	●	●		●	●	●		●	●		●	●	
5	3'-0"	6'-8"	A	●	●		●	●	●		●	●		●	●	

TYPE A
OH - OVER HEAD GARAGE DOOR
RU - RULL UP DOOR

INTERIOR DOOR SCHEDULE

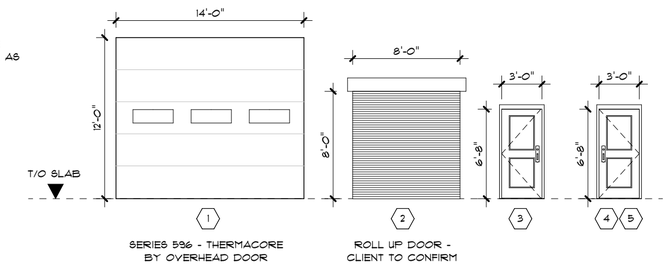
NOTE: CONFIRM ALL R.O.'S WITH MANUFACTURER

NO.	SIZE WIDTH	SIZE HEIGHT	TYPE	WOOD DOOR	PRESSED STEEL FRAME	PAINT FINISH	HINGES	LOCK SET	KICK PLATE	PRIVACY SET	JANITOR SET	DOOR CLOSURE	ELEC. OPENER	WALL STOP/FLR STOP	CONT. OPAQUE STRIP	REMARKS
6	3'-0"	6'-8"	A	●	●	●	●	●	●		●			●		INTERIOR DOOR
7	3'-0"	6'-8"	A	●	●	●	●		●			●		●		INTERIOR DOOR

TYPE A

1 / A.0a — EXTERIOR DOOR & WINDOW SCHEDULE
SCALE: N.T.S.

DOOR NOTES
1. ALL EXTERIOR DOORS & FRAMES TO BE INSULATED.
2. ALL WINDOWS IN EXTERIOR DOORS TO BE CLEAR, DOUBLE GLAZING, THERMALLY BROKEN, LOW "E" ARGON & GLAZING AS PER O.B.C.
3. DOOR SWING AS PER PLANS.
4. COORDINATE HARDWARE REQUIREMENTS WITH BUILDER.
5. WEATHER-STRIP FULL PERIMETER OF EXTERIOR DOORS
6. PROVIDE SELF CLOSER ON GARAGE DOORS



SERIES 536 - THERMACORE BY OVERHEAD DOOR
ROLL UP DOOR - CLIENT TO CONFIRM

2 / A.0a — DOOR ELEVATIONS
SCALE: 1/8" = 1'-0"

PERMIT SET

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LEGEND:
- (1) EXTERIOR DOOR & WINDOW TAG (SEE SCHEDULE)
- (1) INTERIOR DOOR TAG (SEE SCHEDULE)
- W1 EXTERIOR WALL TYPE (SEE A.0.a)
- P1 INTERIOR PARTITION WALL TYPE (SEE A.0.a)

LEGEND:
- F1 FLOOR TYPE (SEE A.0.a)
- R1 ROOF TYPE (SEE A.0.a)
- P1 POST TYPE (SEE A.0.a)
- L1 LINTEL TYPE (SEE A.0.a)
- F1 PAD FOOTING TYPE (SEE A.0.a)
- WF1 WALL FOOTING TYPE (SEE A.0.a)
- (1) CONSTRUCTION NOTE

BELL + ASSOCIATES ARCHITECTURE
186 Pembroke St. E.
Pembroke, ON K8A 3J7
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VERSION NO. 2

SEAL:

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REVISIONS

NO	ITEM	DATE
1	ISSUED FOR 25%	31/10/2023
2	ISSUED FOR 50%	07/12/2023
3	ISSUED FOR FINAL REVIEW	15/05/2024
4	ISSUED FOR PERMIT	05/19//2026

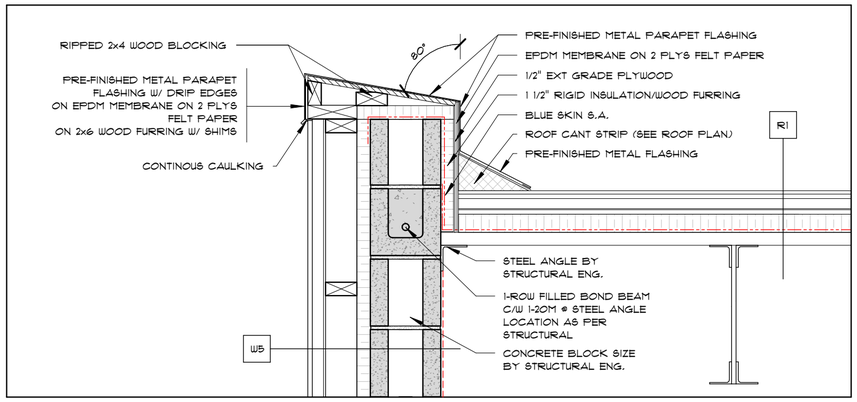
PROJECT
240 COUNTY ROAD 4,
BATH, ON K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN GARAGE STORAGE EXPANSION

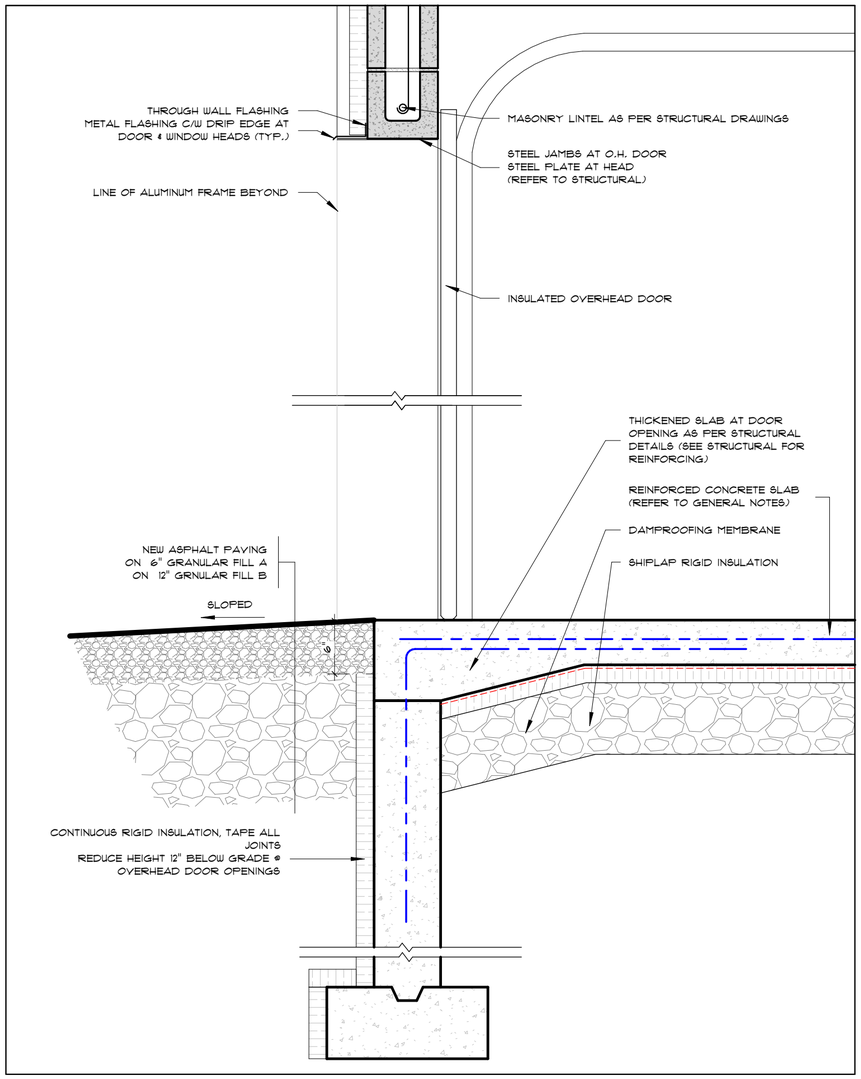
DRAWING
GENERAL NOTES

SCALE	AS INDICATED
DRAWN BY	ETV
DATE	SEPT. 12, 2023
CHKED BY	TJG
APPRD BY	JCB
PROJECT NO.	223-05b

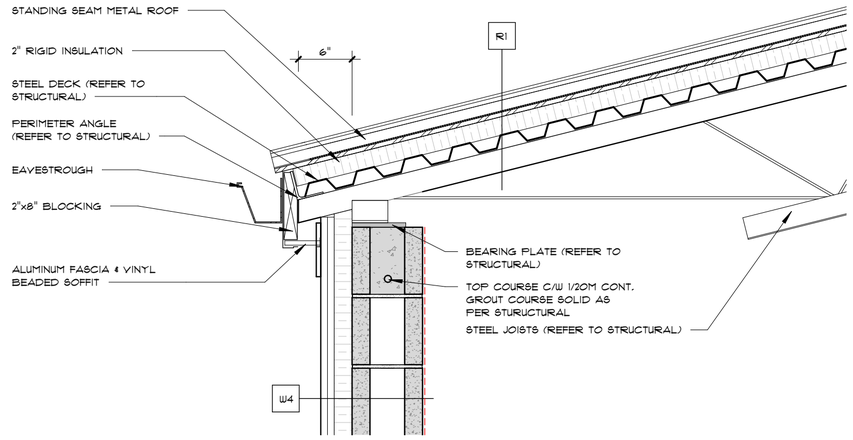
SHEET NO. A.0a



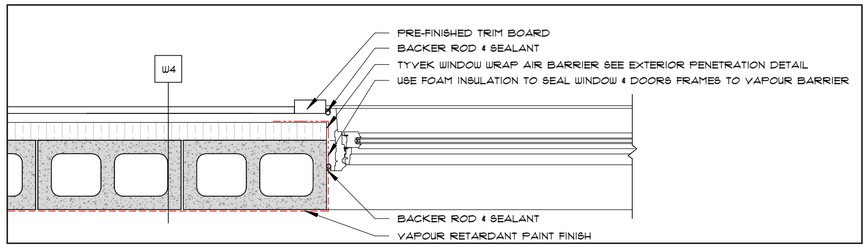
1 A.0b CMU SECTION DETAIL @ PARAPET
SCALE: 1" = 1'-0"



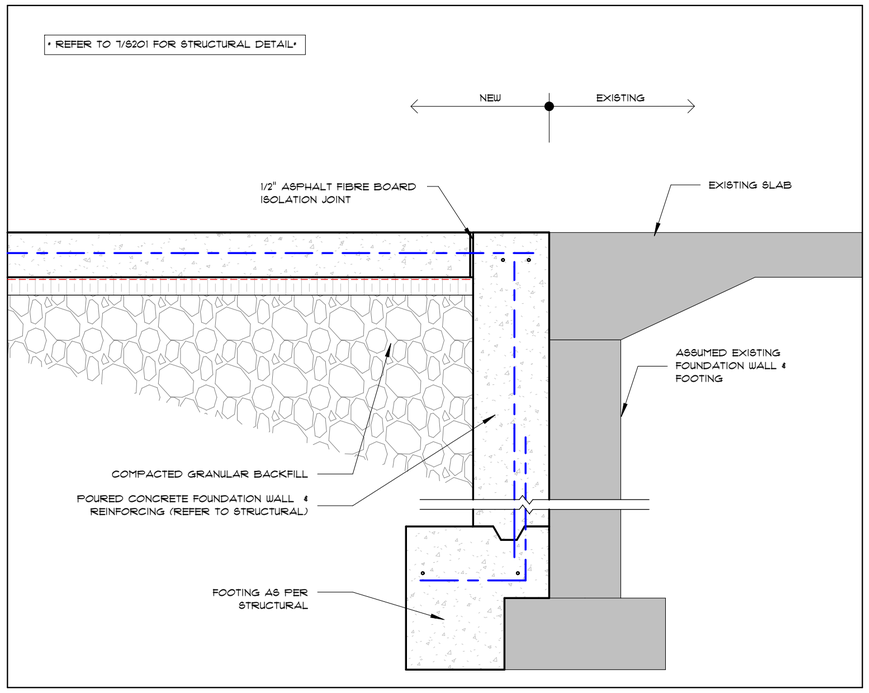
2 A.0b SECTION DETAIL @ GARAGE BAY OVERHEAD DOOR
SCALE: 1" = 1'-0"



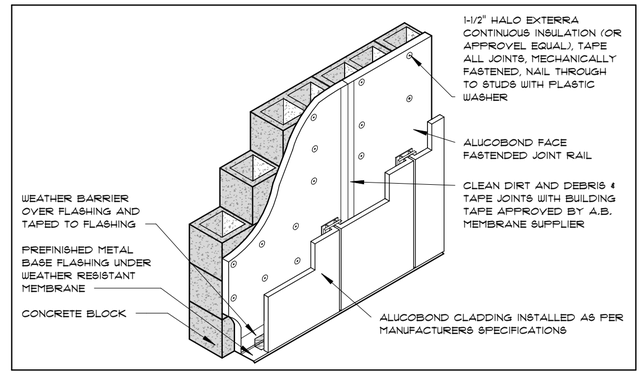
3 A.0b SECTION DETAIL @ EAVE (CMU WALL CONSTRUCTION)
SCALE: 1" = 1'-0"



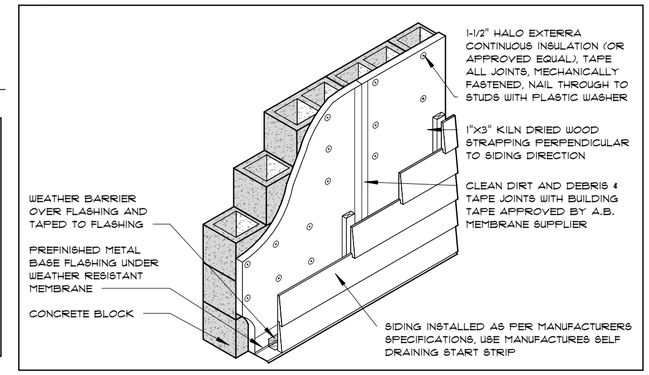
4 A.0b SECTION DETAIL @ WINDOW JAMB SIDING CMU
SCALE: 1" = 1'-0"



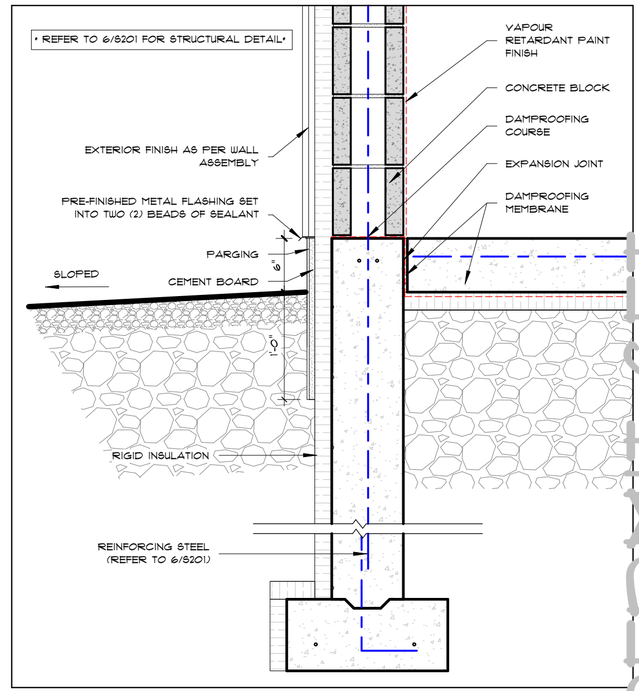
5 A.0b SECTION DETAIL @ NEW TO EXISTING FOUNDATION
SCALE: 1" = 1'-0"



6 A.0b ALUCOBOND CLADDING APPLICATION
SCALE: N.T.S.



7 A.0b SIDING APPLICATION DETAIL
SCALE: N.T.S.



8 A.0b SECTION DETAIL @ EXTERIOR FOUNDATION WALL
SCALE: 1" = 1'-0"

PERMIT SET

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- (1) INTERIOR DOOR TAG (SEE SCHEDULE)
- W1 EXTERIOR WALL TYPE (SEE A.0.a)
- P1 INTERIOR PARTITION WALL TYPE (SEE A.0.a)

LEGEND:
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- L1 LINTEL TYPE (SEE A.0.a)
- F1 PAD FOOTING TYPE (SEE A.0.a)
- WF1 WALL FOOTING TYPE (SEE A.0.a)
- (1) CONSTRUCTION NOTE

BELL + ASSOCIATES ARCHITECTURE
+ 186 Pembroke St. E. Pembroke, ON K8A 3J7 613-629-6988
+ 120 Terence Matthews Cres. Unit B1, Ottawa, ON K2M 1P7 613-831-9688
+ info@bell.ca bellarchitecture.ca

VERSION NO. 2

SEAL:

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PROJECT
240 COUNTY ROAD 4, BATH, ON K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN GARAGE STORAGE EXPANSION

DRAWING
STANDARD DETAILS

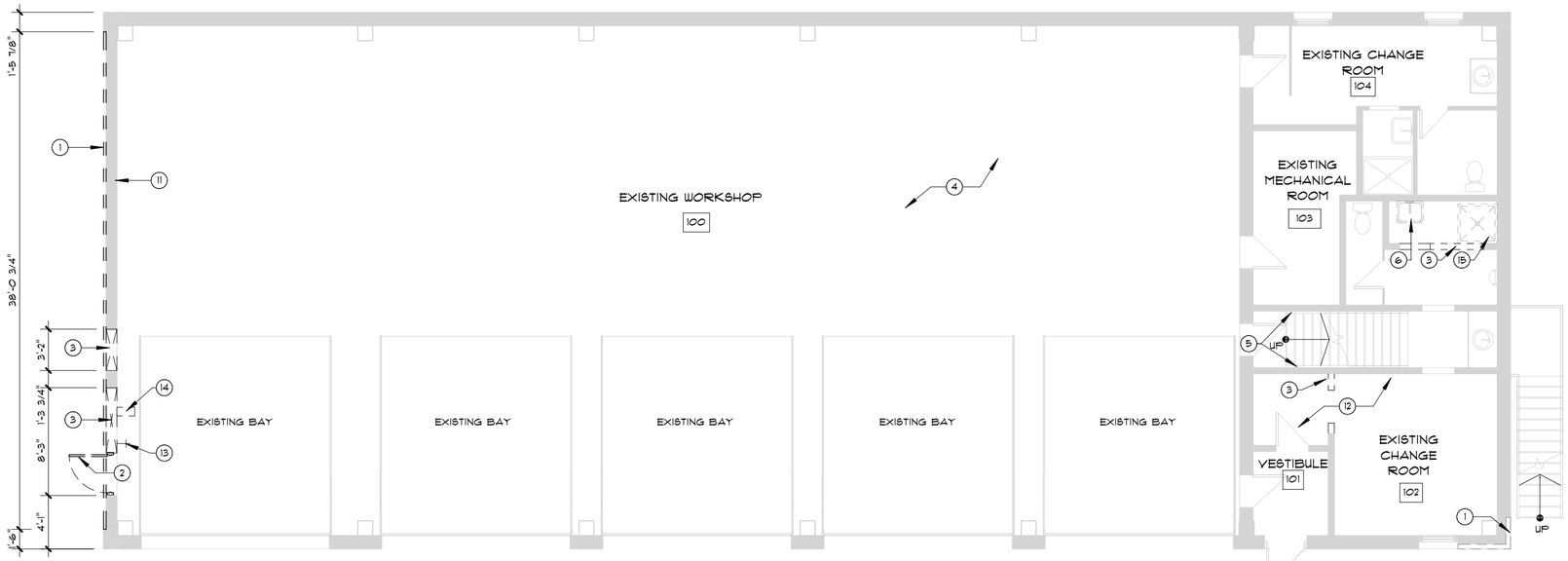
SCALE	AS INDICATED
DRAWN BY	ETV
DATE	SEPT. 12, 2023
CHKED BY	TJG
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO. A.0b

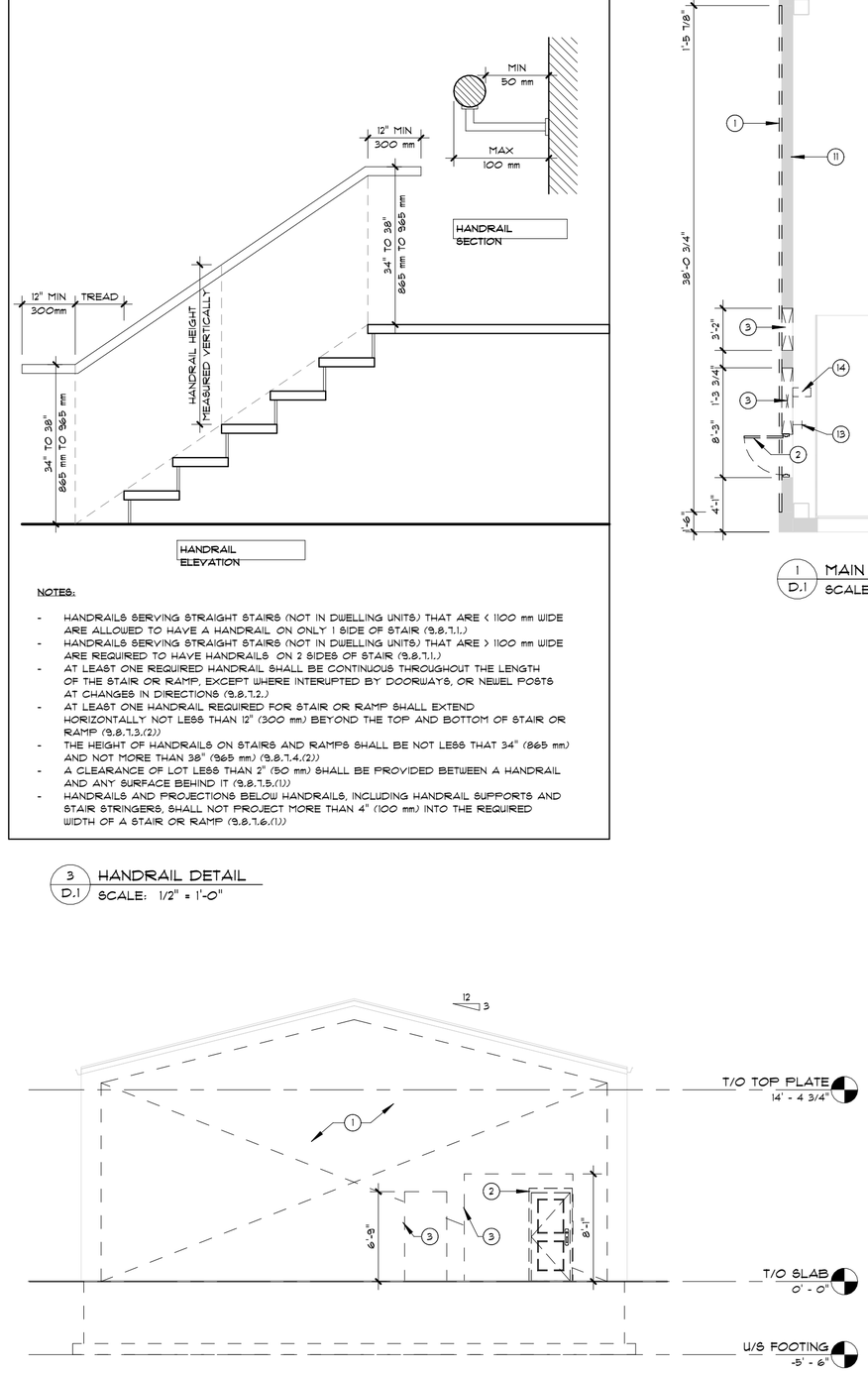
NOTES:

- HANDRAILS SERVING STRAIGHT STAIRS (NOT IN DWELLING UNITS) THAT ARE < 1100 mm WIDE ARE ALLOWED TO HAVE A HANDRAIL ON ONLY 1 SIDE OF STAIR (9.8.7.1.)
- HANDRAILS SERVING STRAIGHT STAIRS (NOT IN DWELLING UNITS) THAT ARE > 1100 mm WIDE ARE REQUIRED TO HAVE HANDRAILS ON 2 SIDES OF STAIR (9.8.7.1.)
- AT LEAST ONE REQUIRED HANDRAIL SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF THE STAIR OR RAMP, EXCEPT WHERE INTERUPTED BY DOORWAYS, OR NEWEL POSTS AT CHANGES IN DIRECTIONS (9.8.7.2.)
- AT LEAST ONE HANDRAIL REQUIRED FOR STAIR OR RAMP SHALL EXTEND HORIZONTALLY NOT LESS THAN 12" (300 mm) BEYOND THE TOP AND BOTTOM OF STAIR OR RAMP (9.8.7.3.(2))
- THE HEIGHT OF HANDRAILS ON STAIRS AND RAMPS SHALL BE NOT LESS THAT 34" (865 mm) AND NOT MORE THAN 38" (965 mm) (9.8.7.4.(2))
- A CLEARANCE OF LOT LESS THAN 2" (50 mm) SHALL BE PROVIDED BETWEEN A HANDRAIL AND ANY SURFACE BEHIND IT (9.8.7.5.(1))
- HANDRAILS AND PROJECTIONS BELOW HANDRAILS, INCLUDING HANDRAIL SUPPORTS AND STAIR STRINGERS, SHALL NOT PROJECT MORE THAN 4" (100 mm) INTO THE REQUIRED WIDTH OF A STAIR OR RAMP (9.8.7.6.(1))

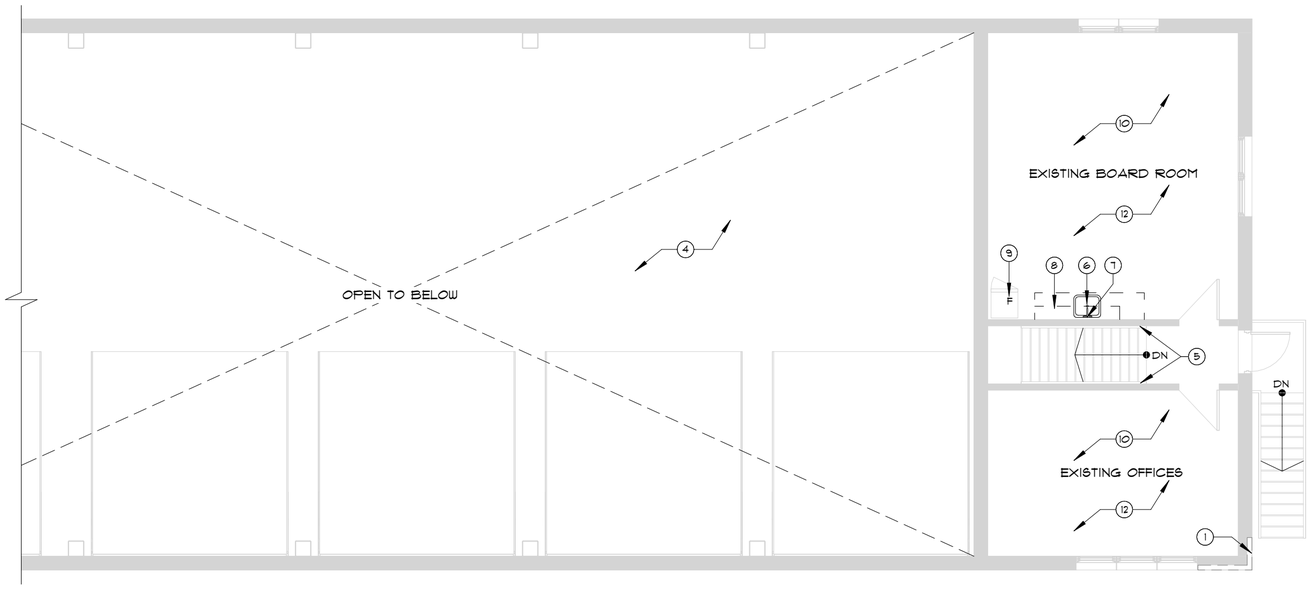
3 / D.1 HANDRAIL DETAIL
SCALE: 1/2" = 1'-0"



1 / D.1 MAIN FLOOR - DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



2 / D.1 LEFT ELEVATION - DEMOLITION
SCALE: 1/8" = 1'-0"



4 / D.1 UPPER FLOOR- DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

DEMOLITION NOTES LEGEND:
NOTE: PATCH AND MAKE GOOD ALL AREAS AFFECTED BY DEMOLITION

1. EXTERIOR CLADDING AND INSULATION TO BE REMOVED
2. REMOVE EXISTING DOOR, FRAME AND ALL ASSOCIATED HARDWARE
3. DEMO/REMOVE PORTION OF EXISTING WALL. PROVIDE TEMPORARY SHORING AS REQUIRED UNTIL NEW SUPPORT IS IN PLACE
4. EXISTING TO REMAIN
5. REPLACE OR REPAIR EXISTING HANDRAIL TO MEET OBC REQUIREMENTS LISTED IN DETAIL 3/D.1
6. EXISTING SINK TO BE REMOVED
7. CAP SUPPLY AND DRAIN PIPING IN CONCEALED LOCATION
8. REMOVE EXISITNG MILLWORK UPPER AND LOWER CABINETS AND EXISITNG COUNTERTOPS
9. EXISTING FRIDGE TO REMAIN
10. EXISTING FURNITURE TO REMAIN
11. PATCH AND MAKE GOOD ENTIRE WALL. PREP ENTIRE WEST WALL FOR PAINT.
12. PATCH AND MAKE GOOD ALL WALLS. PREP FOR PAINT.
13. EXISITNG HOSE BIB TO BE DISCONNECTED, CAPPED, AND RELOCATED
14. EXISTING PRESSURE WASHER AND HOSE REEL TO BE DISCONNECTED AND RELOCATED
15. EXISTING SHOWER TO BE REMVOED. CAP SUPPLY AND DRAIN PIPING

PERMIT SET

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- P1 INTERIOR PARTITION WALL TYPE (SEE A.0.a)

LEGEND:

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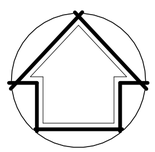
- R1 ROOF TYPE (SEE A.0.a)
- P1 POST TYPE (SEE A.0.a)
- L1 LINTEL TYPE (SEE A.0.a)
- F1 PAD FOOTING TYPE (SEE A.0.a)
- WF1 WALL FOOTING TYPE (SEE A.0.a)
- (1) CONSTRUCTION NOTE

PROJECT NORTH:



BELL + ASSOCIATES ARCHITECTURE
+ 186 Pembroke St. E.
Pembroke, ON K8A 3J7
613-629-6088
+ 120 Terence Matthews Cres.
Unit B1, Ottawa, ON K2M 1P7
613-831-9688
+ info@bell.ca
bellarchitecture.ca

VERSION NO.
2

SEAL:

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REVISIONS

NO	ITEM	DATE
1	ISSUED FOR 25%	31/10/2023
2	ISSUED FOR 50%	07/12/2023
3	ISSUED FOR FINAL REVIEW	15/05/2024
4	ISSUED FOR PERMIT	05/19//2026

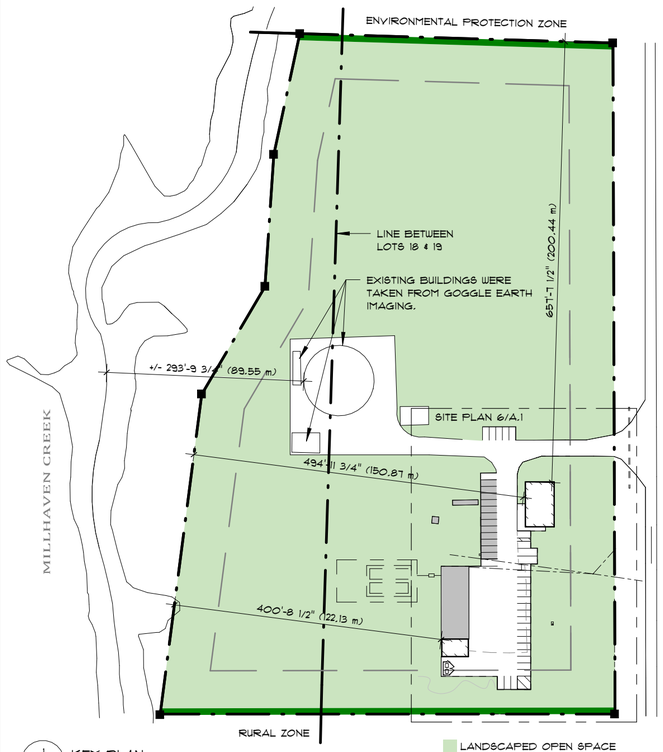
PROJECT
240 COUNTY ROAD 4,
BATH, ON K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN GARAGE STORAGE EXPANSION

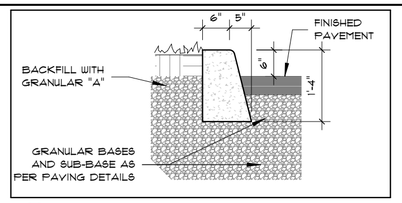
DRAWING
DEMOLITION PLANS

SCALE	AS INDICATED
DRAWN BY	ETV
DATE	SEPT. 12, 2023
CHKED BY	TJG
APPRD BY	JCB
PROJECT NO.	223-05b

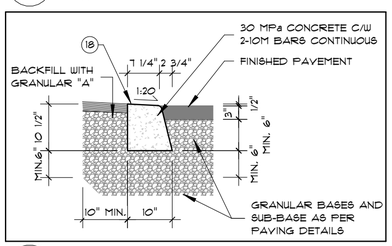
SHEET NO.
D.1



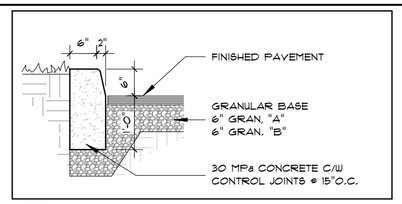
1 A.1 KEY PLAN
SCALE: 1" = 160'-0"



2 A.1 BARRIER CURB DETAIL
SCALE: 1/2" = 1'-0"



4 A.1 DEPRESSED CURB DETAIL
SCALE: 1/2" = 1'-0"



3 A.1 CURB DETAIL
SCALE: 1/2" = 1'-0"

PLANTING STRIP NOTES:

PROVIDE CONTINUOUS PLANTING STRIP CONSISTING OF TREES, EVERGREENS, SHRUBS NOT LESS THAN 1.5 METERS IN HEIGHT,
- TREE SPECIES NATIVE TO ONTARIO SUCH AS RED OAK, SUGAR MAPLE, PAPER BIRCH AND SILVER MAPLE.
- LARGE SHRUBS NATIVE TO ONTARIO SUCH AS DOGWOOD, EASTERN REDBUD, AND JUNE BERRY,

THE PLANTING STRIP IS REQUIRED TO BE MAINTAINED BY THE OWNER OF THE LOST ON WHICH THE PLANTING STRIP IS LOCATED.

9 A.1 PLANTING STRIP GENERAL NOTES
SCALE: 1/2" = 1'-0"

DIRECTIONAL FIRE ACCESS

ACCESSIBLE PARKING SIGN

SIGNAGE NOTES:

1. ALL SIGNS TO BE 300mm W x 450mm HIGH ALUMINUM AND SET ON A PERMANENT GALV. STEEL POST
2. LOCATE THE SIGNS AS PER ARCHITECTURAL SITE PLAN WHERE NOTED.
3. ALL SIGNS TO BE VISIBLE DAY AND NIGHT WITH SCOTCH LIGHT REFLECTIVE VINYL BACKGROUND & LETTERING.
4. MOUNT THE BOTTOM EDGE OF THE FIRE ACCESS ROUTE SIGN AT 2m ABOVE THE ASPHALT SURFACE & SPACES MAX. 25m APART.
5. PROVIDE MULTI-DIRECTIONAL ARROWS IDENTIFYING THE FIRE ACCESS ROUTE OR SINGLE DIRECTIONAL ARROW INDICATING THE LIMIT OF THE FIRE ACCESS ROUTE.

5 A.1 SIGNAGE DETAIL
SCALE: 1/2" = 1'-0"

ZONING CHART

ZONE: M3 & EP	REQUIRED	PROVIDED
LOT AREA (MIN):	0.8 HA	5.43 HA
TOTAL BUILDING AREA FOR ADMIN BLDG.		266.9 m²
TOTAL BUILDING AREA FOR GARAGE BLDG.		503.3 m²
LOT FRONTAGE (MIN):	60 M	304.81 M
FRONT YARD SETBACK (MIN):	20 M	26.41 M
EXTERIOR SIDE YARD (MIN):	20 M	N/A
INTERIOR NORTH SIDE YARD (MIN):	20 M	± 200.44 M
INTERIOR SOUTH SIDE YARD (MIN):	20 M	26.19 M
STREET CENTERLINE SETBACK	33 M	43.10 M
REAR YARD DEPTH (MIN):	20 M	± 122.13 M
LANDSCAPED OPEN SPACE (MIN.):	10%	87.3%
LOT COVERAGE (MAX):	50%	3.6%
HARDSCAPE	/	/
NUMBER OF STANDARD PARKING SPACES - GARAGE - 503.3 m² / 18.5 m² = 27.2 (28 SPACES) - ADMIN - 266.9 m² / 28 m² = 9.5 (10 SPACES)	38	38
NUMBER OF BARRIER FREE PARKING SPACES	2	2
NUMBER OF LOADING SPACES	2	2
PARKING STALL & BARRIER FREE DIMENSIONS	3m x 6m/ 3.2m x 6m	3m x 6m/ 3.2m x 6m
LOADING SPACE DIMENSIONS (MINIMUM)	3.5m x 9m	3.5m x 9m

SYMBOL LEGEND

- EXISTING BUILDING
- PROPOSED BUILDING/ADDITION
- PROPERTY LINE
- SITE SETBACKS
- BARRIER FREE PARKING SYMBOL PAINTED ON ASPHALT IN BLUE AND MARKED BY A INTERNATIONAL SYMBOL.
- BARRIER FREE TRANSFER SPACE PAINTED ON ASPHALT IN YELLOW
- EXISTING FENCE TO REMAIN
- PROPOSED FENCE (TYPE T.B.D. BY CLIENT)
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN
- PROPOSED BOLLARDS AT EACH SIDE OF GARAGE DOORS

LEGEND

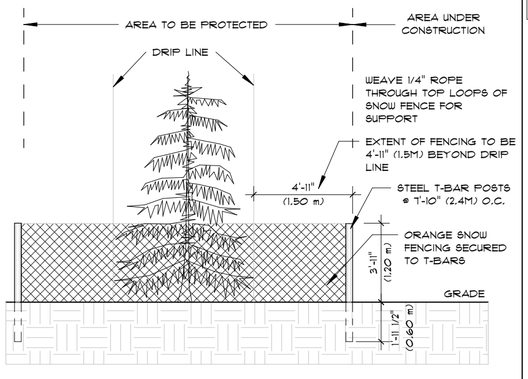
1. ACCESSIBLE PARKING SIGNAGE ON POST. SEE DETAIL
2. LOADING DOCK SIGN
3. RESERVED
4. NEW PATIO STONE SIDEWALK
5. NEW CONCRETE CURB
6. EXISTING CONCRETE CURB
7. NEW SOD
8. EXISTING SOD
9. PROPOSED SEPTIC LOCATION
10. EXISTING HYDRO POLE
11. EXISTING POST AND WIRE FENCE
12. PROPOSED NEW PARKING
13. EXISTING PARKING TO REMAIN
14. PROPOSED POLE - DARK SKY COMPLIANT SITE LIGHTING (FINAL SITE LIGHTING TO BE CONFIRMED ON PHOTOMETRIC PLAN)
15. PROPOSED ELECTRIC CHARGING STATION
16. NEW 6' GALVANIZED FENCE
17. PEDESTRIAN ROUTE TO HAVE A FIRM, SLIP RESISTANT SURFACE
18. TACTILE ATTENTION INDICATOR PROVIDED AT PEDESTRIAN ROUTE TO A VEHICULAR ROUTE. MUST INCORPORATE THE FOLLOWING.
    - RAISED TACTILE PROFILES,
    - HIGH TONAL CONTRAST,
    - LOCATED AT THE BOTTOM PORTION OF DEPRESSED CURB FLUSH WITH ROADWAY.
19. CANTILEVER SLIDE GATE W/ AUTOMATIC GATE OPERATOR SYSTEM

TREE PROTECTION SIGNAGE

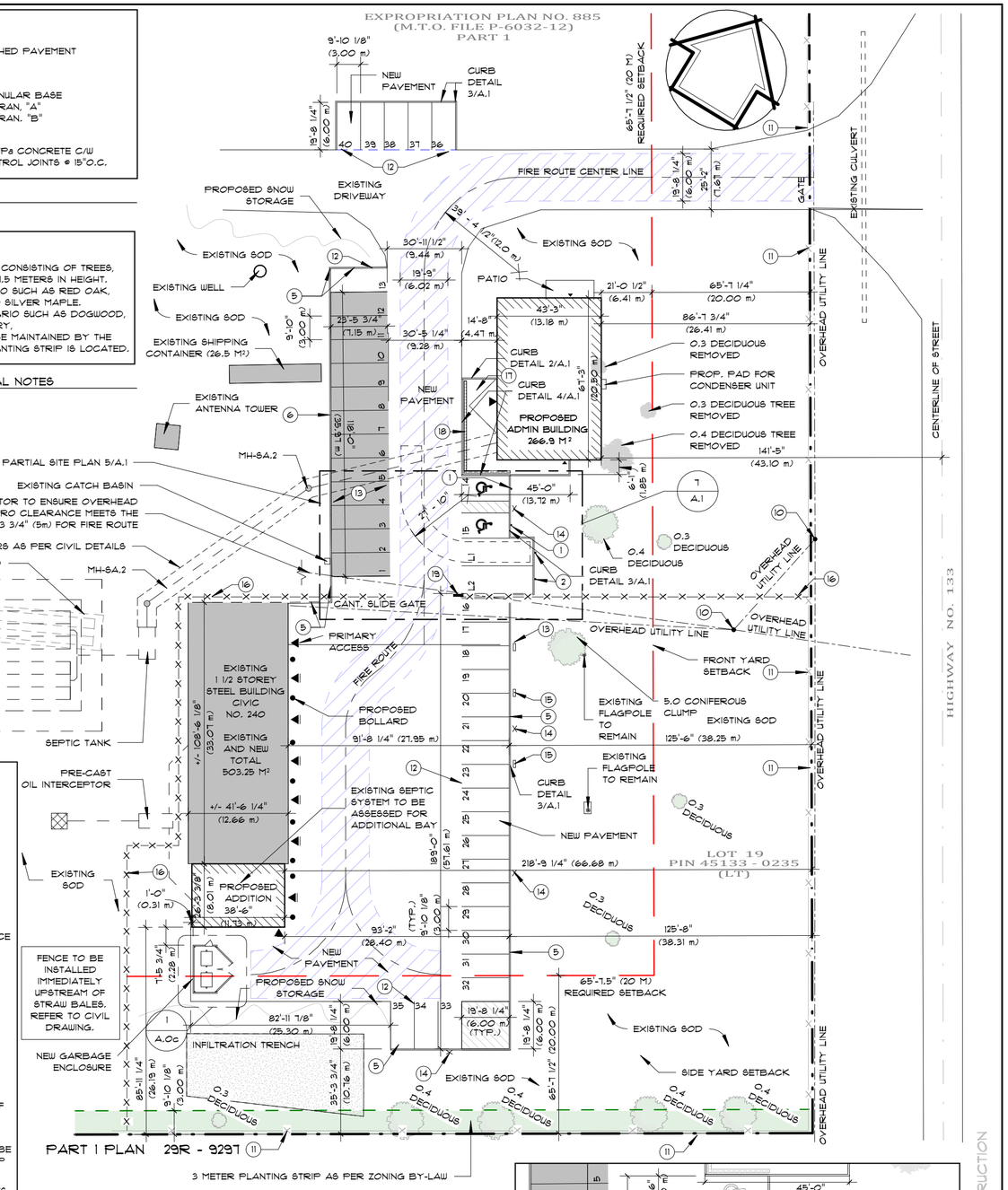
A SIGN THAT IS SIMILAR TO THE ILLUSTRATION TO THE RIGHT MUST BE MOUNTED ON ALL SIDES OF A TREE PROTECTION BARRIER FENCING THE SIGN SHOULD BE A MINIMUM OF 15.7" x 23.6" (400mm x 600mm) AND MADE OF WHITE GATOR BOARD TO EQUIVALENT MATERIAL.

TREE PROTECTION ZONE (TPZ)
NO GRADE CHANGE, STORAGE OF MATERIALS, VEHICLES OR EQUIPMENT IS PERMITTED WITHIN THIS TPZ. THIS TREE PROTECTION BARRIER MUST NOT BE REMOVED WITHOUT WRITTEN AUTHORIZATION OF THE LOYALIST TOWNSHIP.

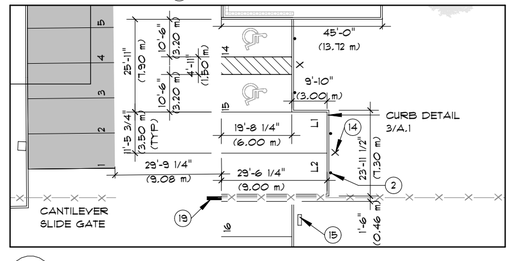
NOTES:
1. ATTACHMENT OF FENCE TO TREES TO BE PRESERVED IS NOT PERMITTED.
2. FENCING TO BE INSTALLED PRIOR TO START OF CONSTRUCTION AND REMAIN IN PLACE UNTIL THE COMPLETION OF ALL WORK.
3. TREE PRESERVATION TO BE IN ACCORDANCE WITH CITY BY-LAWS
4. WEAVE 1/4" ROPE THROUGH TOP LOOPS OF SNOW FENCE FOR SUPPORT



6 A.1 TREE PROTECTION ZONE FENCE
SCALE: 3/16" = 1'-0"



7 A.1 SITE PLAN
SCALE: 1" = 40'-0"



8 A.1 PARTIAL SITE PLAN
SCALE: 1" = 30'-0"

LEGAL DESCRIPTION:
PART OF LOT 18 & 19, CONCESSION 1, GEOGRAPHIC TOWNSHIP OF ERNESTOWN TOWNSHIP OF ERNESTOWN COUNTY OF LENNOX & ADDINGTON, PLAN NO. 885, M.T.O. FILE P-6032-12

CIVIC ADDRESS:
240 COUNTY RD 4, BATH, ONTARIO

SITE PLAN GENERAL NOTES:
-THIS SITE PLAN & ALL EXISTING SITE INFO, ELEVATIONS, SERVICE LOCATIONS & PROPERTY INFORMATION IS BASED ON A SURVEY COMPLETED BY HOPKINS CHITTY LAND SURVEYING INC.
PROJECT NO. 2023-0396, DATED JULY 26, 2023.

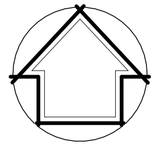
NOTES:
REFER TO GENERAL NOTES FOR ALL TYPICAL CONSTRUCTION NOTES & DETAILS. WHEN DRAWINGS OR NOTES REFERENCE O.B.C. IN ALL CASES PLEASE REFER TO THE LATEST VERSION OF THE ONTARIO BUILDING CODE 2024.

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH EACH OTHER, SPECIFICATIONS & OTHER CONTRACT DOCUMENTS

LEGEND:
- (1) EXTERIOR DOOR & WINDOW TAG (SEE SCHEDULE)
- (1) INTERIOR DOOR TAG (SEE SCHEDULE)
- W1 EXTERIOR WALL TYPE (SEE A.0.a)
- P1 INTERIOR PARTITION WALL TYPE (SEE A.0.a)
- F1 FLOOR TYPE (SEE A.0.a)

LEGEND:
- R1 ROOF TYPE (SEE A.0.a)
- P1 POST TYPE (SEE A.0.a)
- L1 LINTEL TYPE (SEE A.0.a)
- F1 PAD FOOTING TYPE (SEE A.0.a)
- WF1 WALL FOOTING TYPE (SEE A.0.a)
- SCD SMOKE/CARBON MONOXIDE DETECTOR TO O.B.C. 9.10.19
- (1) CONSTRUCTION NOTE
- EXHAUST FAN - VENT TO OUTSIDE
- NON-FREEZE HOSE BIB

PROJECT NORTH:



BELL + ASSOCIATES ARCHITECTURE
+186 Pembroke St. E.
Pembroke, ON K8A 3J7
613-629-6988
+info@jbell.ca
bellarchitecture.ca

VERSION NO. 2

SEAL:

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REVISIONS

NO	ITEM	DATE
1	ISSUED FOR SPA	02-25-2026
2	ISSUED FOR CONSULTANT REVIEW	04-07-2026
3	ISSUED FOR CONSULTANT REVIEW	05-25-2026

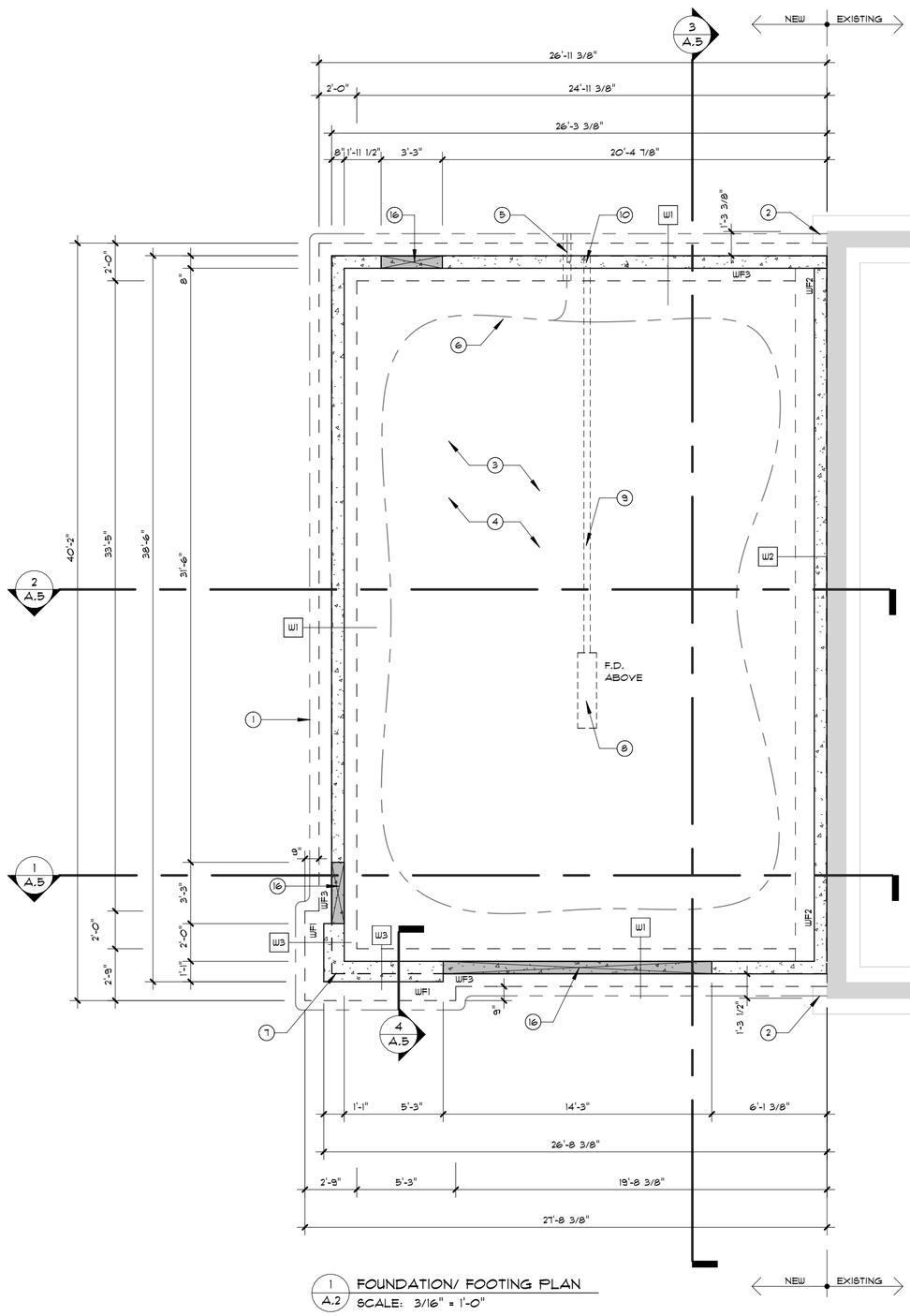
PROJECT
240 COUNTY ROAD, 4 BATH ONTARIO, KOH 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN ADMIN BUILDING

DRAWING
SITE PLAN

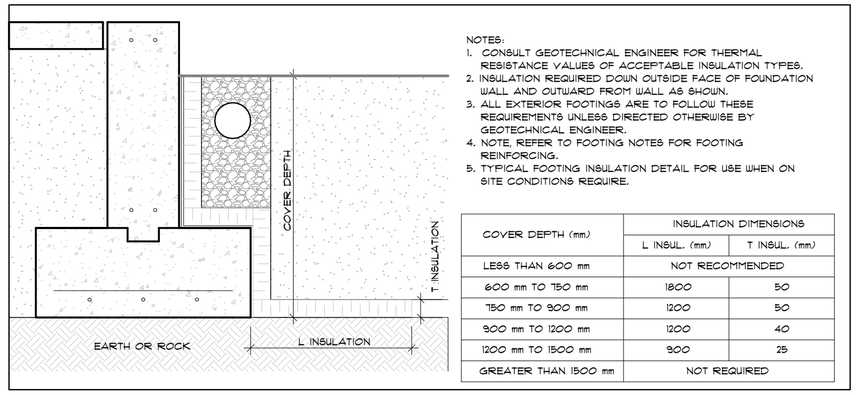
SCALE	AS INDICATED
DRAWN BY	AIT
DATE	SEPT 28, 2023
CHKED BY	AIT
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO. A.1



EXISTING FOUNDATION & FOOTING

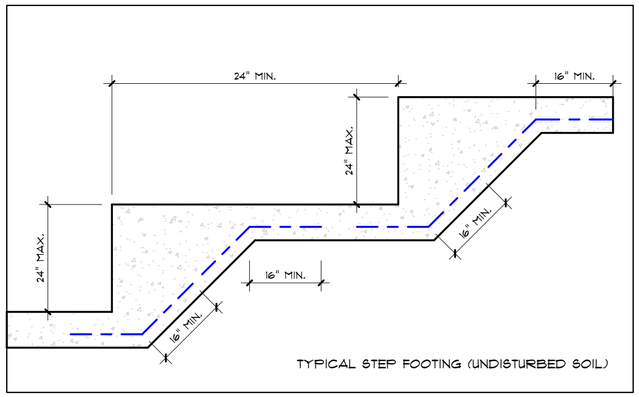
1 A.2 FOUNDATION/ FOOTING PLAN
SCALE: 3/16" = 1'-0"



NOTES:
1. CONSULT GEOTECHNICAL ENGINEER FOR THERMAL RESISTANCE VALUES OF ACCEPTABLE INSULATION TYPES.
2. INSULATION REQUIRED DOWN OUTSIDE FACE OF FOUNDATION WALL AND OUTWARD FROM WALL AS SHOWN.
3. ALL EXTERIOR FOOTINGS ARE TO FOLLOW THESE REQUIREMENTS UNLESS DIRECTED OTHERWISE BY GEOTECHNICAL ENGINEER.
4. NOTE REFER TO FOOTING NOTES FOR FOOTING REINFORCING.
5. TYPICAL FOOTING INSULATION DETAIL FOR USE WHEN ON SITE CONDITIONS REQUIRE.

COVER DEPTH (mm)	INSULATION DIMENSIONS	
	L INSUL. (mm)	T INSUL. (mm)
LESS THAN 600 mm	NOT RECOMMENDED	
600 mm TO 750 mm	1800	50
750 mm TO 900 mm	1200	50
900 mm TO 1200 mm	1200	40
1200 mm TO 1500 mm	900	25
GREATER THAN 1500 mm	NOT REQUIRED	

2 A.2 STRIP FOOTING FROST PROTECTION
SCALE: 1" = 1'-0"



3 A.2 STEP FOOTING DETAIL
SCALE: 1/2" = 1'-0"

CONSTRUCTION NOTES LEGEND:

1. 4" (100mm) PERFORATED WEEPING TILE C.W. FILTER CLOTH AND 6" (150mm) CRUSHED STONE AS PER O.B.C. 9.14.3(4)
2. TIE WEEPING TILE INTO EXISITNG TILE
3. IF NATIVE SOIL IS CLAY, REMOVE ALL NATIVE MATERIAL IN GARAGE TO THE LEVEL OF FOOTINGS AND BACKFILL WITH COMPACTED GRANULAR 'B'.
4. COMPACTION OF BACKFILL MATERIAL BENEATH GARAGE FLOOR SLAB AS PER O.B.C. 9.16.2.2. (4)
5. SLEEVE THROUGH FOOTING FOR INTERIOR TILE DRAIN
6. INTERIOR TILE DRAIN BELOW SLAB - 4" (100mm) PERFORATED WEEPING TILE C.W. FILTER CLOTH AND 6" (150mm) CRUSHED STONE AS PER O.B.C. 9.14.3(4)
7. FACE OF WALL FRAMING ABOVE
8. FLOOR DRAIN COMPLETE WITH T.&P.
9. DRAINAGE PIPE BELOW SLAB
10. SLEEVE THROUGH FOUNDATION WALL FOR DRAINAGE PIPE
11. SAW CUTS IN SLAB (SEE STRUCTURAL FOR DETAILS)
12. EXISTING FRIDGE TO BE REINSTALLED
13. NEW CABINETS, COUNTERTOPS AND SINK (TO BE CONFIRMED BY CONTRACTOR)
14. RELOCATE EXISTING HOSE BIB (FINAL LOCATION TBD BY CONTRACTOR)
15. RELOCATE EXISTING PRESSURE WASHER AND HOSE REEL (FINAL LOCATION TBD BY CONTRACTOR)
16. REDUCE HEIGHT OF FOUNDATION WALL 16" & CONTINUE SLAB OVER FOUNDATION & PROVIDE THICKENED SLAB EDGE OVER FOUNDATION WAL
17. BEAM TO BEAR ON ON CMU WALL AS PER STRUCTURAL DETAIL 3/S201
18. NEW STACKABLE WASHER AND DRYERS

PERMIT SET

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LEGEND:
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- R1 ROOF TYPE (SEE A.0.a)
- P1 POST TYPE (SEE A.0.a)
- L1 LINTEL TYPE (SEE A.0.a)
- F1 PAD FOOTING TYPE (SEE A.0.a)
- WF1 WALL FOOTING TYPE (SEE A.0.a)
- (1) CONSTRUCTION NOTE

PROJECT NORTH:

BELL + ASSOCIATES ARCHITECTURE
+ 186 Pembroke St. E. Pembroke, ON K8A 3J7 613-629-6088
+ 120 Terence Matthews Cres. Unit B1, Ottawa, ON K2M 1P7 613-831-9688
+ info@bell.ca
bellarchitecture.ca

VERSION NO. 2

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2	ISSUED FOR 50%	07/12/2023
3	ISSUED FOR FINAL REVIEW	15/05/2024
4	ISSUED FOR PERMIT	05/19//2026

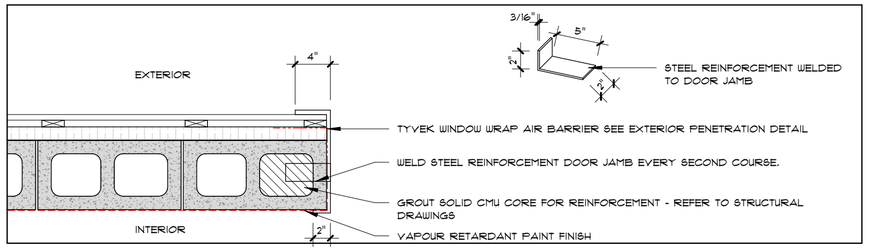
PROJECT
240 COUNTY ROAD 4,
BATH, ON K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN GARAGE STORAGE EXPANSION

DRAWING
FOOTING/ FOUNDATION PLAN

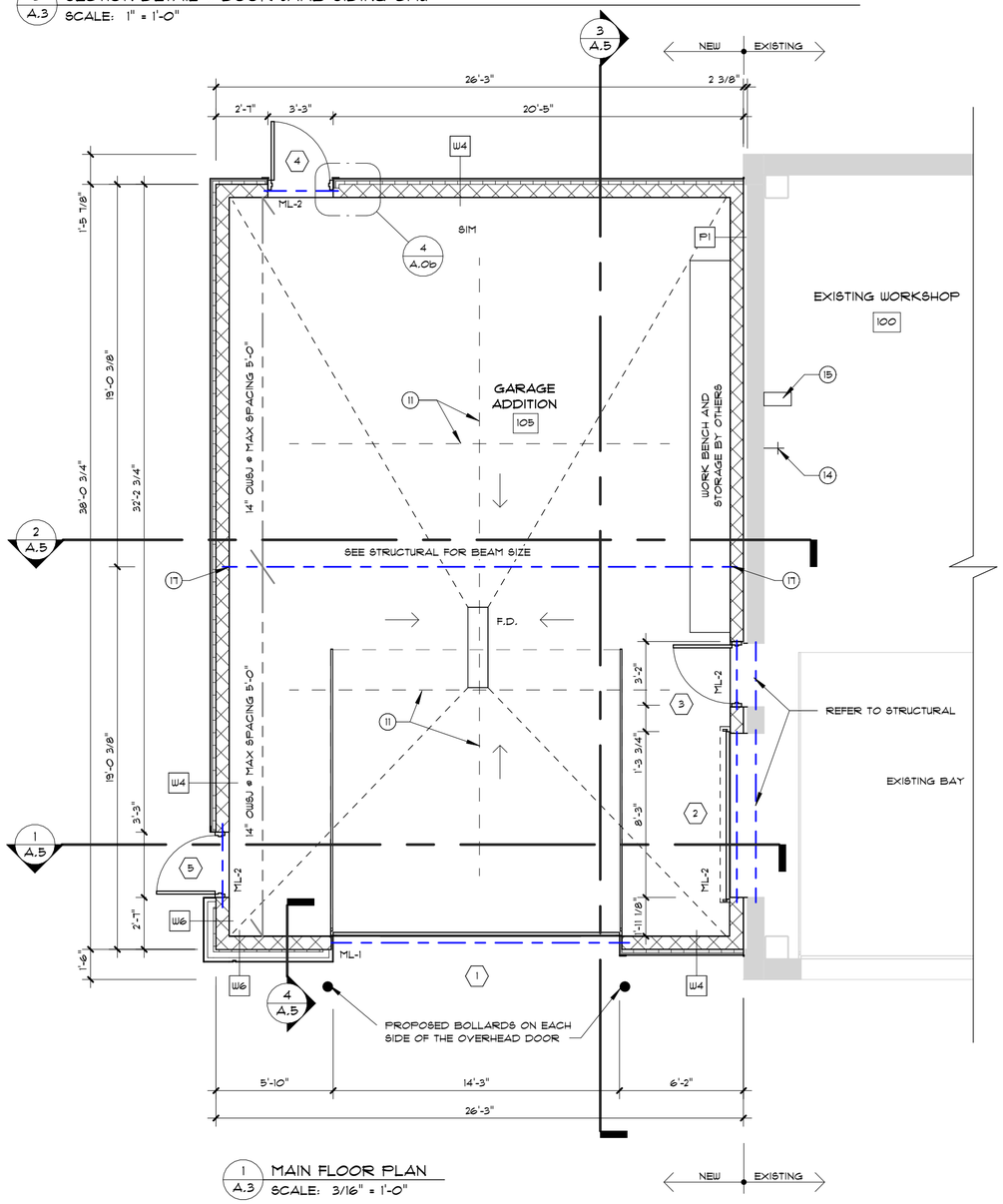
SCALE	AS INDICATED
DRAWN BY	ETV
DATE	SEPT. 12, 2023
CHKED BY	TJG
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO. A.2



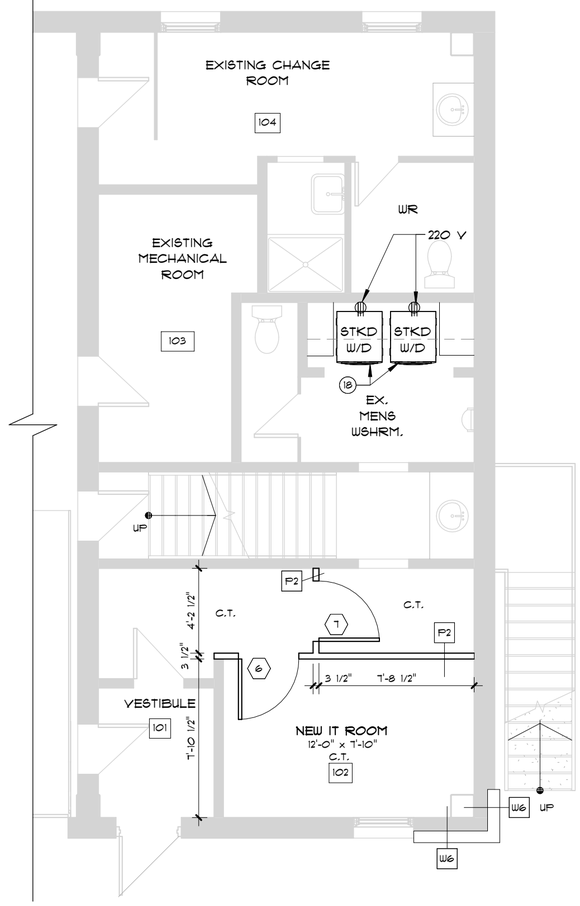
3 / A.3 SECTION DETAIL @ DOOR JAMB SIDING CMU

SCALE: 1" = 1'-0"

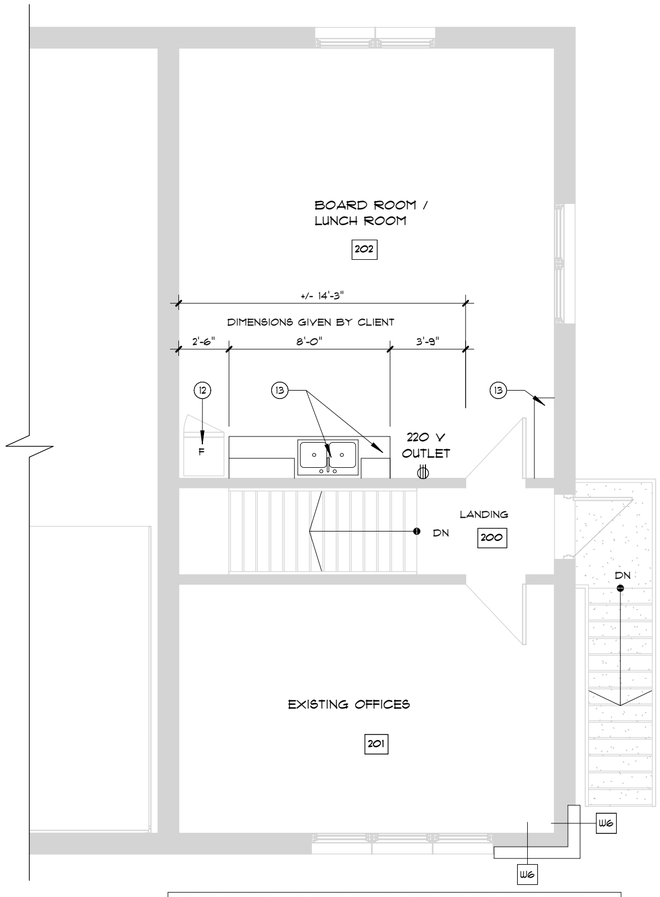


1 / A.3 MAIN FLOOR PLAN

SCALE: 3/16" = 1'-0"



EXISTING GARAGE & OFFICE (INDLUCING STAIRS)	4418 S.F.	(410.45 SQ.M.)
ADDITION:	993 S.F.	(92.80 SQ.M.)
TOTAL:	5411 S.F.	(503.26 SQ.M.)



799 S.F. (74.23 SQ.M.) EXISTING UPPER FLOOR AREA (EXCLUDING STAIRS)

2 / A.3 UPPER FLOOR PLAN

SCALE: 3/16" = 1'-0"

CONSTRUCTION NOTES LEGEND:

1. 4" (100mm) PERFORATED WEEPING TILE C.W. FILTER CLOTH AND 6" (150mm) CRUSHED STONE AS PER O.B.C. 9.14.3(4)
2. TIE WEEPING TILE INTO EXISITNG TILE
3. IF NATIVE SOIL IS CLAY, REMOVE ALL NATIVE MATERIAL IN GARAGE TO THE LEVEL OF FOOTINGS AND BACKFILL WITH COMPACTED GRANULAR 'B'.
4. COMPACTION OF BACKFILL MATERIAL BENEATH GARAGE FLOOR SLAB AS PER O.B.C. 9.16.2.2.(4)
5. SLEEVE THROUGH FOOTING FOR INTERIOR TILE DRAIN
6. INTERIOR TILE DRAIN BELOW SLAB - 4" (100mm) PERFORATED WEEPING TILE C.W. FILTER CLOTH AND 6" (150mm) CRUSHED STONE AS PER O.B.C. 9.14.3(4)
7. FACE OF WALL FRAMING ABOVE
8. FLOOR DRAIN COMPLETE WITH T.S.P.
9. DRAINAGE PIPE BELOW SLAB
10. SLEEVE THROUGH FOUNDATION WALL FOR DRAINAGE PIPE
11. SAW CUTS IN SLAB (SEE STRUCTURAL FOR DETAILS)
12. EXISTING FRIDGE TO BE REINSTALLED
13. NEW CABINETS, COUNTERTOPS AND SINK (TO BE CONFIRMED BY CONTRACTOR)
14. RELOCATE EXISTING HOSE BIB (FINAL LOCATION TBD BY CONTRACTOR)
15. RELOCATE EXISTING PRESSURE WASHER AND HOSE REEL (FINAL LOCATION TBD BY CONTRACTOR)
16. REDUCE HEIGHT OF FOUNDATION WALL 16" & CONTINUE SLAB OVER FOUNDATION & PROVIDE THICKENED SLAB EDGE OVER FOUNDATION WAL
17. BEAM TO BEAR ON ON CMU WALL AS PER STRUCTURAL DETAIL 3/S201
18. NEW STACKABLE WASHER AND DRYERS

PERMIT SET

NOTES:
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THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH EACH OTHER, SPECIFICATIONS & OTHER CONTRACT DOCUMENTS

LEGEND:

- (1) EXTERIOR DOOR & WINDOW TAG (SEE SCHEDULE)
- (1) INTERIOR DOOR TAG (SEE SCHEDULE)
- W1 EXTERIOR WALL TYPE (SEE A.0.a)
- P1 INTERIOR PARTITION WALL TYPE (SEE A.0.a)

LEGEND:

- F1 FLOOR TYPE (SEE A.0.a)
- R1 ROOF TYPE (SEE A.0.a)
- P1 POST TYPE (SEE A.0.a)
- L1 LINTEL TYPE (SEE A.0.a)
- F1 PAD FOOTING TYPE (SEE A.0.a)
- WF1 WALL FOOTING TYPE (SEE A.0.a)
- (1) CONSTRUCTION NOTE

PROJECT NORTH:

BELL + ASSOCIATES ARCHITECTURE

+ 186 Pembroke St. E.
Pembroke, ON K8A 3J7
613-629-6088

+ 120 Terence Matthews Cres.
Unit B1, Ottawa, ON K2M 1P7
613-831-9688

+ info@bell.ca
bellarchitecture.ca

VERSION NO.

2

SEAL:

NOTES:
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REVISIONS

NO	ITEM	DATE
1	ISSUED FOR 25%	31/10/2023
2	ISSUED FOR 50%	07/12/2023
3	ISSUED FOR FINAL REVIEW	15/05/2024
4	ISSUED FOR PERMIT	05/19//2026

PROJECT

240 COUNTY ROAD 4,
BATH, ON K0H 1G0

CLIENT

LOYALIST TOWNSHIP - MILLHAVEN GARAGE STORAGE EXPANSION

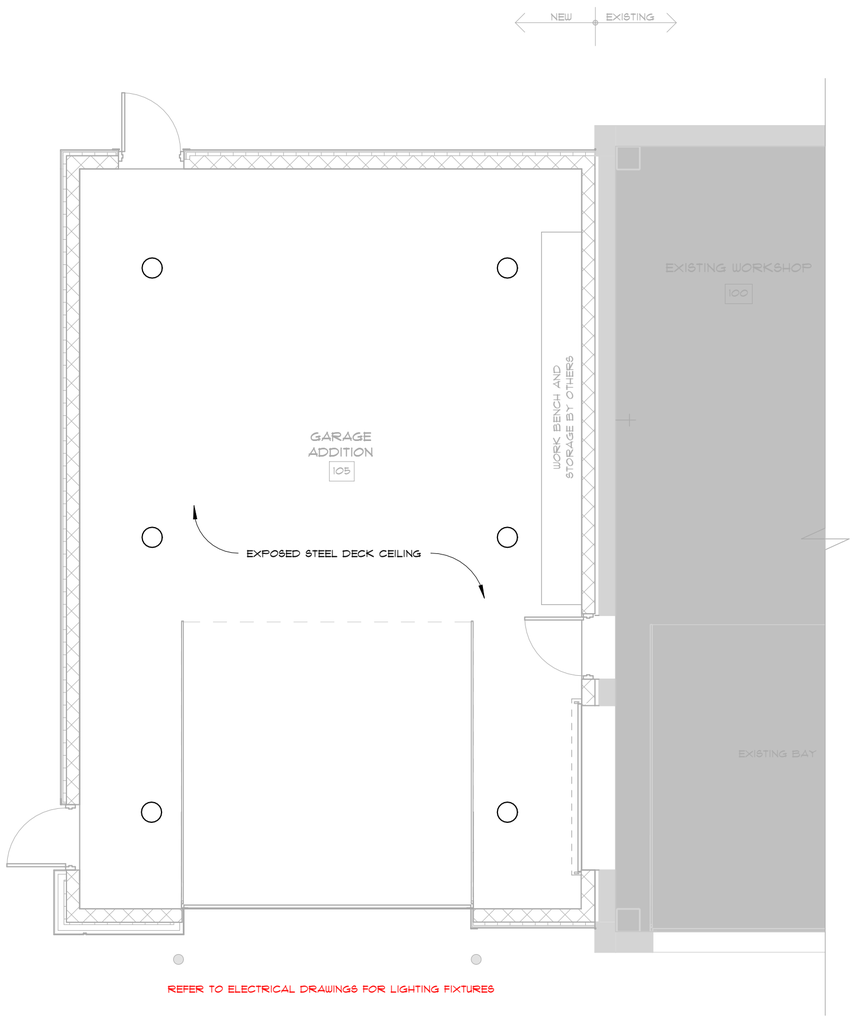
DRAWING

MAIN FLOOR/ UPPER FLOOR PLAN

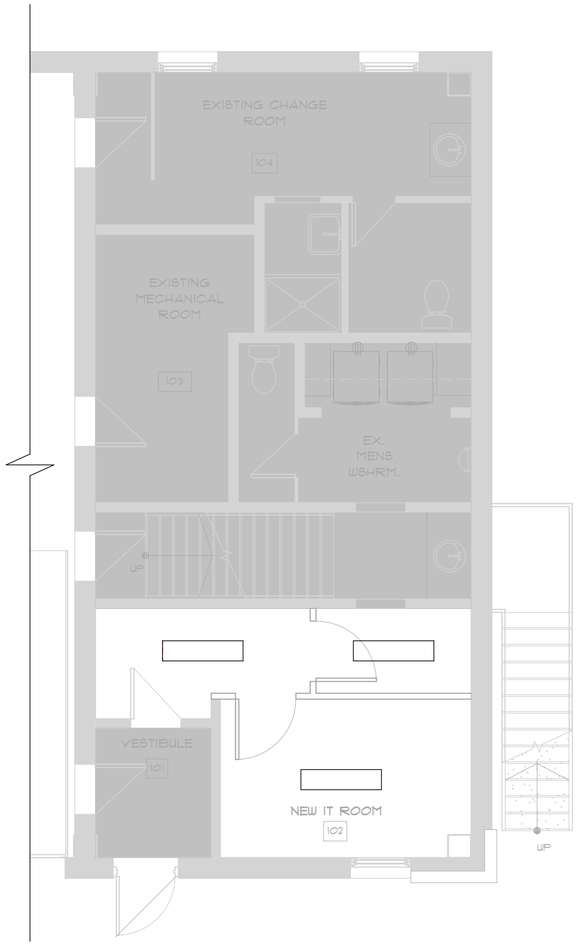
SCALE	AS INDICATED
DRAWN BY	ETV
DATE	SEPT. 12, 2023
CHKED BY	TJG
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO.

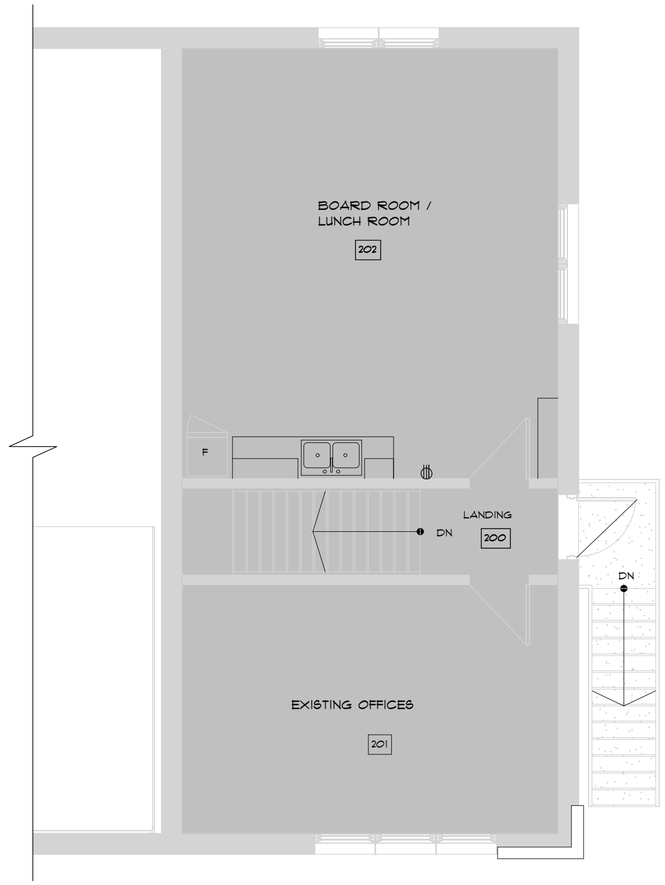
A.3



REFER TO ELECTRICAL DRAWINGS FOR LIGHTING FIXTURES



REFER TO ELECTRICAL DRAWINGS FOR LIGHTING FIXTURES



EXISTING CEILING AND LIGHTING TO REMAIN

EXISTING CEILING AND LIGHTING TO REMAIN

NEW LIGHTING TO MATCH EXISTING, TO BE CONFIRMED ON-SITE.
300mm x 1200mm 2 LAMP T8 LIGHT FIXTURE LITHONIA LIGHTING

NEW LIGHTING TO MATCH EXISTING, TO BE CONFIRMED ON-SITE.
LITHONIA LIGHTING - CPRB ALO13

NEW EXISTING

1 / A.3.1 MAIN FLOOR REFLECTED CEIING PLAN
SCALE: 3/16" = 1'-0"

2 / A.3.1 UPPER FLOOR REFLECTED CEILING PLAN
SCALE: 3/16" = 1'-0"

PERMIT SET

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- W1 EXTERIOR WALL TYPE (SEE A.O.a)
- P1 INTERIOR PARTITION WALL TYPE (SEE A.O.a)

LEGEND:
- F1 FLOOR TYPE (SEE A.O.a)
- R1 ROOF TYPE (SEE A.O.a)
- P1 POST TYPE (SEE A.O.a)
- L1 LINTEL TYPE (SEE A.O.a)
- F1 PAD FOOTING TYPE (SEE A.O.a)
- WF1 WALL FOOTING TYPE (SEE A.O.a)
- (1) CONSTRUCTION NOTE

PROJECT NORTH:

BELL + ASSOCIATES ARCHITECTURE
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613-831-9688
+ info@bell.ca
bellarchitecture.ca

VERSION NO. 2

SEAL:

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PROJECT
240 COUNTY ROAD 4,
BATH, ON K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN GARAGE STORAGE EXPANSION

DRAWING
REFLECTED CEILING PLAN

SCALE	AS INDICATED
DRAWN BY	ETV
DATE	SEPT. 12, 2023
CHKED BY	TJG
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO. A.3.1

1 / A.4 ROOF PLAN
SCALE: 1/8" = 1'-0"

ROOM FINISH SCHEDULE

NOTE: BASE COLOUR TO BE DETERMINED BY ARCHITECT

ROOM #	ROOM NAME	FLOOR	BASE	CEILING	CEILING COLOUR	WALLS NORTH	WALLS EAST	WALLS SOUTH	WALLS WEST	TRIM / FRAMES / DOORS
100	EXISTING WORKSHOP	EXISTING TO REMAIN								
101	VESTIBULE	EXISTING TO REMAIN								
102	EXISTING CHANGE ROOM	EXISTING TO REMAIN								
103	EXISTING MECHANICAL ROOM	EXISTING TO REMAIN								
104	EXISTING CHANGE ROOM	EXISTING TO REMAIN								
105	GARAGE ADDITION	CON	N/A	OWSJ		PT1	PT1	PT1	PT1	TO MATCH EXISTING
200	LANDING	VIN	N/A	E.T.R.	E.T.R.	PT2	PT2	PT2	PT2	EXISITNG TO REMAIN
201	OFFICE	VIN	N/A	E.T.R.	E.T.R.	PT2	PT2	PT2	PT2	EXISITNG TO REMAIN
202	BOARD ROOM / LUNCH ROOM	VIN	N/A	E.T.R.	E.T.R.	PT2	PT2	PT2	PT2	EXISITNG TO REMAIN

P.C.T. = PORCELINE TILE
VIN = VINYL FLOORING T.B.D.
CON = POLISHED CONCRETE
4" RUB = 4" JOHNSON RUBBER BASE
OWSJ = OPEN WEB STEEL JOISTS
PT1 = WHITE VAPOUR RETARDANT PAINT
PT2 = SAND, PRIME AND PAINT FOR FULL COVERAGE (COLOUR TBD BY CLIENT)
- ALL MAIN WALLS
E.T.R. = EXISITNG TO REMAIN

2 / A.5 ROOM FINISH SCHEDULE
SCALE: 3/16" = 1'-0"

PERMIT SET

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LEGEND:
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R1 ROOF TYPE (SEE A.0.a)
P1 POST TYPE (SEE A.0.a)
L1 LINTEL TYPE (SEE A.0.a)
F1 PAD FOOTING TYPE (SEE A.0.a)
WF1 WALL FOOTING TYPE (SEE A.0.a)
(1) CONSTRUCTION NOTE

PROJECT NORTH:

BELL + ASSOCIATES ARCHITECTURE
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120 Terence Matthews Cres.
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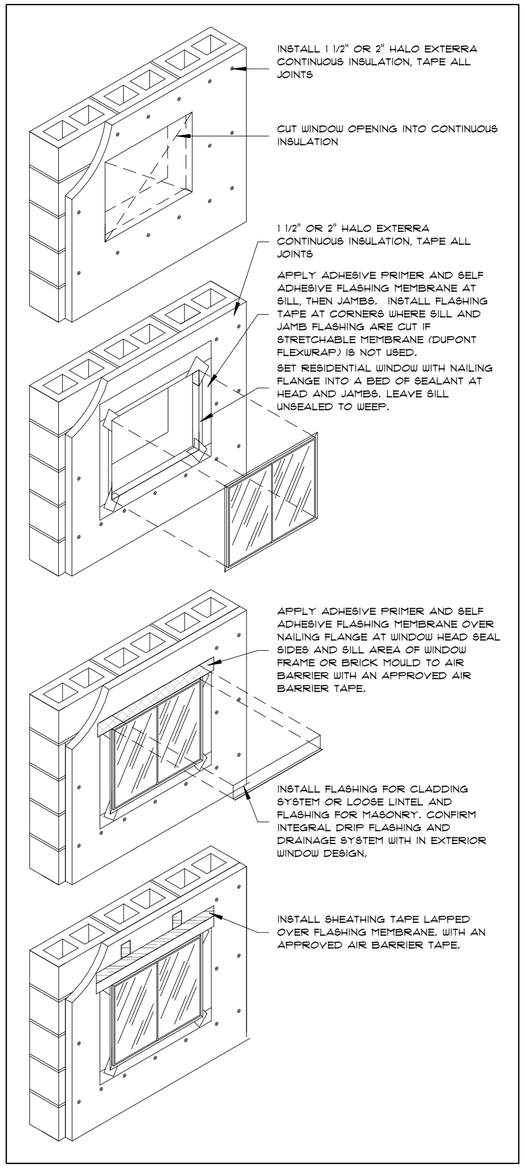
PROJECT
240 COUNTY ROAD 4,
BATH, ON K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN GARAGE STORAGE EXPANSION

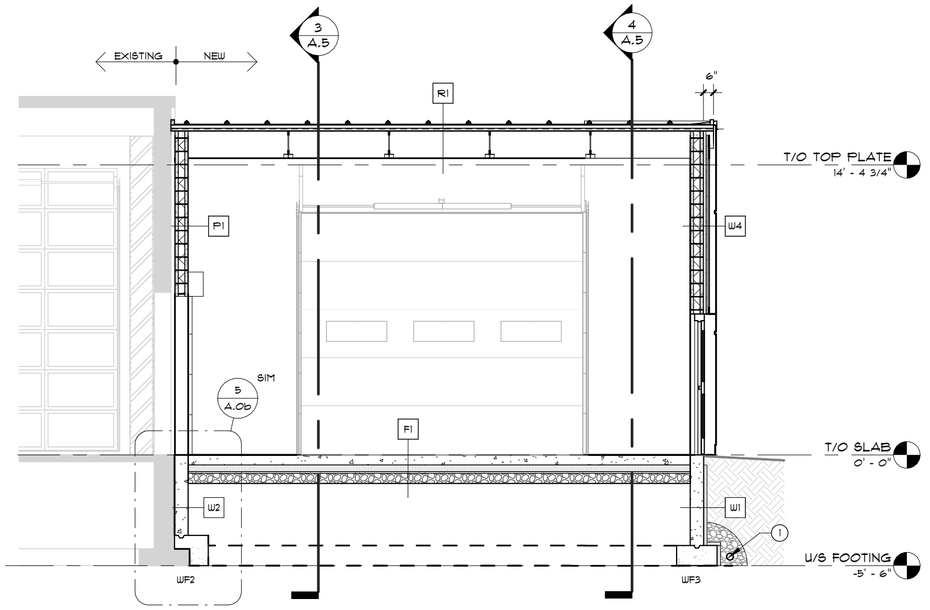
DRAWING
ROOF PLAN/ ROOM FINISH SCHEDULE

SCALE	AS INDICATED
DRAWN BY	ETV
DATE	SEPT. 12, 2023
CHKED BY	TJG
APPRD BY	JCB
PROJECT NO.	223-05b

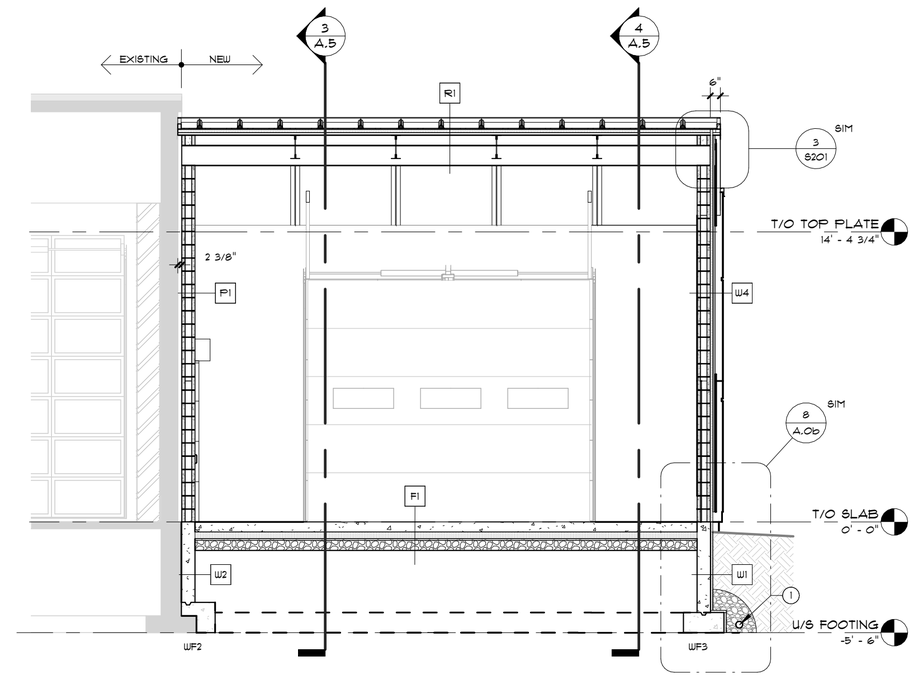
SHEET NO. A.4



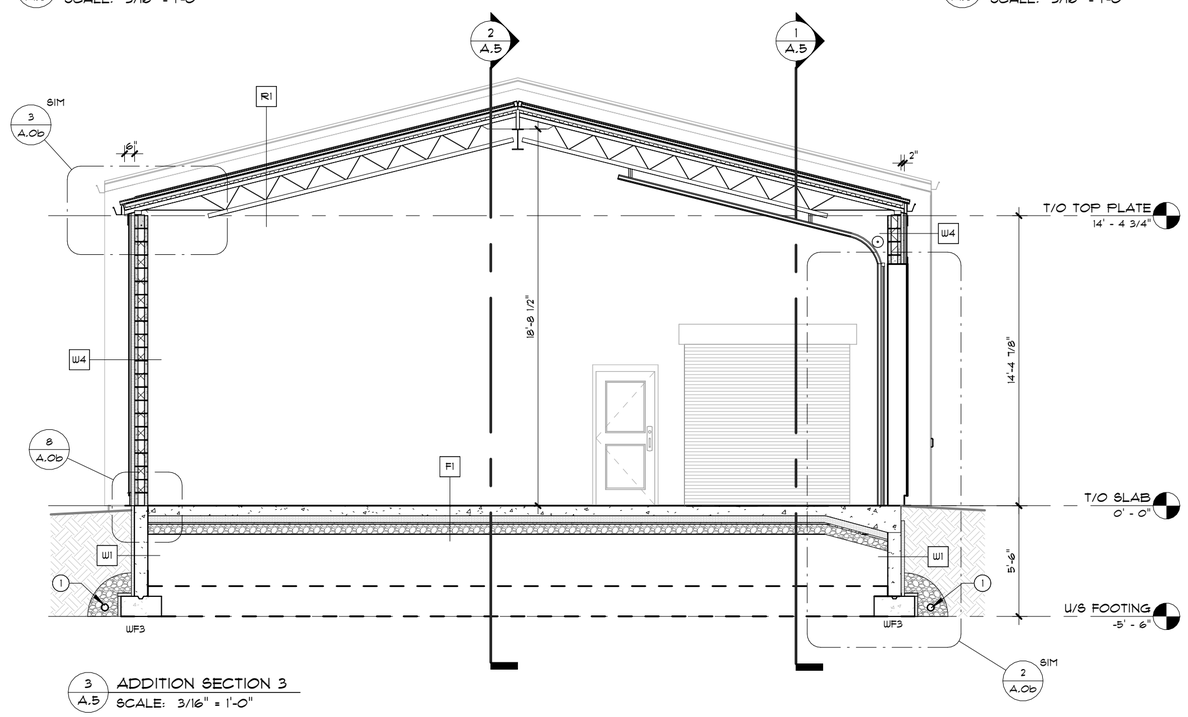
5 / A.5 EXT. WALL PENETRATION WRAP DETAIL W/ RIGID
SCALE: 1/2" = 1'-0"



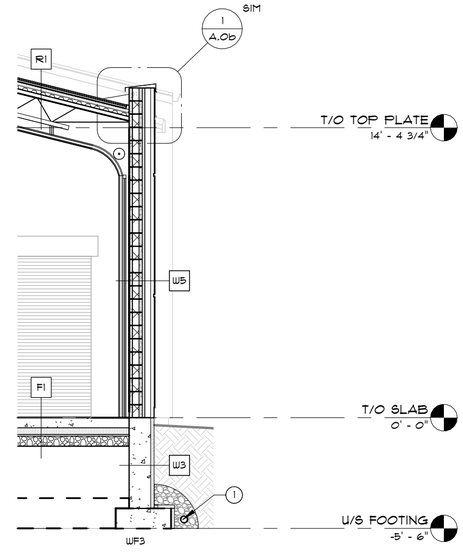
1 / A.5 ADDITION SECTION 1
SCALE: 3/16" = 1'-0"



2 / A.5 ADDITION SECTION 2
SCALE: 3/16" = 1'-0"



3 / A.5 ADDITION SECTION 3
SCALE: 3/16" = 1'-0"



4 / A.5 WALL SECTION
SCALE: 3/16" = 1'-0"

PERMIT SET

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- R1 — ROOF TYPE (SEE A.0.a)
- P1 — POST TYPE (SEE A.0.a)
- L1 — LINTEL TYPE (SEE A.0.a)
- F1 — PAD FOOTING TYPE (SEE A.0.a)
- WF1 — WALL FOOTING TYPE (SEE A.0.a)
- 1 — CONSTRUCTION NOTE

PROJECT NORTH:

BELL + ASSOCIATES ARCHITECTURE
+ 186 Pembroke St. E. Pembroke, ON K8A 3J7 613-629-9088
+ 120 Terence Matthews Cres. Unit B1, Ottawa, ON K2M 1P7 613-831-9688
+ info@bell.ca bellarchitecture.ca

VERSION NO. 2

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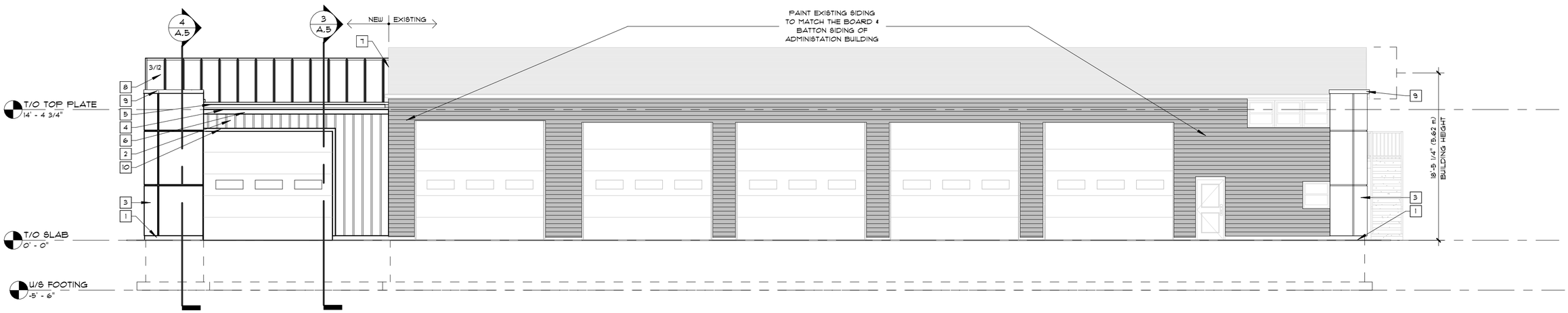
PROJECT
240 COUNTY ROAD 4, BATH, ON K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN GARAGE STORAGE EXPANSION

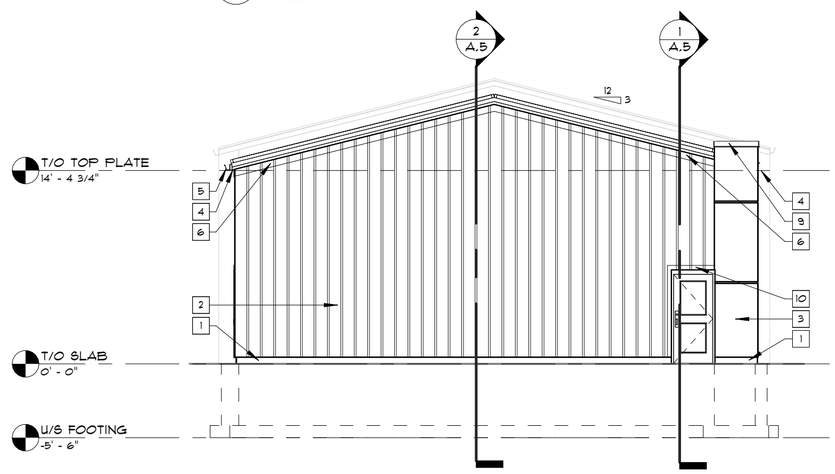
DRAWING
BUILDING SECTIONS

SCALE	AS INDICATED
DRAWN BY	ETV
DATE	SEPT. 12, 2023
CHKED BY	TJG
APPRD BY	JCB
PROJECT NO.	223-05b

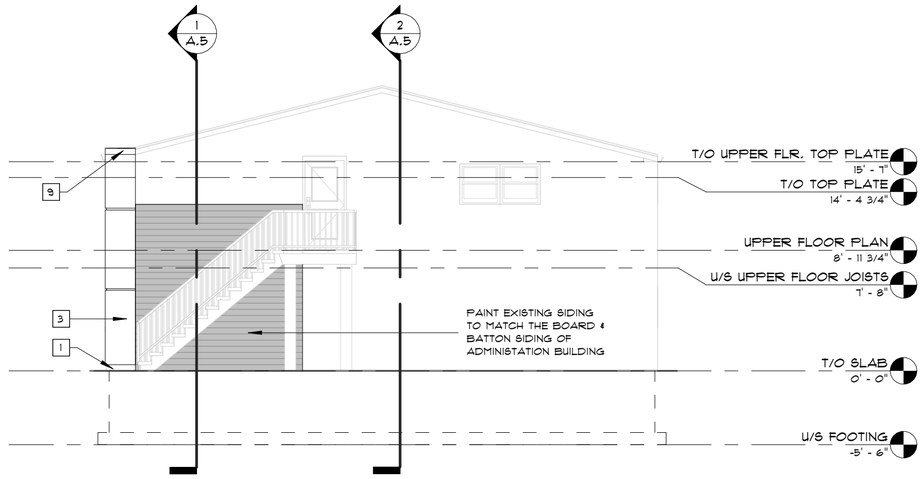
SHEET NO. A.5



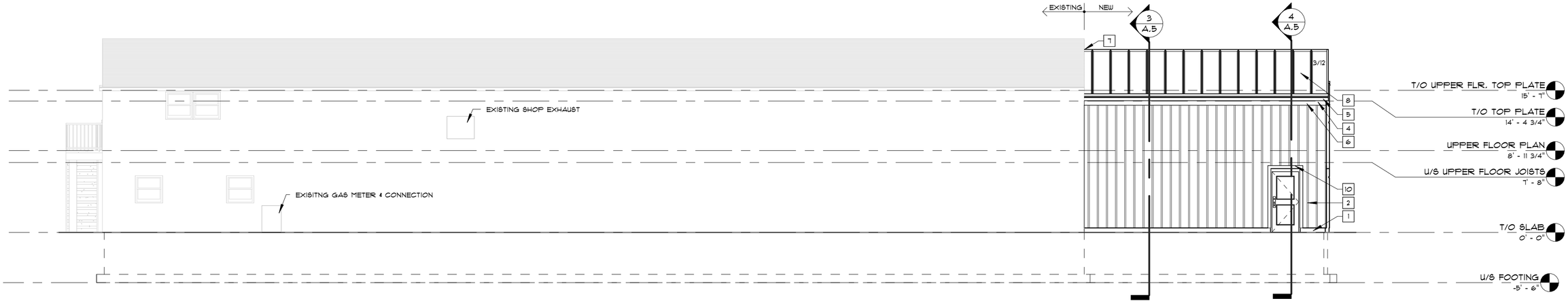
1 A.6 FRONT ELEVATION
SCALE: 1/8" = 1'-0"



2 A.6 LEFT ELEVATION
SCALE: 1/8" = 1'-0"



3 A.6 RIGHT ELEVATION
SCALE: 1/8" = 1'-0"



4 A.6 REAR ELEVATION
SCALE: 1/8" = 1'-0"

BUILDING ENVELOPE REQUIREMENTS:

WALL:	E.B.F (m^2)	L.D. (m)	F.R.R. (H)	CONSTRUCTION TYPE:	CLADDING TYPE:
REAR (N.)	5.48 m^2	123.46 m	N/A	COMBUSTIBLE	COMBUSTIBLE
RIGHT (E.)	3.81 m^2	N/A	N/A	COMBUSTIBLE	COMBUSTIBLE
FRONT (S.)	108.60 m^2	66.55 m	N/A	COMBUSTIBLE	COMBUSTIBLE
LEFT (W.)	2.14 m^2	26.25 m	N/A	COMBUSTIBLE	COMBUSTIBLE

EXTERIOR FINISH LEGEND:

1. PARGING ON ALL EXPOSED CONCRETE TO 12" BELOW GRADE
2. PRE-FINISHED VERTICAL SIDING C.W. ALL TRIMS, CLOSURES AND FITTINGS, INSTALLED AS PER MANUFACTURERS SPECIFICATIONS (COLOUR TO BE APPROVED BY DESIGNER)
3. ALUCOBOND CLADDING (REFER TO ELEVATIONS FOR ORIENTATION, (COLOUR & FINISH TO BE APPROVED BY DESIGNER AND INSTALLED AS PER MANUFACTURER INSTRUCTIONS)
4. PRE-FINISHED ALUMINUM FASCIA & VENTED ALUM. SOFFIT
5. ALUMINUM GUTTER
6. 6" PRE-FINISHED ALUMINUM FREIZE
7. PRE-FINISHED METAL FLASHING @ ALL VALLEYS & ROOF/WALL INTERSECTIONS
8. METAL ROOF, 'POCKET RIB' BY 'IDEAL ROOFING' OR APPROVED EQUAL
9. 6" PRE-FINISHED METAL PARAPET CAP
10. 4" PRE-FINISHED TRIM (COLOUR TO BE APPROVED BY DESIGNER)

PERMIT SET

NOTES:
REFER TO GENERAL NOTES FOR ALL TYPICAL CONSTRUCTION NOTES & DETAILS. WHEN DRAWINGS OR NOTES REFERENCE O.B.C. IN ALL CASES PLEASE REFER TO THE LATEST VERSION OF THE ONTARIO BUILDING CODE 2024.

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH EACH OTHER, SPECIFICATIONS & OTHER CONTRACT DOCUMENTS

LEGEND:

- (1) EXTERIOR DOOR & WINDOW TAG (SEE SCHEDULE)
- (1) INTERIOR DOOR TAG (SEE SCHEDULE)
- W1 EXTERIOR WALL TYPE (SEE A.0.a)
- P1 INTERIOR PARTITION WALL TYPE (SEE A.0.a)

LEGEND:

- F1 FLOOR TYPE (SEE A.0.a)
- R1 ROOF TYPE (SEE A.0.a)
- P1 POST TYPE (SEE A.0.a)
- L1 LINTEL TYPE (SEE A.0.a)
- F1 PAD FOOTING TYPE (SEE A.0.a)
- WF1 WALL FOOTING TYPE (SEE A.0.a)
- (1) CONSTRUCTION NOTE

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VERSION NO. 2

SEAL:

NOTES:
- ALL CONTRACTORS MUST COMPLY WITH ALL CODES & BYLAWS HAVING JURISDICTION
- IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK & VERIFY ALL DIMENSIONS ON SITE & REPORT ALL ERRORS AND/OR OMISSIONS TO THE DESIGNER PRIOR TO COMMENCEMENT.
- DO NOT SCALE DRAWINGS.
- DRAWINGS MAY NOT BE USED FOR CONSTRUCTION UNTIL NOTED AS ISSUED FOR CONSTRUCTION.

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REVISIONS

NO	ITEM	DATE
1	ISSUED FOR 25%	31/10/2023
2	ISSUED FOR 50%	07/12/2023
3	ISSUED FOR FINAL REVIEW	15/05/2024
4	ISSUED FOR PERMIT	05/19//2026

PROJECT
240 COUNTY ROAD 4,
BATH, ON K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN GARAGE STORAGE EXPANSION

DRAWING
ELEVATIONS

SCALE	AS INDICATED
DRAWN BY	ETV
DATE	SEPT. 12, 2023
CHKED BY	TJG
APPRD BY	JCB
PROJECT NO.	223-05b

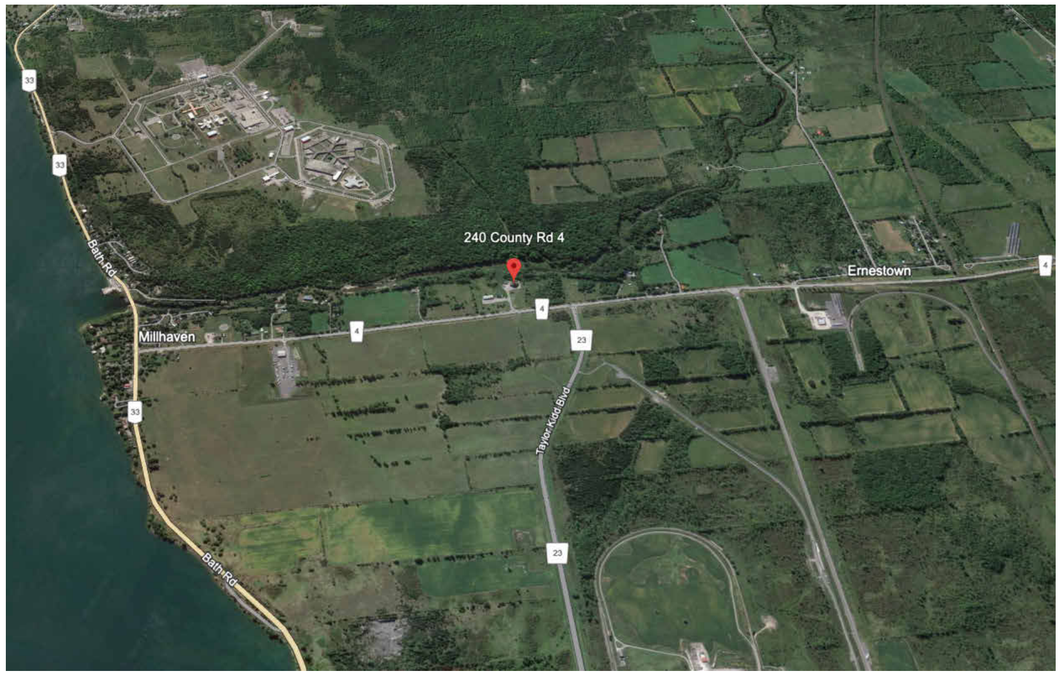
SHEET NO. A.6

ITEM	ONTARIO BUILDING CODE DATA MATRIX PARTS 3 & 9									OBC REFERENCE	
1	PROJECT DESCRIPTION: WAREHOUSE FIT-UP				■ NEW		☐ PART 11			☐ PART 3	■ PART 9
					☐ ADDITION		11.1 TO 11.4			1.1.2.[A]	
					☐ CHANGE OF USE	☐ ALTERATION					
2	MAJOR OCCUPANCY(S) GROUP D OCCUPANCY									3.1.2.1.(1)	
3	BUILDING AREA (m2)		EXISTING: /		NEW: 266.9		TOTAL: 266.8			1.4.1.2.[A]	
4	GROSS AREA		EXISTING: /		NEW: 266.9		TOTAL: 266.9			1.4.1.2.[A]	
5	NUMBER OF STOREYS		ABOVE GRADE: 1				BELOW GRADE: /			1.4.1.2.[A] & 3.2.1.1	
6	HEIGHT OF BUILDING (m): 3.95 m										
7	NUMBER OF STREETS/ACCESS ROUTES: 1									3.2.2.10 & 3.2.5.5.	
8	BUILDING CLASSIFICATION: 3.2.2.55 - GROUP D, UP TO 2 STOREYS									3.2.2.20-.83	
9	SPRINKLER SYSTEM PROPOSED				☐ ENTIRE BUILDING (EXIST)					3.2.2.57	
					☐ BASEMENT ONLY					3.2.2.20-.83	
					☐ IN LIEU OF ROOF RATING					3.2.1.5	
					■ NOT REQUIRED					3.2.2.17	
10	STANDPIPE REQUIRED				☐ YES	■ NO				3.2.9	
11	FIRE ALARM REQUIRED				EXIST ☐ YES	■ NO				3.2.4	
12	WATER SERVICE/SUPPLY IS ADEQUATE				■ YES	☐ NO				3.2.5.7	
13	HIGH BUILDING				☐ YES	■ NO				3.2.6	
14	PERMITTED CONSTRUCTION		☐ COMBUSTIBLE		☐ NON COMBUSTIBLE		■ BOTH			3.2.2.20-.83	
	ACTUAL CONSTRUCTION		☐ COMBUSTIBLE		☐ NON COMBUSTIBLE		■ BOTH				
15	MEZZANINE(S) AREA m2: N/A									3.2.1.1.(3)-(8)	
16	OCCUPANT LOAD BASED ON		☐ m2 / PERSON		■ DESIGN OF BUILDING					3.1.1.6	
	BASEMENT:	OCCUPANCY N/A		LOAD	/	PERSONS					
	1ST FLOOR:	OCCUPANCY		LOAD	10	PERSONS					
	2ND FLOOR:	OCCUPANCY N/A		LOAD	/	PERSONS					
17	BARRIER FREE DESIGN		■ YES	☐ NO	EXPLAIN:					3.8	
18	HAZARDOUS SUBSTANCES		☐ YES	■ NO						3.3.1.2.(1) & 3.3.1.19.(1)	
19	REQUIRED FIRE RESISTANCE RATING (FRR)	HORIZONTAL ASSEMBLIES FRR (HOURS)			LISTED DESIGN NO. OR DESCRIPTION (SG-2)					3.2.2.10-.83 & 3.2.1.4	
		FLOORS	45 MIN.	HOURS	COMBUSTIBLE CONSTRUCTION						
		ROOF	N/A	HOURS							
		MEZZANINE	N/A	HOURS							
		FRR OF SUPPORTING MEMBERS			LISTED DESIGN NO. OR DESCRIPTION (SG-2)						
		FLOORS	45 MIN.	HOURS	COMBUSTIBLE CONSTRUCTION						
		ROOF	45 MIN.	HOURS	COMBUSTIBLE CONSTRUCTION						
		MEZZANINE	N/A	HOURS							
20	PLUMBING FIXTURE REQUIREMENTS									3.7.4.8.(2)	
	MALE / FEMALE COUNT @ 50% / 50% EXEPT AS NOTED OTHERWISE				OCCUPANT LOAD	BC TABLE NUMBER	FIX. REQ'D	FIX. PROV'D			
	WOMEN				1	3.7.4.7 (2)	1 UNISEX	1 UNISEX			
	MEN				1	3.7.4.7 (2)	1 UNISEX	1 UNISEX			
	BARRIER FREE				1	3.8.2.3.A	1	1			
21	SPATIAL SEPARATION - CONSTRUCTION OF EXTERIOR WALLS									3.2.3	

WALL	AREA OF EBF (m2)	L.D. (m)	L/H OR H/L	PERMITTED MAX % OF OPENINGS	PROPOSED % OF OPENINGS	FRR (HOURS)	LISTED DESIGN OR DESCRIPTION	TYPE OF CONSTRUCTION REQUIRED	CLADDING TYPE REQUIRED
NORTH	45.5	21	4:1	100%	8.25 %	45 MIN.	STONE & WOOD	COMBUSTIBLE & NON-COMBUSTIBLE	COMBUSTIBLE & NON-COMBUSTIBLE
EAST	59.6	21	5:1	100%	33.2 %	45 MIN.	STONE & WOOD	COMBUSTIBLE & NON-COMBUSTIBLE	COMBUSTIBLE & NON-COMBUSTIBLE
SOUTH	45.5	80	4:1	100%	33.2 %	45 MIN.	STONE/WOOD/ COMPOSITE	COMBUSTIBLE & NON-COMBUSTIBLE	COMBUSTIBLE & NON-COMBUSTIBLE
WEST	81.7	80	3:1	100%	28.9 %	45 MIN.	STONE/WOOD/ COMPOSITE	COMBUSTIBLE & NON-COMBUSTIBLE	COMBUSTIBLE & NON-COMBUSTIBLE

22 OTHER - DESCRIBE

SITE KEY PLAN



DRAWING LIST

ARCHITECTURAL

A.0	COVER SHEET
A.0a	GENERAL NOTES
A.0b	STANDARD & UNIVERSAL WASHROOM DETAILS
A.1	SITE PLAN
A.2	FOUNDATION & FOOTING PLAN
A.3	MAIN FLOOR PLAN
A.4	REFLECTED CEILING PLAN & BUILDING SECTIONS
A.5	ROOF PLAN/ WINDOW ELEVATIONS/ DOOR SCHEDULE/ ROOM FINISH SCHEDULE
A.6	FRONT & LEFT ELEVATIONS
A.7	BACK & RIGHT ELEVATIONS

STRUCTURAL

S001	GENERAL NOTES & DESIGN CRITERIA
S002	TYPICAL DETAILS & DESIGN CRITERIA
S003	TYPICAL DETAILS & DESIGN CRITERIA
S100	FLOOR PLANS

CIVIL

C1	SITE SERVICING PLAN
C2	EXISTING & PROPOSED SEPTIC SYSTEMS
C3	GRADING PLAN
C4	EROSION SEDIMENT CONTROL PLAN
C5	NOTES AND DETAILS
C6	DETAILS
C7	POST-DEVELOPMENT DRAINAGE PLANS

ELECTRICAL

E-1	ELECTRICAL LEGENDS, SCHEDULES & GENERAL NOTES
E-2	ELECTRICAL REFLECTED CEILING PLAN
E-3	ELECTRICAL DISTRIBUTION
E-4	ELECTRICAL SPECIFICATIONS

MECHANICAL

M-1	MECHANICAL LEGEND & GENERAL NOTES
M-2	PLUMBING
M-3	HVAC SYSTEMS
M-4	MECHANICAL SPECIFICATIONS

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CONTACT:
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PERMIT SET

NOTES:
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LEGEND:
- (1) EXTERIOR DOOR & WINDOW TAG (SEE SCHEDULE)
- (1) INTERIOR DOOR TAG (SEE SCHEDULE)
- W1 EXTERIOR WALL TYPE (SEE A.0.a)
- P1 INTERIOR PARTITION WALL TYPE (SEE A.0.a)
- F1 FLOOR TYPE (SEE A.0.a)

LEGEND:
- R1 ROOF TYPE (SEE A.0.a)
- P1 POST TYPE (SEE A.0.a)
- L1 LINTEL TYPE (SEE A.0.a)
- F1 PAD FOOTING TYPE (SEE A.0.a)
- WF1 WALL FOOTING TYPE (SEE A.0.a)
- SCD SMOKE/CARBON MONOXIDE DETECTOR TO O.B.C. 9.10.19
- (1) CONSTRUCTION NOTE
- EXHAUST FAN - VENT TO OUTSIDE
- NON-FREEZE HOSE BIB

BELL + ASSOCIATES ARCHITECTURE
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Pembroke, ON K8A 3J7
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bellarchitecture.ca

VERSION NO. 2

SEAL:

NOTES:
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REVISIONS

NO	ITEM	DATE
1	ISSUED FOR SPA	02-25-2026
2	ISSUED FOR CONSULTANT REVIEW	04-07-2026
3	ISSUED FOR CONSULTANT REVIEW	05-25-2026
4	ISSUED FOR PERMIT	05-29-2026

PROJECT
240 COUNTY ROAD, 4 BATH ONTARIO, K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN ADMIN BUILDING

DRAWING
COVER SHEET

SCALE	AS INDICATED
DRAWN BY	AIT
DATE	SEPT 28, 2023
CHKED BY	AIT
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO. A.0

GENERAL NOTES

1. THE DESIGN & CONSTRUCTION OF THIS PROJECT IS TO CONFORM TO THE REQUIREMENTS OF THE NATIONAL BUILDING CODE OF CANADA (2015), ONTARIO BUILDING CODE (2024) & THE CSA STANDARDS INDICATED THEREIN. THE LATEST REVISIONS TO ALL STANDARDS WILL GOVERN.
2. THE CONTRACTOR & SUB CONTRACTOR SHALL CHECK & VERIFY ALL CONDITIONS & MEASUREMENTS AT THE SITE AND REPORT ANY DISCREPANCIES OR UNSATISFACTORY CONDITIONS WHICH MAY ADVERSELY AFFECT THE PROPER COMPLETION OF THE WORK IMMEDIATELY TO THE ENGINEER AND/OR PROJECT CO-ORDINATOR PRIOR TO PROCEEDING WITH THE WORK. WHEN IN DOUBT, THE ARCHITECTURAL DRAWINGS WILL GOVERN.
3. THE CONTRACTORS SHALL BE RESPONSIBLE FOR ANY DEWATERING REQUIRED TO UNDERTAKE THE WORK.
4. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATIONS & OTHER CONTRACT DOCUMENTS.
5. NOTIFY BELL + ASSOCIATES ARCHITECTURE IMMEDIATELY UPON DISCOVERY OF ANY DISCREPANCIES WITH DIMENSIONS, ELEVATIONS ANGLES & WORK POINTS.
7. DO NOT SCALE DRAWINGS.
8. MECHANICAL VENTILATION TO CONFORM TO O.B.C. 2024 9.32.3
9. GROUT ALL BEAM POCKETS SOLID WITH NON SHRINK GOUT
10. CARRY ALL POST LOAD DOWN TO FOUNDATION OR SUITABLE BEARING PROVIDE SOLID WOOD BLOCKING WHERE REQUIRED.
11. ALL BEAMS SECURED TO COLUMNS
12. SECURE ALL HOT WATER TANKS TO STRUCTURE.
13. PROVIDE TRAP SEAL PRIMER IN ALL BASEMENT FLOOR DRAINS.
14. PROVIDE 22"x24" ATTIC ACCESS HATCH W/ WEATHER STRIP. LOCATION TO BE DETERMINED ON SITE.
15. GUARDS AND RAILS TO BE MIN. 36" OR 42" ABOVE FLOOR/NOSING AS PER OBC 9.8.8/SB-7.

STRUCTURAL NOTES

1. THIS STRUCTURE IS DESIGNED IN ACCORDANCE WITH PART 9 OF THE 2024 ONTARIO BUILDING CODE.
2. ALL CONSTRUCTION NOT EXPLICITLY FOUND ON DRAWINGS TO BE DONE IN ACCORDANCE WITH PART 9 O.B.C. 2024.
3. DESIGN ALLOWABLE BEARING CAPACITY ASSUMED TO BE 100/kPa MIN. TO BE CONFIRMED BY OTHERS.
4. CONTRACTOR TO VERIFY ALL DIMENSIONS AND DETAILS GIVEN ON DRAWINGS AND REPORT ANY INCONSISTENCIES AND/OR DISCREPANCIES TO STRUCTURAL ENGINEER BEFORE PROCEEDING WITH WORK.
5. DRAWINGS ILLUSTRATE WORK TO BE DONE. ENGINEER IS NOT RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES OR SAFETY ASPECTS INVOLVED IN COMPLETING THE WORK.
6. ALL MATERIALS SHALL BE NEW AND MATERIAL FREE FROM DEFECTS IMPAIRING STRENGTH, DURABILITY AND/OR APPEARANCE.
7. ALL WOOD SHALL BE SPF NO. 1-2 OR BETTER
8. ALL STEEL SHALL BE GRADE 350W STEEL CONFORMING TO CSA-G40.20/G40.21 (Fy = 345 MPa)
9. PROVIDE FULL BEARING/SOLID BLOCKING UNDERNEATH ALL POINT LOADS FROM ABOVE TO STRUCTURE BELOW.
10. PROVIDE FULL LATERAL RESTRAINT TO THE TOP OF ALL WOOD AND STEEL BEAMS AND LINTELS.
11. BACKFILLING TO PROCEED SIMULTANEOUSLY ON BOTH SIDES OF FOUNDATION WALLS.
12. ALL POSTS TO BE P2 (2-2x4 or 2-2x6 SEE WALL TYPE) SPRUCE NO. 1-2 OR BETTER UNLESS NOTED OTHERWISE.
13. SECURE ALL POSTS TO BEAMS TO PREVENT LATERAL DISPLACEMENT.
14. WELD OR BOLT STEEL POSTS TO STEEL BEAMS.
15. ANCHOR BOLTS SPACED 5'-0" MAX. UNLESS NOTED OTHERWISE ON DRAWINGS.
16. CONSULTING ENGINEERS WILL NOT BE LIABLE FOR ANY CONSTRUCTION NOT INSPECTED OR REVIEWED.

GENERAL CONSTRUCTION ASSEMBLY NOTES:

1. PROVIDE MOISTURE RESISTANT GYPSUM BOARD IN ALL WET AREAS, WASHROOM CEILINGS AND WASHROOM WALLS. CEMENT BOARD TO BE USED ON ALL TUB DECKS AND SHOWER ENCLOSURES.
2. PROVIDE TYPE S ROLL ROOFING ISOLATION MEMBRANE BETWEEN CONCRETE BELOW GRADE AND WOOD FRAMING OR INSULATION.
3. REFER TO STRUCTURAL NOTES, FOOTING SCHEDULES AND DETAILS FOR CONCRETE WALL / FOOTING REINFORCING.
4. PROVIDE CEMENT PARGING TO 12" BELOW GRADE ON ALL EXPOSED CONCRETE FOUNDATION WALLS.
5. INTERIOR WOOD FRAMED PARTITIONS USE 2"x4" STUDS UNLESS OTHERWISE NOTED. EXTERIOR WALLS USE 2"x6" STUDS UNLESS OTHERWISE NOTED. FRAMING SPACED AT 16" O.C. UNLESS OTHERWISE NOTED.
6. LAP & SEAL ALL JOINTS IN POLYETHYLENE VAPOR BARRIER.
7. ALL GYPSUM BOARD WALLS AND CEILINGS TAPED AND SANDED FOR PAINT OR SPECIFIED INTERIOR FINISH.
8. REFER TO DRAWINGS FOR THICKNESS OF POURED CONCRETE FOUNDATION WALLS.
9. TAPE & SEAL ALL JOINTS IN AIR / MOISTURE BARRIER. PROVIDE AIR SEAL TO ALL OPENINGS IN ACCORDANCE WITH DETAILS.
10. PROVIDE BRICK TIES AND WEEP VENT HOLES IN MASONRY VENEER PER O.B.C. 9.20.13
11. REFER TO ELEVATIONS FOR ORIENTATION OF PRE-FINISHED SIDING (VERTICAL BOARD & BATTEN, HORIZONTAL SIDING, OR SHAKES).
12. ENSURE A FUME PROOF BARRIER BETWEEN GARAGE WALL AND INTERIOR SPACES.
13. CERAMIC TILE ON ALL TUB AREAS WALLS TO UNDERSIDE OF BULKHEAD.
14. PROVIDE SOILS REPORT TO INSPECTOR AT TIME OF INSPECTION STATED MIN. BEARING CAPACITY 100/KPA

FOUNDATIONS

1. ALL FOOTINGS TO BEAR ON SOUND & UNDISTURBED SOIL WITH AN ALLOWABLE BEARING VALUE OF 100/kPa MIN. BEARING SURFACE TO BE APPROVED BY GEOTECHNICAL ENGINEER BEFORE PLACING CONCRETE.
2. PROTECT SUB-GRADE FROM WATER & FREEZING ADJACENT TO & BELOW ALL FOOTINGS AT ALL TIMES DURING CONSTRUCTION.
3. PROVIDE 5'-0" (1500mm) MINIMUM FROST COVER (FINISHED GRADE TO U/S FOOTING) FOR HEATED FOOTINGS AND 6'-0" (1800mm) TO U/S OF ALL UNHEATED FOOTINGS. CONSULT SOIL REPORT NOTED FOR ADDITIONAL REQUIREMENTS.
4. BACKFILLING TO PROCEED SIMULTANEOUSLY ON BOTH SIDES OF FOUNDATION WALLS (EXCEPT WHERE TEMPORARY SUPPORT FOR THE WALL IS PROVIDED), & COMPACTED IN LAYERS AS SPECIFIED BY GEOTECHNICAL ENGINEER.
5. CONSULT GEOTECHNICAL ENGINEER FOR COMPOSITION & COMPACTION OF FILL SUPPORTING SLAB ON GRADE

CONCRETE

1. THE DESIGN AND CONSTRUCTION OF CONCRETE IS TO CONFORM TO THE REQUIREMENTS OF THE FOLLOWING STANDARDS (INCLUDING LATEST REVISIONS):
   - CONCRETE MATERIALS & METHODS OF CONCRETE CONSTRUCTION CAN3-A23.1-94
   - METHODS OF TEST FOR CONCRETE: CAN3-A23.2-94
   - CODE FOR DESIGN OF CONCRETE STRUCTURES FOR BUILDINGS CAN3-A23.3-M84
   - BILLET STEEL BARS FOR CONCRETE REINFORCEMENT Fy = 400MPa TO CSA G30.18-92
   - QUALIFICATION CODES FOR TESTING LABORATORIES CSA A283-90
   - AIR ENTRAINING ADMIXTURES FOR CONCRETE CAN3-A266.1-M78
   - CHEMICAL ADMIXTURES FOR CONCRETE CAN3-A266.2-M78
   - GUIDELINES FOR THE USE OF ADMIXTURES IN CONCRETE CAN3 A266.4 M78

2. CONCRETE STRENGTH (AFTER 28 DAYS) SHALL BE AS FOLLOWS:

FOOTINGS & FOUNDATION WALL	25 MPa
SLAB-ON-GRADE	35 MPa
EXTERIOR FLAT WORK	35 MPa

WOOD FRAMING

1. ALL TIMBER CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE 2015 N.B.C., LATEST REVISIONS.
2. ALL STRUCTURAL FRAMING LUMBER IS TO BE SPF NO. 2 GRADE OR BETTER, UNLESS NOTED. 'STUD' GRADE IS NOT ACCEPTABLE FOR BEARING WALLS, LINTELS AND POSTS.
3. ALL BEARING WALLS ARE TO HAVE HORIZONTAL BLOCKING AT MID HEIGHT.
4. ALL LOAD BEARING WALLS OVER 9'-0" TO 11'-10" MAX. TO HAVE CONTINUOUS HORIZONTAL BLOCKING AT MID POINT. ALL LOAD BEARING WALLS OVER 12'-0" TO HAVE CONTINUOUS HORIZONTAL BLOCKING AT THIRD POINTS & STRUCTURAL ENGINEERS APPROVAL.
5. PROVIDE SOLID BLOCKING WALL REINFORCEMENT FOR GRAB BARS AS PER 9.5.2.3. OF O.B.C.
6. ALL BEAMS REQUIRE RESTRAINT AGAINST LATERAL DISPLACEMENT & ROTATION AT THE POINTS OF BEARING.
7. ALL BEAMS REQUIRE MIN. OF 3 1/2" END BEARING & BEAM WIDTH TO HAVE FULL BEARING SUPPORT.
8. FOR BUILT-UP BEAMS, IT IS ASSUMED THAT EACH PLY IS A SINGLE CONTINUOUS MEMBER, FASTENED TOGETHER SECURELY AT INTERVALS NOT EXCEEDING 4 TIMES THE DEPTH & THAT EACH PLY IS EQUALLY LOADED.
9. BUILT-UP RECTANGULAR COMPRESSION MEMBERS SHALL CONSIST OF INDIVIDUAL MEMBERS OF EQUAL LENGTH FASTENED TOGETHER USING NAILS, LAG SCREWS OR BOLTS.
10. WHEN USED, NAILS SHALL PENETRATE THROUGH AT LEAST 3/4 OF THE THICKNESS OF THE LAST INDIVIDUAL PIECE. THE NAILS SHALL BE DRIVEN FROM EITHER FACE OF THE BUILT-UP MEMBER ALONG THE LENGTH.

WOOD ROOF TRUSSES

1. ROOF TRUSS MANUFACTURER TO DESIGN TRUSSES.
2. TRUSSES & BRIDGING ARE TO BE DESIGNED IN ACCORDANCE WITH THE PROVISIONS OF THE ONTARIO BUILDING CODE, OREG 423/06 (LATEST EDITION).
3. ENGINEERED TRUSS DRAWINGS SHALL BEAR THE STAMP OF A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.
4. TRUSSES TO BE DESIGNED FOR SPECIFIED WIND UPLIFT (REFER TO NBC 2015 STRUCTURAL COMMENTARIES, FIG B-10).
5. SPECIFIC PURPOSE CONNECTORS (HURRICANE CLIP) ARE REQUIRED AT ALL TRUSS-TO PLATE CONNECTIONS, TRUSS MANUFACTURER TO DESIGN AND SUPPLY CONNECTORS.

STRUCTURAL STEEL

1. THE DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL IS TO CONFORM TO THE REQUIREMENTS OF THE FOLLOWING STANDARDS (INCLUDING LATEST REVISIONS):
   - GENERAL REQUIREMENTS FOR ROLLED OR WELDED STRUCTURAL QUALITY STEEL CAN/CSA G40.21-92
   - STRUCTURAL QUALITY STEELS CAN/CSA-G40.20/G40.21-92
   - LIMIT STATES DESIGN OF STEEL STRUCTURES CAN3-S16.1-94
   - CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES CSA-W47.1-92ODE STILECTST
   - ELECTRODE STANDARDS: CSA-W48.1 TO CSA-W48.7
   - WELDED STEEL CONSTRUCTION (METAL ARC WELDING) CSA-W59-M1989
2. STEEL STRENGTHS SHALL BE AS FOLLOWS:
   - STRUCTURAL STEEL GRADE G40.21M 350W, Fy = 345 MPa FOR W SHAPES
   - HSS GRADE G40.21M 350W, CLASS H, Fy = 350 MPa
   - BOLTS A325/A325M, ANCHOR BOLTS A307/A307M U/N
3. PROVIDE MINIMUM 4"x4"x1/4" END BEARING PLATE @ TOP & BOTTOM OF ALL STEEL POSTS, SECURE ALL POSTS TO BEAMS TO PREVENT LATERAL DISPLACEMENT, WELD OR BOLT STEEL POSTS TO STEEL BEAMS, BOLTS SPACED @ 6" O.C. MAX.
4. ALL SHOP CONNECTIONS SHALL BE WELDED, ALL FIELD CONNECTIONS SHALL BE WELDED OR BOLTED, USING HIGH TENSILE BOLTS BEARING TYPE. CONNECTION SHALL BE C.I.S.C. DOUBLE ANGLE BEAM CONNECTIONS FOR A325 BOLTS & E70XX FILLET WELDS. MINIMUM SIZE OF BOLTS 3/4" (20 mm) DIA.
5. SHOP PAINT SHALL BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
6. PROVIDE ALL TEMPORARY BRACING DURING CONSTRUCTION.
7. MIN. COVER TO REINFORCING BARS SHALL BE AS FOLLOWS:

FOOTINGS:	75mm u/n
FOUNDATION WALLS:	40mm u/n

8. AIR ENTRAINED CONCRETE WITH 5% TO 7% AIR CONTENT SHALL BE USED FOR ALL WORK.9. DETAIL BEND, SUPPORT AND PLACE REINFORCING STEEL TO CONFORM WITH R.S.I.O. MANUAL OF STANDARD PRACTICE.
10. PROVIDE 36 BAR-DIAMETER LAP SPLICES FOR ALL REINFORCING STEEL UNLESS OTHERWISE NOTED ON DRAWINGS.
11. WHERE THE FOUNDATION WALLS DO NOT CONFORM TO THE REQUIREMENTS OF O.B.C. 2024, SECTION 9.15.4., THE CONCRETE FOUNDATION WALLS SHALL BE REINFORCED IN TWO (2) DIRECTIONS (VERTICALLY & HORIZONTALLY) USING 15M BARS SPACED AT NO MORE THAN 16" (400mm) O.C. WHERE THE WALLS ARE TO BE REINFORCED, DOWELS ARE REQUIRED FROM THE FOOTING IN THE WALLS USING THE SAME SIZE OF REINFORCING AND AT EQUAL SPACING THE VERTICAL WALL REINFORCING. COORDINATE WITH GRADING PLAN.

POSTS (TO U/S OF LINTEL OR BEAM)

NOTE: ALL POSTS ARE P2 UNLESS NOTED OTHERWISE

P1	= 10" DIA. CONC. SONO TUBE w/ 4-15M VERTICAL c/w 10M @ 12" TIES
P2	= 2-2"x6" OR 2-2"x4" SEE WALL TYPE (TYPICAL)
P3	= 3-2"x6" OR 3-2"x4" SEE WALL TYPE (TYPICAL)
P4	= 4-2"x6" (TYPICAL)
P5	= 5-2"x6" OR 5-2"x4" SEE WALL TYPE (TYPICAL)
P6	= 6"x6" PT. SUPPORT COLUMN

WALL FOOTINGS

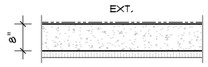
NOTE: ALL FOOTINGS TO BE WF1 UNLESS NOTED OTHERWISE. UNLESS SOIL CONDITIONS REQUIRE LARGER FOOTINGS, TO BE CONFIRMED ON SITE BY GEOTECHNICAL ENGINEER.
WF1 = 20" WIDE X 8" DEEP C/W 2-15M REBAR CONTINUOUS. REFER TO STRUCTURAL FOR SIZING AND REBAR

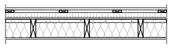
PAD FOOTING

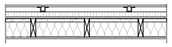
F1 = 24" x 24" x 8" DEEP C/W 2-15M BOTTOM EACH WAY.
REFER TO STRUCTURAL FOR SIZING AND REBAR.

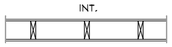
WOOD LINTELS

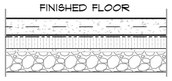
ALL LINTELS PROVIDED BY STRUCTURAL ENGINEER, REFER TO STRUCTURAL PLANS FOR SIZING

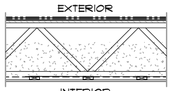












EXTERIOR WALL ASSEMBLIES

NOTE:
1. REPLACE 1/2" GYPSUM BOARD WITH 1/2" MOISTURE RESISTANT GYPSUM BOARD IN ALL WET AREAS.
2. AT ALL OPENINGS IN W1 PROVIDE ADDITIONAL 1-15M VERTICAL AT CENTERLINE OF OPENING AND 1-15M HORIZONTAL ALONG SILL EXTENDING 24" PASSED EACH END OF WINDOW
3. AT ALL WALL ENDS/INTERSECTIONS/CORNERS/INTERSECTIONS /OPENINGS/POINTS LOADS PROVIDE 2-15M VERTICAL.

W1 - FOUNDATION WALL (NON-FINISHED SPACE)
PARGING TO 12" BELOW GRADE
8" POURED CONCRETE REINFORCED FOUNDATION WALL (AS PER PLAN)
C/W 2-15M HORIZONTAL CONTINUOUS @ TOP & BOTTOM OF WALL C/W 24"x24" CORNER REBARS.
- PROVIDE 2-15M VERTICAL REBARS AT WALL ENDS, OPENINGS, INTERSECTIONS AND CORNERS.
- PROVIDE 2-15M HORZ. RE-BARS BELOW CONCRETE CHECKS & OPENINGS (REBARS TO EXTEND 24" BEYOND OPENINGS AND CHECKS)
- PROVIDE 12"x36" 15M-L SHAPE DOWELS @ 24" O.C. INTO FOOTINGS
- PROVIDE 24" LAPSPLICE AS REQUIRED.

R10 2" RIGID INSULATION

W2 - EXTERIOR SIDING
PRE-FINISHED WOOD SIDING (REFER TO ELEVATIONS FOR TYPE & ORIENTATION, ie HORIZONTAL, VERTICAL, SHAKE)
(COLOUR & FINISH TO BE APPROVED BY DESIGNER)
(INSTALLED AS PER MANUFACTURER INSTRUCTIONS)
1"x3" STRAPPING @ 16" O.C. MAX. (ORIENTATION TO SUIT, REFER TO ELEVATIONS. STAGGERED & SLOPED TO ALLOW DRAINAGE WHERE STRAPPING IS HORIZONTAL)
1-1/2" HALO EXTERRA CONTINUOUS OR APPROVED EQUAL INSULATION, TAPE ALL JOINTS
1/2" EXTERIOR SHEATHING
2"x6" WOOD STUDS @ 16" O.C. C.W. R-20 BATT INSULATION & 1" SPRAY FOAM OPEN CELLULOSE INSULATION
6 MIL. POLY VAPOR BARRIER
1/2" GYPSUM BOARD FOR PAINT FINISH

W3 - EXTERIOR CLADDING
ALUCOBOND CLADDING OR APPROVED EQUAL
(REFER TO ELEVATIONS FOR TYPE & ORIENTATION, ie HORIZONTAL, VERTICAL)
(COLOUR & FINISH TO BE APPROVED BY DESIGNER)
(INSTALLED AS PER MANUFACTURER INSTRUCTIONS)
ALUCOBOND FACE FASTENED JOINT RAIL
1-1/2" HALO EXTERRA OR APPROVED EQUAL CONTINUOUS INSULATION, TAPE ALL JOINTS
1/2" EXTERIOR SHEATHING
2"x6" WOOD STUDS @ 16" O.C. C.W. R-20 BATT INSULATION & 1" SPRAY FOAM OPEN CELLULOSE INSULATION
6 MIL. POLY VAPOR BARRIER
1/2" GYPSUM BOARD FOR PAINT FINISH

INTERIOR WALL ASSEMBLIES

NOTE:
1. REPLACE 1/2" GYPSUM BOARD WITH 1/2" MOISTURE RESISTANT GYPSUM BOARD IN ALL WET AREAS.
2. ALL INTERIOR WALLS ARE P1 UNLESS NOTED OTHERWISE.
3. PROVIDE SOUND ATTENUATION BATT TO SUIT STUD DEPTH FOR ALL BEDROOMS, WASHROOMS AND LAUNDRY ROOM.

P1 - INTERIOR PARTITION
1/2" GYPSUM BOARD FOR PAINT FINISH
2x4 OR 2x6 WOOD STUDS @ 16" O.C.
(OR AS NOTED ON PLAN)
1/2" GYPSUM BOARD FOR PAINT FINISH

P2 - LOAD BEARING INTERIOR PARTITION
1/2" GYPSUM BOARD FOR PAINT FINISH
2x4 OR 2x6 WOOD STUD @ 16" O.C. W/ BLOCKING (OR AS NOTED ON PLAN)
1/2" GYPSUM BOARD FOR PAINT FINISH

FLOOR ASSEMBLIES

NOTES:
1. KITCHEN, CORRIDORS, BATHROOMS, AND ENTRANCE VESTIBULES, SHALL BE PROVIDED WITH FINISHED FLOORING AS PER SECTION 9.30. OF THE CURRENT O.B.C.

F1 - SLAB ON GRADE (MAIN FLOOR)
FLOOR FINISH (SEE PLANS)
4" POURED CONC. SLAB C.W. 6x6x6/6 W.W.M. @ MID DEPTH
SAW CUTS TO HAVE EQUAL SPACING BETWEEN SAW CUTS OF MAX. 10'-0" SAW CUTS TO BE MADE WITHIN 8 TO 24 HOURS OF CONCRETE POUR
VAPOR BARRIER
R20 (4") SHIPLAP RIGID INSULATION
1" COMPACTED SAND
MIN. 6" GRANULAR FILL TO O.B.C. 2024 9.16.2.1
UNDISTURBED SOIL OR COMPACTED FILL

ROOF ASSEMBLIES

NOTE:
1. REPLACE 1/2" GYPSUM BOARD WITH 1/2" MOISTURE RESISTANT GYPSUM BOARD IN ALL WET AREAS.
2. ICE AND WATER SHIELD 60" UP EAVES AND 30" EITHER SIDE OF VALLEYS. UNLESS OTHERWISE NOTED. PER OBC 9.26.5

R1 - ROOF ASSEMBLY - LOW SLOPE
PREFINISHED METAL, STANDING SEAM ROOFING W/ SEAMS @ 16" SPACING C/W CONCEALED FASTENERS INSTALLED PER MFG' SPEC'S
ICE & WATER SHIELD (CONTINUOUS)
1/2" EXTERIOR SHEATHING C/W H-CLIPS 2 PER SPACE LARGER THAN 18")
PRE-ENGINEERED ROOF TRUSS @ 24" O.C. R-60 SPRAY FOAM INSULATION
6 MIL. POLY VAPOR BARRIER
1"x3" WOOD STRAPPING @ 16" O.C. MAX.
PREFINISHED METAL SOFFIT

R3 - ROOF ASSEMBLY - LOW SLOPE (CANOPY)
PREFINISHED METAL, STANDING SEAM ROOFING W/ SEAMS @ 16" SPACING C/W CONCEALED FASTENERS INSTALLED PER MFG' SPEC'S
ICE & WATER SHIELD (CONTINUOUS)
1/2" EXTERIOR SHEATHING C/W H-CLIPS 2 PER SPACE LARGER THAN 18")

PERMIT SET

NOTES:
REFER TO GENERAL NOTES FOR ALL TYPICAL CONSTRUCTION NOTES & DETAILS. WHEN DRAWINGS OR NOTES REFERENCE O.B.C. IN ALL CASES PLEASE REFER TO THE LATEST VERSION OF THE ONTARIO BUILDING CODE 2024.

THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH EACH OTHER, SPECIFICATIONS & OTHER CONTRACT DOCUMENTS

LEGEND:
- (1) EXTERIOR DOOR & WINDOW TAG (SEE SCHEDULE)
- (1) INTERIOR DOOR TAG (SEE SCHEDULE)
- W1 EXTERIOR WALL TYPE (SEE A.0.a)
- P1 INTERIOR PARTITION WALL TYPE (SEE A.0.a)
- F1 FLOOR TYPE (SEE A.0.a)

LEGEND:
- R1 ROOF TYPE (SEE A.0.a)
- P1 POST TYPE (SEE A.0.a)
- L1 LINTEL TYPE (SEE A.0.a)
- F1 PAD FOOTING TYPE (SEE A.0.a)
- WF1 WALL FOOTING TYPE (SEE A.0.a)
- SCD SMOKE/CARBON MONOXIDE DETECTOR TO O.B.C. 9.10.19
- (1) CONSTRUCTION NOTE
- EXHAUST FAN - VENT TO OUTSIDE
- NON-FREEZE HOSE BIB

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VERSION NO. 2

SEAL:

NOTES:
- ALL CONTRACTORS MUST COMPLY WITH ALL CODES & BYLAWS HAVING JURISDICTION
- IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK & VERIFY ALL DIMENSIONS ON SITE & REPORT ALL ERRORS AND/OR OMISSIONS TO THE DESIGNER PRIOR TO COMMENCEMENT.
- DO NOT SCALE DRAWINGS.
- DRAWINGS MAY NOT BE USED FOR CONSTRUCTION UNTIL NOTED AS ISSUED FOR CONSTRUCTION.

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REVISIONS

NO	ITEM	DATE
1	ISSUED FOR SPA	02-25-2026
2	ISSUED FOR CONSULTANT REVIEW	04-07-2026
3	ISSUED FOR CONSULTANT REVIEW	05-25-2026
4	ISSUED FOR PERMIT	05-29-2026

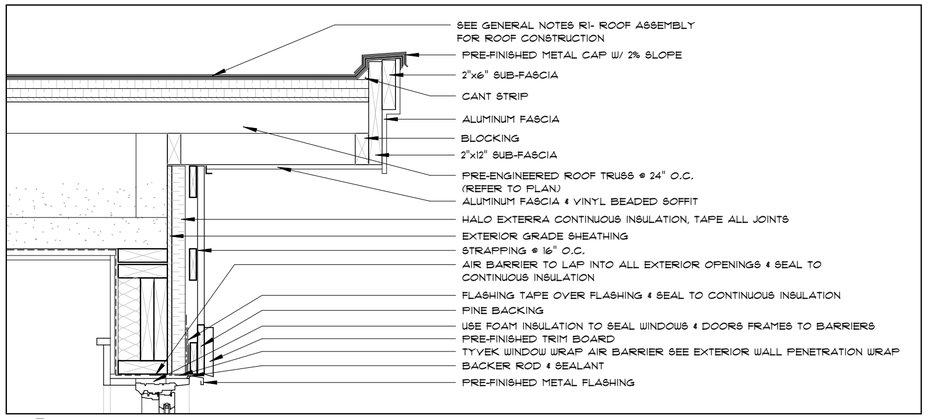
PROJECT
240 COUNTY ROAD, 4 BATH
ONTARIO, K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN ADMIN BUILDING

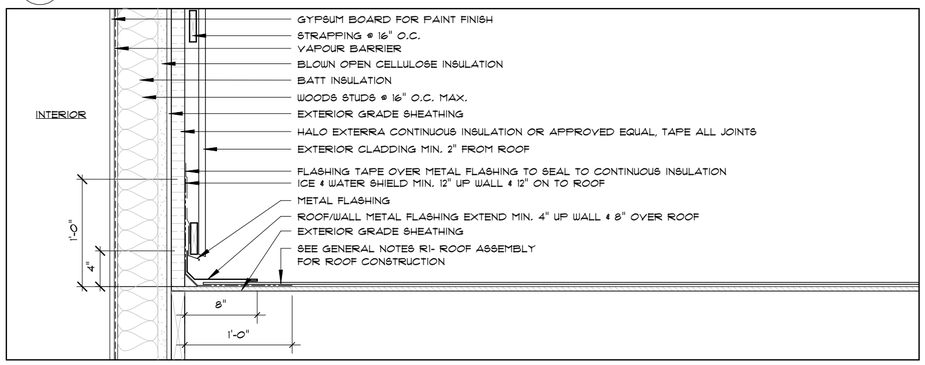
DRAWING
GENERAL NOTES

SCALE	AS INDICATED
DRAWN BY	AIT
DATE	SEPT 28, 2023
CHKED BY	AIT
APPRD BY	JCB
PROJECT NO.	223-05b

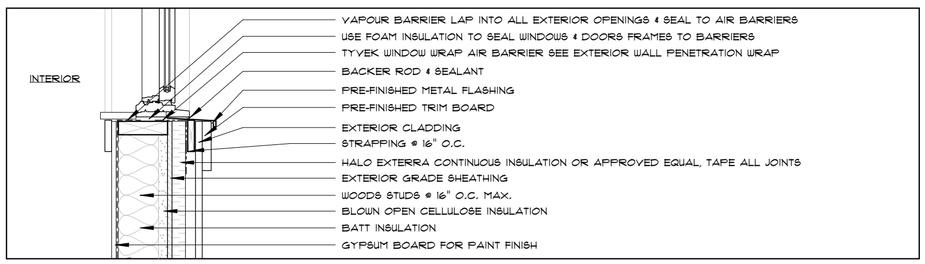
SHEET NO.
A.0.a



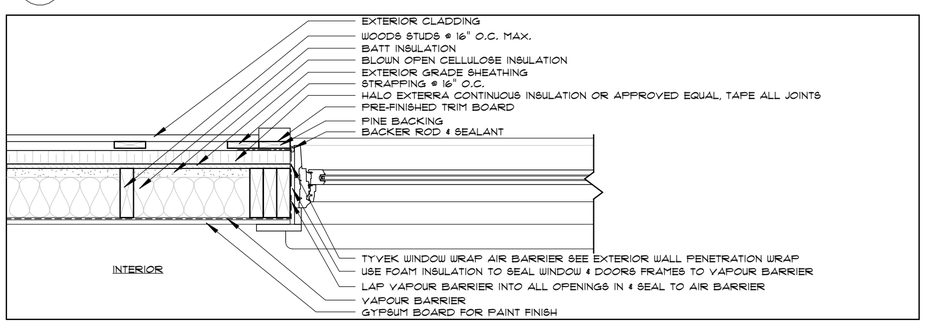
1 A.0.b SECTION DETAIL @ EAVE
SCALE: 1" = 1'-0"



2 A.0.b SECTION DETAIL @ ROOF / WALL WITH 1" SPRAY FOAM
SCALE: 1" = 1'-0"



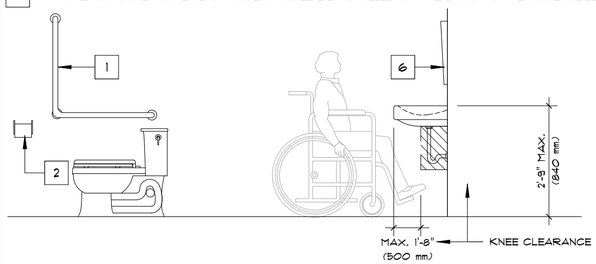
3 A.0.b SECTION DETAIL @ WINDOW SILL WITH 1" SPRAY FOAM
SCALE: 1" = 1'-0"

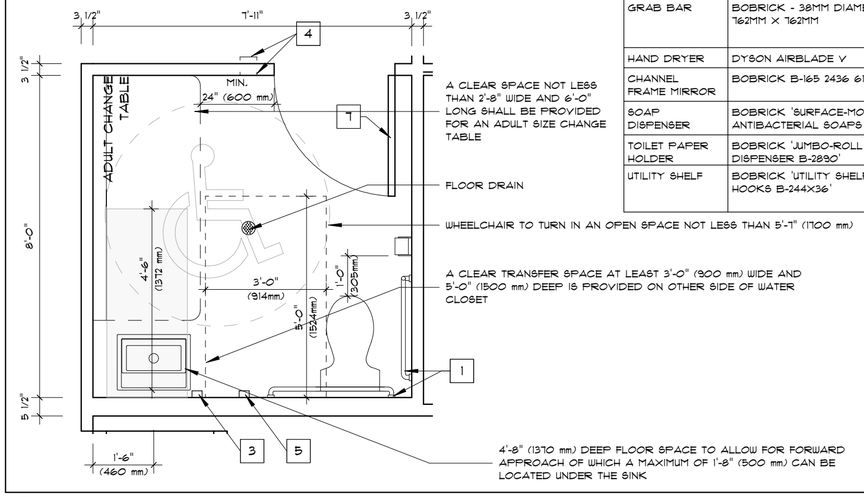


4 A.0.b PLAN DETAIL @ WINDOW JAMB SIDING WITH 1" SPRAY FOAM
SCALE: 1" = 1'-0"

UNIVERSAL WASHROOM GENERAL NOTES

1. STAINLESS STEEL GRAB BAR SHALL BE A CONTINUOUS L-SHAPED WITH 2'-5" (750 mm) LONG HORIZONTAL AND VERTICAL COMPONENT AND BE WALL MOUNTED WITH THE HORIZONTAL COMPONENT 2'-5" (750 mm) ABOVE THE FINISHED FLOOR AND THE VERTICAL COMPONENT 6" (150 mm) IN FRONT OF THE WATER CLOSET
2. TOILET PAPER DISPENSER MOUNTED ON SIDE WALL CLOSEST TO THE WATER CLOSET. THE DISPENSER IS LOCATED BELOW THE GRAB BAR AND THE CLOSEST EDGE OF THE DISPENSER IS 1'-0" (300 mm) FROM THE FRONT OF THE WATER CLOSET SEAT AND THE BOTTOM OF THE DISPENSER IS 24"-32" (600-800 mm) ABOVE THE FINISHED FLOOR
3. SOAP DISPENSER SHALL OPERATE AUTOMATICALLY OR IS OPERABLE USING A CLOSED FIST AND WITH A FORCE OF NOT MORE THAN 22.2 N, AND IS LOCATED NOT MORE THAN 3'-7" (1100 mm) ABOVE THE FINISHED FLOOR, AND LOCATED NOT MORE THAN 2'-0" (610 mm) MEASURED HORIZONTALLY, FROM THE EDGE OF THE LAVATORY.
4. POWER DOOR OPERATOR SHALL BE DESIGNED TO BE OPERABLE USING A CLOSED FIST AND ME MOUNTED NOT LESS THAN 2'-11" (900 mm) AND NOTE MORE THAN (3'-7") 1100 mm ABOVE THE FINISHED FLOOR
5. COAT HOOK SHALL BE MOUNTED NOT MORE THAN 3'-11" (1200 mm) ABOVE THE FINISHED FLOOR ON A SIDE WALL AND PROJECTING NOT MORE THAN 2" (50 mm) FROM THE WALL. AS PER O.B.C. 3.8.3.8 (8)
6. MIRROR TO BE INSTALLED ABOVE THE LAVATORY, MOUNTED WITH ITS BOTTOM EDGE NOT MORE THAN 3'-3" (1000 mm) ABOVE THE FINISHED FLOOR OR INCLINED TO THE VERTICAL TO BE USABLE BY A PERSON IN A WHEELCHAIR
7. INTERNATIONAL SYMBOL OF ACCESS SHALL BE INSTALLED ON THE DOOR TO THE ACCESSIBLE WASHROOM.





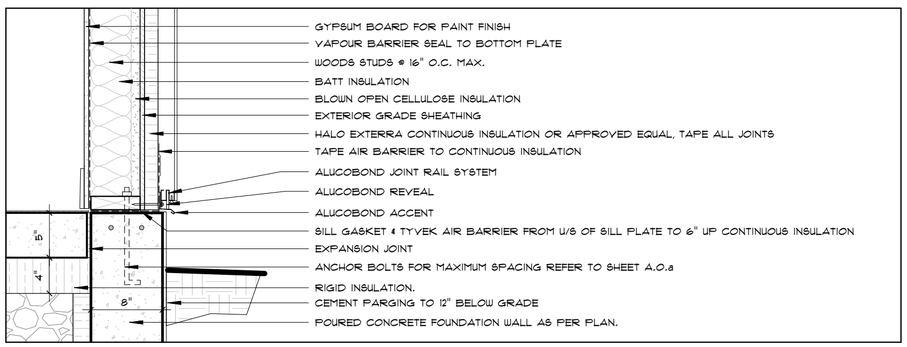
5 A.0.b UNIVERSAL WASHROOM DETAIL
SCALE: 3/8" = 1'-0"

UNIVERSAL WASHROOM GENERAL NOTES

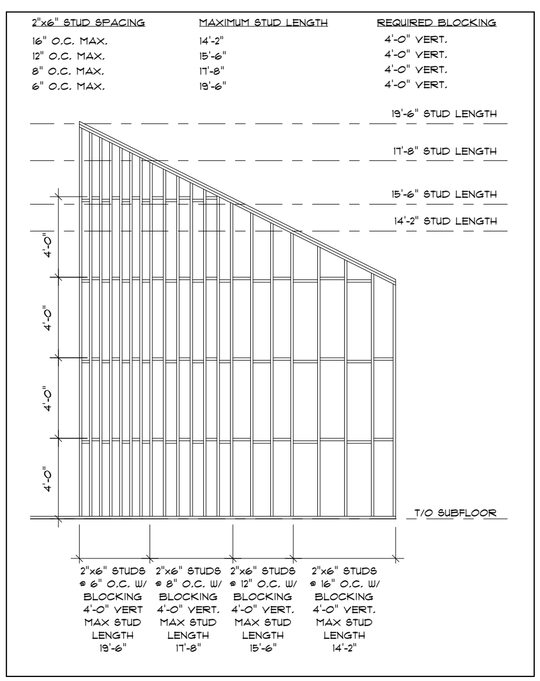
1. PROVIDE BLOCKING AS REQUIRED FOR ALL WASHROOM ACCESSORIES
2. INCLUDE EMERGENCY CALL SYSTEM THAT CONSISTS OF AUDIBLE AND VISUAL SIGNAL DEVICES INSIDE AND OUTSIDE THE WASHROOM THAT ARE ACTIVATED BY A CONTROL DEVICE INSIDE THE WASHROOM. AS PER O.B.C. 3.8.3.12 (2)
3. PROVIDE EMERGENCY SIGN THAT CONTAINS WORDS "**IN THE EVENT OF AN EMERGENCY, PUSH EMERGENCY BUTTON AND AUDIBLE AND VISUAL SIGNAL WILL ACTIVATE**" IN LETTERS AT LEAST 25 mm HIGH WITH A 5 mm STROKE AND THAT IS POSTED ABOVE EMERGENCY BUTTON.
4. THE CONTROL FOR A POWER DOOR OPERATOR SHALL BE LOCATED NOT LESS THAN 3'-0" (900 mm) AND NOT MORE THAN 3'-8" (1100 mm) ABOVE THE FINISHED FLOOR
5. LAVATORY SHALL CONFORM TO O.B.C. 3.8.3.11
6. WATER CLOSET SHALL CONFORM TO O.B.C. 3.8.3.9
7. PROVIDE GRAB BARS IN ACCORDANCE WITH O.B.C. 3.8.3.8 (5)
8. FIXTURE CLEARANCE IN ACCORDANCE WITH O.B.C. 3.8.3.11
9. ADULT CHANGE TABLE TO BE INSTALLED ABOVE THE FINISHED FLOOR THAT CAN BE ADJUSTED FROM BETWEEN 18" (450 mm) AND 20" (500 mm) AT THE LOW RANGE TO BE BETWEEN 34" (850 mm) AND 36" (900 mm)

UNIVERSAL WASHROOM ACCESSORIES LIST

ITEM NAME	BASE OF DESIGN	ELECTRIC POWER	MATERIAL / COLOUR
ADULT CHANGE TABLE	FRESSALIT 'CARE 3000 SPECIAL NEEDS CHANGING TABLE R8538' 1800 MM LENGTH, 700 MM HEIGHT ADJUSTABLE, ELECTRIC MOTOR AND SAFETY RAIL.	YES	
COAT HOOK	BOBRICK 'STAINLESS STEEL CLOTHES HOOK B-233'		TYPE 304 STAINLESS STEEL WITH 'NAAMM BRUSHED NO.4' FINISH
GRAB BAR	BOBRICK 38MM DIAMETER STRAIGHT GRAB BAR 610MM (HORIZONTAL)		TYPE 304 STAINLESS STEEL WITH 'NAAMM BRUSHED NO.4' FINISH WITH 'KNURLED' GRIPPING SURFACE
GRAB BAR	BOBRICK - 38MM DIAMETER 90 DEGREE GRAB BAR, 762MM X 762MM		TYPE 304 STAINLESS STEEL WITH 'NAAMM BRUSHED NO.4' FINISH WITH 'KNURLED' GRIPPING SURFACE
HAND DRYER	DYSON AIRBLADE V	YES	SPRAYED NICKLE
CHANNEL FRAME MIRROR	BOBRICK B-165 2436 610MM X 910MM		STAINLESS STEEL MIRROR
SOAP DISPENSER	BOBRICK 'SURFACE-MOUNTED SOAP DISPENSER FOR ANTIBACTERIAL SOAPS 818615'		TYPE 316 STAINLESS STEEL WITH SATIN FINISH
TOILET PAPER HOLDER	BOBRICK 'JUMBO-ROLL SURFACE-MOUNTED TOILET TISSUE DISPENSER B-2890'		TYPE 316 STAINLESS STEEL WITH SATIN FINISH
UTILITY SHELF	BOBRICK 'UTILITY SHELF WITH MOP/BROOM HOLDERS AND RAG HOOKS B-244X36'		TYPE 304 STAINLESS STEEL WITH 'NAAMM BRUSHED NO.4' FINISH



8 A.0.b SECTION DETAIL @ PLATE SLAB ON GRADE WITH 1" SPRAY FOAM
SCALE: 1" = 1'-0"



11 A.0.b TYP. STUD SPACING FOR HIGH WALLS
SCALE: 3/16" = 1'-0"

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- (1) INTERIOR DOOR TAG (SEE SCHEDULE)
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- P1 INTERIOR PARTITION WALL TYPE (SEE A.0.a)
- F1 FLOOR TYPE (SEE A.0.a)

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- P1 POST TYPE (SEE A.0.a)
- L1 LINTEL TYPE (SEE A.0.a)
- F1 PAD FOOTING TYPE (SEE A.0.a)
- WF1 WALL FOOTING TYPE (SEE A.0.a)
- SCD SMOKE/CARBON MONOXIDE DETECTOR TO O.B.C. 9.10.19
- (1) CONSTRUCTION NOTE
- EXHAUST FAN - VENT TO OUTSIDE
- NON-FREEZE HOSE BIB

BELL + ASSOCIATES ARCHITECTURE
186 Pembroke St. E.
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bellarchitecture.ca

VERSION NO. 2

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REVISIONS

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3	ISSUED FOR CONSULTANT REVIEW	05-25-2026
4	ISSUED FOR PERMIT	05-29-2026

PROJECT
240 COUNTY ROAD, 4 BATH
ONTARIO, K0H 1G0

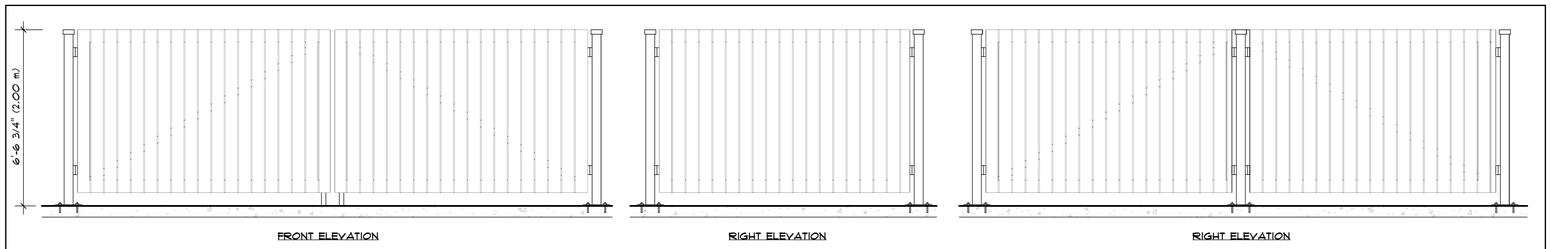
CLIENT
LOYALIST TOWNSHIP - MILLHAVEN ADMIN BUILDING

DRAWING
STANDARD & UNIVERSAL WASHROOM DETAILS

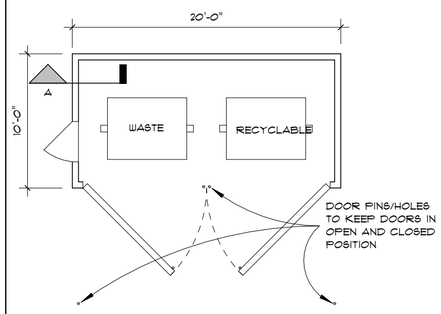
SCALE	AS INDICATED
DRAWN BY	AIT
DATE	SEPT 28, 2023
CHKED BY	AIT
APPRD BY	JCB
PROJECT NO.	223-05b

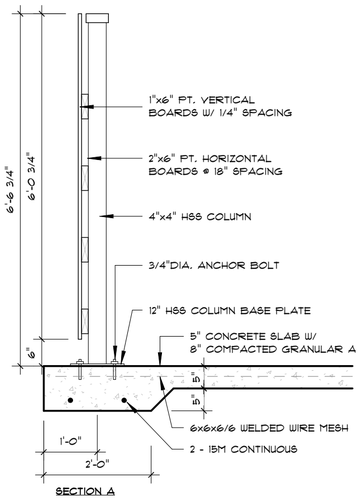
SHEET NO. A.0.b

PERMIT SET

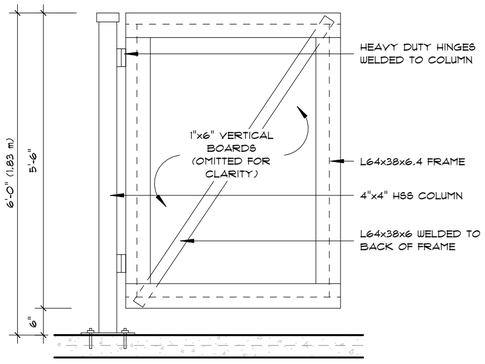


7 / A.0.c GARBAGE ENCLOSURE ELEVATIONS
SCALE: 1/4" = 1'-0"



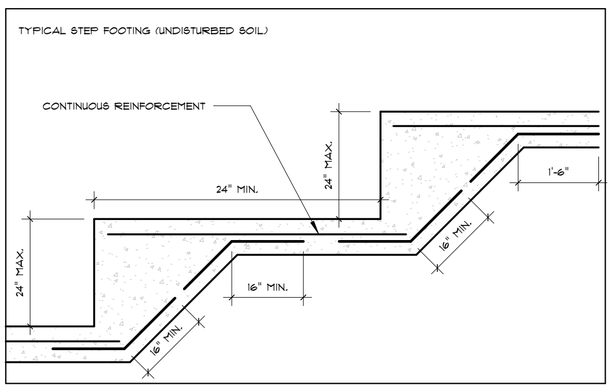


SECTION A

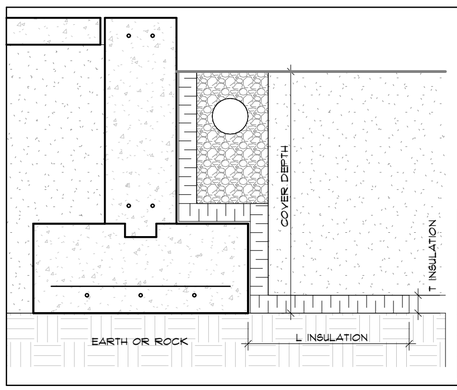


PARTIAL LEFT ELEVATION

1 / A.0.c GARBAGE ENCLOSURE DETAILS
SCALE: 1/2" = 1'-0"



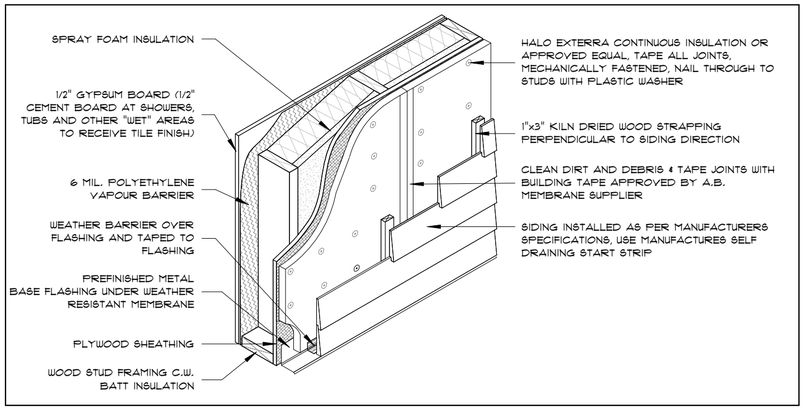
2 / A.0.c STEP FOOTING DETAIL
SCALE: 1/2" = 1'-0"



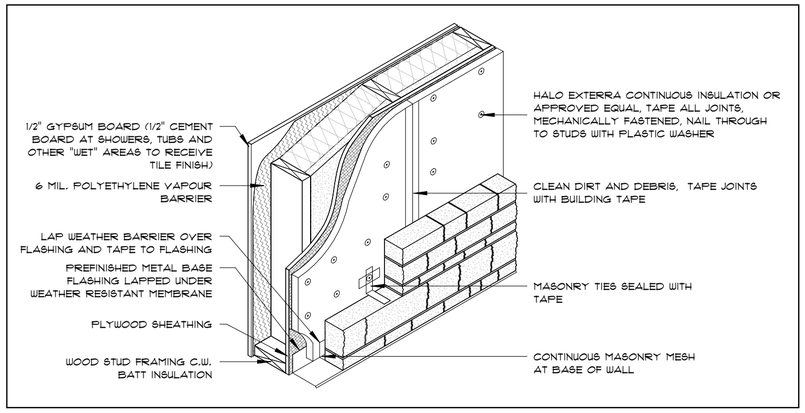
NOTES:
1. CONSULT GEOTECHNICAL ENGINEER FOR THERMAL RESISTANCE VALUES OF ACCEPTABLE INSULATION TYPES.
2. INSULATION REQUIRED DOWN OUTSIDE FACE OF FOUNDATION WALL AND OUTWARD FROM WALL AS SHOWN.
3. ALL EXTERIOR FOOTINGS ARE TO FOLLOW THESE REQUIREMENTS UNLESS DIRECTED OTHERWISE BY GEOTECHNICAL ENGINEER.
4. NOTE, REFER TO FOOTING NOTES FOR FOOTING REINFORCING.
5. TYPICAL FOOTING INSULATION DETAIL FOR USE WHEN ON SITE CONDITIONS REQUIRE.

COVER DEPTH (mm)	INSULATION DIMENSIONS	
	L INSUL. (mm)	T INSUL. (mm)
LESS THAN 600 mm	NOT RECOMMENDED	
600 mm TO 750 mm	1800	50
750 mm TO 900 mm	1200	50
900 mm TO 1200 mm	1200	40
1200 mm TO 1500 mm	900	25
GREATER THAN 1500 mm	NOT REQUIRED	

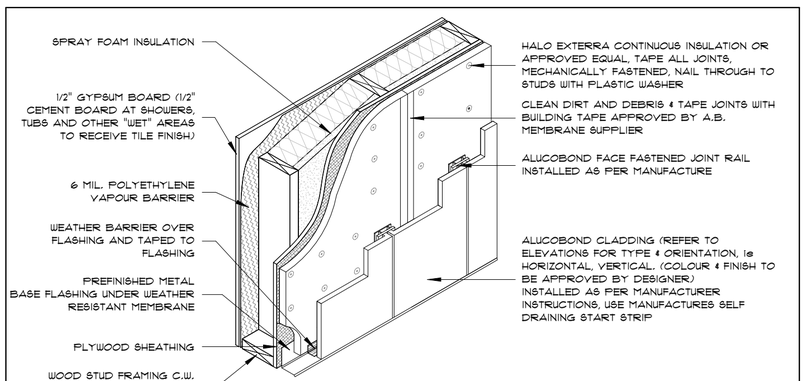
3 / A.0.c STRIP FOOTING FROST PROTECTION
SCALE: 1" = 1'-0"



4 / A.0.c SIDING APPLICATION DETAIL W/ 1" SPRAY FOAM
SCALE: 3/8" = 1'-0"



5 / A.0.c MASONRY STONE APPLICATION DETAIL W/ 1" SPRAY FOAM
SCALE: 3/8" = 1'-0"



6 / A.0.c ALUCOBOND SIDING APPLICATION DETAIL W/ 1" SPRAY FOAM
SCALE: 3/8" = 1'-0"

PERMIT SET

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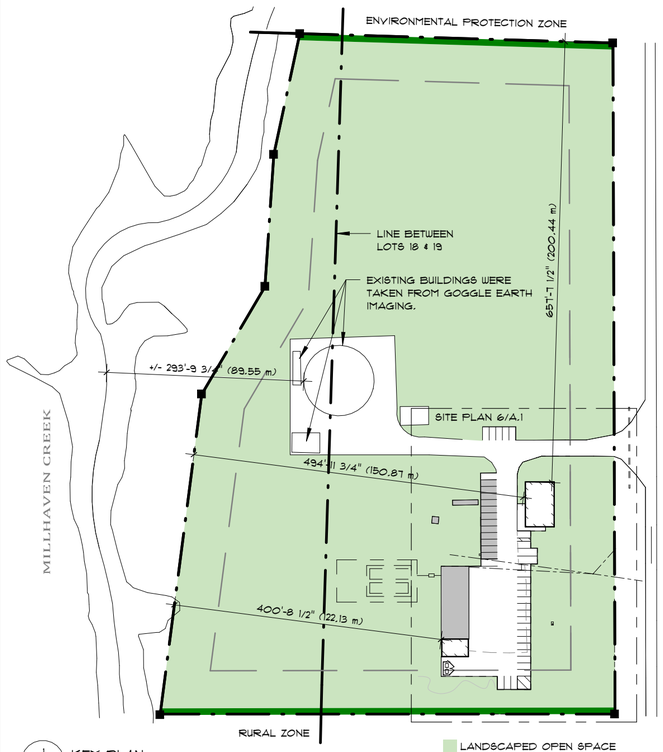
PROJECT
240 COUNTY ROAD, 4 BATH ONTARIO, K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN ADMIN BUILDING

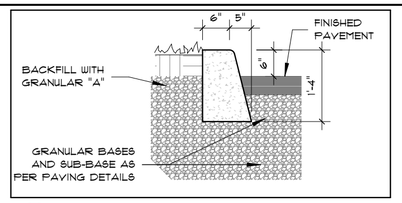
DRAWING
STANDARD DETAILS CONTINUED

SCALE	AS INDICATED
DRAWN BY	AIT
DATE	SEPT 28, 2023
CHKED BY	AIT
APPRD BY	JCB
PROJECT NO.	223-05b

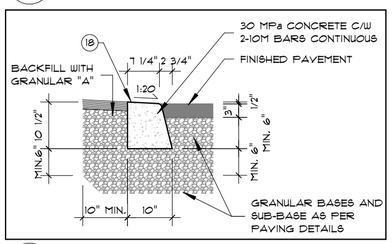
SHEET NO. A.0.c



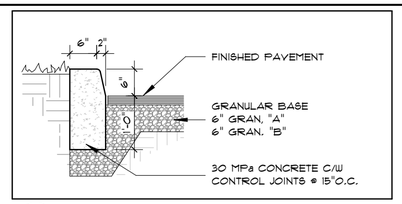
1 / A.1 KEY PLAN
SCALE: 1" = 160'-0"



2 / A.1 BARRIER CURB DETAIL
SCALE: 1/2" = 1'-0"



4 / A.1 DEPRESSED CURB DETAIL
SCALE: 1/2" = 1'-0"



3 / A.1 CURB DETAIL
SCALE: 1/2" = 1'-0"

PLANTING STRIP NOTES:

PROVIDE CONTINUOUS PLANTING STRIP CONSISTING OF TREES, EVERGREENS, SHRUBS NOT LESS THAN 1.5 METERS IN HEIGHT,
- TREE SPECIES NATIVE TO ONTARIO SUCH AS RED OAK, SUGAR MAPLE, PAPER BIRCH AND SILVER MAPLE.
- LARGE SHRUBS NATIVE TO ONTARIO SUCH AS DOGWOOD, EASTERN REDBUD, AND JUNE BERRY,

THE PLANTING STRIP IS REQUIRED TO BE MAINTAINED BY THE OWNER OF THE LOST ON WHICH THE PLANTING STRIP IS LOCATED.

9 / A.1 PLANTING STRIP GENERAL NOTES
SCALE: 1/2" = 1'-0"

DIRECTIONAL FIRE ACCESS

ACCESSIBLE PARKING SIGN

SIGNAGE NOTES:

1. ALL SIGNS TO BE 300mm W x 450mm HIGH ALUMINUM AND SET ON A PERMANENT GALV. STEEL POST
2. LOCATE THE SIGNS AS PER ARCHITECTURAL SITE PLAN WHERE NOTED.
3. ALL SIGNS TO BE VISIBLE DAY AND NIGHT WITH SCOTCH LIGHT REFLECTIVE VINYL BACKGROUND & LETTERING.
4. MOUNT THE BOTTOM EDGE OF THE FIRE ACCESS ROUTE SIGN AT 2m ABOVE THE ASPHALT SURFACE & SPACES MAX. 25m APART.
5. PROVIDE MULTI-DIRECTIONAL ARROWS IDENTIFYING THE FIRE ACCESS ROUTE OR SINGLE DIRECTIONAL ARROW INDICATING THE LIMIT OF THE FIRE ACCESS ROUTE.

5 / A.1 SIGNAGE DETAIL
SCALE: 1/2" = 1'-0"

ZONING CHART

ZONE: M3 & EP	REQUIRED	PROVIDED
LOT AREA (MIN):	0.8 HA	5.43 HA
TOTAL BUILDING AREA FOR ADMIN BLDG.		266.9 m²
TOTAL BUILDING AREA FOR GARAGE BLDG.		503.3 m²
LOT FRONTAGE (MIN):	60 M	304.81 M
FRONT YARD SETBACK (MIN):	20 M	26.41 M
EXTERIOR SIDE YARD (MIN):	20 M	N/A
INTERIOR NORTH SIDE YARD (MIN):	20 M	± 200.44 M
INTERIOR SOUTH SIDE YARD (MIN):	20 M	26.19 M
STREET CENTERLINE SETBACK	33 M	43.10 M
REAR YARD DEPTH (MIN):	20 M	± 88.55 M
LANDSCAPED OPEN SPACE (MIN.):	10%	87.3%
LOT COVERAGE (MAX):	50%	3.6%
HARDSCAPE	/	/
NUMBER OF STANDARD PARKING SPACES - GARAGE - 503.3 m² / 18.5 m² = 27.2 (28 SPACES) - ADMIN - 266.9 m² / 28 m² = 9.5 (10 SPACES)	38	38
NUMBER OF BARRIER FREE PARKING SPACES	2	2
NUMBER OF LOADING SPACES	2	2
PARKING STALL & BARRIER FREE DIMENSIONS	3m x 6m/ 3.2m x 6m	3m x 6m/ 3.2m x 6m
LOADING SPACE DIMENSIONS (MINIMUM)	3.5m x 9m	3.5m x 9m

SYMBOL LEGEND

- EXISTING BUILDING
- PROPOSED BUILDING/ADDITION
- PROPERTY LINE
- SITE SETBACKS
- BARRIER FREE PARKING SYMBOL PAINTED ON ASPHALT IN BLUE AND MARKED BY A INTERNATIONAL SYMBOL.
- BARRIER FREE TRANSFER SPACE PAINTED ON ASPHALT IN YELLOW
- EXISTING FENCE TO REMAIN
- PROPOSED FENCE (TYPE T.B.D. BY CLIENT)
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN
- PROPOSED BOLLARDS AT EACH SIDE OF GARAGE DOORS

LEGEND

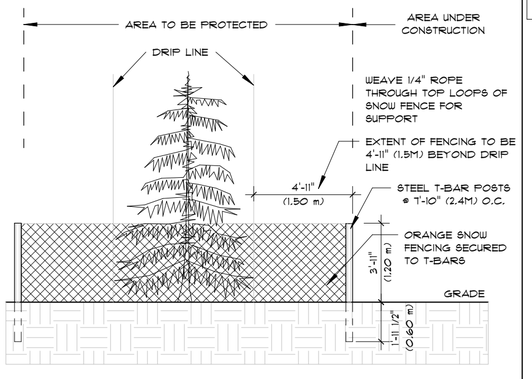
1. ACCESSIBLE PARKING SIGNAGE ON POST. SEE DETAIL
2. LOADING DOCK SIGN
3. RESERVED
4. NEW PATIO STONE SIDEWALK
5. NEW CONCRETE CURB
6. EXISTING CONCRETE CURB
7. NEW SOD
8. EXISTING SOD
9. PROPOSED SEPTIC LOCATION
10. EXISTING HYDRO POLE
11. EXISTING POST AND WIRE FENCE
12. PROPOSED NEW PARKING
13. EXISTING PARKING TO REMAIN
14. PROPOSED POLE - DARK SKY COMPLIANT SITE LIGHTING (FINAL SITE LIGHTING TO BE CONFIRMED ON PHOTOMETRIC PLAN)
15. PROPOSED ELECTRIC CHARGING STATION
16. NEW 6' GALVANIZED FENCE
17. PEDESTRIAN ROUTE TO HAVE A FIRM, SLIP RESISTANT SURFACE
18. TACTILE ATTENTION INDICATOR PROVIDED AT PEDESTRIAN ROUTE TO A VEHICULAR ROUTE. MUST INCORPORATE THE FOLLOWING.
    - RAISED TACTILE PROFILES,
    - HIGH TONAL CONTRAST,
    - LOCATED AT THE BOTTOM PORTION OF DEPRESSED CURB FLUSH WITH ROADWAY.
19. CANTILEVER SLIDE GATE W/ AUTOMATIC GATE OPERATOR SYSTEM

TREE PROTECTION SIGNAGE

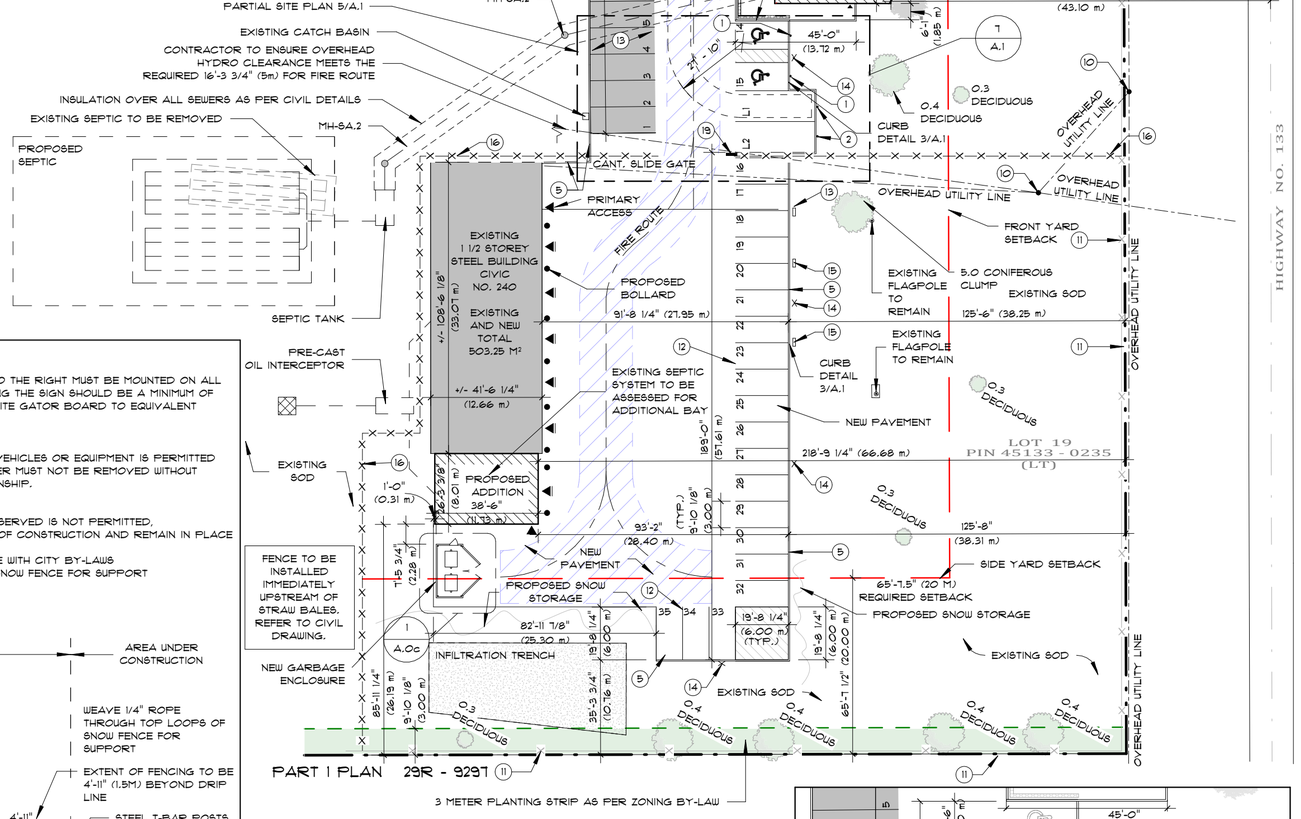
A SIGN THAT IS SIMILAR TO THE ILLUSTRATION TO THE RIGHT MUST BE MOUNTED ON ALL SIDES OF A TREE PROTECTION BARRIER FENCING THE SIGN SHOULD BE A MINIMUM OF 15.7" x 23.6" (400mm x 600mm) AND MADE OF WHITE GATOR BOARD TO EQUIVALENT MATERIAL.

TREE PROTECTION ZONE (TPZ)
NO GRADE CHANGE, STORAGE OF MATERIALS, VEHICLES OR EQUIPMENT IS PERMITTED WITHIN THIS TPZ. THIS TREE PROTECTION BARRIER MUST NOT BE REMOVED WITHOUT WRITTEN AUTHORIZATION OF THE LOYALIST TOWNSHIP.

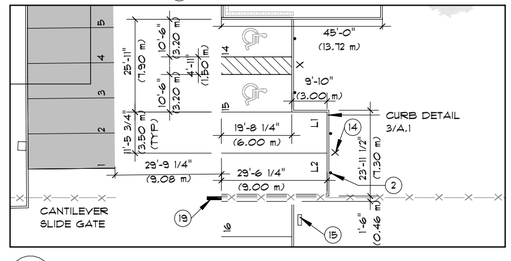
NOTES:
1. ATTACHMENT OF FENCE TO TREES TO BE PRESERVED IS NOT PERMITTED.
2. FENCING TO BE INSTALLED PRIOR TO START OF CONSTRUCTION AND REMAIN IN PLACE UNTIL THE COMPLETION OF ALL WORK.
3. TREE PRESERVATION TO BE IN ACCORDANCE WITH CITY BY-LAWS
4. WEAVE 1/4" ROPE THROUGH TOP LOOPS OF SNOW FENCE FOR SUPPORT



6 / A.1 TREE PROTECTION ZONE FENCE
SCALE: 3/16" = 1'-0"



7 / A.1 SITE PLAN
SCALE: 1" = 40'-0"



8 / A.1 PARTIAL SITE PLAN
SCALE: 1" = 30'-0"

LEGAL DESCRIPTION:
PART OF LOT 18 & 19, CONCESSION 1, GEOGRAPHIC TOWNSHIP OF ERNESTOWN TOWNSHIP OF ERNESTOWN COUNTY OF LENNOX & ADDINGTON, PLAN NO. 885, M.T.O. FILE P-6032-12

CIVIC ADDRESS:
240 COUNTY RD 4, BATH, ONTARIO

SITE PLAN GENERAL NOTES:
-THIS SITE PLAN & ALL EXISTING SITE INFO, ELEVATIONS, SERVICE LOCATIONS & PROPERTY INFORMATION IS BASED ON A SURVEY COMPLETED BY HOPKINS CHITTY LAND SURVEYING INC.
PROJECT NO. 2023-0396, DATED JULY 26, 2023.

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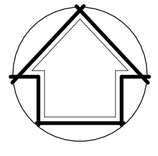
PROJECT NORTH:



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REVISIONS

NO	ITEM	DATE
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4	ISSUED FOR PERMIT	05-29-2026

PROJECT
240 COUNTY ROAD, 4 BATH ONTARIO, KOH 1G0

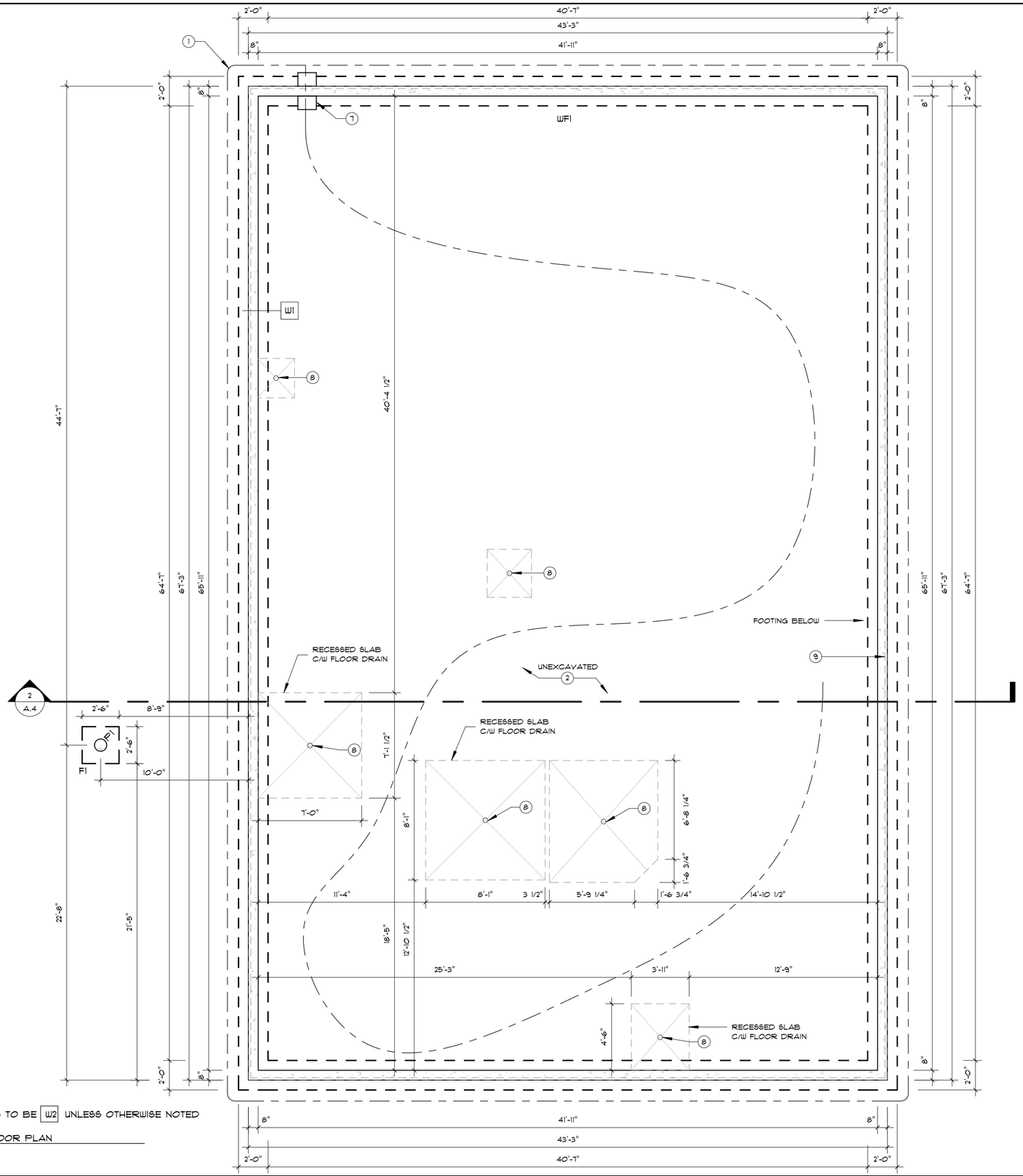
CLIENT
LOYALIST TOWNSHIP - MILLHAVEN ADMIN BUILDING

DRAWING
SITE PLAN

SCALE	AS INDICATED
DRAWN BY	AIT
DATE	SEPT 28, 2023
CHKED BY	AIT
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO. A.1

PERMIT SET



• ALL FOUNDATION PARTITIONS TO BE W2 UNLESS OTHERWISE NOTED

1 / A.2 FOUNDATION & SLAB FLOOR PLAN
SCALE: 3/16" = 1'-0"

CONSTRUCTION NOTES LEGEND:

1. 4" (100mm) PERFORATED WEEPING TILE C.W. FILTER CLOTH AND 6" (150mm) CRUSHED STONE AS PER O.B.C. 9.14.3(4)
2. IF NATIVE SOIL IS CLAY, REMOVE ALL NATIVE MATERIAL IN GARAGE TO THE LEVEL OF FOOTINGS AND BACKFILL WITH COMPACTED GRANULAR 'B'.
3. CONDUIT FOR A/C LINES THROUGH FOUNDATION
4. CONDUIT FOR NATURAL GAS LINES THROUGH FOUNDATION
5. SANITARY SERVICE AS PER MECHANICAL PLANS
6. WATER SERVICE AS PER MECHANICAL PLANS
7. SLEEVE THROUGH FOOTING FOR INTERIOR TILE DRAIN
8. FLOOR DRAIN COMPLETE WITH T.S.P.
9. FACE OF WALL FRAMING ABOVE
10. 2"x6" SILL PLATE C.W. COMPRESSIBLE SILL GASKET & ANCHOR BOLTS @ 48" O.C., PROVIDE 2 BOLTS @ CORNERS. REFER TO STRUCTURAL FOR SIZING AND LOCATIONS.
11. BEAM POCKET TO SUIT STEEL BEAM, PROVIDE MASONITE SHIMS, (LOWERED FOUNDATION WALL TO SUIT STEEL BEAM WHERE BEAM IS SUPPORTED BY NON-EXTERIOR FOUNDATION WALL)
12. BEAM ANCHORED TO FOUNDATION WALL WITH GALVANIZED BEAM HANGER
13. PROVIDE 3-15MV IN FOUNDATION UNDERNEATH ALL POINT LOADS FROM ABOVE
14. FASTEN LEDGER TO RIM BOARD WITH 1/2" GALVANIZED LAG BOLTS STAGGERED @ 12" O.C. TOP & BOTTOM
15. PROVIDE 2: 5/8" STIFFENER PLATES EACH SIDE @ EACH SUPPORT, WELD ALL AROUND
16. 7/8" THK TOP & BOTTOM PLATE. REFER TO PLATE DETAIL
17. BEAMS TO BEAR ON STEEL PLATE @ ALL STEEL POSTS WIDTH TO SUIT, WELD ALL SIDES
18. HYDRO PANEL
19. HYDRO UNDER GROUND TO POLE
20. INTERNATIONAL SYMBOL OF ACCESS LOCATED AT THE BUILDING ENTRANCE
21. T-BAR CEILING CONSTRUCTION, INSTALLED AS PER MANUF.
22. WATER METER & BACKWATER VALVE
23. 4" DIA. PLUMBING VENT TO ROOF, PENETRATION ADEQUATELY SEALED
24. POWER DOOR OPERATOR SHALL BE DESIGNED TO BE OPERABLE USING A CLOSED FIST AND ME MOUNTED NOT LESS THAN 2'-11" (900 mm) AND NOTE MORE THAN (3'-7") 1100 mm ABOVE THE FINISHED FLOOR
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26. CUSTOM MILLWORK/SHELVING/COUNTER'S FOR REFERENCE ONLY.
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28. TALL WALL CONSTRUCTION SEE DETAIL - TYP. STUD SPACING FOR HIGH WALLS
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32. UTILITY SHELF - SEE WASHROOM ACCESSORIES FOR DETAILS
33. HOT WATER TANK & HVAC EQUIPMENT SECURED TO STRUCTURE
34. ELECTRICAL CONDUIT FOR CAMERAS TO BE MOUNTED

PERMIT SET

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- (1) EXTERIOR DOOR & WINDOW TAG (SEE SCHEDULE)
- (1) INTERIOR DOOR TAG (SEE SCHEDULE)
- W1 EXTERIOR WALL TYPE (SEE A.0.a)
- P1 INTERIOR PARTITION WALL TYPE (SEE A.0.a)
- F1 FLOOR TYPE (SEE A.0.a)

LEGEND:
- R1 ROOF TYPE (SEE A.0.a)
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- (1) CONSTRUCTION NOTE
- EXHAUST FAN - VENT TO OUTSIDE
- NON-FREEZE HOSE BIB

PROJECT NORTH:

BELL + ASSOCIATES ARCHITECTURE
+ 186 Pembroke St. E.
Pembroke, ON K8A 3J7
613-629-6988
+ info@jbell.ca
bellarchitecture.ca

VERSION NO. 2

SEAL:

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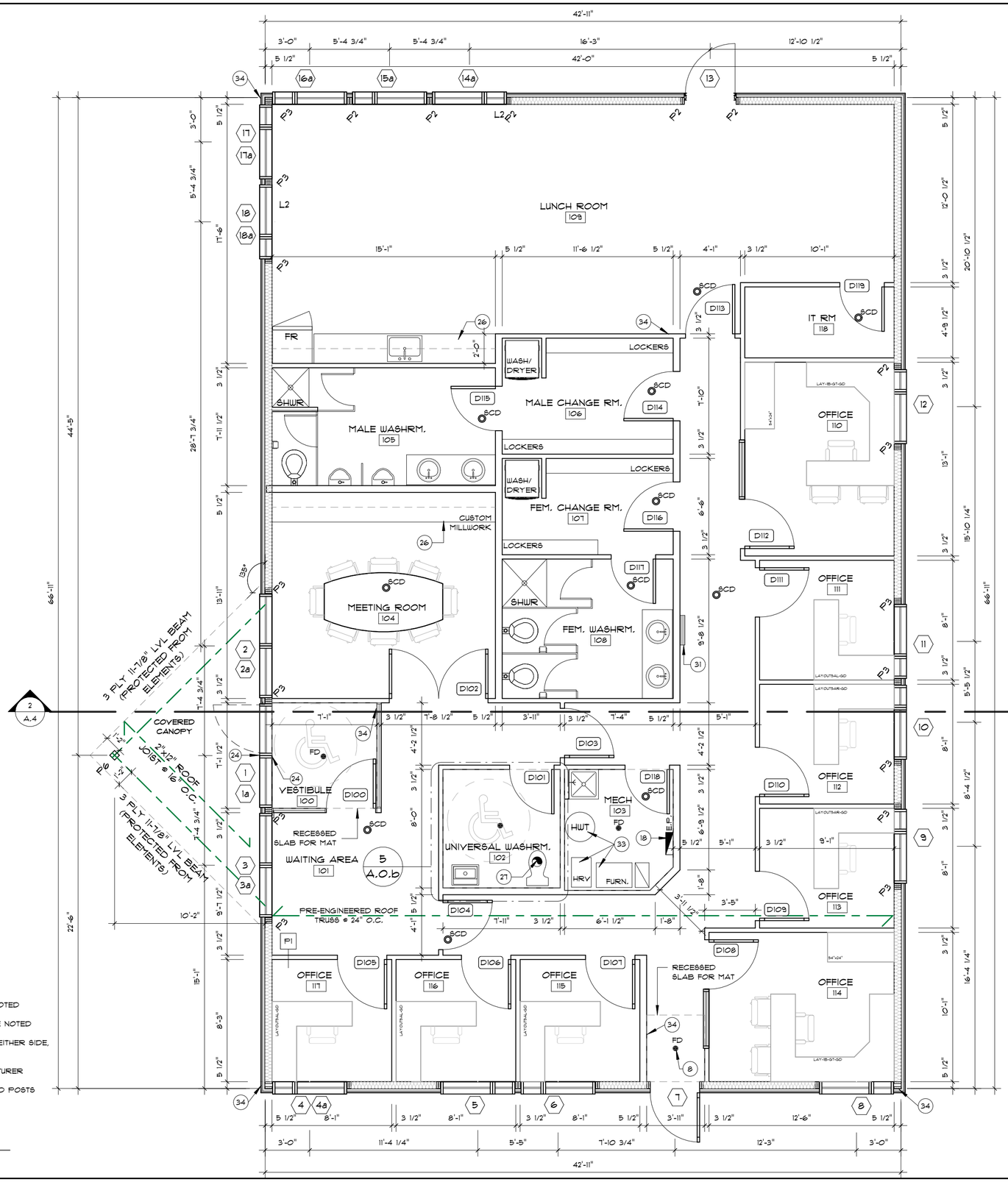
PROJECT
240 COUNTY ROAD, 4 BATH ONTARIO, K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN ADMIN BUILDING

DRAWING
FOUNDATION AND FOOTING PLAN

SCALE	AS INDICATED
DRAWN BY	AIT
DATE	SEPT 28, 2023
CHKED BY	AIT
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO. A.2



- ALL INTERIOR PARTITIONS ARE P1 UNLESS OTHERWISE NOTED
- EXTERIOR WALL ASSEMBLIES ARE W2 UNLESS OTHERWISE NOTED
- ALL POSTS FOR WINDOW/DOOR FRAMING TO BE P2 ON EITHER SIDE, UNLESS OTHERWISE NOTED
- COORDINATE ALL POINT LOADS FROM TRUSS MANUFACTURER
- REFER TO STRUCTURAL DRAWINGS FOR ALL LINTELS AND POSTS

2,871.9 FT² (266.9 M²) MAIN FLOOR AREA

1 / A.3 MAIN FLOOR PLAN
SCALE: 3/16" = 1'-0"

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bellarchitecture.ca

VERSION NO. 2

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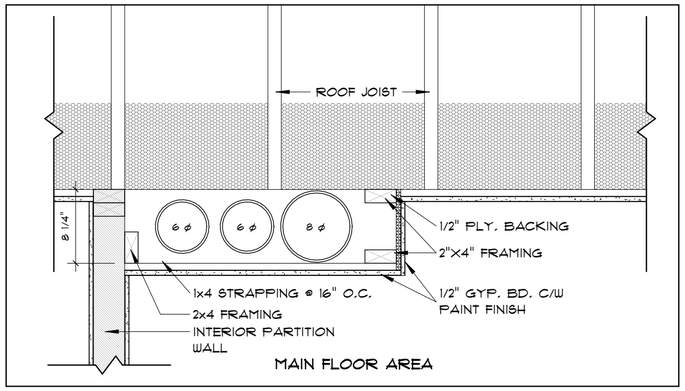
PROJECT
240 COUNTY ROAD, 4 BATH ONTARIO, K0H 1G0

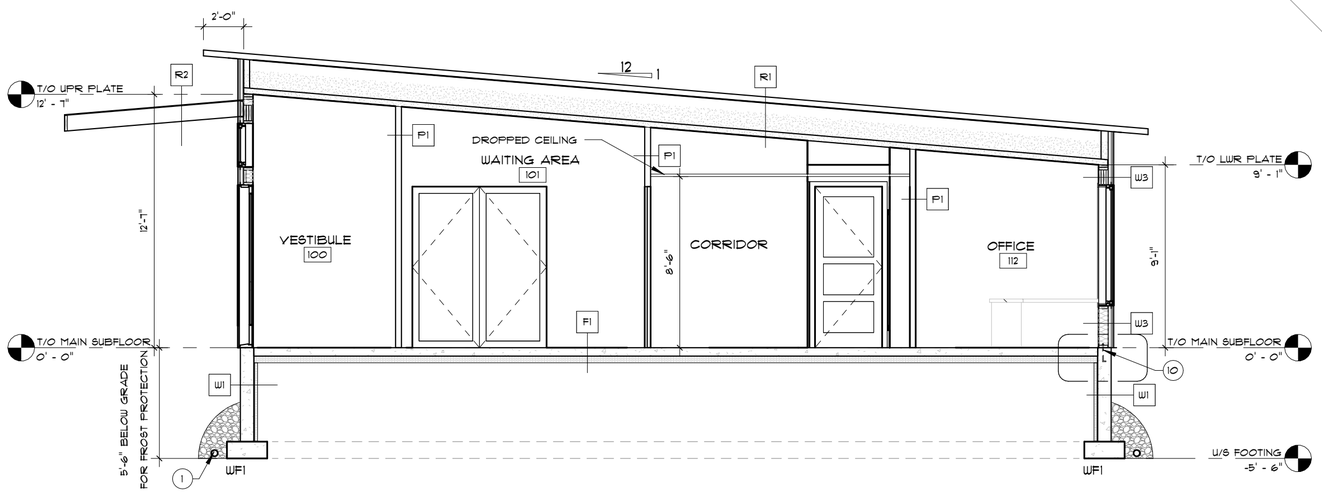
CLIENT
LOYALIST TOWNSHIP - MILLHAVEN ADMIN BUILDING

DRAWING
MAIN FLOOR PLAN

SCALE	AS INDICATED
DRAWN BY	AIT
DATE	SEPT 28, 2023
CHKED BY	AIT
APPRD BY	JCB
PROJECT NO.	223-05b
SHEET NO.	A.3



3 / A.4 BULKHEAD DETAIL
SCALE: 1" = 1'-0"



2 / A.4 BUILDING SECTION
SCALE: 3/16" = 1'-0"

DROPPED CEILING GRID 2'x2' AND 4'x2" AS PER PLAN - 8'-6" A.F.F

BULKHEAD - SEE DETAIL

1 / A.4 UPPER REFLECTED CEILING PLAN
SCALE: 3/16" = 1'-0"

PERMIT SET

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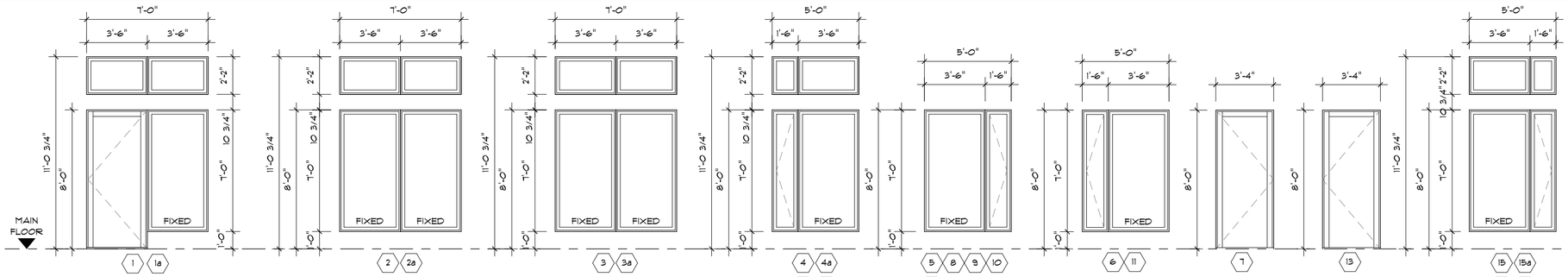
PROJECT
240 COUNTY ROAD, 4 BATH
ONTARIO, K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN ADMIN BUILDING

DRAWING
REFLECTED CEILING PLAN & BUILDING SECTIONS

SCALE	AS INDICATED
DRAWN BY	AIT
DATE	SEPT 28, 2023
CHKED BY	AIT
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO. A.4

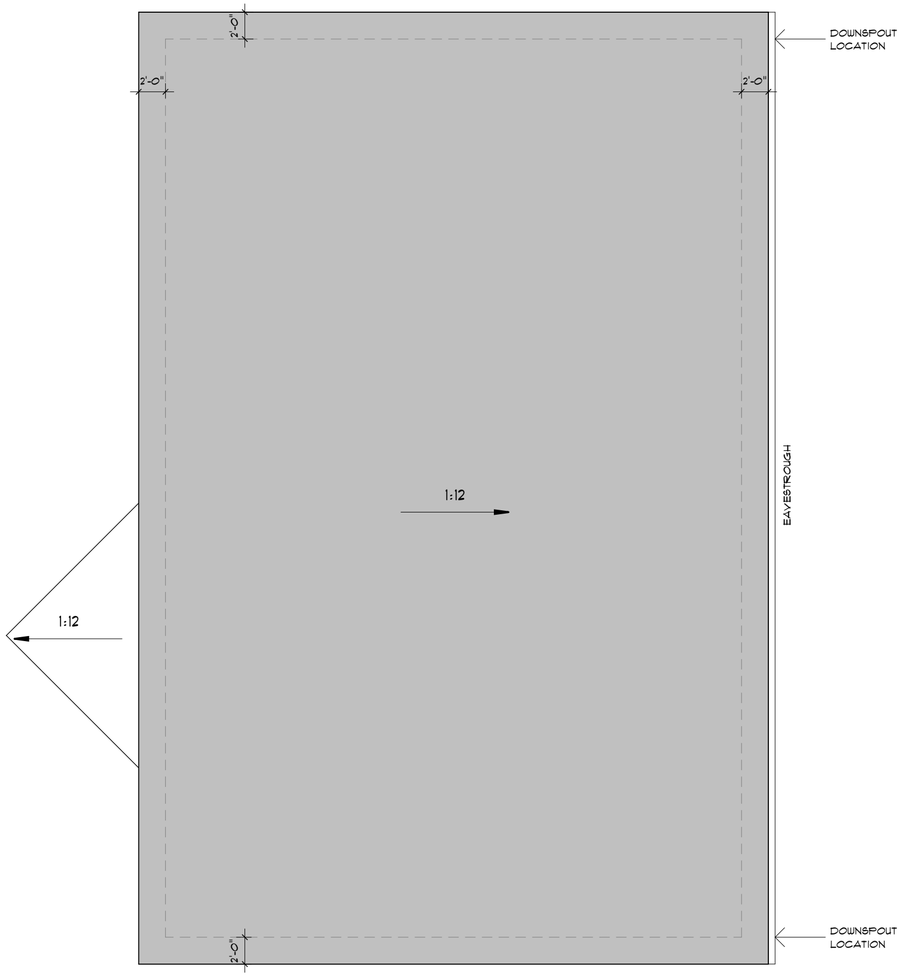


1 / A.7 EXTERIOR WINDOW & DOOR ELEVATIONS
SCALE: 3/16" = 1'-0"

EXTERIOR DOOR SCHEDULE

NOTE: CONFIRM ALL R.O.'S WITH MANUFACTURER

NO.	SIZE		METAL DOOR		FRAME RATING	DOOR RATING	HINGES	LOCK SET	KICK PLATE	DOOR CLOSURE	ELEC. OPENER	WALL STOP/FLOOR STOP	CONT. OPAQUE STRIP	REMARKS
	WIDTH	HEIGHT	H.C	S.C										
1	3'-6"	8'-0"		●			●							BARRIER FREE
7	3'-4"	8'-0"	●											
13	3'-4"	8'-0"	●				●				●			



*NOTE: 2'-0" OVERHANDS UNLESS OTHERWISE NOTED

ICE AND WATER SHIELD ENTIRE ROOF

1 / A.5 ROOF PLAN
SCALE: 1/8" = 1'-0"

ROOM FINISH SCHEDULE

NOTE: BASE COLOUR TO BE DETERMINED BY ARCHITECT

ROOM #	ROOM NAME	FLOOR	BASE	CEILING	CEILING COLOUR	WALLS				FRAMES / TRIM
						NORTH	EAST	SOUTH	WEST	
100	VESTIBULE	L.V.T	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	BLACK ALUMINUM
101	WAITING AREA	L.V.T	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	PT2
102	UNIVERSAL WSH.	L.V.T.	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	PT2
103	MECHANICAL	POL. CONC.	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	PT2
104	MEETING ROOM	L.V.T.	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	PT2
105	MALE WASHRM	L.V.T.	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	BLACK ALUMINUM / PT2
106	MALE CHNG RM.	L.V.T.	4" RUB	SUSP.	MANUF. COLOUR	PT3	PT3	PT3	PT3	BLACK ALUMINUM / PT2
107	FEM. CHNG RM.	L.V.T.	4" RUB	SUSP.	MANUF. COLOUR	PT3	PT3	PT3	PT3	BLACK ALUMINUM / PT2
108	FEM. WASHRM	L.V.T.	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	BLACK ALUMINUM / PT2
109	LUNCH ROOM	L.V.T.	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	PT2
110	OFFICE	CPT	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	BLACK ALUMINUM / PT2
111	OFFICE	CPT	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	PT2
112	OFFICE	CPT	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	PT2
113	OFFICE	CPT	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	PT2
114	OFFICE	CPT	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	BLACK ALUMINUM / PT2
115	OFFICE	CPT	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	PT2
116	OFFICE	CPT	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	PT2
117	OFFICE	CPT	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	PT2
118	IT ROOM	POL. CONC.	4" RUB	GYP.	PT1	PT3	PT3	PT3	PT3	PT2

LEGEND
- L.V.T. = VINYL ENHANCED TILE - COLOUR ESSENCE (COLOUR TO BE SELECTED FROM MANUFACTURER)
- CPT = T.B.D.
- 4" RUB = 4" JOHNSON RUBBER BASE
- SUSP. = SUSPENDED CEILING TILE (COLOUR TO BE SELECTED FROM MANUFACTURER)
- GYP. = GYPSUM BOARD
- PT1 = BENJAMIN MOORE - (PAINT #) PAINT COLOUR NAME - GYPSUM CEILINGS
- PT2 = BENJAMIN MOORE - (PAINT #) PAINT COLOUR NAME (SEMI GLOSS) - ALL DOORS AND TRIM
- PT3 = BENJAMIN MOORE - (PAINT #) PAINT COLOUR NAME - ALL MAIN WALLS

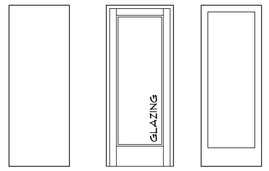
INTERIOR WINDOW AND DOOR SCHEDULE

NOTE: CONFIRM ALL R.O.'S WITH MANUFACTURER

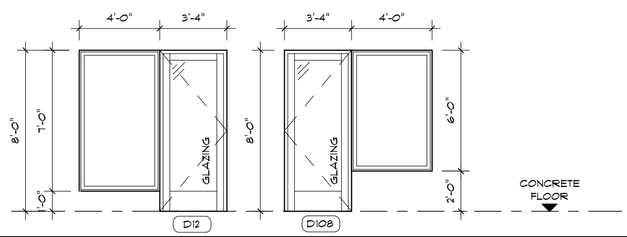
NO.	SIZE		TYPE	DOOR		FRAME MATERIAL	DOOR RATING	HINGES	LOCK SET	KICK PLATE	PRIVACY SET	JANITOR SET	DOOR CLOSURE	ELEC. OPENER	WALL STOP/FLOOR	CONT. OPAQUE STRIP	REMARKS
	WIDTH	HEIGHT		METAL	WOOD												
D100	3'-4"	8'-0"	B	●		P.S		●		●			●	●	●	●	BARRIER FREE
D101	3'-0"	8'-0"	A	●		P.S		●	●	●	●		●	●	●		BARRIER FREE
D102	6'-8"	8'-0"	B		●	W.D		●		●					●	●	DOUBLE DOOR
D103	3'-4"	8'-0"	B		●	W.D		●		●					●		BARRIER FREE
D104	3'-4"	8'-0"	B		●	W.D		●		●				●	●		BARRIER FREE
D105	3'-4"	8'-0"	B		●	W.D		●	●	●	●				●		BARRIER FREE
D106	3'-4"	8'-0"	B		●	W.D		●	●	●	●				●		BARRIER FREE
D107	3'-4"	8'-0"	B		●	W.D		●	●	●	●				●		BARRIER FREE
D108	3'-4"	8'-0"	B	●		P.S		●	●	●	●				●		BARRIER FREE
D109	3'-4"	8'-0"	B		●	W.D		●	●	●	●				●		BARRIER FREE
D110	3'-4"	8'-0"	B		●	W.D		●	●	●	●				●		BARRIER FREE
D111	3'-4"	8'-0"	B		●	W.D		●	●	●	●				●		BARRIER FREE
D112	3'-4"	8'-0"	B	●		P.S		●	●	●	●				●		BARRIER FREE
D113	3'-4"	8'-0"	C		●	W.D		●	●	●					●		BARRIER FREE
D114	3'-4"	8'-0"	A	●		P.S		●	●	●					●		BARRIER FREE
D115	3'-4"	8'-0"	A	●		P.S		●	●	●					●		
D116	3'-4"	8'-0"	A	●		P.S		●	●	●					●		BARRIER FREE
D117	3'-0"	8'-0"	A	●		P.S		●	●	●					●		
D118	3'-0"	8'-0"	A	●		P.S		●	●	●		●			●		FOB SET
D119	3'-0"	8'-0"	A	●		P.S		●	●	●		●			●		FOB SET

DOOR & WINDOW NOTES
1. ALL EXTERIOR DOORS & FRAMES TO BE INSULATED.
2. ALL WINDOWS IN EXTERIOR DOORS TO BE CLEAR, DOUBLE GLAZING, THERMALLY BROKEN, LOW "E" ARGON & GLAZING AS PER O.B.C.
3. DOOR SWING AS PER PLANS.
4. ALL WINDOWS TO HAVE INSULATED FRAMES, DOUBLE GLAZING, THERMALLY BROKEN & LOW "E" ARGON (GLAZING AS PER O.B.C.).
5. ALL OPERABLE WINDOWS TO INCLUDE REMOVABLE SCREENS AND HARDWARE.
6. OPERABLE WINDOW DIRECTION AS PER ELEVATIONS.
7. GRILLE PATTERNS AS PER ELEVATIONS.
8. WEATHER-STRIP FULL PERIMETER OF EXTERIOR DOORS
9. INTERIOR FINISH FOR ALL WINDOWS/DOORS TO BE MDF TRIM. UNLESS OTHERWISE NOTED.

DOOR TYPES



LEGEND
- S.C. = SOLID CORE WOOD
- W.D. = 1/4" JAMB DEPTH HARD WOOD FRAME
- P.S. = PRESSED STEEL FRAME



PERMIT SET

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- (1) INTERIOR DOOR TAG (SEE SCHEDULE)
- W1 EXTERIOR WALL TYPE (SEE A.0.a)
- P1 INTERIOR PARTITION WALL TYPE (SEE A.0.a)
- F1 FLOOR TYPE (SEE A.0.a)

LEGEND:
- R1 ROOF TYPE (SEE A.0.a)
- P1 POST TYPE (SEE A.0.a)
- L1 LINTEL TYPE (SEE A.0.a)
- F1 PAD FOOTING TYPE (SEE A.0.a)
- WF1 WALL FOOTING TYPE (SEE A.0.a)
- SCD SMOKE/CARBON MONOXIDE DETECTOR TO O.B.C. 9.10.19
- (1) CONSTRUCTION NOTE
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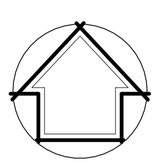
- NON-FREEZE HOSE BIB

PROJECT NORTH:



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bellarchitecture.ca

VERSION NO. 2

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REVISIONS

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4	ISSUED FOR PERMIT	05-29-2026

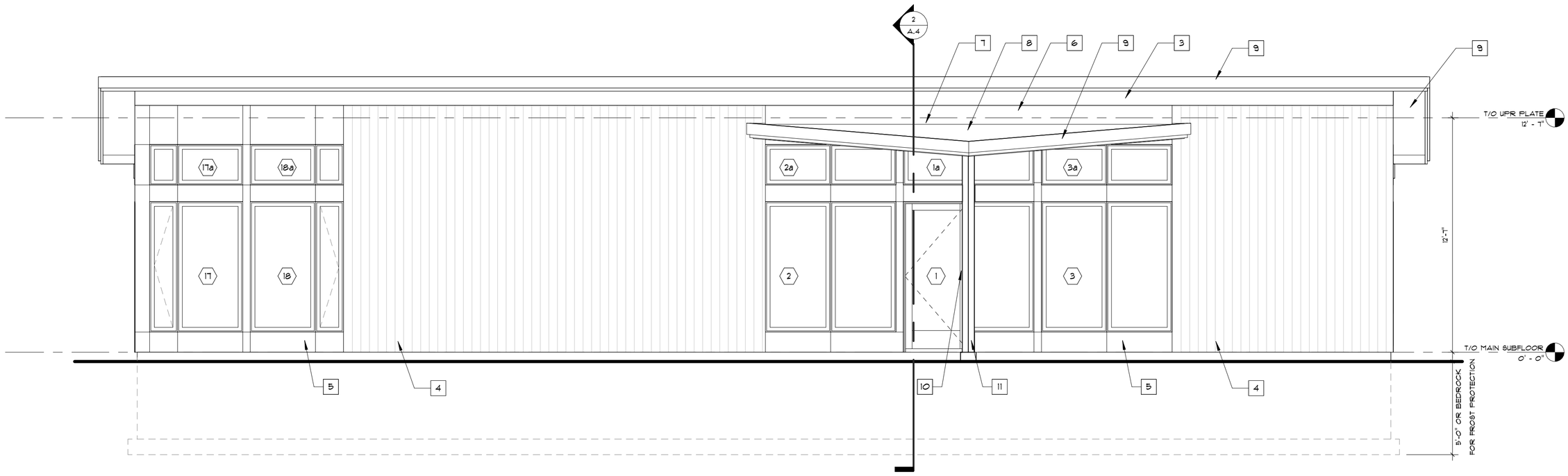
PROJECT
240 COUNTY ROAD, 4 BATH ONTARIO, K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN ADMIN BUILDING

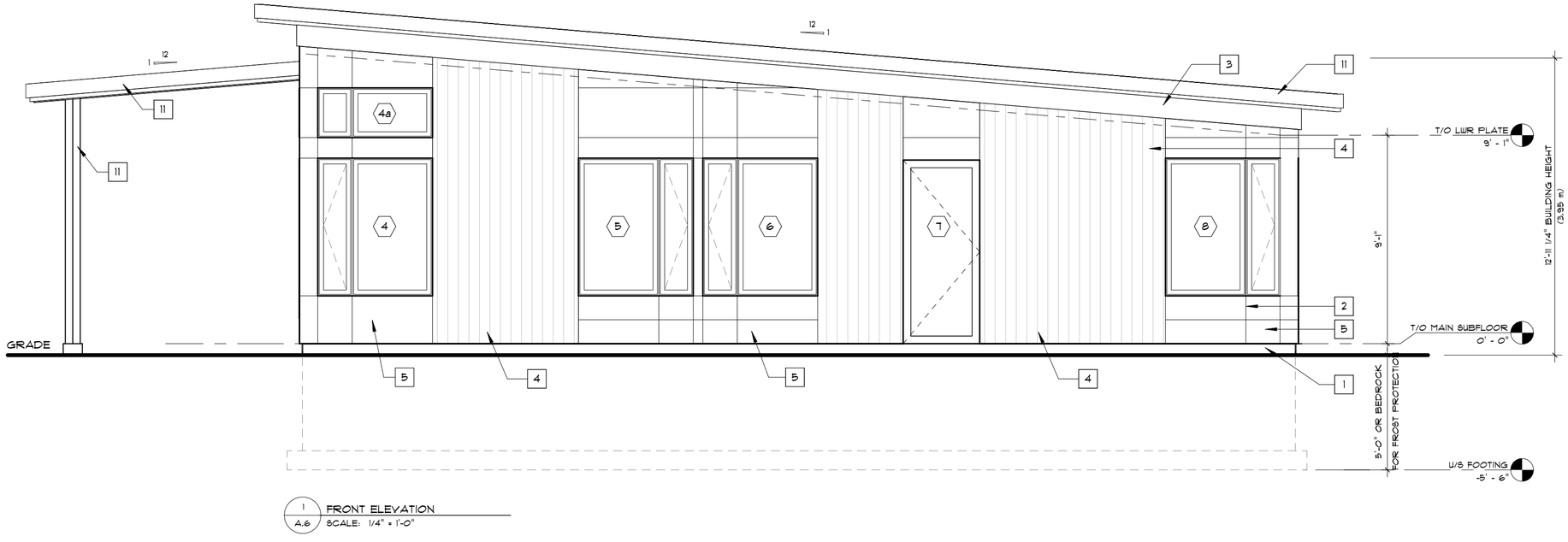
DRAWING
ROOF PLAN / WINDOW ELEVATIONS / DOOR SCHEDULE / ROOM FINISH SCHEDULE

SCALE	AS INDICATED
DRAWN BY	AIT
DATE	SEPT 28, 2023
CHKED BY	AIT
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO. A.5



2 / A.6 LEFT ELEVATION
SCALE: 1/4" = 1'-0"



1 / A.6 FRONT ELEVATION
SCALE: 1/4" = 1'-0"

EXTERIOR FINISH LEGEND:

1	PARGING ON ALL EXPOSED CONCRETE TO 12" BELOW GRADE
2	ALUCOBOND REVEALS (REFER TO MANUFACTURER SPECIFICATIONS)
3	12" PRE-FINISHED TRIM (COLOUR TO BE APPROVED BY DESIGNER)
4	PRE-FINISHED VERTICAL SIDING C.W. ALL TRIMS, CLOSURES AND FITTINGS. INSTALLED AS PER MANUFACTURERS SPECIFICATIONS (COLOUR TO BE APPROVED BY DESIGNER)
5	ALUCOBOND CLADDING (REFER TO ELEVATIONS FOR ORIENTATION, (COLOUR & FINISH TO BE APPROVED BY DESIGNER AND INSTALLED AS PER MANUFACTURER INSTRUCTIONS)
6	8" PRE-FINISHED CONTINOUS FRIEZE TRIM (COLOUR TO BE APPROVED BY DESIGNER)
7	PRE-FINISHED METAL FLASHING @ ALL VALLEYS & ROOF/WALL INTERSECTIONS
8	METAL ROOF, 'POCKET RIB' BY 'IDEAL ROOFING' OR APPROVED EQUAL
9	2"x8" OVER 2"x10" PRE-FINISHED ALUMINUM FASCIA & VENTED VINYL BEADED SOFFIT
10	POWER DOOR OPERATOR SHALL BE DESIGNED TO BE OPERABLE USING A CLOSED FIST AND ME MOUNTED NOT LESS THAN 2'-11" (900 mm) AND NOT MORE THAN (3'-1") 1100 mm ABOVE THE FINISHED FLOOR.
11	STRUCTURAL POST (REFER TO FLOOR PLANS AND STRUCTURAL DRAWINGS)

PERMIT SET

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VERSION NO. 2

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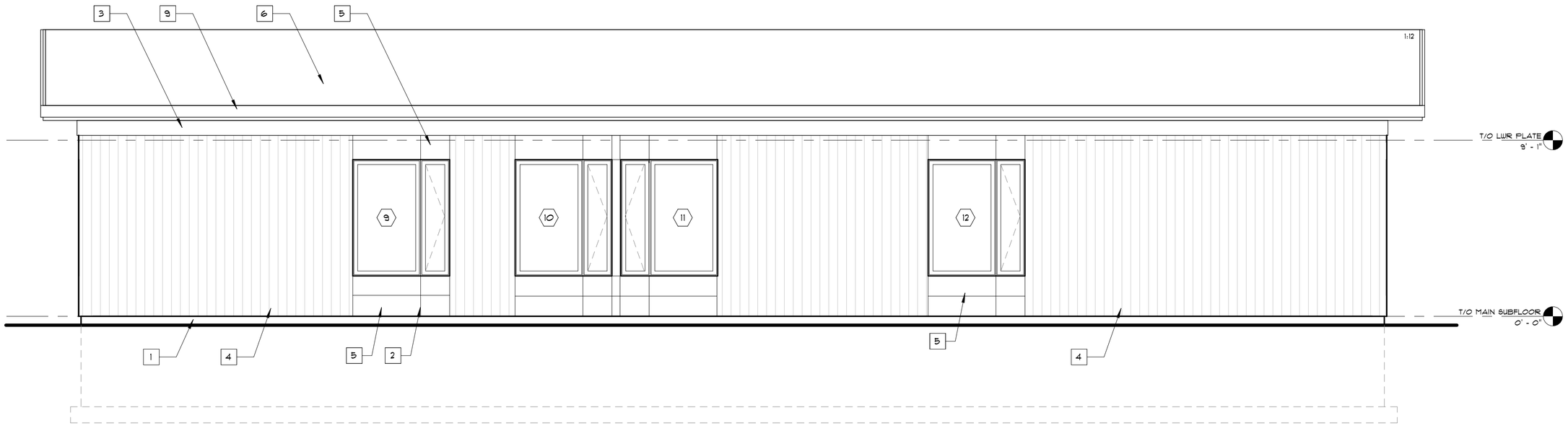
PROJECT
240 COUNTY ROAD, 4 BATH ONTARIO, K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN ADMIN BUILDING

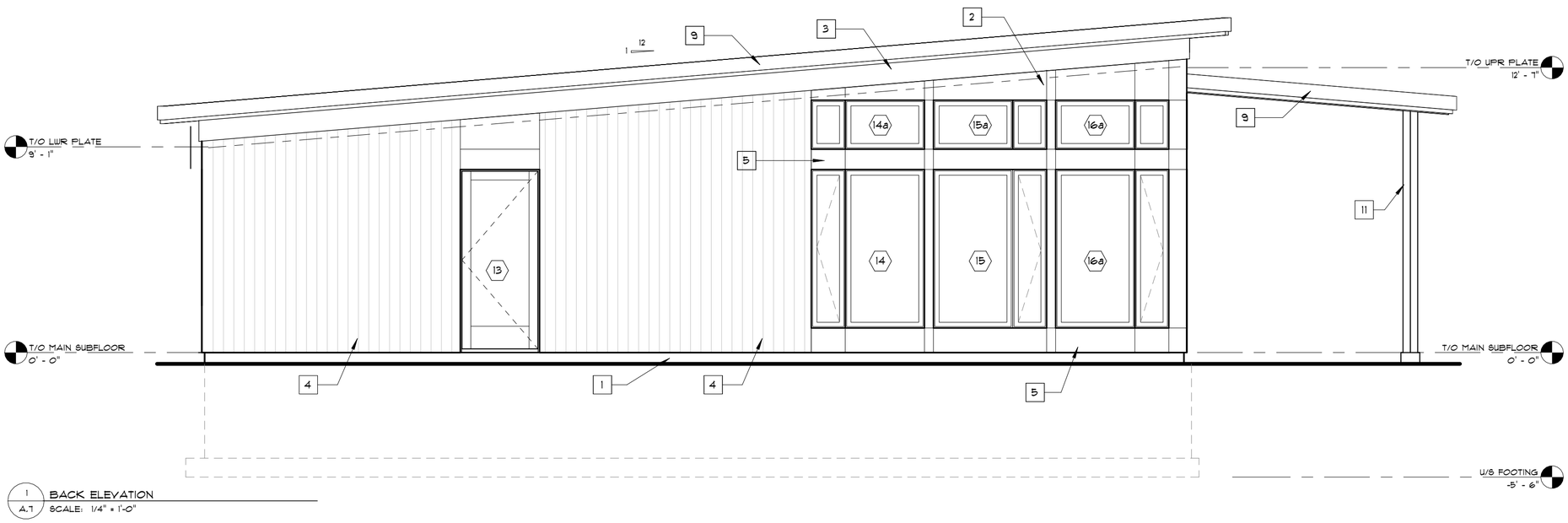
DRAWING
FRONT & LEFT ELEVATIONS

SCALE	AS INDICATED
DRAWN BY	AIT
DATE	SEPT 28, 2023
CHKED BY	AIT
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO. A.6



2 / A.1 RIGHT ELEVATION
SCALE: 1/4" = 1'-0"



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SCALE: 1/4" = 1'-0"

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11	STRUCTURAL POST (REFER TO FLOOR PLANS AND STRUCTURAL DRAWINGS)

PERMIT SET

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PROJECT
240 COUNTY ROAD, 4 BATH ONTARIO, K0H 1G0

CLIENT
LOYALIST TOWNSHIP - MILLHAVEN ADMIN BUILDING

DRAWING
BACK & RIGHT ELEVATIONS

SCALE	AS INDICATED
DRAWN BY	AIT
DATE	SEPT 28, 2023
CHKED BY	AIT
APPRD BY	JCB
PROJECT NO.	223-05b

SHEET NO. A.1

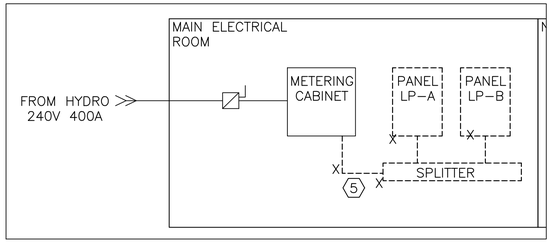
ELECTRICAL LEGEND

ITEM	DESCRIPTION
	DOWNLIGHT
	CEILING/WALL MOUNTED EXIT SIGN
$	SWITCH
$OS (OS)	WALL/CEILING MOUNTED OCCUPANCY SENSOR
	ELECTRICAL PANEL
CR	CARD READER
JB	JUNCTION BOX
OL	OCCUPIED WHEN LIT INDICATOR
PB	PUSH BUTTON
DO	DOOR OPERATOR
	DUPLEX RECEPTACLE WALL MOUNTED
	DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER
	SPECIALTY RECEPTACLE
	QUAD RECEPTACLE
	DATA OUTLET WALL MOUNTED
	VOICE OUTLET WALL MOUNTED
	DATA/VOICE OUTLET WALL MOUNTED
C	27MMC FOR CAMERA
	DEDICATED 5-20R DUPLEX RECEPTACLE
	DIRECT CONNECTION
	FLOOR/CEILING MOUNTED RECEPTACLE
	EMERGENCY BATTERY PACK LIGHTING
	WALL/CEILING MOUNTED EMERGENCY REMOTE LIGHT HEAD
	COMBINATION BATTERY PACK / EXIT SIGN
	TRANSFORMER
	NON-FUSED/FUSED DISCONNECT SWITCH
	1ø/3ø MOTOR DIRECT CONNECTION

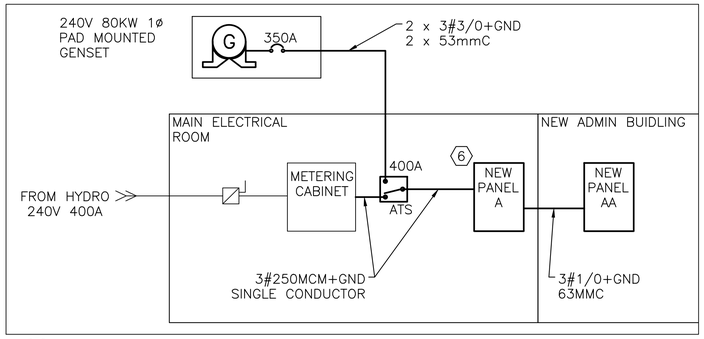
NOT ALL SYMBOLS SHOWN IN LEGEND SET ARE NECESSARILY USED IN DRAWING SET.

GENERAL NOTES:

1. ALL ELECTRICAL EQUIPMENT SHOWN IN THIN SOLID LINES IS EXISTING TO REMAIN.
2. ALL ELECTRICAL EQUIPMENT SHOWN IN THICK SOLID LINES IS NEW TO BE PROVIDED UNDER THIS CONTRACT, TOGETHER WITH ALL ASSOCIATED CONDUITS AND WIRING.
3. ALL ELECTRICAL EQUIPMENT SHOWN IN THICK DASHED LINES WITH LETTER 'R' IS EXISTING TO BE RELOCATED AS SHOWN. EXTEND ALL CONDUITS AND WIRING TO SUIT.
4. ALL ELECTRICAL EQUIPMENT SHOWN IN THICK DASHED LINES WITH LETTER 'X' IS EXISTING TO BE REMOVED C/W ALL CONDUIT, WIRING AND ASSOCIATED HARDWARE BACK TO NEAREST J/B.
5. FOR ANY REQUIRED SHUT DOWN, CONTRACTOR TO COORDINATE WITH SITE MANAGER AND OBTAIN APPROVAL BEFORE SHUT DOWN CAN BE PERFORMED.
6. PROVIDE NEW BREAKERS AS REQUIRED IN EXISTING ELECTRICAL PANELS TO ACCOMMODATE NEW CONNECTIONS, ALSO PROVIDE BLANK PLATES WHERE CIRCUIT BREAKERS ARE NOT INSTALLED, PROVIDE NEW TYPED PANEL LEGEND TYPICAL FOR ALL PANELS TOUCHED BY THIS CONTRACT. TURN OVER TO THE OWNER ALL BREAKERS REMOVED UNDER THIS CONTRACT.
7. ALL EXISTING AND NEW CONDUITS AND WIRING PASSING THRU FLOOR AND FIRE RATED WALLS TO BE FIRESTOPPED USING FIRE RETARDANT MASTIC SEALANT, CAN/ULC-S115 RATED PRODUCT.
8. ALL WIRING TO BE R/RW90, MINIMUM SIZE #12AWG COPPER, IN EMT CONDUIT UNLESS OTHERWISE NOTED.
9. ALL ELECTRICAL CIRCUITS ARE SHOWN FOR GROUPING PURPOSES ONLY, CONTRACTOR TO USE AVAILABLE CIRCUITS IN EXISTING ELECTRICAL PANELS. REUSE EXISTING AND/OR PROVIDE NEW ELECTRICAL BREAKERS AS REQUIRED.
10. REGROUP CIRCUITS AS REQUIRED.
11. COORDINATE ALL WORK WITH ARCHITECTURAL AND MECHANICAL CONTRACTORS.
12. THIS DRAWING WAS BASED ON PARTIAL SITE REVIEW ONLY, ALL EQUIPMENT, ACCESSORIES, SIZES, LOCATIONS AND DETAILS OF INSTALLATIONS TO BE CONFIRMED ON SITE.
13. SEISMIC RESTRAINT SYSTEM (SRS) – PROVIDE DESIGN, SUPPLY AND INSTALLATION OF COMPLETE SRS FOR ALL SYSTEMS, EQUIPMENT SPECIFIED FOR INSTALLATION ON THIS PROJECT AS PER ONTARIO BUILDING CODE LATEST EDITION. THIS INCLUDES ELECTRICAL LIGHT FIXTURES, TRANSFORMERS, MCC'S, UPS, DIESEL GENERATORS, FIRE PROTECTION, CONDUIT, COMMUNICATIONS, ELECTRICAL EQUIPMENT AND SYSTEMS, BOTH VIBRATION ISOLATED AND STATICALLY SUPPORTED.



1 E-1 PARTIAL SINGLE LINE DIAGRAM – DEMOLITION
N.T.S.



2 E-1 PARTIAL SINGLE LINE DIAGRAM – NEW WORK
N.T.S.

DRAWING NOTES:

1. REFER TO SINGLE LINE DIAGRAMS FOR DETAILS ON EXISTING ELECTRICAL DISTRIBUTION DEMOLITION AND NEW PANEL LAYOUT/DETAILS.
2. EXISTING STAND ALONE SMOKE DETECTOR TO REMAIN.
3. EXISTING FORCE FLOW HEATER TO BE DISCONNECTED AND REMOVED C/W ALL CONDUIT, WIRING AND ASSOCIATED HARDWARE, BACK TO SOURCE.
4. DISCONNECT AND REMOVE EXISTING LIGHT FIXTURE. C/W ALL CONDUIT, WIRING AND SWITCHING.
5. DISCONNECT AND REMOVE EXISTING TWO PANELS. CONTRACTOR TO VERIFY ALL CIRCUITS AND BREAKERS PRIOR TO REMOVING. C/W ALL CONDUIT AND WIRING.
6. PROVIDE NEW PANEL AS INDICATED. REFER TO PANEL LEGEND FOR DETAILS. CONTRACTOR TO VERIFY ALL EXISTING BREAKERS AND ORDER NEW. C/W ALL CONDUIT AND WIRING.

NEW PANEL A
120/240V, 1PH, 3 WIRE, 400A

DESCRIPTION	BREAKER SIZE	CIRCUIT NUMBER			CIRCUIT NUMBER	BREAKER SIZE	DESCRIPTION
NEW ADMIN BUILDING	125	1	ϕ		2		
		3		ϕ	4		
		5	ϕ		6		
		7		ϕ	8		
		9	ϕ		10		
		11		ϕ	12		
		13	ϕ		14		
		15		ϕ	16		
		17	ϕ		18		
		19		ϕ	20		
		21	ϕ		22		
		23		ϕ	24		
		25	ϕ		26		
		27		ϕ	28		
		29	ϕ		30		
		31		ϕ	32		
		33	ϕ		34		
		35		ϕ	36		
		37	ϕ		38		
		39		ϕ	40		
		41	ϕ		42		
		43		ϕ	44		
		45	ϕ		46		
		47		ϕ	48		
		49	ϕ		50		
		51		ϕ	52		
		53	ϕ		54		
		55		ϕ	56		
		57	ϕ		58		
		59		ϕ	60		
		61	ϕ		62		
		63		ϕ	64		
		65	ϕ		66		
		67		ϕ	68		
		69	ϕ		70		
		71		ϕ	72		
		73	ϕ		74		
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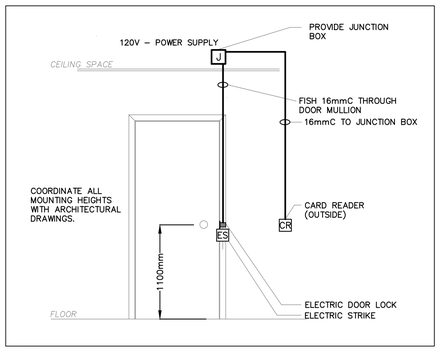
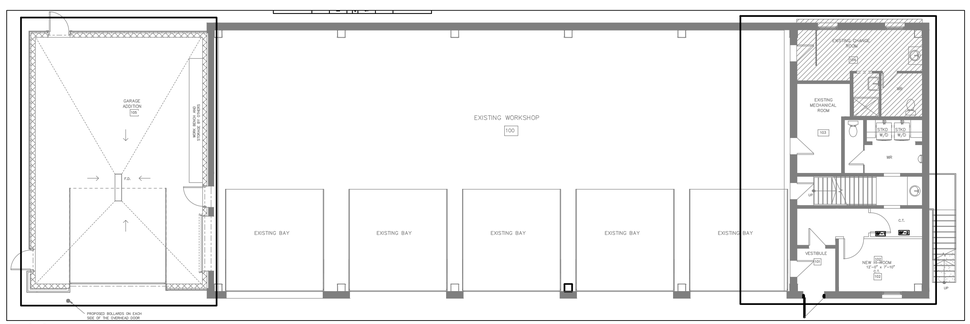
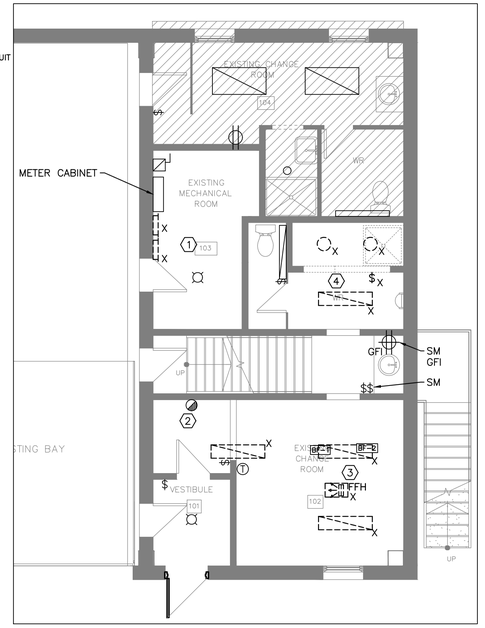
		79		ϕ	80		
		81	ϕ		82		
		83		ϕ	84		



5 E-1 CARD READER DETAIL
N.T.S.



3 E-1 KEYPLAN
N.T.S.



4 E-1 PARTIAL GROUND FLOOR PLAN – DEMOLITION
3/16" = 1'-0"

JRP ENGINEERING
Professional Engineers
110 Didsbury Rd – Unit M090, Kanata, ON, K2T 0C2
Tel: 613-627-2462 Email: Admin@jrpeng.com

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No	DESCRIPTION	DATE
2	ISSUED FOR PERMIT/TENDER	MAY 29, 2026
1	ISSUED FOR REVIEW	APR. 24, 2026
0	ISSUED FOR REVIEW	FEB. 02, 2024

REVISIONS

client:
BELL+ASSOCIATES ARCHITECTURE
120 TERENCE MATTHEWS CRES. UNIT B1, OTTAWA, ONTARIO

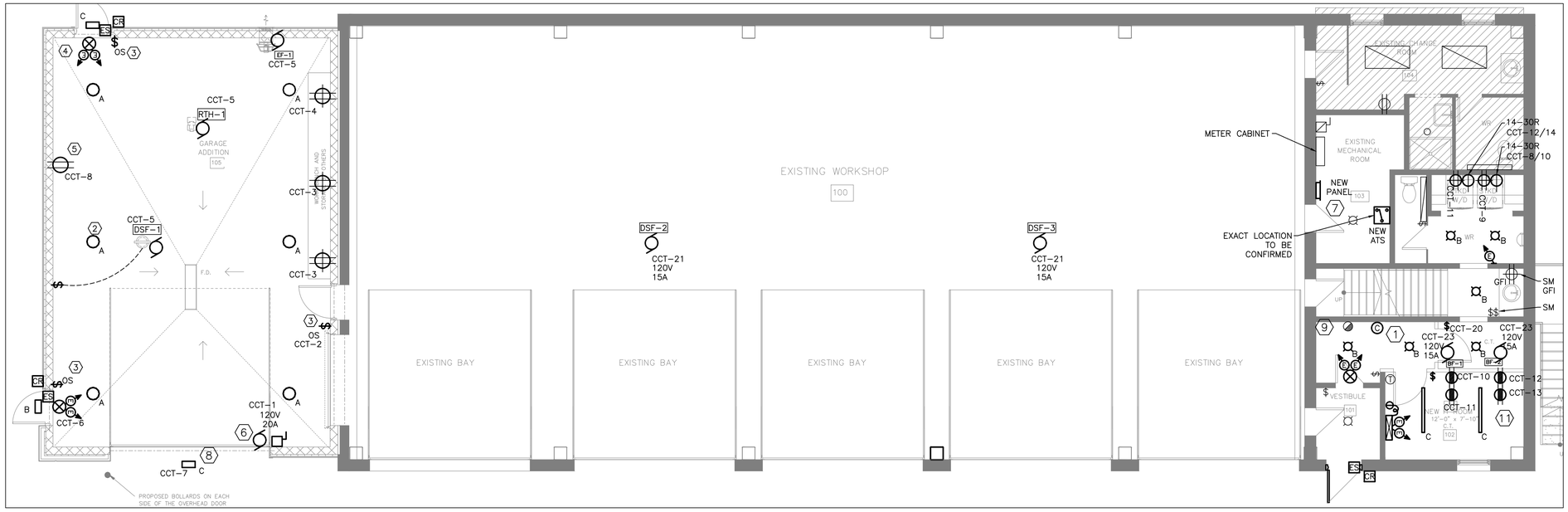
project:
MILLHAVEN GARAGE STORAGE EXPANSION
240 COUNTY ROAD 4, BATH, ONTARIO K0H 1G0

drawing title:
ELECTRICAL LEGENDS AND DETAILS

scale:	AS NOTED	drawn by:	C.M.
designed by:	C.M.	reviewed by:	M.G.
approved by:	M.G.	date:	MAY 2026

project no.: 420-2301-02

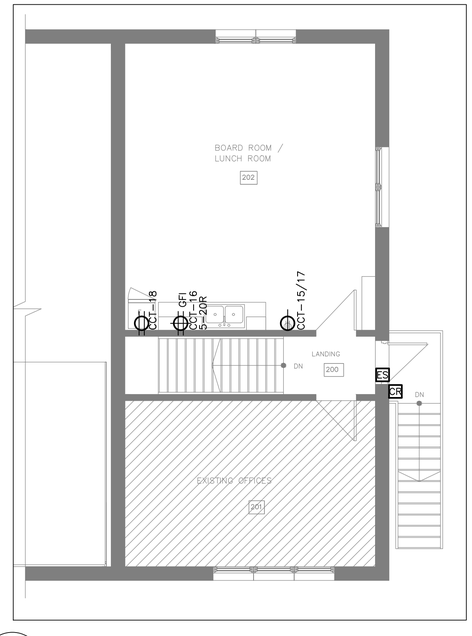
drawing no.: E-1 of 3



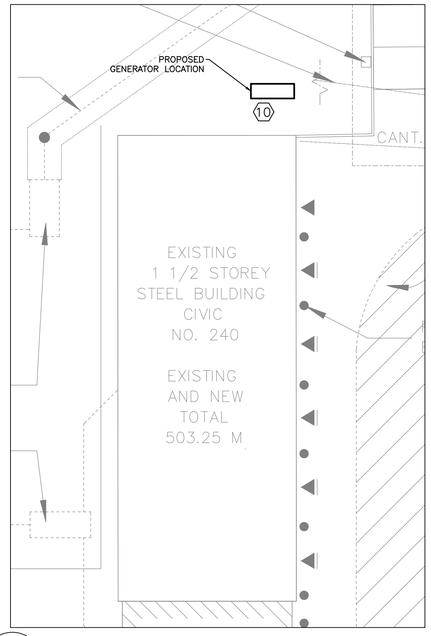
2 PARTIAL GROUND FLOOR PLAN – NEW WORK
E-2 — 3/16" = 1'-0"

DRAWING NOTES:

1. TYPICAL: PROVIDE NEW 27MMC CONDUIT AND BOX FOR CAMERA. CONDUIT TO GO BACK TO IT ROOM. COORDINATE WITH CLIENT FOR FINAL MOUNTING LOCATION.
2. TYPICAL: PROVIDE NEW LIGHT FIXTURE. TYPE AS INDICATED. C/W ALL CONDUIT, WIRING AND SWITCHING.
3. TYPICAL: ALL NEW LIGHTING TO BE CONTROLLED BY WALL MOUNTED OCCUPANCY SENSORS (INSTALLED IN PARALLEL) C/W MANUAL OVERRIDE. ANY OF THE THREE (3) OCCUPANCY SENSORS TO TURN ALL LIGHTS IN NEW ADDITION ON AND MAINTAIN ON FOR A MINIMUM OF 30 MINUTES.
4. TYPICAL: PROVIDE NEW EXIT SIGN C/W BATTERY BACKUP AND REMOTE HEADS AS INDICATED, ALL CONDUIT AND WIRING.
5. TYPICAL: PROVIDE NEW RECEPTACLE, TYPE AS INDICATED. C/W ALL CONDUIT AND WIRING. COORDINATE MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS.
6. TYPICAL: PROVIDE NEW DIRECT CONNECTION TO NEW EQUIPMENT. C/W ALL CONDUIT, WIRING AND DISCONNECTING MEANS.
7. REFER TO SINGLE LINE DIAGRAMS FOR DETAILS ON EXISTING ELECTRICAL DISTRIBUTION DEMOLITION AND NEW PANEL LAYOUT/DETAILS.
8. TYPICAL: NEW OUTDOOR LIGHTING TO BE CONTROLLED BY COMMON PHOTOCELL. (NOT SHOWN)
9. EXISTING STAND ALONE SMOKE DETECTOR TO REMAIN.
10. PROVIDE NEW GENERATOR AS INDICATED. REFER TO SPECIFICATIONS AND SINGLE LINE DIAGRAM. GENERATOR COMPLETE WITH:
    - TRANSFER SWITCH
    - COMMISSIONING
    - LOAD BANK TESTING (2 HOURS)
    - ALL SIGNAL WIRING
    - SHOW POWER CONNECTIONS
11. EXACT LOCATION OF RECEPTACLES FOR IT ROOM TO BE COORDINATED WITH CLIENT.
12. GENERAL: CIRCUITING SHOWN FOR COORDINATION PURPOSES ONLY. CONTRACTOR TO COUNT CIRCUITING FOR BREAKERS.



2 PARTIAL SECOND FLOOR PLAN – NEW WORK
E-2 — 3/16" = 1'-0"



3 PROPOSED GENERATOR LOCATION
E-2 — N.T.S.

JRP ENGINEERING
Professional Engineers
110 Didsbury Rd – Unit M090, Kanata, ON, K2T 0C2
Tel: 613-627-2462 Email: Admin@jrpeng.com

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REVISIONS

client:
BELL+ASSOCIATES ARCHITECTURE
120 TERENCE MATTHEWS CRES.
UNIT B1, OTTAWA, ONTARIO

project:
MILLHAVEN GARAGE STORAGE EXPANSION
240 COUNTY ROAD 4,
BATH, ONTARIO K0H 1G0

drawing title:
ELECTRICAL NEW WORK

scale:	AS NOTED	drawn by:	C.M.
designed by:	C.M.	reviewed by:	M.G.
approved by:	M.G.	date:	MAY 2026

project no.: 420-2301-02

drawing no.: E-2

GENERAL INSTRUCTIONS

CONDITIONS OF CONTRACT

1. THE OWNERS INSTRUCTIONS TO BIDDERS AND THE GENERAL CONDITIONS OF THE DESIGNERS SPECIFICATIONS ARE AN INTEGRAL PART OF THIS CONTRACT AND SHALL BE READ IN CONJUNCTION HEREWITH. THESE INSTRUCTIONS TO BIDDERS AND GENERAL CONDITIONS SHALL BE FULLY BINDING ON THE GENERAL CONTRACTOR AND HIS SUB-CONTRACTORS TO THE FULL SATISFACTION OF THE DESIGNER, ENGINEER AND OWNER.
2. THE RESPONSIBILITY AND SCOPE OF EACH SUB-TRADE RESTS SOLELY WITH THE CONTRACTOR. EXTRAS WILL NOT BE CONSIDERED BASED ON THE GROUNDS OF DIFFERENCE IN INTERPRETATION OF SPECIFICATIONS AND DRAWINGS AS TO WHICH TRADE INVOLVED SHALL PROVIDE CERTAIN SPECIALTIES OR MATERIALS.
3. IT IS A CONDITION OF THIS CONTRACT, THAT THE CONTRACTOR WILL, IN THE PERFORMANCE OF THE SERVICES FOR THE OWNER AS DESCRIBED IN THIS CONTRACT, PERFORM WORK IN ACCORDANCE WITH ONTARIO BUILDING CODE LATEST EDITION, THE ONTARIO HYDRO ELECTRICAL SAFETY CODE, THE SEWAGE SYSTEMS ENVIRONMENTAL PROTECTION ACT ONTARIO, WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS), O.REG 644/88, THE ONTARIO GAS UTILIZATION CODE, AND ANY OTHER CODE OF PROVINCIAL OR LOCAL APPLICATION, INCLUDING HOURS OF WORK, RATES OF PAY, JOB SAFETY AND ALL OTHER MATTERS IN WHICH THE MUNICIPAL OR FEDERAL AUTHORITIES HAVE JURISDICTION, PROVIDED THAT IN ANY CASE OF CONFLICT OR DISCREPANCY, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.
4. COMPLY WITH STANDARD FOR BUILDING CONSTRUCTION OPERATIONS, ISSUED BY THE ONTARIO FIRE MARSHALL'S OFFICE AND ALL APPLICABLE FIRE SAFETY CODES, LAWS, AND REGULATIONS.
5. IT IS INCUMBENT UPON THE CONTRACTOR TO INFORM ITSELF OF ANY SUCH LEGISLATION AND THE CONTRACTOR AGREES THAT IN THE EVENT OF NON-COMPLIANCE WITH THIS LEGISLATION, IT WILL INDEMNIFY AND HOLD HARMLESS THE OWNER FROM ANY COSTS AND DAMAGES RESULTING FROM SUCH NON-COMPLIANCE.
6. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH STANDARDS OF GOOD PRACTICE SUCH AS, BUT NOT LIMITED TO, SMACNA AND ASHRAE, MEET OR EXCEED REQUIREMENTS OF CONTRACT DOCUMENTS, SPECIFIED STANDARDS, CODES AND REFERENCED DOCUMENTS DESCRIBED IN THESE INSTRUCTIONS.

EXAMINATION OF WORK

1. THIS PROJECT INVOLVES RENOVATIONS TO EXISTING BUILDING, THEREFORE EXAMINE THE SITE AND LOCAL CONDITIONS TO DETERMINE THE DIFFICULTIES IN CARRYING OUT THE WORK INDICATED AND SPECIFIED PRIOR TO SUBMITTING FINAL PRICE.

INTENT

1. IT IS THE INTENT OF THIS SPECIFICATION AND DRAWINGS TO PROVIDE FOR A COMPLETE AND FULLY OPERATING SYSTEM IN COMPLETE ACCORD WITH ALL APPLICABLE CODES. THESE DOCUMENTS MAY NOT SHOW OR DESCRIBE EACH AND EVERY ITEM REQUIRED FOR THE COMPLETE INSTALLATION;THEREFORE, THE CONTRACTOR SHALL MAKE PROVISIONS FOR ALL LABOUR, MATERIAL AND EQUIPMENT DEEMED NECESSARY TO COMPLETE THE WORK INDICATED OR REASONABLY IMPLIED ON ALL DRAWINGS.

LIABILITY

1. THIS CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR LAYING OUT HIS WORK AND FOR ANY DAMAGE OR EXTRA COSTS CAUSED TO THE OWNER OR OTHER CONTRACTORS BY IMPROPER LOCATION OR CARRYING OUT OF HIS WORK. CARRY ALL NECESSARY INSURANCE COVERAGE.

PERMITS, CERTIFICATES, FEES, ETC.

1. GIVE ALL NOTICES, OBTAIN ALL PERMITS AND PAY ALL FEES SO THAT THE WORK SPECIFIED HEREIN MAY BE CARRIED OUT, EXCEPT FOR OCCUPANCY PERMIT WHICH WILL BE OBTAINED BY THE OWNER. AT THE ENGINEER'S REQUEST, FURNISH ANY CERTIFICATES AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH THE LAWS AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION.

GUARANTEE

1. THE CONTRACTOR, AS A CONDITION PRECEDENT TO FINAL PAYMENT AFTER COMPLETION OF THIS WORK, SHALL GIVE THE OWNER A WRITTEN GUARANTEE WARRANTING ALL APPARATUS FURNISHED UNDER THE CONTRACT TO REMAIN IN PERFECT SERVICEABLE CONDITION FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL PERFORMANCE OF HIS WORK AS ESTABLISHED BY THE PROJECT MANAGER AND ENGINEER.

DOCUMENTS REQUIRED

1. MAINTAIN AT JOB SITE ONE COPY OF EACH OF THE FOLLOWING DOCUMENTS:
   - .1 DRAWINGS.
   - .2 SPECIFICATIONS.
   - .3 ADDENDA.
   - .4 CHANGE ORDERS. .
   - .5 OTHER MODIFICATIONS TO CONTRACT.
   - .6 FIELD TEST REPORTS.
   - .7 MANUFACTURERS' INSTALLATION AND APPLICATION INSTRUCTIONS.

EXTRA WORK

1. NO EXTRA WORK IS TO BE CARRIED OUT WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER OR THE OWNER'S REPRESENTATIVE.
2. CONTRACTOR SHALL PROVIDE QUOTATIONS FOR EXTRA WORK AS DIRECTED UNDER CONTEMPLATED CHANGE NOTICES (CCN'S) ISSUED IN WRITING BY THE ENGINEER OR THE OWNER'S REPRESENTATIVE.
3. CONTRACTOR TO SUBMIT ITEMIZED BREAKDOWN FOR BOTH MATERIAL AND LABOUR FOR ALL CONTEMPLATED CHANGE NOTICES. CONTRACTOR WILL USE THE CCN FORMS PROVIDED WITH THE TENDER DOCUMENTS. ALL COLUMNS TO BE USED WHERE APPLICABLE AND EXTENSIONS MADE.
4. AT THE START OF THE PROJECT THE CONTRACTOR SHALL SUBMIT FOR REVIEW THE HOURLY LABOUR RATE THAT IS PROPOSED FOR PRICING ON ALL EXTRA WORK THAT MAY ARISE ON THE PROJECT.
5. LABOUR RATE TO INCLUDE ONLY:
   - .1 PAY AND VACATION PAY.
   - .2 WELFARE AS PER UNION COLLECTIVE AGREEMENT (ACCEPTED ONLY IF CONTRACTOR IS A UNION CONTRACTOR).
   - .3 E.I. OR C.P.P. AS PER FEDERAL GOVERNMENT REQUIREMENTS.
   - .4 W.C.B. PAYMENTS AS PER ONTARIO REGULATIONS.
   - .5 INSURANCE AS PER REQUIREMENTS OR REGULATING BODY.
6. MATERIAL WILL BE PRICES AT THE CONTRACTOR'S COST. COPIES OF SUPPLIER'S INVOICES MAY BE REQUIRED TO SUBSTANTIATE MATERIAL COSTS WHEN REQUESTED.
7. THE AMOUNT OF MARK-UP ALLOWED FOR PROFIT AND OVERHEAD WILL BE IN ACCORDANCE WITH THOSE IN THE CONTRACT DOCUMENTS WITH THE TENDER. TO BE MODIFIED TO REFLECT THE ALLOWED PROFIT AND OVERHEAD STATED IN THE CONTRACT DOCUMENTS.
8. THE MARK-UPS APPLY TO THE NET WHERE A CHANGE INCLUDES BOTH EXTRAS AND CREDITS.
9. COST OF WORK BY A SUB-TRADE TO THE DIVISION 26 CONTRACTOR WILL BE DETERMINED BY THE SUB-TRADE USING THE SAME ITEMIZED BREAKDOWN FORMAT AND THE SAME CCN FORM.
10. A MARK-UP OF 5% WILL BE PERMITTED BY THE DIVISION 26 CONTRACTOR FOR SUB-TRADE WORK.

PROGRESS BILLING

1. CONTRACTOR TO SUBMIT ITEMIZED BREAKDOWN FOR THE PROJECT BASED ON THE CONTRACT PRICE AGREED TO FOR THIS PROJECT. CONTEMPLATED CHANGE NOTICES ONCE AUTHORIZED BY THE OWNER WILL BE ADDED TO THE MONTHLY PROGRESS CLAIM.
2. CLAIMS FOR PAYMENT SHALL BE SUBMITTED FOR REVIEW PRIOR TO THE END OF THE PAY PERIOD TO ALLOW FOR A TIMELY REVIEW BY THE ENGINEER.
3. CONTRACTOR SHALL SUBMIT PROGRESS CLAIMS FOR REVIEW AND PAYMENT AUTHORIZATION IN ACCORDANCE WITH THE TERMS OF THE CONTRACT.

AS-BUILT AND RECORD DRAWINGS

1. OWNERS REPRESENTATIVE WILL PROVIDE TWO(2) SETS OF DRAWINGS AT THE START OF CONSTRUCTION TO ALLOW THE CONTRACTOR TO KEEP AND MAINTAIN ACCURATE AS-BUILT DRAWINGS.
2. ONE SET SHALL BE KEPT ON SITE TO RECORD THE INFORMATION REFLECTING CHANGES AND INSTALLATION ON A DAILY BASIS DURING CONSTRUCTION. AT THE END OF THE PROJECT ALL INFORMATION FROM THE CONSTRUCTION SET SHALL BE TRANSFERRED ONTO THE CLEAN SET AND SENT TO THE ENGINEER FOR THE FINAL REVIEW.
3. FAILURE TO KEEP UP TO DATE AS-BUILT DRAWING MAY JEOPARDIZE MONTHLY PROGRESS PAYMENTS. AS-BUILT DRAWING WILL BE REVIEWED AT THE SAME TIME AS MONTLY PROGRESS PAYMENT INSPECTIONS ARE CONDUCTED.

SHOP DRAWINGS

1. BEFORE FABRICATION OR DELIVERY OF ANY MATERIALS OR EQUIPMENT, SUBMIT ELECTRONIC COPIES OF SHOP DRAWINGS AND DATA SHEETS COVERING ALL ITEMS OF EQUIPMENT FURNISHED AND INTENDED FOR INSTALLATION UNDER THIS CONTRACT FOR APPROVAL BY THE ENGINEER.

TEMPORARY AND TRIAL USAGE

1. TEMPORARY OR TRIAL USAGE BY THE OWNER OF ANY MACHINERY, APPARATUS, EQUIPMENT OR ANY OTHER WORK OR MATERIALS SUPPLIED UNDER THE CONTRACT BEFORE FINAL WRITTEN ACCEPTANCE BY THE ENGINEER IS NOT TO BE CONSTRUED AS EVIDENCE OF THE ACCEPTANCE OF SAME BY THE OWNER. THE OWNER SHALL HAVE THE PRIVILEGE OF SUCH TEMPORARY AND TRIAL USAGE AS SOON AS THIS CONTRACTOR CLAIMS THAT SAID WORK IS COMPLETED. ANY DAMAGE CAUSED BY DEFECTIVE MATERIAL OR WORKMANSHIP THROUGH TEMPORARY OR TRIAL USAGE BY THE OWNER SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.
2. ANY PERMANENT EQUIPMENT USED TEMPORARILY FOR TEMPORARY HEAT OR OTHERWISE WILL BE COMPLETELY REPAIRED, REPLACED, AND CLEANED TO THE FULL SATISFACTION OF THE OWNER.

EXPLOSIVES ACTUATED FASTENING DEVICES

1. DO NOT EMPLOY POWER GUNS USING EXPLOSIVES, UNLESS EXPRESSLY PERMITTED BY THE PROJECT MANAGER; COMPLY WITH REQUIREMENTS OF CSA Z-166 (SAFETY CODE FOR EXPLOSIVE ACTUATED TOOLS).

STORAGE

1. THE SECURITY OF THE CONTRACTOR'S EQUIPMENT AND MATERIALS SHALL BE HIS RESPONSIBILITY. CONTRACTOR SHALL LIAISE WITH THE BUILDING OPERATOR AS NECESSARY.

SIGNS

1. PROVIDE WARNING SIGNS IN LOCATIONS WHERE RENOVATIONS AND ALTERATION WORK IS ADJACENT TO AREAS AFFECTING THE PUBLIC.

EQUIPMENT AND SITE CLEANLINESS

1. DUCTS AND EQUIPMENT SHALL BE THOROUGHLY CLEANED OF DIRT, CUTTINGS AND OTHER FOREIGN SUBSTANCES. DISCONNECT, CLEAN AND RECONNECT WHENEVER NECESSARY FOR THE PURPOSE OF LOCATING AND REMOVING OBSTRUCTIONS. REPAIR WORK DAMAGED IN THE COURSE OF REMOVING OBSTRUCTIONS.
2. THE CONTRACTOR SHALL AT ALL TIMES KEEP THE PREMISES FREE FROM THE ACCUMULATION OF WASTE MATERIAL TO THE SATISFACTION OF THE PROJECT MANAGER. PLACE DUST PROTECTION IN THE FORM OF COVER SHEETS OVER EQUIPMENT AND FURNITURE TO ENSURE NO DUST INFILTRATION. CLEANING TO BE COMPLETED AT THE END OF EACH SHIFT TO THE SATISFACTION OF THE PROJECT MANAGER.

OPERATING AND MAINTENANCE DATA

1. FURNISH THREE (3) SETS OF OPERATING AND MAINTENANCE DATA FOR ALL NEW EQUIPMENT AND SYSTEMS. DATA SHALL BE ASSEMBLED IN BOOKLET FORM WITH HARD COVER AND INDEX. IDENTIFY FRONT COVER WITH NAME AND LOCATION OF THE PROJECT, CONSULTING ENGINEER AND CONTRACTOR. SUBMIT ONE COPY TO THE ENGINEER FOR APPROVAL.

MATERIALS

1. MATERIALS AND EQUIPMENT INSTALLED SHALL BE NEW, FULL WEIGHT AND OF BEST QUALITY SPECIFIED. USE SAME BRAND OF MANUFACTURER FOR EACH SPECIFIC APPLICATION. STATICALLY AND DYNAMICALLY BALANCE ROTATING EQUIPMENT FOR MINIMUM VIBRATION AND LOW OPERATING NOISE LEVEL. REPLACE MATERIAL OR WORKMANSHIP BELOW SPECIFIED QUALITY AND RELOCATE WORK WRONGLY PLACED TO THE SATISFACTION OF THE ENGINEER.

APPROVALS

1. THE PRICE SUBMITTED FOR THIS CONTRACT SHALL BE BASED ON THE USE OF MATERIALS AND EQUIPMENT AS SPECIFIED. IF THIS CONTRACTOR WISHES TO QUOTE ON EQUIVALENT MATERIALS AND EQUIPMENT, HE MUST QUOTE ON PRODUCTS APPROVED BY THE ENGINEER, IN WRITING, AS AN EQUIVALENT TO THE PRODUCT SPECIFIED. THIS CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY ADDITIONAL WORK OR MATERIALS REQUIRED BY ALL OTHER CONTRACTORS TO ACCOMMODATE APPROVED EQUIVALENT MATERIALS OR EQUIPMENT. EXTRAS WILL NOT BE APPROVED TO COVER SUCH WORK.

CUTTING AND PATCHING

1. THE CONTRACTOR IS RESPONSIBLE FOR THIS WORK AND SHALL CO-ORDINATE LOCATIONS FOR ALL HOLES FOR PIPES, DUCTS THROUGH FLOORS AND ROOF, ETC., AND PROVIDE SLEEVES REQUIRED TO EXECUTE THE INSTALLATION. X-RAY FLOORS AND STRUCTURAL WALLS BEFORE CUTTING TO LOCATE EXISTING REBAR AND CONDUITS, AND MUST OBTAIN PROJECT MANAGER'S APPROVAL FOR PROPOSED CUTTING BEFORE PROCEEDING. PROVIDE ULC APPROVED FIRE STOPPING SYSTEM FOR ALL PENETRATIONS THROUGH RATED ASSEMBLIES.

SHUTDOWNS

1. ANY SHUTDOWN THAT MAY BE REQUIRED OF EXISTING EQUIPMENT MUST HAVE PRIOR APPROVAL FROM THE PROJECT MANAGER AND ENGINEER. PROVIDE A MINIMUM OF 48 HOURS NOTICE.

MATERIALS REMOVED

1. ALL MATERIALS REMOVED DURING DEMOLITION SHALL BECOME THE PROPERTY OF THE OWNER AND STOCKPILED AS DIRECTED ON SITE. MATERIAL REJECTED BY THE OWNER SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

ELECTRICAL SPECIFICATIONS

MINIMUM STANDARDS

1. ELECTRICAL INSTALLATION: TO CSA C22.1-LATEST EDITION
2. LIGHTING FIXTURES: TO CSA C22.2 No. 9-LATEST EDITION
3. FIXTURE BALLAST: TO CSA C22.2 No. 74-LATEST EDITION
4. ONTARIO BUILDING CODE-LATEST EDITION
5. ONTARIO ELECTRICAL SAFETY CODE-LATEST EDITION.

MOUNTING HEIGHTS

1. INSTALL ELECTRICAL EQUIPMENT AT FOLLOWING HEIGHTS UNLESS INDICATED OTHERWISE:
   - .1 LOCAL SWITCHES: 1100mm
   - .2 WALL RECEPTACLES:
     - .1 GENERAL: 400mm
     - .2 ABOVE COUNTERS: 175mm
   - .3 PANEL BOARDS: 1800mm FROM TOP
   - .4 TELECOMMUNICATION OUTLETS: 400mm

DEMOLITION

1. CONTRACTOR TO CO-ORDINATE WITH OTHER TRADES TO ENSURE THAT ELECTRICAL EQUIPMENT AND FEEDERS ASSOCIATED WITH MECHANICAL EQUIPMENT AND/OR IS LOCATED IN WALLS BEING DEMOLISHED IS ALSO BEING REMOVED.
2. EXISTING EQUIPMENT SHOWN AS RELOCATED TO BE CLEANED AND MADE OPERATIONAL BY THIS CONTRACTOR PRIOR TO ITS RELOCATION.
3. CONTRACTOR TO REPLACE BROKEN AND DISCOLOURED LIGHT FIXTURE ACRYLIC LENSES AS INDICATED BY THE ENGINEER.

EQUIPMENT SHUT-DOWN

1. ANY SHUTDOWN THAT MAY BE REQUIRED OF EXISTING EQUIPMENT, MUST HAVE PRIOR APPROVAL FROM THE ENGINEER.

IDENTIFICATION

1. IDENTIFY WITH LAMACOID NAMEPLATES ALL ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND/OR MENTIONED IN THE SPECIFICATION SUCH AS MOTORS, SWITCHES, STARTERS, PANEL BOARDS, TRANSFORMERS, CONTROLS, AND SPECIAL RECEPTACLES, REGARDLESS OF WHETHER OR NOT THE ELECTRICAL EQUIPMENT WAS FURNISHED UNDER THIS SECTION OF THE SPECIFICATION. IDENTIFICATION REVIEWED BY ENGINEER.
2. UNLESS OTHERWISE SPECIFIED, NAMEPLATES SHALL BE RIGID LAMACOID, MINIMUM 1.5mm THICK, BLACK LETTERS ENGRAVED ON A WHITE BACKGROUND. NAMEPLATES TO BE NEATLY PLACED, AND SQUARE TO SURROUNDING BUILDING OR EQUIPMENT LINES, AND FASTENED IN PLACE WITH MECHANICAL FASTENERS (SCREWS OR POP RIVETS) AS REVIEWED BY ENGINEER.
3. PROVIDE NEATLY TYPED UPDATED CIRCUIT DIRECTORIES IN A PLASTIC HOLDER ON THE INSIDE DOOR OF PANEL BOARDS, WITH COPY IN MANUAL.
4. IDENTIFY ALL PULL AND JUNCTION BOXES, WITH P-TOUCH LABEL IDENTIFICATION, INDICATING SOURCE PANEL AND CIRCUIT NUMBERS.
5. IDENTIFY ALL RECEPTACLES AND SWITCHES WITH P-TOUCH LABELS, BLACK LETTERING ON TRANSPARENT TAPE, INDICATING SOURCE PANEL AND CIRCUIT NUMBER. LABELS TO BE LOCATED ON FRONT OF COVERPLATE.

LOCATION OF OUTLETS

1. LOCATE OUTLETS AS SHOWN ON DRAWINGS. REFER TO INTERIOR DESIGNER DRAWINGS FOR LOCATION OF OUTLETS WHICH ARE DIMENSIONED OR OTHERWISE LOCATED.
2. DO NOT INSTALL OUTLETS BACK-TO-BACK IN WALL; ALLOW MINIMUM 150mm HORIZONTAL CLEARANCE BETWEEN BOXES, AND LOCATE IN SEPARATE STUD CAVITIES WHEREVER POSSIBLE.
3. CHANGE LOCATION OF OUTLETS AT NO EXTRA COST OR CREDIT, PROVIDING DISTANCE DOES NOT EXCEED 3 METERS AND INFORMATION IS GIVEN BEFORE INSTALLATION.

ELECTRIC MOTORS AND WIRING

1. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO SUPPLY ALL MOTOR STARTERS, EXCEPT ON PRE-WIRED PACKAGED EQUIPMENT, DISCONNECT SWITCHES FOR ALL MOTORS FOR THE PROJECT, AND ALL WIRING TO STARTERS AND MOTORS EXCEPT WHERE SHOWN OR NOTED OTHERWISE. EQUIPMENT REQUIRING CONNECTION TO AN ELECTRICAL POWER SOURCE SHALL BE CSA OR HYDRO APPROVED FOR USE AT LOCATION OF INSTALLATION. THE MECHANICAL CONTRACTOR SHALL SUPPLY AND INSTALL ALL LOW VOLTAGE CONTROL WIRING WITHIN 'EMT' CONDUIT FOR A COMPLETE AND OPERATING INSTALLATION UNLESS OTHERWISE SPECIFIED.

WIRING

1. ALL WIRING TO BE COPPER, R90 XLPE, STRANDED WITH 'BRADY LABEL' MAKING SLEEVES AT EACH END, UNLESS OTHERWISE NOTED ON DRAWINGS. WIRING TO BE COLOUR CODED AS PER CODE. MINIMUM WIRE SIZE TO BE No.12 AWG FOR POWER AND LIGHTING.
2. LEAVE ADEQUATE LENGTHS OF WIRE IN JUNCTION BOXES FOR CONNECTIONS TO EQUIPMENT.
3. 'Bx' WIRING IN WALLS ONLY (MAX 5M)
4. RUN A GREEN INSULATED GROUND WIRE SIZED AS PER CODE IN ALL CONDUIT RUNS. DO NOT RELY ON CONDUIT AS GROUND.

CONDUITS

1. EACH LENGTH OF CONDUIT TO BE NEW AND BEAR CSA STAMP OF APPROVAL.
2. ALL CONDUITS RUN ABOVE THE SUSPENDED CEILING TO BE 'EMT'.
3. PROVIDE NYLON PULLROPES IN ALL EMPTY CONDUIT RUNS.
4. MODULAR TO MATCH EXISTING: NOCOM MODULAR WIRING CABLES SYSTEM FOR CONNECTION OF FLUORESCENT TROFFER LIGHT FIXTURES, CONSISTENT WITH BASE BUILDING
5. SMART-CONNECT CABLES: START, JOINER, DROP, SWITCH DROP CABLES AS REQUIRED.
6. CONNECTORS: MOULDED PVC RECEPTACLES AND ADAPTERS.
7. REMOVE AND RECONNECT AS REQUIRED TO OBTAIN LIGHTING CIRCUITS INDICATED AND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
8. TERMINATE STARTER AND DROP CABLES AT LIGHT SWITCHES AND LIGHT FIXTURES NOT OUTFITTED WITH NOCOM RECEPTACLES.
9. TURN OVER UNUSED CABLES TO BUILDING OWNER.

OUTLET BOXES

1. ELECTRO-GALVANIZED STEEL, COATING EQUAL TO THAT TO THE CONDUIT.
2. MINIMUM 37 mm DEEP 100 mm SQUARE OR OCTAGONAL AS REQUIRED.
3. EQUIP WITH PLASTER RINGS DEEP ENOUGH FOR WALL FINISH MATERIAL TO FIT OVER THE BOX AND WITHIN 6 mm OF THE COVER OPENING.

PULL BOXES

1. PROVIDE PULLBOXES WHERE RUNS EXCEED 30 METERS IN LENGTH AND HAVE MORE THAN 2-90° BENDS.

WIRING DEVICES

1. RECEPTACLES:
   - .1 DUPLEX RECEPTACLES, CSA TYPE 5-15R 125 VOLT, 15A 'U' GROUND WITH FOLLOWING WITH THE FOLLOWING FEATURES:
   - .2 RECEPTACLES OF SPECIFICATION GRADE.
   - .3 RECEPTACLES OF ONE MANUFACTURER THROUGHOUT PROJECT.
   - .4 UNBREAKABLE NYLON FACE.
   - .5 SUITABLE FOR No. 10 AWG FOR BACK AND SIDE WIRING. SIDE WIRING.
   - .6 BREAK-OFF LINKS FOR USE AS SPLIT RECEPTACLES.
   - .7 EIGHT (8) BACK WIRED ENTRANCES, FOUR(4) SIDE WIRING SCREWS.
   - .8 DOUBLE WIPE CONTACTS AND RIVETED GROUNDING CONTACTS.
   - .9 COLOUR: REFER TO ARCHITECTURAL FINISHES
   - .10 RECEPTACLE TO BE DECORA TYPE.
2. SWITCHES:
   - .1 TO CSA C22.2 NO. 111-M1986 (R1992)
   - .2 15A, 120 VOLT, SINGLE, 3 WAY SWITCHES, AS INDICATED.
   - .3 MANUALLY OPERATED GENERAL PURPOSE AC SWITCHES WITH THE FOLLOWING FEATURES:
     - .1 TERMINAL HOLES APPROVED FOR NO. 10 AWG WIRE.
     - .2 SILVER ALLOY CONTACTS.
     - .3 UREA OR MELAMINE MOULDING FOR PARTS SUBJECT TO CARBON TRACKING
     - .4 SUITABLE FOR BACK AND SIDE WIRING.
     - .5 IVORY TOGGLE.
   - .4 TOGGLE OPERATED LOCKING FULLY RATED FOR TUNGSTEN FILAMENT AND FLUORESCENT LAMPS, AND UP TO 80% OF RATED CAPACITY OF MOTOR LOADS.
   - .5 SWITCHES OF ONE MANUFACTURER THROUGH OUT.
   - .6 SWITCHES TO BE DECORA TYPE.
3. ISOLATED GROUND RECEPTACLES:
   - .1 DUPLEX RECEPTACLES, CSA TYPE 5-15R 125 VOLT, 15A, ISOLATED GROUND, WITH THE FOLLOWING FEATURES:
     - .1 ORANGE UREA MOULDED HOUSING.
     - .2 SUITABLE FOR No. 10 AWG FOR BACK AND SIDE WIRING.
     - .3 BREAK-OFF LINKS FOR USE AS SPLIT RECEPTACLES.
     - .4 EIGHT BACK WIRED ENTRANCES, FOUR(4) SIDE WIRING SCREWS.
     - .5 DOUBLE WIPE CONTACTS AND RIVETTED GROUNDING CONTACTS.
   - .2 RECEPTACLES OF SPECIFICATION GRADE.
   - .3 RUN ADDITIONAL GREEN ISOLATED GROUND WIRE PER CIRCUIT FROM PANEL TO EACH WIRING

PANEL BOARDS

1. TO CSA C22.2 No. 29-M1989
2. TO CSA C22.2 No. 5.1-M91
3. MINIMUM 125AMP, 120/208 VOLT, 3 PHASE, 4 WIRE PANEL BOARD RATED 10,000A (SYMMETRICAL) INTERRUPTING CAPACITY. OR AS INDICATED
4. COPPER BUS WITH COPPER NEUTRAL OF SAME AMPERE RATING AS MAINS.
5. MAINS: SUITABLE FOR BOLT ON BREAKERS
6. TRIM AND DOOR FINISH: BAKED GREY ENAMEL WITH TWO(2) KEYS FOR DOOR LOCK
7. PANEL BOARD MAINS, NUMBER OF CIRCUITS AND NUMBER OF BRANCH BREAKERS AS INDICATED.

CIRCUIT BREAKERS

1. PROVIDE CIRCUIT BREAKERS IN PANEL BOARD AS INDICATED.
2. BRANCH CIRCUIT BREAKERS QUICK MAKE, QUICK BREAK, AMBIENT COMPENSATED, COMMON TRIP ON ALL MULTIPOLE BREAKERS, TRIP INDICATING CLEARLY SHOWN BY BREAKER HANDLE TAKING POSITION MIDWAY BETWEEN ON AND OFF.
3. BREAKER INTERRUPTING CAPACITY:
   - .1 250V PANELBOARDS AND CDP PANELBOARDS: 10Ka SYMMETRICAL (OR AS INDICATED)
   - .2 600V CDP PANELBOARDS: 25Ka SYMMETRICAL (OR AS INDICATED)

TELEPHONE, DATA AND CABLEVISION

1. COMPLETE EMPTY RACEWAYS SYSTEM CONSISTS OF OUTLET BOXES, CONDUITS, FISH WIRES.
2. CONDUITS:
   - .1 21mm 'EMT' RISERS BETWEEN DOUBLE GANGED DEVICES BOXES AND CEILING PLENUM BY DIVISION 26. EXACT LOCATION TO BE DETERMINED ON SITE.(OR AS INDICATED)
3. FISH WIRE: POLYPROPYLENE TYPE.
4. COVERPLATES INSTALLED BY OTHERS.

COVERPLATES

1. POLISHED STAINLESS STEEL COVER PLATES, THICKNESS 1.0mm FOR WIRING DEVICES MOUNTED IN A FLUSH MOUNTED BOX.
2. INSTALL COVER PLATES ONLY AFTER PAINTING AND OTHER WORK IS FINISHED.
3. INSTALL SUITABLE COMMON COVER PLATES WHERE WIRING DEVICES ARE GROUPED.
4. COVER PLATES FOR WIRING DEVICES. COMMUNICATION OUTLET COVERLETS PROVIDED BY SYSTEM CONTRACTOR.
5. COVER PLATES FROM ONE MANUFACTURER THROUGHOUT PROJECT.

DISCONNECT SWITCH

1. DISCONNECT SWITCH TO BE RATED HORSEPOWER AND BE EQUIPPED WITH PROVISIONS FOR THREE(3) LOCKING DEVICES AND TO BE CEMA 1 UNLESS OTHERWISE INDICATED, AMPERAGE AS INDICATED ON DRAWINGS AND MOUNTED 1500mm ABOVE FINISHED FLOOR TO CENTRELINE OF HANDLE.

FUSES

1. FUSE TYPE REFERENCE J1, HAS BEEN ADOPTED FOR USE IN THIS SPECIFICATION.
2. FUSES: PRODUCT OF ONE MANUFACTURER.
3. HRCI-J FUSES.
4. TYPE J1, TIME DELAY, CAPABLE OF CARRYING 500% OF ITS RATED CURRENT FOR 10 SECOND MINIMUM.
5. INSTALL FUSES IN MOUNTING DEVICES IMMEDIATELY BEFORE ENERGIZING CIRCUIT.

TRANSFORMERS

1. ELECTRICAL CHARACTERISTICS:
   - .1 3 PHASE, 600 VOLT INPUT, 120/208 VOLT OUTPUT, 60Hz, kVA RATINGS AS INDICATED ON SINGLE LINE DIAGRAM/DRAWING
   - .2 VOLTAGE TAPS: STANDARD.
   - .3 CAPABILITY TO DELIVER FULL NAMEPLATE kVA
   - .4 NEUTRAL CONNECTION SHALL BE RATED AT TWICE THE CAPACITY OF THE SECONDARY PHASE CURRENT.
2. GENERAL CHARACTERISTICS:
   - .1 THREE PHASE COMMON CORE CONSTRUCTION.
   - .2 CONVECTION AIR COOLED, EEMAC 2R SPRINKLER-PROOF ENCLOSURE, REMOVABLE FRONT COVER.
   - .3 COPPER WINDINGS.
   - .4 INSULATION: CLASS 'H', 150°C TEMPERATURE RISE.
   - .5 BASIC IMPULSE LEVEL (BIL): 10kV.
   - .6 TYPE ANN.
   - .7 SOUND LEVEL: MAX. 45db AT 5 FEET.
   - .8 VOLTAGE CLASS: 1.2kV.
   - .9 ANTI-VIBRATION PADS SHALL BE USED BETWEEN CORE AND ENCLOSURE.
   - .10 FULL LOAD EFFICIENCY AT 170°C: 97%.
   - .11 MAGNETIZING INRUSH CURRENT: MAXIMUM 10 TIMES FULL LOAD RATING.

LIGHTING

1. LIGHTING TO FOLLOW SCHEDULE, COMPLETE WITH ALL NECCESSARY MOUNTING BRACKETS, SUSPENSIONS CABLES ETC.

EXIT LIGHTS

1. FACE AND BACK PLATES: SATIN ALUMINIUM OR GREY PAINTED STEEL.
2. LED TYPE, 120-347V MVOLT, SECONDARY DC VOLTAGE REQUIRED.
3. LIFE EXPECTANCY OF THE LEDS TO BE 25 YEARS.
4. RUNNING MAN SIGN
5. FACE PLATE TO REMAIN CAPTIVE FOR RELAMPING.
6. UNIVERSAL MOUNTING.
7. ARROW RIGHT, LEFT, BOTH DIRECTIONS AS SHOWN ON DRAWINGS.
8. IMPACT RESISTANT PROTECTIVE PANEL WITH EXTRUDED ALUMINIUM ENCLOSURE.
9. CEILING OR WALL MOUNTING CANOPY AND MOUNTING PLATE FOR INSTALLATION ON 100mm OCTAGONAL JUNCTION BOX.
10. INSTALL EXIT LIGHTS AS INDICATED, TO REQUIREMENTS OF OBC-2012
11. CONNECT FIXTURES TO EXISTING EXIT LIGHT CIRCUITS AS INDICATED.

TESTING

1. PRIOR TO ENERGIZING THE VARIOUS PORTIONS OF THE ELECTRICAL SYSTEMS, PERFORM MEGGER TESTS ON ALL FEEDERS AND BRANCH CIRCUITS. ALSO PERFORM RESISTANCE-TO GROUND OHM TESTS FOR GROUNDING CONDUCTORS IN ELECTRICAL ROOMS AFFECTED BY THIS RENOVATION. RESULTS SHALL COMPLY WITH THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE (2009) AND THE LOCAL INSPECTION AUTHORITY.
   SUBMIT RESULTS TO THE PROJECT MANAGER.
2. UPON COMPLETION OF THE PROJECT AND IMMEDIATELY PRIOR TO FINAL INSPECTION, CHECK THE LOAD BALANCE OF ALL AFFECTED PANELS, ETC. THESE TESTS SHALL BE CARRIED OUT BY TURNING ON ALL POSSIBLE LOADS DERIVED FROM PANEL(S) AND CHECKING LOAD CURRENT BALANCE. IF LOAD UNBALANCE EXCEEDS 15%, RECONNECT CIRCUITS TO BALANCE THE LOAD.
   SUBMIT FINAL READINGS TO PROJECT MANAGER.

COLOUR CODING

1. ALL EQUIPMENT AND COMPONENTS, FIELD WIRED OR FACTORY ASSEMBLED, SHALL BE IDENTIFIED.
2. ALL CONDUCTORS SHALL BE IDENTIFIABLE BY COLOURED INSULATION AND MARKERS AT EVERY TERMINAL AND ACCESSIBLE POINT THROUGHOUT ITS ENTIRE RUN, AS FOLLOWS:
   - .1 120/240 VOLT, 1 PHASE, 3 WIRE - RED, BLACK AND BLUE
   - .2 NEUTRAL CONDUCTOR - WHITE
   - .3 GROUND CONDUCTOR - GREEN.

SEISMIC RESTRAINT SYSTEM (SRS)

1. PROVIDE DESIGN, SUPPLY AND INSTALLATION OF COMPLETE SRS FOR ALL SYSTEMS, EQUIPMENT SPECIFIED FOR INSTALLATION ON THIS PROJECT AS PER ONTARIO BUILDING CODE LATEST EDITION AND NFPA13. THE INCLUDES ELECTRICAL LIGHT FIXTURES, TRANSFORMERS, MCC'S, UPS DIESEL GENERATORS, FIRE PROTECTION, CONDUIT, COMMUNICATIONS, ELECTRICAL

MECHANICAL LEGEND

SYMBOL	DESCRIPTION
	LINEAR DIFFUSER
	LIGHT TROFFER
	SQUARE DIFFUSER
	RETURN AIR GRILLE
T	THERMOSTAT
	SUPPLY DUCT
	ACOUSTIC INSULATION
	FLEXIBLE DUCT
	CAP DUCT OR PIPE AS INDICATED
	CONICAL TAKE-OFF C/W BALANCING DAMPER (BD)
	CONICAL TAKE-OFF (CAPPED, NO BD, W/ BD)
	ROUND DUCT TO ROUND DUCT TAKE-OFF
	VERTICAL ROUND DUCT TAKE-OFF (W/BD, W/O BD)
	VARIABLE AIR VOLUME (VAV) TERMINAL DEVICE (W/O ATTENUATOR, W/ ATTENUATOR)
	FAN-POWERED VAV TERMINAL DEVICE (W/O ATTENUATOR, W/ ATTENUATOR)
CO	CLEAN OUT
VTR	PLUMBING VENT THROUGH ROOF
	TRANSFER DUCT
FD FD	FIRE DAMPER
	SPRINKLER HEAD (UPRIGHT, PENDANT, WALL MOUNTED
	FIRE HOSE CABINET
FD	FLOOR DRAIN
	FUNNEL DRAIN
HD	HUB DRAIN
— - —	D.C.W. PIPING
— - - —	D.H.W. PIPING
— + —	SANITARY UNDERGROUND
— —	SANITARY UNDER FLOOR
—V—	SANITARY VENT PIPING
	GATE VALVE
	BALL VALVE
	SOLENOID VALVE
	PUMP
S	SUCTION DIFFUSER
	CHECK VALVE
T	TEMPERATURE SENSOR
	TEMPERATURE GAUGE
	PRESSURE RELIEF VALVE
	AIR VENT
	GAS VALVE
	GAS SHUT OFF VALVE
	ELECTRIC CONVECTOR
#	DRAWING NOTE

NOT ALL SYMBOLS SHOWN IN LEGEND ARE NECESSARILY USED IN THE DRAWING SET.

GENERAL NOTES:

1. ALL MECHANICAL EQUIPMENT SHOWN IN THIN SOLID LINES IS EXISTING TO REMAIN.
2. ALL MECHANICAL EQUIPMENT SHOWN IN THICK SOLID LINES IS NEW TO BE PROVIDED UNDER THIS CONTRACT.
3. ALL MECHANICAL EQUIPMENT SHOWN IN DASHED LINES WITH LETTER 'R' IS EXISTING TO BE RELOCATED AS SHOWN.
4. ALL MECHANICAL EQUIPMENT SHOWN IN DASHED LINES WITH LETTER 'X' IS EXISTING TO BE REMOVED BACK TO SOURCE.
5. THIS DRAWING WAS BASED ON PARTIAL SITE REVIEW. ALL EQUIPMENT, DUCTS, PIPING AND ALL ACCESSORIES' SIZES, LOCATIONS AND DETAILS OF INSTALLATIONS TO BE CONFIRMED BY MECHANICAL CONTRACTOR ON SITE.
6. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ROOF, WALL AND BUILDING ENVELOPE CUTTING, PATCHING AND REPAIRS, AS REQUIRED FOR EXECUTION OF WORK INCLUDED IN THIS CONTRACT.
7. PROVIDE ALL NEW EQUIPMENT, CONTROLS, DUCTWORK, PIPING, VALVES AND ACCESSORIES AS SHOWN AND NOTED ON DETAILS AND AS REQUIRED FOR COMPLETE FUNCTIONING SYSTEMS.
8. PROVIDE ADDITIONAL DUCTWORK, PIPING, FITTINGS AND OFFSETS WHERE REQUIRED TO SUIT EXISTING CONDITIONS AND TO AVOID COLLISIONS WITH EXISTING SYSTEMS AND BUILDING STRUCTURE.
9. NOT ALL MECHANICAL ELEMENTS SHOWN, AFFECTED AREAS ONLY.
10. SEISMIC RESTRAINT SYSTEM (SRS) – PROVIDE DESIGN, SUPPLY AND INSTALLATION OF COMPLETE SRS FOR ALL SYSTEMS, EQUIPMENT SPECIFIED FOR INSTALLATION ON THIS PROJECT AS PER ONTARIO BUILDING CODE LATEST EDITION.
11. HATCHED AREA INDICATED ON FLOOR PLANS NOT IN CONTRACT.

DRAWING LIST

DRAWING NUMBER	DESCRIPTION
M-1	MECHANICAL LEGEND, GENERAL NOTES, KEY PLAN, & DRAWING LIST
M-2	MECHANICAL – PLUMBING & NATURAL GAS
M-3	MECHANICAL – PLUMBING & NATURAL GAS (CONTINUED)
M-4	MECHANICAL – HVAC SYSTEMS
M-5	MECHANICAL SPECIFICATIONS

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No	DESCRIPTION	DATE
2	ISSUED FOR PERMIT/TENDER	MAY 29, 2026
1	ISSUED FOR REVIEW	APR. 24, 2026
0	ISSUED FOR REVIEW	FEB. 02, 2024

REVISIONS

client:
BELL+ASSOCIATES ARCHITECTURE
120 TERENCE MATTHEWS CRES.
UNIT B1, OTTAWA, ONTARIO

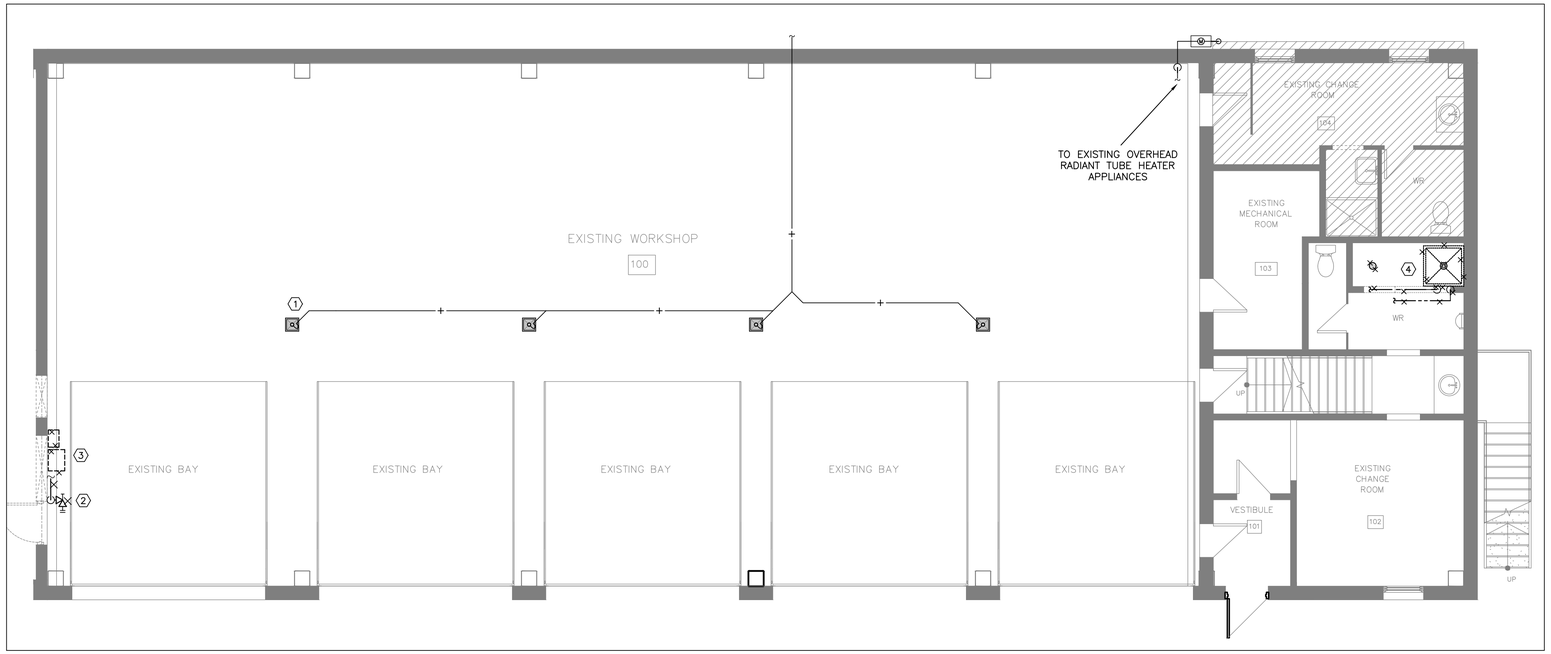
project:
MILLHAVEN GARAGE STORAGE EXPANSION
240 COUNTY ROAD 4,
BATH, ONTARIO K0H 1G0

drawing title:
MECHANICAL LEGEND, GENERAL NOTES, KEY PLAN, & DRAWING LIST

scale:	AS NOTED	drawn by:	P.P.
designed by:	K.P.	reviewed by:	JRP ENG.
approved by:	JRP ENG.	date:	MAY 2026

project no.: 420-2301-02

drawing no.: M-1 of 5



1 / M-2 GROUND FLOOR PLAN – PLUMBING, EXISTING & DEMOLITION

3/16":1'-0"

DRAWING NOTES:

1. TYPICAL: EXISTING AREA DRAINS, FOR REFERENCE. EXACT QUANTITY AND DRAIN PIPING CONNECTION ROUTING TO BE DETERMINED ON SITE.
2. EXISTING DCW HOSE BIB TO BE DISCONNECTED AND REMOVED.
3. EXISTING PRESSURE WASHER AND HOSE REEL TO BE DISCONNECTED AND REMOVED. COORDINATE ELECTRICAL DISCONNECTIONS/REMOVALS WITH ELECTRICAL DIVISION.
4. EXISTING SHOWER FIXTURE AND FLOOR DRAIN TO BE REMOVED. EXISTING DOMESTIC HOT AND COLD WATER CONNECTIONS TO BE DISCONNECTED AND CUT BACK TO MAIN AND CAPPED. EXISTING SANITARY DRAINAGE CONNECTION TO BE CAPPED.

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drawing title:

MECHANICAL – PLUMBING & NATURAL GAS

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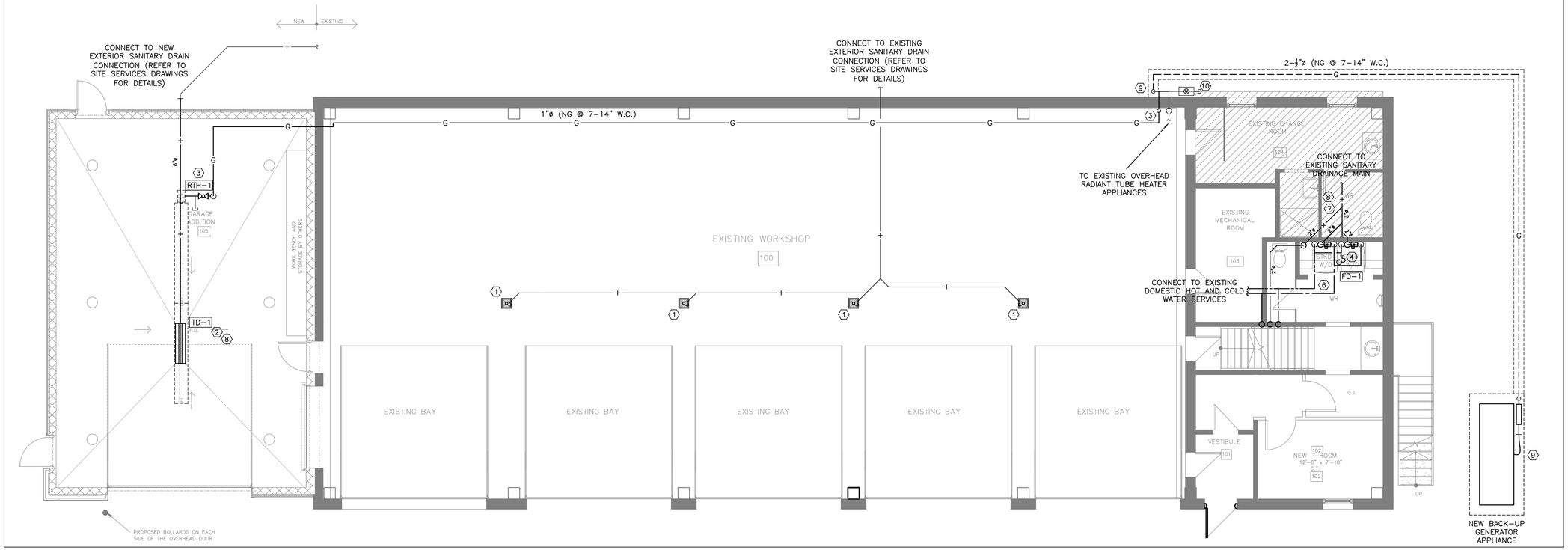
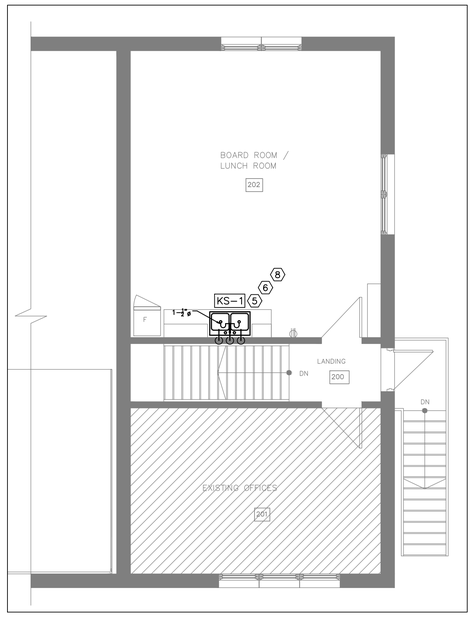
approved by:	JRP ENG.	date:	MAY 2026

project no.:	drawing no.:
420-2301-02	M-2 of 5



1 M–3 GROUND FLOOR PLAN – PLUMBING, EXISTING & NEW
3/16":1'–0"



2 M–3 PARTIAL SECOND FLOOR PLAN – PLUMBING, EXISTING, DEMOLITION, & NEW
3/16":1'–0"

DRAWING NOTES:

1. TYPICAL: EXISTING AREA DRAINS, FOR REFERENCE. EXACT QUANTITY AND DRAIN PIPING CONNECTION ROUTING TO BE DETERMINED ON SITE.
2. PROVIDE AND INSTALL TRENCH DRAIN (TD–1) WITH BURIED DRAIN CONNECTION TO EXISTING UNDERGROUND MAIN. CONTRACTOR TO CARRY FOR ALL SCANNING/SLAB CUTTING AS REQUIRED. FLOOR SLAB REMEDIATION TO BE COORDINATED WITH ARCHITECTURAL DIVISION UPON COMPLETION OF PLUMBING INSTALLATIONS.
3. PROVIDE NATURAL GAS SUPPLY PIPING CONNECTION TO NEW RADIANT TUBE HEATER, AT HIGH LEVEL. CONNECTION TO BE HOME RUN TO EXISTING EXTERIOR NATURAL GAS METER. ALL WORK AND MATERIALS BY CERTIFIED CONTRACTOR TO CSA B149.1 AND EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS. REFER TO DRAWING SHEET M–4 FOR HVAC INSTALLATIONS.
4. PROVIDE AND INSTALL NEW FLOOR DRAIN (FD–1). PROVIDE TRAP SEAL PRIMING FROM NEAREST DCW FIXTURE.
5. PROVIDE AND INSTALL NEW KITCHENETTE SINK (KS–1) WITH FAUCET AS SHOWN. REFER TO ASSOCIATED ARCHITECTURAL DRAWING SET FOR EXACT INSTALLATION LOCATION. PROVIDE AND INSTALL DCW, DHW, AND SANITARY DRAIN CONNECTIONS. PROVIDE ALL PIPING, FITTINGS, VALVES, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
6. TYPICAL: PROVIDE NEW DOMESTIC HOT AND COLD WATER DISTRIBUTION, AND HOT WATER RETURN PIPEWORK AS SHOWN, SIZE INDICATED, IN CEILING SPACE. PROVIDE COMPLETE WITH ALL VALVES, FITTINGS, SUPPORTS, THERMAL INSULATION/JACKETING, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION. ALL PIPING TO BE ¾" UNLESS OTHERWISE SPECIFIED.
7. PROVIDE AND INSTALL UNDERSLAB SANITARY PIPING CONNECTIONS, SIZE INDICATED. CONNECT BACK TO EXISTING MAIN. EXACT ROUTING TO CONFIRMED ON SITE. CONTRACTOR TO CARRY FOR ALL SCANNING AND CORING AS REQUIRED. COORDINATE FLOOR SLAB REMEDIATION WITH ARCHITECTURAL DIVISION UPON COMPLETION OF PLUMBING INSTALLATIONS.
8. GENERAL (NOT SHOWN): PROVIDE ALL VENTING (NOT SHOWN) AS REQUIRE BY OBC. CONNECT TO EXISTING VENT PIPING IN CEILING SPACE. PROVIDE ALL FITTINGS, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
9. PROVIDE NATURAL GAS SUPPLY PIPING CONNECTION TO NEW NATURAL GAS–FIRED BACK–UP DUTY ELECTRICAL GENERATOR APPLIANCE, INSTALLED AT BUILDING EXTERIOR. CONNECTION TO BE HOME RUN TO EXISTING EXTERIOR NATURAL GAS METER. ALL WORK AND MATERIALS BY CERTIFIED CONTRACTOR TO CSA B149.1 AND EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS. CONTRACTOR TO CARRY FOR ALL TRENCHING AS REQUIRED, COMPLETE WITH REMEDIATION OF LANDSCAPING FOLLOW COMPLETION OF MECHANICAL INSTALLATION WORKS. REFER TO TYPICAL DETAIL ON THIS DRAWING SHEET FOR GENERATOR APPLIANCE CONNECTION DETAILS. REFER TO ELECTRICAL DRAWINGS FOR GENERATOR APPLIANCE INSTALLATION.
10. MECHANICAL CONTRACTOR TO HAVE LOCAL NATURAL GAS UTILITY TO REVIEW CAPACITY OF EXISTING UTILITY REVENUE METER. IF CAPACITY IS NOT SUFFICIENT TO SUPPORT NATURAL GAS USE FOR EXISTING AND PROPOSED NEW APPLIANCES, CONTRACTOR TO CARRY FOR LOCAL NATURAL GAS UTILITY TO UPGRADE METER.

PLUMBING EQUIPMENT SCHEDULE

KS–1

TYPE: KITCHENETTE SINK
MAKE: AMERICAN STANDARD
MODEL: COLONY 25 x 22 SINGLE BOWL STAINLESS STEEL KITCHEN SINK
DESCRIPTION:
- STAINLESS STEEL
- SINGLE BOWL
- TOP MOUNT INSTALLATION

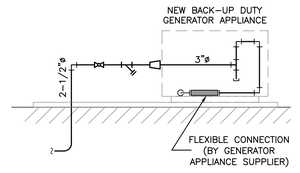
ACCESSORIES:
- FAUCET: AMERICAN STANDARD COLONY PRO SINGLE HANDLE KITCHEN FAUCET (7074)

FD–1

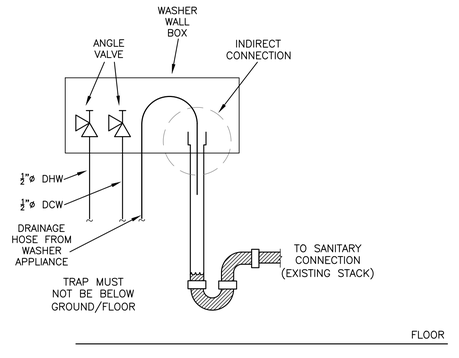
TYPE: FLOOR DRAIN
MAKE: ZURN
MODEL: ZXN211
DESCRIPTION:
- PROVIDE COMPLETE WITH TRAP SEAL PRIMING FROM NEAREST DCW FIXTURE

TD–1

TYPE: TRENCH DRAIN
MAKE: WATTS
MODEL: DEAD LEVEL D–EO–DI–B6
DESCRIPTION:
- DUCTILE IRON FRAME & GRATING



3 M–3 TYPICAL DETAIL – NATURAL GAS GENERATOR CONNECTION
NTS



4 M–3 TYPICAL DETAIL – DRAIN CONNECTION FOR CLOTHES WASHER
NTS

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2	ISSUED FOR PERMIT/TENDER	MAY 29, 2026
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REVISIONS

client:
BELL+ASSOCIATES ARCHITECTURE
120 TERENCE MATTHEWS CRES.
UNIT B1, OTTAWA, ONTARIO

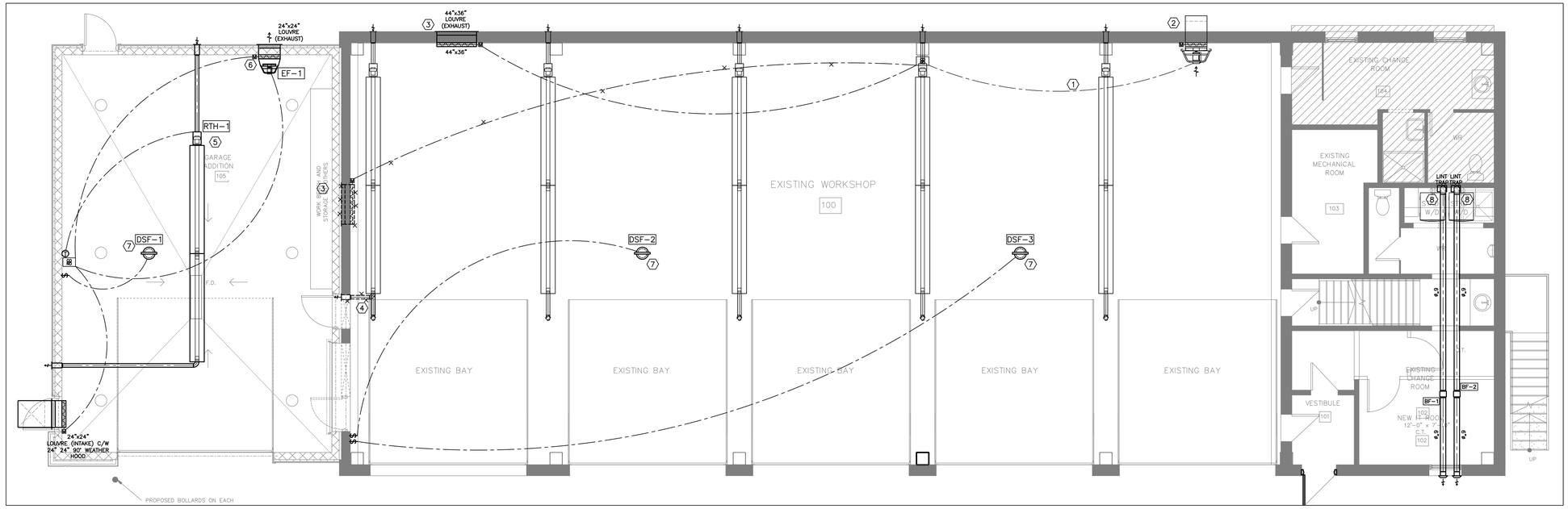
project:
MILLHAVEN GARAGE STORAGE EXPANSION
240 COUNTY ROAD 4,
BATH, ONTARIO K0H 1G0

drawing title:
MECHANICAL – PLUMBING & NATURAL GAS (CONTINUED)

scale:	AS NOTED	drawn by:	P.P.
designed by:	K.P.	reviewed by:	JRP ENG.
approved by:	JRP ENG.	date:	MAY 2026

project no.: 420–2301–02

drawing no.: M–3 of 5



1
M-4

GROUND FLOOR PLAN – HVAC SYSTEMS, EXISTING, DEMOLITION, & NEW

3/16":1'-0"

DRAWING NOTES:

1. TYPICAL: EXISTING GAS-FIRED RADIANT TUBE HEATERS AT HIGH LEVEL, FOR REFERENCE.
2. EXISTING GENERAL GARAGE EXHAUST FAN, INTERLOCKED WITH INTAKE LOUVRE AND CONTROLLED BY CO/NO DETECTOR, FOR REFERENCE.
3. EXISTING GENERAL GARAGE VENTILATION LOUVRE AND MOTORIZED DAMPER TO BE DISCONNECTED AND REMOVED. PROVIDE NEW LOUVRE AND MOTORIZED DAMPER ASSEMBLY (SIZE INDICATED) AND PROVIDE CONTROLS CONNECTION TO EXISTING GENERAL GARAGE VENTILATION CONTROLS SYSTEM. COORDINATE BLOCK WALL OPENING AND REMEDIATION WITH ARCHITECTURAL DIVISION. LOUVRE TO BE EQUAL TO EH PRICE DE 439.
4. EXISTING COMBUSTION EXHAUST VENTING TO BE DISCONNECTED AND REMOVED. PROVIDE NEW COMBUSTION EXHAUST VENTING AND 'B' VENT THROUGH ROOF. ALL VENTING AND MATERIALS TO EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS AND CSA B139.1. COORDINATE BLOCK WALL REMEDIATION WITH ARCHITECTURAL DIVISION.
5. PROVIDE AND INSTALL GAS-FIRED RADIANT TUBE HEATER (RTH-1) AT HIGH LEVEL COMPLETE WITH ALL-MOUNTED CONTROL THERMOSTAT. REFER TO DRAWING SHEET M-2 FOR NATURAL GAS SUPPLY CONNECTIONS.
6. PROVIDE AND INSTALL WALL-MOUNTED EXHAUST FAN (EF-1), INTERLOCKED WITH ASSOCIATED VENTILATION INTAKE LOUVRE (AT HIGH LEVEL), AND CONTROLLED VIA CO/NO SENSORS / CONTROLLER. PROVIDE SYSTEM VERIFICATION REPORT UPON COMPLETION OF INSTALLATION FOR REVIEW AND ACCEPTANCE.
7. PROVIDE AND INSTALL DESTRATIFICATION FAN (DSF-1 THROUGH DSF-3), SUSPENDED FROM ROOF JOISTS, AT HIGH LEVEL. COORDINATE ELECTRICAL INSTALLATIONS WITH ELECTRICAL DIVISION.
8. TYPICAL: PROVIDE AND INSTALL CLOTHES DRYER APPLIANCE EXHAUST CONNECTION TO OWNER-PROVIDED CLOTHES DRYER, SIZE INDICATED. EXHAUST THROUGH BUILDING ENVELOPE VIA WALL BOX. WALL BOX TO BE EQUAL TO REVERSOMATIC WPEBS. THERMALLY INSULATE/JACKET AT MINIMUM FIRST 10FT FROM BUILDING ENVELOPE PENETRATION (NOT SHOWN). PROVIDE INLINE BOOSTER FAN (BF-1/BF-2, C/W CURRENT SENSING ACTIVATION FROM DRYER APPLIANCE) AND AUXILIARY LINT TRAP. INSTALL AS PER MANUFACTURER'S WRITTEN INSTRUCTIONS. COORDINATE ELECTRICAL CONNECTIONS WITH ELECTRICAL DIVISION. ARCHITECTURAL DIVISION TO PROVIDE ACCESS PANELS IN CEILING FOR INLINE BOOSTER FANS FOR MAINTENANCE ACCESS.

HVAC EQUIPMENT SCHEDULE:

RTH-1

TYPE: RADIANT TUBE HEATER
MAKE: SUPERIOR RADIANT PRODUCTS (SRP)
MODEL: TA-60
DESCRIPTION:
- 45,000 BTU/HR LOW, 60,000 BTU/HR HIGH INPUT
- NATURAL GAS
- PROVIDE COMPLETE WITH WALL-MOUNTED THERMOSTAT, VENT TERMINAL, WALL THIMBLE, GAS FLEX CONNECTOR, SHUT-OFF VALVE, SIDE REFLECTORES, AND ALL EXHAUST FLUE VENTING.

ELECTRICAL: 120V/60HZ, 1A (36" LONG 3-PRONG PLUG) AND LINE-VOLTAGE THERMOSTAT (SUPPLIED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR)

EF-1

TYPE: WALL-MOUNTED EXHAUST FAN
MAKE: LOREN COOK
MODEL: 12XW26D17 (VF) (EC)
DESCRIPTION:
- PERFORMANCE: 725 CFM @ 0.25 IN. W.C. SP
- INTEGRATED SEED CONTROLLER (FAN-MOUNTED)
- BALANCED AS SPECIFIED
- CONTROL: VIA GARAGE CO/NO DETECTION SYSTEM. EXHAUST FAN TO START AFTER MOTORIZED DAMPERS PROVED 100% OPEN AFTER CALL TO OPEN FROM CO/NO DETECTION CONTROL SYSTEM.

ELECTRICAL: 115V/60HZ/1PH, 0.125 HP

DSF-1, DSF-2, DSF-3

TYPE: DESTRATIFICATION FAN
MAKE: VENTS-US
MODEL: BUCKET FAN WHISPER 1055
DESCRIPTION: PROVIDE COMPLETE WITH ALL-MOUNTED VARIABLE SPEED CONTROLLER (INSTALLED BY ELECTRICAL DIVISION) AND ALL SUPPORTS/SAFETY CABLING AS REQUIRED FOR SUSPENSION.
ELECTRICAL: 120V/60HZ, 0.8A / 94W MAX.

BF-1, BF-2

TYPE: BOOSTER FAN, CLOTHES DRYER APPLIANCE EXHAUST
MAKE: REVERSOMATIC
MODEL: TLD-200
DESCRIPTION: PROVIDE COMPLETE WITH AUXILIARY LINT TRAP AND DRYER APPLIANCE AMP SENSOR FAN CONTROL WITH SURGE PROTECTION AND TIME-DELAYED SHUTDOWN.
ELECTRICAL: 120V/60HZ, 0.7A

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drawing title:
MECHANICAL – HVAC SYSTEMS

scale:	AS NOTED	drawn by:	P.P.
designed by:	K.P.	reviewed by:	JRP ENG.
approved by:	JRP ENG.	date:	MAY 2026

project no.: 420-2301-02

drawing no.: M-4

GENERAL INSTRUCTIONS

1.0 CONDITIONS OF CONTRACT

THE INSTRUCTIONS TO BIDDERS AND THE GENERAL CONDITIONS ARE AN INTEGRAL PART OF THIS DIVISION AND SHALL BE READ IN CONJUNCTION HEREWITH. THESE INSTRUCTIONS TO BIDDERS AND GENERAL CONDITIONS SHALL BE FULLY BINDING ON THE GENERAL CONTRACTOR AND THEIR SUB-CONTRACTORS TO THE FULL SATISFACTION OF THE ENGINEER AND OWNER.

THE RESPONSIBILITY AND SCOPE OF EACH SUB-TRADE RESTS SOLELY WITH THE MECHANICAL CONTRACTOR. EXTRAS WILL NOT BE CONSIDERED BASED ON THE GROUNDS OF DIFFERENCE IN INTERPRETATION OF SPECIFICATIONS AND DRAWINGS AS TO WHICH TRADE INVOLVED SHALL PROVIDE CERTAIN SPECIALITIES OR MATERIALS.

2.0 EXAMINATION OF WORK

EXAMINE THE SITE AND LOCAL CONDITIONS LIKELY TO AFFECT WORK INDICATED AND SPECIFIED PRIOR TO SUBMITTING FINAL PRICE.

THIS PROJECT INVOLVES CHANGES TO HE BUILDING, WHICH IS PRESENTLY OCCUPIED. THEREFORE, EXAMINE HE SITE AND LOCAL CONDITIONS TO DETERMINE THE DIFFICULTIES IN CARRYING OUT THE WORK INDICATED AND SPECIFIED PRIOR TO SUBMITTING A FINAL PRICE.

3.0 LIABILITY

THIS CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR LAYING OUT THEIR WORK AND FOR ANY DAMAGE CAUSED TO THE OWNER AND OTHER CONTRACTORS BY IMPROPER LOCATION OR CARRYING OUT OF THIS WORK. CARRY ALL NECESSARY INSURANCE COVERAGE.

THIS CONTRACTOR SHALL PROTECT ALL FINISHED AND UNFINISHED WORK OF THEIR OWN AND OTHER CONTRACTORS INCLUDING EXISTING FROM DAMAGE DUE TO HE CARRYING OUT OF THEIR WORK.

4.0 INTENT

IT IS THE INTENT OF THIS SPECIFICATION AND DRAWINGS TO PROVIDE FOR A COMPLETE AND FULLY-OPERATING SYSTEM IN COMPLETE ACCORD WITH ALL APPLICABLE CODES. THESE SPECIFICATIONS MAY NOT COVER EACH AND VERY ITEM REQUIRED FOR THE COMPLETE MECHANICAL INSTALLATION; THEREFORE, THE CONTRACTOR SHALL MAKE PROVISIONS FOR ALL LABOUR, MATERIAL, AND EQUIPMENT DEEMED NECESSARY TO COMPLETE THE SYSTEM(S) AFFECTED BY THE WORK DESCRIBED IN THE SPECIFICATIONS AND DRAWINGS.

5.0 CERTIFICATES, FEES, ETC.

THIS CONTRACTOR TO PAY ALL FEES AND OBTAIN ALL PERMITS. PROVIDE AUTHORITIES WITH PLANS AND INFORMATION FOR ACCEPTANCE CERTIFICATES. FURNISH INSPECTION CERTIFICATES AS EVIDENCE THAT WORK CONFORMS WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION (AHJs).

6.0 CUTTING AND PATCHING

THE MECHANICAL CONTRACTOR WILL CONFER WITH THE GENERAL CONTRACTOR IN REGARDS TO THIS WORK AND SHALL GIVE LOCATIONS FOR ALL HOLES/PENETRATIONS FOR PIPES, DUCTS THROUGH FLOORS AND ROOF, ETC., AND PROVIDE SLEEVES REQUIRED TO EXECUTE THE MECHANICAL INSTALLATION.

7.0 PIPE HANGERS, SUPPORTS, AND SLEEVES

HANGERS AND SUPPORTS SHALL SECURE PIPES N PLACE, PREVENT VIBRATION, MAINTAIN GRADE BY ADJUSTMENT, PROVIDE FOR EXPANSION AND CONTRACTION, ND SHALL BE DIRECTLY SUPPORTED FROM THE STRUCTURE. PERFORATED STRAP HANGERS ARE NOT ACCEPTABLE.

8.0 TESTING

TEST ALL EQUIPMENT AND MATERIAL WHERE REQUIRED BY SPECIFICATIONS OR AUTHORITIES HAVING JURISDICTION (AHJs) TO DEMONSTRATE ITS PROPER OPERATION TO THE OWNER'S REPRESENTATIVE. TEST PROCEDURES SHALL BE IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF THE ASME, ASHRAE, AND OTHER RECOGNIZED TEST CODES AS FAR AS FIELD CONDITIONS PERMIT.

- PERFORM TESTING UPON COMPLETION OF THE MECHANICAL INSTALLATION, URN OVER TO THE OWNER A CERTIFICATION OF THE TEST COMPLETE WITH DETAILED DATA AS REQUIRED BY EACH;
- TESTS SHALL BE ITEMIZED AS TO THE TIME PERFORMED AND PERSONNEL RESPONSIBLE FOR THE TEST. HYDRAULIC TESTS SHALL BE CARRIED OUT FOR A PERIOD OF 8 HOURS AND PRESSURE MAINTAINED WITH NO APPRECIABLE PRESSURE DROP. WHERE LEAKAGE OCCURS, REPAIRS SHALL BE MADE AND THE ENTIRE SYSTEM RETESTED TO THE SATISFACTION OF BUILDING OWNER AND ENGINEER.
- ALL TESTS TO BE MADE BEFORE BACK-FILLING AND FURRING.
- ALL LOW AND HIGH VELOCITY DUCT SYSTEMS, INCLUDING SUPPLY SHALL BE CHECKED FOR TIGHTNESS. ALL LEAKS SHALL BE REPAIRED BEFORE DUCTS ARE FURRED IN TO ENSURE TOTAL OUTLET CAPACITY IS WITHIN 5% OF THE TOTAL QUANTITY BEING SUPPLIED BY THE AIR SYSTEM

9.0 RECORD 'AS-BUILT' DRAWINGS

KEEP IN THE JOB OFFICE AN EXTRA SET OF WHITE PRINTS AND SPECIFICATIONS ON WHICH ALL CHANGES AND DEVIATIONS SHALL BE RECORDED DAILY. AT COMPLETION OF THIS PROJECT, TURN OVER TO ENGINEER TWO (2) SETS OF NEAT AND LEGIBLE 'AS-BUILT' RECORD DRAWINGS AND SPECIFICATIONS. USE RED INK TO MARK ALL CHANGES AND DEVIATIONS AND SEAL WITH CONTRACTOR'S IDENTIFYING SEAL. THESE EXTRA SETS OF WHITE PRINTS AND SPECIFICATIONS WILL BE PROVIDED BY THE ENGINEER UPON REQUEST.

10.0 SHOP DRAWINGS

BEFORE FABRICATION OF MAJOR EQUIPMENT AND MATERIALS, SUBMIT THROUGH THE GENERAL CONTRACTOR SHOP DRAWINGS AND DATA SHEETS COVERING ALL ITEMS OF EQUIPMENT AND MATERIALS FURNISHED AND INSTALLED UNDER THIS CONTRACT FOR REVIEW BY THE ENGINEER.

11.0 TEMPORARY AND TRIAL USAGE

ANY PERMANENT EQUIPMENT USED TEMPORARILY FOR HEAT OR OTHERWISE WILL BE REPAIRED AND REPLACED TO THE FULL SATISFACTION OF THE OWNER.

12.0 CLEANING

DUCTS, PIPEWORK, AND EQUIPMENT SHALL BE THOROUGHLY CLEANED OF DIRT, CUTTINGS, AND OTHER FOREIGN SUBSTANCES. DISCONNECT, CLEAN, AND RE-CONNECT WHENEVER NECESSARY FOR THE PURPOSE OF LOCATING AND REMOVING OBSTRUCTIONS. REPAIR WORK THAT HAS BEEN DAMAGED IN THE COURSE OF REMOVING OBSTRUCTIONS. DUCTS SHALL BE POWER-VACUUM CLEANED BEFORE BEING TURNED OVER TO THE OWNER.

13.0 GUARANTEE

THE MECHANICAL CONTRACTOR, AS A CONDITION PRECEDENT TO FINAL PAYMENT AFTER COMPLETION OF THIS WORK, SHALL GIVE THE OWNER A WRITTEN GUARANTEE WARRANTING ALL APPARATUS FURNISHED UNDER THE CONTRACT TO REMAIN IN PERFECT SERVICEABLE CONDITION FOR A PERIOD OF ONE (1) CALENDAR YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THEIR WORK BY THE OWNER AND THE ENGINEER.

14.0 INSTALLATION

INSTALL EQUIPMENT IN ACCORDANCE TO MANUFACTURER'S INSTRUCTIONS.

15.0 OPERATING AND MAINTENANCE DATA

FURNISH OPERATING AND MAINTENANCE DATA FOR ALL EQUIPMENT AND SYSTEMS AS PROVIDED AND/OR INSTALLED UNDER THE CONTRACT. DATA SHALL BE ASSEMBLED IN BOOKLET FORM WITH SOFT COVER AND INDEX. IDENTIFY FRONT COVER WITH NAME AND LOCATION OF THE PROJECT, CONSULTING ENGINEER, AND CONTRACTOR. SUBMIT REVIEW COPY TO OWNER AND ENGINEER FOR ACCEPTANCE. IF AGREEABLE TO THE OWNER, AND AGREED UPON IN WRITING, THE OPERATING AND MAINTENANCE DATA MAY BE SUBMITTED IN ELECTRONIC FORM (.PDF FILE FORMAT ONLY).

16.0 MATERIALS

REPLACE MATERIAL AND WORKMANSHIP BELOW SPECIFIED QUALITY AND RELOCATE WORK WRONGLY PLACED TO THE SATISFACTION OF OWNER AND ENGINEER.

MATERIALS AND EQUIPMENT INSTALLED SHALL BE NEW, FULL WEIGHT, ND OF THE BEST QUALITY SPECIFIED. USE SAME BRAND OF MANUFACTURER FOR EACH SPECIFIC INSTALLATION.

STATICALLY AND DYNAMICALLY BALANCE ROTATING EQUIPMENT FOR MINIMUM VIBRATION AND LOW OPERATING NOISE LEVEL.

17.0 APPROVALS

THE PRICE SUBMITTED FOR THIS CONTRACT SHALL BE BASED ON THE USE OF MATERIALS AND EQUIPMENT AS SPECIFIED. IF THIS CONTRACTOR WISHES TO QUOTE ON EQUIVALENT MATERIALS AND EQUIPMENT, THEY MUST QUOTE ON PRODUCTS REVIEWED AND APPROVED BY THE ENGINEER (WRITTEN APPROVAL), AS EQUIVALENT TO THE PRODUCT SPECIFIED. MANUFACTURER'S LISTED IN SPECIFICATIONS DO NOT HAVE TO REQUEST APPROVAL BUT MUST MEET ALL PERFORMANCE REQUIREMENTS.

CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY ADDITIONAL WORK OR MATERIALS REQUIRED BY THE MECHANICAL TRADE OR OTHER CONTRACTORS TO ACCOMMODATE APPROVED EQUIVALENT MATERIALS OR EQUIPMENT. EXTRA COSTS ASSOCIATED WILL NOT BE APPROVED.

VENTILATION AND AIR-CONDITIONING

1.0 DUCTWORK

DUCTWORK SHALL BE OF GALVANIZED STEEL AND SHALL BE LOCK-FORMING QUALITY. ALL DUCTWORK SHALL BE CONSTRUCTED, BRACED, CONNECTED, AND JOINED AS RECOMMENDED IN THE LATEST ISSUE OF ASHRAE GUIDE AND DUCT CONSTRUCTION STANDARDS ISSUED BY THE SHEET METAL NATIONAL ASSOCIATION INC. (SMACNA). ALL DUCTWORK SHALL BE INSTALLED TO CONFORM TO THE NATIONAL BUILDING CODE, THE CFUA PAMPHLETS 90A AND 91, AND BE IN ACCORDANCE WITH APPLICABLE CODES. THE MINIMUM SHEET METAL THICKNESS SHALL BE AS FOLLOWS:

RECTANGULAR DUCTS

MAXIMUM WIDTH	GAUGE
UP TO 300MM	28 USGA
325MM TO 750MM	24 USGA
775MM TO 1,350MM	22 USGA

ROUND DUCTWORK SHALL BE SUSPENDED WITH BAND IRON HANGERS.

RECTANGULAR DUCTWORK SHALL BE SUPPORTED AT MAXIMUM 2.4M (8FT) SPACING.

SHEET METAL SCREWS TO BE ACCEPTABLE FOR DUCT FABRICATION.

FLEXIBLE DUCT TO BE TRIPLE-LOCK ALUMINUM, MAXIMUM LENGTH 3.0M (10FT).

SEAL CLASSIFICATION AS FOLLOWS:

MAXIMUM PRESSURE (PA)	SMACNA SEAL CLASS
1000 AND OVER	A
750	B
500	C

CLASS A SEAL: LONGITUDINAL SEAMS, TRANSVERSE JOINTS, DUCT WALL PENETRATIONS, AND CONNECTIONS MADE AIR-TIGHT WITH SEALANT AND TAPE.

CLASS B SEAL: LONGITUDINAL SEAMS, TRANSVERSE JOINTS, AND CONNECTIONS MADE AIR-TIGHT WITH SEALANT, TAPE, OR COMBINATION THEREOF.

CLASS C SEAL: TRANSVERSE JOINTS AND CONNECTIONS MADE AIR-TIGHT WITH GASKETS, SEALANT, TAPE, OR COMBINATION THEREOF. LONGITUDINAL SEAMS UNSEALED.

2.0 VOLUME DAMPERS

INSTALL AT EACH TAKE-OFF FROM MAIN AS NOTED ON DRAWING - SINGLE-BLADE WITH LOCKING QUADRANT, EQUAL TO DURO-DYNE K-9.

3.0 AIR OUTLETS AND INLETS

ALL NEW SUPPLY DIFFUSERS AND RETURN GRILLES TO BE PROVIDED AS PER SCHEDULE AND/OR AS LISTED IN DRAWING NOTES.

4.0 AIR SYSTEM BALANCING AND TESTING

BALANCING SYSTEMS FOR RATED AIR FLOWS, ROOM TEMPERATURE CONTROL, AND ELECTRICAL CURRENT DRAW AFTER INSTALLATION IS COMPLETE AND EQUIPMENT IS IN FULL WORKING ORDER. ADJUST CONTROLS FOR CONTINUOUS AIR CIRCULATION AND MINIMUM ENERGY CONSUMPTION. ADJUST FAN SPEEDS AS REQUIRED TO OBTAIN SPECIFIC PERFORMANCE. BALANCING WORK TO BE PERFORMED BY INDEPENDENT BALANCING CONTRACTOR. PROVIDE COPIES OF TESTING AND BALANCING (TAB) REPORT TO ENGINEER FOR REVIEW.

5.0 DUCT INSULATION: THERMAL AND ACOUSTIC

ALL HIGH-PRESSURE DUCTWORK UP TO VARIABLE AIR VOLUME (VAV) TERMINAL DEVICE INLETS SHALL BE THERMALLY-INSULATED WITH 25MM THICK RIGID FIBREGLASS INSULATION AND VAPOUR BARRIER, SEALED WITH ALUMINUM DUCT TAPE.

PROVIDE ACOUSTIC DUCT LINING IN ALL RECTANGULAR DUCTS DOWNSTREAM FROM VARIABLE AIR VOLUME (VAV) TERMINAL DEVICE, IN ALL TRANSFER DUCTS, OR AS INDICATED ON DRAWINGS. THE LINING SHALL BE RIGID FIBREGLASS BOARD OF 25MM THICKNESS WITH A MINIMUM DENSITY OF 36 KG/M^2. DUCT DIMENSIONS AS INDICATED ON DRAWINGS REPRESENT CLEARANCE DIMENSIONS INSIDE OF DUCT LINING. ALL COVERING SHALL BE APPLIED IN A WORKMAN-LIKE MANNER TO PRESENT A NEAT AND CLEAN APPEARANCE AT COMPLETION OF THE WORK TO THE FULL SATISFACTION OF THE ENGINEER AND OWNER. INSULATION ASSEMBLIES SHALL COMPLY WITH ONTARIO BUILDING REGULATIONS WITH RESPECT TO FLAME SPREAD AND SMOKE-DEVELOPED RATINGS NOT EXCEEDING 25 AND 50, RESPECTIVELY.

REPAIR EXISTING INSULATION AND/OR JACKETING THAT IS DAMAGED BY CUTTING INTO MAINS OR OTHER ALTERATIONS PERFORMED UNDER THIS CONTRACT.

6.0 EQUIPMENT

REFER TO NOTES AND SCHEDULES ON DRAWINGS FOR DETAILS ON EQUIPMENT, TYPES, MODEL NUMBERS, AND PERFORMANCE REQUIREMENTS.

DOMESTIC WATER PIPING

1.0 GENERAL

ALL WORK AND MATERIALS TO THE FOLLOWING SPECIFICATIONS/REQUIREMENTS:
- ONTARIO BUILDING CODE (OBC)
- NATIONAL PLUMBING CODE OF CANADA (NPC)
- AUTHORITIES HAVING JURISDICTION (AHJ), AS APPLICABLE
- ASTM B88M 'STANDARD SPECIFICATION FOR SEAMLESS COPPER WATER TUBE (METRIC)'
- ANSI/ASME B16.15 'CAST BRONZE THREADED FITTINGS, CLASSES 125 AND 250'
- ANSI/ASME B16.18 'CAST COPPER ALLOY SOLDER JOINT PRESSURE FITTINGS'
- ANSI/ASME B16.22 'WROUGHT COPPER AND COPPER ALLOY SOLDER JOINT PRESSURE FITTINGS'
- ANSI/ASME B16.24 'CAST COPPER ALLOY PIPE FLANGES AND FLANGED FITTINGS - CLASS 150 THROUGH 2500'
- CAN/CGSB-24.3 'IDENTIFICATION OF PIPING SYSTEMS'

2.0 PIPING

DOMESTIC HOT, COLD, AND RECIRCULATION SYSTEMS WITHIN BUILDING AS FOLLOWS:

- ABOVE GROUND: COPPER TUBE, HARD DRAWN, TYPE K/L/M
- BURIED / EMBEDDED: COPPER TUBE, SOFT ANNEALED, TYPE K/L

3.0 INSTALLATION

- ASSEMBLE PIPING USING FITTINGS MANUFACTURED TO ANSI STANDARDS.
- INSTALL COLD WATER PIPING BELOW AND AWAY OF HOT WATER SUPPLY AND CIRCULATION PIPING SO AS TO MAINTAIN TEMPERATURE OF COLD WATER AS LOW AS POSSIBLE.
- CONNECT TO FIXTURES AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS UNLESS OTHERWISE SPECIFIED.
- WHEREVER DISSIMILAR METALS ARE JOINED OR SUPPORTED, THE PIPING SHALL HAVE NON-CONDUCTING TYPE CONNECTIONS OR HANGERS TO PREVENT GALVANIC CORROSION.
- BURIED TUBING:
- LAY IN WELL-COMPACTED WASHER SAND IN ACCORDANCE AWWA CLASS B BEDDING.
- BEND TUBING WITHOUT CRIMPING OR CONSTRUCTION
- MINIMIZE USE OF FITTINGS
- MUST BE INSTALLED IN LONG LENGTHS, NO BURIED JOINTS

4.0 VALVES

ISOLATE EQUIPMENT, FIXTURES, AND BRANCHES WITH BALL VALVES. BALANCE RECIRCULATION SYSTEMS USING LOCK-SHIELD GLOBE VALVES - MARK SETTINGS AND RECORD ON AS-BUILT DRAWINGS ON COMPLETION OF WORK. PROVIDE ALL VALVES AS SHOWN ON THE DRAWINGS OR REQUIRED BY AUTHORITIES HAVING JURISDICTION. PROVIDE VACUUM BREAKERS / BACKFLOW PREVENTER DEVICES ON LINES SERVING EQUIPMENT OR FIXTURES WHERE CONTAMINATION OF DOMESTIC WATER CAN OCCUR.

5.0 PRESSURE TESTING

TEST PRESSURE TO BE ONE (1) TIMES THE MAXIMUM SYSTEM OPERATING PRESSURE, OR 125 PSI (860KPA), WHICHEVER IS GREATER.

6.0 FLUSHING/CLEANING AND DISINFECTION

FLUSH /CLEAN AND DISINFECT SYSTEM TO EXTENT REQUIRED BASED ON SCOPE OF DOMESTIC WATER PLUMBING PIPING SCOPE OF WORK , APPLICABLE REGULATIONS, AND REQUIREMENTS OF BUILDING OWNER/PROPERTY MANAGER/LANDLORD.

DRAINAGE, WASTE, AND VENT (DWV) PIPING

1.0 GENERAL

ALL WORK AND MATERIALS TO THE FOLLOWING SPECIFICATIONS/REQUIREMENTS:

- ONTARIO BUILDING CODE (OBC)
- NATIONAL PLUMBING CODE OF CANADA (NPC)
- AUTHORITIES HAVING JURISDICTION (AHJ), AS APPLICABLE
- ASTM B32 'STANDARD SPECIFICATIONS FOR SOLDER METAL'
- ASTM B306 'STANDARD SPECIFICATION OF COPPER DRAINAGE TUBE (DWV)'
- ASTM C564 'STANDARD SPECIFICATION FOR RUBBER GASKETS FOR CAST IRON SOIL PIPE AND FITTINGS'
- CSA B67 'LEAD SERVICE PIPE, WASTE PIPE, TRAPS, BENDS, AND ACCESSORIES'
- CAN/CSA B70 'CAST IRON SOIL PIPE, FITTINGS, AND MEANS OF JOINING'
- CAN/CSA B125.3 'PLUMBING FITTINGS'
- ASTM D2564 'STANDARD SPECIFICATION FOR SOLVENT CEMENTS FOR POLY VINYL-CHLORIDE (PVC) PLASTIC PIPING SYSTEMS'
- CAN/CSA-SERIES B1800 'THERMOPLASTIC NON-PRESSURE PIPE COMPENDIUM - B1800 SERIES'
- CAN/CSA B181.2 'PVC DRAIN, WASTE, AND VENT PIPE AND PIPE FITTINGS'
- CAN/CGSB-24.3 'IDENTIFICATION OF PIPING SYSTEMS'

2.0 COPPER TUBE AND FITTINGS:

- CAST BRASS AND WROUGHT COPPER FITTINGS TO CAN/CSA-B125.3
- JOINING: LEAD-FREE SOLDER (95:5 TIN ANTIMONY) RATED FOR USE IN POTABLE WATER SYSTEMS

3.0 CAST IRON PIPING AND FITTINGS:

BURIED SANITARY/STORM/VENT PIPING TO BE MINIMUM NPS 3, WITH POLYETHYLENE FILM WRAP, TO CAN/CSA-B70 WITH FOLLOWING JOINING METHODS:
- MECHANICAL: NEOPRENE OR BUTYL RUBBER COMPRESSION GASKETS, TO CAN/CSA-B70
- HUB AND SPIGOT: CAULKING LEAD TO CSA B67, COLD CAULKING COMPOUNDS

ABOVE-GROUND SANITARY/STORM/VENT PIPING TO CAN/CSA-B70 WITH FOLLOWING JOINING METHODS:

- MECHANICAL: NEOPRENE OR BUTYL RUBBER COMPRESSION GASKETS, TO CAN/CSA-B70, WITH STAINLESS STEEL CLAMPS
- HUB AND SPIGOT: CAULKING LEAD TO CSA B67

STORM WATER DRAINAGE:

- VERIFY THAT DOMES ARE SECURE
- ENSURE WEIRS ARE CORRECTLY SIZED AND INSTALLED PROPERLY
- VERIFY PROVISIONS FOR MOVEMENT OF ROOF SYSTEM

4.0 PVC PIPING AND FITTINGS:

- MUST BE AIR PLENUM AND HIGH-BUILDING RATED (FLAME SPREAD <= 25, AND SMOKE DEVELOPED CLASSIFICATION <= 50), TESTED AND VERIFIED TO CAN/ULC S102.2. BASIS OF DESIGN PERFORMANCE: IPEX XFR OR APPROVED EQUIVALENT.
- PIPING AND FITTINGS CERTIFIED TO CSA B181.2.

5.0 CLEANOUTS:

- PROVIDE AND SET CLEANOUTS AT ALL POINTS REQUIRED BY CODE AND WHERE INDICATED ON DRAWINGS.
- ENSURE ACCESSIBLE AND THAT ACCESS DOORS ARE CORRECTLY LOCATED, EXTENDING BRANCH CONNECTIONS TO FINISHED SURFACES AND FITTING THEM WITH A SUITABLE ACCESS DOOR / COVER.
- OPEN, COVER IN LINSEED OIL, AND RE-SEAL
- VERIFY THAT CLEAN-OUT RODS CAN PROBE AS FAR AS THE NEXT CLEANOUT (AT MINIMUM)

6.0 TESTING / VERIFICATION:

- PRESSURE TEST BURIED SYSTEMS BEFORE BACKFILLING
- HYDRAULICALLY TEST TO VERIFY GRADES AND FREEDOM FROM OBSTRUCTIONS
- TEST TO ENSURE THAT TRAPS ARE FULLY AND PERMANENTLY PRIMED
- ENSURE THAT FIXTURES ARE PROPERLY ANCHORED, CONNECTED TO DRAINAGE SYSTEM, AND EFFECTIVELY VENTED AS REQUIRED
- AFFIX APPLICABLE LABEL (STORM / SANITARY / VENT / PUMP DISCHARGE / ETC.) COMPLETE WITH DIRECTIONAL ARROWS MINIMUM EVERY 15 FT (4.5 M), AND AT LEAST ONCE PER FLOOR.

THERMAL INSULATION OF PIPING

1.0 GENERAL:

ALL WORK AND MATERIALS TO THE FOLLOWING SPECIFICATIONS/REQUIREMENTS:

- ONTARIO BUILDING CODE (OBC)
- NATIONAL PLUMBING CODE OF CANADA (NPC)
- AUTHORITIES HAVING JURISDICTION (AHJ), AS APPLICABLE
- ASHRAE STANDARD 90.1 'ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS'
- CGSB 51-GP-52MA 'VAPOUR BARRIER, JACKET, AND FACING MATERIAL FOR PIPE, DUCT, AND EQUIPMENT THERMAL INSULATION'
- CAN/CGSB-51.53 'POLY VINYL-CHLORIDE JACKETING SHEET, FOR INSULATED PIPES, VESSELS, AND ROUND DUCTS'
- TIAC: NATIONAL INSULATION STANDARDS
- CAN/ULC-701 'THERMAL INSULATION, POLYSTYRENE, BOARDS AND PIPE COVERING
- CAN/ULC-702 'THERMAL INSULATION, MINERAL FIBRE, FOR BUILDINGS
- CAN/ULC-702.2 'THERMAL INSULATION, MINERAL FIBRE, FOR BUILDINGS, PART 2: APPLICATION GUIDELINES'

2.0 FIRE AND SMOKE RATING:

TO CAN/ULC-S102 'STANDARD METHOD OF TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS AND ASSEMBLIES', WITH MAXIMUM FLAME SPREAD RATING OF 25 AND MAXIMUM SMOKE DEVELOPED RATING OF 50

3.0 INSULATION:

- THERMAL CONDUCTIVITY ('K' FACTOR) TO NOT EXCEED SPECIFIED VALUES AT 75 FAHRENHEIT (24 CELSIUS) MEAN TEMPERATURE WHEN TESTED IN ACCORDANCE WITH ASTM C335
- MAXIMUM 'K' FACTOR TO CAN/ULC-S702 AND/OR ASTM C547
- JACKETING TO CGSB 51-GP-52MA, TYPE TO MEET CONDITIONS AT LOCATION OF INSTALLATION AND PIPING TYPE.

4.0 INSTALLATION:

- INSTALL IN ACCORDANCE WTIH TIAC NATIONAL STANDARDS
- APPY MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS
- USE TWO (2) LAYERS WITH STAGGERED JOINTS WHEN REQUIRED NOMINAL WALL THICKNESS EXCEEDS 3IN (75MM)
- MAINTAIN UNINTERRUPTED CONTINUITY AND INTEGRITY OF VAPOUR RETARDER JACKET AND FINISHES, INSTALL HANGERS AND SUPPORTS OUTSIDE VAPOUR RETARDED JACKET
- SUPPORTS AND HANGERS - APPLY HIGH-COMPRESSIVE STRENGTH INSULATION, SUITABLE FOR SERVICE, AT OVERSIZED SADDLES AND SHOES WHERE INSULATION SADDLES HAVE NOT BEEN PROVIDED

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No	DESCRIPTION	DATE
2	ISSUED FOR PERMIT/TENDER	MAY 29, 2026
1	ISSUED FOR REVIEW	APR. 24, 2026
0	ISSUED FOR REVIEW	FEB. 02, 2024

REVISIONS

client:

BELL+ASSOCIATES ARCHITECTURE

120 TERENCE MATTHEWS CRES.
UNIT B1, OTTAWA, ONTARIO

project:

MILLHAVEN GARAGE STORAGE EXPANSION

240 COUNTY ROAD 4,
BATH, ONTARIO K0H 1G0

drawing title:

MECHANICAL SPECIFICATIONS

scale:	AS NOTED	drawn by:	P.P.
designed by:	K.P.	reviewed by:	JRP ENG.
approved by:	JRP ENG.	date:	MAY 2026

project no.: 420-2301-02

drawing no.: M-5 of 5

ELECTRICAL LEGEND

ITEM	DESCRIPTION
	T–BAR CEILING LIGHT FIXTURE
	EMERGENCY NIGHT LIGHTING FIXTURE
	2X2 T–BAR CEILING LIGHT FIXTURE
	DOWNLIGHT
	CEILING/WALL MOUNTED EXIT SIGN
$	SWITCH
$OS (OS)	WALL/CEILING MOUNTED OCCUPANCY SENSOR MUST REMAIN ON FOR 30 MINUTES
	ALARM PANEL
	ELECTRICAL PANEL
CR	CARD READER
JB	JUNCTION BOX
OL	OCCUPIED WHEN LIT INDICATOR
PB	PUSH BUTTON
DO	DOOR OPERATOR
EC	EMERGENCY CALL BUTTON
EC	EMERGENCY CALL LIGHT
EL	ELECTRONIC LOCK BUTTON
ES	ELECTRIC STRIKE
	DUPLEX RECEPTACLE WALL MOUNTED
	DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER
	SPECIALTY RECEPTACLE
	QUAD RECEPTACLE
	DATA OUTLET WALL MOUNTED
	VOICE OUTLET WALL MOUNTED
C	27MMC FOR CAMERA
	DATA/VOICE OUTLET WALL MOUNTED
	DEDICATED 5–20R DUPLEX RECEPTACLE
	DIRECT CONNECTION
	POWER POLE
	FLOOR/CEILING MOUNTED RECEPTACLE
	EMERGENCY BATTERY PACK LIGHTING
EC EC	WALL/CEILING MOUNTED EMERGENCY REMOTE LIGHT HEAD
EC	COMBINATION BATTERY PACK / EXIT SIGN
	TRANSFORMER
	NON–FUSED/FUSED DISCONNECT SWITCH
	1ø/3ø MOTOR DIRECT CONNECTION

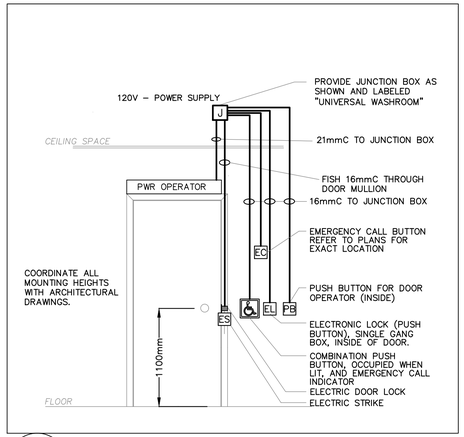
NOT ALL SYMBOLS SHOWN IN LEGEND SET ARE NECESSARILY USED IN DRAWING SET.

GENERAL NOTES:

1. ALL ELECTRICAL EQUIPMENT SHOWN IN THICK SOLID LINES IS NEW TO BE PROVIDED UNDER THIS CONTRACT, TOGETHER WITH ALL ASSOCIATED CONDUITS AND WIRING.
2. FOR ANY REQUIRED SHUT DOWN, CONTRACTOR TO COORDINATE WITH SITE MANAGER AND OBTAIN APPROVAL BEFORE SHUT DOWN CAN BE PERFORMED.
3. PROVIDE NEW BREAKERS AS REQUIRED IN EXISTING ELECTRICAL PANELS TO ACCOMMODATE NEW CONNECTIONS, ALSO PROVIDE BLANK PLATES WHERE CIRCUIT BREAKERS ARE NOT INSTALLED, PROVIDE NEW TYPED PANEL LEGEND TYPICAL FOR ALL PANELS TOUCHED BY THIS CONTRACT. TURN OVER TO THE OWNER ALL BREAKERS REMOVED UNDER THIS CONTRACT.
4. ALL EXISTING AND NEW CONDUITS AND WIRING PASSING THRU FLOOR AND FIRE RATED WALLS TO BE FIRESTOPPED USING FIRE RETARDANT MASTIC SEALANT, CAN/ULC–S115 RATED PRODUCT.
5. ALL WIRING TO BE R/RW90, MINIMUM SIZE #12AWG COPPER, IN EMT CONDUIT UNLESS OTHERWISE NOTED.
6. ALL ELECTRICAL CIRCUITS ARE SHOWN FOR GROUPING PURPOSES ONLY, CONTRACTOR TO USE AVAILABLE CIRCUITS IN EXISTING ELECTRICAL PANELS. REUSE EXISTING AND/OR PROVIDE NEW ELECTRICAL BREAKERS AS REQUIRED.
7. COORDINATE ALL WORK WITH ARCHITECTURAL AND MECHANICAL CONTRACTORS.
8. THIS DRAWING WAS BASED ON PARTIAL SITE REVIEW ONLY, ALL EQUIPMENT, ACCESSORIES, SIZES, LOCATIONS AND DETAILS OF INSTALLATIONS TO BE CONFIRMED ON SITE.
9. SEISMIC RESTRAINT SYSTEM (SRS) – PROVIDE DESIGN, SUPPLY AND INSTALLATION OF COMPLETE SRS FOR ALL SYSTEMS, EQUIPMENT SPECIFIED FOR INSTALLATION ON THIS PROJECT AS PER ONTARIO BUILDING CODE LATEST EDITION. THIS INCLUDES ELECTRICAL LIGHT FIXTURES, TRANSFORMERS, MCC'S, UPS, DIESEL GENERATORS, FIRE PROTECTION, CONDUIT, COMMUNICATIONS, ELECTRICAL EQUIPMENT AND SYSTEMS, BOTH VIBRATION ISOLATED AND STATICALLY SUPPORTED.

NEW PANEL AA
120/240V, 1PH, 3 WIRE, 125A

DESCRIPTION	BREAKER SIZE	CIRCUIT NUMBER			CIRCUIT NUMBER	BREAKER SIZE	DESCRIPTION
		1	ϕ		2		
		3		ϕ	4		
		5	ϕ		6		
		7		ϕ	8		
		9	ϕ		10		
		11		ϕ	12		
		13	ϕ		14		
		15		ϕ	16		
		17	ϕ		18		
		19		ϕ	20		
		21	ϕ		22		
		23		ϕ	24		
		25	ϕ		26		
		27		ϕ	28		
		29	ϕ		30		
		31		ϕ	32		
		33	ϕ		34		
		35		ϕ	36		
		37	ϕ		38		
		39		ϕ	40		
		41	ϕ		42		
		43		ϕ	44		
		45	ϕ		46		
		47		ϕ	48		
		49	ϕ		50		
		51		ϕ	52		
		53	ϕ		54		
		55		ϕ	56		
		57	ϕ		58		
		59		ϕ	60		



1 / E–1 UNIVERSAL WASHROOM – TYPICAL DETAIL
NTS

LIGHTING FIXTURE SCHEDULE

TYPE	MAKE/MODEL	VOLTAGE	MOUNT	LAMPS	TEMP	NOTES
A1	LIGHOTLIER MODULITE M4RDL	120V	RECESSED	LED	3500	DOWNLIGHT
A2	LIGHOTLIER MODULITE M6RDL	120V	RECESSED	LED	3500	EXTERIOR RATED DOWNLIGHT
B	LEDALYTE PIQUE P2 22 D1STL935 A1 D E	120V	2X2 T–BAR	LED	3500	
C	LEDALYTE TRUGROOVE 2901L93540 LN 08 D E 1	120V	SUSPENDED	LED	3500	9'AFF USE AIRCRAFT CABLES
D1	ARTIKA PRO 24VAN–NU–EL10TE10	120V	VANITY	LED	3500	
F	LEDALYTE TRUVUE TV06L93540AA06B0D1BXXBDVDDE1	120V	SUSPENDED	LED	3500	7'AFF USE AIRCRAFT CABLES
G	ARTIKA PRO WALTON BLACK	120V	EXTERIOR WALL PACK	LED	3500	USE COMMON PHOTOCELL
H	4ft LINEAR STRIP	120V	SURFACE	LED	3500	

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0	ISSUED FOR REVIEW	APR. 24, 2024

REVISIONS

client:
BELL+ASSOCIATES ARCHITECTURE
186 PEMBROKE STREET EAST
PEMBROKE, ON K8A 3J7

project:
MILLHAVEN GARAGE ADMINISTRATION BUILDING
240 COUNTY ROAD 4,
BATH, ONTARIO K0H 1G0

drawing title:
ELECTRICAL LEGENDS, SCHEDULES & GENERAL NOTES

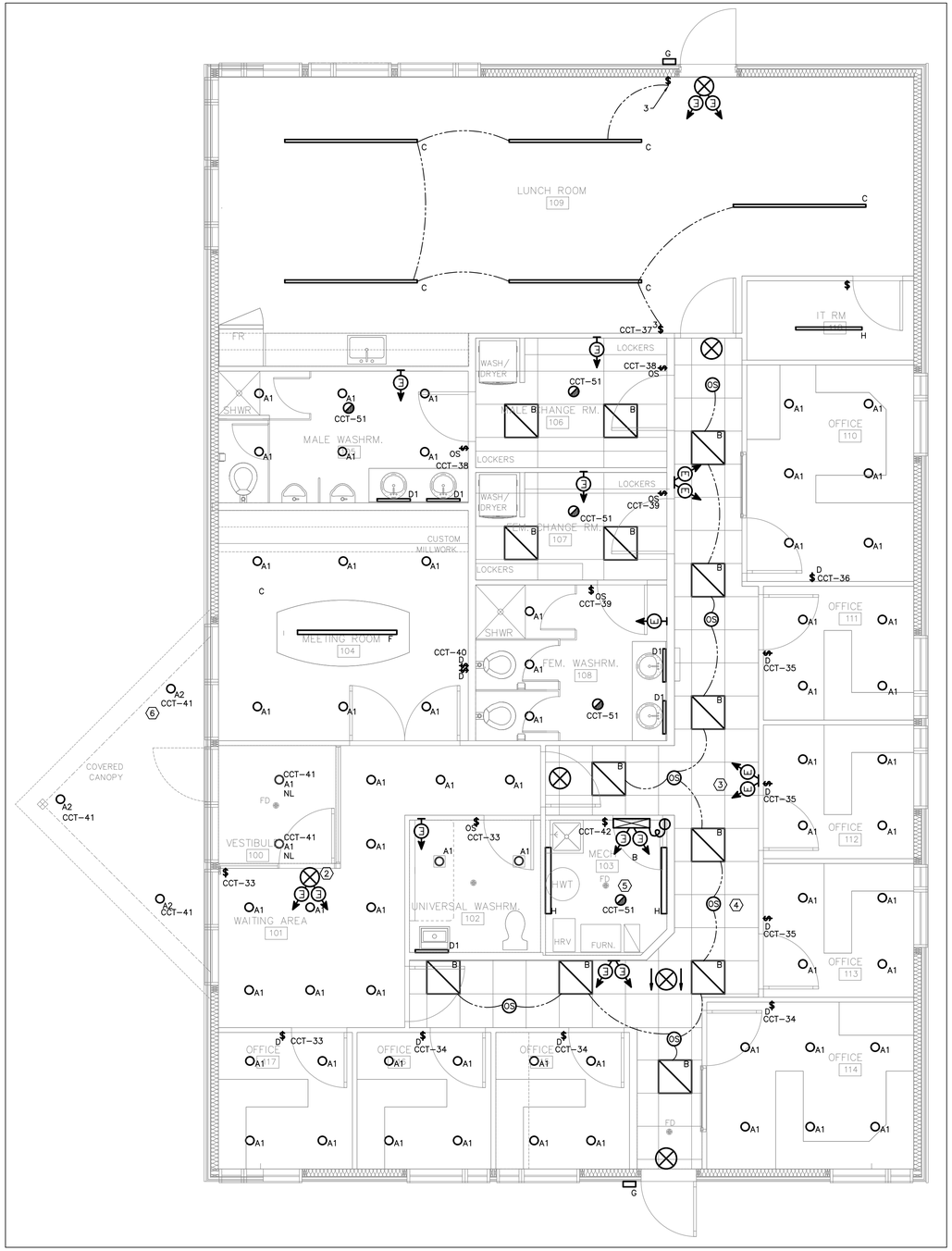
scale:	AS NOTED	drawn by:	C.M.
designed by:	C.M.	reviewed by:	M.G.
approved by:	M.G.	date:	MAY 2026

project no.: 420–2301–03

drawing no.: E–1

DRAWING NOTES:

1. TYPICAL: PROVIDE NEW LIGHT FIXTURE. TYPE AS INDICATED. C/W ALL CONDUIT, WIRING AND SWITCHING.
2. TYPICAL: PROVIDE NEW COMBINATION EXIT SIGN/ EXIT SIGN AS INDICATED C/W ALL CONDUIT AND WIRING.
3. TYPICAL: PROVIDE NEW EM. REMOTE AS INDICATED, TIE INTO DC EM.LIGHTING CIRCUIT C/W ALL CONDUIT, WIRING AND ASSOCIATED HARDWARE.
4. PROVIDE NEW CEILING MOUNTED OCCUPANCY SENSORS FOR HALLWAY LIGHTING. ALL HALLWAY LIGHTING AND SENSORS TO BE CONNECTED AND COME ON/OFF AT SAME TIME. C/W ALL CONDUIT AND WIRING.
5. PROVIDE NEW 120V COMBINATION SMOKE/CO DETECTOR. C/W ALL CONDUIT AND WIRING. ALL DETECTORS TO BE ON SAME CIRCUIT.
6. TYPICAL: ALL EXTERIOR LIGHTING TO BE CONTROLLED BY COMMON PHOTOCELL.



1 / E-2 GROUND FLOOR PLAN – REFLECTED CEILING PLAN
1/4" = 1' 0"

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No	DESCRIPTION	DATE

REVISIONS

client:

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186 PEMBROKE STREET EAST
PEMBROKE, ON K8A 3J7

project:

MILLHAVEN GARAGE ADMINISTRATION BUILDING
240 COUNTY ROAD 4,
BATH, ONTARIO K0H 1G0

drawing title:

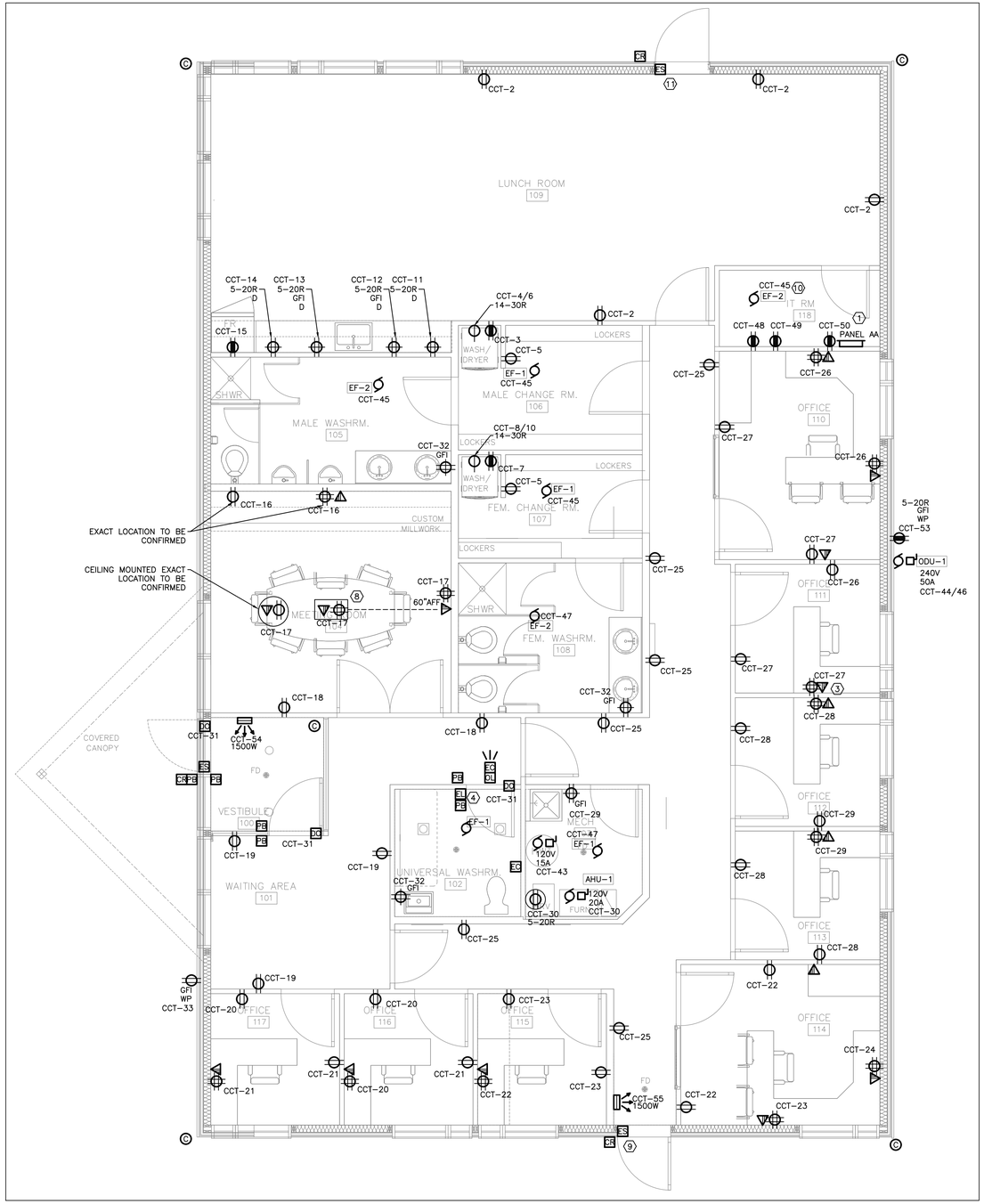
ELECTRICAL
REFLECTED CEILING PLAN

scale:	AS NOTED	drawn by:	C.M.
designed by:	C.M.	reviewed by:	M.G.
approved by:	M.G.	date:	MAY 2026

project no.:	drawing no.:
420-2301-03	E-2 of 5

DRAWING NOTES:

1. PROVIDE NEW ELECTRICAL PANEL. REFER TO PANEL LEGEND AND SINGLE LINE DIAGRAM FOR DETAILS. SERVICE FROM EXISTING GARAGE.
2. TYPICAL: PROVIDE NEW RECEPTACLE, TYPE AS INDICATED. C/W ALL CONDUIT AND WIRING. COORDINATE MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS.
3. PROVIDE NEW DATA OUTLET. C/W 27MMC RUN BACK TO IT ROOM. CONTRACTOR CAN GROUP CONDUITS TOGETHER AS REQUIRED. COORDINATE WITH IT CONTRACTOR.
4. PROVIDE AND INSTALL EMERGENCY CALL SYSTEM C/W AUDIBLE AND VISIBLE SIGNAL, PUSH BUTTONS, PULL STRING, ALL CONDUIT, WIRING AND ASSOCIATED HARDWARE AS PER OBC 3.8.3.12.(2). FOR FULLY OPERATIONAL SYSTEM. SIGNAGE BY OTHERS. REFER TO UNIVERSAL WASHROOM TYPICAL DOOR DETAIL FOR FURTHER INFORMATION.
5. TYPICAL: PROVIDE NEW DIRECT CONNECTION TO MECHANICAL EQUIPMENT. C/W ALL CONDUIT, WIRING AND DISCONNECTING MEANS. COORDINATE WITH MECANICAL DRAWINGS.
6. PROVIDE NEW DIRECT CONNECTION TO EXHAUST FAN. TIE INTO LIGHTING CIRCUIT. C/W ALL CONDUIT AND WIRING.
7. TYPICAL: PROVIDE NEW 27MMC CONDUIT AND BOX FOR CAMERA. CONDUIT RUN BACK TO IT ROOM. COORDINATE WITH CLIENT FOR FINAL MOUNTING LOCATION.
8. PROVIDE NEW FLUSH MOUNT FLOOR MONUMENT WITH INTEGRATED POWER + DATA. PROVIDE CONDUIT FROM FLOOR MONUMENT TO WALL WHERE DISPLAY IS PROJECTED TO GO. C/W ALL CONDUIT, WIRING AND ASSOCIATED HARDWARE.
9. TYPICAL: PROVIDE NEW ROUGH-IN FOR CARD READER AND ELECTRIC STRIKE. C/W ALL CONDUIT, WIRING AND ASSOCIATED HARDWARE.
10. PROVIDE NEW CONNECTION TO MECHANICAL SUPPLIED EXHAUST FAN. COORDINATE WITH MECHANICAL DRAWINGS FOR WALL MOUNTED SWITCH / THERMOSTAT. C/W ALL CONDUIT, WIRING AND ASSOCIATED HARDWARE.
11. TYPICAL: PROVIDE NEW CARD READ WITH ELECTRIC STRIKE. C/W ALL CONDUIT.
12. PROVIDE NEW STELPRO FAN FORCED FLOW HEATER AS INDICATED. C/W ALL CONDUIT, WIRING AND INTEGRATED THERMOSTAT (STELPRO WFA-LUX).



1 / E-3 GROUND FLOOR PLAN – DISTRIBUTION

1/4" = 1' 0"

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1	ISSUED FOR PERMIT AND PRICING	FEB. 21, 2025
0	ISSUED FOR REVIEW	APR. 24, 2024
No	DESCRIPTION	DATE

REVISIONS

client:

BELL+ASSOCIATES ARCHITECTURE
186 PEMBROKE STREET EAST
PEMBROKE, ON K8A 3J7

project:

MILLHAVEN GARAGE ADMINISTRATION BUILDING
240 COUNTY ROAD 4,
BATH, ONTARIO K0H 1G0

drawing title:

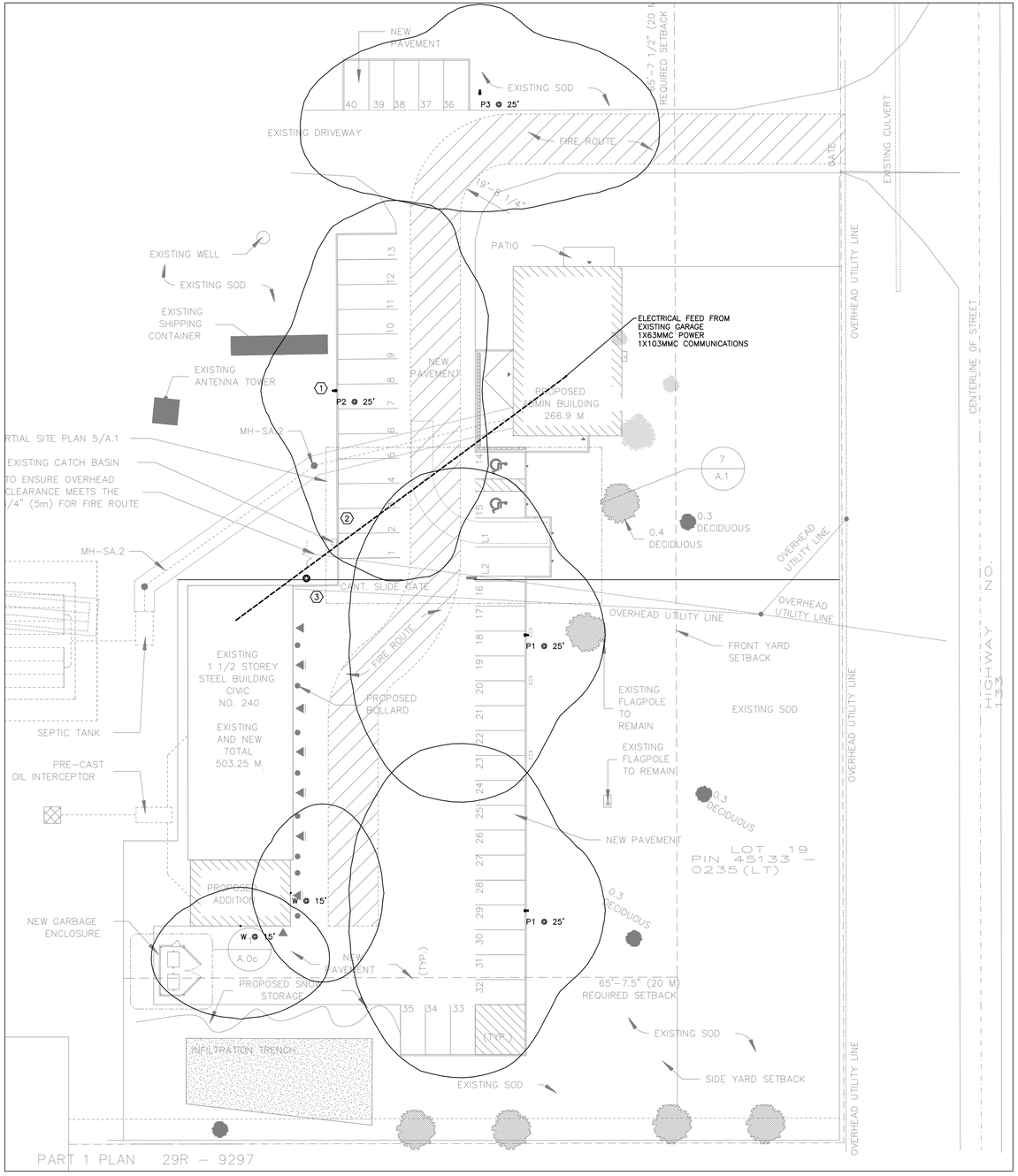
ELECTRICAL DISTRIBUTION

scale:	AS NOTED	drawn by:	C.M.
designed by:	C.M.	reviewed by:	M.G.
approved by:	M.G.	date:	MAY 2026

project no.: 420-2301-03	drawing no.: E-3 of 5

DRAWING NOTES:

1. PROVIDE NEW EXTERIOR, TYPE AS INDICATED. C/W ALL CONDUIT, WIRING, POLE AND ASSOCIATED HARDWARE. ALL EXTERIOR LIGHTING TO BE CONTROLLED BY COMMON PHOTOCELL. ALL POLE LIGHTING TO BE FED FROM GARAGE BUILDING.
2. PROVIDE NEW ELECTRICAL FEED FROM EXISTING GARAGE TO NEW ADMIN BUILDING. PROVIDE NEW COMMUNICATION CONDUIT AS INDICATED. REFER TO FLOOR PLAN FOR FURTHER DETAILS.
3. PROVIDE NEW 120V 20A DIRECT CONNECTION TO NEW POWER GATE. COORDINATE EXACT CONNECTIONS ON SITE. TO BE FED FROM GARAGE BUILDING. C/W ALL CONDUIT AND WIRING.



1 / E-4 ELECTRICAL SITE PLAN
3/32" = 1' 0"

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REVISIONS

client:
BELL+ASSOCIATES ARCHITECTURE
186 PEMBROKE STREET EAST
PEMBROKE, ON K8A 3J7

project:
MILLHAVEN GARAGE ADMINISTRATION BUILDING
240 COUNTY ROAD 4,
BATH, ONTARIO K0H 1G0

drawing title:
ELECTRICAL SITE PLAN

scale:	AS NOTED	drawn by:	C.M.
designed by:	C.M.	reviewed by:	M.G.
approved by:	M.G.	date:	MAY 2026

project no.:	drawing no.:
420-2301-03	E-4 of 5

GENERAL INSTRUCTIONS

CONDITIONS OF CONTRACT

1. THE OWNERS INSTRUCTIONS TO BIDDERS AND THE GENERAL CONDITIONS OF THE DESIGNERS SPECIFICATIONS ARE AN INTEGRAL PART OF THIS CONTRACT AND SHALL BE READ IN CONJUNCTION HEREWITH. THESE INSTRUCTIONS TO BIDDERS AND GENERAL CONDITIONS SHALL BE FULLY BINDING ON THE GENERAL CONTRACTOR AND HIS SUB-CONTRACTORS TO THE FULL SATISFACTION OF THE DESIGNER, ENGINEER AND OWNER.
2. THE RESPONSIBILITY AND SCOPE OF EACH SUB-TRADE RESTS SOLELY WITH THE CONTRACTOR. EXTRAS WILL NOT BE CONSIDERED BASED ON THE GROUNDS OF DIFFERENCE IN INTERPRETATION OF SPECIFICATIONS AND DRAWINGS AS TO WHICH TRADE INVOLVED SHALL PROVIDE CERTAIN SPECIALTIES OR MATERIALS.
3. IT IS A CONDITION OF THIS CONTRACT, THAT THE CONTRACTOR WILL, IN THE PERFORMANCE OF THE SERVICES FOR THE OWNER AS DESCRIBED IN THIS CONTRACT, PERFORM WORK IN ACCORDANCE WITH ONTARIO BUILDING CODE LATEST EDITION, THE ONTARIO HYDRO ELECTRICAL SAFETY CODE, THE SEWAGE SYSTEMS ENVIRONMENTAL PROTECTION ACT ONTARIO, WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS), O.REG 644/88, THE ONTARIO GAS UTILIZATION CODE, AND ANY OTHER CODE OF PROVINCIAL OR LOCAL APPLICATION, INCLUDING HOURS OF WORK, RATES OF PAY, JOB SAFETY AND ALL OTHER MATTERS IN WHICH THE MUNICIPAL OR FEDERAL AUTHORITIES HAVE JURISDICTION, PROVIDED THAT IN ANY CASE OF CONFLICT OR DISCREPANCY, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.
4. COMPLY WITH STANDARD FOR BUILDING CONSTRUCTION OPERATIONS, ISSUED BY THE ONTARIO FIRE MARSHALL'S OFFICE AND ALL APPLICABLE FIRE SAFETY CODES, LAWS, AND REGULATIONS.
5. IT IS INCUMBENT UPON THE CONTRACTOR TO INFORM ITSELF OF ANY SUCH LEGISLATION AND THE CONTRACTOR AGREES THAT IN THE EVENT OF NON-COMPLIANCE WITH THIS LEGISLATION, IT WILL INDEMNIFY AND HOLD HARMLESS THE OWNER FROM ANY COSTS AND DAMAGES RESULTING FROM SUCH NON-COMPLIANCE.
6. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH STANDARDS OF GOOD PRACTICE SUCH AS, BUT NOT LIMITED TO, SMACNA AND ASHRAE, MEET OR EXCEED REQUIREMENTS OF CONTRACT DOCUMENTS, SPECIFIED STANDARDS, CODES AND REFERENCED DOCUMENTS DESCRIBED IN THESE INSTRUCTIONS.

EXAMINATION OF WORK

1. THIS PROJECT INVOLVES RENOVATIONS TO EXISTING BUILDING, THEREFORE EXAMINE THE SITE AND LOCAL CONDITIONS TO DETERMINE THE DIFFICULTIES IN CARRYING OUT THE WORK INDICATED AND SPECIFIED PRIOR TO SUBMITTING FINAL PRICE.

INTENT

1. IT IS THE INTENT OF THIS SPECIFICATION AND DRAWINGS TO PROVIDE FOR A COMPLETE AND FULLY OPERATING SYSTEM IN COMPLETE ACCORD WITH ALL APPLICABLE CODES. THESE DOCUMENTS MAY NOT SHOW OR DESCRIBE EACH AND EVERY ITEM REQUIRED FOR THE COMPLETE INSTALLATION;THEREFORE, THE CONTRACTOR SHALL MAKE PROVISIONS FOR ALL LABOUR, MATERIAL AND EQUIPMENT DEEMED NECESSARY TO COMPLETE THE WORK INDICATED OR REASONABLY IMPLIED ON ALL DRAWINGS.

LIABILITY

1. THIS CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR LAYING OUT HIS WORK AND FOR ANY DAMAGE OR EXTRA COSTS CAUSED TO THE OWNER OR OTHER CONTRACTORS BY IMPROPER LOCATION OR CARRYING OUT OF HIS WORK. CARRY ALL NECESSARY INSURANCE COVERAGE.

PERMITS, CERTIFICATES, FEES, ETC.

1. GIVE ALL NOTICES, OBTAIN ALL PERMITS AND PAY ALL FEES SO THAT THE WORK SPECIFIED HEREIN MAY BE CARRIED OUT, EXCEPT FOR OCCUPANCY PERMIT WHICH WILL BE OBTAINED BY THE OWNER. AT THE ENGINEER'S REQUEST, FURNISH ANY CERTIFICATES AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH THE LAWS AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION.

GUARANTEE

1. THE CONTRACTOR, AS A CONDITION PRECEDENT TO FINAL PAYMENT AFTER COMPLETION OF THIS WORK, SHALL GIVE THE OWNER A WRITTEN GUARANTEE WARRANTING ALL APPARATUS FURNISHED UNDER THE CONTRACT TO REMAIN IN PERFECT SERVICEABLE CONDITION FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL PERFORMANCE OF HIS WORK AS ESTABLISHED BY THE PROJECT MANAGER AND ENGINEER.

DOCUMENTS REQUIRED

1. MAINTAIN AT JOB SITE ONE COPY OF EACH OF THE FOLLOWING DOCUMENTS:
   - .1 DRAWINGS.
   - .2 SPECIFICATIONS.
   - .3 ADDENDA.
   - .4 CHANGE ORDERS.
   - .5 OTHER MODIFICATIONS TO CONTRACT.
   - .6 FIELD TEST REPORTS.
   - .7 MANUFACTURERS' INSTALLATION AND APPLICATION INSTRUCTIONS.

EXTRA WORK

1. NO EXTRA WORK IS TO BE CARRIED OUT WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER OR THE OWNER'S REPRESENTATIVE.
2. CONTRACTOR SHALL PROVIDE QUOTATIONS FOR EXTRA WORK AS DIRECTED UNDER CONTEMPLATED CHANGE NOTICES (CCN'S) ISSUED IN WRITING BY THE ENGINEER OR THE OWNER'S REPRESENTATIVE.
3. CONTRACTOR TO SUBMIT ITEMIZED BREAKDOWN FOR BOTH MATERIAL AND LABOUR FOR ALL CONTEMPLATED CHANGE NOTICES. CONTRACTOR WILL USE THE CCN FORMS PROVIDED WITH THE TENDER DOCUMENTS. ALL COLUMNS TO BE USED WHERE APPLICABLE AND EXTENSIONS MADE.
4. AT THE START OF THE PROJECT THE CONTRACTOR SHALL SUBMIT FOR REVIEW THE HOURLY LABOUR RATE THAT IS PROPOSED FOR PRICING ON ALL EXTRA WORK THAT MAY ARISE ON THE PROJECT.
5. LABOUR RATE TO INCLUDE ONLY:
   - .1 PAY AND VACATION PAY.
   - .2 WELFARE AS PER UNION COLLECTIVE AGREEMENT (ACCEPTED ONLY IF CONTRACTOR IS A UNION CONTRACTOR).
   - .3 E.I. OR C.P.P. AS PER FEDERAL GOVERNMENT REQUIREMENTS.
   - .4 W.C.B. PAYMENTS AS PER ONTARIO REGULATIONS.
   - .5 INSURANCE AS PER REQUIREMENTS OR REGULATING BODY.
6. MATERIAL WILL BE PRICES AT THE CONTRACTOR'S COST. COPIES OF SUPPLIER'S INVOICES MAY BE REQUIRED TO SUBSTANTIATE MATERIAL COSTS WHEN REQUESTED.
7. THE AMOUNT OF MARK-UP ALLOWED FOR PROFIT AND OVERHEAD WILL BE IN ACCORDANCE WITH THOSE IN THE CONTRACT DOCUMENTS WITH THE TENDER. TO BE MODIFIED TO REFLECT THE ALLOWED PROFIT AND OVERHEAD STATED IN THE CONTRACT DOCUMENTS.
8. THE MARK-UPS APPLY TO THE NET WHERE A CHANGE INCLUDES BOTH EXTRAS AND CREDITS.
9. COST OF WORK BY A SUB-TRADE TO THE DIVISION 26 CONTRACTOR WILL BE DETERMINED BY THE SUB-TRADE USING THE SAME ITEMIZED BREAKDOWN FORMAT AND THE SAME CCN FORM.
10. A MARK-UP OF 5% WILL BE PERMITTED BY THE DIVISION 26 CONTRACTOR FOR SUB-TRADE WORK.

PROGRESS BILLING

1. CONTRACTOR TO SUBMIT ITEMIZED BREAKDOWN FOR THE PROJECT BASED ON THE CONTRACT PRICE AGREED TO FOR THIS PROJECT. CONTEMPLATED CHANGE NOTICES ONCE AUTHORIZED BY THE OWNER WILL BE ADDED TO THE MONTHLY PROGRESS CLAIM.
2. CLAIMS FOR PAYMENT SHALL BE SUBMITTED FOR REVIEW PRIOR TO THE END OF THE PAY PERIOD TO ALLOW FOR A TIMELY REVIEW BY THE ENGINEER.
3. CONTRACTOR SHALL SUBMIT PROGRESS CLAIMS FOR REVIEW AND PAYMENT AUTHORIZATION IN ACCORDANCE WITH THE TERMS OF THE CONTRACT.

AS-BUILT AND RECORD DRAWINGS

1. OWNERS REPRESENTATIVE WILL PROVIDE TWO(2) SETS OF DRAWINGS AT THE START OF CONSTRUCTION TO ALLOW THE CONTRACTOR TO KEEP AND MAINTAIN ACCURATE AS-BUILT DRAWINGS.
2. ONE SET SHALL BE KEPT ON SITE TO RECORD THE INFORMATION REFLECTING CHANGES AND INSTALLATION ON A DAILY BASIS DURING CONSTRUCTION. AT THE END OF THE PROJECT ALL INFORMATION FROM THE CONSTRUCTION SET SHALL BE TRANSFERRED ONTO THE CLEAN SET AND SENT TO THE ENGINEER FOR THE FINAL REVIEW.
3. FAILURE TO KEEP UP TO DATE AS-BUILT DRAWING MAY JEOPARDIZE MONTHLY PROGRESS PAYMENTS. AS-BUILT DRAWING WILL BE REVIEWED AT THE SAME TIME AS MONTLY PROGRESS PAYMENT INSPECTIONS ARE CONDUCTED.

SHOP DRAWINGS

1. BEFORE FABRICATION OR DELIVERY OF ANY MATERIALS OR EQUIPMENT, SUBMIT ELECTRONIC COPIES OF SHOP DRAWINGS AND DATA SHEETS COVERING ALL ITEMS OF EQUIPMENT FURNISHED AND INTENDED FOR INSTALLATION UNDER THIS CONTRACT FOR APPROVAL BY THE ENGINEER.

TEMPORARY AND TRIAL USAGE

1. TEMPORARY OR TRIAL USAGE BY THE OWNER OF ANY MACHINERY, APPARATUS, EQUIPMENT OR ANY OTHER WORK OR MATERIALS SUPPLIED UNDER THE CONTRACT BEFORE FINAL WRITTEN ACCEPTANCE BY THE ENGINEER IS NOT TO BE CONSTRUED AS EVIDENCE OF THE ACCEPTANCE OF SAME BY THE OWNER. THE OWNER SHALL HAVE THE PRIVILEGE OF SUCH TEMPORARY AND TRIAL USAGE AS SOON AS THIS CONTRACTOR CLAIMS THAT SAID WORK IS COMPLETED. ANY DAMAGE CAUSED BY DEFECTIVE MATERIAL OR WORKMANSHIP THROUGH TEMPORARY OR TRIAL USAGE BY THE OWNER SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.
2. ANY PERMANENT EQUIPMENT USED TEMPORARILY FOR TEMPORARY HEAT OR OTHERWISE WILL BE COMPLETELY REPAIRED, REPLACED, AND CLEANED TO THE FULL SATISFACTION OF THE OWNER.

EXPLOSIVES ACTUATED FASTENING DEVICES

1. DO NOT EMPLOY POWER GUNS USING EXPLOSIVES, UNLESS EXPRESSLY PERMITTED BY THE PROJECT MANAGER; COMPLY WITH REQUIREMENTS OF CSA Z-166 (SAFETY CODE FOR EXPLOSIVE ACTUATED TOOLS).

STORAGE

1. THE SECURITY OF THE CONTRACTOR'S EQUIPMENT AND MATERIALS SHALL BE HIS RESPONSIBILITY. CONTRACTOR SHALL LIAISE WITH THE BUILDING OPERATOR AS NECESSARY.

SIGNS

1. PROVIDE WARNING SIGNS IN LOCATIONS WHERE RENOVATIONS AND ALTERATION WORK IS ADJACENT TO AREAS AFFECTING THE PUBLIC.

EQUIPMENT AND SITE CLEANLINESS

1. DUCTS AND EQUIPMENT SHALL BE THOROUGHLY CLEANED OF DIRT, CUTTINGS AND OTHER FOREIGN SUBSTANCES. DISCONNECT, CLEAN AND RECONNECT WHENEVER NECESSARY FOR THE PURPOSE OF LOCATING AND REMOVING OBSTRUCTIONS. REPAIR WORK DAMAGED IN THE COURSE OF REMOVING OBSTRUCTIONS.
2. THE CONTRACTOR SHALL AT ALL TIMES KEEP THE PREMISES FREE FROM THE ACCUMULATION OF WASTE MATERIAL TO THE SATISFACTION OF THE PROJECT MANAGER. PLACE DUST PROTECTION IN THE FORM OF COVER SHEETS OVER EQUIPMENT AND FURNITURE TO ENSURE NO DUST INFILTRATION. CLEANING TO BE COMPLETED AT THE END OF EACH SHIFT TO THE SATISFACTION OF THE PROJECT MANAGER.

OPERATING AND MAINTENANCE DATA

1. FURNISH THREE (3) SETS OF OPERATING AND MAINTENANCE DATA FOR ALL NEW EQUIPMENT AND SYSTEMS. DATA SHALL BE ASSEMBLED IN BOOKLET FORM WITH HARD COVER AND INDEX. IDENTIFY FRONT COVER WITH NAME AND LOCATION OF THE PROJECT, CONSULTING ENGINEER AND CONTRACTOR. SUBMIT ONE COPY TO THE ENGINEER FOR APPROVAL.

MATERIALS

1. MATERIALS AND EQUIPMENT INSTALLED SHALL BE NEW, FULL WEIGHT AND OF BEST QUALITY SPECIFIED. USE SAME BRAND OF MANUFACTURER FOR EACH SPECIFIC APPLICATION. STATICALLY AND DYNAMICALLY BALANCE ROTATING EQUIPMENT FOR MINIMUM VIBRATION AND LOW OPERATING NOISE LEVEL. REPLACE MATERIAL OR WORKMANSHIP BELOW SPECIFIED QUALITY AND RELOCATE WORK WRONGLY PLACED TO THE SATISFACTION OF THE ENGINEER.

APPROVALS

1. THE PRICE SUBMITTED FOR THIS CONTRACT SHALL BE BASED ON THE USE OF MATERIALS AND EQUIPMENT AS SPECIFIED. IF THIS CONTRACTOR WISHES TO QUOTE ON EQUIVALENT MATERIALS AND EQUIPMENT, HE MUST QUOTE ON PRODUCTS APPROVED BY THE ENGINEER, IN WRITING, AS AN EQUIVALENT TO THE PRODUCT SPECIFIED. THIS CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY ADDITIONAL WORK OR MATERIALS REQUIRED BY ALL OTHER CONTRACTORS TO ACCOMMODATE APPROVED EQUIVALENT MATERIALS OR EQUIPMENT. EXTRAS WILL NOT BE APPROVED TO COVER SUCH WORK.

CUTTING AND PATCHING

1. THE CONTRACTOR IS RESPONSIBLE FOR THIS WORK AND SHALL CO-ORDINATE LOCATIONS FOR ALL HOLES FOR PIPES, DUCTS THROUGH FLOORS AND ROOF, ETC., AND PROVIDE SLEEVES REQUIRED TO EXECUTE THE INSTALLATION. X-RAY FLOORS AND STRUCTURAL WALLS BEFORE CUTTING TO LOCATE EXISTING REBAR AND CONDUITS, AND MUST OBTAIN PROJECT MANAGER'S APPROVAL FOR PROPOSED CUTTING BEFORE PROCEEDING. PROVIDE ULC APPROVED FIRE STOPPING SYSTEM FOR ALL PENETRATIONS THROUGH RATED ASSEMBLIES.

SHUTDOWNS

1. ANY SHUTDOWN THAT MAY BE REQUIRED OF EXISTING EQUIPMENT MUST HAVE PRIOR APPROVAL FROM THE PROJECT MANAGER AND ENGINEER. PROVIDE A MINIMUM OF 48 HOURS NOTICE.

MATERIALS REMOVED

1. ALL MATERIALS REMOVED DURING DEMOLITION SHALL BECOME THE PROPERTY OF THE OWNER AND STOCKPILED AS DIRECTED ON SITE. MATERIAL REJECTED BY THE OWNER SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

ELECTRICAL SPECIFICATIONS

MINIMUM STANDARDS

1. ELECTRICAL INSTALLATION: TO CSA C22.1-LATEST EDITION
2. LIGHTING FIXTURES: TO CSA C22.2 No. 9-LATEST EDITION
3. FIXTURE BALLAST: TO CSA C22.2 No. 74-LATEST EDITION
4. ONTARIO BUILDING CODE-LATEST EDITION
5. ONTARIO ELECTRICAL SAFETY CODE-LATEST EDITION.

MOUNTING HEIGHTS

1. INSTALL ELECTRICAL EQUIPMENT AT FOLLOWING HEIGHTS UNLESS INDICATED OTHERWISE:
   - .1 LOCAL SWITCHES: 1100mm
   - .2 WALL RECEPTACLES:
     - .1 GENERAL: 400mm
     - .2 ABOVE COUNTERS: 175mm
   - .3 PANEL BOARDS: 1800mm FROM TOP
   - .4 TELECOMMUNICATION OUTLETS: 400mm

DEMOLITION

1. CONTRACTOR TO CO-ORDINATE WITH OTHER TRADES TO ENSURE THAT ELECTRICAL EQUIPMENT AND FEEDERS ASSOCIATED WITH MECHANICAL EQUIPMENT AND/OR IS LOCATED IN WALLS BEING DEMOLISHED IS ALSO BEING REMOVED.
2. EXISTING EQUIPMENT SHOWN AS RELOCATED TO BE CLEANED AND MADE OPERATIONAL BY THIS CONTRACTOR PRIOR TO ITS RELOCATION.
3. CONTRACTOR TO REPLACE BROKEN AND DISCOLOURED LIGHT FIXTURE ACRYLIC LENSES AS INDICATED BY THE ENGINEER.

EQUIPMENT SHUT-DOWN

1. ANY SHUTDOWN THAT MAY BE REQUIRED OF EXISTING EQUIPMENT, MUST HAVE PRIOR APPROVAL FROM THE ENGINEER.

IDENTIFICATION

1. IDENTIFY WITH LAMACOID NAMEPLATES ALL ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND/OR MENTIONED IN THE SPECIFICATION SUCH AS MOTORS, SWITCHES, PANEL BOARDS, TRANSFORMERS, CONTROLS, AND SPECIAL RECEPTACLES, REGARDLESS OF WHETHER OR NOT THE ELECTRICAL EQUIPMENT WAS FURNISHED UNDER THIS SECTION OF THE SPECIFICATION. IDENTIFICATION REVIEWED BY ENGINEER.
2. UNLESS OTHERWISE SPECIFIED, NAMEPLATES SHALL BE RIGID LAMACOID, MINIMUM 1.5mm THICK WITH BLACK LETTERS ENGRAVED ON A WHITE BACKGROUND. NAMEPLATES TO BE NEATLY PLACED, AND SQUARE TO SURROUNDING BUILDING OR EQUIPMENT LINES, AND FASTENED IN PLACE WITH MECHANICAL FASTENERS (SCREWS OR POP RIVETS) AS REVIEWED BY ENGINEER.
3. PROVIDE NEATLY TYPED UPDATED CIRCUIT DIRECTORIES IN A PLASTIC HOLDER ON THE INSIDE DOOR OF NEW PANEL BOARDS, WITH COPY IN MANUAL.
4. IDENTIFY ALL PULL AND JUNCTION BOXES, WITH P-TOUCH LABEL IDENTIFICATION, INDICATING SOURCE PANEL AND CIRCUIT NUMBERS.
5. IDENTIFY ALL RECEPTACLES AND SWITCHES WITH P-TOUCH LABELS, BLACK LETTERING ON TRANSPARENT TAPE, INDICATING SOURCE PANEL AND CIRCUIT NUMBER. LABELS TO BE LOCATED ON FRONT OF COVERPLATE.

LOCATION OF OUTLETS

1. LOCATE OUTLETS AS SHOWN ON DRAWINGS. REFER TO INTERIOR DESIGNER DRAWINGS FOR LOCATION OF OUTLETS WHICH ARE DIMENSIONED OR OTHERWISE LOCATED.
2. DO NOT INSTALL OUTLETS BACK-TO-BACK IN WALL; ALLOW MINIMUM 150mm HORIZONTAL CLEARANCE BETWEEN BOXES, AND LOCATE IN SEPARATE STUD CAVITIES WHEREVER POSSIBLE.
3. CHANGE LOCATION OF OUTLETS AT NO EXTRA COST OR CREDIT, PROVIDING DISTANCE DOES NOT EXCEED 3 METERS AND INFORMATION IS GIVEN BEFORE INSTALLATION.

ELECTRIC MOTORS AND WIRING

1. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO SUPPLY ALL MOTOR STARTERS, EXCEPT ON PRE-WIRED PACKAGED EQUIPMENT, DISCONNECT SWITCHES FOR ALL MOTORS FOR THE PROJECT, AND ALL WIRING TO STARTERS AND MOTORS EXCEPT WHERE SHOWN OR NOTED OTHERSWISE. EQUIPMENT REQUIRING CONNECTION TO AN ELECTRICAL POWER SOURCE SHALL BE CSA OR HYDRO APPROVED FOR USE AT LOCATION OF INSTALLATION. THE MECHANICAL CONTRACTOR SHALL SUPPLY AND INSTALL ALL LOW VOLTAGE CONTROL WIRING WITHIN "EMT" CONDUIT FOR A COMPLETE AND OPERATING INSTALLATION UNLESS OTHERWISE SPECIFIED.

SCOPE OF WORK

1. DISCONNECTION AND REMOVALS OF ALL EXISTING ELECTRICAL EQUIPMENT WHICH BECOMES UNUSED OR IS PRESENTLY UNUSED.
2. MODIFICATION AND ADDITION TO NORMAL AND EMERGENCY LIGHTING SYSTEMS.
3. MODIFICATION AND ADDITION TO RECEPTACLES AND POWER DISTRIBUTION SYSTEM.
4. MODIFICATION AND ADDITION TO FIRE ALARM SYSTEM.
5. MODIFICATION AND ADDITION TO RACEWAY SYSTEM FOR TELECOMMUNICATION SYSTEM INCLUDING CABLE TV SYSTEM.
6. MODIFICATION AND ADDITION TO CONNECTION MECHANICAL EQUIPMENT.

WIRING

1. ALL WIRING TO BE COPPER, R90 XLPE, STRANDED WITH 'BRADY LABEL' MAKING SLEEVES AT EACH END, UNLESS OTHERWISE NOTED ON DRAWINGS. WIRING TO BE COLOUR CODED AS PER CODE. MINIMUM WIRE SIZE TO BE No.12 AWG FOR POWER AND LIGHTING.
2. LEAVE ADEQUATE LENGTHS OF WIRE IN JUNCTION BOXES FOR CONNECTIONS TO EQUIPMENT.
3. 'Bx' WIRING IN WALLS ONLY.
4. RUN A GREEN INSULATED GROUND WIRE SIZED AS PER CODE IN ALL CONDUIT RUNS. DO NOT RELY ON CONDUIT AS GROUND.

CONDUITS

1. EACH LENGTH OF CONDUIT TO BE NEW AND BEAR CSA STAMP OF APPROVAL.
2. ALL CONDUITS RUN ABOVE THE SUSPENDED CEILING TO BE 'EMT'.
3. PROVIDE NYLON PULLROPES IN ALL EMPTY CONDUIT RUNS.
4. MODULAR TO MATCH EXISTING: NOCOM MODULAR WIRING CABLES SYSTEM FOR CONNECTION OF FLUORESCENT TROFFER LIGHT FIXTURES, CONSISTENT WITH BASE BUILDING
5. SMART-CONNECT CABLES: START, JOINER, DROP, SWITCH DROP CABLES AS REQUIRED.
6. CONNECTORS: MOULDED PVC RECEPTACLES AND ADAPTERS.
7. REMOVE AND RECONNECT AS REQUIRED TO OBTAIN LIGHTING CIRCUITS INDICATED AND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
8. TERMINATE STARTER AND DROP CABLES AT LIGHT SWITCHES AND LIGHT FIXTURES NOT OUTFITTED WITH NOCOM RECEPTACLES.
9. TURN OVER UNUSED CABLES TO BUILDING OWNER.

OUTLET BOXES

1. ELECTRO-GALVANIZED STEEL, COATING EQUAL TO THAT TO THE CONDUIT.
2. MINIMUM 37 mm DEEP 100 mm SQUARE OR OCTAGONAL AS REQUIRED.
3. EQUIP WITH PLASTER RINGS DEEP ENOUGH FOR WALL FINISH MATERIAL TO FIT OVER THE BOX AND WITHIN 6 mm OF THE COVER OPENING.

PULL BOXES

1. PROVIDE PULLBOXES WHERE RUNS EXCEED 30 METERS IN LENGTH AND HAVE MORE THAN 2-90° BENDS.

GENERATOR

1. PROVIDE NEW GENERAC SG250 14.2L NATURAL GAS GENSET
   - C/W HEATER, LIGHTING, RECEPTACLE ETC.
   - -PROVISION FOR LOAD BANK TESTING VIA SECOND 100% RATED SHUNT TRIP BREAKER.
   - -C/W PANELS AND ASSOCIATED HARDWARE.
   - -C/W ALL CONTROLS WIRING, CALL TO START
   - -GENERATOR TO BE SUPPLIED BY NATURAL GAS
   - -PROVIDE SHORE POWER AS PER SHOP DRAWINGS (BATTERY CHARGER, LIGHTING, ETC)
   - -C/W LEVEL 3 SOUND ENCLOSURE. EXTERIOR MOUNTED.
   - PROVIDE FOUR (4) POLE ATS AS SHOWN (SWITCHED NEUTRAL)

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   - -PROVIDE SHORE POWER AS PER SHOP DRAWINGS (BATTERY CHARGER, LIGHTING, ETC)
   - -C/W LEVEL 3 SOUND ENCLOSURE. EXTERIOR MOUNTED.
   - PROVIDE FOUR (4) POLE ATS AS SHOWN (SWITCHED NEUTRAL)

WIRING DEVICES

1. RECEPTACLES:
   - .1 DUPLEX RECEPTACLES, CSA TYPE 5-15R 125 VOLT, 15A 'U' GROUND WITH FOLLOWING WITH THE FOLLOWING FEATURES:
   - .2 RECEPTACLES OF SPECIFICATION GRADE.
   - .3 RECEPTACLES OF ONE MANUFACTURER THROUGHOUT PROJECT.
   - .4 IUNBREAKABLE NYLON FACE
   - .5 SUITABLE FOR No. 10 AWG FOR BACK AND SIDE WIRING. SIDE WIRING.
   - .6 BREAK-OFF LINKS FOR USE AS SPLIT RECEPTACLES.
   - .7 EIGHT (8) BACK WIRED ENTRANCES, FOUR(4) SIDE WIRING SCREWS.
   - .8 DOUBLE WIPE CONTACTS AND RIVETED GROUNDING CONTACTS.
   - .9 COLOUR: REFER TO ARCHITECTURAL FINISHES
   - .10 RECEPTACLE TO BE DECORA TYPE.
2. SWITCHES:
   - .1 TO CSA C22.2 NO. 111-M1986 (R1992)
   - .2 15A, 120 VOLT SINGLE POLE, 3 WAY SWITCHES, AS INDICATED.
   - .3 MANUALLY OPERATED GENERAL PURPOSE AC SWITCHES WITH THE FOLLOWING FEATURES:
     - .1 TERMINAL HOLES APPROVED FOR NO. 10 AWG WIRE.
     - .2 SILVER ALLOY CONTACTS.
     - .3 UREA OR MELAMINE MOULDING FOR PARTS SUBJECT TO CARBON TRACKING
     - .4 SUITABLE FOR BACK AND SIDE WIRING.
     - .5 IVORY TOGGLE.
   - .4 TOGGLE OPERATED LOCKING FULLY RATED FOR TUNGSTEN FILAMENT AND FLUORESCENT LAMPS, AND UP TO 80% OF RATED CAPACITY OF MOTOR LOADS.
   - .5 SWITCHES OF ONE MANUFACTURER THROUGH OUT.
   - .6 SWITCHES TO BE DECORA TYPE.
3. ISOLATED GROUND RECEPTACLES:
   - .1 DUPLEX RECEPTACLES, CSA TYPE 5-15R 125 VOLT, 15A, ISOLATED GROUND, WITH THE FOLLOWING FEATURES:
     - .1 ORANGE UREA MOULDED HOUSING.
     - .2 SUITABLE FOR No. 10 AWG FOR BACK AND SIDE WIRING.
     - .3 BREAK-OFF LINKS FOR USE AS SPLIT RECEPTACLES.
     - .4 EIGHT BACK WIRED ENTRANCES, FOUR(4) SIDE WIRING SCREWS.
     - .5 DOUBLE WIPE CONTACTS AND RIVETTED GROUNDING CONTACTS.
   - .2 RECEPTACLES OF SPECIFICATION GRADE
   - .3 RUN ADDITIONAL GREEN ISOLATED GROUND WIRE PER CIRCUIT FROM PANEL TO EACH WIRING

MODULAR WIRING

1. SWITCH ADAPTERS AND MULTI-TAP ADAPTERS BY SYSTEM CONNECTORS MODULAR WIRING SYSTEM MANUFACTURER
2. MANUFACTURER: NOCOM.

PANEL BOARDS

1. TO CSA C22.2 No. 29-M1989
2. TO CSA C22.2 No. 5.1-M91
3. AMPERAGE AS INDICATED, VOLTAGE AS INIDCATED, 3 PHASE, 4 WIRE PANEL BOARD RATED 10,000A (SYMMETRICAL) INTERRUPTING CAPACITY.
4. COPPER BUS WITH COPPER NEUTRAL OF SAME AMPERE RATING AS MAINS.
5. MAINS: SUITABLE FOR BOLT ON BREAKERS
6. TRIM AND DOOR FINISH: BAKED GREY ENAMEL WITH TWO(2) KEYS FOR DOOR LOCK
7. PANEL BOARD MAINS, NUMBER OF CIRCUITS AND NUMBER OF BRANCH BREAKERS AS INDICATED.

CIRCUIT BREAKERS

1. PROVIDE CIRCUIT BREAKERS IN PANEL BOARD AS INDICATED.
2. BRANCH CIRCUIT BREAKERS QUICK MAKE, QUICK BREAK, AMBIENT COMPENSATED, COMMON TRIP ON ALL MULTIPOLE BREAKERS, TRIP INDICATING CLEARLY SHOWN BY BREAKER HANDLE TAKING POSITION MIDWAY BETWEEN ON AND OFF.
3. BREAKER INTERRUPTING CAPACITY:
   - .1 250V PANELBOARDS AND CDP PANELBOARDS: 10Ka SYMMETRICAL
   - .2 600V CDP PANELBOARDS: 25Ka SYMMETRICAL

TELEPHONE, DATA AND CABLEVISION

1. COMPLETE EMPTY RACEWAYS SYSTEM CONSISTS OF OUTLET BOXES, CONDUITS, FISH WIRES.
2. CONDUITS:
   - .1 21mm 'EMT' RISERS BETWEEN DOUBLE GANGED DEVICES BOXES AND CEILING PLENUM BY DIVISION 26. EXACT LOCATION TO BE DETERMINED ON SITE.
3. FISH WIRE: POLYPROPYLENE TYPE.
4. COVERPLATES INSTALLED BY OTHERS.

COVERPLATES

1. POLISHED STAINLESS STEEL COVER PLATES, THICKNESS 1.0mm FOR WIRING DEVICES MOUNTED IN A FLUSH MOUNTED BOX.
2. INSTALL COVER PLATES ONLY AFTER PAINTING AND OTHER WORK IS FINISHED.
3. INSTALL SUITABLE COMMON COVER PLATES WHERE WIRING DEVICES ARE GROUPED.
4. COVER PLATES FOR WIRING DEVICES. COMMUNICATION OUTLET COVERLETS PROVIDED BY SYSTEM CONTRACTOR.
5. COVER PLATES FROM ONE MANUFACTURER THROUGHOUT PROJECT.

DISCONNECT SWITCH

1. DISCONNECT SWITCH TO BE RATED HORSEPOWER AND BE EQUIPPED WITH PROVISIONS FOR THREE(3) LOCKING DEVICES AND TO BE CEMA 1 UNLESS OTHERWISE INDICATED, AMPERAGE AS INDICATED ON DRAWINGS AND MOUNTED 1500mm ABOVE FINISHED FLOOR TO CENTRELINE OF HANDLE.

FUSES

1. FUSE TYPE REFERENCE J1, HAS BEEN ADOPTED FOR USE IN THIS SPECIFICATION.
2. FUSES: PRODUCT OF ONE MANUFACTURER.
3. HRCI-J FUSES.
4. TYPE J1, TIME DELAY, CAPABLE OF CARRYING 500% OF ITS RATED CURRENT FOR 10 SECOND MINIMUM.
5. INSTALL FUSES IN MOUNTING DEVICES IMMEDIATELY BEFORE ENERGIZING CIRCUIT.

TESTING

1. PRIOR TO ENERGIZING THE VARIOUS PORTIONS OF THE ELECTRICAL SYSTEMS, PERFORM MEGGER TESTS ON ALL FEEDERS AND BRANCH CIRCUITS. ALSO PERFORM RESISTANCE-TO GROUND OHM TESTS FOR GROUNDING CONDUCTORS IN ELECTRICAL ROOMS AFFECTED BY THIS RENOVATION. RESULTS SHALL COMPLY WITH THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE (2009) AND THE LOCAL INSPECTION AUTHORITY. SUBMIT RESULTS TO THE PROJECT MANAGER.
2. UPON COMPLETION OF THE PROJECT AND IMMEDIATELY PRIOR TO FINAL INSPECTION, CHECK THE LOAD BALANCE OF ALL AFFECTED PANELS, ETC. THESE TESTS SHALL BE CARRIED OUT BY TURNING ON ALL POSSIBLE LOADS DERIVED FROM PANEL(S) AND CHECKING LOAD CURRENT BALANCE. IF LOAD UNBALANCE EXCEEDS 15%, RECONNECT CIRCUITS TO BALANCE THE LOAD. SUBMIT FINAL READINGS TO PROJECT MANAGER.

COLOUR CODING

1. ALL EQUIPMENT AND COMPONENTS, FIELD WIRED OR FACTORY ASSEMBLED, SHALL BE IDENTIFIED.
2. ALL CONDUCTORS SHALL BE IDENTIFIABLE BY COLOURED INSULATION AND MARKERS AT EVERY TERMINAL AND ACCESSIBLE POINT THROUGHOUT ITS ENTIRE RUN, AS FOLLOWS:
   - .1 120/240 VOLT, 1 PHASE, 3 WIRE - RED, BLACK AND BLUE
   - .2 NEUTRAL CONDUCTOR - WHITE
   - .3 GROUND CONDUCTOR - GREEN.

SEISMIC RESTRAINT SYSTEM (SRS)

1. PROVIDE DESIGN, SUPPLY AND INSTALLATION OF COMPLETE SRS FOR ALL SYSTEMS, EQUIPMENT SPECIFIED FOR INSTALLATION ON THIS PROJECT AS PER ONTARIO BUILDING CODE LATEST EDITION AND NFPA13. THE INCLUDES ELECTRICAL LIGHT FIXTURES, TRANSFORMERS, MCC'S, UPS DIESEL GENERATORS, FIRE PROTECTION, CONDUIT, COMMUNICATIONS, ELECTRICAL EQUIPMENT AND SYSTEMS, BOTH VIBRATION ISOLATED AND STATICALLY SUPPORTED.
2. DESIGN TO BE BY PROFES

MECHANICAL LEGEND

SYMBOL	DESCRIPTION
	LINEAR DIFFUSER
	LIGHT TROFFER
	SQUARE DIFFUSER
	RETURN AIR GRILLE
T	THERMOSTAT
	SUPPLY DUCT
	ACOUSTIC INSULATION
	FLEXIBLE DUCT
	CAP DUCT OR PIPE AS INDICATED
	CONICAL TAKE-OFF C/W BALANCING DAMPER (BD)
	CONICAL TAKE-OFF (CAPPED, NO BD, W/ BD)
	ROUND DUCT TO ROUND DUCT TAKE-OFF
	VERTICAL ROUND DUCT TAKE-OFF (W/BD, W/O BD)
	VARIABLE AIR VOLUME (VAV) TERMINAL DEVICE (W/O ATTENUATOR, W/ ATTENUATOR)
	FAN-POWERED VAV TERMINAL DEVICE (W/O ATTENUATOR, W/ ATTENUATOR)
CO	CLEAN OUT
VTR	PLUMBING VENT THROUGH ROOF
	TRANSFER DUCT
FD FD	FIRE DAMPER
	SPRINKLER HEAD (UPRIGHT, PENDANT, WALL MOUNTED
	FIRE HOSE CABINET
FD	FLOOR DRAIN
	FUNNEL DRAIN
HD	HUB DRAIN
— - —	D.C.W. PIPING
— -- —	D.H.W. PIPING
— + —	SANITARY UNDERGROUND
— —	SANITARY UNDER FLOOR
— V —	SANITARY VENT PIPING
	GATE VALVE
	BALL VALVE
	SOLENOID VALVE
	PUMP
	SUCTION DIFFUSER
	CHECK VALVE
	TEMPERATURE SENSOR
	TEMPERATURE GAUGE
	PRESSURE RELIEF VALVE
	AIR VENT
	GAS VALVE
	GAS SHUT OFF VALVE
	ELECTRIC CONVECTOR
#	DRAWING NOTE

NOT ALL SYMBOLS SHOWN IN LEGEND ARE NECESSARILY USED IN THE DRAWING SET.

GENERAL NOTES:

1. ALL MECHANICAL EQUIPMENT SHOWN IN THIN SOLID LINES IS EXISTING TO REMAIN.
2. ALL MECHANICAL EQUIPMENT SHOWN IN THICK SOLID LINES IS NEW TO BE PROVIDED UNDER THIS CONTRACT.
3. ALL MECHANICAL EQUIPMENT SHOWN IN DASHED LINES WITH LETTER 'R' IS EXISTING TO BE RELOCATED AS SHOWN.
4. ALL MECHANICAL EQUIPMENT SHOWN IN DASHED LINES WITH LETTER 'X' IS EXISTING TO BE REMOVED BACK TO SOURCE.
5. THIS DRAWING WAS BASED ON PARTIAL SITE REVIEW. ALL EQUIPMENT, DUCTS, PIPING AND ALL ACCESSORIES' SIZES, LOCATIONS AND DETAILS OF INSTALLATIONS TO BE CONFIRMED BY MECHANICAL CONTRACTOR ON SITE.
6. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ROOF, WALL AND BUILDING ENVELOPE CUTTING, PATCHING AND REPAIRS, AS REQUIRED FOR EXECUTION OF WORK INCLUDED IN THIS CONTRACT.
7. PROVIDE ALL NEW EQUIPMENT, CONTROLS, DUCTWORK, PIPING, VALVES AND ACCESSORIES AS SHOWN AND NOTED ON DETAILS AND AS REQUIRED FOR COMPLETE FUNCTIONING SYSTEMS.
8. PROVIDE ADDITIONAL DUCTWORK, PIPING, FITTINGS AND OFFSETS WHERE REQUIRED TO SUIT EXISTING CONDITIONS AND TO AVOID COLLISIONS WITH EXISTING SYSTEMS AND BUILDING STRUCTURE.
9. NOT ALL MECHANICAL ELEMENTS SHOWN, AFFECTED AREAS ONLY.
10. SEISMIC RESTRAINT SYSTEM (SRS) – PROVIDE DESIGN, SUPPLY AND INSTALLATION OF COMPLETE SRS FOR ALL SYSTEMS, EQUIPMENT SPECIFIED FOR INSTALLATION ON THIS PROJECT AS PER ONTARIO BUILDING CODE LATEST EDITION.
11. HATCHED AREA INDICATED ON FLOOR PLANS NOT IN CONTRACT.

DRAWING LIST

DRAWING NUMBER	DESCRIPTION
M-1	MECHANICAL LEGEND, GENERAL NOTES, AND DRAWING LIST
M-2	MECHANICAL – PLUMBING AND FIRE EXTINGUIHSERS
M-3	MECHANICAL – HVAC SYSTEMS
M-4	MECHANICAL SPECIFICATIONS

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client:
BELL+ASSOCIATES ARCHITECTURE
186 PEMBROKE STREET EAST
PEMBROKE, ON K8A 3J7

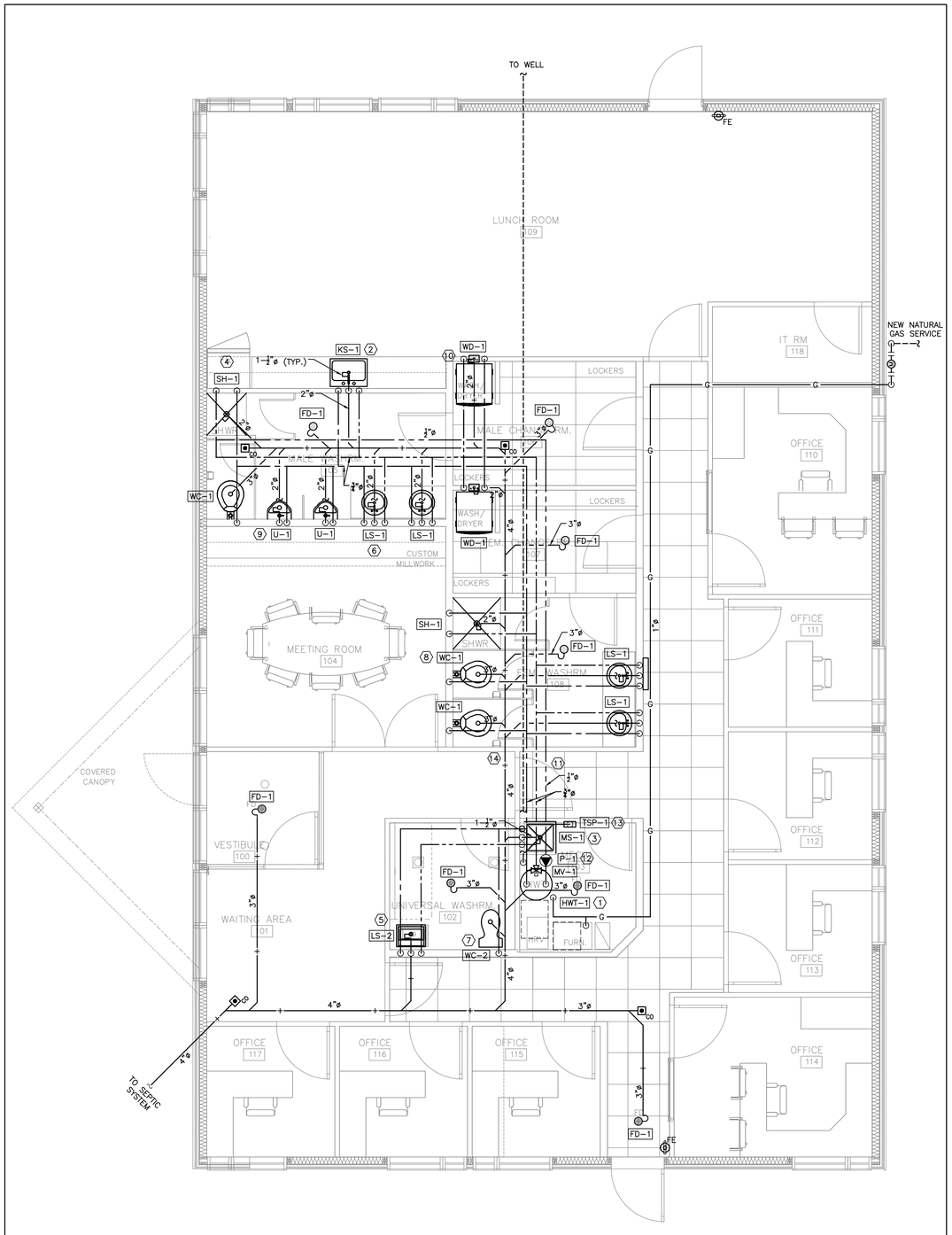
project:
MILLHAVEN GARAGE ADMINISTRATION BUILDING
240 COUNTY ROAD 4,
BATH, ONTARIO K0H 1G0

drawing title:
MECHANICAL LEGEND, GENERAL NOTES, & DRAWING LIST

scale:	AS NOTED	drawn by:	K.P.
designed by:	K.P.	reviewed by:	P.P.
approved by:	P.P.	date:	MAY 2026

project no.: 420-2301-03

drawing no.: M-1
of 4



1 M-2 GROUND FLOOR PLAN – PLUMBING & FIRE EXTINGUISHERS

1/4" : 1'0"

DRAWING NOTES:

1. PROVIDE AND INSTALL NEW GAS-FIRED HOT WATER TANK (HWT-1). PROVIDE COMPLETE WITH THERMOSTATIC MIXING VALVE AND ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION. INSTALL AS PER MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS. COORDINATE INSTALLATION WITH ELECTRICAL DIVISION.
2. PROVIDE AND INSTALL NEW KITCHENETTE SINK (KS-1) WITH FAUCET AS SHOWN. REFER TO ASSOCIATED ARCHITECTURAL DRAWING SET FOR EXACT INSTALLATION LOCATION. PROVIDE AND INSTALL DCW, DHW, AND SANITARY DRAIN CONNECTIONS. PROVIDE ALL PIPING, FITTINGS, VALVES, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
3. PROVIDE AND INSTALL NEW MOP SINK (MS-1) WITH FAUCET AS SHOWN. REFER TO ASSOCIATED ARCHITECTURAL DRAWING SET FOR EXACT INSTALLATION LOCATION. PROVIDE AND INSTALL DCW, DHW, AND SANITARY DRAIN CONNECTIONS. PROVIDE ALL PIPING, FITTINGS, VALVES, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
4. TYPICAL: PROVIDE AND INSTALL NEW SHOWER KIT (SH-1) WITH FAUCET AS SHOWN. REFER TO ASSOCIATED ARCHITECTURAL DRAWING SET FOR EXACT INSTALLATION LOCATION. PROVIDE AND INSTALL DCW, DHW, AND SANITARY DRAIN CONNECTIONS. PROVIDE ALL PIPING, FITTINGS, VALVES, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
5. PROVIDE AND INSTALL NEW BARRIER FREE LAVATORY SINK (LS-2) WITH FAUCET AS SHOWN. REFER TO ASSOCIATED ARCHITECTURAL DRAWING SET FOR EXACT INSTALLATION LOCATION. PROVIDE AND INSTALL DCW, DHW, AND SANITARY DRAIN CONNECTIONS. PROVIDE ALL PIPING, FITTINGS, VALVES, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION. EXPOSED PIPE WORK BENEATH SINK FIXTURE TO BE COVERED OR THERMALLY-INSULATED AND JACKETED.
6. TYPICAL: PROVIDE AND INSTALL NEW LAVATORY SINK (LS-1) WITH FAUCET AS SHOWN. REFER TO ASSOCIATED ARCHITECTURAL DRAWING SET FOR EXACT INSTALLATION LOCATION. PROVIDE AND INSTALL DCW, DHW, AND SANITARY DRAIN CONNECTIONS. PROVIDE ALL PIPING, FITTINGS, VALVES, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
7. PROVIDE AND INSTALL NEW BARRIER FREE WATER CLOSET (WC-2) AS SHOWN. REFER TO ASSOCIATED ARCHITECTURAL DRAWING SET FOR EXACT INSTALLATION LOCATION. PROVIDE AND INSTALL DCW, AND SANITARY DRAIN CONNECTIONS. PROVIDE ALL PIPING, FITTINGS, VALVES, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
8. TYPICAL: PROVIDE AND INSTALL NEW WATER CLOSET (WC-1) AS SHOWN. REFER TO ASSOCIATED ARCHITECTURAL DRAWING SET FOR EXACT INSTALLATION LOCATION. PROVIDE AND INSTALL DCW, AND SANITARY DRAIN CONNECTIONS. PROVIDE ALL PIPING, FITTINGS, VALVES, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
9. PROVIDE AND INSTALL NEW URINAL (U-1) AS SHOWN. REFER TO ASSOCIATED ARCHITECTURAL DRAWING SET FOR EXACT INSTALLATION LOCATION. PROVIDE AND INSTALL DCW, AND SANITARY DRAIN CONNECTIONS. PROVIDE ALL PIPING, FITTINGS, VALVES, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
10. PROVIDE AND INSTALL DCW, DHW AND SANITARY DRAIN CONNECTIONS TO CLIENT PROVIDED WASHING MACHINE. PROVIDE ALL PIPING, FITTINGS, VALVES, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
11. TYPICAL: PROVIDE NEW DOMESTIC HOT AND COLD WATER DISTRIBUTION, AND HOT WATER RETURN PIPEWORK AS SHOWN, SIZE INDICATED, IN CEILING SPACE. PROVIDE COMPLETE WITH ALL VALVES, FITTINGS, SUPPORTS, THERMAL INSULATION/JACKETING, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION. ALL PIPING TO BE ¾" UNLESS OTHERWISE SPECIFIED.
12. PROVIDE AND INSTALL NEW DOMESTIC HOT WATER RECIRCULATION PUMP (P-1). PROVIDE COMPLETE WITH ALL ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION. COORDINATE INSTALLATION WITH ELECTRICAL DIVISION.
13. TYPICAL: PROVIDE AND INSTALL NEW ELECTRONIC TRAP SEAL PRIMER (TSP-1). COORDINATE INSTALLATION WITH ELECTRICAL DIVISION.
14. PROVIDE AND INSTALL UNDERSLAB SANITARY PIPING CONNECTIONS, SIZE INDICATED.
15. PROVIDE NEW UNDERSLAB DOMESTIC COLD WATER CONNECTION FROM EXISTING WELL. TO BE COORDINATED WITH SITE SERVICES. EXACT LOCATION AND ROUTING TO BE CONFIRMED ON SITE.
16. GENERAL (NOT SHOWN): PROVIDE ALL VENTING (NOT SHOWN) AS REQUIRE BY OBC. CONNECT TO EXISTING VENT PIPING IN CEILING SPACE. PROVIDE ALL FITTINGS, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
17. TYPICAL: PROVIDE AND INSTALL PORTABLE FIRE EXTINGUISHER ON WALL-MOUNTED BRACKET. EXTINGUISHER TO BE SUITABLE FOR CLASS A ORDINARY HAZARD WITH MINIMUM 3A RATING. INSTALL AS PER ONTARIO FIRE CODE (O.REG. 213/07) BY CERTIFIED FIRE PROTECTION CONTRACTOR.
18. PROVIDE AND INSTALL NEW GAS PIPING, SIZE INDICATED. PROVIDE ALL PIPING, FITTINGS, VALVES, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION. ALL WORK AND MATERIALS BY LICENSED CONTRACTOR TO LATEST EDITION OF CSA B149.1.

PLUMBING EQUIPMENT SCHEDULE:

HWT-1

TYPE: GAS-FIRED TANK STYLE HOT WATER HEATER
MAKE: RHEEM
MODEL: QPV75-76FV-2
DESCRIPTION:
- 75 GALLON CAPACITY
- 77 US GPH AT 95F RISE
- 75100 BTU INPUT

ELECTRICAL:
- 120V/1PH
- 1440 W

WC-1

TYPE: TOP SPUD, BOTTOM DISCHARGE WATER CLOSET
MAKE: AMERICAN STANDARD
MODEL: MADERA FLOWISE 16-1/2" HEIGHT ELONGATED FLUSHOMETER TOILET (3461.001)
DESCRIPTION:
- VITREOUS CHINA
- LOW CONSUMPTION, 1.6 GPF
- WHITE

ACCESSORIES:
- PROVIDE COMPLETE WITH HEAVY DUTY OPEN FRONT LESS COVER (#5901.100SS)
- PROVIDE COMPLETE WITH FLUSHOMETER FLUSH VALVE

WC-2

TYPE: BARRIER FREE WATER CLOSET
MAKE: AMERICAN STANDARD
MODEL: CADET CHAIR HEIGHT, ELONGATED TOILET (2467.016)
DESCRIPTION:
- VITREOUS CHINA
- LOW CONSUMPTION, 1.6 GPF
- WHITE

ACCESSORIES:
- PROVIDE COMPLETE WITH ELONGATED SEAT WITH SLOW-CLOSE SNAP-OFF HINGES (5321.110)

LS-1

TYPE: DROP-IN COUNTERTOP LAVATORY SINK
MAKE: AMERICAN STANDARD
MODEL: COLONY COUNTERTOP SINK
DESCRIPTION:
- VITREOUS CHINA
- WHITE
- FRONT OVERFLOW

ACCESSORIES:
- FAUCET: AMERICAN STANDARD COLONY PRO SINGLE CONTROL LAVATORY FAUCET (7075)

LS-2

TYPE: WALL-HUNG, BARRIER FREE LAVATORY SINK
MAKE: AMERICAN STANDARD
MODEL: MURRO UNIVERSAL DESIGN WALL-HUNG LAVATORY WITH EVERCLEAN
DESCRIPTION:
- VITREOUS CHINA
- WHITE
- OVERFLOW
- SELF-DRAINING DECK

ACCESSORIES:
- FAUCET: AMERICAN STANDARD COLONY PRO SINGLE CONTROL LAVATORY FAUCET (7075)
- PROVIDE COMPLETE WITH PROTECTIVE SHROUD (0059.020EC)

KS-1

TYPE: KITCHENETTE SINK
MAKE: AMERICAN STANDARD
MODEL: COLONY 25 x 22 SINGLE BOWL STAINLESS STEEL KITCHEN SINK
DESCRIPTION:
- STAINLESS STEEL
- SINGLE BOWL
- TOP MOUNT INSTALLATION

ACCESSORIES:
- FAUCET: AMERICAN STANDARD COLONY PRO SINGLE HANDLE KITCHEN FAUCET (7074)

MS-1

TYPE: MOP SERVICE BASIN
MAKE: ZURN
MODEL: Z1996-24
DESCRIPTION:
- STAINLESS STEEL STRAINER
- PVC DRAIN BODY

WF-1

TYPE: WATER BOTTLE FILLING STATION
MAKE: ELKAY
MODEL: LZWSSM
DESCRIPTION:
- SURFACE (WALL) MOUNT

ELECTRICAL:
- 115V/60HZ, 1 A, 15 W

U-1

TYPE: TOP SPUD URINAL
MAKE: AMERICAN STANDARD
MODEL: MAYBROOK UNIVERSAL URINAL
DESCRIPTION:
- VITREOUS CHINE
- LOW CONSUMPTION
- WHITE

ACCESSORIES:
- PROVIDE COMPLETE WITH FLUSH VALVE

SH-1

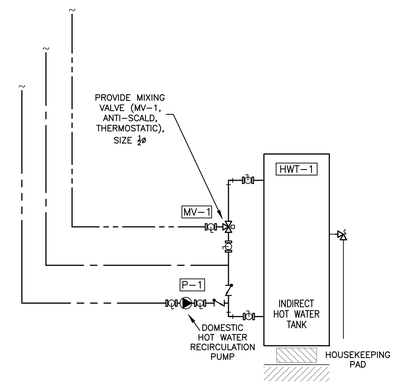
TYPE: SHOWER
MAKE: AMERICAN STANDARD
MODEL: COMMERCIAL SHOWER SYSTEM KIT (TU662SG.211)

FD-1

TYPE: FLOOR DRAIN
MAKE: ZURN
MODEL: ZXN211
DESCRIPTION:
- PROVIDE COMPLETE WITH TRAP SEAL PRIMING FROM CENTRAL TRAP SEAL PRIMER

P-1

TYPE: DOMESTIC HOT WATER RECIRCULATION PUMP
MAKE: TACO
MODEL: 0026e
ELECTRICAL: 120V/60PH, 120W, 0.16 HP



2 M-2 INDIRECT HOT WATER TANK & RECIRC. PUMP

NTS

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REVISIONS

client:
BELL+ASSOCIATES ARCHITECTURE
186 PEMBROKE STREET EAST
PEMBROKE, ON K8A 3J7

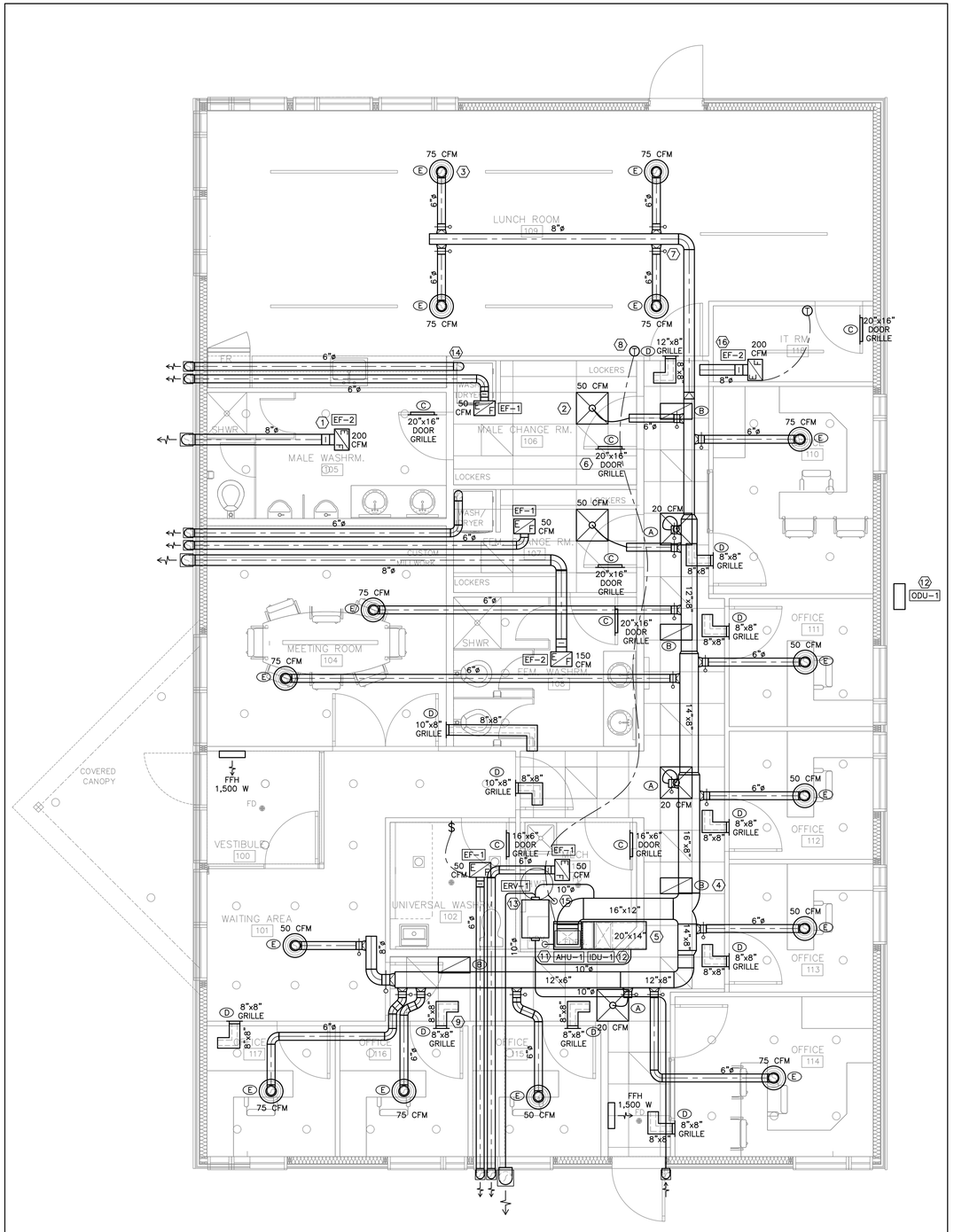
project:
MILLHAVEN GARAGE ADMINISTRATION BUILDING
240 COUNTY ROAD 4,
BATH, ONTARIO K0H 1G0

drawing title:
MECHANICAL
PLUMBING

scale:	AS NOTED	drawn by:	K.P.
designed by:	K.P.	reviewed by:	P.P.
approved by:	P.P.	date:	MAY 2026

project no.: 420-2301-03

drawing no.: M-2 of 4

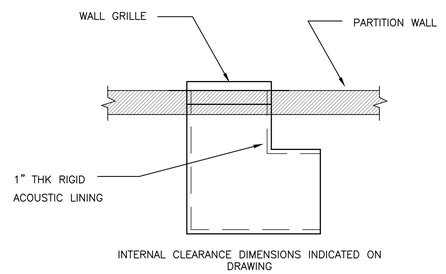


1 M-3 GROUND FLOOR PLAN – HVAC SYSTEMS

1/4" : 1'0"

DRAWING NOTES:

1. TYPICAL: SUPPLY AND INSTALL CEILING-MOUNTED EXHAUST FAN (EF-1, EF-2). BALANCE EXHAUST FLOW AS SPECIFIED. PROVIDE COMPLETE WITH DUCT CONNECTION TO BUILDING EXTERIOR VIA WALL BOX. COORDINATE INSTALLATION WITH ELECTRICAL DIVISION. REFER TO THIS DRAWING SHEET FOR EQUIPMENT SCHEDULE.
2. TYPICAL: PROVIDE AND INSTALL NEW SQUARE SUPPLY AIR DIFFUSER. COLLAR TO MATCH BRANCH DUCT CONNECTION SIZE. PROVIDE BRANCH DUCT CONNECTION (SIZE INDICATED).
3. TYPICAL: PROVIDE AND INSTALL NEW ROUND CONE SUPPLY AIR DIFFUSER. COLLAR TO MATCH BRANCH DUCT CONNECTION SIZE. PROVIDE BRANCH DUCT CONNECTION (SIZE INDICATED).
4. TYPICAL: PROVIDE AND INSTALL NEW RETURN AIR GRILLES.
5. TYPICAL: PROVIDE AND INSTALL NEW RETURN AIR DUCTWORK (INTERIOR CLEARANCE DIMENSIONS SIZE INDICATED), COMPLETE WITH INTERNAL ACOUSTIC INSULATION (MINIMUM 1" THICK) WHERE INDICATED.
6. TYPICAL: PROVIDE AND INSTALL NEW DOOR GRILLE.
7. TYPICAL: PROVIDE NEW SUPPLY AIR DUCTWORK (INTERIOR CLEARANCE DIMENSIONS SIZE INDICATED), COMPLETE WITH INTERNAL ACOUSTIC INSULATION (MINIMUM 1" THICK) WHERE INDICATED.
8. TYPICAL: PROVIDE NEW WALL-MOUNTED TEMPERATURE SENSOR AND CONTROLS WIRING.
9. TYPICAL: PROVIDE AND INSTALL NEW ACOUSTIC TRANSFER DUCT (SIZE INDICATED) ACROSS WALL AS SHOWN. PROVIDE COMPLETE WITH NEW WALL GRILLE, SIZE INDICATED, WITH SUITABLE TRIM FOR INTENDED INSTALLATION. REFER TO TYPICAL DETAIL ON THIS DRAWING SHEET.
10. CONTRACTOR TO CARRY FOR HVAC TEST AND BALANCING CONTRACTOR TO PROVIDE FOR SUPPLY/RETURN FLOW RATE READINGS FOR ALL GRILLES/DIFFUSERS. PROVIDE REPORT TO CONSULTANT FOR REVIEW.
11. PROVIDE AND INSTALL VERTICAL AIR HANDLING UNIT (AHU-1). REFER TO THIS DRAWING SHEET FOR EQUIPMENT SCHEDULE.
12. PROVIDE AND INSTALL INDOOR CABINET COIL (IDU-1) AND ASSOCIATED OUTDOOR AIR SOURCE HEAT PUMP COMPRESSOR UNIT (ODU-1).
13. PROVIDE AND INSTALL ENERGY RECOVERY VENTILATOR UNIT (ERV-1) COMPLETE WITH DUCTWORK CONNECTIONS TO BUILDING EXTERIOR AND ASSOCIATED AIR HANDLING UNIT SUPPLY AND RETURN AIR DUCTWORK. THERMALLY INSULATE AND JACKET MINIMUM FIRST 10 FT FROM BUILDING ENVELOPE PENETRATION. REFER TO THIS DRAWING SHEET FOR EQUIPMENT SCHEDULE.
14. PROVIDE AND INSTALL NEW VENTILATION DUCTWORK FROM CLIENT PROVIDED CLOTHES DRYER.
15. TYPICAL: PROVIDE COMBUSTION EXHAUST AND COMBUSTION AIR INTAKE VENTING AS REQUIRED BY APPLIANCE MANUFACTURERS, REFER TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
16. SUPPLY AND INSTALL CEILING-MOUNTED EXHAUST FAN (EF-2). BALANCE EXHAUST FLOW AS SPECIFIED. PROVIDE COMPLETE WITH DUCT CONNECTION TO WALL GRILLE. COORDINATE INSTALLATION WITH ELECTRICAL DIVISION. REFER TO THIS DRAWING SHEET FOR EQUIPMENT SCHEDULE. TO BE CONTROLLED VIA WALL-MOUNTED TEMPERATURE CONTROLLER.



INTERNAL CLEARANCE DIMENSIONS INDICATED ON DRAWING

2 M-3 TYPICAL DETAIL – ACOUSTIC TRANSFER DUCT

NTS

HVAC EQUIPMENT SCHEDULE:

EF-1

TYPE: CEILING EXHAUST FAN
MAKE: GREENHECK
MODEL: SP-A70
DESCRIPTION:
- BALANCED TO 50 CFM EXHAUST FLOW RATE

ELECTRICAL:
- 115V/60HZ/1PH, 0.14A
- FAN TO BE CONTINUOUSLY OPERATING, UNLESS OTHERWISE INDICATED

EF-2

TYPE: CEILING EXHAUST FAN
MAKE: GREENHECK
MODEL: SP-A200
DESCRIPTION:
- BALANCED AS SPECIFIED

ELECTRICAL:
- 115V/60HZ/1PH, 0.56A
- FAN TO BE CONTINUOUSLY OPERATING, UNLESS OTHERWISE INDICATED

ERV-1

TYPE: INDOOR ERV UNIT
MAKE: RENEWAIRE
MODEL: HE05IN
DESCRIPTION:
- BALANCE TO 250 CFM

ELECTRICAL:
- 115V/60HZ/1PH, 220 W, 2.7 FLA, MCA: 6.1, MOCP: 15

AHU-1

TYPE: TWO STAGE VARIABLE SPEED ECM RESIDENTIAL GAS FURNACE
MAKE: YORK
MODEL: LX, TM9V080B12MP12C
DESCRIPTION:
- 80 MBH HEATING CAPACITY
- 1,200 CFM SUPPLY AIR
- NATURAL GAS INPUT

ELECTRICAL:
- 208-230V/60HZ/1PH, MCA: 9.6A, MOCP: 15A

IDU-1, ODU-1

DESCRIPTION: COLD CLIMATE AIR SOURCE HEAT PUMP, CASED COIL CABINET
MAKE: MOOVAIR
MODEL: CUB36HAC20CWT7A (INDOOR COIL), DMA36HOS20230E7 (OUTDOOR COMPRESSOR UNIT)
DESCRIPTION:
- 40 MBH MAXIMUM COOLING CAPACITY
- 45 MBH MAXIMUM HEATING CAPACITY
- 1,200 CFM SUPPLY AIR
- COMPLETE WITH SPLIT-SYSTEM COIL
- REFRIGERANT: R410A
- PROVIDE AND INSTALL NEUTRALIZER ON COMBUSTION CONDENSATE DRAIN

ELECTRICAL:
- 208-230V/60HZ/1PH, MCA: 30A, MOCP: 50A

GRILLE & DIFFUSER SCHEDULE:

TYPE 'A'

MAKE: EH PRICE
MODEL: SPD
DESCRIPTION:
- SQUARE PLAQUE DIFFUSER
- SIZE INDICATED, COLLAR TO MATCH

TYPE 'B'

MAKE: EH PRICE
MODEL: 80
DESCRIPTION:
- EXHAUST AIR GRILLE
- 12x12x12 EGG CRATE GRILLE
- SIZE: 24"x12"
- INSTALLATION: FOR DROP CEILING TYPE, PROVIDE FRAME AS REQUIRED
-

TYPE 'C'

MAKE: EH PRICE
MODEL: STG
DESCRIPTION:
- STEEL TRANSFER GRILLE
- SIZE INDICATED

TYPE 'D'

MAKE: EH PRICE
MODEL: 530
DESCRIPTION:
- STEEL LOUVERED RETURN GRILLE WITH 45° DEFLECTION AND ¾" BLADE SPACING
- SIZE INDICATED

TYPE 'E'

MAKE: EH PRICE
MODEL: RCD
DESCRIPTION:
- ROUND CONE DIFFUSER
- SIZE INDICATED, COLLAR TO MATCH

TYPE 'F'

MAKE: EH PRICE
MODEL: 510
DESCRIPTION:
- STEEL LOUVERED SUPPLY GRILLE
- SIZE INDICATED

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project:
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240 COUNTY ROAD 4,
BATH, ONTARIO K0H 1G0

drawing title:
MECHANICAL
HVAC SYSTEMS

scale:	AS NOTED	drawn by:	K.P.
designed by:	K.P.	reviewed by:	P.P.
approved by:	P.P.	date:	MAY 2026

project no.: 420-2301-03

drawing no.: M-3

GENERAL INSTRUCTIONS

1.0 CONDITIONS OF CONTRACT

THE INSTRUCTIONS TO BIDDERS AND THE GENERAL CONDITIONS ARE AN INTEGRAL PART OF THIS DIVISION AND SHALL BE READ IN CONJUNCTION HEREWITH. THESE INSTRUCTIONS TO BIDDERS AND GENERAL CONDITIONS SHALL BE FULLY BINDING ON THE GENERAL CONTRACTOR AND THEIR SUB-CONTRACTORS TO THE FULL SATISFACTION OF THE ENGINEER AND OWNER.

THE RESPONSIBILITY AND SCOPE OF EACH SUB-TRADE RESTS SOLELY WITH THE MECHANICAL CONTRACTOR. EXTRAS WILL NOT BE CONSIDERED BASED ON THE GROUNDS OF DIFFERENCE IN INTERPRETATION OF SPECIFICATIONS AND DRAWINGS AS TO WHICH TRADE INVOLVED SHALL PROVIDE CERTAIN SPECIALITIES OR MATERIALS.

2.0 EXAMINATION OF WORK

EXAMINE THE SITE AND LOCAL CONDITIONS LIKELY TO AFFECT WORK INDICATED AND SPECIFIED PRIOR TO SUBMITTING FINAL PRICE.

THIS PROJECT INVOLVES CHANGES TO HE BUILDING, WHICH IS PRESENTLY OCCUPIED. THEREFORE, EXAMINE HE SITE AND LOCAL CONDITIONS TO DETERMINE THE DIFFICULTIES IN CARRYING OUT THE WORK INDICATED AND SPECIFIED PRIOR TO SUBMITTING A FINAL PRICE.

3.0 LIABILITY

THIS CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR LAYING OUT THEIR WORK AND FOR ANY DAMAGE CAUSED TO THE OWNER AND OTHER CONTRACTORS BY IMPROPER LOCATION OR CARRYING OUT OF THIS WORK. CARRY ALL NECESSARY INSURANCE COVERAGE.

THIS CONTRACTOR SHALL PROTECT ALL FINISHED AND UNFINISHED WORK OF THEIR OWN AND OTHER CONTRACTORS INCLUDING EXISTING FROM DAMAGE DUE TO HE CARRYING OUT OF THEIR WORK.

4.0 INTENT

IT IS THE INTENT OF THIS SPECIFICATION AND DRAWINGS TO PROVIDE FOR A COMPLETE AND FULLY-OPERATING SYSTEM IN COMPLETE ACCORD WITH ALL APPLICABLE CODES. THESE SPECIFICATIONS MAY NOT COVER EACH AND VERY ITEM REQUIRED FOR THE COMPLETE MECHANICAL INSTALLATION; THEREFORE, THE CONTRACTOR SHALL MAKE PROVISIONS FOR ALL LABOUR, MATERIAL, AND EQUIPMENT DEEMED NECESSARY TO COMPLETE THE SYSTEM(S) AFFECTED BY THE WORK DESCRIBED IN THE SPECIFICATIONS AND DRAWINGS.

5.0 CERTIFICATES, FEES, ETC.

THIS CONTRACTOR TO PAY ALL FEES AND OBTAIN ALL PERMITS. PROVIDE AUTHORITIES WITH PLANS AND INFORMATION FOR ACCEPTANCE CERTIFICATES. FURNISH INSPECTION CERTIFICATES AS EVIDENCE THAT WORK CONFORMS WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION (AHJs).

6.0 CUTTING AND PATCHING

THE MECHANICAL CONTRACTOR WILL CONFER WITH THE GENERAL CONTRACTOR IN REGARDS TO THIS WORK AND SHALL GIVE LOCATIONS FOR ALL HOLES/PENETRATIONS FOR PIPES, DUCTS THROUGH FLOORS AND ROOF, ETC., AND PROVIDE SLEEVES REQUIRED TO EXECUTE THE MECHANICAL INSTALLATION.

7.0 PIPE HANGERS, SUPPORTS, AND SLEEVES

HANGERS AND SUPPORTS SHALL SECURE PIPES N PLACE, PREVENT VIBRATION, MAINTAIN GRADE BY ADJUSTMENT, PROVIDE FOR EXPANSION AND CONTRACTION, ND SHALL BE DIRECTLY SUPPORTED FROM THE STRUCTURE. PERFORATED STRAP HANGERS ARE NOT ACCEPTABLE.

8.0 TESTING

TEST ALL EQUIPMENT AND MATERIAL WHERE REQUIRED BY SPECIFICATIONS OR AUTHORITIES HAVING JURISDICTION (AHJs) TO DEMONSTRATE ITS PROPER OPERATION TO THE OWNER'S REPRESENTATIVE. TEST PROCEDURES SHALL BE IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF THE ASME, ASHRAE, AND OTHER RECOGNIZED TEST CODES AS FAR AS FIELD CONDITIONS PERMIT.

- PERFORM TESTING UPON COMPLETION OF THE MECHANICAL INSTALLATION, URN OVER TO THE OWNER A CERTIFICATION OF THE TEST COMPLETE WITH DETAILED DATA AS REQUIRED BY EACH;
- TESTS SHALL BE ITEMIZED AS TO THE TIME PERFORMED AND PERSONNEL RESPONSIBLE FOR THE TEST. HYDRAULIC TESTS SHALL BE CARRIED OUT FOR A PERIOD OF 8 HOURS AND PRESSURE MAINTAINED WITH NO APPRECIABLE PRESSURE DROP. WHERE LEAKAGE OCCURS, REPAIRS SHALL BE MADE AND THE ENTIRE SYSTEM RETESTED TO THE SATISFACTION OF BUILDING OWNER AND ENGINEER.
- ALL TESTS TO BE MADE BEFORE BACK-FILLING AND FURRING.
- ALL LOW AND HIGH VELOCITY DUCT SYSTEMS, INCLUDING SUPPLY SHALL BE CHECKED FOR TIGHTNESS. ALL LEAKS SHALL BE REPAIRED BEFORE DUCTS ARE FURRED IN TO ENSURE TOTAL OUTLET CAPACITY IS WITHIN 5% OF THE TOTAL QUANTITY BEING SUPPLIED BY THE AIR SYSTEM

9.0 RECORD 'AS-BUILT' DRAWINGS

KEEP IN THE JOB OFFICE AN EXTRA SET OF WHITE PRINTS AND SPECIFICATIONS ON WHICH ALL CHANGES AND DEVIATIONS SHALL BE RECORDED DAILY. AT COMPLETION OF THIS PROJECT, TURN OVER TO ENGINEER TWO (2) SETS OF NEAT AND LEGIBLE 'AS-BUILT' RECORD DRAWINGS AND SPECIFICATIONS. USE RED INK TO MARK ALL CHANGES AND DEVIATIONS AND SEAL WITH CONTRACTOR'S IDENTIFYING SEAL. THESE EXTRA SETS OF WHITE PRINTS AND SPECIFICATIONS WILL BE PROVIDED BY THE ENGINEER UPON REQUEST.

10.0 SHOP DRAWINGS

BEFORE FABRICATION OF MAJOR EQUIPMENT AND MATERIALS, SUBMIT THROUGH THE GENERAL CONTRACTOR SHOP DRAWINGS AND DATA SHEETS COVERING ALL ITEMS OF EQUIPMENT AND MATERIALS FURNISHED AND INSTALLED UNDER THIS CONTRACT FOR REVIEW BY THE ENGINEER.

11.0 TEMPORARY AND TRIAL USAGE

ANY PERMANENT EQUIPMENT USED TEMPORARILY FOR HEAT OR OTHERWISE WILL BE REPAIRED AND REPLACED TO THE FULL SATISFACTION OF THE OWNER.

12.0 CLEANING

DUCTS, PIPEWORK, AND EQUIPMENT SHALL BE THOROUGHLY CLEANED OF DIRT, CUTTINGS, AND OTHER FOREIGN SUBSTANCES. DISCONNECT, CLEAN, AND RE-CONNECT WHENEVER NECESSARY FOR THE PURPOSE OF LOCATING AND REMOVING OBSTRUCTIONS. REPAIR WORK THAT HAS BEEN DAMAGED IN THE COURSE OF REMOVING OBSTRUCTIONS. DUCTS SHALL BE POWER-VACUUM CLEANED BEFORE BEING TURNED OVER TO THE OWNER.

13.0 GUARANTEE

THE MECHANICAL CONTRACTOR, AS A CONDITION PRECEDENT TO FINAL PAYMENT AFTER COMPLETION OF THIS WORK, SHALL GIVE THE OWNER A WRITTEN GUARANTEE WARRANTING ALL APPARATUS FURNISHED UNDER THE CONTRACT TO REMAIN IN PERFECT SERVICEABLE CONDITION FOR A PERIOD OF ONE (1) CALENDAR YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THEIR WORK BY THE OWNER AND THE ENGINEER.

14.0 INSTALLATION

INSTALL EQUIPMENT IN ACCORDANCE TO MANUFACTURER'S INSTRUCTIONS.

15.0 OPERATING AND MAINTENANCE DATA

FURNISH OPERATING AND MAINTENANCE DATA FOR ALL EQUIPMENT AND SYSTEMS AS PROVIDED AND/OR INSTALLED UNDER THE CONTRACT. DATA SHALL BE ASSEMBLED IN BOOKLET FORM WITH SOFT COVER AND INDEX. IDENTIFY FRONT COVER WITH NAME AND LOCATION OF THE PROJECT, CONSULTING ENGINEER, AND CONTRACTOR. SUBMIT REVIEW COPY TO OWNER AND ENGINEER FOR ACCEPTANCE. IF AGREEABLE TO THE OWNER, AND AGREED UPON IN WRITING, THE OPERATING AND MAINTENANCE DATA MAY BE SUBMITTED IN ELECTRONIC FORM (.PDF FILE FORMAT ONLY).

16.0 MATERIALS

REPLACE MATERIAL AND WORKMANSHIP BELOW SPECIFIED QUALITY AND RELOCATE WORK WRONGLY PLACED TO THE SATISFACTION OF OWNER AND ENGINEER.

MATERIALS AND EQUIPMENT INSTALLED SHALL BE NEW, FULL WEIGHT, ND OF THE BEST QUALITY SPECIFIED. USE SAME BRAND OF MANUFACTURER FOR EACH SPECIFIC INSTALLATION.

STATICALLY AND DYNAMICALLY BALANCE ROTATING EQUIPMENT FOR MINIMUM VIBRATION AND LOW OPERATING NOISE LEVEL.

17.0 APPROVALS

THE PRICE SUBMITTED FOR THIS CONTRACT SHALL BE BASED ON THE USE OF MATERIALS AND EQUIPMENT AS SPECIFIED. IF THIS CONTRACTOR WISHES TO QUOTE ON EQUIVALENT MATERIALS AND EQUIPMENT, THEY MUST QUOTE ON PRODUCTS REVIEWED AND APPROVED BY THE ENGINEER (WRITTEN APPROVAL), AS EQUIVALENT TO THE PRODUCT SPECIFIED. MANUFACTURER'S LISTED IN SPECIFICATIONS DO NOT HAVE TO REQUEST APPROVAL BUT MUST MEET ALL PERFORMANCE REQUIREMENTS.

CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY ADDITIONAL WORK OR MATERIALS REQUIRED BY THE MECHANICAL TRADE OR OTHER CONTRACTORS TO ACCOMMODATE APPROVED EQUIVALENT MATERIALS OR EQUIPMENT. EXTRA COSTS ASSOCIATED WILL NOT BE APPROVED.

VENTILATION AND AIR-CONDITIONING

1.0 DUCTWORK

DUCTWORK SHALL BE OF GALVANIZED STEEL AND SHALL BE LOCK-FORMING QUALITY. ALL DUCTWORK SHALL BE CONSTRUCTED, BRACED, CONNECTED, AND JOINED AS RECOMMENDED IN THE LATEST ISSUE OF ASHRAE GUIDE AND DUCT CONSTRUCTION STANDARDS ISSUED BY THE SHEET METAL NATIONAL ASSOCIATION INC. (SMACNA). ALL DUCTWORK SHALL BE INSTALLED TO CONFORM TO THE NATIONAL BUILDING CODE, THE CFUA PAMPHLETS 90A AND 91, AND BE IN ACCORDANCE WITH APPLICABLE CODES. THE MINIMUM SHEET METAL THICKNESS SHALL BE AS FOLLOWS:

RECTANGULAR DUCTS

MAXIMUM WIDTH	GAUGE
UP TO 300MM	28 USGA
325MM TO 750MM	24 USGA
775MM TO 1,350MM	22 USGA

ROUND DUCTWORK SHALL BE SUSPENDED WITH BAND IRON HANGERS.

RECTANGULAR DUCTWORK SHALL BE SUPPORTED AT MAXIMUM 2.4M (8FT) SPACING.

SHEET METAL SCREWS TO BE ACCEPTABLE FOR DUCT FABRICATION.

FLEXIBLE DUCT TO BE TRIPLE-LOCK ALUMINUM, MAXIMUM LENGTH 3.0M (10FT).

SEAL CLASSIFICATION AS FOLLOWS:

MAXIMUM PRESSURE (PA)	SMACNA SEAL CLASS
1000 AND OVER	A
750	B
500	C

CLASS A SEAL: LONGITUDINAL SEAMS, TRANSVERSE JOINTS, DUCT WALL PENETRATIONS, AND CONNECTIONS MADE AIR-TIGHT WITH SEALANT AND TAPE.

CLASS B SEAL: LONGITUDINAL SEAMS, TRANSVERSE JOINTS, AND CONNECTIONS MADE AIR-TIGHT WITH SEALANT, TAPE, OR COMBINATION THEREOF.

CLASS C SEAL: TRANSVERSE JOINTS AND CONNECTIONS MADE AIR-TIGHT WITH GASKETS, SEALANT, TAPE, OR COMBINATION THEREOF. LONGITUDINAL SEAMS UNSEALED.

2.0 VOLUME DAMPERS

INSTALL AT EACH TAKE-OFF FROM MAIN AS NOTED ON DRAWING - SINGLE-BLADE WITH LOCKING QUADRANT, EQUAL TO DURO-DYNE K-9.

3.0 AIR OUTLETS AND INLETS

ALL NEW SUPPLY DIFFUSERS AND RETURN GRILLES TO BE PROVIDED AS PER SCHEDULE AND/OR AS LISTED IN DRAWING NOTES.

4.0 AIR SYSTEM BALANCING AND TESTING

BALANCING SYSTEMS FOR RATED AIR FLOWS, ROOM TEMPERATURE CONTROL, AND ELECTRICAL CURRENT DRAW AFTER INSTALLATION IS COMPLETE AND EQUIPMENT IS IN FULL WORKING ORDER. ADJUST CONTROLS FOR CONTINUOUS AIR CIRCULATION AND MINIMUM ENERGY CONSUMPTION. ADJUST FAN SPEEDS AS REQUIRED TO OBTAIN SPECIFIC PERFORMANCE. BALANCING WORK TO BE PERFORMED BY INDEPENDENT BALANCING CONTRACTOR. PROVIDE COPIES OF TESTING AND BALANCING (TAB) REPORT TO ENGINEER FOR REVIEW.

5.0 DUCT INSULATION: THERMAL AND ACOUSTIC

ALL HIGH-PRESSURE DUCTWORK UP TO VARIABLE AIR VOLUME (VAV) TERMINAL DEVICE INLETS SHALL BE THERMALLY-INSULATED WITH 25MM THICK RIGID FIBREGLASS INSULATION AND VAPOUR BARRIER, SEALED WITH ALUMINUM DUCT TAPE.

PROVIDE ACOUSTIC DUCT LINING IN ALL RECTANGULAR DUCTS DOWNSTREAM FROM VARIABLE AIR VOLUME (VAV) TERMINAL DEVICE, IN ALL TRANSFER DUCTS, OR AS INDICATED ON DRAWINGS. THE LINING SHALL BE RIGID FIBREGLASS BOARD OF 25MM THICKNESS WITH A MINIMUM DENSITY OF 36 KG/M^2. DUCT DIMENSIONS AS INDICATED ON DRAWINGS REPRESENT CLEARANCE DIMENSIONS INSIDE OF DUCT LINING. ALL COVERING SHALL BE APPLIED IN A WORKMAN-LIKE MANNER TO PRESENT A NEAT AND CLEAN APPEARANCE AT COMPLETION OF THE WORK TO THE FULL SATISFACTION OF THE ENGINEER AND OWNER. INSULATION ASSEMBLIES SHALL COMPLY WITH ONTARIO BUILDING REGULATIONS WITH RESPECT TO FLAME SPREAD AND SMOKE-DEVELOPED RATINGS NOT EXCEEDING 25 AND 50, RESPECTIVELY.

REPAIR EXISTING INSULATION AND/OR JACKETING THAT IS DAMAGED BY CUTTING INTO MAINS OR OTHER ALTERATIONS PERFORMED UNDER THIS CONTRACT.

6.0 EQUIPMENT

REFER TO NOTES AND SCHEDULES ON DRAWINGS FOR DETAILS ON EQUIPMENT, TYPES, MODEL NUMBERS, AND PERFORMANCE REQUIREMENTS.

DOMESTIC WATER PIPING

1.0 GENERAL

ALL WORK AND MATERIALS TO THE FOLLOWING SPECIFICATIONS/REQUIREMENTS:
- ONTARIO BUILDING CODE (OBC)
- NATIONAL PLUMBING CODE OF CANADA (NPC)
- AUTHORITIES HAVING JURISDICTION (AHJ), AS APPLICABLE
- ASTM B88M 'STANDARD SPECIFICATION FOR SEAMLESS COPPER WATER TUBE (METRIC)'
- ANSI/ASME B16.15 'CAST BRONZE THREADED FITTINGS, CLASSES 125 AND 250'
- ANSI/ASME B16.18 'CAST COPPER ALLOY SOLDER JOINT PRESSURE FITTINGS'
- ANSI/ASME B16.22 'WROUGHT COPPER AND COPPER ALLOY SOLDER JOINT PRESSURE FITTINGS'
- ANSI/ASME B16.24 'CAST COPPER ALLOY PIPE FLANGES AND FLANGED FITTINGS - CLASS 150 THROUGH 2500'
- CAN/CGSB-24.3 'IDENTIFICATION OF PIPING SYSTEMS'

2.0 PIPING

DOMESTIC HOT, COLD, AND RECIRCULATION SYSTEMS WITHIN BUILDING AS FOLLOWS:

- ABOVE GROUND: COPPER TUBE, HARD DRAWN, TYPE K/L/M
- BURIED / EMBEDDED: COPPER TUBE, SOFT ANNEALED, TYPE K/L

3.0 INSTALLATION

- ASSEMBLE PIPING USING FITTINGS MANUFACTURED TO ANSI STANDARDS.
- INSTALL COLD WATER PIPING BELOW AND AWAY OF HOT WATER SUPPLY AND CIRCULATION PIPING SO AS TO MAINTAIN TEMPERATURE OF COLD WATER AS LOW AS POSSIBLE.
- CONNECT TO FIXTURES AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS UNLESS OTHERWISE SPECIFIED.
- WHEREVER DISSIMILAR METALS ARE JOINED OR SUPPORTED, THE PIPING SHALL HAVE NON-CONDUCTING TYPE CONNECTIONS OR HANGERS TO PREVENT GALVANIC CORROSION.
- BURIED TUBING:
- LAY IN WELL-COMPACTED WASHER SAND IN ACCORDANCE AWWA CLASS B BEDDING.
- BEND TUBING WITHOUT CRIMPING OR CONSTRUCTION
- MINIMIZE USE OF FITTINGS
- MUST BE INSTALLED IN LONG LENGTHS, NO BURIED JOINTS

4.0 VALVES

ISOLATE EQUIPMENT, FIXTURES, AND BRANCHES WITH BALL VALVES. BALANCE RECIRCULATION SYSTEMS USING LOCK-SHIELD GLOBE VALVES - MARK SETTINGS AND RECORD ON AS-BUILT DRAWINGS ON COMPLETION OF WORK. PROVIDE ALL VALVES AS SHOWN ON THE DRAWINGS OR REQUIRED BY AUTHORITIES HAVING JURISDICTION. PROVIDE VACUUM BREAKERS / BACKFLOW PREVENTER DEVICES ON LINES SERVING EQUIPMENT OR FIXTURES WHERE CONTAMINATION OF DOMESTIC WATER CAN OCCUR.

5.0 PRESSURE TESTING

TEST PRESSURE TO BE ONE (1) TIMES THE MAXIMUM SYSTEM OPERATING PRESSURE, OR 125 PSI (860KPA), WHICHEVER IS GREATER.

6.0 FLUSHING/CLEANING AND DISINFECTION

FLUSH /CLEAN AND DISINFECT SYSTEM TO EXTENT REQUIRED BASED ON SCOPE OF DOMESTIC WATER PLUMBING PIPING SCOPE OF WORK , APPLICABLE REGULATIONS, AND REQUIREMENTS OF BUILDING OWNER/PROPERTY MANAGER/LANDLORD.

DRAINAGE, WASTE, AND VENT (DWV) PIPING

1.0 GENERAL

ALL WORK AND MATERIALS TO THE FOLLOWING SPECIFICATIONS/REQUIREMENTS:

- ONTARIO BUILDING CODE (OBC)
- NATIONAL PLUMBING CODE OF CANADA (NPC)
- AUTHORITIES HAVING JURISDICTION (AHJ), AS APPLICABLE
- ASTM B32 'STANDARD SPECIFICATIONS FOR SOLDER METAL'
- ASTM B306 'STANDARD SPECIFICATION OF COPPER DRAINAGE TUBE (DWV)'
- ASTM C564 'STANDARD SPECIFICATION FOR RUBBER GASKETS FOR CAST IRON SOIL PIPE AND FITTINGS'
- CSA B67 'LEAD SERVICE PIPE, WASTE PIPE, TRAPS, BENDS, AND ACCESSORIES'
- CAN/CSA B70 'CAST IRON SOIL PIPE, FITTINGS, AND MEANS OF JOINING'
- CAN/CSA B125.3 'PLUMBING FITTINGS'
- ASTM D2564 'STANDARD SPECIFICATION FOR SOLVENT CEMENTS FOR POLY VINYL-CHLORIDE (PVC) PLASTIC PIPING SYSTEMS'
- CAN/CSA-SERIES B1800 'THERMOPLASTIC NON-PRESSURE PIPE COMPENDIUM - B1800 SERIES'
- CAN/CSA B181.2 'PVC DRAIN, WASTE, AND VENT PIPE AND PIPE FITTINGS'
- CAN/CGSB-24.3 'IDENTIFICATION OF PIPING SYSTEMS'

2.0 COPPER TUBE AND FITTINGS:

- CAST BRASS AND WROUGHT COPPER FITTINGS TO CAN/CSA-B125.3
- JOINING: LEAD-FREE SOLDER (95:5 TIN ANTIMONY) RATED FOR USE IN POTABLE WATER SYSTEMS

3.0 CAST IRON PIPING AND FITTINGS:

BURIED SANITARY/STORM/VENT PIPING TO BE MINIMUM NPS 3, WITH POLYETHYLENE FILM WRAP, TO CAN/CSA-B70 WITH FOLLOWING JOINING METHODS:
- MECHANICAL: NEOPRENE OR BUTYL RUBBER COMPRESSION GASKETS, TO CAN/CSA-B70
- HUB AND SPIGOT: CAULKING LEAD TO CSA B67, COLD CAULKING COMPOUNDS

ABOVE-GROUND SANITARY/STORM/VENT PIPING TO CAN/CSA-B70 WITH FOLLOWING JOINING METHODS:

- MECHANICAL: NEOPRENE OR BUTYL RUBBER COMPRESSION GASKETS, TO CAN/CSA-B70, WITH STAINLESS STEEL CLAMPS
- HUB AND SPIGOT: CAULKING LEAD TO CSA B67

STORM WATER DRAINAGE:

- VERIFY THAT DOMES ARE SECURE
- ENSURE WEIRS ARE CORRECTLY SIZED AND INSTALLED PROPERLY
- VERIFY PROVISIONS FOR MOVEMENT OF ROOF SYSTEM

4.0 PVC PIPING AND FITTINGS:

- MUST BE AIR PLENUIM AND HIGH-BUILDING RATED (FLAME SPREAD <= 25, AND SMOKE DEVELOPED CLASSIFICATION <= 50), TESTED AND VERIFIED TO CAN/ULC S102.2. BASIS OF DESIGN PERFORMANCE: IPEX XFR OR APPROVED EQUIVALENT.
- PIPING AND FITTINGS CERTIFIED TO CSA B181.2.

5.0 CLEANOUTS:

- PROVIDE AND SET CLEANOUTS AT ALL POINTS REQUIRED BY CODE AND WHERE INDICATED ON DRAWINGS.
- ENSURE ACCESSIBLE AND THAT ACCESS DOORS ARE CORRECTLY LOCATED, EXTENDING BRANCH CONNECTIONS TO FINISHED SURFACES AND FITTING THEM WITH A SUITABLE ACCESS DOOR / COVER.
- OPEN, COVER IN LINSEED OIL, AND RE-SEAL
- VERIFY THAT CLEAN-OUT RODS CAN PROBE AS FAR AS THE NEXT CLEANOUT (AT MINIMUM)

6.0 TESTING / VERIFICATION:

- PRESSURE TEST BURIED SYSTEMS BEFORE BACKFILLING
- HYDRAULICALLY TEST TO VERIFY GRADES AND FREEDOM FROM OBSTRUCTIONS
- TEST TO ENSURE THAT TRAPS ARE FULLY AND PERMANENTLY PRIMED
- ENSURE THAT FIXTURES ARE PROPERLY ANCHORED, CONNECTED TO DRAINAGE SYSTEM, AND EFFECTIVELY VENTED AS REQUIRED
- AFFIX APPLICABLE LABEL (STORM / SANITARY / VENT / PUMP DISCHARGE / ETC.) COMPLETE WITH DIRECTIONAL ARROWS MINIMUM EVERY 15 FT (4.5 M), AND AT LEAST ONCE PER FLOOR.

THERMAL INSULATION OF PIPING

1.0 GENERAL:

ALL WORK AND MATERIALS TO THE FOLLOWING SPECIFICATIONS/REQUIREMENTS:

- ONTARIO BUILDING CODE (OBC)
- NATIONAL PLUMBING CODE OF CANADA (NPC)
- AUTHORITIES HAVING JURISDICTION (AHJ), AS APPLICABLE
- ASHRAE STANDARD 90.1 'ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS'
- CGSB 51-GP-52MA 'VAPOUR BARRIER, JACKET, AND FACING MATERIAL FOR PIPE, DUCT, AND EQUIPMENT THERMAL INSULATION'
- CAN/CGSB-51.53 'POLY VINYL-CHLORIDE JACKETING SHEET, FOR INSULATED PIPES, VESSELS, AND ROUND DUCTS'
- TIAC: NATIONAL INSULATION STANDARDS
- CAN/ULC-701 'THERMAL INSULATION, POLYSTYRENE, BOARDS AND PIPE COVERING
- CAN/ULC-702 'THERMAL INSULATION, MINERAL FIBRE, FOR BUILDINGS
- CAN/ULC-702.2 'THERMAL INSULATION, MINERAL FIBRE, FOR BUILDINGS, PART 2: APPLICATION GUIDELINES'

2.0 FIRE AND SMOKE RATING:

TO CAN/ULC-S102 'STANDARD METHOD OF TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS AND ASSEMBLIES', WITH MAXIMUM FLAME SPREAD RATING OF 25 AND MAXIMUM SMOKE DEVELOPED RATING OF 50

3.0 INSULATION:

- THERMAL CONDUCTIVITY ('K' FACTOR) TO NOT EXCEED SPECIFIED VALUES AT 75 FAHRENHEIT (24 CELSIUS) MEAN TEMPERATURE WHEN TESTED IN ACCORDANCE WITH ASTM C335
- MAXIMUM 'K' FACTOR TO CAN/ULC-S702 AND/OR ASTM C547
- JACKETING TO CGSB 51-GP-52MA, TYPE TO MEET CONDITIONS AT LOCATION OF INSTALLATION AND PIPING TYPE.

4.0 INSTALLATION:

- INSTALL IN ACCORDANCE WITH TIAC NATIONAL STANDARDS
- APPY MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS
- USE TWO (2) LAYERS WITH STAGGERED JOINTS WHEN REQUIRED NOMINAL WALL THICKNESS EXCEEDS 3IN (75MM)
- MAINTAIN UNINTERRUPTED CONTINUITY AND INTEGRITY OF VAPOUR RETARDER JACKET AND FINISHES, INSTALL HANGERS AND SUPPORTS OUTSIDE VAPOUR RETARDED JACKET
- SUPPORTS AND HANGERS - APPLY HIGH-COMPRESSIVE STRENGTH INSULATION, SUITABLE FOR SERVICE, AT OVERSIZED SADDLES AND SHOES WHERE INSULATION SADDLES HAVE NOT BEEN PROVIDED

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Authorized modifications must be signed and sealed by an engineer and this engineer will be completely responsible for these modifications. J.R.P. Engineering is not and will not be responsible for the consequences of these modifications or for modifications carried out without it's consent.

No	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	MAY 29, 2026
2	ISSUED FOR REVIEW	APR. 24, 2026
1	ISSUED FOR PERMIT AND PRICING	FEB. 21, 2025
0	ISSUED FOR REVIEW	APR. 24, 2024

REVISIONS

client:

BELL+ASSOCIATES ARCHITECTURE

186 PEMBROKE STREET EAST
PEMBROKE, ON K8A 3J7

project:

MILLHAVEN GARAGE ADMINISTRATION BUILDING

240 COUNTY ROAD 4,
BATH, ONTARIO K0H 1G0

drawing title:

MECHANICAL SPECIFICATIONS

scale:	AS NOTED	drawn by:	K.P.
designed by:	K.P.	reviewed by:	P.P.
approved by:	P.P.	date:	MAY 2026

project no.: 420-2301-03

drawing no.: M-4 of 4

GENERAL NOTES

1. GENERAL

1.1. SCOPE

1.1.1. THE INFORMATION PRESENTED ON THESE DRAWINGS HAS BEEN DESIGNED AND ANALYZED IN ACCORDANCE WITH THE 2024 ONTARIO BUILDING CODE.

1.1.2. THESE STRUCTURAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND DOCUMENTS INCLUDED IN THIS CONTRACT.

1.1.3. IF ANY ITEMS ON THE DRAWINGS ARE UNCLEAR THE CLIENT/CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE ENGINEER PRIOR TO STARTING WORK.

1.1.4. THE CLIENT/CONTRACTOR TO NOTIFY THE ENGINEER WHEN SITE WORK IS IN PROGRESS. ANY WORK COVERED WITHOUT BEING INSPECTED MAY NEED TO BE UNCOVERED FOR INSPECTION.

1.1.5. THE FOLLOWING ITEMS SHALL BE INSPECTED BY STRUCLINK INC.
- 1.1.5.1. ALL REBARS PRIOR TO POURING FOOTINGS, WALLS, SLABS, SUSPENDED SLABS AND BEAMS. COPIES OF CONCRETE DELIVERY SLIPS SHALL BE FORWARDED TO STRUCLINK INC. WITHIN 24 HOURS OF POUR
- 1.1.5.2. CONCRETE PRIOR TO POURING
- 1.1.5.3. STRUCTURAL STEEL PRIOR TO COVERING
- 1.1.5.4. FRAMING PRIOR TO SHEATHING
- 1.1.5.5. SHEATHING PRIOR TO FINISHING

1.1.6. THE DRAWINGS ILLUSTRATE THE REQUIRED WORK TO BE DONE; THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK.

1.1.7. STRUCLINK INC. IS TO BE NOTIFIED 24 HOURS IN ADVANCE OF ANY WORK REQUIRING INSPECTION.

1.1.8. STRUCLINK INC. WILL NOT BE LIABLE FOR ANY CONSTRUCTION THAT HAS NOT BEEN DESIGNED OR INSPECTED BY STRUCLINK INC.

1.1.9. DO NOT SCALE DRAWINGS. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS, SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS. CONTRACTOR TO VERIFY ALL DIMENSIONS/PENETRATIONS WITH ARCHITECTURAL/MECHANICAL/ELECTRICAL DRAWINGS PRIOR TO CONSTRUCTION. REPORT INCONSISTENCIES BEFORE PROCEEDING WITH WORK. ANY OPENINGS NOT INDICATED ON STRUCTURAL DRAWINGS SHALL BE APPROVED BY STRUCTURAL ENGINEER IN WRITING PRIOR TO CONSTRUCTION..

1.2. TEMPORARY WORKS

1.2.1. TEMPORARY BRACING, SHORING, AND WINTER PROTECTION, AS REQUIRED, ARE TO BE PROVIDED BY THE CONTRACTOR; STEEL ERECTION BRACING IS TO REMAIN IN PLACE UNTIL PERMANENT BRACING, ROOF DECK, AND ANY MEZZANINES ARE COMPLETED. ALL CONSTRUCTION IS TO BE CARRIED OUT IN ACCORDANCE WITH THE 2024 ONTARIO BUILDING CODE, APPLICABLE CITY OF OTTAWA BY-LAWS, AND ONTARIO OHSA REQUIREMENTS. DIMENSIONS AND FIELD CONDITIONS ARE TO BE VERIFIED PRIOR TO FABRICATION OR CONSTRUCTION. COORDINATE STRUCTURAL WORK WITH ARCHITECTURAL, MECHANICAL, AND ELECTRICAL WORK AS INDICATED ON THE DRAWINGS.

DEMOLITION SPECIFICATIONS

1. GENERAL

1.1. SCOPE

1.1.1. THIS SPECIFICATION OUTLINES THE SAFETY PRECAUTIONS AND GENERAL PROCEDURES TO BE CONSIDERED BEFORE, DURING, AND AFTER DEMOLITION WORK, WITH THE INTENT OF PROTECTING THE PUBLIC, WORKERS, ADJACENT PROPERTIES, AND THE ENVIRONMENT.

1.2. REFERENCES

1.2.1. THE FOLLOWING CODES AND STANDARDS FORM PART OF THIS SPECIFICATION. EXCEPT WHERE NOTED OTHERWISE, USE THE LATEST EDITIONS AND ADDENDA. WHERE THERE IS A CONFLICT, THE MORE STRINGENT REQUIREMENT SHALL APPLY.

1.2.1.1. CAN/CSA S350-M, "CODE OF PRACTICE FOR SAFETY IN DEMOLITION OF STRUCTURES," AS REFERENCED BY THE 2024 ONTARIO BUILDING CODE, PART 8 – SAFETY MEASURES AT CONSTRUCTION AND DEMOLITION SITES.
1.2.1.2. 2024 ONTARIO BUILDING CODE, PART 8 – SAFETY MEASURES AT CONSTRUCTION AND DEMOLITION SITES.
1.2.1.3. DO WORK IN ACCORDANCE WITH THE ONTARIO OCCUPATIONAL HEALTH AND SAFETY REGULATION (ONTARIO OHSA REGULATION, INCLUDING PART 20 – CONSTRUCTION, EXCAVATION AND DEMOLITION) AND APPLICABLE CITY OF OTTAWA BY-LAWS.

1.3. SITE CONDITIONS

1.3.1. REVIEW AND FOLLOW THE RECOMMENDATIONS OF ANY DESIGNATED SUBSTANCE OR HAZARDOUS MATERIALS (INCLUDING ASBESTOS) ASSESSMENT PROVIDED FOR THE PROJECT, AND TAKE APPROPRIATE MEASURES TO PROTECT WORKERS, THE PUBLIC, AND THE ENVIRONMENT.

1.3.2. IF MATERIAL RESEMBLING SPRAY OR TROWEL APPLIED ASBESTOS OR OTHER SUSPECT HAZARDOUS MATERIAL IS ENCOUNTERED, SUSPEND WORK IN THE AFFECTED AREA, IMPLEMENT BASIC PRECAUTIONS TO PREVENT DISTURBANCE, AND PROMPTLY NOTIFY THE OWNER AND CONSULTANT. DO NOT RESUME WORK IN THAT AREA UNTIL INSTRUCTIONS ARE RECEIVED FROM A QUALIFIED PERSON AND ANY REQUIRED ABATEMENT HAS BEEN COMPLETED IN ACCORDANCE WITH ONTARIO OHSA AND APPLICABLE REGULATIONS.

1.3.3. TAKE REASONABLE CARE TO PROTECT ADJACENT PROPERTIES, BUILDINGS, AND PUBLIC AREAS FROM DAMAGE OR HAZARDS DUE TO DEMOLITION OR CONSTRUCTION ACTIVITIES, AND MAINTAIN SAFE ACCESS TO AND FROM BUILDINGS IN ACCORDANCE WITH OBC PART 8 AND MUNICIPAL BY-LAWS.

1.3.4. WHERE WORK MAY AFFECT NEARBY STRUCTURES, SERVICES, SIDEWALKS, DRIVEWAYS, OR TREES, USE SUITABLE METHODS, INCLUDING BRACING OR SHORING WHERE NECESSARY, TO MINIMIZE DAMAGING VIBRATION, MOVEMENT, OR SETTLEMENT, AND PROMPTLY ADDRESS ANY DAMAGE CAUSED BY THE WORK.

1.3.5. PROVIDE AND MAINTAIN THE GUARDS, BARRIERS, RAILINGS, LIGHTS, AND WARNING SIGNS NECESSARY TO HELP PROTECT WORKERS AND THE PUBLIC, IN ACCORDANCE WITH ONTARIO OHSA REGULATION AND APPLICABLE CITY OF OTTAWA BY-LAWS.

1.3.6. SELLING, BURYING, OR BURNING DEMOLITION OR CONSTRUCTION DEBRIS ON SITE IS NOT PERMITTED. REMOVE WASTE FROM THE SITE AND DISPOSE OF IT AT APPROVED FACILITIES IN ACCORDANCE WITH LOCAL REQUIREMENTS.

1.3.7. BLASTING IS NOT ANTICIPATED AND IS NOT PERMITTED ON THIS PROJECT.

1.3.8. PROVIDE REASONABLE PROTECTION FOR EXISTING TREES, LANDSCAPING, AND ADJACENT GRADES, AS REQUIRED BY THE CITY OF OTTAWA AND THE OWNER.

1.3.9. TAKE CARE TO PREVENT DEMOLITION AND CONSTRUCTION DEBRIS FROM BLOCKING OR DAMAGING DRAINAGE SYSTEMS, DITCHES, AND CATCH BASINS.

2. EXECUTION

2.1. PREPARATION

2.1.1. BEFORE STARTING WORK, REVIEW THE EXISTING BUILDING AND CONFIRM THE EXTENT AND LOCATION OF ITEMS DESIGNATED FOR REMOVAL, DISPOSAL, RECYCLING, SALVAGE, AND ITEMS TO REMAIN.

2.1.2. IDENTIFY, LOCATE, AND PROTECT EXISTING UTILITIES AND SERVICES. MAINTAIN UTILITIES THAT ARE TO REMAIN IN SERVICE IN A SAFE, OPERATING CONDITION.

2.1.3. WHERE REQUIRED, NOTIFY AND OBTAIN APPROVAL OR CLEARANCE FROM THE APPLICABLE UTILITY COMPANIES OR AUTHORITIES HAVING JURISDICTION BEFORE STARTING DEMOLITION.

2.2. PROTECTION

2.2.1. TAKE REASONABLE MEASURES TO PREVENT MOVEMENT, SETTLEMENT, OR DAMAGE TO PARTS OF THE BUILDING AND STRUCTURE THAT ARE TO REMAIN. PROVIDE TEMPORARY BRACING OR SHORING WHERE NECESSARY TO MAINTAIN STABILITY.

2.2.2. CARRY OUT WORK IN A MANNER THAT LIMITS EXCESSIVE NOISE, DUST, AND INCONVENIENCE TO OCCUPANTS AND NEIGHBOURS, AS PRACTICABLE.

2.2.3. PROTECT EXISTING BUILDING SYSTEMS, SERVICES, AND EQUIPMENT THAT ARE TO REMAIN FROM DAMAGE DURING DEMOLITION AND CONSTRUCTION.

2.2.4. PROVIDE TEMPORARY DUST SCREENS, COVERS, RAILINGS, SUPPORTS, AND OTHER PROTECTIVE MEASURES AS APPROPRIATE FOR THE SCALE OF WORK.

2.2.5. WHERE REQUIRED BY THE CITY OF OTTAWA OR SITE CONDITIONS, ENSURE THAT ADEQUATE SITE FENCING OR HOARDING IS IN PLACE BEFORE DEMOLITION BEGINS, AND MAINTAIN IT IN A SAFE CONDITION FOR THE DURATION OF THE WORK. REPAIR OR REPLACE DAMAGED SECTIONS AS NEEDED.

2.2.6. IF AT ANY TIME THE STABILITY OR SAFETY OF THE BUILDING BEING ALTERED, OR OF ADJACENT STRUCTURES OR SERVICES, APPEARS TO BE AT RISK, SUSPEND WORK IN THE AFFECTED AREA, PROVIDE TEMPORARY SUPPORT AS NEEDED, AND NOTIFY THE CONSULTANT. DO NOT PROCEED WITH FURTHER DEMOLITION IN THAT AREA UNTIL DIRECTION HAS BEEN RECEIVED.

2.3. PREPARATION

2.3.1. LOCATE AND CLEARLY MARK ENCLOSED OR HIDDEN SERVICES WITHIN AREAS TO BE AFFECTED BY DEMOLITION OR CONSTRUCTION.

2.3.2. ARRANGE FOR DESIGNATED ELECTRICAL AND TELECOMMUNICATION LINES ENTERING AREAS TO BE DEMOLISHED TO BE DISCONNECTED, RE-ROUTED, OR MADE SAFE IN ACCORDANCE WITH AUTHORITIES HAVING JURISDICTION. POST WARNING SIGNS ON ANY LINES OR EQUIPMENT THAT MUST REMAIN ENERGIZED DURING THE WORK.

2.3.3. ARRANGE FOR DESIGNATED MECHANICAL SERVICES TO BE DISCONNECTED AND CAPPED IN ACCORDANCE WITH AUTHORITIES HAVING JURISDICTION.

2.3.4. ARRANGE FOR NATURAL GAS SUPPLY LINES TO BE DISCONNECTED OR REMOVED BY THE LOCAL GAS AUTHORITY OR A QUALIFIED CONTRACTOR IN ACCORDANCE WITH GAS AUTHORITY REQUIREMENTS.

2.3.5. DISCONNECT, CAP, OR REMOVE SEWER AND WATER LINES AS INDICATED ON THE DRAWINGS OR AS DIRECTED BY THE CONSULTANT AND AUTHORITIES HAVING JURISDICTION.

2.3.6. REMOVE OR MAKE SAFE OTHER SERVICES AS INDICATED ON THE DRAWINGS OR AS DIRECTED BY THE CONSULTANT.

2.3.7. DO NOT INTERRUPT OR DAMAGE ACTIVE UTILITIES OR SERVICES DESIGNATED TO REMAIN IN SERVICE WITHOUT PRIOR COORDINATION AND APPROVAL.

2.4. DEMOLITION

2.4.1. REMOVE PORTIONS OF THE EXISTING BUILDING AS REQUIRED TO ACCOMMODATE THE NEW CONSTRUCTION. WHERE DEMOLITION AFFECTS PRIMARY STRUCTURAL ELEMENTS OR WHERE REQUESTED BY THE STRUCTURAL ENGINEER OR AUTHORITY HAVING JURISDICTION, PROVIDE SHOP DRAWINGS OR SKETCHES SHOWING ANY REQUIRED TEMPORARY OR PERMANENT STRUCTURAL SUPPORT.

2.4.2. REMOVE EXISTING EQUIPMENT, SERVICES, AND OBSTRUCTIONS AS REQUIRED TO ALLOW REPAIRS, REFINISHING, OR NEW CONSTRUCTION, AND REINSTATE OR REPLACE THEM AS THE WORK PROGRESSES WHERE INDICATED.

2.4.3. AT THE END OF EACH WORKING DAY, LEAVE PARTIALLY DEMOLISHED AREAS IN A STABLE AND SAFE CONDITION SO THAT NO PORTION IS AT RISK OF TOPPLING OR FALLING. PROVIDE TEMPORARY WEATHER PROTECTION AS NEEDED TO PROTECT INTERIOR AREAS THAT ARE TO REMAIN.

2.4.4. CARRY OUT DEMOLITION WORK IN A MANNER THAT MINIMIZES DUST GENERATION. APPLY WATER OR OTHER SUITABLE DUST-CONTROL MEASURES WHERE PRACTICAL AND AS PERMITTED BY AUTHORITIES HAVING JURISDICTION.

2.4.5. REMOVE MASONRY AND CONCRETE WALLS IN SMALLER SECTIONS WHERE NECESSARY TO REDUCE THE RISK OF DAMAGE TO STRUCTURE OR FINISHES TO REMAIN.

2.4.6. REMOVE AND DISPOSE OF CONTAMINATED OR HAZARDOUS MATERIALS, AS DEFINED BY AUTHORITIES HAVING JURISDICTION, IN ACCORDANCE WITH APPLICABLE BY-LAWS, REGULATIONS, AND GUIDELINES.

2.5. INSPECTION

2.5.1. ON COMPLETION OF DEMOLITION IN AN AREA AND BEFORE NEW WORK COMMENCES, ARRANGE FOR A REVIEW OF EXPOSED SUBSTRATES OR SUB-SURFACES BY THE CONTRACTOR'S SUPERVISOR AND, WHERE REQUIRED, BY THE CONSULTANT.

2.5.2. DO NOT PROCEED WITH NEW WORK IN AREAS WHERE CONDITIONS ARE UNSUITABLE OR WHERE REQUIRED REVIEWS HAVE NOT BEEN COMPLETED.

2.6. CLEANUP

2.6.1. AT THE END OF EACH WORKING DAY, LEAVE THE SITE IN A GENERALLY CLEAN AND SAFE CONDITION, WITH DEBRIS MANAGED SO AS NOT TO CREATE HAZARDS OR OBSTRUCTIONS.

2.6.2. PROMPTLY REMOVE AND DISPOSE OF DEMOLISHED MATERIALS, EXCEPT WHERE SPECIFICALLY NOTED TO BE RETAINED OR SALVAGED, IN ACCORDANCE WITH THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.

2.6.3. DO NOT SELL, BURY, OR BURN DEMOLITION OR CONSTRUCTION MATERIALS ON SITE.

2.6.4. LEAVE INTERIOR AREAS IN A "BROOM-CLEAN" CONDITION AFTER DEMOLITION, READY FOR REPAIR OR NEW CONSTRUCTION.

2.6.5. WHERE AFFECTED BY DEMOLITION, LEAVE EXTERIOR LANDSCAPED AREAS IN A "RAKED CLEAN" CONDITION AND PAVED AREAS IN A "BROOM-CLEAN" CONDITION, FREE OF LOOSE DEBRIS AND EXCESS DIRT.

EXCAVATION, FOUNDATIONS AND BACKFILL SPECIFICATIONS

1. GENERAL

1.1. SCOPE

1.1.1. THIS SPECIFICATION DEFINES THE REQUIREMENTS OF EXCAVATION, FOUNDATIONS CONSTRUCTION AND BACKFILLING INCLUDING DESIGN, FROST PROTECTION, SITE PREPARATION AND ASSOCIATED OPERATIONS.

1.2. SITE PREPARATION

1.2.1. PRIOR TO ANY EXCAVATION, VERIFY LOCATION OF EXISTING SERVICES AND TAKE ALL NECESSARY MEASURES TO MAINTAIN SERVICES WHERE REQUIRED. NOTIFY OWNER AND ENGINEER IF ANY SERVICES NOT SHOWN ON PLAN OR OTHERWISE EXPECTED ARE ENCOUNTERED. DO NOT PROCEED FURTHER UNTIL DIRECTED.

1.3. GEOTECHNICAL INVESTIGATION

1.3.1. ALL FOOTINGS SHALL BEAR ON UNDISTURBED NATIVE SOIL OR ON ENGINEERED FILL WITH A MINIMUM ALLOWABLE SOIL BEARING CAPACITY OF 75 KPA AT SLS (SERVICEABILITY LIMIT STATE) AND 125 KPA AT ULS (ULTIMATE LIMIT STATE), UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER.

1.3.2. BEARING SURFACES ARE TO BE REVIEWED BY THE GEOTECHNICAL ENGINEER OR A QUALIFIED PROFESSIONAL, WHERE REQUIRED BY THE CITY OF OTTAWA OR PROJECT DOCUMENTS, PRIOR TO PLACING CONCRETE. REFER TO THE LATEST GEOTECHNICAL REPORT FOR ADDITIONAL REQUIREMENTS.

1.4. SOIL PROTECTION

1.4.1. PROTECT SUB-GRADE FROM WATER AND FREEZING ADJACENT TO AND BELOW ALL FOOTINGS AT ALL TIMES DURING CONSTRUCTION.

1.4.2. PROVIDE MINIMUM FROST COVER FROM FINISHED GRADE TO THE UNDERSIDE OF FOOTINGS IN ACCORDANCE WITH THE 2024 ONTARIO BUILDING CODE, LOCAL MUNICIPAL REQUIREMENTS, AND THE GEOTECHNICAL REPORT.

1.4.3. WHERE THE REQUIRED FROST COVER CANNOT BE OBTAINED, CONSULT THE GEOTECHNICAL ENGINEER FOR INSULATION OR ALTERNATIVE FROST PROTECTION DETAILS.

1.5. FOUNDATION

1.5.1. PROVIDE DOWELS FROM FOOTINGS TO MATCH VERTICAL REINFORCING OF WALLS AND PIERS UNLESS OTHERWISE SHOWN.

1.5.2. ALL HORIZONTAL WALL REINFORCING TO BE CONTINUOUS THROUGH PIERS UNLESS OTHERWISE SHOWN.

1.5.3. FOOTINGS AND PIERS TO BE CONCENTRIC WITH COLUMN GRID LINES UNLESS OTHERWISE SHOWN. FOUNDATION WALL TO BE CONCENTRIC ABOVE FOOTINGS BELOW UNLESS OTHERWISE SHOWN.

1.5.4. CONSTRUCTION JOINTS AND CONTROL JOINTS IN WALLS SHALL BE POSITIONED AT PIERS LOCATIONS. MAXIMUM SPACING OF CONSTRUCTION JOINTS SHALL BE 65'-6"[20m] UNLESS OTHERWISE SHOWN.

1.5.5. NO SLEEVES, PIPES, HOLES OR NOTCHES SHALL BE PLACED THROUGH WALLS, SLABS, PIERS OR FOOTINGS EXCEPT AS DESIGNATED ON STRUCTURAL DRAWINGS.

1.5.6. FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE 2024 ONTARIO BUILDING CODE AND THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT NOTED IN SECTION 1.3 GEOTECHNICAL INVESTIGATION.

1.5.7. NO FOUNDATION ELEMENTS SHALL BE CONSTRUCTED UNTIL A WRITTEN APPROVAL OF THE UNDISTURBED SOIL BEARING CAPACITY IS PROVIDED BY A GEOTECHNICAL ENGINEER THROUGH ON-SITE INVESTIGATION. FAILURE TO COMPLETE THIS WORK COULD RESULT IN THE REMOVAL/REINSTATEMENT OF ANY/ALL FOUNDATION ELEMENTS AT CONTRACTOR'S OWN COST.

1.5.8. WHERE A GEOTECHNICAL ENGINEER IS ENGAGED FOR THE PROJECT OR REQUIRED BY THE CITY OF OTTAWA, DO NOT PLACE FOUNDATION CONCRETE UNTIL THE BEARING CONDITIONS HAVE BEEN REVIEWED AND ACCEPTED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND APPLICABLE APPROVALS. ANY WORK COMPLETED CONTRARY TO THESE REQUIREMENTS MAY NEED TO BE MODIFIED OR REPLACED AT THE CONTRACTOR'S COST.

1.6. BACKFILLING

1.6.1. THE GEOTECHNICAL REQUIREMENTS SHALL TAKE PRECEDENCE OVER THESE SPECIFICATION. REFER TO THE LATEST GEOTECHNICAL REPORT AS NOTED IN NOTE 1.3. GEOTECHNICAL INVESTIGATION.

1.6.2. BACKFILL FOUNDATION WALLS SO THAT THE LEVEL OF BACKFILL AGAINST ONE SIDE IS NEVER GREATER THAN 1'-6" ABOVE THE LEVEL ON THE OTHER SIDE, UNLESS TEMPORARY BRACING IS PROVIDED.

1.6.3. DO NOT PLACE BACKFILL AGAINST WALL RETAINING EARTH, (EXCEPT CANTILEVER RETAINING WALLS) UNTIL FLOOR AT THE TOP AND BOTTOM OF RETAINING WALL IS PLACED AND REACHED THEIR DESIGN CAPACITY.

1.6.4. BACKFILL TO WITHIN 8"[203] OF UNDERSIDE OF SLAB-ON-GRADE WITH GRANULAR 'B' TYPE I IN LAYERS UP TO 12"[305]]THICK, COMPACTED TO MINIMUM 95% SPMDD OR AS RECOMMENDED IN THE GEOTECHNICAL REPORT.

1.6.5. FINAL 8"[203] UNDER SLAB TO BE GRANULAR 'A' COMPACTED TO MINIMUM 98% SPMDD OR AS RECOMMENDED IN THE GEOTECHNICAL REPORT.

1.6.6. RE-USE OF EXCAVATED GRANULAR MATERIAL IS SUBJECT TO REVIEW AND ACCEPTANCE BY THE GEOTECHNICAL CONSULTANT, WHERE ENGAGED.

1.7. FORMWORK

1.7.1. VERIFY LINES, LEVELS AND WALL CENTERS BEFORE PROCEEDING WITH FORMWORK AND ENSURE DIMENSIONS AGREE WITH DRAWINGS.

1.7.2. CONSTRUCT FORMS TO PRODUCE FINISHED CONCRETE CONFORMING TO SHAPE, DIMENSIONS, LOCATIONS AND LEVELS INDICATED WITHIN TOLERANCES REQUIRED BY CSA A23.1-24/A23.2-24. ALIGN FORM JOINTS AND MAKE WATERTIGHT. KEEP FORM JOINTS TO MINIMUM. LOCATE HORIZONTAL FORM JOINTS FOR EXPOSED WALLS TO APPROVAL OF ARCHITECT. CLEAN FORMWORK IN ACCORDANCE WITH CSA A23.1-24/A23.2-24, BEFORE PLACING CONCRETE.

1.7.3. FORM CHASES, SLOTS, OPENINGS, DRIPS, RECESSES EXPANSION AND CONTROL JOINTS AS INDICATED.

1.7.4. LEAVE FORMWORK IN PLACE FOR A MINIMUM PERIOD OF TIME OF 48 HOURS AFTER PLACING CONCRETE. AFTER FORM REMOVAL, COVER AND PROTECT WITH INSULATED TARPS FOR COLD WEATHER OPERATION.

1.7.5. OBTAIN ENGINEER'S PERMISSION BEFORE FRAMING OPENINGS NOT INDICATED IN CONCRETE SLABS, WALLS, PIERS AND FOOTINGS.

1.8. SLAB-ON-GRADE

1.8.1. REFER TO DRAWINGS FOR SLABS ON GRADE THICKNESS AND REINFORCEMENT.

1.8.2. REFER TO THE GEOTECHNICAL REPORT FOR COMPOSITION AND COMPACTION OF THE FILL SUPPORTING SLAB ON GRADE.

1.8.3. PROVIDE ∫"[13] ASPHALT IMPREGNATED FIBREBOARD BETWEEN SLABS ON GRADE & FOUNDATION WALLS OR COLUMNS UNLESS OTHERWISE SHOWN.

1.8.4. SAW CUT FOR SLAB ON GRADE TO BE ⨍ X SLAB THICKNESS) BY ∫" [6] WIDE. SAW CUTTING TO BE COMPLETED WITHIN THE FIRST 24 HOURS AFTER CONCRETE PLACEMENT. SAW CUTTING SHALL BEGIN A SOON AS CONCRETE CAN SUPPORT THE WORKERS AND EQUIPMENT BUT NOT LESS THAN 8 HOURS AFTER CONCRETE PLACEMENT.

1.8.5. SPACE SAW CUTS ON A GRID OF (30 X SLAB THICKNESS). LIMIT RATIO OF LENGTH TO WIDTH OF ANY SAW CUT PANEL TO 1.5 MAXIMUM, AVOID LONG & NARROW SAW CUT PANELS. LOCATE SAW CUTS ALONG COLUMN LINES WHERE POSSIBLE. SAW CUTS TO BE FILLED WITH APPROVED BITUMINOUS COMPOUND OR CAULKING.

1.8.6. CONTRACTOR TO PROVIDE THE ENGINEER WITH DOCUMENTATION SHOWING PROPOSED SAW CUT LOCATIONS FOR APPROVAL UNLESS SAW CUTS LOCATIONS ARE OTHERWISE INDICATED ON THESE DRAWINGS.

CONCRETE SPECIFICATIONS

1. GENERAL

1.1. SCOPE

1.1.1. THIS SPECIFICATION DEFINES THE REQUIREMENTS TO DESIGN, SUPPLY, CONSTRUCT, TEST AND PROTECT REINFORCED CONCRETE AND PLAIN CONCRETE INCLUDING CONNECTIONS, BENDS, PLACEMENT, SPACING, SPLICING AND PREPARATION OF SHOP/ERECTION DRAWINGS AND ASSOCIATED OPERATIONS.

1.2. CODES AND STANDARDS

1.2.1. THE FOLLOWING CODES AND STANDARDS FORM PART OF THIS SPECIFICATION. EXCEPT WHERE NOTED OTHERWISE, USE THE LATEST EDITIONS AND ADDENDA. EXCEPT AS SPECIFICALLY STATED IN THIS SPECIFICATION OR MODIFIED BY THE DETAILS OF THE DRAWINGS, ALL WORK IS TO CONFORM TO THE APPLICABLE CODES AND STANDARDS.

1.2.1.1. CAN/CSA A23.3 DESIGN OF CONCRETE STRUCTURES.
1.2.1.2. CAN/CSA A23.2 TEST METHODS AND STANDARD PRACTICES FOR CONCRETE.
1.2.1.3. CAN/CSA A23.1 CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION.
1.2.1.4. CAN/CSA G30.18 CARBON STEEL BARS FOR CONCRETE REINFORCEMENT.

1.3. CEMENT ASSOCIATION OF CANADA (CAC):

1.3.1. CODE OF STANDARD PRACTICE FOR CONCRETE DESIGN (CONCRETE DESIGN HANDBOOK).

1.4. REINFORCING STEEL INSTITUTE OF CANADA

1.4.1. MANUAL OF STANDARD PRACTICE FOR REINFORCING STEEL (REINFORCING STEEL MANUAL OF STANDARD PRACTICE)

2. QUALITY ASSURANCE

2.1. INSPECTION AND TESTING:

2.1.1. THE 2024 ONTARIO BUILDING CODE REQUIRES FIELD REVIEWS OF THE BUILDING DURING CONSTRUCTION. THE CONTRACTOR IS TO NOTIFY THE ENGINEER AT THE START OF RELEVANT WORK TO FACILITATE SUCH REVIEWS BY THE STRUCTURAL ENGINEER.

2.1.2. NOTIFY THE ENGINEER A MINIMUM OF 24 HOURS IN ADVANCE FOR REINFORCING STEEL INSPECTIONS. THE CONTRACTOR IS TO ENSURE THAT APPROXIMATELY 95% OF THE REINFORCEMENT IN THE AREA UNDER REVIEW IS IN PLACE AT THE TIME OF INSPECTION.

2.1.3. WHERE APPLICABLE, THE CONTRACTOR IS TO FURNISH THE FOLLOWING TO THE STRUCTURAL ENGINEER IN ADVANCE OF CONCRETE PLACEMENT OR ERECTION OF STRUCTURAL ELEMENTS:
- 2.1.3.1. SOIL BEARING CONFIRMATION OR GEOTECHNICAL REPORT, WHERE REQUIRED BY THE AUTHORITY HAVING JURISDICTION OR THE ENGINEER.
- 2.1.3.2. REINFORCING STEEL PLACING DRAWINGS AND BAR LISTS.
- 2.1.3.3. PROPOSED CONSTRUCTION JOINT DETAILS FOR SLABS AND WALLS, WHERE NOT SHOWN ON THE STRUCTURAL DRAWINGS.
- 2.1.3.4. CONCRETE CYLINDER TEST REPORTS FOR STRUCTURAL CONCRETE, IN ACCORDANCE WITH THE REQUIREMENTS OF THESE NOTES AND CSA A23.2.

2.1.4. CONCRETE TESTING IS TO BE CARRIED OUT BY A TESTING LABORATORY ACCEPTABLE TO THE OWNER AND IN ACCORDANCE WITH CSA A23.1 / CSA A23.2. COSTS OF TESTS WILL BE PAID BY THE OWNER UNLESS NOTED OTHERWISE IN THE CONTRACT DOCUMENTS.

2.1.5. AS A MINIMUM, PROVIDE ONE SET OF TEST CYLINDERS PER DAY FOR EACH CLASS OF CONCRETE PLACED, OR AT INTERVALS NOT EXCEEDING 76 m³ OR 465 m² (SLAB), WHICHEVER RESULTS IN MORE FREQUENT TESTING, OR MORE FREQUENTLY IF REQUIRED BY THE SPECIFICATIONS, THE OWNER, OR THE AUTHORITY HAVING JURISDICTION. EACH SET IS TO CONSIST OF AT LEAST FOUR CYLINDERS, WITH ASSOCIATED SLUMP, AIR CONTENT, AND UNIT WEIGHT TESTS, IN ACCORDANCE WITH CSA A23.2.

2.1.6. WHERE REQUIRED BY THE ENGINEER, ADDITIONAL TEST CYLINDERS MAY BE TAKEN, INCLUDING DURING COLD WEATHER CONCRETING. CURE CYLINDERS IN ACCORDANCE WITH CSA A23.2; FIELD-CURED CYLINDERS, WHERE USED, ARE TO BE CURED UNDER CONDITIONS SIMILAR TO THE CONCRETE THEY REPRESENT. INSPECTION AND TESTING BY THE CONSULTANT DO NOT REPLACE THE CONTRACTOR'S QUALITY CONTROL NOR RELIEVE THE CONTRACTOR OF CONTRACTUAL RESPONSIBILITIES.

2.1.7. MAINTAIN RECORDS OF POURED CONCRETE ITEMS. RECORD DATE, LOCATION OF POUR, QUANTITY, AIR TEMPERATURE, AND TEST SAMPLES TAKEN. PROVIDE ALL RECORDS AND TEST DATA TO THE CONSULTANT. PREPARE PREVIOUSLY PLACED CONCRETE BY CLEANING WITH STEEL BRUSH AND APPLYING BONDING AGENT. APPLY BONDING AGENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. POUR CONCRETE CONTINUOUSLY BETWEEN PRE-DETERMINED CONSTRUCTION AND CONTROL JOINTS.

2.2. SHOP AND ERECTION DRAWINGS:

2.2.1. ALL SHOP AND ERECTION DRAWINGS ARE TO BE CHECKED AND SIGNED BY THE CONTRACTOR PRIOR TO SUBMISSION. SUBMIT DRAWINGS TO THE OWNER'S REPRESENTATIVE OR ENGINEER FOR REVIEW BEFORE FABRICATION.

2.2.2. SHOP AND ERECTION DRAWINGS ARE TO SHOW THE GENERAL ARRANGEMENT OF WORK AND IDENTIFY EACH MEMBER TO BE FABRICATED AND ERECTED, WITH DETAILS OF CONNECTIONS, ERECTION SEQUENCE, AND HANDLING REQUIREMENTS, AS APPLICABLE.

2.2.3. SHOP AND ERECTION DRAWINGS ARE TO SHOW MATERIALS, FABRICATION, ERECTION, REINFORCEMENT SIZES, CONCRETE COVER, SPACING, CONNECTION DETAILS INCLUDING CUTS, LAP SPLICES, DEVELOPMENT LENGTHS, HOOKS, CONNECTIONS, AND WELDS.

2.2.4. WHERE STRUCTURAL CONNECTIONS OR TEMPORARY WORKS ARE DELEGATED DESIGN ITEMS, THE ASSOCIATED SHOP AND ERECTION DRAWINGS, CONNECTION DETAILS, AND CALCULATIONS ARE TO BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN ONTARIO, PRIOR TO SUBMISSION FOR REVIEW.

2.2.5. REVIEW BY THE OWNER'S REPRESENTATIVE OR ENGINEER IS FOR THE PURPOSE OF ASCERTAINING GENERAL CONFORMANCE WITH THE DESIGN INTENT. SUCH REVIEW DOES NOT TRANSFER RESPONSIBILITY FOR DETAIL DESIGN FROM THE CONTRACTOR OR OTHERS RESPONSIBLE FOR THE SHOP/ERECTION DRAWINGS, NOR RELIEVE THE CONTRACTOR OF THE OBLIGATION TO MEET ALL CONTRACT REQUIREMENTS.

3. PRODUCTS

3.1. MATERIALS

3.1.1. ALL MATERIALS ARE TO BE NEW AND FREE FROM DEFECTS THAT WOULD IMPAIR STRENGTH, DURABILITY, OR APPEARANCE.

3.2. CEMENT

3.2.1. PROVIDE PORTLAND CEMENT OF CANADIAN MANUFACTURE CONFORMING TO CSA A3001, TYPE GU (NORMAL GENERAL USE CEMENT), UNLESS NOTED OTHERWISE.

3.3. AGGREGATES

3.3.1. PROVIDE CLEAN, SOUND, UNCOATED SAND AND COARSE AGGREGATE FROM APPROVED SOURCES IN ACCORDANCE WITH CSA A23.1 / CSA A23.2.

3.4. WATER

3.4.1. PROVIDE CLEAN MIXING WATER, FREE FROM INJURIOUS AMOUNTS OF OILS, ACIDS, SALTS, ORGANIC MATERIALS, OR OTHER HARMFUL SUBSTANCES, IN ACCORDANCE WITH CSA A23.1.

3.5. READY MIX CONCRETE

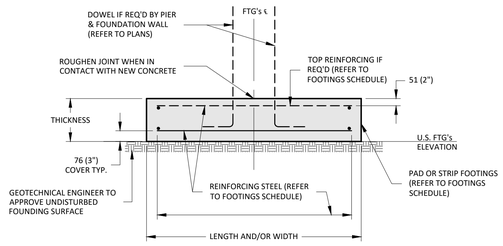
3.5.1. READY-MIXED CONCRETE IS TO CONFORM TO CSA A23.1 / CSA A23.2. UNLESS NOTED OTHERWISE ON THE DRAWINGS, CONCRETE NOT EXPOSED TO THE ELEMENTS IS TO HAVE A MINIMUM 28-DAY SPECIFIED COMPRESSIVE STRENGTH OF 25 MPa. SUBMIT MIX DESIGNS TO AN APPROVED TESTING LABORATORY AND TO THE ENGINEER OF RECORD FOR REVIEW PRIOR TO COMMENCING WORK. CALCIUM CHLORIDE IS NOT TO BE USED AS AN ADMIXTURE.

3.6. AIR ENTRAINMENT:

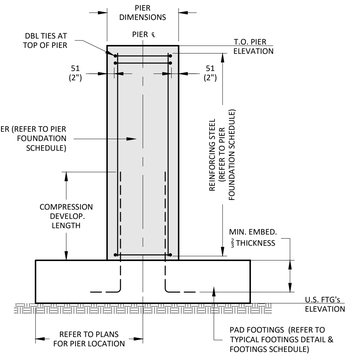
3.6.1. PROVIDE AIR ENTRAINMENT IN ACCORDANCE WITH CSA A23.1 AND ASTM C260, WHERE APPLICABLE FOR THE SPECIFIED EXPOSURE CLASS.

3.7. FLY-ASH AND SLAG

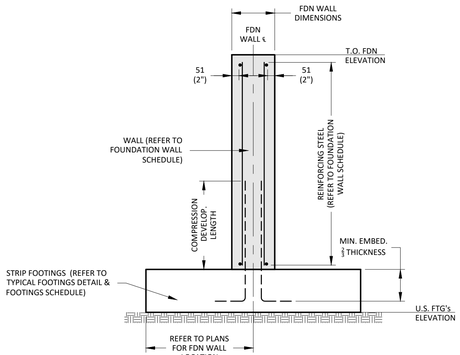
3.7.1. DO N



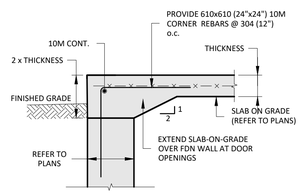
TYPICAL FOOTINGS DETAIL



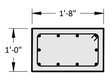
TYPICAL PIER FOUNDATION DETAIL DETAIL

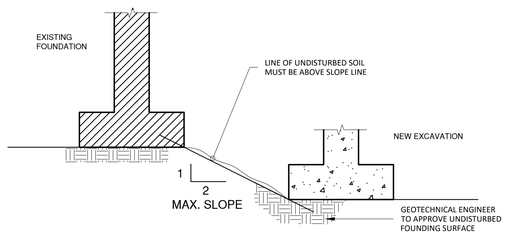


TYPICAL FOUNDATION WALL DETAIL



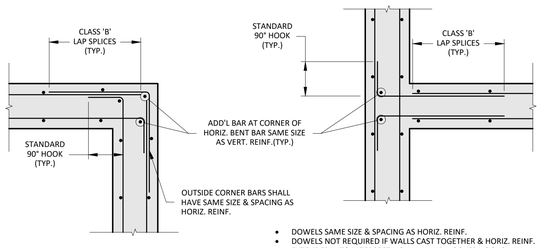
TYPICAL SLAB DETIAL AT DOOR OPENING





UNLESS OTHERWISE OUTLINED IN GEOTECHNICAL REPORT DO NOT EXCAVATE BELOW A LINE EXTENDING DOWNWARD FROM ANY BEARING STRATA AT A SLOPE OF 1 VERTICAL TO 2 HORIZONTAL. ADJUST FOOTING AND TRENCH ELEVATIONS TO MEET THIS REQUIREMENT (SEE DIAGRAM).

PROTECT LATERAL STABILITY OF BEARING STRATA UNLESS NOTED



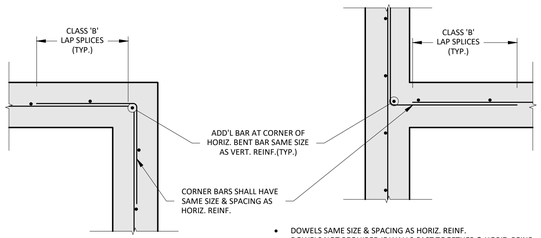
LAPPING AT CORNER OF WALL

ONE LAYER OF REINFORCEMENT

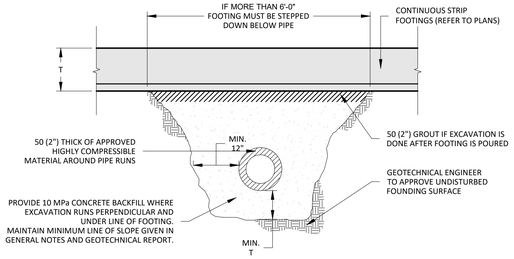
- DOWELS SAME SIZE & SPACING AS HORIZ. REINF.
- DOWELS NOT REQUIRED IF WALLS CAST TOGETHER & HORIZ. REINF. EXTENDED INTO INTERSECTING WALL AND HOOKED AS SHOWN.

DOWELING OF INTERSECTING WALLS

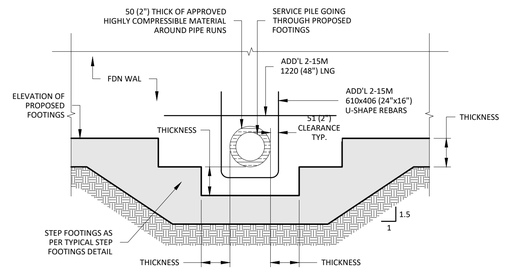
ONE LAYER OF REINFORCEMENT



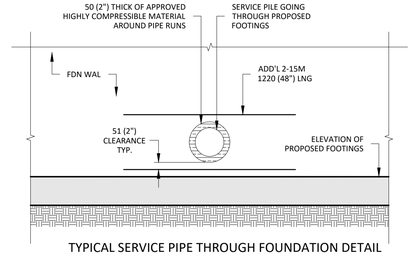
TYPICAL CONCRETE WALL DETAILS



TYPICAL BACKFILL AROUND PIPE UNDER STRIP FOOTING



TYPICAL SERVICE PIPE THROUGH FOOTINGS DETAIL



TYPICAL SERVICE PIPE THROUGH FOUNDATION DETAIL

REINFORCING BAR DEVELOPMENT LENGTH TABLE

CONCRETE STRENGTH (MPa)	TENSION DEVELOPMENT LENGTH FOR REINFORCING BAR GRADE 400 MPa, Ld IN mm (in")				
	10M	15M	20M	25M	30M
15	420 (17")	595 (23")	725 (29")	1171 (46")	1390 (55")
20	364 (14")	515 (20")	628 (25")	1014 (40")	1203 (47")
25	325 (13")	461 (18")	562 (22")	907 (36")	1076 (42")
30	305 (12")	421 (17")	513 (20")	828 (33")	983 (39")
35	305 (12")	389 (15")	475 (19")	767 (30")	910 (36")
40	305 (12")	364 (14")	444 (17")	717 (28")	851 (34")

- FOR SPECIAL CONDITIONS MULTIPLY THE VALUES LISTED ABOVE BY THE FOLLOWING FACTORS:
1. EPOXY COATED REINFORCING (x 1.5)
2. HORIZONTAL REINFORCING WITH >12"[304] CONCRETE BELOW (x 1.3)
3. FOR CONDITIONS 1 & 2 OCCURRING SIMULTANEOUSLY (x 1.7)
4. FOR SEMI-LOW DENSITY CONCRETE MULTIPLY VALUES IN TABLE BY (x 1.2)
5. FOR BUNDLED BARS, MULTIPLY VALUES IN TABLE BY 10% FOR A TWO BAR BUNDLE, 20% FOR A THREE BAR BUNDLE AND 33% FOR A FOUR BAR BUNDLE

CONCRETE STRENGTH (MPa)	TENSION DEVELOPMENT LENGTH WITH STANDARD END HOOKS FOR REINFORCING BAR GRADE 400 MPa, Ldh IN mm (in")				
	10M	15M	20M	25M	30M
15	204 (8")	289 (11")	352 (14")	455 (18")	540 (21")
20	177 (7")	250 (10")	305 (12")	394 (16")	468 (18")
25	158 (6")	224 (9")	273 (11")	353 (14")	419 (16")
30	150 (6")	204 (8")	249 (10")	322 (13")	382 (15")
35	150 (6")	189 (7")	231 (9")	298 (12")	354 (14")
40	150 (6")	177 (7")	216 (8")	279 (11")	331 (13")

- ALL HOOKED REBAR TO HAVE A MINIMUM CONCRETE COVER OF 23/8"[60]
- FOR SPECIAL CONDITIONS MULTIPLY THE VALUES LISTED ABOVE BY THE FOLLOWING FACTORS:
1. EPOXY COATED REINFORCING (x 1.2)
2. FOR SEMI-LOW DENSITY CONCRETE MULTIPLY VALUES IN TABLE BY (x 1.2)

CONCRETE STRENGTH (MPa)	COMPRESSION DEVELOPMENT LENGTH FOR REINFORCING BAR GRADE 400 MPa, Ldc IN mm (in")				
	10M	15M	20M	25M	30M
15	280 (11")	397 (16")	483 (19")	625 (25")	741 (29")
20	243 (10")	343 (14")	419 (16")	541 (21")	642 (25")
25	217 (9")	307 (12")	374 (15")	484 (19")	574 (23")
30	203 (8")	282 (11")	343 (14")	444 (17")	524 (21")
35	203 (8")	282 (11")	343 (14")	444 (17")	485 (19")
40	203 (8")	282 (11")	343 (14")	444 (17")	454 (18")

- FOR SPECIAL CONDITIONS MULTIPLY THE VALUES LISTED ABOVE BY THE FOLLOWING FACTORS:
1. REINFORCEMENT ENCLOSED WITHIN 1/4"[6] SPIRAL REINFORCEMENT OR 10M TIES SPACED AT NOT MORE THAN 100 MM ON CENTRE (X 0.75)
2. FOR BUNDLED BARS, MULTIPLY VALUES IN TABLE BY 10% FOR A TWO BAR BUNDLE, 20% FOR A THREE BAR BUNDLE AND 33% FOR A FOUR BAR BUNDLE

REINFORCING BAR LAP SPLICE LENGTH TABLE

CONCRETE STRENGTH (MPa)	CLASS B TENSION LAP SPLICES LENGTH FOR REINFORCING BAR GRADE 400 MPa, IN mm (in")				
	10M	15M	20M	25M	30M
15	546 (22")	773 (30")	943 (37")	1523 (60")	1807 (71")
20	473 (19")	670 (26")	816 (32")	1319 (52")	1564 (62")
25	423 (17")	599 (24")	730 (29")	1179 (46")	1399 (55")
30	386 (15")	547 (22")	666 (26")	1077 (42")	1277 (50")
35	358 (14")	506 (20")	617 (24")	997 (39")	1183 (47")
40	334 (13")	474 (19")	577 (23")	932 (37")	1106 (44")

- LAP SPLICES SHALL NOT BE USED FOR BARS LARGER THAN 35M, EXCEPT IN COMPRESSION
- FOR SPECIAL CONDITIONS MULTIPLY THE VALUES LISTED ABOVE BY THE FOLLOWING FACTORS:
1. EPOXY COATED REINFORCING (X 1.5)
2. HORIZONTAL REINFORCING WITH >12"[304] CONCRETE BELOW (X 1.3)
3. FOR CONDITIONS 1 & 2 OCCURRING SIMULTANEOUSLY (X 1.7)
4. FOR SEMI-LOW DENSITY CONCRETE MULTIPLY VALUES IN TABLE BY (X 1.2)
5. FOR BUNDLED BARS, MULTIPLY VALUES IN TABLE BY 10% FOR A TWO BAR BUNDLE, 20% FOR A THREE BAR BUNDLE AND 33% FOR A FOUR BAR BUNDLE

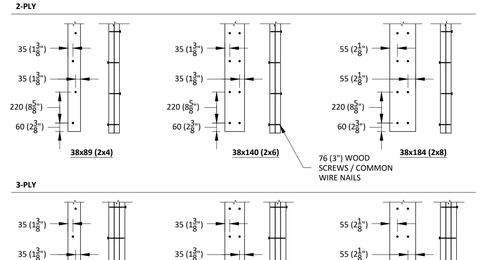
CONCRETE STRENGTH (MPa)	COMPRESSION LAP SPLICES LENGTH FOR REINFORCING BAR GRADE 400 MPa, IN mm (in")				
	10M	15M	20M	25M	30M
STANDARD LAP	330 (13")	467 (18")	569 (22")	736 (29")	873 (34")

- WHEN BARS OF DIFFERENT SIZES ARE LAP SPLICED IN COMPRESSION, THE SPLICE LENGTH SHALL BE THE LARGER OF THE DEVELOPMENT LENGTH OF THE LARGER BAR OR THE SPLICE LENGTH OF THE SMALLER BAR

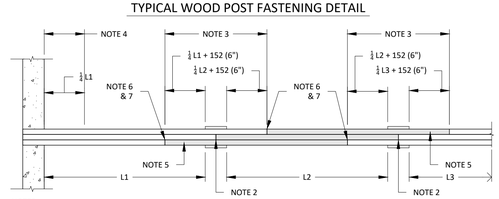
SLAB-ON-GRADE REINFORCEMENT SCHEDULE

SLAB THICKNESS	DOWEL SIZE AND SPACING
UP TO 76mm (up to 3")	152x152 - MW19 x MW19 (6x6 - W2.9 x W2.9)
UP TO 127mm (up to 5")	152x152 - MW26 x MW26 (6x6 - W4.0 x W4.0)
UP TO 178mm (up to 7")	102x102 - MW26 x MW26 (4x4 - W4.0 x W4.0)

NOTES:
1. PLACE W.W.M. ↕ FROM THE TOP OF S.O.G.

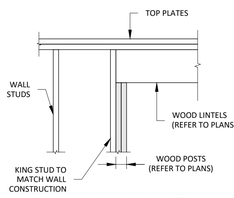


TYPICAL WOOD POST FASTENING DETAIL

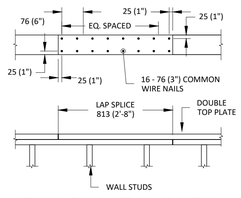


NOTES:
1) INDIVIDUAL MEMBERS OF A BUILT-UP BEAM SHALL HAVE A MINIMUM THICKNESS OF 38 (1½") AND LAID ON EDGE.
2) WHERE INDIVIDUAL MEMBERS OF A BUILT-UP BEAM ARE BUTTED TOGETHER TO FORM A JOINT, THE JOINT SHALL OCCUR OVER A SUPPORT, EXCEPT AS PERMITTED IN NOTE 3.
3) WHERE A BEAM IS CONTINUOUS OVER MORE THAN ONE SPAN, INDIVIDUAL MEMBERS ARE PERMITTED TO BE BUTTED TOGETHER TO FORM A JOINT AT OR WITHIN 152 (6") OF THE END QUARTER POINTS OF THE CLEAR SPANS.
4) INDIVIDUAL MEMBERS ARE NOT PERMITTED TO BE BUTTED TOGETHER TO FORM A JOINT AT BEAM ENDS.
5) MEMBERS JOINED AT QUARTER POINTS SHALL BE CONTINUOUS OVER ADJACENT SUPPORTS.
6) JOINTS IN INDIVIDUAL MEMBERS OF A BEAM THAT ARE LOCATED AT OR NEAR THE END QUARTER POINTS SHALL NOT OCCUR IN ADJACENT MEMBERS AT THE SAME QUARTER POINT AND SHALL NOT REDUCE THE EFFECTIVE BEAM WIDTH BY MORE THAN HALF.
7) NOT MORE THAN ONE BUTT JOINT SHALL OCCUR IN ANY INDIVIDUAL MEMBER OF A BUILT-UP BEAM WITHIN ANY ONE SPAN.
8) WHERE INDIVIDUAL MEMBERS ARE LAID ON EDGE TO FORM A BUILT-UP BEAM, THEY SHALL BE NAILED TOGETHER WITH A DOUBLE ROW OF NAILS, NOT LESS THAN 89 (3½") IN LENGTH, SPACED NOT MORE THAN 457 (18") APART IN EACH ROW, WITH THE END NAILS LOCATED 302 (4") TO 152 (6") FROM THE END OF EACH PIECE, EXCEPT AS PERMITTED IN NOTE 9.
9) WHERE INDIVIDUAL MEMBERS OF A BUILT-UP BEAMS ARE NOT NAILED TOGETHER AS DESCRIBED IN NOTE 8, THEY SHALL BE BOLTED TOGETHER WITH BOLTS NOT LESS THAN 12.7 (½") Ø, EQUIPPED WITH WASHERS, SPACED NOT MORE THAN 1220 (48") o.c., WITH THE END BOLTS LOCATED NOT MORE THAN 610 (24") FROM THE ENDS OF THE MEMBERS.

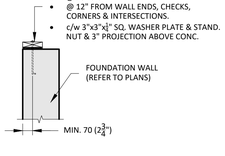
TYPICAL SPLICING OF CONTINUOUS BUILT-UP BEAMS DETAIL



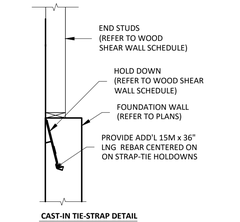
TYPICAL WOOD LINTEL DETAIL



TYPICAL TOP PLATE SPLICE DETAIL



SILL PLATE ANCHOR DETAIL



CAST-IN TIE-STRAP DETAIL

HOLD DOWN INSTALLATION DETAIL DETAIL

ADDITIONAL NOTES:
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By the use of the drawings for construction of the project, the clients/owners represents that they have reviewed and approved these drawings. The contractors represent that they have visited the site, familiarized themselves with the local conditions, verified field dimensions and correlated their observations with the requirements of the contract documents.

An experienced contractor should be able to take these drawings to provide the owner with a reasonable budget, and provide for contingencies that have not been designed for but can be expected based on building type and general configuration.

These drawings illustrate the required work to be done; the engineer is not responsible for the means, methods, techniques, sequences and procedures used to do the work, or the safety aspects of construction. Contractor shall check and verify all dimensions and determine all conditions at the site and shall be responsible for knowing how they affect the work. Submittal of a bid to perform this work is an acknowledgement of the duties and responsibilities required and they have been fully considered during the planning of work and bid pricing. No claims for extra charges due to these conditions will be forthcoming.

All drawings are only to be used for the purpose indicated in the revision block. Unless the revision is titled "ISSUED FOR CONSTRUCTION", stamped, dated and signed by the engineer, these drawings shall be considered preliminary and shall not be used as a construction document.

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No.	REVISION / ISSUE	DATE
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02	Issued For Permit/Temder	2 June 2026
01	Issued For Client Review	24 March 2026

PROJECT NORTH

STAMP

LICENSED PROFESSIONAL ENGINEER
A. M. A. MUSTAFA
100150203
02 June 2026
PROVINCE OF ONTARIO

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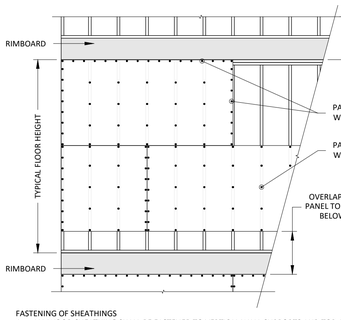
186 Pembroke St E, Pembroke, ON K8A 3J7

PROJECT
Admin Building
240 County Rd 4. Bath, ON K0H 1G0

DRAWING TITLE
TYPICAL DETAILS & DESIGN CRITERIA

PROJECT No:	230300
DESIGNED BY:	A.M.
DRAWN:	A.M.
DATE:	March 2026

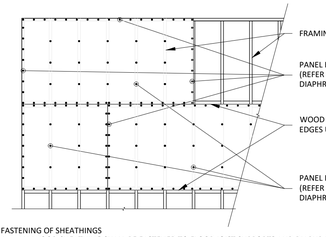
S002



FASTENING OF SHEATHINGS

1. ALL WOOD SHEATHING SHALL BE FASTENED TO VERTICAL WALL SUPPORTS AND TOP AND BOTTOM PLATES SPACED NOT MORE THAN 152 (6") o.c. ALONG PANEL EDGES AND 305 (12") o.c. ALONG PANEL FIELD SUPPORTS USING:
   a. 64 ($2\frac{1}{2}$") COMMON WIRE NAILS WHEN FASTENING TO WOOD FRAMING.
   b. BUGLE HEAD #8 x 51 (2") PLYWOOD-TO-METAL SCREWS WHEN FASTENING TO LIGHT GAUGE STEEL STUDS.
2. ALL EXTERIOR GYPSUM SHEATHING SHALL BE FASTENED TO VERTICAL WALL SUPPORTS AND TOP & BOTTOM PLATES SPACED NOT MORE THAN 152 (6") o.c. ALONG PANEL EDGES AND 305 (12") o.c. ALONG PANEL FIELD SUPPORTS USING:
   a. BUGLE HEAD #6 x 51 (2") DRYWALL-TO-WOOD SCREWS WHEN FASTENING TO WOOD FRAMING.
   b. BUGLE HEAD #6 x 32 ($1\frac{1}{4}$") DRYWALL-TO-METAL SCREWS WHEN FASTENING TO LIGHT GAUGE STEEL STUDS.
3. ALL INTERIOR GYPSUM WALL BOARD SHALL BE FASTENED TO VERTICAL WALL SUPPORTS AND TOP AND BOTTOM PLATES SPACED NOT MORE THAN 203 (8") o.c. ALONG PANEL EDGES AND 406 (16") o.c. ALONG PANEL FIELD SUPPORTS USING:
   a. BUGLE HEAD #6 x 51 (2") DRYWALL-TO-WOOD SCREWS WHEN FASTENING TO WOOD FRAMING.
   b. BUGLE HEAD #6 x 32 ($1\frac{1}{4}$") DRYWALL-TO-METAL SCREWS WHEN FASTENING TO LIGHT GAUGE STEEL STUDS.

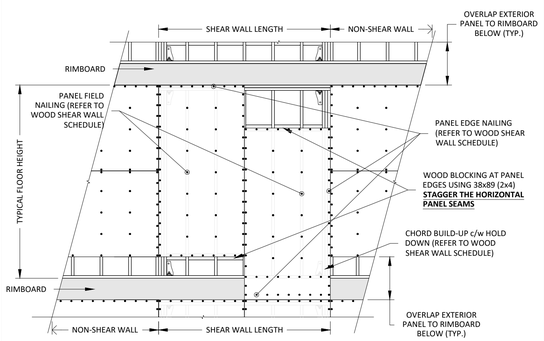
TYPICAL NON-SHEAR WALL FASTENING PATTERN



FASTENING OF SHEATHINGS

1. ALL WOOD SHEATHING SHALL BE FASTENED TO FLOOR JOIST SUPPORTS AND DIAPHRAGM BOUNDARY SPACED NOT MORE THAN 152 (6") o.c. ALONG PANEL EDGES AND 305 (12") o.c. ALONG PANEL FIELD SUPPORTS USING:
   a. 64 ($2\frac{1}{2}$") COMMON WIRE NAILS, OR #8 x 64 ($2\frac{1}{2}$") FLAT HEAD SQUARE DRIVE CONSTRUCTION SCREWS WHEN FASTENING TO WOOD FRAMING.
   b. BUGLE HEAD #8 x 51 (2") PLYWOOD-TO-METAL SCREWS WHEN FASTENING TO LIGHT GAUGE STEEL STUDS.
2. ALL WOOD SHEATHING SHALL BE FASTENED TO ROOF RAFTER/TRUSS SUPPORTS AND DIAPHRAGM BOUNDARY SPACED NOT MORE THAN 152 (6") o.c. ALONG PANEL EDGES AND PANEL FIELD SUPPORTS USING:
   a. 64 ($2\frac{1}{2}$") COMMON WIRE NAILS, OR #8 x 64 ($2\frac{1}{2}$") FLAT HEAD SQUARE DRIVE CONSTRUCTION SCREWS WHEN FASTENING TO WOOD FRAMING.
   b. BUGLE HEAD #8 x 51 (2") PLYWOOD-TO-METAL SCREWS WHEN FASTENING TO LIGHT GAUGE STEEL STUDS.

TYPICAL FLOOR/ROOF FASTENING PATTERN



TYPICAL WOOD SHEAR WALL CONSTRUCTION DETAIL

1. ALL LOAD BEARING STUD WALLS TO BE 38x140 (2x6) SPF No.1/No.2 STUDS @ 406 (16") o.c. U.N.O. ON PLANS c/w
   - 1 - "STUD SIZE" SPF No.1/No.2 BLOCKING @ 1220 (48") o.c. (MIN. 1 ROW PER FLOOR)
   - 2 - "STUD SIZE" SPF No.1/No.2 TOP PLATE
   - 1 - "STUD SIZE" SPF No.1/No.2 SILL PLATE
2. ALL WOOD WALL SHEATHING TO BE MIN. OF 11 ($\frac{7}{16}$") c/w
   - FASTENERS AS PER (TYPICAL NON-SHEAR WALL FASTENING PATTERN)
3. ALL GYPSUM BOARD SHEATHING TO BE MIN. OF 12.7 ($\frac{1}{2}$") c/w
   - INCREASE THICKNESS AS REQ'D TO SUIT ARCH. REQUIREMENTS
   - FASTENERS AS PER (TYPICAL NON-SHEAR WALL FASTENING PATTERN)
4. ALL WOOD FLOOR SHEATHING TO BE MIN. OF 15 ($\frac{5}{8}$") c/w
   - SUBFLOOR ADHESIVE (FULL LENGTH OF SUPPORT MEMBERS)
   - FASTENERS AS PER (TYPICAL FLOOR/ROOF FASTENING PATTERN)
5. ALL WOOD ROOF SHEATHING TO BE MIN. OF 12.7 ($\frac{1}{2}$") c/w
   - FASTENERS AS PER (TYPICAL FLOOR/ROOF FASTENING PATTERN)

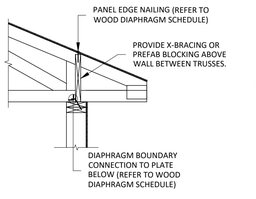
DIAMETER OF NAILS

NAIL LENGTH, mm (INCHES)	MINIMUM NAIL DIAMETER, mm (INCHES)
57 ($2\frac{1}{4}$")	2.87 (0.113")
64 ($2\frac{1}{2}$")	3.25 (0.131")
76 (3")	3.66 (0.148")
82 ($3\frac{1}{4}$")	3.66 (0.148")
102 (4") or MORE	4.88 (0.192")

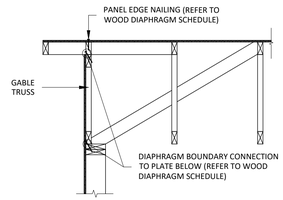
WOOD DIAPHRAGM SCHEDULE

MARK	PANEL THICKNESS	PANEL EDGE NAILING	BOUNDARY CONNECTION TO PLATE BELOW	REMARK
ROOF	$\frac{7}{16}$" THK OSB	$2\frac{1}{2}$" NAILS @ 6" o.c.	$3\frac{1}{4}$" TOE-NAILS @ 6" o.c.	-

- ALL DIAPHRAGMS TO BE FULLY BLOCKED U.N.O.
- ROOF TRUSS PERPENDICULAR TO SHEAR WALL: PROVIDE X-BRACING OR PREFAB BLOCKING ABOVE SHEAR WALL BETWEEN TRUSSES.
- ALL PANEL FIELD NAILING TO MATCH DIAPHRAGM NAIL SIZE BUT SPACED AT 12"[305] O.C.
- ALL PENETRATIONS IN SHEAR WALL SHALL BE SUBMITTED TO STRUCTURAL ENGINEER BEFORE COMMENCING WITH WORK.



ROOF TRUSSES PERPENDICULAR TO SHEAR WALL



ROOF TRUSSES PARALLEL TO SHEAR WALL

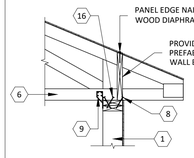
TYPICAL DIAPHRAGM BOUNDARY CONNECTION DETAIL

WOOD SHEAR WALL SCHEDULE

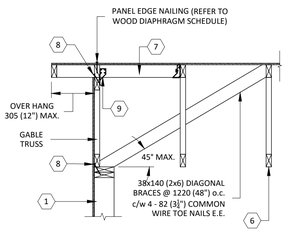
MARK	PANEL THICKNESS	PANEL EDGE NAILING	CHORD BUILD-UP	BOTTOM HOLDDOWN	BOTTOM PLATE CONNECTION TO SUPPORT BELOW	BLOCKING CONNECTION TO PLATE BELOW	REMARK
SW1	$\frac{7}{16}$" THK OSB	$2\frac{1}{2}$" NAILS @ 6" o.c.	2-2x6 E.E.	STHD14 STRAP-TIE HOLDOWNS + (24) - 3" NAILS	REFER TO SILL PLATE NOTE: SP1	-	-
SW2	$\frac{7}{16}$" THK OSB	$2\frac{1}{2}$" NAILS @ 6" o.c.	2-2x6 E.E.	-	REFER TO SILL PLATE NOTE: SP1	-	-

- ALL SHEAR WALLS TO BE FULLY BLOCKED U.N.O.
- WHERE PANELS ARE APPLIED ON BOTH FACES OF A WALL PANEL JOINTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS.
- PROVIDE DOUBLE STUDS AT PANEL EDGES WHEN SPACING IS LESS THAN 3"[75].
- PROVIDE DOUBLE JOISTS OR BLOCKING BETWEEN JOISTS, BELOW ALL SHEAR WALLS.
- WRAP AND FASTEN ALL STRAPS TO TRANSFER BEAMS BELOW SHEAR WALL WHERE APPLICABLE.
- ROOF TRUSS PERPENDICULAR TO SHEAR WALL: PROVIDE X-BRACING OR PREFAB BLOCKING ABOVE SHEAR WALL BETWEEN TRUSSES.
- ALL PANEL FIELD NAILING TO MATCH SHEAR WALL NAIL SIZE BUT SPACED AT 12"[305] O.C.
- ALL PENETRATIONS IN SHEAR WALL SHALL BE SUBMITTED TO STRUCTURAL ENGINEER BEFORE COMMENCING WITH WORK.
- NO PENETRATIONS ARE PERMITTED IN SHEAR WALL AT HOLD-DOWN ANCHORS AND CHORD LOCATIONS (24"[610] MIN. PROTECTION ZONE FROM END OF SHEAR WALL).
- ALL BUILD-UP CHORDS SHALL BE FASTENED TOGETHER WITH NAILS (PENETRATING ALL PLYS) IN A DOUBLE ROW, SPACED NOT MORE THAN 8"[203] APART IN EACH ROW.

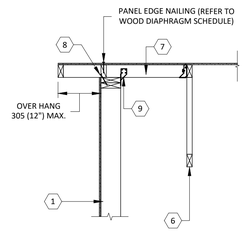
1. STUD WALL (REFER TO PLANS).
2. ~~FOUNDATION WALL (REFER TO PLANS).~~
3. ~~RIMBOARD.~~
4. ~~WOOD BLOCKING TO NEXT JOISTS @ 406 (16") o.c.~~
5. WOOD FLOOR JOISTS (REFER TO PLANS).
6. ~~PRE-ENG ROOF TRUSSES (REFER TO PLANS).~~
7. ~~38x89 (2x4) OVER HANG FRAMING @ 610 (24") o.c. c/w LU524 SIMPSON STRONG TIE HANGER.~~
8. 82 ($3\frac{1}{2}$") COMMON WIRE TOE NAILS @ 152 (6") o.c. U.N.O. BY DIAPHRAGM SCHEDULE.
9. H2.5A HURRICANE TIES AT EACH MEMBER.
10. 38x184 (2x8) @ 406 (16") o.c. c/w LUS24 HANGER.
11. 38x235 (2x10) P.T. LEDGER BOARD.
12. ~~L 127x76x9.5 (L5"x3"x$\frac{3}{8}$") HOT DIPPED GALVANIZED STEEL ANGEL (ILV).~~
13. ~~RIMBOARD BLOCKING BETWEEN JOIST FRAMING.~~
14. ~~STEEL BEAM (REFER TO PLANS).~~
15. ~~WOOD BEAM (REFER TO PLANS).~~
16. 2 - 82 ($3\frac{1}{2}$") COMMON WIRE TOE NAILS TO EACH JOIST, TRUSS OR BLOCKING.
17. 82 ($3\frac{1}{2}$") COMMON WIRE NAILS @ 152 (6") o.c. U.N.O. BY WOOD SHEAR WALL SCHEDULE.



TRUSSES PERPENDICULAR TO WALL

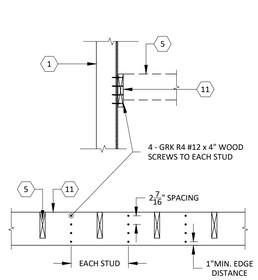


TRUSSES PARALLEL TO WALL (OPTION 1)

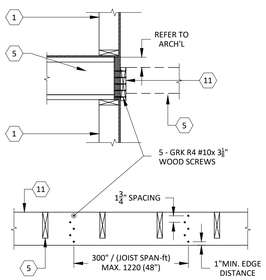


TRUSSES PARALLEL TO WALL (OPTION 2)

TYPICAL WOOD FRAMING DETAIL



LEDGER BOARD DETAIL TO WOOD STUDS

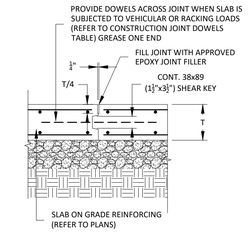


LEDGER BOARD DETAIL TO RIMBOARDS

TYPICAL LEDGER BOARD FRAMING DETAIL

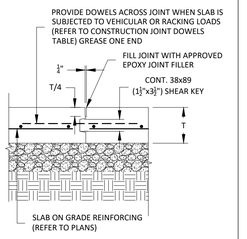
CONSTRUCTION JOINT DOWELS

SLAB THICKNESS "T"	DOWEL SIZE AND SPACING
127-152mm (5" to 6")	20M @ 305 (12") o.c. x 305 (12") EMBED.
178-203mm (7" to 8")	25M @ 305 (12") o.c. x 356 (14") EMBED.
229-254mm (9" to 10")	30M @ 305 (12") o.c. x 406 (16") EMBED.



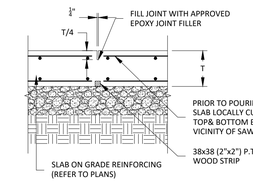
SLAB-ON-GRADE CONSTRUCTION JOINT

FOR SLABS WITH TWO LAYERS OF REINFORCEMENT



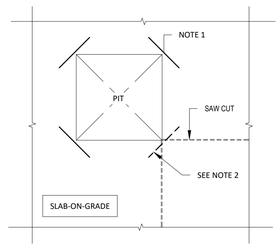
SLAB-ON-GRADE CONSTRUCTION JOINT

FOR SLABS WITH ONE LAYER OF REINFORCEMENT



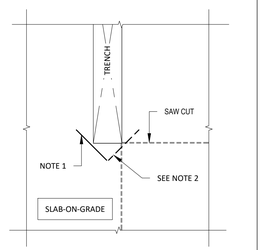
SLAB-ON-GRADE SAWCUT CONTROL JOINT

FOR SLABS WITH TWO LAYERS OF REINFORCEMENT



SLAB-ON-GRADE SAWCUT CONTROL JOINT

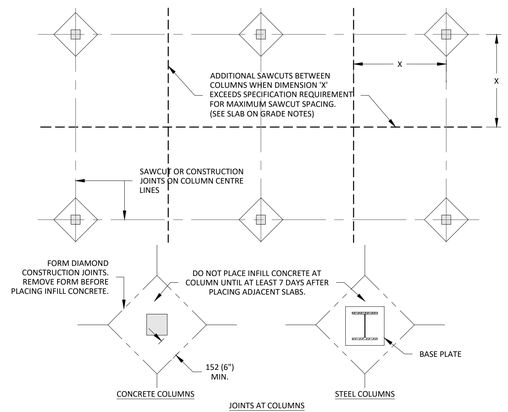
FOR SLABS WITH ONE LAYER OF REINFORCEMENT



NOTES:

1. 1-15M 1524 (5'-0") LG (TOP & BOTTOM FOR SLAB GREATER THAN 203 (8") OTHERWISE TOP ONLY) TYPICAL AT EACH CORNER.
2. BARS ARE NOT REQUIRED AT CORNERS WHERE SAW CUT OR CONSTRUCTION JOINT IS PROVIDED.
3. SLAB SAW CUTS TO BE MADE WITH THE FIRST 8 TO 24 HRS OF CONCRETE POUR.
5. SPACE SAW CUTS ON A GRID OF (30 x SLAB THICKNESS). LIMIT RATIO OF LENGTH TO WIDTH OF ANY SAW CUT PANEL TO 1.5 MAXIMUM.
6. WHEN SLAB IS MORE THAN 21 DAYS OLD, REMOVE RESIDUE IN JOINT BY FLUSHING AND FILL JOINT WITH APPROVED EPOXY JOINT FILLER

ADDITIONAL REINFORCEMENTS & REQUIREMENTS FOR SLAB ON GRADE



TYPICAL SLAB ON GRADE SAWCUT PATTERN

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By the use of the drawings for construction of the project, the clients/owners represents that they have reviewed and approved these drawings. The contractors represent that they have visited the site, familiarized themselves with the local conditions, verified field dimensions and correlated their observations with the requirements of the contract documents.

An experienced contractor should be able to take these drawings to provide the owner with a reasonable budget, and provide for contingencies that have not been designed for but can be expected based on building type and general configuration.

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UNAUTHORIZED CHANGES:
The client or the client's representative are not authorized to make any changes to any reports, plans, specifications or other construction documents prepared by StrucLink Inc. without obtaining StrucLink's prior written consent. Therefore the client agrees to waive any claims against StrucLink Inc. and to release StrucLink Inc. from any liability arising directly or indirectly from such changes.

No.	REVISION / ISSUE	DATE
02	Issued For Permit/Temder	2 June 2026
01	Issued For Client Review	24 March 2026

PROJECT NORTH

STAMP

StrucLink Structural Engineers
StrucLink Inc. - Structural Engineers
T. 613 277-9021 | E. mail@struclink.com | www.struclink.com

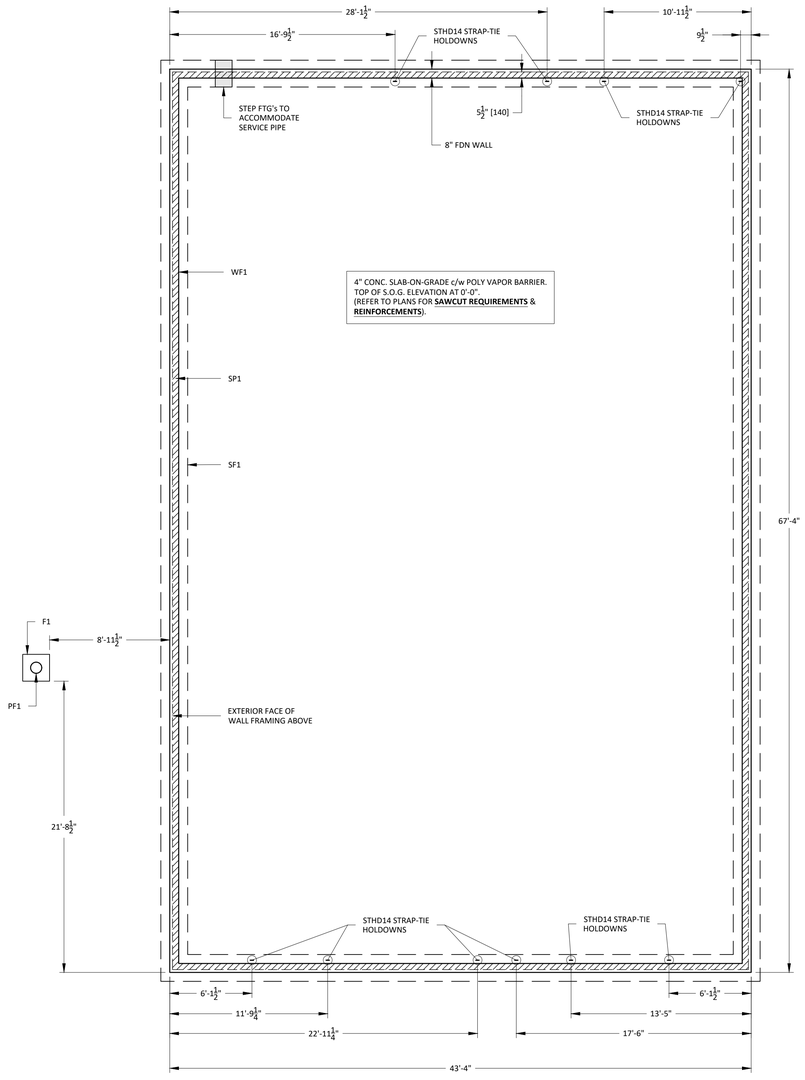
CLIENT
Bell+Associates Architecture
186 Pembroke St E, Pembroke, ON K8A 3J7

PROJECT
Admin Building
240 County Rd 4. Bath, ON K0H 1G0

DRAWING TITLE
TYPICAL DETAILS & DESIGN CRITERIA

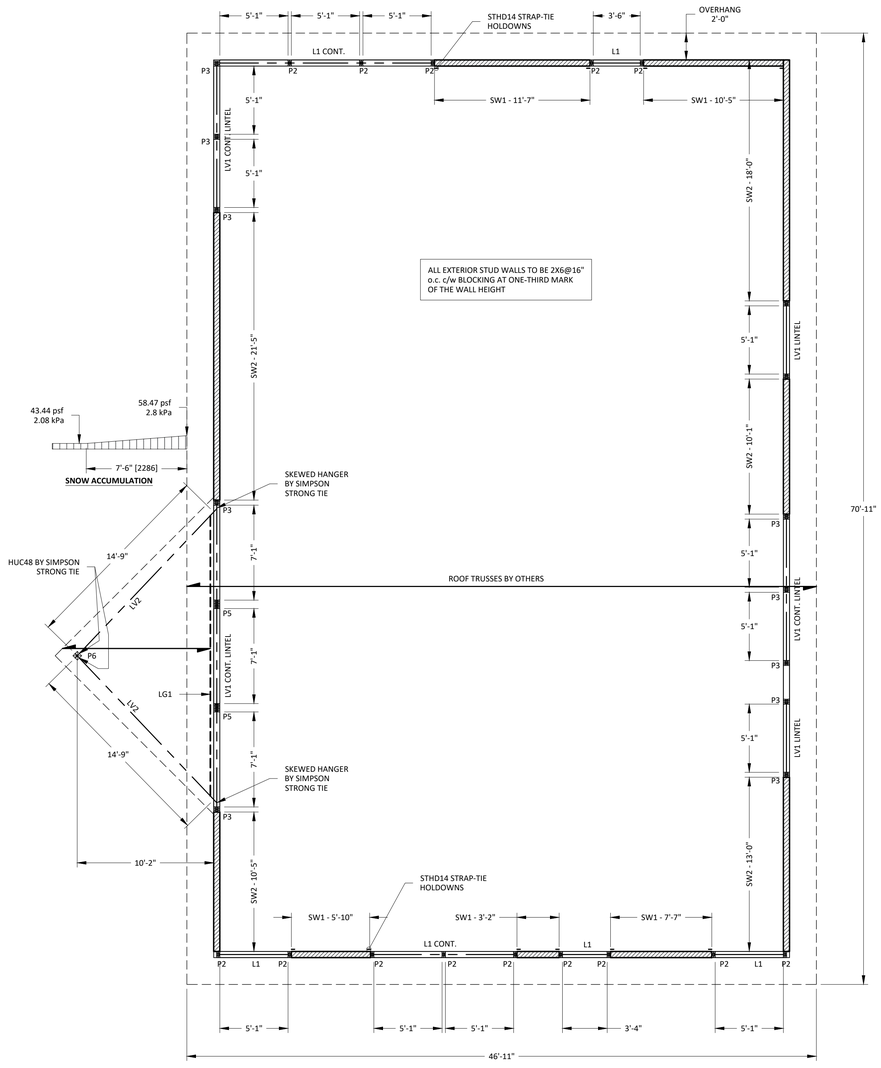
PROJECT No:	230300
DESIGNED BY:	A.M.
DRAWN:	A.M.
DATE:	March 2026

S003



FOUNDATION PLAN

SCALE: 3/16" = 1'-0"



GROUND FLOOR PLAN

SCALE: 3/16" = 1'-0"

PIER FOUNDATION SCHEDULE

MARK	PIER SIZE	VERTICAL REINFORCEMENT	FTG'S DOWELS	T.O. PIER ELEV.	REMARK
PF1	10" Ø	4-15M VERT. c/w 10M@12" TIES.	15M L-SHAPE T.M.V.	0'-0"	-

NOTES:
1. CONCRETE COVER SHALL BE 76 (3") WHEN CONCRETE EXPOSED TO EARTH.
2. TIES SHALL BE ARRANGED SO THAT ALL CORNER REBARS AND EVERY OTHER REBAR BE LATERALLY SUPPORTED BY A TIE REINFORCEMENT, TIE CORNERS SHALL HAVE AN ANGLE OF NOT MORE THAN 135° & REBAR PLACED FARTHER THAN 6"[152] FROM A TIE CORNER SHALL BE LATERALLY SUPPORTED BY A TIE REINFORCEMENT.
3. WHEN USING FOUR VERTICAL REBARS OR MORE, INSTALL DOUBLE 10M TIES AT TOP OF CONCRETE PIER (TYPICAL FOR ALL CONCRETE PIERS).

FOUNDATION WALL SCHEDULE

MARK	THICKNESS	HORIZONTAL REINFORCEMENT	VERTICAL REINFORCEMENT	FTG's DOWELS	T.O. FDN. ELEV.	REMARK
WF1	8"	15M@16" o.c. CENTERED	15M@16" o.c. CENTERED	15M@32" L-SHAPE (8"x24")	0'-0"	-

NOTE:
1. CONCRETE COVER SHALL BE 3"[76] WHEN CONCRETE EXPOSED TO EARTH.
2. TOP HORIZONTAL REBARS SHALL BE 2" BELOW T.O. FDN.
3. ALL REINFORCING STEEL TO BE EQUALLY SPACED U.N.O.
4. PROVIDE 2 VERT. REBARS AT WALL ENDS, OPENINGS (SAME SIZE AS VERT. REINF.)
5. PROVIDE 2 HORIZ. REBARS AT TOP AND BOTTOM OF OPENINGS (SAME SIZE AS HORIZ. REINF.) EXTEND REBARS 24" BEYOND OPENING & CHECKS.
6. PROVIDE CORNER REBARS AS REQ'd AT WALL CORNERS & INTERSECTIONS (SAME SIZE AS HORIZ. REINF.)
7. PROVIDE 1 VERT REBAR AT CORNER OF HORIZ. BENT BAR (SAME SIZE AS VERT. REINF.)
8. PROVIDE LAPSPLICE AS REQ'D.
9. ALL HOLES AND RECESSES FROM TIES REMOVAL LOCATED BELOW GRADE SHALL BE SEALED WITH WATERPROOFING MATERIAL.

FOOTING SCHEDULE

MARK	LENGTH	WIDTH	THICKNESS	REINFORCEMENT	U.S. FTG's ELEV.	REMARK
SF1	CONT.	1'-8"	8"	2-15M EQ. SP. BOT. LONGI.	- 5'-6"	-
F1	24"	24"	8"	2-15M BOTTOM E.W.	- 5'-6"	-

NOTES:
1. CONCRETE COVER SHALL BE 76 (3") WHEN CONCRETE EXPOSED TO EARTH.
2. ALL FOOTINGS TO BE CONCENTRIC WITH THE PIER OR COLUMN ABOVE U.N.O.
3. ALL REINFORCING STEEL TO BE EQUALLY SPACED U.N.O.
4. SEE GENERAL NOTE FOR REQUIRED UNDISTURBED SOIL BEARING CAPACITY.

LINTEL / BEAM SCHEDULE
L1 = 2 PLYS - 2x10 BUILD-UP LINTEL
LV1 = 2 PLYS - 1¾" x 9¼" M.L. LVL LINTEL
LV2 = 2 PLYS - 1¾" x 11¾" M.L. LVL BEAM

POST SCHEDULE
P2 = 2 PLYS - 2x6 BUILD-UP WOOD POST
P3 = 3 PLYS - 2x6 BUILD-UP WOOD POST
P4 = 4 PLYS - 2x6 BUILD-UP WOOD POST
P5 = 5 PLYS - 2x6 BUILD-UP WOOD POST
P6 = 6x6 WOOD POST c/w RCPSS.5HDG SADDLE BY SIMPSON STRONG TIE

SP1 = 2x6 P.T. SILL PLATE + 10"x2"x$\frac{1}{4}$"Ø J-ANCHOR BOLTS :
@ 48" o.c.
@ 12" FROM WALL ENDS, CHECKS, CORNERS & INTERSECTIONS.
c/w 3"x3"x$\frac{1}{4}$" SQ. WASHER PLATE & STAND. NUT & 3" PROJECTION ABOVE CONC.

LG1 = 2x10 LEDGER BOARD c/w 4 - GRK R4 #12 x 4" WOOD SCREWS @ 16" o.c.

CONCRETE MIX SCHEDULE

LOCATION	CLASS OF EXPOSURE	WATER/CEMENT RATIO BY WEIGHT	COMPRESSIVE STRENGTH (AT 28 DAYS)	AIR ENTRAINMENT (%)	AGGREGATE SIZE (MAX.)	SLUMP	CURING (NORMAL CONCRETE)
EXTERIOR FTG's, FDN-WALL, PIERS, COLUMNS, SLABS & WALLS	F-2	0.55	25	5-8	19mm ($\frac{3}{4}$")	75±19mm (3"±$\frac{3}{4}$")	3 DAYS ≥ 10°C
INTERIOR SLAB-ON-GRADE	N	0.55	35	NONE	19mm ($\frac{3}{4}$")	75±19mm (3"±$\frac{3}{4}$")	3 DAYS ≥ 10°C

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No.	REVISION / ISSUE	DATE
02	Issued For Permit/Temder	2 June 2026
01	Issued For Client Review	24 March 2026

PROJECT NORTH

STAMP
LICENSED PROFESSIONAL ENGINEER
A. M. A. MUSTAFA
100150203
02 June 2026
PROVINCE OF ONTARIO

StrucLink Structural Engineers
StrucLink Inc. - Structural Engineers
T. 613 277-9021 | E. mail@struclink.com | www.struclink.com

CLIENT
Bell+Associates Architecture
186 Pembroke St E, Pembroke, ON K8A 3J7

PROJECT
Admin Building
240 County Rd 4. Bath, ON K0H 1G0

DRAWING TITLE
FLOOR PLANS

PROJECT No:	230300
DESIGNED BY:	A.M.
DRAWN:	A.M.
DATE:	March 2026

S100

GENERAL NOTES

1. GENERAL

1.1. SCOPE

1.1.1. THE INFORMATION PRESENTED ON THESE DRAWINGS HAS BEEN DESIGNED AND ANALYZED IN ACCORDANCE WITH THE 2024 ONTARIO BUILDING CODE (O.REG 350/06).

1.1.2. THESE STRUCTURAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND DOCUMENTS INCLUDED IN THIS CONTRACT.

1.1.3. IF ANY ITEMS ON THE DRAWINGS ARE UNCLEAR THE CLIENT/CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE ENGINEER PRIOR TO STARTING WORK.

1.1.4. THE CLIENT/CONTRACTOR TO NOTIFY THE ENGINEER WHEN SITE WORK IS IN PROGRESS. ANY WORK COVERED WITHOUT BEING INSPECTED MAY NEED TO BE UNCOVERED FOR INSPECTION.

1.1.5. THE FOLLOWING ITEMS SHALL BE INSPECTED BY STRUCLINK INC.
- 1.1.5.1. ALL REBARS PRIOR TO POURING FOOTINGS, WALLS, SLABS, SUSPENDED SLABS AND BEAMS. COPIES OF CONCRETE DELIVERY SLIPS SHALL BE FORWARDED TO STRUCLINK INC. WITHIN 24 HOURS OF POUR
- 1.1.5.2. CONCRETE PRIOR TO POURING
- 1.1.5.3. STRUCTURAL STEEL PRIOR TO COVERING
- 1.1.5.4. FRAMING PRIOR TO SHEATHING
- 1.1.5.5. SHEATHING PRIOR TO FINISHING

1.1.6. THE DRAWINGS ILLUSTRATE THE REQUIRED WORK TO BE DONE; THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK.

1.1.5. STRUCLINK INC. IS TO BE NOTIFIED 24 HOURS IN ADVANCE OF ANY WORK REQUIRING INSPECTION.

1.1.6. STRUCLINK INC. WILL NOT BE LIABLE FOR ANY CONSTRUCTION THAT HAS NOT BEEN DESIGNED OR INSPECTED BY STRUCLINK INC.

1.1.7. DO NOT SCALE DRAWINGS. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS, SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS. CONTRACTOR TO VERIFY ALL DIMENSIONS/PENETRATIONS WITH ARCHITECTURAL/MECHANICAL/ELECTRICAL DRAWINGS PRIOR TO CONSTRUCTION. REPORT INCONSISTENCIES BEFORE PROCEEDING WITH WORK. ANY OPENINGS NOT INDICATED ON STRUCTURAL DRAWINGS SHALL BE APPROVED BY STRUCTURAL ENGINEER IN WRITING PRIOR TO CONSTRUCTION.

1.1.8. GUARDRAILS/HANDRAILS SHALL BE DESIGNED IN ACCORDANCE WITH LOADS PROVIDED IN (4.1.5.5, 3.4.6.4 AND 3.4.6.5) OF THE 2024 ONTARIO BUILDING CODE BY A PROFESSIONAL ENGINEER REGISTERED WITH THE PROFESSIONAL ENGINEERS OF ONTARIO PRIOR TO BEING SUBMITTED FOR REVIEW. STAMPED SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW.

1.1.9. LADDERS SHALL BE DESIGNED IN ACCORDANCE WITH LOADS PROVIDED IN IN PART 4 AND PART 3 OF THE 2024 ONTARIO BUILDING CODE BY A PROFESSIONAL ENGINEER REGISTERED WITH THE PROFESSIONAL ENGINEERS OF ONTARIO PRIOR TO BEING SUBMITTED FOR REVIEW. STAMPED SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW.

1.1.10. STEEL STAIRS SHALL BE DESIGNED IN ACCORDANCE WITH LOADS PROVIDED IN IN PART 4 AND PART 3 OF THE 2024 ONTARIO BUILDING CODE BY A PROFESSIONAL ENGINEER REGISTERED WITH THE PROFESSIONAL ENGINEERS OF ONTARIO PRIOR TO BEING SUBMITTED FOR REVIEW. STAMPED SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW.

1.1.11. SEISMIC RESTRAINT OF ARCH/MECH/ELECT ELEMENTS NOT NOTED ON THE DRAWINGS ARE THE RESPONSIBILITY OF THE CONTRACTOR'S PROFESSIONAL ENGINEER. RESTRAINT DETAILS ARE TO BE DEVELOPED IN ACCORDANCE WITH THE 2024 ONTARIO BUILDING CODE/2010 ONTARIO BUILDING CODE. CONTRACTOR'S PROFESSIONAL ENGINEER IS RESPONSIBLE FOR THE DESIGN AND DETAILING OF SEISMIC RESTRAINTS AND ISOLATIONS AS REQUIRED BY SPECIFICATIONS INCLUDING THE VERIFICATION THAT THE EXISTING/NEW STRUCTURE IS CAPABLE OF SAFELY SUPPORTING THE IMPOSED LOADS IN ACCORDANCE WITH THE 2024 OBC/2010 NBC. NO ELEMENTS MAY BE CONSTRUCTED WITHOUT WRITTEN CONFIRMATION OF THESE CONDITIONS BY CONTRACTOR'S PROFESSIONAL ENGINEER.

1.1.12. NEW OPENINGS IN EXISTING/ERECTED CONCRETE/MASONRY ELEMENTS:
- 1.1.12.1. REFER TO MECH/ARCH/ELECT DWGS FOR LAYOUTS.
- 1.1.12.2. SCAN TOP & BOTTOM OF SLAB, EACH SIDES OF WALL PRIOR TO CUTTING, DRILLING OR REMOVAL. MARK OUT OPENING POSITION ON SLAB & WALL PRIOR TO CUTTING, DRILLING OR REMOVAL.
- 1.1.12.3. CONTACT ENGINEER FOR REVIEW OF SCANS/MARKS PRIOR TO COMMENCEMENT OF ANY DEMOLITION.
- 1.1.12.4. NO WORK TO COMMENCE UNTIL RECEIVING WRITTEN APPROVAL FROM ENGINEER.
- 1.1.12.5. PROVIDE ADEQUATE PROTECTION OF SURROUNDING AREAS DURING REMOVALS.
- 1.1.12.6. SAWCUT/CORE OUT OPENINGS AS REQUIRED.
- 1.1.12.7. DO NOT OVERCUT.
- 1.1.12.8. ANY REQUIRED SUPPLEMENTAL STRENGTHENING/REINFORCING IS TO BE ERECTED PRIOR TO REMOVALS.

1.1.13. CONTRACTOR TO PROVIDE PRE-ENGINEERED SHORING AS REQUIRED TO ACCOMMODATE THE CONTRACTOR'S CONSTRUCTION ACTIVITIES AND TO PREVENT DAMAGE TO ANY ADJACENT PROPERTY. ALL CONSTRUCTION ACTIVITIES TO BE LIMITED TO THE LIMITS OF THE CONSTRUCTION SITE AND ALL DAMAGE TO EXISTING PROPERTIES MUST BE REINSTATED.

1.1.14. CONTRACTOR IS REQUIRED TO SUBMIT CONDUIT AND SLEEVING SHOP DRAWINGS FOR ALL FLOORS/ROOFS/WALLS/COLUMNS PRIOR TO THE ERECTION/CONSTRUCTION/FABRICATION OF ANY OF THESE ELEMENTS. THE DRAWINGS ARE TO LOCATE/DIMENSION THE CLEAR SIZES OF OPENINGS/SLEEVES/CONDUITS IN PLAN (FLOORS/ROOFS/COLUMNS) AND ELEVATION (WALLS/BEAMS). THE COORDINATION OF THE VARIOUS DISCIPLINES/SUBTRADES TO ENSURE ALL ITEMS ARE CLEARLY INDICATED IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. DRAWINGS ARE TO BE SUBMITTED A MINIMUM OF 4 WEEKS PRIOR TO THE CONSTRUCTION OF THE AFFECTED ELEMENT.

1.2. TEMPORARY WORKS

1.2.1. TEMPORARY BRACING, SHORING, WINTER PROTECTION, ETC. DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR; STEEL ERECTION BRACING TO REMAIN IN PLACE UNTIL PERMANENT BRACING, ROOF DECK AND MEZZANINES ARE COMPLETED. ALL CONSTRUCTION TO THE REQUIREMENTS OF THE ONTARIO BUILDING CODE. DIMENSIONS AND FIELD CONDITIONS TO BE VERIFIED PRIOR TO FABRICATION OR CONSTRUCTION. COORDINATE STRUCTURAL WORK WITH REFERENCE TO ARCH., MECH. & ELECT. WORK AS INDICATED ON DRAWINGS.

1.3. MISCELLANEOUS METALS

1.3.1. MISC METALS ARE TO BE DESIGNED AND DETAILED BY MISC METALS SUPPLIER. SHOP DRAWINGS SHALL BE STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED WITH THE PROFESSIONAL ENGINEERS OF ONTARIO. ALL MISC METAL WORK IS TO BE INSPECTED DURING CONSTRUCTION BY THE MISC METALS DESIGN ENGINEER.

DEMOLITION SPECIFICATIONS

1. GENERAL

1.1. SCOPE

1.1.1. THIS SPECIFICATION DEFINES THE SAFETY PRECAUTIONS TO BE CONSIDERED AND PROCEDURES TO BE USED BEFORE, DURING AND AFTER DEMOLITION OPERATIONS, TO PROVIDE FOR THE SAFETY OF PUBLIC, WORKERS AND PROPERTY.

1.2. REFERENCES

1.2.1. THE FOLLOWING CODES AND STANDARDS SHALL FORM PART OF THIS SPECIFICATION. EACH PUBLICATION OF THE CODE AND STANDARD LISTED SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT, UNLESS OTHERWISE SHOWN. EXCEPT AS SPECIFICALLY STATED IN THE SPECIFICATION OR MODIFIED BY THE DETAILS OF THE DRAWINGS, ALL WORK SHALL CONFORM TO THE APPLICABLE CODE AND STANDARD.

- 1.2.1.1. CAN/CSA S350-M1980 (R2003) CODE OF PRACTICE FOR SAFETY IN DEMOLITION OF STRUCTURES.
- 1.2.1.2. NBCC 2010 PART 8 SAFETY MEASURES AT CONSTRUCTION AND DEMOLITION SITES
- 1.2.1.3. DO WORK IN STRICT ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT, R.S.O. 1990, C. O.1 AND MUNICIPAL BY-LAWS

1.3. SUBMITTALS

1.3.1. SUBMISSIONS IN ACCORDANCE WITH SECTION 01 33 00 – SUBMITTAL PROCEDURES

1.3.2. DEMOLITION DRAWINGS
- 1.3.2.1. WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION, SUBMIT DRAWINGS, DIAGRAMS, AND/OR DETAILS FOR APPROVAL, CLEARLY INDICATING SEQUENCE OF DEMOLITION WORK, SUPPORT OF EXISTING STRUCTURES, SHORING, AND UNDERPINNING.
- 1.3.2.2. SUCH DRAWINGS SHALL BEAR THE STAMP OF QUALIFIED PROFESSIONAL ENGINEER REGISTERED OR LICENSED IN THE PROVINCE OF ONTARIO.
- 1.3.2.3. DRAWING SHALL INDICATING LOCATION OF HOARDINGS, AS REQUIRED.

1.3.3. PROPOSED SCHEDULE PROVIDING THE FOLLOWING FOR EACH SEPARATE WORK AREA:
- 1.3.3.1. DURATION OF WORK IN EACH WORK AREA.
- 1.3.3.2. PROPOSED SHUT-DOWN OF UTILITIES OR SERVICES.
- 1.3.3.3. ANY PROPOSED DEVIATION FROM SPECIFICATIONS, PROCEDURES, OR DRAWINGS.
- 1.3.3.4. DOCUMENTATION INCLUDING TEST RESULTS, FIRE AND FLAMMABILITY DATA, AND MATERIAL SAFETY DATA SHEETS FOR CHEMICALS OR MATERIAL USED IN THE COURSE OF THE PROJECT.
- 1.3.3.5. PRE-DEMOLITION SURVEY AND PHOTOGRAPHIC RECORD OF DAMAGE TO PROPERTIES, SIDEWALKS AND STREETS.

1.4. SITE CONDITIONS

1.4.1. REVIEW AND ABIDE BY THE RECOMMENDATIONS OF THE "DESIGNATED SUBSTANCE AND HAZARDOUS MATERIALS ASSESSMENT" AND TAKE PRECAUTIONS TO PROTECT ENVIRONMENT.

1.4.2. SHOULD MATERIAL RESEMBLING SPRAY OR TROWEL-APPLIED ASBESTOS BE ENCOUNTERED IN THE COURSE OF DEMOLITION WORK, STOP WORK AND NOTIFY CONSULTANT IMMEDIATELY. DO NOT PROCEED UNTIL WRITTEN INSTRUCTIONS HAVE BEEN RECEIVED FROM CONSULTANT

1.4.3. SHOULD MATERIAL RESEMBLING ASBESTOS OR OTHER DESIGNATED SUBSTANCE LISTED AS HAZARDOUS BE ENCOUNTERED, STOP WORK, TAKE PREVENTATIVE MEASURES, AND NOTIFY CONSULTANT IMMEDIATELY.

1.4.4. PROTECT IMMEDIATE AND ADJACENT PROPERTY AGAINST DAMAGE WHICH MIGHT OCCUR FROM FALLING DEBRIS OR OTHER CAUSE; DO NOT INTERFERE WITH USE OF OR SAFE PASSAGE TO AND FROM BUILDINGS.

1.4.5. TAKE PRECAUTIONS TO GUARD AGAINST DAMAGING VIBRATION, MOVEMENT OR SETTLEMENT OF ADJACENT PORTIONS OF STRUCTURE OR BUILDINGS; DESIGN, PROVIDE AND PLACE BRACING OR SHORING AS REQUIRED; BE RESPONSIBLE FOR SAFETY AND SUPPORT OF SUCH ELEMENTS; BE LIABLE FOR ANY SUCH MOVEMENT OR SETTLEMENT, ANY DAMAGE OR INJURY CAUSED THEREBY OR RESULTING THEREFROM. IF AT ANY TIME SAFETY OF ANY ADJACENT BUILDING APPEARS TO BE ENDANGERED, CEASE OPERATIONS, NOTIFY CONSULTANT, TAKE PRECAUTIONS TO SUPPORT STRUCTURE; DO NOT RESUME OPERATIONS UNTIL PERMISSION HAS BEEN GRANTED. IF SUCH MOVEMENT OR SETTLEMENT OF ADJACENT PORTION OF BUILDING IS CAUSED BY NEGLIGENCE OR DEFAULT OF CONTRACTOR, RESTORE THE STRUCTURAL INTEGRITY OF THE STRUCTURE TO THE CONSULTANT'S DESIGN AT NO EXTRA COST TO OWNER. WHEN CONSULTANT CONSIDERS ADDITIONAL BRACING OR SHORING NECESSARY TO SAFEGUARD OR PREVENT SUCH MOVEMENT OR SETTLEMENT, INSTALL BRACING AND SHORING UPON ORDER.

1.4.6. TAKE PRECAUTIONS TO GUARD AGAINST MOVEMENT, SETTLEMENT OR COLLAPSE OF ANY ADJACENT OR OWNER'S SERVICES, SIDEWALKS, DRIVEWAYS, OR TREES; BE LIABLE FOR SUCH MOVEMENT, SETTLEMENT OR COLLAPSE CAUSED BY CONTRACTOR'S NEGLIGENCE OR DEFAULT; REPAIR PROMPTLY SUCH DAMAGE WHEN SO ORDERED.

1.4.7. PROVIDE AND MAINTAIN ALL LEGAL AND NECESSARY GUARDS, RAILINGS, LIGHTS, WARNING SIGNS, MORALITY LIGHTS, AND WATCHMEN DURING EXECUTION OF WORK TO FULLY PROTECT ALL PERSONS AND OWNER FROM LOSS, DAMAGE, DEATH OR INJURY THROUGH NEGLECT, CARELESSNESS OR INCOMPETENCE OF CONTRACTOR OR HIS EMPLOYEES OR CONDITION OR HANDLING OF MATERIALS.

1.4.8. SELLING, BURYING OR BURNING OF DEBRIS ON SITE IS NOT PERMITTED.

1.4.9. BLASTING OF EXISTING STRUCTURES IS NOT PERMITTED.

1.4.10. PROVIDE ADEQUATE TREE PROTECTION AROUND EXISTING TREES AND LANDSCAPE AS REQUIRED.

1.4.11. PREVENT DEBRIS FROM BLOCKING THE DRAINAGE SYSTEMS.

2. PRODUCTS (NOT APPLICABLE)

3. EXECUTION

3.1. PREPARATION

3.1.1. INSPECT BUILDING AND VERIFY EXTENT AND LOCATION OF ITEMS DESIGNATED FOR REMOVAL, DISPOSAL, ALTERNATIVE DISPOSAL, RECYCLING, SALVAGE AND ITEMS TO REMAIN.

3.1.2. LOCATE AND PROTECT UTILITIES, PRESERVE UTILITIES TO REMAIN IN OPERATING CONDITION.

3.1.3. NOTIFY AND OBTAIN APPROVAL OF UTILITY COMPANIES BEFORE STARTING DEMOLITION.

3.2. PROTECTION

3.2.1. PREVENT MOVEMENT, SETTLEMENT, OR DAMAGE TO ADJACENT PARTS OF BUILDING TO REMAIN IN PLACE. PROVIDE BRACING AND SHORING REQUIRED.

3.2.2. KEEP NOISE, DUST, AND INCONVENIENCE TO OCCUPANTS TO MINIMUM.

3.2.3. PROTECT BUILDING SYSTEMS, SERVICES AND EQUIPMENT.

3.2.4. PROVIDE TEMPORARY DUST SCREENS, COVERS, RAILINGS, SUPPORTS AND OTHER PROTECTION AS REQUIRED.

3.2.5. ENSURE THAT SECURE SITE HOARDING AND/OR FENCING IS IN PLACE AND COMPLETE, PRIOR TO COMMENCEMENT OF DEMOLITION OPERATIONS. MAINTAIN HOARDING DURING DEMOLITION OPERATIONS. REPLACE OR REPAIR SECTIONS OF HOARDING DAMAGED OR REMOVED, AS A RESULT OF DEMOLITION OPERATIONS.

3.2.6. TAKE PRECAUTIONS TO SUPPORT AFFECTED STRUCTURES AND IF SAFETY OF BUILDING BEING DEMOLISHED, OR ADJACENT STRUCTURES OR SERVICES APPEARS TO BE ENDANGERED, CEASE OPERATIONS AND NOTIFY CONSULTANT

3.2.7.

3.3. PREPARATION

3.3.1. LOCATE AND MARK ALL ENCLOSED OR HIDDEN SERVICES WITHIN THE STRUCTURE.

3.3.2. DISCONNECT AND RE-ROUTE ELECTRICAL AND TELEPHONE SERVICE LINES ENTERING AREAS TO BE DEMOLISHED, IN ACCORDANCE WITH AUTHORITIES HAVING JURISDICTION. POST WARNING SIGNS ON ELECTRICAL LINES AND EQUIPMENT WHICH MUST REMAIN ENERGIZED DURING PERIOD OF DEMOLITION.

3.3.3. DISCONNECT AND CAP, DESIGNATED MECHANICAL SERVICES IN ACCORDANCE WITH AUTHORITIES HAVING JURISDICTION;

3.3.4. NATURAL GAS SUPPLY LINES TO BE REMOVED BY LOCAL GAS AUTHORITY WHERE REQUIRED, OR BY QUALIFIED TRADESMAN IN ACCORDANCE WITH GAS AUTHORITY INSTRUCTIONS.

3.3.5. DISCONNECT, CAP AND REMOVE SEWER AND WATER LINES AS INDICATED ON DRAWINGS, OR AS DIRECTED BY CONSULTANT.

3.3.6. REMOVE AND DISPOSE OF OTHER SERVICES AS INDICATED ON DRAWINGS, OR AS DIRECTED BY CONSULTANT.

3.3.7. DO NOT DISRUPT ACTIVE OR ENERGIZED UTILITIES TRAVERSING PREMISES, DESIGNATED TO REMAIN UNDISTURBED.

3.4. DEMOLITION

3.4.1. REMOVE PARTS OF EXISTING BUILDING TO PERMIT NEW CONSTRUCTION. PROVIDE SHOP DRAWINGS OF THE REQUIRED STRUCTURAL SUPPORTS FOR ALL OF THE REMOVED STRUCTURAL ELEMENTS.

3.4.2. REMOVE EXISTING EQUIPMENT, SERVICES, AND OBSTACLES WHERE REQUIRED FOR REFINISHING OR MAKING GOOD OF EXISTING SURFACES, AND REPLACE SAME AS WORK PROGRESSES.

3.4.3. AT END OF EACH DAY'S WORK, LEAVE WORK IN SAFE CONDITION SO THAT NO PART IS IN DANGER OF TOPPLING OR FALLING. PROTECT INTERIORS OF PARTS NOT TO BE DEMOLISHED FROM EXTERIOR ELEMENTS AT ALL TIMES.

3.4.4. DEMOLISH TO MINIMIZE DUSTING. KEEP DUSTY MATERIALS WETTED AS DIRECTED BY CONSULTANT.

3.4.5. DEMOLISH MASONRY AND CONCRETE WALLS IN SMALL SECTIONS TO PREVENT DAMAGE TO EXISTING STRUCTURE OR SURFACES TO REMAIN.

3.4.6. REMOVE CONTAMINATED OR DANGEROUS MATERIALS, AS DEFINED BY AUTHORITIES HAVING JURISDICTION, FROM SITE, AND DISPOSE OF IN STRICT ACCORDANCE WITH BY-LAWS, REGULATIONS AND/OR GUIDELINES APPLICABLE TO SUCH MATERIAL.

3.5. INSPECTION

3.5.1. ARRANGE FOR AN INSPECTION BY CONTRACT SUPERVISOR OF SUB-SURFACES AFTER DEMOLITION BUT BEFORE NEW WORK BEGINS.

3.5.2. DO NOT PROCEED WITH OTHER WORK UNTIL APPROVAL IS GIVEN BY THE CONTRACT SUPERVISOR

3.6. CLEANUP

3.6.1. LEAVE THE SITE IN A CLEAN AND SAFE CONDITION AT THE END OF EACH WORKING DAY.

3.6.2. PROMPTLY REMOVE AND DISPOSE OF DEMOLISHED MATERIALS EXCEPT WHERE NOTED OTHERWISE, IN ACCORDANCE WITH AUTHORITIES HAVING JURISDICTION.

3.6.3. DO NOT SELL, BURY OR BURN MATERIALS ON SITE.

3.6.4. LEAVE INTERIOR AREAS IN A "SWEPT CLEAN" CONDITION AFTER DEMOLITION IN PREPARATION FOR REMEDIAL WORK.

3.6.5. IF AFFECTED BY DEMOLITION, LEAVE EXTERIOR SOFT AREAS IN A "RAKED CLEAN" CONDITION, AND CLEAR OF ALL DEBRIS. LEAVE PAVED AREAS IN A "SWEPT CLEAN" CONDITION, AND CLEAR OF ALL DIRT, DEBRIS, AND OTHER CONTAMINATION.

EXCAVATION, FOUNDATIONS AND BACKFILL SPECIFICATIONS

1. GENERAL

1.1. SCOPE

1.1.1. THIS SPECIFICATION DEFINES THE REQUIREMENTS OF EXCAVATION, FOUNDATIONS CONSTRUCTION AND BACKFILLING INCLUDING DESIGN, FROST PROTECTION, SITE PREPARATION AND ASSOCIATED OPERATIONS.

1.2. SITE PREPARATION

1.2.1. PRIOR TO ANY EXCAVATION, VERIFY LOCATION OF EXISTING SERVICES AND TAKE ALL NECESSARY MEASURES TO MAINTAIN SERVICES WHERE REQUIRED. NOTIFY OWNER AND ENGINEER IF ANY SERVICES NOT SHOWN ON PLAN OR OTHERWISE EXPECTED ARE ENCOUNTERED. DO NOT PROCEED FURTHER UNTIL DIRECTED.

1.3. GEOTECHNICAL INVESTIGATION

1.3.1. ALL FOOTINGS TO BEAR ON UNDISTURBED NATIVE SOIL CAPABLE OF SAFELY SUSTAINING 100 kPa (SLS), 175 kPa (ULS).
- 1.3.1.1. REFERENCE GEOTECHNICAL REPORT:
- 1.3.1.2. REPORT AUTHOR:
- 1.3.1.3. BEARING SURFACE TO BE REVIEWED BY GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE. REFER TO SOILS REPORT PREPARED BY GEOTECHNICAL ENGINEER.

1.4. SOIL PROTECTION

1.4.1. PROTECT SUB-GRADE FROM WATER AND FREEZING ADJACENT TO AND BELOW ALL FOOTINGS AT ALL TIMES DURING CONSTRUCTION.

1.4.2. PROVIDE THE MINIMUM FROST COVER FROM FINISHED GRADE TO UNDERSIDE OF FOOTING AS REQUIRED
- 1.4.2.1. @ HEATED BUILDINGS: 5'-0" [1524]
- 1.4.2.2. @ UNHEATED BUILDING (SNOW CLEARED): 6'-10" [2100]
- 1.4.2.3. CONSULT SOILS ENGINEER FOR INSULATION REQUIREMENTS WHERE COVER CANNOT BE ATTAINED.

1.5. FOUNDATION

1.5.1. PROVIDE DOWELS FROM FOOTINGS TO MATCH VERTICAL REINFORCING OF WALLS AND PIERS UNLESS OTHERWISE SHOWN.

1.5.2. ALL HORIZONTAL WALL REINFORCING TO BE CONTINUOUS THROUGH PIERS UNLESS OTHERWISE SHOWN.

1.5.3. FOOTINGS AND PIERS TO BE CONCENTRIC WITH COLUMN GRID LINES UNLESS OTHERWISE SHOWN. FOUNDATION WALL TO BE CONCENTRIC ABOVE FOOTINGS BELOW UNLESS OTHERWISE SHOWN.

1.5.4. CONSTRUCTION JOINTS AND CONTROL JOINTS IN WALLS SHALL BE POSITIONED AT PIERS LOCATIONS. MAXIMUM SPACING OF CONSTRUCTION JOINTS SHALL BE 65'-6"[20m] UNLESS OTHERWISE SHOWN.

1.5.5. NO SLEEVES, PIPES, HOLES OR NOTCHES SHALL BE PLACED THROUGH WALLS, SLABS, PIERS OR FOOTINGS EXCEPT AS DESIGNATED ON STRUCTURAL DRAWINGS.

1.5.6. FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH OBC 2024 (4.1.8.16) AND GEOTECHNICAL REPORT NOTED IN NOTE GEOTECHNICAL INVESTIGATION.

1.5.7. NO FOUNDATION ELEMENTS SHALL BE CONSTRUCTED UNTIL A WRITTEN APPROVAL OF THE UNDISTURBED SOIL BEARING CAPACITY IS PROVIDED BY A GEOTECHNICAL ENGINEER THROUGH ON-SITE INVESTIGATION. FAILURE TO COMPLETE THIS WORK COULD RESULT IN THE REMOVAL/REINSTATEMENT OF ANY/ALL FOUNDATION ELEMENTS AT CONTRACTOR'S OWN COST.

1.6. BACKFILLING

1.6.1. THE GEOTECHNICAL REQUIREMENTS SHALL TAKE PRECEDENCE OVER THESE SPECIFICATION. REFER TO THE LATEST GEOTECHNICAL REPORT AS NOTED IN NOTE 1.3. GEOTECHNICAL INVESTIGATION.

1.6.2. BACKFILL FOUNDATION WALLS SO THAT THE LEVEL OF BACKFILL AGAINST ONE SIDE IS NEVER GREATER THAN 1'-6" ABOVE THE LEVEL ON THE OTHER SIDE, UNLESS TEMPORARY BRACING IS PROVIDED.

1.6.3. DO NOT PLACE BACKFILL AGAINST WALL RETAINING EARTH, (EXCEPT CANTILEVER RETAINING WALLS) UNTIL FLOOR AT THE TOP AND BOTTOM OF RETAINING WALL IS PLACED AND REACHED THEIR DESIGN CAPACITY.

1.6.4. BACKFILL TO WITHIN 8"[203] OF UNDERSIDE OF SLAB-ON-GRADE WITH GRANULAR 'B' TYPE I IN LAYERS UP TO 12"[305]]THICK, COMPACTED TO MINIMUM 95% SPMDD OR AS PER GEOTECHNICAL REQUIREMENTS.

1.6.5. FINAL 8"[203] UNDER SLAB TO BE GRANULAR 'A' COMPACTED TO MINIMUM 98% SPMDD OR AS PER GEOTECHNICAL REQUIREMENTS.

1.6.6. RE-USE OF EXCAVATED GRANULAR MATERIAL IS SUBJECT TO APPROVAL OF GEOTECHNICAL CONSULTANT

1.7. FORMWORK

1.7.1. VERIFY LINES, LEVELS AND WALL CENTERS BEFORE PROCEEDING WITH FORMWORK AND ENSURE DIMENSIONS AGREE WITH DRAWINGS.

1.7.2. CONSTRUCT FORMS TO PRODUCE FINISHED CONCRETE CONFORMING TO SHAPE, DIMENSIONS, LOCATIONS AND LEVELS INDICATED WITHIN TOLERANCES REQUIRED BY CSA A23.1-04/A23.2-04. ALIGN FORM JOINTS AND MAKE WATERTIGHT. KEEP FORM JOINTS TO MINIMUM. LOCATE HORIZONTAL FORM JOINTS FOR EXPOSED WALLS TO APPROVAL OF ARCHITECT. CLEAN FORMWORK IN ACCORDANCE WITH CSA A23.1-04/A23.2-04, BEFORE PLACING CONCRETE.

1.7.3. FORM CHASES, SLOTS, OPENINGS, DRIPS, RECESSES EXPANSION AND CONTROL JOINTS AS INDICATED.

1.7.4. LEAVE FORMWORK IN PLACE FOR A MINIMUM PERIOD OF TIME OF 48 HOURS AFTER PLACING CONCRETE. AFTER FORM REMOVAL, COVER AND PROTECT WITH INSULATED TARPS FOR COLD WEATHER OPERATION.

1.7.5. OBTAIN ENGINEER'S PERMISSION BEFORE FRAMING OPENINGS NOT INDICATED IN CONCRETE SLABS, WALLS, PIERS AND FOOTINGS.

1.8. SLAB-ON-GRADE

1.8.1. REFER TO DRAWINGS FOR SLABS ON GRADE THICKNESS AND REINFORCEMENT.

1.8.2. REFER TO THE GEOTECHNICAL REPORT FOR COMPOSITION AND COMPACTION OF THE FILL SUPPORTING SLAB ON GRADE.

1.8.3. PROVIDE $\frac{3}{4}$"[13] ASPHALT IMPREGNATED FIBREBOARD BETWEEN SLABS ON GRADE & FOUNDATION WALLS OR COLUMNS UNLESS OTHERWISE SHOWN.

1.8.4. SAW CUT FOR SLAB ON GRADE TO BE (¼ X SLAB THICKNESS) BY $\frac{1}{4}$" [6] WIDE. SAW CUTTING TO BE COMPLETED WITHIN THE FIRST 24 HOURS AFTER CONCRETE PLACEMENT. SAW CUTTING SHALL BEGIN A SOON AS CONCRETE CAN SUPPORT THE WORKERS AND EQUIPMENT BUT NOT LESS THAN 8 HOURS AFTER CONCRETE PLACEMENT.

1.8.5. SPACE SAW CUTS ON A GRID OF (30 X SLAB THICKNESS). LIMIT RATIO OF LENGTH TO WIDTH OF ANY SAW CUT PANEL TO 1.5 MAXIMUM, AVOID LONG & NARROW SAW CUT PANELS. LOCATE SAW CUTS ALONG COLUMN LINES WHERE POSSIBLE. SAW CUTS TO BE FILLED WITH APPROVED BITUMINOUS COMPOUND OR CAULKING.

1.8.6. CONTRACTOR TO PROVIDE THE ENGINEER WITH DOCUMENTATION SHOWING PROPOSED SAW CUT LOCATIONS FOR APPROVAL UNLESS SAW CUTS LOCATIONS ARE OTHERWISE INDICATED ON THESE DRAWINGS.

STRUCTURAL STEEL SPECIFICATIONS

1. GENERAL

1.1. SCOPE

1.1.1. THIS SPECIFICATION DEFINES THE REQUIREMENTS TO SUPPLY, FABRICATE, TRANSPORT AND ERECT STRUCTURAL STEEL INCLUDING CONNECTIONS DESIGN, PREPARATION OF SHOP/ERECTION DRAWINGS AND ASSOCIATED OPERATIONS.

1.2. CODES AND STANDARDS

1.2.1. THE FOLLOWING CODES AND STANDARDS SHALL FORM PART OF THIS SPECIFICATION. EACH PUBLICATION OF THE CODE AND STANDARD LISTED SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT, UNLESS OTHERWISE SHOWN. EXCEPT AS SPECIFICALLY STATED IN THE SPECIFICATION OR MODIFIED BY THE DETAILS OF THE DRAWINGS, ALL WORK SHALL CONFORM TO THE APPLICABLE CODE AND STANDARD.

- 1.2.1.1. CAN/CSA-S16.1 LIMIT STATE DESIGN OF STEEL STRUCTURES
- 1.2.1.2. CAN/CSA-G40.20 GENERAL REQUIREMENTS FOR ROLLED OR WELDED STRUCTURAL QUALITY STEELS
- 1.2.1.3. CAN/CSA-G40.21 STRUCTURAL QUALITY STEELS
- 1.2.1.4. CSA W47.1 CERTIFICATION OF COMPANIES FOR FUSION OF STEEL STRUCTURES
- 1.2.1.5. CSA W59-03 WELDED STEEL CONSTRUCTION

1.3. CANADIAN INSTITUTE OF STEEL CONSTRUCTION (CISC)::

1.3.1. CODE OF STANDARD PRACTICE FOR STRUCTURAL STEEL (HANDBOOK OF STEEL CONSTRUCTION).

1.4. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):

1.4.1. A307 STANDARD SPECIFICATION FOR CARBON STEEL EXTERNALLY THREADED STANDARD FASTENERS.

1.4.2. A325 STANDARD SPECIFICATION FOR HIGH STRENGTH BOLTS FOR STRUCTURAL STEEL JOINTS.

2. QUALITY ASSURANCE

2.1. QUALIFICATION OF CONTRACTOR:

2.1.1. WELDING SHALL CONFORM TO LATEST CSA W59-03 SPECIFICATION AND SHALL BE PERFORMED BY A FULLY CERTIFIED FABRICATOR APPROVED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA W47.1, DIVISION 2.1.

2.1.2. THE CONTRACTOR SHALL MAINTAIN RECORDS OF RESULTS OBTAINED IN WCB-CERTIFICATION, WELDING PROCEDURES QUALIFICATIONS AND WELDING OPERATORS PERFORMANCE QUALIFICATIONS IN COMPLIANCE WITH CSA W47.1 AND SHALL SUPPLY COPIED TO THE OWNERS' REPRESENTATIVE UPON REQUEST.

2.2. MATERIALS AND PRODUCTS:

2.2.1. THE MATERIAL USED SHALL COMPLY WITH THIS SPECIFICATION AND THE CODES AND STANDARDS NOTED WITHIN.

2.2.2. ALL MANUFACTURED PRODUCTS SHALL BE FABRICATED BY A SHOP CERTIFIED IN ACCORDANCE WITH THE STANDARDS NOTED WITHIN THIS SPECIFICATION.

2.3. DESIGN:

2.3.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL ELEMENTS AND CONNECTIONS NOT SPECIFIED ON THE DRAWINGS.

2.3.2. DESIGN SHALL BE BASED ON LIMIT STATES DESIGN METHOD IN ACCORDANCE WITH THE STANDARDS NOTED WITHIN THIS SPECIFICATION.

2.4. SHOP AND ERECTION DRAWINGS:

2.4.1. ALL DRAWINGS SHALL BE CHECKED AND SIGNED BY THE CONTRACTOR PRIOR TO SUBMITTAL. ONE PRINT AND ONE REPRODUCIBLE OF EACH DRAWING SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR REVIEW. ALL REVISIONS REQUIRED BY THE OWNER'S REPRESENTATIVE SHALL BE INCORPORATED INTO THE DRAWINGS, WHICH WILL THEN BE RESUBMITTED FOR REVIEW PRIOR TO BEING FABRICATED.

2.4.2. SH

2.5.1. THE OWNER'S REPRESENTATIVE OR HIS DESIGNATED REPRESENTATIVE SHALL HAVE FREE ACCESS TO THE CONTRACTOR'S SITE FOR INSPECTION OF SITE, MATERIALS, MANUFACTURE AND TESTING.

2.5.2. THE CONTRACTOR SHALL ENSUE ALL MATERIAL IS MARKED IN COMPLIANCE WITH CSA G40.20 AND G40.21.

2.5.3. THE CONTRACTOR SHALL MAINTAIN EQUIPMENT AND INSTRUMENTS NECESSARY TO VERIFY THAT WELDING, MATERIALS AND METHODS OF CONSTRUCTION COMPLY WITH THESE SPECIFICATIONS.

2.5.4. A THIRD PARTY INSPECTION AND TESTING COMPANY SHALL BE APPOINTED BY THE OWNER TO CONDUCT INSPECTIONS AND TESTS AS REQUIRED TO ENSURE THE COMPLIANCE OF MATERIALS, FABRICATION, ERECTION, CONNECTIONS AND METHODS OF CONSTRUCTION WITH THE SHOP AND ERECTION DRAWINGS AND THESE SPECIFICATIONS. PAYMENT FOR INSPECTIONS AND TESTS WILL BE MADE BY THE OWNER.

2.6. SUBMITTALS

2.6.1. SUBMIT CERTIFICATE VERIFYING CERTIFICATION BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA W47.1 AND COPIES OF WELDING QUALIFICATION CERTIFICATES AND IDENTIFICATION CARDS FOR WELDERS OR WELDING OPERATORS.

2.6.2. SUBMIT COPIES OF CERTIFIED MANUFACTURER'S MILL TESTS AS MAINTAINED IN THE SHOP FOR MATERIALS USED IN FABRICATION OF METAL FABRICATIONS, PROPERLY CORRELATED TO THE FABRICATED ITEMS.

2.6.3. THE CONTRACTOR SHALL MAINTAIN A RECORD SYSTEM FOR MILL TEST CERTIFICATES, CERTIFICATES FOR WELDERS OR WELDING OPERATORS, THIRD PARTY INSPECTORS AND STEEL WORK FABRICATION REPORTS,

2.6.4. THE CONTRACTOR SHALL SUBMIT COPIES OF STEEL WORK FABRICATION REPORTS UPON REQUEST.

3. PRODUCTS

3.1. MATERIALS

ALL MATERIALS SHALL BE NEW MATERIAL, FREE FROM DEFECTS IMPAIRING STRENGTH, DURABILITY AND/OR APPEARANCE.

3.2. STRUCTURAL STEEL:

3.2.1. ALL STRUCTURAL STEEL SHALL BE GRADE G40.20-4/G40.21-04 350W,
3.2.2. ROLLED SECTIONS FY = 345 MPa FOR W SHAPES
3.2.3. FY = 300 MPa FOR OTHER THAN W SHAPES
3.2.4. HSS (TUBE) SECTIONS CLASS C, FY = 350 MPa

3.3. BOLTS:

3.3.1. CONNECTION BOLTS A325/A325M (BEARING TYPE)
3.3.2. ANCHOR BOLTS A307/A307M

3.4. WELDS:

3.4.1. ELECTRODES E490XX

3.5. ADHESIVE ANCHORS:

3.5.1. ALL EPOXY ADHESIVE ANCHORS TO BE HILTI - HIT-HY 200 MAX.

3.6. UNISTRUT:

3.6.1. ALL CHANNEL MEMBERS SHALL BE FABRICATED FROM STRUCTURAL GRADE STEEL CONFORMING TO ONE OF THE FOLLOWING ASTM SPECIFICATIONS: A 1011 SS GR 33 or A 653 GR 33
3.6.2. ALL FITTINGS SHALL BE FABRICATED FROM STEEL CONFORMING TO ONE OF THE FOLLOWING ASTM SPECIFICATIONS: A 575,A 576,A 36 ORA 635.
3.6.3. ALL CHANNELS SHALL BE HOT-DIPPED GALVANIZED (HG) ZINC COATED AFTER ALL MANUFACTURING OPERATIONS ARE COMPLETE. COATING SHALL CONFORM TO ASTMA 123 ORA 153.

3.7. STRUCTURAL STEEL DECK NOTES

3.7.1. DESIGN AND ERECT METAL DECKING IN ACCORDANCE WITH CSSBI. UNLESS NOTED OTHERWISE, ALL STEEL DECK SHALL BE 38mm DEEP, WITH FLUTES AT 150mm CENTRES, CONTINUOUS OVER AT LEASE THREE SPANS. 0.76MM THICKNESS OF DECK IS THE MINIMUM REQUIRED. DECK SUPPLIER IS RESPONSIBLE TO ENSURE PROPRIETARY DECK IS ADEQUATE TO SUPPORT THE LIVE LOAD 4.8 kPa WITH MAXIMUM VERTICAL DECK DEFLECTION OF 1:240 AND DEAD LOAD OF 1.9 kPa. USING THICKER GAUGE WHERE REQUIRED.

3.7.2. STEEL DECK SHALL BE COLD FORMED SHEET STEEL CONFORMING TO CSSBI 101 (ZINC COATED STRUCTURAL QUALITY SHEET STEEL FOR ROOF AND FLOOR DECK). DESIGN, FABRICATION AND ERECTION OF DECK TO CSSBI 10M (CSSBI 12M FOR COMPOSITE DECK).WELDING MATERIALS CONFORM TO CSA W55.3 AND CSA W59.

3.7.3. PROVIDE 1.22 x 200 CONTINUOUS PLATE OVER THE DECK TO DECK JOINT WHERE METAL DECK CHANGES ORIENTATION.

3.7.4. DECKING CONTRACTOR TO PAINT TOP SIDES OF ALL WELDS WITH GALVAFROID ZINC RICH COATING. IRON OXIDE PAINT WILL NOT BE ACCEPTED.

3.7.5. SUBMIT DECK SHOP DRAWINGS SIGNED AND SEALED BY QUALIFIED P.ENG. CONFIRMING ADEQUACY OF THE DECK FOR GRAVITY LOADS, CONNECTIONS, AND DECK REINFORCING AT OPENINGS.

3.7.6. ERECTION COMPANIES MUST BE CERTIFIED BY CANADIAN WELDING BUREAU (cwb) UNDER CSA W47.1 CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES, AND WELDING OPERATORS MUST BE QUALIFIED BY CWB FOR DECK WELDING. FUSION WELDS TO CWB APPROVED PROCEDURE s-100, d-100.

3.7.7. NO MECHANICAL OR ELECTRICAL EQUIPMENT OR ACCESSORIES SHALL BE HUNG FROM THE DECK UNLESS APPROVED BY METAL DECK SPECIALIST AND USING AN APPROVED FASTENING METHOD. HANGERS FOR SUSPENSION OF FALSE CEILING SHALL BE ATTACHED TO STEEL JOISTS WHERE POSSIBLE. AT AREAS BETWEEN JOISTS, THEY MAY BE ATTACHED TO THE SIDE OF DECK FLUTE BY LOOPING AND TYING AROUND. BUT ON NO ACCOUNT SHOULD THESE HANGERS PUNCH THROUGH THE BOTTOM FLUTE.

3.7.8. STEEL DECKING MATERIAL SHALL CONFORM TO:
3.7.8.1. ZINC-IRON ALLOY (ZF) COATED STEEL SHEET: TO ASTM A 653/A 653M STRUCTURAL QUALITY GRADE 230, WITH ZF75 COATING.
3.7.8.2. DECKS TO BE PAINTED: ZINC-IRON ALLOY COATED DECKS SUITABLE FOR FINISH PAINTING.
3.7.8.3. ALUMINUM-ZINC ALLOY (AZ) COATED STEEL SHEET: TO ASTM A 792/A 792M STRUCTURAL QUALITY GRADE 230, WITH AZ 150 COATING.
3.7.8.4. ACOUSTIC INSULATION: FIBROUS GLASS 17.5 KG/M^3 DENSITY MINIMUM PROFILED TO SUIT DECK FLUTES.
3.7.8.5. CLOSURES: AS INDICATED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3.7.8.6. COVER PLATES, CELL CLOSURES AND FLASHINGS: STEEL SHEET WITH MINIMUM BASE STEEL THICKNESS OF 0.76 MM MINIMUM. METALLIC COATING SAME AS DECK MATERIAL.
3.7.8.7. PRIMER: ZINC RICH, READY MIX TO CAN/CGSB-1.181.
3.7.8.8. CAULKING: TO SECTION 07 92 00 - JOINT SEALANTS.
3.7.8.9. SHEAR STUDS: TO CSA W59.
3.7.8.10. CONTRACTOR SHALL PROVIDE TEMPORARY SHORING, IF REQUIRED, TO SUPPORT CONSTRUCTION LOADS, WET CONCRETE AND OTHER CONSTRUCTION EQUIPMENT. DO NOT REMOVE TEMPORARY SHORING UNTIL CONCRETE ATTAINS 75% OF ITS SPECIFIED 28 DAY COMPRESSION STRENGTH.
3.7.8.11. FOR ACOUSTIC DECK PROVIDE AND INSTALL GLASS FIBRE INSULATION: DENSITY 17 KG/CUBIC METER, SHAPED TO PROFILES OF FLUTES

3.8. STRUCTURAL STEEL JOIST NOTES

3.8.1. STEEL JOISTS AND ACCESSORIES SHALL CONFORM TO CSA 216 AND IN ACCORADANCE TO REVIEWED SHOP DRAWINGS. WELDING MATERIALS CONFORM TO CSA W55.3 AND CSA W59.

3.8.2. STEEL JOIST CONTRACTOR TO:
3.8.2.1. DESIGN STEEL JOISTS AND BRIDGING TO CARRY LOADS INDICATED IN JOIST SCHEDULE SHOWN ON DRAWINGS TO CSA S16.
3.8.2.2. DESIGN JOISTS AND ANCHORAGES FOR UPLIFT FORCES AS INDICATED.
3.8.2.3. ENSURE JOISTS ARE MANUFACTURED TO CONSIDER LOAD EFFECTS DUE TO FABRICATION, ERECTION AND HANDLING.

3.8.3. STEEL JOIST CONTRACTOR TO APPLY ONE COAT OF CISC/CPMA 2 PRIMER TO STEEL SURFACES TO ACHIEVE DRY FILM THICKNESS OF .080 MM MAXIMUM EXCEPT:
3.8.3.1. SURFACES TO BE ENCASED IN CONCRETE.
3.8.3.2. SURFACES TO RECEIVE FIELD INSTALLED STUD SHEAR CONNECTORS AND STEEL DECKS.
3.8.3.3. SURFACES AND EDGES TO BE FIELD WELDED.
3.8.3.4. FAYING SURFACES OF FRICTION-TYPE CONNECTIONS.
3.8.3.5. BELOW GRADE SURFACES IN CONTACT WITH SOIL.

3.8.4. SUBMIT STEEL JOIST SHOP DRAWINGS SIGNED AND SEALED BY QUALIFIED P.ENG. CONFIRMING ADEQUACY OF THE JOISTS FOR GRAVITY LOADS, CONNECTIONS, AND UPLIFT FORCES.

3.8.5. ERECTION COMPANIES MUST BE CERTIFIED BY CANADIAN WELDING BUREAU (CWB) UNDER CSA W47.1 CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES, AND WELDING OPERATORS MUST BE QUALIFIED BY CWB FOR STEEL JOIST WELDING. FUSION WELDS TO CWB APPROVED PROCEDURE S-100, D-100.

3.8.6. NO MECHANICAL OR ELECTRICAL EQUIPMENT OR ACCESSORIES SHALL BE HUNG FROM THE JOISTS UNLESS APPROVED BY METAL JOIST SPECIALIST AND USING AN APPROVED FASTENING METHOD. HANGERS FOR SUSPENSION OF FALSE CEILING MAY BE ATTACHED TO STEEL JOISTS.

3.8.7. STEEL JOIST MATERIAL SHALL CONFORM TO:
3.8.7.1. OPEN WEB STEEL JOISTS: TO CSA S16.
3.8.7.2. STRUCTURAL STEEL: TO CSA G40.20/G40.21 AND CSA S136.
3.8.7.3. WELDING MATERIALS: TO CSA W59.
3.8.7.4. SHOP PAINT AND PRIMER: CISC/CPMA-1 ANDCISC/CPMA-2.
3.8.7.5. SHEAR STUDS: TO CSA W59, APPENDIX H.

3.7. FABRICATION

3.7.1. CONNECTIONS:
3.7.1.1. ALL SHOP CONNECTIONS SHALL BE WELDED CONNECTION, ALL FIELD CONNECTIONS SHALL BE BOLTED CONNECTION.

3.7.1.2. BOLTED CONNECTIONS TO BE DESIGNED USING HIGH STRENGTH BOLTS AS BEARING TYPE WITH THREADS ASSUMED TO BE INTERSECTED BY THE SHEAR PLANE UNLESS OTHERWISE SHOWN.

3.7.1.3. ALL CONNECTIONS TO BE SYMMETRICAL UNLESS OTHERWISE SHOWN.

3.7.1.4. BEAM CONNECTIONS SHALL BE C.I.S.C. DOUBLE ANGLE BEAM CONNECTIONS FOR A325 BOLTS AND E490XX FILLET WELDS.

3.7.1.5. MINIMUM SIZE OF BOLTS TO BE $\frac{3}{4}$"[20], MINIMUM OF TWO (2) BOLTS IN EACH CONNECTION.

3.7.1.6. ALL WELDS SHALL BE CONTINUOUS SEAL WELDS UNLESS OTHERWISE SHOWN.

3.7.1.7. GUSSET AND CONNECTION PLATES SHALL HAVE $\frac{3}{8}$"[9.5] MINIMUM THICKNESS.

3.7.1.8. DESIGN BEAMS CONNECTIONS TO RESIST THE STATED FACTORED REACTIONS OR THE SHEAR REACTION BASED ON THE UNIFORM DISTRIBUTED LOAD THAT GENERATES THE BEAM BENDING MOMENT RESISTANCE FOR THE GIVEN SPAN, WHICHEVER IS GREATER.

3.7.1.9. BRACING CONNECTIONS SHALL BE CONCENTRIC AND DESIGNED FOR THE FORCES SHOWN ON THE DRAWINGS.

3.7.1.10. ALL EMBEDDED ITEMS EXCEPT ANCHOR BOLTS TO BE COATED AS PER THE COATING NOTES.

3.7.1.11. BEAM CONNECTIONS SHALL BE DESIGNED TO RESIST FORCES APPLIED FROM HORIZONTAL AND VERTICAL BRACING MEMBERS AND TO RESIST PULL THROUGH (AXIAL) FORCES WHERE REQUIRED, IN ADDITION TO THE VERTICAL FORCES SPECIFIED IN GRAVITY MEMBERS, AXES SHALL INTERSECT THE WORK POINT UNLESS OTHERWISE SHOWN ON THE DRAWINGS. FORCES TO BE APPLIED SUCH AS TO PRODUCE THE MAXIMUM EFFECT ON THE VARIOUS COMPONENTS BEING CONSIDERED.

3.7.2. SPLICING:
3.7.2.1. MATERIAL SPLICING SHALL BE PERMITTED ONLY WITH THE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER. SPLICE LOCATIONS AND DETAILING SHALL BE SHOWN ON SHOP AND ERECTION DRAWINGS PRIOR TO SUBMITTING DRAWINGS TO THE OWNER'S REPRESENTATIVE FOR APPROVAL.

3.7.3. ERECTION:
3.7.3.1. ERECT STRUCTURAL STEEL IN ACCORDANCE WITH CAN/CSA-S16.1 AND CISC CODE OF STANDARD PRACTICE FOR STRUCTURAL STEEL.

3.7.3.2. ALL STEEL WORK SHALL BE PLUMB, LEVEL AND THOROUGHLY FASTENED.

3.7.3.3. DURING CONSTRUCTION ALLOW FOR ERECTION LOADS, SUFFICIENT TEMPORARY BRACING TO MAINTAIN THE STRUCTURAL INTEGRITY, SAFETY, PLUMBNESS, AND IN TRUE ALIGNMENT UNTIL COMPLETION OF ERECTION AND INSTALLATION OF PERMANENT BRACING & HORIZONTAL DIAPHRAGMS.

3.7.3.4. THE CONTRACTOR IS RESPONSIBLE FOR THE SUPPLY AND DESIGN OF ALL BRACING AND SHORING REQUIRED DURING CONSTRUCTION.

3.7.3.5. AFTER ERECTION, PRIME WELDS, ABRASIONS, AND SURFACES EXCEPT SURFACES TO BE IN CONTACT WITH CONCRETE.

3.7.3.6. GROUT (UNDER BASE PLATES) IN ACCORDANCE WITH SECTION STRUCTURAL STEEL NOTES.

3.7.3.7. MAXIMUM VARIATION FROM PLUMB 6 MM PER STOREY, NON-CUMULATIVE. MAXIMUM OFFSET FROM TRUE ALIGNMENT 6 MM.

3.7.3.8. CLEAN AND PREPARE STRUCTURAL STEEL MEMBERS FOR FINISHING TOUCH-UPS AND PAINT ALL STEEL MEMBERS.

3.7.4. COATING
3.7.4.1. APPLY ONE COAT SHOP PRIMER CONFIRMING TO CGSB-1-GP 40M TO ALL STRUCTURAL STEEL MEMBERS AND TOUCH UP AFTER ERECTION.

3.7.4.2. ALL EXTERIOR EXPOSED STRUCTURAL STEEL SHALL BE GALVANIZED OR PRIMED WITH ONE COAT OF PRIMER CONFORMING TO CISC/CPMA 1-73a AND PAINTED WITH 1 COAT OF RUST INHIBITIVE PAINT CONFORMING TO CISC/CPMA 2-75.

3.7.4.3. ALL EXPOSED WELDS SHALL BE PAINTED WITH APPROVED RUST INHIBITIVE PAINT.

3.7.4.4. ALL STEEL TO HAVE A MINIMUM OF 1 COAT OF RED OXIDE PRIMER TO CISC/CPMA 1-73a. DO NOT PRIME SURFACES THAT WILL BE FIREPROOFED.

CONCRETE SPECIFICATIONS

1. GENERAL

1.1. SCOPE

1.1.1. THIS SPECIFICATION DEFINES THE REQUIREMENTS TO DESIGN, SUPPLY, CONSTRUCT, TEST AND PROTECT REINFORCED CONCRETE AND PLAIN CONCRETE MATERIALS INCLUDING CONNECTIONS, BENDS, PLACEMENT, SPACING, SPLICING AND PREPARATION OF SHOP/ERECTION DRAWINGS AND ASSOCIATED OPERATIONS.

1.2. CODES AND STANDARDS

1.2.1. THE FOLLOWING CODES AND STANDARDS SHALL FORM PART OF THIS SPECIFICATION. EACH PUBLICATION OF THE CODE AND STANDARD LISTED SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT, UNLESS OTHERWISE SHOWN. EXCEPT AS SPECIFICALLY STATED IN THE SPECIFICATION OR MODIFIED BY THE DETAILS OF THE DRAWINGS, ALL WORK SHALL CONFORM TO THE APPLICABLE CODE AND STANDARD.

1.2.1.1. CAN/CSA A23.3 DESIGN OF CONCRETE STRUCTURES.
1.2.1.2. CAN/CSA A23.2 TEST METHODS AND STANDARD PRACTICES FOR CONCRETE.
1.2.1.3. CAN/CSA A23.1 CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION.
1.2.1.4. CAN/CSA G30.18 CARBON STEEL BARS FOR CONCRETE REINFORCEMENT.

1.3. CEMENT ASSOCIATION OF CANADA (CAC):

1.3.1. CODE OF STANDARD PRACTICE FOR CONCRETE DESIGN (CONCRETE DESIGN HANDBOOK).

1.4. REINFORCING STEEL INSTITUTE OF CANADA

1.4.1. MANUAL OF STANDARD PRACTICE FOR REINFORCING STEEL (REINFORCING STEEL MANUAL OF STANDARD PRACTICE)

2. QUALITY ASSURANCE

2.1. INSPECTION AND TESTING:

2.1.1. THE O.B.C. BUILDING CODE 2024 SPECIFIES THAT FIELD REVIEWS OF THE BUILDING BE CARRIED OUT DURING THE COURSE OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF THE START OF CONSTRUCTION TO FACILITATE SUCH REVIEWS BY THE STRUCTURAL ENGINEER.

2.1.2. NOTIFY THE ENGINEER 24 HOUR IN ADVANCE FOR INSPECTION OF REBAR. CONTRACTOR MUST ENSURE MINIMUM 95% STEEL ARE IN PLACE FOR THE INSPECTION.

2.1.3. THE CONTRACTOR SHALL FURNISH TO THE STRUCTURAL ENGINEER PRIOR TO POURING OF CONCRETE OR ERECTION OF STRUCTURAL ELEMENTS:
2.1.3.1. SOIL BEARING TEST REPORTS
2.1.3.2. REINFORCING STEEL PLACING DRAWINGS AND BARS LISTS
2.1.3.3. CONSTRUCTION JOINT DETAILS TO BE USED FOR SLAB AND WALLS
2.1.3.4. THE CONTRACTOR SHALL ALSO FURNISH THE ENGINEER WITH CONCRETE CYLINDER TEST REPORTS FOR ALL STRUCTURAL CONCRETE USED IN THE BUILDING IN ACCORDANCE TO THE REQUIREMENTS NOTED IN THE CONCRETE NOTES.

2.1.4. TESTS SHALL BE CARRIED OUT BY A TESTING LABORATORY DESIGNATED BY OWNER IN ACCORDANCE WITH CSA A23.1-04/A23.2-04. COSTS OF TESTS WILL BE PAID FOR BY OWNER.

2.1.5. CONTRACTOR SHALL TEST CONCRETE FOR EACH DAY'S CONCRETE POUR AND AT 30 CUBIC METER INTERVALS. TEST RESULTS SHALL BE FORWARDED TO ENGINEER FOR REVIEW. MINIMUM THREE CYLINDERS PER TEST. ONE SLUMP TEST WILL BE TAKEN FOR EACH SET OF TEST CYLINDERS TAKEN.

2.1.6. ENGINEER WILL TAKE ADDITIONAL TEST CYLINDERS DURING COLD WEATHER CONCRETING. CURE CYLINDERS ON JOB SITE UNDER SAME CONDITIONS AS CONCRETE WHICH THEY REPRESENT. INSPECTION OR TESTING BY CONSULTANT WILL NOT AUGMENT OR REPLACE CONTRACTOR QUALITY CONTROL NOR RELIEVE HIM OF HIS CONTRACTUAL RESPONSIBILITY.

2.1.7. MAINTAIN RECORDS OF POURED CONCRETE ITEMS. RECORD DATE, LOCATION OF POUR, QUANTITY, AIR TEMPERATURE, AND TEST SAMPLES TAKEN. PROVIDE ALL RECORDS AND TEST DATA TO THE CONSULTANT. PREPARE PREVIOUSLY PLACED CONCRETE BY CLEANING WITH STEEL BRUSH AND APPLYING BONDING AGENT. APPLY BONDING AGENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. POUR CONCRETE CONTINUOUSLY BETWEEN PRE-DETERMINED CONSTRUCTION AND CONTROL JOINTS.

2.2. SHOP AND ERECTION DRAWINGS:

2.2.1. ALL DRAWINGS SHALL BE CHECKED AND SIGNED BY THE CONTRACTOR PRIOR TO SUBMITTAL. ONE PRINT AND ONE REPRODUCIBLE OF EACH DRAWING SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR REVIEW. ALL REVISIONS REQUIRED BY THE OWNER'S REPRESENTATIVE SHALL BE INCORPORATED INTO THE DRAWINGS, WHICH WILL THEN BE RESUBMITTED FOR REVIEW PRIOR TO BEING FABRICATED.

2.2.2. SHOP AND ERECTION DRAWINGS SHALL SHOW THE GENERAL ARRANGEMENT OF WORK AND SHALL IDENTIFY EACH MEMBER TO BE ERECTED WITH DETAILS OF CONNECTION, ERECTION SEQUENCE AND HANDLING REQUIREMENTS.

2.2.3. ALL SHOP AND ERECTION DRAWINGS SHALL SHOW ALL MATERIALS, FABRICATION, ERECTION, REINFORCEMENT SIZES, CONCRETE COVER, SPACING, CONNECTION DETAILS INCLUDING CUTS, LAP SPLICE, DEVELOPMENT LENGTH, HOOKS, CONNECTIONS AND WELDS ON THE ERECTION DRAWINGS.

2.2.4. ALL SHOP AND ERECTION DRAWINGS, CONNECTION DETAILS AND CALCULATIONS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED WITH THE PROFESSIONAL ENGINEERS OF ONTARIO PRIOR TO BEING SUBMITTED FOR REVIEW.

2.2.5. THE REVIEW BY THE OWNER'S REPRESENTATIVE IS FOR THE SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH THE GENERAL DESIGN CONCEPT. THIS REVIEW SHALL NOT MEAN THAT THE OWNER'S REPRESENTATIVE APPROVES THE DETAIL DESIGN INHERENT IN THE SHOP/ERECTION DRAWINGS, RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR. SUBMITTING SAME AND SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR MEETING ALL THE REQUIREMENTS OF THE CONTRACT.

3. PRODUCTS

3.1. MATERIALS

ALL MATERIALS SHALL BE NEW MATERIAL, FREE FROM DEFECTS IMPAIRING STRENGTH, DURABILITY AND/OR APPEARANCE.

3.2. CEMENT

3.2.1. PROVIDE PORTLAND CEMENT OF CANADIAN MANUFACTURE CONFORMING WITH CSA-A3001, NORMAL TYPE.

3.3. AGGREGATES

3.3.1. PROVIDE CLEAN, UNCOATED SAND AND COARSE AGGREGATES FROM APPROVED SOURCES WHICH CONFORM WITH CSA/CAN - A23.1/A23.2.

3.4. WATER

3.4.1. CLEAN, AND FREE FROM INJURIOUS MATERIAL.

3.5. READY MIX CONCRETE

3.5.1. PRE-MIXED CONCRETE SHALL BE QUALITY CONTROLLED CONCRETE CONFORMING WITH CSA STANDARD CAN/CSA - A23.1/A23.2. GENERALLY CONCRETE NOT EXPOSED TO ELEMENTS TO BE OF MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 25 MPa OR AS NOTED ON THE DRAWINGS. DESIGN TO BE SUBMITTED FOR TESTING & APPROVAL BY THIRD PARTY & SUBMITTED TO ENGINEER OF RECORD PRIOR TO COMMENCING WORK. CALCIUM CHLORIDE SHALL NOT BE USED AS AN ADDITIVE TO CONCRETE.

3.6. AIR ENTRAINMENT:

3.6.1. AIR ENTRAINMENT AS PER ASTM C260 WHERE APPLICABLE.

3.7. FLY-ASH AND SLAG

3.7.1. DO NOT INCORPORATE FLY-ASH OR SLAG INTO CONCRETE MIX DESIGNS WITHOUT PRIOR APPROVAL IN WRITING.

3.7.2. FLY-ASH AND SLAG MAY BE CONSIDERED AS ACCEPTABLE IN NON-SUSPENDED CONCRETE,OR IN SLABS WHICH ARE NOT TO BE SUBJECTED TO AN ACCELERATED POURING SEQUENCE. THIS IS DEPENDENT ON PROVEN PERFORMANCE AND PREVALENT WEATHER CONDITIONS.

3.8. CLASS OF EXPOSURE:

3.8.1. C-XL STRUCTURALLY REINFORCED CONCRETE EXPOSED TO CHLORIDES OR OTHER SEVERE ENVIRONMENTS WITH OR WITHOUT FREEZING AND THAWING CONDITIONS, WITH HIGHER DURABILITY PERFORMANCE EXPECTATIONS THAN THE C-1, A-1, OR S-1 CLASSES.

3.8.2. C-1 STRUCTURALLY REINFORCED CONCRETE EXPOSED TO CHLORIDES WITH OR WITHOUT FREEZING AND THAWING CONDITIONS. EXAMPLES: BRIDGE DECKS, PARKING DECKS AND RAMPS, PORTIONS OF MARINE STRUCTURES LOCATED WITHIN THE TIDAL AND SPLASH ZONES, CONCRETE EXPOSED TO SEAWATER SPRAY, AND SALT WATER POOLS.

3.8.3. C-2 NON-STRUCTURALLY REINFORCED (I.E., PLAIN) CONCRETE EXPOSED TO CHLORIDES AND FREEZING AND THAWING. EXAMPLES: GARAGE FLOORS, PORCHES, STEPS, PAVEMENTS, SIDEWALKS, CURBS, AND GUTTERS.

3.8.4. C-3 CONTINUOUSLY SUBMERGED CONCRETE EXPOSED TO CHLORIDES BUT NOT TO FREEZING AND THAWING. EXAMPLES: UNDERWATER PORTIONS OF MARINE STRUCTURES.

3.8.5. C-4 NON-STRUCTURALLY REINFORCED CONCRETE EXPOSED TO CHLORIDES BUT NOT TO FREEZING AND THAWING. EXAMPLES: UNDERGROUND PARKING SLABS ON GRADE.

3.8.6. F-1 CONCRETE EXPOSED TO FREEZING AND THAWING IN A SATURATED CONDITION BUT NOT TO CHLORIDES. EXAMPLES: POOL DECKS, PATIOS, TENNIS COURTS, FRESHWATER POOLS, AND FRESHWATER CONTROL STRUCTURES.

3.8.7. F-2 CONCRETE IN AN UNSATURATED CONDITION EXPOSED TO FREEZING AND THAWING BUT NOT TO CHLORIDES. EXAMPLES: EXTERIOR WALLS AND COLUMNS.

3.8.8. N CONCRETE NOT EXPOSED TO CHLORIDES NOR TO FREEZING AND THAWING EXAMPLES: FOOTINGS AND INTERIOR SLABS, WALLS, AND COLUMNS.

3.8.9. A-1 STRUCTURALLY REINFORCED CONCRETE EXPOSED TO SEVERE MANURE AND/OR SILAGE GASES, WITH OR WITHOUT FREEZE-THAW EXPOSURE. CONCRETE EXPOSED TO THE VAPOUR ABOVE MUNICIPAL SEWAGE OR INDUSTRIAL EFFLUENT, WHERE HYDROGEN SULPHIDE GAS MAY BE GENERATED. EXAMPLES: REINFORCED BEAMS, SLABS, AND COLUMNS OVER MANURE PITS AND SILOS, CANALS, AND PIG SLATS; AND ACCESS HOLES, ENCLOSED CHAMBERS, AND PIPES THAT ARE PARTIALLY FILLED WITH EFFLUENTS.

3.8.10. A-2 STRUCTURALLY REINFORCED CONCRETE EXPOSED TO MODERATE TO SEVERE MANURE AND/OR SILAGE GASES AND LIQUIDS, WITH OR WITHOUT FREEZE-THAW EXPOSURE. EXAMPLES: REINFORCED WALLS IN EXTERIOR MANURE TANKS, SILOS, AND FEED BUNKERS, AND EXTERIOR SLABS.

3.8.11. A-3 STRUCTURALLY REINFORCED CONCRETE EXPOSED TO MODERATE TO SEVERE MANURE AND/OR SILAGE GASES AND LIQUIDS, WITH OR WITHOUT FREEZE-THAW EXPOSURE IN A CONTINUOUSLY SUBMERGED CONDITION. CONCRETE CONTINUOUSLY SUBMERGED IN MUNICIPAL OR INDUSTRIAL EFFLUENTS. EXAMPLES: INTERIOR GUTTER WALLS, BEAMS, SLABS, AND COLUMNS; SEWAGE PIPES THAT ARE CONTINUOUSLY FULL (E.G., FORCEMAINS); AND SUBMERGED PORTIONS OF SEWAGE TREATMENT STRUCTURES.

3.8.12. A-4 NON-STRUCTURALLY REINFORCED CONCRETE EXPOSED TO MODERATE MANURE AND/OR SILAGE GASES AND LIQUIDS, WITHOUT FREEZE-THAW EXPOSURE. EXAMPLES: INTERIOR SLABS ON GRADE.

3.9. CAST-IN PLACE CONCRETE

3.9.1. UNLESS OFFICIALLY APPROVED OTHERWISE, SLUMPS SHALL BE AS SPECIFIED IN THE CONCRETE MIX TABLE HEREIN. GREATER SLUMPS ARE NOT ACCEPTABLE AND THE LOADS SHALL BE REJECTED. ADMIXTURES, WHERE PERMITTED, SHALL CONFORM WITH CSA A23.1.

3.9.2. PERFORM CAST-IN-PLACE CONCRETE WORK IN ACCORDANCE WITH CSA-A23.1/A23.2 UNLESS SPECIFIED OTHERWISE IN THIS SECTION.

3.9.3. CONFORM TO CSA-A23.1/A23.2 IN THE USE OF ADMIXTURES.

3.9.4. ALL CONCRETE SHALL BE CONSOLIDATED WITH INTERNAL VIBRATOR, AND FINISH TO OWNER'S REQUIREMENTS.

3.9.5. ALL CONCRETE SURFACE MUST BE CURED FOR MINIMUM 3 DAY AT MINIMUM 10°C. CURING SHALL BE IN STRICT ACCORDANCE WITH AS PER CSA A-23.1/A23.2.

3.9.6. PLACEMENT & CONSOLIDATION SHALL BE IN ACCORDANCE WITH CSA A23.1/A23.2. MAINTAIN RECORDS OF POURED CONCRETE ITEMS. RECORD DATE, LOCATION OF POUR, QUANTITY, AIR TEMPERATURE, AND TEST SAMPLES TAKEN. POUR CONCRETE CONTINUOUSLY BETWEEN PRE-DETERMINED CONSTRUCTION AND CONTROL JOINTS.

3.9.9. BEFORE ANY NEW CONCRETE IS ADDED, THE SURFACE OF THE EXISTING CONCRETE SHALL BE ROUGHENED, THOROUGHLY CLEANED WITH ALL LAITANCE REMOVED AND A BONDING AGENT APPLIED. PROVIDE WATERSTOPS IN SUPPLEMENTAL JOINTS IN STRUCTURES DESIGNATED AS "WATERTIGHT".

3.9.10. IMMEDIATELY AFTER PLACEMENT, PROTECT CONCRETE FROM PRE-MATURE DRYING, EXCESSIVE HOT OR COLD TEMPERATURES AND MECHANICAL DAMAGE.

3.9.11. CONFORM TO CSA-A23.1/A23.2 WHEN CONCRETING DURING HOT WEATHER.

3.9.12. CONFORM TO CSA-A23.1/A23.2 WHEN CONCRETING DURING COLD WEATHER.

3.9.13. CONCRETE FINISHING SHALL BE IN ACCORDANCE WITH ARCHITECTURAL REQUIREMENTS.

3.9.14. FILLETS AND CHAMFERED FOR CONCRETE EDGES AND CORNERS SHALL BE IN ACCORDANCE WITH ARCHITECTURAL REQUIREMENTS.

3.9.15. CONCRETE EXPOSED TO PUBLIC VIEW TO HAVE A SMOOTH-FORM FINISH UNLESS SPECIFIED OTHERWISE.

3.9.16. PROVIDE A POWERED STEEL TROWEL FINISH FOR ALL INTERIOR CONCRETE SLABS.

3.9.17. FORM TIES WILL BE REMOVABLE. THE FORM RELEASE AGENT WILL BE COLOURLESS MINERAL OIL THAT WILL NOT STAIN OR IMPAIR NATURAL BONDING OF CONCRETE COATINGS.

3.9.18. MODIFY OR REPLACE CONCRETE NOT CONFORMING TO REQUIRED LINES, DETAILS AND ELEVATIONS.

3.9.19. REPAIR OR REPLACE CONCRETE WITH EXCESSIVE HONEYCOMBING AND OTHER DEFECTS.

3.9.20. THE VERTICAL HEIGHT OF FREE FALL CONCRETE SHALL NOT EXCEED 1829mm UNLESS OFFICIALLY APPROVED OTHERWISE.

3.9.21. PROVIDE AND TEST ONE SET OF (4) CYLINDERS OF EACH CLASS PER CONCRETE POUR PER DAY NOR LESS THAN ONE SET EVERY 76 CUBIC METERS NOR LESS THAN ONE SET EVERY 465-SQ. METERS. TEST FOR COMPRESSIVE STRENGTH, SLUMP, AIR CONTENT AND UNIT WEIGHT.

3.10. ANCHOR BOLTS

3.10.1. PLACE ANCHOR BOLTS ACCURATELY USING TEMPLATE TO WITHIN $\frac{1}{8}$" [3]

3.10.2. STEEL FOR ANCHOR BOLTS SHALL COMPLY WITH ASTM A307 OR A36 UNLESS NOTED OTHERWISE ON THE DRAWINGS.

3.10.3. ANCHOR BOLTS ARE TO BE SUPPLIED THREADED AND COMPLETE WITH STANDARD WASHER, WASHER PLATES AND HEXAGONAL NUTS.

3.10.4. J-BOLTS ARE TO BE COMPLETED WITH 2" [51] END HOOK.

3.10.5. ALL GROUT TO BE NON-SHRINK TYPE,PRE-MIXED COMPOUND CONSISTING OF NON-METALLIC AGGREGATE, CEMENT, WATER REDUC

3.11.7. WELDED WIRE FABRIC SHALL CONFORM TO CSA STANDARD G30.5 - M - LATEST EDITION.

3.11.8. WELDED WIRE FABRIC SPLICES SHALL BE MADE BY OVERLAPPING ONE MESH OR 150mm, WHICHEVER IS GREATER.

3.11.9. ALL EXISTING REINFORCING SHALL BE CLEANED TO BE FREE OF RUST, OIL OR ANY OTHER DELETERIOUS MATERIAL

3.11.10. CONCRETE COVER

	N (MIN)	F-1, F-2, F-3 (MIN)	C-XL, C-1, C-3 (MIN)
UNDERSIDE FOOTINGS & AGAINST SOIL	-	75mm	75mm
TOP OF FOOTINGS, BEAMS & COLUMNS	30mm	40mm	60mm
SLABS & WALL	20mm	40mm	60mm

3.11.10.11. PROVIDE 38mm COVER FOR BOTTOM STEEL FOR SLAB ABOVE 3HR, FIRE RATED AREAS.
3.11.10.12. PROVIDE 50mm COVER FOR COLUMN TIES IN 3HR, FIRE RATED AREAS.
3.11.10.13. THE COVER FOR A BUNDLE OF BARS SHALL BE THE SAME AS THAT FOR A SINGLE BAR WITH AN EQUIVALENT AREA.
3.11.10.14. INCREASE COVER WHERE REQUIRED TO MAINTAIN MINIMUM RATIO OF COVER TO NOMINAL BAR DIAMETER OF 1.0 FOR CLASS N, 1.5 FOR CLASSES F-1, F-2, F-3, AND 2.0 FOR CLASSES C-XL, C-1, C-3.

3.11.11. REINFORCING STEEL
3.11.11.1. REINFORCING STEEL TO BE DEFORMED GRADE 400R WITH Fy= 400MPa.
3.11.11.2. DO NOT FIELD BEND REINFORCEMENT EXCEPT WHERE INDICATED OR AUTHORIZED BY ENGINEER. WHEN FIELD BENDING IS AUTHORIZED, BEND WITHOUT HEAT, APPLYING A SLOW AND STEADY PRESSURE. REPLACE BARS WHICH DEVELOP CRACKS OR SPLITS.
3.11.11.3. DOWELS TO FOOTINGS TO BE SAME DIAMETER AND LOCATION AS ALL VERTICAL REINFORCING IN COLUMNS, PIERS OR WALLS U.N.O.
3.11.11.4. REINFORCING STEEL SPLICES TO BE AS NOTED IN REINFORCING BAR LAP LENGTH TABLE.
3.11.11.5. REINFORCING STEEL DEVELOPMENT LENGTH TO BE AS NOTED IN REINFORCING DEVELOPMENT LENGTH TABLE.
3.11.11.6. SPLICES IN REINFORCEMENT SHALL BE STAGGERED WHERE POSSIBLE. SPLICES SHALL BE IN ACCORDANCE WITH CSA 23.3-04 CLAUSE 12, CLASS B TENSION SPLICE AS SHOWN ON STANDARD DETAIL.

3.11.12. OPENINGS
3.11.12.1. AT OPENINGS IN WALLS PROVIDE 2-20M EACH SIDE OF OPENING EXTENDING 600 mm MIN. BEYOND CORNERS OF OPENINGS.
3.11.12.2. FOR ADDITIONAL OPENINGS 300 x 300 mm OR SMALLER SEE ARCHITECTURAL & MECHANICAL DRAWINGS.REPORT ANY OPENINGS LARGER THAN 300 x 300 mm NOT SHOWN ON THESE DRAWINGS TO THE ENGINEER.

3.11.13. WELDING OF REBARS
3.11.13.1. WELDING OF REINFORCEMENT SHALL CONFORM TO CSA W186 "WELDING OF REINFORCING BARS IN REINFORCED CONCRETE CONSTRUCTION".
3.11.13.2. FIRMS UNDERTAKING WELDING OF REINFORCEMENT SHALL BE CURRENTLY CERTIFIED BY THE CANADIAN WELDING BUREAU AND SHALL MEET REQUIREMENTS OF CSA W47.1 "CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES" AND CSA W186 "WELDING OF REINFORCING BARS IN REINFORCED CONCRETE CONSTRUCTION".

MASONRY SPECIFICATIONS

1. GENERAL

1.1. SCOPE
1.1.1. THIS SPECIFICATION DEFINES THE REQUIREMENTS TO DESIGN, SUPPLY, CONSTRUCT, TEST AND PROTECT REINFORCED MASONRY AND UNREINFORCED MASONRY MATERIALS INCLUDING CONNECTIONS, BENDS, PLACEMENT, SPACING, SPLICING AND PREPARATION OF SHOP/ERECTION DRAWINGS AND ASSOCIATED OPERATIONS.

1.2. CODES AND STANDARDS
1.2.1. THE FOLLOWING CODES AND STANDARDS SHALL FORM PART OF THIS SPECIFICATION. EACH PUBLICATION OF THE CODE AND STANDARD LISTED SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT, UNLESS OTHERWISE SHOWN. EXCEPT AS SPECIFICALLY STATED IN THE SPECIFICATION OR MODIFIED BY THE DETAILS OF THE DRAWINGS, ALL WORK SHALL CONFORM TO THE APPLICABLE CODE AND STANDARD.

1.2.1.17. CAN/CSA A23.2 TEST METHODS AND STANDARD PRACTICES FOR CONCRETE
1.2.1.26. CAN/CSA A23.1 CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION
1.2.1.30. CAN/CSA G30.18 CARBON STEEL BARS FOR CONCRETE REINFORCEMENT.
1.2.1.31. CAN/CSA A165 SERIES-04 CSA STANDARDS ON CONCRETE MASONRY UNITS, COVERS.
1.2.1.32. CAN/CSA A179 MORTAR AND GROUT FOR UNIT MASONRY.
1.2.1.33. CAN/CSA W186 WELDING OF REINFORCING BARS IN REINFORCED CONCRETE CONSTRUCTION.
1.2.1.30. CAN/CSA S304.1 DESIGN OF MASONRY STRUCTURES.
1.2.1.26. CAN/CSA A369.1 METHOD OF TEST FOR COMPRESSIVE STRENGTH OF MASONRY PRISMS
1.2.1.27. CAN/CSA A370 CONNECTORS FOR MASONRY.
1.2.1.28. CAN/CSA A371 MASONRY CONSTRUCTION FOR BUILDINGS.
1.2.1.29. CAN/ULC-S101 STANDARD METHODS OF FIRE ENDURANCE TESTS OF BUILDING CONSTRUCTION AND MATERIALS.

1.3. CEMENT ASSOCIATION OF CANADA (CAC):
1.3.1. CODE OF STANDARD PRACTICE FOR CONCRETE DESIGN (CONCRETE DESIGN HANDBOOK).

1.4. REINFORCING STEEL INSTITUTE OF CANADA
1.4.1. MANUAL OF STANDARD PRACTICE FOR REINFORCING STEEL (REINFORCING STEEL MANUAL OF STANDARD PRACTICE)

2. QUALITY ASSURANCE

2.1. QUALIFICATION OF CONTRACTOR:
2.1.1. INSTALLERS MUST BE MEMBERS IN GOOD STANDING OF THE CANADIAN MASONRY CONTRACTORS ASSOCIATION.

2.1.2. INSTALLERS MUST HAVE PROVEN EXPERIENCE ON SIMILAR PROJECTS.

2.2. DELIVERY. STORAGE AND HANDLING
2.2.1. DELIVER MATERIALS TO JOB SITE IN DRY CONDITION.

2.2.2. KEEP MATERIALS DRY UNTIL USE, STORE UNDER WATERPROOF COVER ON PALLETS.

2.2.3. PROTECT MASONRY UNITS FROM DAMAGE.

2.3. SHOP AND ERECTION DRAWINGS:
2.3.1. ALL DRAWINGS SHALL BE CHECKED AND SIGNED BY THE CONTRACTOR PRIOR TO SUBMITTAL. ONE PRINT AND ONE REPRODUCIBLE OF EACH DRAWING SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR REVIEW. ALL REVISIONS REQUIRED BY THE OWNER'S REPRESENTATIVE SHALL BE INCORPORATED INTO THE DRAWINGS, WHICH WILL THEN BE RESUBMITTED FOR REVIEW PRIOR TO BEING FABRICATED.

2.3.2. SHOP AND ERECTION DRAWINGS SHALL SHOW THE GENERAL ARRANGEMENT OF WORK AND SHALL IDENTIFY EACH MEMBER TO BE ERECTED WITH DETAILS OF CONNECTION, ERECTION SEQUENCE AND HANDLING REQUIREMENTS.

2.3.3. ALL SHOP AND ERECTION DRAWINGS SHALL SHOW ALL MATERIALS, FABRICATION, ERECTION, REINFORCEMENT SIZES, CONCRETE COVER, SPACING, CONNECTION DETAILS INCLUDING CUTS, LAP SPLICE, DEVELOPMENT LENGTH, HOOKS, CONNECTIONS AND WELDS ON THE ERECTION DRAWINGS.

2.3.4. ALL SHOP AND ERECTION DRAWINGS, CONNECTION DETAILS AND CALCULATIONS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED WITH THE PROFESSIONAL ENGINEERS OF ONTARIO PRIOR TO BEING SUBMITTED FOR REVIEW.

2.3.5. THE REVIEW BY THE OWNER'S REPRESENTATIVE IS FOR THE SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH THE GENERAL DESIGN CONCEPT. THIS REVIEW SHALL NOT MEAN THAT THE OWNER'S REPRESENTATIVE APPROVES THE DETAIL DESIGN INHERENT IN THE SHOP/ERECTION DRAWINGS, RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR. SUBMITTING SAME AND SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR MEETING ALL THE REQUIREMENTS OF THE CONTRACT.

2.4. ENVIRONMENT REQUIREMENTS:
2.4.1. IF AIR TEMPERATURE IS BETWEEN 0°C AND 4°C. THEN HEAT SAND OR MIXING WATER TO A MINIMUM OF 20°C AND A MAXIMUM OF 70°C.

2.4.2. IF AIR TEMPERATURE RANGES FROM -4°C TO 0°C, THEN HEAT SAND AND MIXING WATER TO A MINIMUM OF 20°C AND A MAXIMUM OF 70°C.

2.4.3.
2.4.4. IF AIR TEMPERATURE RANGES FROM -7°C TO -4°C THEN HEAT SAND AND MIXING WATER TO A MINIMUM OF 20°C AND A MAXIMUM OF 70°C PROVIDE HEAT TO BOTH SIDES OF WALLS USE WINDBREAKERS WHEN WIND SPEEDS EXCEEDS 15KM/Hr.

2.4.5.
2.4.6. IF AIR TEMPERATURE -7°C AND BELOW, HEAT SAND AND MIXING WATER TO A MINIMUM OF 20°C AND A MAXIMUM OF 70°C. PROVIDE ENCLOSURES AND HEAT TO MAINTAIN AN AIR TEMPERATURE ABOVE 0°C. ENSURE THAT TEMPERATURE OF THE MASONRY UNIT ABOVE -7°C.

2.4.7.
2.4.8. IF AIR TEMPERATURES BELOW 0°C. GROUTING MAY PROCEED PROVIDING TEMPERATURE OF GROUT DURING PLACING IS NOT LESS THAN -2°C AND GROUT IN THE WALL IS MAINTAINED ABOVE 0°C FOR A 24-HOUR PERIOD.

2.4.9. BRACE MASON WALLS AS NECESSARY TO RESIST WIND PRESSURE AND OTHER LATERAL FORCES DURING CONSTRUCTION

3. PRODUCTS

3.1. MORTAR AND GROUT MATERIALS
3.1.1. HYDRATED LIME TO BE TYPE "S" TO MEET THE REQUIREMENTS OF ASTM-C-207.

3.1.2. CEMENT TO BE NORMAL PORTLAND, TYPE 10, TO MEET THE REQUIREMENTS OF CAN/CSA A23.1

3.1.3. PIGMENTS FOR MORTAR COLOUR METALLIC OXIDE.

3.1.4. MORTAR AGGREGATE: CLEAN, UNCOATED GRAINS OF SOUND MATERIAL AND CONFORM TO CAN/CSA A23.1 WITH COARSE AGGREGATES PASSING A $\frac{3}{8}$" [10] SIEVE.

3.1.5. WATER TO BE POTABLE, FREE OF DELETERIOUS MATTER AND ACIDS AND ALKALIS.

3.1.6. ADMIXTURES FOR MORTAR SHALL NOT BE USED WITHOUT APPROVAL

3.2. MATERIAL SOURCE
3.2.1. USE BRANDS OF PRODUCTS AND MATERIALS FROM THE SAME SOURCE FOR THE ENTIRE PROJECT.

3.3. MORTAR MIXES
3.3.1. USE TYPE S, CEMENT/LIME MORTAR FOR STRUCTURAL MASONRY AS PER CAN/CSA A179.

3.3.2. USE TYPE N, CEMENT/LIME MORTAR FOR VENEER MASONRY IN ACCORDANCE WITH CAN/CSA A179.

3.3.3. MINIMUM COMPRESSIVE STRENGTH OF 12.5 MPa AT 28 DAYS, BY PROPERTY SPECIFICATION AS PER CAN/CSA A179.

3.3.4. THE PROPORTION SPECIFICATION SHALL APPLY TO FIELD MIXED MORTAR THE PROPERTY SPECIFICATION SHALL APPLY TO MORTAR MANUFACTURED OFF-SITE.

3.3.5. USE MORTAR WITHIN 2.5 HOURS AFTER MIXING RETEMPER USING MINIMUM AMOUNTS OF WATER.

3.4. GROUT MIXES
3.4.1. MINIMUM COMPRESSIVE STRENGTH OF 15 MPa AT 28 DAYS, BY PROPERTY SPECIFICATION AS PER CAN/CSA A179.

3.4.2. MAXIMUM AGGREGATE SIZE TO BE $\frac{3}{8}$" [10] DIAMETER.

3.4.3. GROUT SLUMP SHALL NOT BE LESS THAN 200MM AND NOT EXCEED 250MM.

3.5. CONCRETE BLOCK
3.5.1. CONCRETE MASONRY UNITS TO CAN/CSA A165 CLASSIFICATION.

3.5.2. HOLLOW MASONRY UNITS TO HAVE MIN. OF 15 MPa COMPRESSIVE STRENGTH NORMAL DENSITY.

3.5.3. JOINT REINFORCEMENT MINIMUM 9GA GALVANIZED LADDER TYPE.

3.5.4. NOMINAL DIMENSION SHALL BE AS SHOWN ON DRAWINGS.

3.5.5. STEEL REINFORCEMENT TO CAN/CSA A371.

3.5.6. FOR REINFORCED MASONRY REQUIREMENTS REFER TO STRUCTURAL DRAWINGS AND SPECIFICATIONS.

3.6. CONNECTORS
3.6.1. MASONRY CONNECTORS TO MEET THE REQUIREMENTS OF CAN/CSA A370
3.6.1.1. VENEER TIES SHALL BE HOT DIPPED GALVANIZED.

3.7. MASONRY CLEANING COMPOUNDS
3.7.1. COMPATIBLE WITH MASONRY UNIT AND ACCEPTABLE TO UNIT MANUFACTURER FOR USE ON THEIR PRODUCT

4. EXECUTION

4.1. EXAMINATION
4.1.1. BEFORE STARTING THE WORK, CHECK THAI EXISTING SURFACES AND ADJACENT BUILDING COMPONENTS ARE OF ACCEPTABLE CONDITION I. REPORT ANY DEFECTS IN WRITING TO THE CONSULTANT. COMMENCEMENT OF INSTALLATION CONSTITUTES ACCEPTANCE OF EXISTING CONDITIONS.

4.1.2. EXAMINE DRAWINGS AND COORDINATE INSTALLATION OF MASONRY WITH RELATED SECTIONS SO THAT THIS WORK CAN BE PERFORMED WITH A MINIMUM OF CUTTING AND PATCHING.

4.2. PREPARATION
4.2.1. PROTECT ADJACENT FINISHED MINERALS FROM DAMAGE DUE TO MASONRY WORK.

4.3. INSTALLATION
4.3.1. CONSTRUCT MASONRY WORK TO CAN/CAN3-A371 REQUIREMENTS AND TOLERANCES.

4.3.2. USE $\frac{3}{8}$" [10] NOMINAL THICKNESS JOINT FOR CONCRETE BLOCK

4.3.3. PROVIDE HORIZONTAL AND VERTICAL JOINTS OF UNIFORM THICKNESS EXCEPT WHERE ADJUSTMENTS ARE NECESSARY TO MAINTAIN THE BOND PATTERN OR TO ADJUST COURSING
4.3.3.1. SPEC NOTE NOMINAL THICKNESS OF THE MORTAR JOINTS CAN BE ADJUSTED IN THE FIELD FOR COURSING TO MEET DESIRED ELEVATIONS. MORTAR JOINT THICKNESS MAY ALSO HAVE TO BE ADJUSTED ON SITE TO ACCOUNT FOR TOLERANCES IN BRICK SIZING

4.4. INSTALLING UNITS
4.4.1. DO NOT WET CONCRETE MASONRY WALL UNITS DURING ERECTION OF WALLS.

4.4.2. HOLLOW UNITS: USE FACE SHELL BEDDING WITH FULL HEAD AND BED JOINTS MINIMIZE MORTAR PROTRUDING OR DROPPING INTO CORE SPACES.

4.4.3. SOLID UNITS: USE FULL BEDDING FOR HEAD AND BEAD JOINTS AVOID BRIDGING OF AIRSPACE BETWEEN VENEER AND BACK-UP WALL AND BEVELING BACK EDGE OF BED JOINT.

4.4.4. TAMP UNITS FIRMLY INTO PLACE.

4.4.5. CLOSURE UNITS MUST RECEIVE 'DOUBLE BUTTERING" TO ENSURE FULL HEAD JOINTS.

4.4.6. DO NOT RESET MASONRY UNITS AFTER LAYING WHERE RESETTING OF MASONRY IS REQUIRED, REMOVE AND CLEAN UNITS AND RESET IN NEW MORTAR.

4.4.7. EXPOSED JOINTS SHALL BE [CONCAVE] [RAKED], STRIKE CONCEALED JOINTS FLUSH.

4.4.7.1. SPEC NOTE CONCAVE TOOLED JOINTS PROVIDE THE HIGHEST RESISTANCE TO WATER PENETRATION DUE TO THEIR SHAPE, COMPACTION AND BOND. RAKED JOINTS ARE NOT AS WEATHER RESISTANT AND ARE NOT RECOMMENDED IN HIGH EXPOSURE SITUATIONS.

4.4.8. AFTER MORTAR HAS INITIALLY SET UP, TOOL ALL JOINTS WHERE REQUIRED WIPE WALL SURFACE WITH SUITABLE BRUSH OR BURLAP TO REMOVE MORTAR PROTRUSIONS AND RE- TOOL THE JOINTS.

4.4.9. ON COMPLETION OF MASONRY, FILL ALL HOLES AND CRACKS REMOVE LOOSE MORTAR AND REPAIR DEFECTIVE WORK.

4.5. REINFORCING AND GROUTING
4.5.1. REINFORCE AND GROUT MASONRY WALLS AS INDICATED ON THE STRUCTURAL DRAWINGS AND SPECIFICATIONS.

4.5.2. LAY HORIZONTAL REINFORCING BARS ON WEBS OF BOND BEAM UNITS.

4.5.3. INSTALL VERTICAL REINFORCING STEEL TO HAVE A MINIMUM CLEARANCE OF I3MM FROM THE MASONRY. AND NOT LESS THAN ONE BAR DIAMETER BETWEEN BARS

4.5.4. INSTALL JOINT REINFORCING AT 16" [400] MAXIMUM SPACING. ENSURE A MINIMUM OF 6" [152] OVER LAP.

4.5.5. NOTIFY THE ENGINEER 24 HOURS PRIOR TO GROUT POURS.

4.5.6. VERTICAL CELLS IN HOLLOW UNITS TO BE FILLED SHALL HAVE VERTICAL ALIGNMENT TO MAINTAIN A CONTINUOUS UNOBSTRUCTED CELL AREA.

4.5.7. REMOVE ANY EXCESS OVERHANGING MORTAR OR OTHER OBSTRUCTION AND DEBRIS FROM INSIDE OF CELL WALLS.

4.5.8. PROVIDE CLEAN OUT OPENINGS AT THE BOTTOM OF ALL CORES CONTAINING REINFORCEMENT WHERE SUCH LIFT OF GROUT POURS ARE IN EXCESS OF 5'-0" [1500] IN HEIGHT. SEAL THE CLEAN OUTS BEFORE GROUTING, AFTER INSPECTION CLEAN OUTS MAY BE OMITTED IF APPROVED PROVISIONS ARE MADE TO KEEP THE GROUT SPACE CLEAN PRIOR TO GROUTING.

4.5.9. CONSOLIDATE GROUT BY PUDDLING OR VIBRATING DURING POURING.

4.5.10. FILL ALL CELLS CONTAINING EMBEDMENT AND ANCHOR BOLTS SOLIDLY WITH CONCRETE GROUT.

4.6. MOVEMENT JOINTS
4.6.1. INSTALL VERTICAL AND HORIZONTAL MOVEMENT JOINTS AS SHOWN ON THE DRAWINGS.

4.6.2. BRICK EXPANSION JOINTS ARE TO BE KEPT FREE OF MORTAR READY TO RECEIVE A BACK-UP ROD AND SEALANT.

4.6.3. BLOCK CONTROL JOINTS SHALL BE RAKED BACK, READY TO RECEIVE A BACK-UP ROD AND SEALANT

4.7. PROTECTION
4.7.1. KEEP MASONRY DRY USING WATERPROOF. NCN-SIAINING COVERINGS THAI EXTEND OVER WALLS AND DOWN SIDES SUFFICIENT TD PROTECT WALLS FROM WIND DRIVEN RAIN, UNTIL COMPLETED AND PROTECTED BY FLASHING OR OTHER PERMANENT CONSTRUCTION.

4.7.2. PROTECT COMPLETE MASONRY IN ACCORDANCE WITH CAN/CSA A37D.

4.8. FIELD QUALITY CONTROL
4.8.1. FIELD MIXED MORTAR SHALL; BE INSPECTED FOR ADHERENCE TO PROPORTIONS FOR TYPE SPECIFIED AS PER CAN/CSA A370.

4.8.2. GROUT SPECIMENS SHALL BE SAMPLED AND TESTED AS PER CSA-179 FOR COMPRESSIVE STRENGTH AND SLUM.

4.8.3. CO-OPERATE WITH INDEPENDENT INSPECTION AGENCY APPOINTED AND PAID FOR BY THE OWNER.

4.9. CLEANING
4.9.1. PROTECT ADJACENT BUILDING FINISHES POTENTIALLY VULNERABLE TO STAINS OR CORROSION FROM THE CLEANING AGENT.

4.9.2. PRIOR TO FULL SCALE CLEANING, CONFIRM SUITABILITY OF MATERIALS AND METHODS BY CLEANING INCONSPICUOUS TEST AREA.

4.9.3. SOAK WALL WITH CLEAN WATER AND FLUSH OFF ALL LOOSE DIRT AND MORTAR.

4.9.4. APPLY THE SPECIFIED CLEANING AGENT IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTION.

4.9.5. RINSE ALL AREAS THOROUGHLY WITH CLEAN WATER TO REMOVE ALL CLEANING SOLUTIONS, DIRT AND MORTAR RESIDUE.

4.10. CLEANUP
4.10.1. REMOVE ALL DEBRIS RESULTING FROM THE WORK OF THIS SECTION INTO REFUSE BINS PROVIDED. LEAVE FLOOR IN BROOM CLEAN CONDITION.

ADDITIONAL NOTES:
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By the use of the drawings for construction of the project, the clients/owners represents that they have reviewed and approved these drawings. The contractors represent that they have visited the site, familiarized themselves with the local conditions, verified field dimensions and correlated their observations with the requirements of the contract documents.

An experienced contractor should be able to take these drawings to provide the owner with a reasonable budget, and provide for contingencies that have not been designed for but can be expected based on building type and general configuration.

These drawings illustrate the required work to be done; the engineer is not responsible for the means, methods, techniques, sequences and procedures used to do the work, or the safety aspects of construction. Contractor shall check and verify all dimensions and determine all conditions at the site and shall be responsible for knowing how they affect the work. Submittal of a bid to perform this work is an acknowledgement of the duties and responsibilities required and they have been fully considered during the planning of work and bid pricing. No claims for extra charges due to these conditions will be forthcoming.

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No.	REVISION / ISSUE	DATE
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03	ISSUED FOR PERMIT / TENDER	03 June 2026
02	RE-ISSUED FOR CLIENT REVIEW	16 April 2024
01	ISSUED FOR CLIENT REVIEW	30 Nov 2023

PROJECT NORTH

STAMP
LICENSED PROFESSIONAL ENGINEER
A. M. A. MUSTAFA
100150203
02 June 2026
PROVINCE OF ONTARIO

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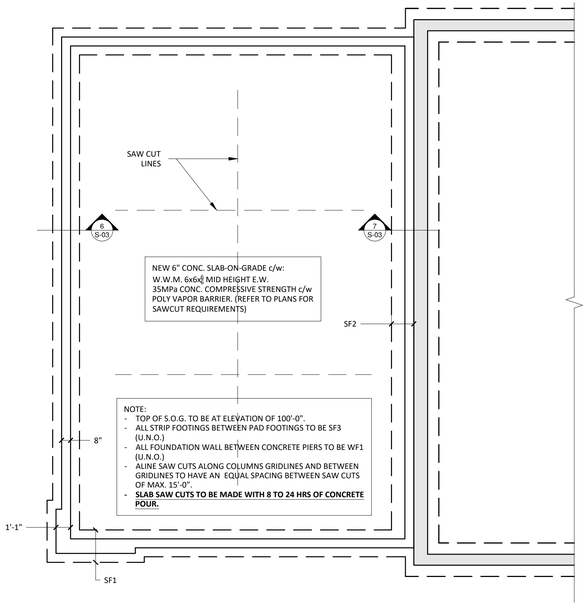
PROJECT
Millhaven Garage Storage Expansion
240 County Rd 4. Bath, ON K0H 1G0

DRAWING TITLE
GENERAL NOTES & DESIGN CRITERIA

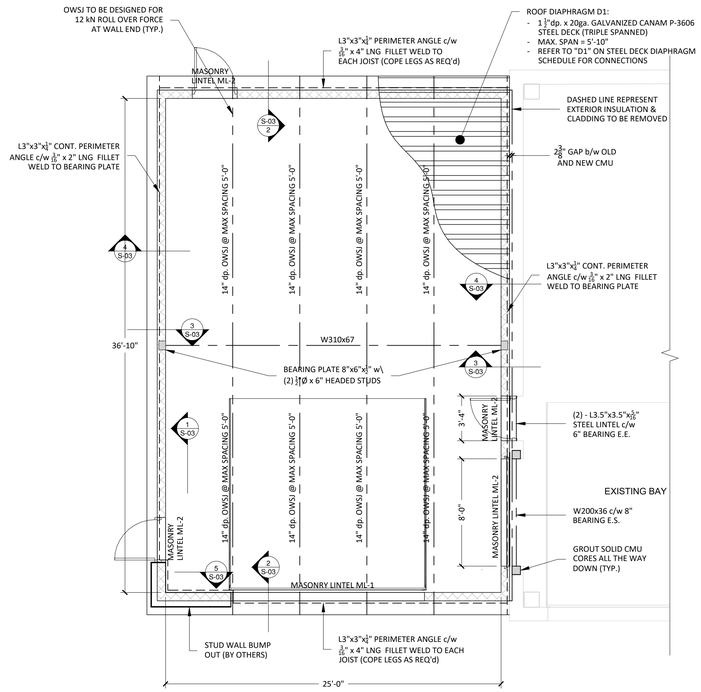
PROJECT No:	230300
DRAWN:	A.M.
DESIGNED BY:	A.M.
DATE:	December 2021

S003



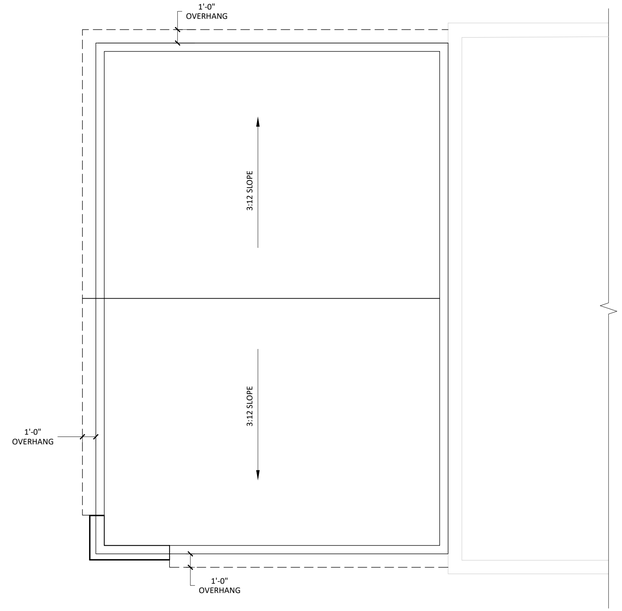
FOUNDATION PARTIAL PLAN

SCALE: 3/16" = 1'-0"



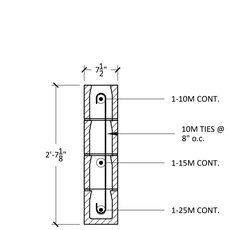
GROUND PARTIAL PLAN

SCALE: 3/16" = 1'-0"



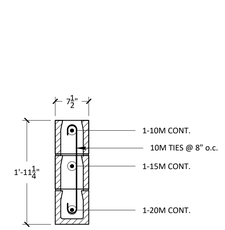
ROOF PARTIAL PLAN

SCALE: 3/16" = 1'-0"



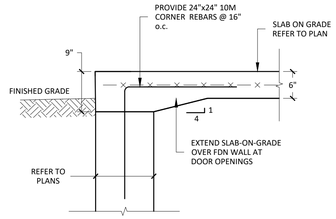
ML-1 TYPICAL CMU LINTEL DETAIL

SCALE: 3/4" = 1'-0"



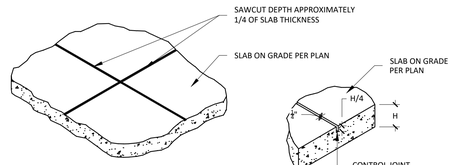
ML-2 TYPICAL CMU LINTEL DETAIL

SCALE: 3/4" = 1'-0"

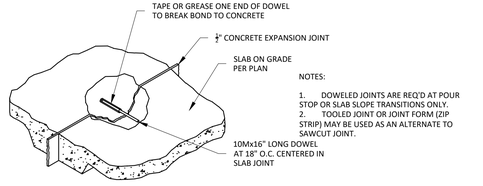


TYPICAL SLAB DETIAL AT DOOR OPENING

SCALE: 3/4" = 1'-0"



SAWCUT JOINT



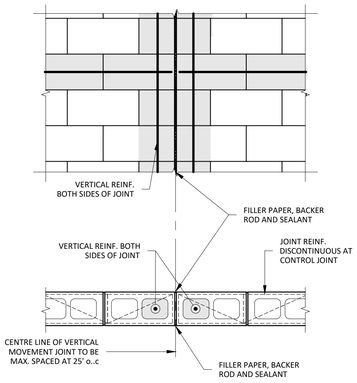
NOTES:

1. DOWELED JOINTS ARE REQ'D AT POUR STOP OR SLAB SLOPE TRANSITIONS ONLY.
2. TOOLED JOINT OR JOINT FORM (ZIP STRIP) MAY BE USED AS AN ALTERNATE TO SAWCUT JOINT.

DOWELED JOINT

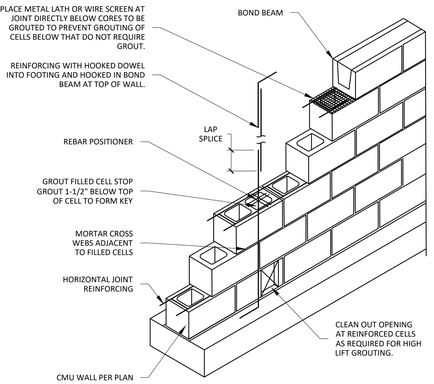
CONCRETE CONTROL JOINTS

SCALE: 3/4" = 1'-0"



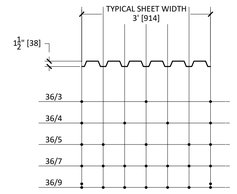
VERTICAL CMU CONTROL JOINT

SCALE: 3/4" = 1'-0"



TYPICAL MASONRY WALL CONSTRUCTION

SCALE: 3/4" = 1'-0"



TYPICAL STEEL DECK FASTENING PATTERN

1:20

MASONRY WALL SCHEDULE

MARK	CMU SIZE	VERTICAL REINFORCEMENT	HORIZ. REINFORCEMENT
W1	8" THICK PARTIALLY GROUTED	15M @ 32" o.c.	$\frac{9}{16}$" TWO WIRE HORIZONTAL TRUSS TYPE @ 32" o.c.

FOOTING SCHEDULE

MARK	LENGTH	WIDTH	THICKNESS	REINFORCEMENT	U.S. FTG's	REMARK
SF1	CONT.	2'-5"	12"	3-15M EQ. SP. BOT. LONGI. & 15M@16" o.c. TRANSV.	-	-
SF2	CONT.	1'-8"	18"	2-15M EQ. SP. BOT. LONGI. & 15M@16" o.c. TRANSV. EPOXY 6" INTO EX. FTG's	-	-
SF3	CONT.	2'-0"	12"	2-15M EQ. SP. BOT. LONGI. & 15M@16" o.c. TRANSV.	-	-

- CONCRETE COVER SHALL BE 3"[76] WHEN CAST AGAINST PERMANENTLY EXPOSED TO EARTH.
- ALL FOOTINGS TO BE CONCENTRIC WITH THE PIER OR COLUMN ABOVE U.N.O.
- ALL REINFORCING STEEL TO BE EQUALLY SPACED U.N.O.

FOUNDATION WALL SCHEDULE

MARK	THICKNESS	HORIZONTAL REINFORCEMENT	VERTICAL REINFORCEMENT	FTG's DOWELS	T.O. FDN.	REMARK
WF1	REFER TO PLANS	15M @ 16" o.c 2 - LAYERS FOR WALL THICKER THAN 8"	15M @ 16" o.c. 2 - LAYERS FOR WALL THICKER THAN 8"	15M@32" L-SHAPE (8"x36")	100'	-

- CONCRETE COVER SHALL BE 3"[76] WHEN CAST AGAINST PERMANENTLY EXPOSED TO EARTH.
- HOOK THE ENDS OF ALL REINFORCING STEEL AGAINST FOUNDATION CHECKS AND OPENINGS
- EXTEND VERTICAL REBARS INTO CONCRETE CHECK AS REQUIRED
- CONCRETE CHECK TO BE REINFORCED WITH MIN. 2-15M EQUALLY SPACED OR 15M@12"[305] HORIZONTAL REBARS (WHICHEVER IS GREATER)
- ALL REINFORCING STEEL TO BE EQUALLY SPACED U.N.O.
- TOP HORIZONTAL REBARS SHALL BE 2" BELOW T.O. FDN.
- T.O. FDN SHALL BE AS INDICATED IN THIS SCHEDULE U.N.O. ON THESE DRAWINGS.

CONCRETE MIX

LOCATION	CLASS OF EXPOSURE	WATER/CEMENT RATIO BY WEIGHT	COMPRESSIVE STRENGTH (MIN. 28 DAYS)	AIR ENTRAINMENT (%)	AGGREGATE SIZE (MAX.)	SLUMP	CURING TYPE (NORMAL CONCRETE)
INTERIOR FTG's, FDN-WALL, PIERS, COLUMNS, SLABS & WALLS	N	0.55	30	NONE	19mm ($\frac{3}{4}$")	75±19mm (3"±$\frac{3}{4}$")	3 DAYS ≥ 10°C
INTERIOR PARKING DECKS, S.O.G. & RAMPS	C-4	0.55	35	4-7	19mm ($\frac{3}{4}$")	75±19mm (3"±$\frac{3}{4}$")	3 DAYS ≥ 10°C

STEEL DECK DIAPHRAGM SCHEDULE

MARK	STEEL DECK PROFILE	STEEL DECK THICKNESS	ASSUMED BASE STEEL THICKNESS	FRAME FASTENERS	FASTENING PATTERN	SIDELAP CONNECTOR	REMARK
D1	P-3606	20Ga [0.91mm]	$\frac{3}{16}$" to $\frac{3}{8}$" [5mm to 10mm]	HILTI X-ENP-19	24/7	HILTI5-SLC 02 M HWH @ 12" [300mm] o.c.	-

- 1$\frac{1}{16}$" [41] MIN. END BEARING LENGTH.
- 4" [102] MIN. INTERIOR BEARING LENGTH.
- 4" [102] MIN. SHEET LAP SPLICE.
- REFER TO TYPICAL STEEL DECK FASTENING PATTERN.
- USE X-ENP-19 L15 FASTENERS FOR BASE STEEL THICKNESS GREATER THAN $\frac{1}{20}$" [10].
- STEEL DECK SHALL NOT BE USED TO SUPPORT ARCH'L, MECH'L OR ELECT'L ITEMS. USE STRUCTURAL STEEL TO SUPPORT THOSE ITEMS AS REQUIRED.
- AT DIAPHRAGM PERIMETER, HILTI FRAME FASTENERS SHALL BE SPACED AT 152mm o.c.
- AT DIAPHRAGM OPENINGS, HILTI FRAME FASTENERS SHALL BE SPACED AT 152mm o.c.

ADDITIONAL NOTES:
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No.	REVISION / ISSUE	DATE
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03	ISSUED FOR PERMIT / TENDER	03 June 2026
02	RE-ISSUED FOR CLIENT REVIEW	16 April 2024
01	ISSUED FOR CLIENT REVIEW	30 Nov 2023

PROJECT NORTH

STAMP

LICENSED PROFESSIONAL ENGINEER
A. M. A. MUSTAFA
100150203
02 June 2026
PROVINCE OF ONTARIO

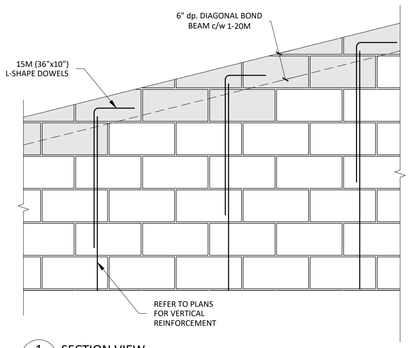
StrucLink
Structural Engineers
StrucLink Inc. - Structural Engineers
T. 613 277-9021 | E. mail@struclink.com | www.struclink.com

CLIENT
Bell+Associates Architecture
186 Pembroke St E, Pembroke, ON K8A 3J7

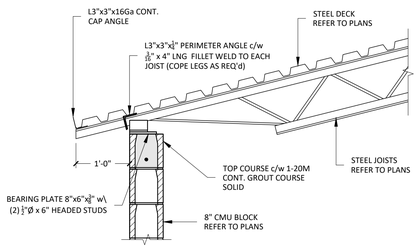
PROJECT
Millhaven Garage Storage Expansion
240 County Rd 4. Bath, ON K0H 1G0

DRAWING TITLE
PLANS & TYPICAL DETAILS

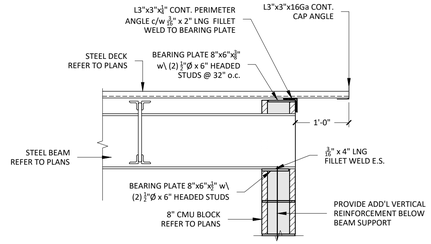
PROJECT No:	230300	S101
DRAWN:	A.M.	
DESIGNED BY:	A.M.	
DATE:	December 2021	



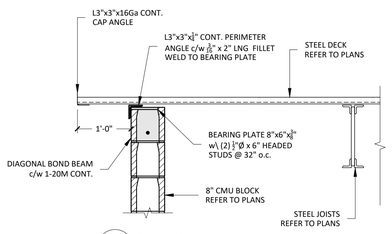
1 S201 SECTION VIEW
SCALE: 3/4" = 1'-0"



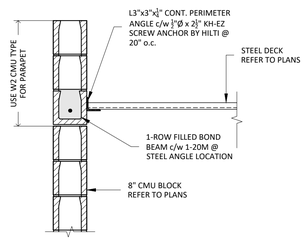
2 S201 SECTION VIEW
SCALE: 3/4" = 1'-0"



3 S201 SECTION VIEW
SCALE: 3/4" = 1'-0"



4 S201 SECTION VIEW
SCALE: 3/4" = 1'-0"



5 S201 SECTION VIEW
SCALE: 3/4" = 1'-0"

6 S201 SECTION VIEW
SCALE: 3/4" = 1'-0"

7 S201 SECTION VIEW
SCALE: 3/4" = 1'-0"

DOWELING OF INTERSECTING WALLS (1-LAYER)

LAPPING AT CORNER OF WALL (1-LAYER)

TYPICAL MASONRY WALL DETAILS
3/4" = 1'-0"

LAPPING AT CORNER OF WALL (1-LAYER)

- DOWELS SAME SIZE & SPACING AS HORIZ. REINF.
- DOWELS NOT REQUIRED IF WALLS CAST TOGETHER & HORIZ. REINF. EXTENDED INTO INTERSECTING WALL AND HOOKED AS SHOWN.

DOWELING OF INTERSECTING WALLS (1-LAYER)

TYPICAL CONCRETE WALL DETAILS
3/4" = 1'-0"

TYPICAL CMU WALL DETAILS
3/4" = 1'-0"

CONCRETE BLOCK WALL NOTES:

FOR CONCRETE BLOCK WALLS REQUIRED TO BE REINFORCED, CONTINUOUS VERTICAL REINFORCEMENT SHALL

a. BE PROVIDED AT WALL CORNERS, WALL ENDS, WALL INTERSECTIONS, AT CHANGES IN WALL HEIGHT, AT THE JAMBS OF ALL OPENINGS AND AT MOVEMENT JOINTS

FOR CONCRETE BLOCK WALLS REQUIRED TO BE REINFORCED, A CONTINUOUS HORIZONTAL BOND BEAM CONTAINING NOT LESS THAN ONE 15M BAR SHALL BE INSTALLED

a. ALONG THE TOP OF THE WALL
b. AT THE SILL AND HEAD OF ALL OPENINGS GREATER THAN 3'-11"[1200] IN WIDTH
c. AT STRUCTURALLY CONNECTED FLOORS

FOR CONCRETE BLOCK WALLS REQUIRED TO BE REINFORCED, ALL VERTICAL BAR REINFORCEMENT SHALL BE INSTALLED ALONG THE CENTER LINE OF THE WALL.

FOR CONCRETE BLOCK WALLS REQUIRED TO BE REINFORCED, LADDER- OR TRUSS-TYPE LATERAL REINFORCEMENT NOT LESS THAN 0.15"[3.8] IN DIAMETER (NO. 9 ASWG) SHALL BE INSTALLED IN THE BED JOINT OF EVERY SECOND MASONRY COURSE U.N.O.

DOWELS SAME SIZE & SPACING AS HORIZ. REINF. DOWELS NOT REQUIRED IF WALLS CAST TOGETHER & HORIZ. REINF. EXTENDED INTO INTERSECTING WALL AND HOOKED AS SHOWN.

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No.	REVISION / ISSUE	DATE
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03	ISSUED FOR PERMIT / TENDER	03 June 2026
02	RE-ISSUED FOR CLIENT REVIEW	16 April 2024
01	ISSUED FOR CLIENT REVIEW	30 Nov 2023

PROJECT NORTH

STAMP
LICENSED PROFESSIONAL ENGINEER
A. M. A. MUSTAFA
100150203
02 June 2026
PROVINCE OF ONTARIO

StrucLink Structural Engineers
StrucLink Inc. - Structural Engineers
T. 613 277-9021 | E. mail@struclink.com | www.struclink.com

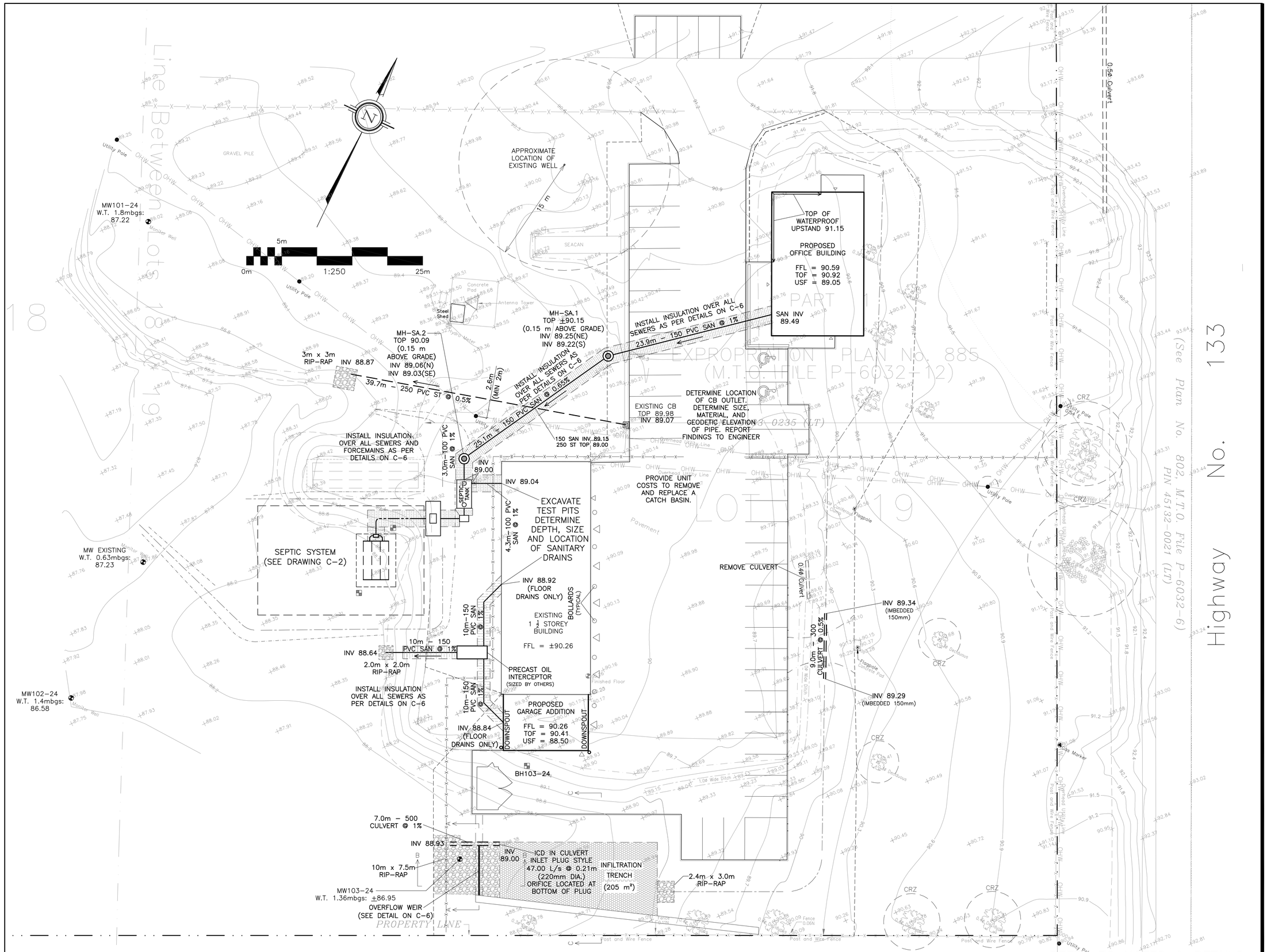
CLIENT
Bell+Associates Architecture
186 Pembroke St E, Pembroke, ON K8A 3J7

PROJECT
Millhaven Garage Storage Expansion
240 County Rd 4. Bath, ON K0H 1G0

DRAWING TITLE
SECTION DETAILS

PROJECT No:	230300
DRAWN:	A.M.
DESIGNED BY:	A.M.
DATE:	December 2021

S201



LEGEND

FFL	FIRST FLOOR ELEVATION
TOF	TOP OF FOUNDATION
USF	UNDERSIDE OF FOOTING
	PROPERTY LINE
C.R.Z	CRITICAL ROOT ZONE
CB	CATCH BASIN
MH	SANITARY MANHOLE
SAN	SANITARY SEWER
FM	SEPTIC FORCEMAIN
ST	STORM SEWER
WL	WATER LINE
INV	INVERT OF PIPE
T.O.S	TOP OF SLOPE
B.O.S	BOTTOM OF SLOPE
	CENTERLINE OF SWALE
	150mm BARRIER CURB
D.C	DEPRESSED CURB

KEY PLAN

No.	DATE	REVISION
2	FEB 23-26	ISSUED FOR APPROVAL
1	JAN 27-25	ISSUED FOR COORDINATION

D. B. GRAY ENGINEERING INC.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle 613-425-8044

Ottawa, Ontario d.gray@dbgrayengineering.com

Project

LOYALIST TOWNSHIP
MILLHAVEN OFFICE BUILDING
& GARAGE ADDITION
240 COUNTY ROAD 4
BATH, ONTARIO

Drawing Title

SITE SERVICING PLAN

Engineer's Seal

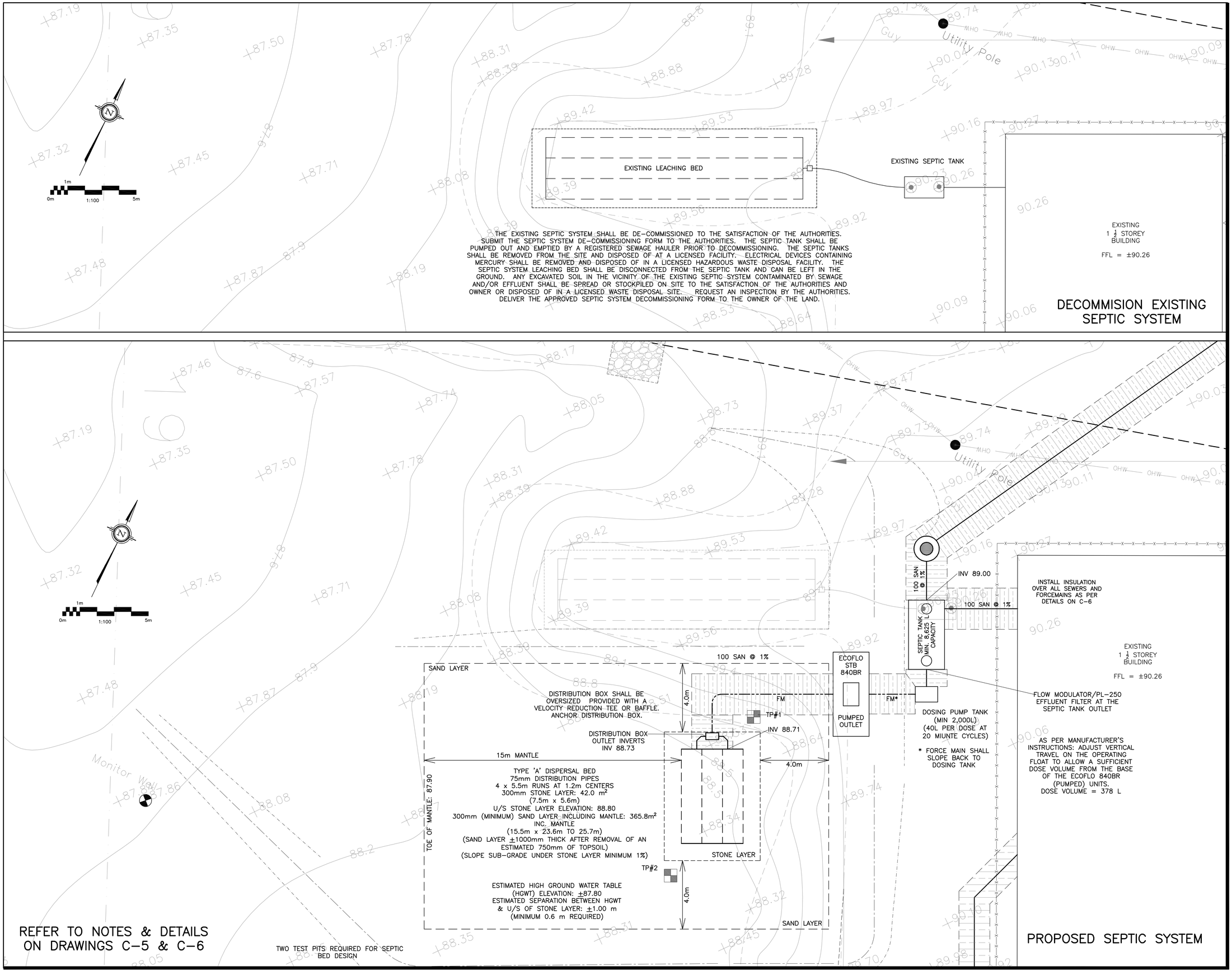
LICENSED PROFESSIONAL ENGINEER
D.B. GRAY
1701650Z
FEB 23-26
PROVINCE OF ONTARIO

NOT VALID UNLESS SIGNED & DATED

Drawn	D.B.G
H. Scale	1:250
V. Scale	
Date	JAN 27-25
Job No.	22100B

Drawing No.

C-1
of 7



LEGEND

FFL	FIRST FLOOR ELEVATION
TOF	TOP OF FOUNDATION
USF	UNDERSIDE OF FOOTING
	PROPERTY LINE
C.R.Z	CRITICAL ROOT ZONE
CB	CATCH BASIN
MH	SANITARY MANHOLE
SAN	SANITARY SEWER
FM	SEPTIC FORCEMAIN
ST	STORM SEWER
WL	WATER LINE
INV	INVERT OF PIPE
T.O.S	TOP OF SLOPE
B.O.S	BOTTOM OF SLOPE
	CENTERLINE OF SWALE
	150mm BARRIER CURB
D.C	DEPRESSED CURB

KEY PLAN

No.	DATE	REVISION
2	FEB 23-26	ISSUED FOR APPROVAL
1	JAN 27-25	ISSUED FOR COORDINATION

D. B. GRAY ENGINEERING INC.
Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains
700 Long Point Circle 613-425-8044
Ottawa, Ontario d.gray@dbgrayengineering.com

Project

LOYALIST TOWNSHIP
MILLHAVEN OFFICE BUILDING & GARAGE ADDITION
240 COUNTY ROAD 4
BATH, ONTARIO

Drawing Title

EXISTING & PROPOSED SEPTIC SYSTEMS

Engineer's Seal

LICENSED PROFESSIONAL ENGINEER
D.B. GRAY
17016502
FEB 23-26
PROVINCE OF ONTARIO

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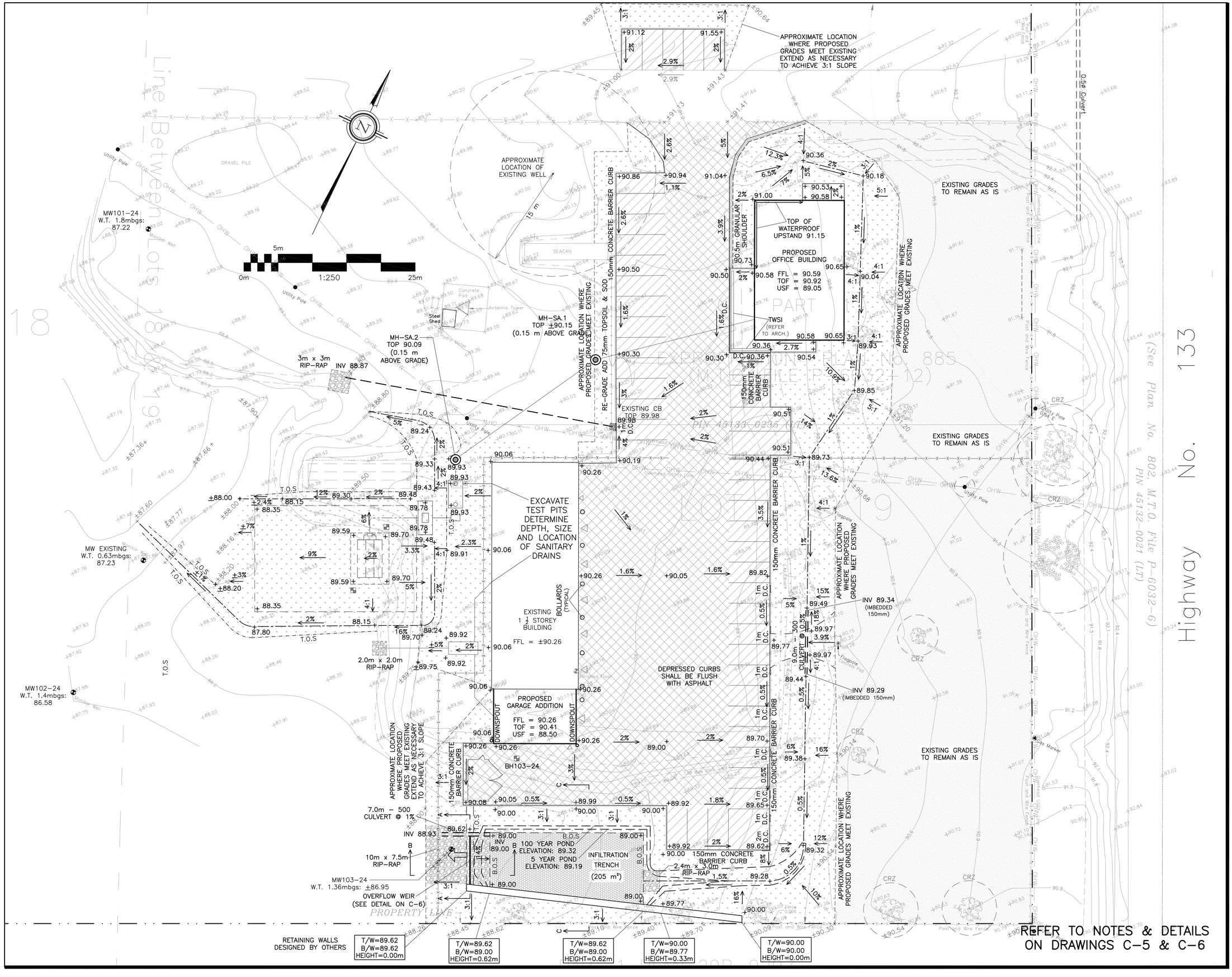
Drawn	D.B.G
H. Scale	1:100
V. Scale	
Date	JAN 27-25
Job No.	22100B

Drawing No.

C-2
of 7



LEGEND

FFL	FIRST FLOOR ELEVATION
TOF	TOP OF FOUNDATION
USF	UNDERSIDE OF FOOTING
	PROPERTY LINE
C.R.Z	CRITICAL ROOT ZONE
CB	CATCH BASIN
MH	SANITARY MANHOLE
×99.99	EXISTING GRADE ELEVATION
+99.99	PROPOSED GRADE ELEVATION
2%	EXISTING SLOPE OF GRADE
2%	PROPOSED SLOPE OF GRADE
	EMERGENCY OVERLAND FLOW
T.O.S	TOP OF SLOPE
B.O.S	BOTTOM OF SLOPE
	CENTERLINE OF SWALE
	150mm BARRIER CURB
D.C	DEPRESSED CURB
	SILT FENCE BARRIER
	LIGHT-DUTY PAVEMENT
	HEAVY-DUTY PAVEMENT
	LANDSCAPE

KEY PLAN

No.	DATE	REVISION
2	FEB 23-26	ISSUED FOR APPROVAL
1	JAN 27-25	ISSUED FOR COORDINATION

D. B. GRAY ENGINEERING INC.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle 613-425-8044

Ottawa, Ontario d.gray@dbgrayengineering.com

Project

LOYALIST TOWNSHIP
MILLHAVEN OFFICE BUILDING
& GARAGE ADDITION
240 COUNTY ROAD 4
BATH, ONTARIO

Drawing Title

GRADING PLAN

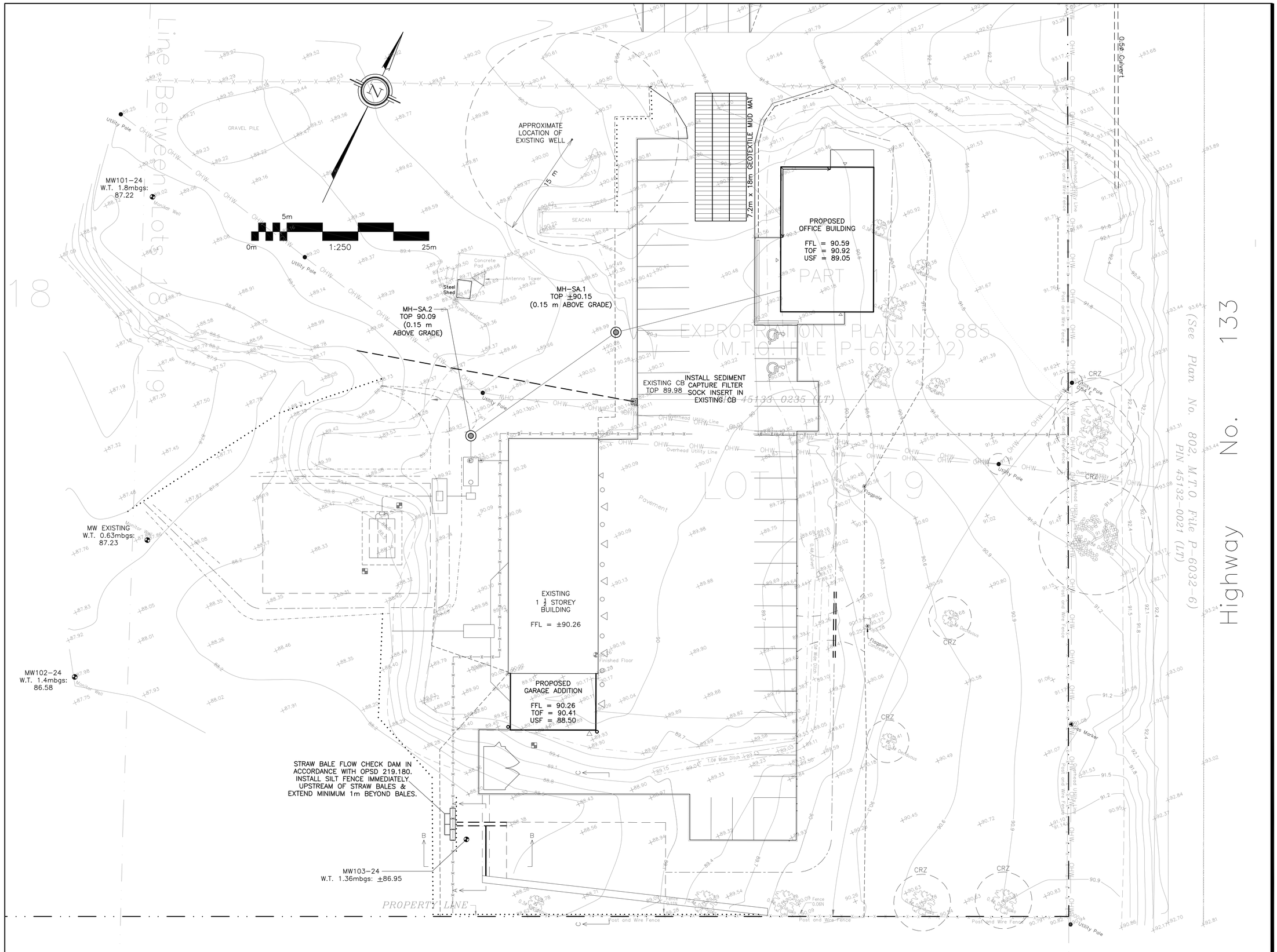
Engineer's Seal

LICENCED PROFESSIONAL ENGINEER
D.B. GRAY
17016502
FEB 23-26
PROVINCE OF ONTARIO
NOT VALID UNLESS SIGNED & DATED

Drawn	D.B.G
H. Scale	1:250
V. Scale	
Date	JAN 27-25
Job No.	22100B

Drawing No.

C-3
of 7



LEGEND

FFL	FIRST FLOOR ELEVATION
TOF	TOP OF FOUNDATION
USF	UNDERSIDE OF FOOTING
	PROPERTY LINE
C.R.Z	CRITICAL ROOT ZONE
CB	CATCH BASIN
MH	SANITARY MANHOLE
x99.99	EXISTING GRADE ELEVATION
+99.99	PROPOSED GRADE ELEVATION
2%	EXISTING SLOPE OF GRADE
2%	PROPOSED SLOPE OF GRADE
	EMERGENCY OVERLAND FLOW
T.O.S	TOP OF SLOPE
B.O.S	BOTTOM OF SLOPE
	CENTERLINE OF SWALE
	150mm BARRIER CURB
D.C	DEPRESSED CURB
	SILT FENCE BARRIER
	LIGHT-DUTY PAVEMENT
	HEAVY-DUTY PAVEMENT
	LANDSCAPE

KEY PLAN

No.	DATE	REVISION
2	FEB 23-26	ISSUED FOR APPROVAL
1	JAN 27-25	ISSUED FOR COORDINATION

D. B. GRAY ENGINEERING INC.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle 613-425-8044

Ottawa, Ontario d.gray@dbgrayengineering.com

Project

LOYALIST TOWNSHIP
MILLHAVEN OFFICE BUILDING
& GARAGE ADDITION
240 COUNTY ROAD 4
BATH, ONTARIO

Drawing Title

EROSION & SEDIMENT CONTROL PLAN

Engineer's Seal

LICENCED PROFESSIONAL ENGINEER
D.B. GRAY
17016502
FEB 23-26
PROVINCE OF ONTARIO

NOT VALID UNLESS SIGNED & DATED

Drawn	D.B.G
H. Scale	1:250
V. Scale	
Date	JAN 27-25
Job No.	22100B

Drawing No.

C-4
of 7

REFER TO NOTES & DETAILS ON DRAWINGS C-5 & C-6

1. GENERAL

1.1 USE BAR SCALE TO CONFIRM ACTUAL PLOT SCALE. EXISTING AND NEW ELEVATIONS AND INVERTS SHOWN ARE GEODETIC AND ARE IN METERS. ALL PIPE DIMENSIONS ARE NOMINAL AND IN MILLIMETERS UNLESS OTHERWISE NOTED.
1.2 UNLESS OTHERWISE STATED "ENGINEER" REFERS TO D. B. GRAY ENGINEERING INC.
1.3 SITE BOUNDARIES AND EXISTING GRADES AND OTHER FEATURES DERIVED FROM TOPOGRAPHIC SURVEY PREPARED BY HOPKINS CHITTY LAND SURVEYORS INC. PROJECT No. 2023-0396. THE ELEVATIONS ARE REFERRED TO A SITE BENCHMARK BEING THE TOP OF CM (MTO) HAVING AN ELEVATION OF 92.84 (CGVD28). IT IS THE RESPONSIBILITY OF THE USER OF THE SURVEY PLAN AND THESE DRAWINGS TO VERIFY THAT THE JOB BENCHMARK HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREE WITH THE INFORMATION SHOWN ON SURVEY PLAN AND THESE DRAWINGS.
1.4 REFER TO ARCHITECTURAL AND LANDSCAPE SITE PLANS FOR EXACT LOCATIONS OF BUILDINGS, PAVED AREAS, SIDEWALKS, PLANTERS ETC. LAYOUT SHALL BE COMPLETED BY THE CONTRACTOR AND SHALL BE REVIEWED BY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION. AT ALL TIMES THE CONTRACTOR IS RESPONSIBLE FOR THE ACCURACY OF THE LAYOUT INCLUDING LINES AND GRADES.
1.5 EFERENCE THE LATEST REVISION AND ALL ADDENDUMS OF THE GEOTECHNICAL INVESTIGATION BY CAMBIUM INC. REFERENCE No.: 19697-001. CONSTRUCTION SHALL CONFORM TO THE GEOTECHNICAL INVESTIGATION TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER INCLUDING: SUB-GRADE PREPARATION AND CONSTRUCTION OF THE PAVEMENT STRUCTURE; EXCAVATION AND BACKFILLING; SERVICE TRENCH EXCAVATION AND PIPE BEDDING AND BACKFILL; AND THE COMPACTION OF MATERIALS.
1.6 DRAWINGS ARE TO BE READ IN CONJUNCTION WITH SITE SERVICING STUDY STORMWATER MANAGEMENT REPORT No. 22100B PREPARED BY D. B. GRAY ENGINEERING INC.
1.7 CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT AND CURRENT PROVINCIAL AND MUNICIPAL STANDARD SPECIFICATIONS AND DRAWINGS.
1.8 ONTARIO PROVINCIAL STANDARD SPECIFICATIONS AND DRAWINGS SHALL APPLY WHERE NO MUNICIPAL STANDARD SPECIFICATIONS OR DRAWINGS ARE AVAILABLE.
1.9 REINSTATE AREAS DISTURBED BY CONSTRUCTION TO PRE-CONSTRUCTION CONDITIONS.

2. EROSION AND SEDIMENT CONTROL PLAN

2.1 THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATER COURSE DURING CONSTRUCTION ACTIVITIES. THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL, USING SEDIMENT CAPTURE FILTER SOCK INSERTS IN CATCH BASINS AND MANHOLES AND INSTALLING SILT FENCES AND OTHER EFFECTIVE SEDIMENT TRAPS. DO NOT REMOVE UNTIL CONSTRUCTION IS COMPLETE.
2.2 PRIOR TO COMMENCEMENT OF CONSTRUCTION AT ALL EXISTING CATCH BASINS AND AT ANY MANHOLES OR CATCH BASINS THAT WILL RECEIVE DISCHARGE FROM DE-WATERING OPERATIONS AND ALL NEW CATCH BASINS AS THEY ARE INSTALLED: INSTALL SEDIMENT CAPTURE FILTER SOCK INSERTS (TERRAFIX GEOSYNTHETICS INC SILTSACK OR APPROVED EQUAL). INSPECT AT THE END OF EACH DAY AND AFTER EACH RAINFALL. REMOVE SEDIMENT AS RECOMMENDED BY THE MANUFACTURER. IMMEDIATELY REPAIR OR REPLACE ANY DAMAGED FILTER SOCK INSERTS. DO NOT REMOVE UNTIL CONSTRUCTION IS COMPLETE.
2.3 INSTALL A SILT FENCE BARRIER AROUND STOCKPILED SEDIMENT OR SOIL. PRIOR TO COMMENCEMENT OF CONSTRUCTION INSTALL A SILT FENCE BARRIER AS SHOWN ON PLANS. INSPECT ALL SILT FENCES AT THE END OF EACH DAY AND AFTER EACH RAINFALL. REMOVE SEDIMENT DEPOSITS WHEN THE LEVEL OF DEPOSITS REACHES ONE THIRD THE HEIGHT OF THE FENCE. IMMEDIATELY REPAIR OR REPLACE ANY DAMAGED SECTIONS OF FENCE. DO NOT REMOVE ANY SILT FENCES IN ANY PHASE UNTIL CONSTRUCTION IS COMPLETE.
2.4 PRIOR TO COMMENCEMENT OF CONSTRUCTION INSTALL STRAW BALE FLOW CHECK DAMS AS INDICATED ON DRAWINGS. INSPECT ALL STRAW BALE FLOW CHECK DAMS AT THE END OF EACH DAY AND AFTER EVERY RAINFALL. REMOVE SEDIMENT DEPOSITS WHEN THE LEVEL OF DEPOSITS REACHES ONE THIRD THE HEIGHT OF THE DAM. IMMEDIATELY REPAIR OR REPLACE ANY DAMAGED BALES. STRAW BALES SHALL BE EMBEDDED INTO SOIL A MINIMUM 150MM AND SHALL BE SECURELY ANCHORED BY TWO STAKES. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARDS THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER. DO NOT REMOVE ANY STRAW BALES UNTIL CONSTRUCTION IS COMPLETE.
2.5 ANY MATERIAL DEPOSITED ON A PUBLIC ROAD SHALL BE REMOVED BY SWEEPING AND SHOVELING OR VACUUMING AND DISPOSING SEDIMENT IN A CONTROLLED AREA. DO NOT SWEEP OR HOSE MATERIAL INTO ANY STORMWATER CONVEYANCE SYSTEM.
2.6 CONSTRUCTION IS CONSIDERED COMPLETE WHEN THE FOLLOWING CONDITIONS HAVE BEEN MET:
A. ALL STRUCTURES HAVE BEEN BUILT.
B. ALL HARD SURFACES HAVE BEEN CONSTRUCTED.
C. ALL PROPOSED GRASSED AREAS ARE EITHER SODDED OR HAVE A FULL COVERAGE OF WELL ESTABLISHED TURF AND HAVE HAD A MINIMUM OF ONE FULL GROWING SEASON (MAY 15TH TO SEPTEMBER 15TH).
D. THERE ARE NO AREAS OF EXPOSED EARTH.
E. ALL STOCKPILED MATERIALS HAVE BEEN REMOVED.
2.7 REMOVE EROSION AND SEDIMENT CONTROL MEASURES WHEN CONSTRUCTION IS COMPLETE.

3. GRADING & DRAINAGE

3.1 NEW GRADES TO MATCH EXISTING AT PROPERTY LINE. NO EXCESS DRAINAGE WILL BE DIRECTED TOWARDS THE ADJACENT PROPERTIES DURING OR AFTER CONSTRUCTION. THERE WILL BE NO ALTERATION TO EXISTING GRADE AND DRAINAGE PATTERNS ON PROPERTY LINE.
3.2 ALL AREAS SHALL BE GRADED TO ENSURE ADEQUATE DRAINAGE AWAY FROM BUILDINGS TO CATCH BASINS, SWALES, DITCHES AND OTHER APPROVED DISPOSAL AREAS. GRADING SHALL BE GRADUAL BETWEEN FINISHED SPOT ELEVATIONS SHOWN ON DRAWINGS TO PREVENT PONDING (OTHER THAN PONDING REQUIRED FOR STORMWATER MANAGEMENT).
3.3 WHETHER RESULT OF POOR WORKMANSHIP OR DAMAGE: DEFECTIVE GRADING SHALL BE CORRECTED.
3.4 CONCRETE CURBS SHALL BE CONSTRUCTED TO PROVINCIAL STANDARDS. DEPRESSED CURBS SHALL BE FLUSH WITH ASPHALT PAVEMENT.
3.5 WHETHER RESULT OF POOR WORKMANSHIP, USE OF DEFECTIVE PRODUCTS OR DAMAGE: DEFECTIVE PORTIONS OF CURBS, SIDEWALK AND ASPHALT SHALL BE CORRECTED OR REMOVED AND REPLACED.
3.6 CULVERTS SHALL BE HDPE TO TO OPSS 1840 AND CSA B182.8 OR 182.6. MINIMUM 320 kPa STIFFNESS AT 5% DEFLECTION WITH SOIL-TIGHT OR BETTER: BOSS 2000 OR APPROVED EQUAL.
3.7 RIP RAP: PLACE RIP-RAP 300mm THICK AS INDICATED ON PLANS AS PER OPSS 511 AND OPSD 810.010 AND/OR 810.020. USE QUARRIED STONE 200MM TO 300MM IN DIAMETER. AREA TO BE RIP RAPPED SHALL BE EXCAVATED AND FINE GRADED TO A UNIFORM AND EVEN SURFACE TO PROVIDE ADEQUATE FOUNDATION. FILL AND THOROUGHLY COMPACT DEPRESSIONS. WHERE RIP RAP IS TO BE PLACED ON SLOPES, EXCAVATE TRENCH AT TOE OF SLOPE. PLACE GEOTEXTILE FABRIC ON PREPARED SURFACE. GEOTEXTILE FABRIC SHALL EXTEND A MINIMUM 300mm BEYOND THE EXTENT OF THE RIP RAP IN ALL DIRECTIONS. PLACE RIP RAP ON FABRIC CAREFULLY, TO AVOID PUNCTURING FABRIC. PLACE RIP RAP IN A SET AND STABLE MANNER. ROCK SHALL BE PLACED, STARTING AT THE LOWER END OF THE SLOPE. THE LARGEST ROCKS OBTAINABLE SHALL BE USED AND PLACED IN THE BOTTOM COURSES AND FOR USE AS HEADERS THROUGH SUBSEQUENT COURSES. THEY SHALL BE LAID CLOSELY AND SUCH THAT THEY WILL PROVIDE A REASONABLE SEMBLANCE OF COURSES. FILL VOIDS WITH ROCK SPALLS OR COBBLES. FINNISH SURFACE EVEN, FREE OF LARGE OPENINGS AND NEAT IN APPEARANCE.
3.8 GEOTEXTILE FABRIC: TO OPSS 1860. WOVEN SYNTHETIC FIBRE FABRIC SHALL BE USED IN SILT FENCE BARRIER (GEOSYNTHETIC HD105 OR APPROVED EQUAL). NON-WOVEN SYNTHETIC FIBRE FABRIC 1.75mm THICK, 200g/sq.m. SHALL BE USED FOR MATERIAL SEPARATION. SUBDRAIN / INFILTRATION TRENCH APPLICATIONS: GEOSYNTHETIC TERRAFIX 360R OR APPROVED EQUAL. RIP RAP APPLICATIONS: GEOSYNTHETIC TERRAFIX 420R OR APPROVED EQUAL. PRIOR TO INSTALLATION SUBMIT SHOP DRAWING TO ENGINEER FOR APPROVAL. GEOTEXTILE FABRIC SHALL BE FREE OF TEARS AND RESISTANT TO DETERIORATION BY ULTRA VIOLET AND HEAT EXPOSURE. PLACE GEOTEXTILE MATERIAL BY UNROLLING ONTO GRADED SURFACE, SMOOTH AND FREE OF TENSION STRESS, FOLDS, WRINKLES AND CREASES. PLACE GEOTEXTILE MATERIAL ON SLOPING SURFACES IN ONE CONTINUOUS LENGTH FROM TOE OF SLOPE TO UPPER EXTENT OF GEOTEXTILE. OVERLAP EACH SUCCESSIVE STRIP OF GEOTEXTILE 600mm OVER PREVIOUSLY LAID STRIP IN DIRECTION OF FLOW. ALTERNATIVELY THE FABRIC MAY BE LAPPED A MINIMUM OF 300mm AND PINNED TOGETHER. PROTECT INSTALLED GEOTEXTILE MATERIAL FROM DISPLACEMENT, DAMAGE OR DETERIORATION BEFORE, DURING AND AFTER PLACEMENT OF MATERIAL LAYERS AFTER INSTALLATION, COVER WITH OVERLYING LAYER WITHIN 4 HOURS OF PLACEMENT. DURING DELIVERY AND STORAGE, PROTECT GEOTEXTILES FROM DIRECT SUNLIGHT, ULTRAVIOLET RAYS, EXCESSIVE HEAT, MUD, DIRT, DUST, DEBRIS AND RODENTS. VEHICULAR TRAFFIC NOT PERMITTED DIRECTLY ON GEOTEXTILE. AVOID PUNCTURING GEOTEXTILE. REPLACE DAMAGED OR DETERIORATED GEOTEXTILE.

4. SITE SERVICES

4.1 ALL SEWER MATERIALS AND CONSTRUCTION METHODS TO ONTARIO PROVINCIAL STANDARDS SPECIFICATIONS (OPSS & OPSD). SEWER MATERIAL SHALL BE PVC SDR-35 (SDR-28 FOR DIAMETERS 150mm OR LESS) AND SHALL CONFORM TO CSA B182.2 AND SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS.
4.2 SEWERS SHALL HAVE A MINIMUM 1.8m OF COVER OR SHALL BE INSULATED AS PER DETAIL.
4.3 MANHOLES & CATCH BASINS:
A. PRECAST MANHOLE UNITS: TO OPSS 1351 AND OPSD 701.010 WITH BASE SLAB OR MONOLITHIC BASE. TOP SECTIONS ECCENTRIC CONE OR FLAT LAB TOP TYPE WITH OPENING OFFSET FOR VERTICAL LADDER INSTALLATION.
B. MANHOLE STEPS: TO OPSD 405.01
C. ADJUSTING RINGS: TO ASTM C 478M.
D. ALUMINUM SURFACES IN CONTACT WITH OR CAST INTO CONCRETE SHALL HAVE POLYETHYLENE ANCHOR INSULATING SLEEVES.
E. PRECAST CATCH BASIN SECTIONS: TO OPSS 1351.
F. JOINTS: SHALL BE MADE WATERTIGHT USING BUTYL BASED, FLEXIBLE WATERSTOP/JOINT SEALANT MATERIAL.
G. SANITARY SEWERS: BENCH TO PROVIDE A SMOOTH U-SHAPED CHANNEL PER OPSD 701.021. SLOPE INVERT TO ESTABLISH SEWER GRADE.
H. FRAMES, GRATES AND COVERS TO OPSD (AS PER CATCH BASIN & MANHOLE SCHEDULE). GRATES AND COVERS TO BEAR EVENLY ON FRAMES.
I. GRANULAR BEDDING AND BACKFILL: OPSS GRANULAR A. RE-CYLCLED GRANULAR MATERIALS ARE NOT PERMITTED.
G. PRIOR TO INSTALLATION SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW.
4.4 CLASS 4 SEWAGE SYSTEM:
THE PROPOSED CLASS 4 SEWAGE SYSTEM SHALL CONSIST OF A SEPTIC TANK, DOSING PUMP, A ECOFLO BIOFILTER; AND TYPE "A" DISPERSAL BED AND SHALL CONFORM TO THE REQUIREMENTS OF THE ONTARIO BUILDING CODE (OBC). THE SEWAGE SYSTEM SHALL BE CONSTRUCTED BY A REGISTERED SEWAGE SYSTEM INSTALLER. THE ECOFLO BIOFILTER SYSTEM SHALL BE INSTALLED, MAINTAINED AND SERVICED BY MANUFACTURER TRAINED AND AUTHORIZED AGENTS OR EMPLOYEES. THE SEPTIC TANK SHALL CONFORM TO THE REQUIREMENTS OF CSA B66 AND THE OBC AND SHALL BE FITTED WITH AN EFFLUENT FILTER THAT SCREENS OUT PARTICLES LARGER THAN 3.2 mm AND AS RECOMMENDED BY THE MANUFACTURER. HANDLE AND INSTALL SEPTIC TANK USING METHODS APPROVED BY THE TANK MANUFACTURER AND AS FOLLOWS (IN THE EVENT OF A CONFLICT, THE METHOD APPROVED BY THE MANUFACTURER SHALL BE USED):
A. PLACE TANK PLUMB AND TRUE TO ALIGNMENT AND GRADE.
B. TOP OF TANK SHALL BE A MINIMUM 600 mm AND A MAXIMUM 1200 mm BELOW FINISHED GRADE OR AS PER MANUFACTURER'S RECOMMENDATIONS. INSTALL MANUFACTURER SUPPLIED ACCESS RISERS TO EXTEND ACCESS AS PER MANUFACTURER'S RECOMMENDATIONS.
C. SET TANK ON MINIMUM 150 mm OF GRANULAR A COMPACTED TO 100% CORRECTED MAXIMUM DRY DENSITY OR AS DIRECTED BY MANUFACTURER.
D. PLACE GRANULAR BACKFILL MATERIALS IN A UNIFORM LAYERS TO COMPACTED THICKNESS OF 150 mm, COMPACT TO 95% CORRECTED MAXIMUM DRY DENSITY. BUILD A 3H:1V FROST TAPER WITHIN THE UPPER 1.2 m.
E. PLACE LAYERS SIMULTANEOUSLY ON BOTH SIDES OF INSTALLED WORK TO EQUALIZE LOADING.
F. ANCHOR TANK TO PREVENT UPLIFT FROM HYDROSTATIC PRESSURES USING A METHOD APPROVED BY TANK MANUFACTURER. MAKE JOINTS WATERTIGHT BETWEEN TANK AND PIPE.

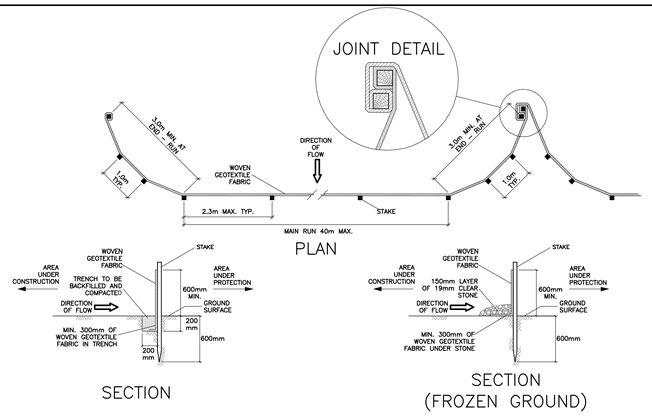
5. CONSTRUCTION:

5.1 PRIOR TO COMMENCING WORK:
A. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE AUTHORITIES.
B. SIZE, DEPTH AND LOCATION OF EXISTING INFRASTRUCTURE (SERVICES, UTILITIES, AND STRUCTURES) AND ARE NOT NECESSARILY SHOWN ON DRAWINGS AND THOSE INDICATED ON THE DRAWINGS ARE DERIVED FROM AVAILABLE INFORMATION AND ARE FOR GUIDANCE ONLY AND MUST BE CONFIRMED ON SITE BEFORE COMMENCING ANY WORK. COMPLETENESS AND ACCURACY ARE NOT GUARANTEED. NOTIFY ALL APPLICABLE OWNERS, UTILITY COMPANIES AND AUTHORITIES HAVING JURISDICTION OF PROPOSED WORK AND LOCATE AND CLEARLY IDENTIFY ALL EXISTING INFRASTRUCTURE ON THE SITE AND ADJACENT TO THE SITE. UNDERGROUND LOCATES (INCLUDING BUT NOT LIMITED TO ONTARIO ONE CALL: 1-800-400-2255) SHALL BE CONDUCTED PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION. CONFIRM LOCATIONS OF BURIED INFRASTRUCTURE BY CAREFULLY EXCAVATING TEST PITS AND REPORT FINDINGS AND ANY DIFFERENCES TO THE ENGINEER. ANY ISSUES ARISING FROM FAILURE OF CONTRACTOR TO DETERMINE THE SIZE, DEPTH AND LOCATION ALL EXISTING INFRASTRUCTURE WILL BE AT THE CONTRACTOR'S EXPENSE.
C. EXISTING GRADE ELEVATIONS SHOWN ON DRAWINGS ARE DERIVED FROM AVAILABLE INFORMATION AND ARE FOR GUIDANCE ONLY AND MUST BE CONFIRMED ON SITE BEFORE COMMENCING CONSTRUCTION. COMPLETENESS AND ACCURACY ARE NOT GUARANTEED. REPORT ANY DIFFERENCES TO ENGINEER.
D. COORDINATE AND SCHEDULE WORK WITH THE OWNER, AUTHORITIES AND OTHER TRADES.
E. SCHEDULE WORK TO PROVIDE THE MINIMUM DISRUPTION TO SERVICES.
F. INSTALL CONSTRUCTION FENCING AROUND THE AREA OF WORK. DO NOT REMOVE FENCING UNTIL WORK IS COMPLETE.

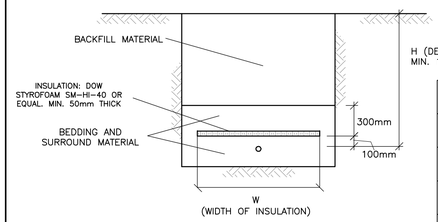
5.2 MAINTAIN AND PROTECT FROM DAMAGE, SERVICES, UTILITIES AND STRUCTURES ENCOUNTERED.
5.3 PROTECT EXISTING BUILDINGS, TREES AND OTHER PLANTS, LAWNS, FENCING, SERVICE POLES, WIRES, PAVEMENT, SURVEY BENCH MARKS AND MONUMENTS AND OTHER SURFACE FEATURES FROM DAMAGE WHILE WORK IS IN PROGRESS. DO NOT DISTURB SOIL WITHIN BRANCH SPREAD OF TREES OR SHRUBS THAT ARE TO REMAIN.
5.4 PROVIDE TRAFFIC CONTROL AND SAFETY MEASURES AS REQUIRED BY THE AUTHORITIES, INCLUDING ANY NECESSARY PERSONNEL AND THE SUPPLY, INSTALLATION, REMOVAL AND REPLACEMENT OF ALL NECESSARY SIGNAGE AND BARRIERS. IF APPLICABLE, PROVIDE TRAFFIC MANAGEMENT PLAN AS PER MUNICIPAL AND/OR PROVINCIAL REQUIREMENTS.
5.5 FENCE OFF ALL OPEN EXCAVATIONS AT THE END OF EACH WORK DAY. FENCES SHALL BE INSTALLED AND MAINTAINED A GOOD AND EFFECTIVE CONDITION.
5.6 REMOVE OBSTRUCTIONS, ICE AND SNOW, FROM SURFACES TO BE EXCAVATED.
5.7 CUT PAVEMENT AND / OR SIDEWALK NEATLY ALONG LIMITS OF PROPOSED EXCAVATION IN ORDER THAT SURFACE MAY BREAK EVENLY AND CLEANLY.
5.8 COORDINATE AND PAY FOR GEOTECHNICAL INSPECTIONS AND COMPACTION TESTS OF; SERVICING TRENCHES (SUB-GRADE, PIPE BEDDING AND EACH LAYER OF SURROUND MATERIAL AND BACKFILL); AND PAVEMENT STRUCTURES (SUB-GRADE, SUB-BASE, BASE AND ASPHALT); TO THE SATISFACTION OF THE GEOTECHNICAL CONSULTANT AND ENGINEER. SUBMIT GEOTECHNICAL INSPECTIONS AND COMPACTION REPORTS TO ENGINEER. A MINIMUM ON ONE SET OF INSPECTIONS AND COMPACTION TESTS SHALL BE COMPLETED ON EACH PIPE SEGMENT GREATER THAN 15 m IN LENGTH. A MINIMUM ONE SET OF INSPECTION AND COMPACTION TESTS SHALL BE COMPLETED FOR EVERY 500 m² OF PAVEMENT AREA.
5.9 CUT AND FILL AS NECESSARY TO ACHIEVE THE PROPOSED GRADE ELEVATIONS. DISPOSE OF SURPLUS AND UNSUITABLE EXCAVATED MATERIAL OFF SITE. ANY REQUIRED FILL SHALL BE CLEAN WELL GRADED SAND TO OPSS 1004 UNLESS OTHERWISE DIRECTED BY GEOTECHNICAL ENGINEER. FILL SHALL BE COMPACTED TO NOT LESS THAN 95% OF CORRECTED MAXIMUM DRY DENSITY. FILL MATERIAL AND THE PLACEMENT AND COMPACTION OF THE FILL MATERIAL AS PER THE GEOTECHNICAL REPORT AND TO THE SATISFACTION OF THE GEOTECHNICAL CONSULTANT. PLACE MATERIAL IN UNIFORM LAYERS NOT EXCEEDING 300mm COMPACTED THICKNESS. STOCKPILE GRANULAR AND FILL MATERIALS IN MANNER TO PREVENT SEGREGATION AND PROTECT FROM CONTAMINATION.
5.10 PROTECT WORK AREA AGAINST FLOODING AND DAMAGE DUE TO SURFACE RUN-OFF. DEWATER AS REQUIRED TO KEEP WORK AREA FREE OF WATER. DISCHARGE FROM DEWATERING OPERATIONS SHALL BE DIRECTED TO A SEDIMENT CONTROL MEASURE AND/OR A VEGETATED DISCHARGE AREA. ENSURE THAT THE DISCHARGED WATER DOES NOT CAUSE EROSION OR OTHER DAMAGE TO ADJACENT LANDS.
5.11 EXCAVATION, TRENCHING, & BACKFILL:
A. SHORE AND BRACE EXCAVATIONS, PROTECT SLOPES AND BANKS AND PERFORM ALL WORK IN ACCORDANCE WITH ONTARIO REGULATION 213/91 UNDER THE ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT AND OTHER AUTHORITIES HAVING JURISDICTION.
B. KEEP EXCAVATIONS FREE OF WATER WHILE WORK IS IN PROGRESS. PROTECT OPEN EXCAVATIONS AGAINST FLOODING AND DAMAGE DUE TO SURFACE RUN-OFF.
C. EXCAVATION SHALL NOT INTERFERE WITH BEARING CAPACITY OF ADJACENT FOUNDATIONS.
D. DO NOT OBSTRUCT FLOW OF SURFACE DRAINAGE OR NATURAL WATERCOURSES.
E. EXCAVATE TO LINES, GRADES, ELEVATIONS AND DIMENSIONS AS INDICATED.
F. EARTH BOTTOMS OF EXCAVATIONS TO BE UNDISTURBED SOIL, LEVEL, FREE FROM LOOSE, SOFT OR ORGANIC MATTER.
G. ALL STRUCTURES WITHIN PAVED AREAS SHALL HAVE 4:1 FROST TAPERS FROM FROST LINE TO SUB-GRADE.
H. CORRECT OVER-EXCAVATION WITH GRANULAR A COMPACTED TO NOT LESS THAN 95% OF CORRECTED MAXIMUM DRY DENSITY.
I. SUB-GRADE AND AREAS TO BE BACKFILLED TO BE FREE FROM DEBRIS, SNOW, ICE, WATER AND FROZEN GROUND.
J. DO NOT USE BACKFILL MATERIAL WHICH IS FROZEN OR CONTAINS ICE, SNOW OR DEBRIS.
K. PIPE BEDDING AND SURROUND MATERIAL SHALL BE OPSS GRANULAR A. RE-CYLCLED GRANULAR MATERIALS ARE NOT PERMITTED.
L. DO NOT USE BEDDING, SURROUND OR BACKFILL MATERIAL WHICH IS FROZEN OR CONTAINS ICE, SNOW OR DEBRIS.
M. PIPE BEDDING SHALL BE 150mm THICK. SHAPE BED TRUE TO GRADE AND TO PROVIDE CONTINUOUS, UNIFORM BEARING SURFACE FOR PIPE.
N. PLACE SURROUND MATERIAL AROUND PIPES TO FULL WIDTH OF TRENCH AND TO 300mm ABOVE PIPES.
O. PLACE BEDDING AND SURROUND MATERIAL IN UNIFORM LAYERS NOT EXCEEDING 150mm COMPACTED THICKNESS. PLACE FILL AND BACKFILL MATERIAL IN UNIFORM LAYERS NOT EXCEEDING 300mm COMPACTED THICKNESS.
P. COMPACT EACH LAYER TO 95% OF CORRECTED DRY DENSITY BEFORE PLACING SUCCEEDING LAYER.
Q. DO NOT BACKFILL AROUND OR OVER CAST-IN-PLACE CONCRETE WITHIN 24 HOURS AFTER PLACING OF CONCRETE.
R. BACKFILL MATERIALS WITHIN 1.8m OF PROPOSED GRADE SHALL MATCH THE MATERIALS EXPOSED ON THE TRENCH WALLS. BACKFILL BELOW 1.8m OF THE PROPOSED CAN CONSIST OF EITHER ACCEPTABLE NATIVE MATERIAL; ROCK; OR IMPORTED GRANULAR MATERIAL CONFORMING TO OPSS GRANULAR B TYPE I OR II. ANY ORGANIC SOILS OR TOPSOIL IF ENCOUNTERED, SHALL BE REMOVED FROM THE EXCAVATION. IF ROCK IS USED AS BACKFILL IT SHALL BE WELL SHATTERED AND GRADED AND 200mm OR SMALLER IN DIAMETER. TO PREVENT INGRESS OF FINE MATERIAL INTO VOIDS IN THE ROCK FILL, THE UPPER SURFACE OF THE ROCK FILL SHALL BE COVERED WITH 150mm LAYER OF COMPACTED, WELL GRADED CRUSHED STONE PLACED ON GEOTEXTILE FABRIC.
5.12 PIPES:
A. HANDLE PIPE USING METHODS APPROVED BY MANUFACTURER.
B. LAY, CUT AND JOIN PIPES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
C. USE ONLY FITTINGS AS RECOMMENDED BY PIPE MANUFACTURER.
D. LAY PIPES ON PREPARED BED, TRUE TO LINE AND GRADE AND ENSURE BARREL OF EACH PIPE IS IN CONTACT WITH SHAPED BED THROUGHOUT ITS FULL LENGTH, FREE OF SAGS OR HIGH POINTS.
E. DO NOT EXCEED MAXIMUM JOINT DEFLECTION RECOMMENDED BY PIPE MANUFACTURER.
F. WHENEVER WORK IS SUSPENDED, INSTALL REMOVABLE WATERTIGHT BULKHEAD AT OPEN END OF LAST PIPE LAID TO PREVENT ENTRY OF FOREIGN MATERIALS.
G. WHEN STOPPAGE OF WORK OCCURS, BLOCK PIPES TO PREVENT CREEP DURING DOWN TIME. MAKE WATERTIGHT CONNECTIONS TO MANHOLES.
H. JOINTS SHALL BE STRUCTURALLY SOUND AND WATERTIGHT.
I. REPAIR OR REPLACE PIPE, PIPE JOINT OR BEDDING FOUND DEFECTIVE.
5.13 SEWERS AND SEWER SERVICE CONNECTIONS:
A. CONSTRUCT TRENCHES AS PER MUNICPAL AND PROVINCIAL STANDARDS.
B. RIGID STRUCTURES, INSTALL PIPE JOINTS NOT MORE THAN 1.2 m FROM SIDE OF STRUCTURE.
C. MAINTAIN EXISTING SEWAGE FLOWS DURING CONSTRUCTION.
5.14 MANHOLES & CATCH BASINS:
A. JOINTS: SHALL BE MADE WATERTIGHT.
B. SET PRECAST CONCRETE BASE ON 150mm MINIMUM OF GRANULAR BEDDING COMPACTED TO 100% CORRECTED MAXIMUM DRY DENSITY.
C. MAKE EACH JOINT WATERTIGHT WITH RUBBER RING GASKETS.
D. PLACE GRANULAR BACKFILL MATERIALS IN A UNIFORM LAYERS TO COMPACTED THICKNESS OF 150mm, COMPACT TO 95% CORRECTED MAXIMUM DRY DENSITY.
E. PLACE FRAME AND COVER ON TOP SECTION TO ELEVATION AS INDICATED. IF ADJUSTMENT REQUIRED USE CONCRETE RINGS TO A MAXIMUM OF 300mm.
F. CLEAN UNITS OF DEBRIS, FOREIGN AND SURPLUS MATERIALS. REMOVE FINS AND SHARP PROJECTIONS. PREVENT DEBRIS FROM ENTERING SYSTEM.
5.15 MAINTAIN RECORD DRAWINGS AND ACCURATELY RECORD DEVIATIONS FROM THE ORIGINAL CONTRACT DOCUMENTS CAUSED BY SITE CONDITIONS AND CHANGES MADE BY CHANGE ORDER OR ADDITIONAL INSTRUCTIONS. UPDATE DAILY AND MAKE AVAILABLE ON-SITE FOR REVIEW THROUGHOUT THE CONSTRUCTION PERIOD. RECORD DRAWINGS SHALL INCLUDE BUT NOT NECESSARILY LIMITED TO CHANGES OF DIMENSION AND DETAIL; CHANGES TO GRADE ELEVATIONS; AND HORIZONTAL AND VERTICAL LOCATIONS OF UNDERGROUND SERVICES, UTILITIES AND APPURTENANCES REFERENCED TO A PERMANENT SURFACE STRUCTURE. SUBMIT DRAWINGS TO ENGINEER AT THE END OF CONSTRUCTION. SUBMIT A RECORD DRAWING OF "AS-BUILT" GRADE ELEVATIONS, PREPARED BY AN OLS SURVEYOR, TO THE ENGINEER AT THE END OF CONSTRUCTION.
5.16 REINSTATE ALL AREAS DISTURBED BY CONSTRUCTION. REINSTATE PAVEMENTS, CURBS AND SIDEWALKS, TO THICKNESS, STRUCTURE AND ELEVATION WHICH EXISTED BEFORE CONSTRUCTION. REINSTATE LANDSCAPED AREAS TO THE CONDITION AND ELEVATION WHICH EXISTED BEFORE CONSTRUCTION.
5.17 CLEAN AND REINSTATE AREAS AFFECTED BY THE WORK.

6. PAVEMENT

6.1 PAVEMENT STRUCTURE:
LIGHT DUTY PAVEMENT:
40mm HL-3 ASPHALTIC CONCRETE
50mm HL-8 ASPHALTIC CONCRETE
150mm OPSS GRANULAR A BASE
300mm OPSS GRANULAR B TYPE I OR II SUB-BASE
HEAVY DUTY PAVEMENT:
40mm HL-3 ASPHALTIC CONCRETE
50mm HL-8 ASPHALTIC CONCRETE
150mm OPSS GRANULAR A BASE
450mm OPSS GRANULAR B TYPE I OR II SUB-BASE
6.2 RE-CYLCLED GRANULAR MATERIALS ARE NOT PERMITTED.
ASPHALTIC CONCRETE SHALL BE PERFORMANCE GRADE PG58-34.
HOT MIX ASPHALT MATERIALS SHALL BE ACCORDING TO OPSS 1150 OR 1151.
PAVEMENT SUB-GRADE PREPARATION AND CONSTRUCTION OF THE PAVEMENT STRUCTURE SHALL CONFORM TO THE GEOTECHNICAL INVESTIGATION TO THE SATISFACTION OF R.
6.3 ALL EXISTING ASPHALT TO BE REMOVED SHALL BE HAULED TO A FACILITY APPROVED FOR ACCEPTING SUCH MATERIALS. REMOVE ALL MATERIALS TO THE SUB-GRADE LEVEL. REMOVE ORGANIC OR UNSUITABLE MATERIAL FROM SUB-GRADE WHERE ENCOUNTERED TO THE SATISFACTION OF THE GEOTECHNICAL CONSULTANT. SUB-GRADE TO BE FREE FROM DEBRIS, SNOW, ICE, WATER AND FROZEN GROUND. COMPACT SUB-GRADE TO 95%.
6.4 CONSTRUCT GRANULAR BASE AND SUB-BASE TO DEPTH AND GRADE IN AREAS INDICATED.CONSTRUCT A 5H:1V FROST TAPER IN SUB-GRADE SURFACE AS A TRANSITION BETWEEN DIFFERING PAVEMENT STRUCTURES AND BETWEEN PAVEMENT AND CURBS AND SIDEWALKS.
6.5 ENSURE NO FROZEN MATERIAL IS PLACED. PLACE MATERIAL ONLY ON CLEAN UNFROZEN SURFACE, FREE FROM SNOW OR ICE.
6.6 PLACE MATERIAL TO FULL WIDTH IN UNIFORM LAYERS NOT EXCEEDING 300mm COMPACTED THICKNESS. SHAPE EACH LAYER TO SMOOTH CONTOUR AND COMPACT TO SPECIFIED DENSITY BEFORE SUCCEEDING LAYER IS PLACED.
6.7 COMPACT SUB-BASE MATERIAL TO DENSITY OF NOT LESS THAN 98% CORRECTED MAXIMUM DRY DENSITY. FILL OVER-EXCAVATED SUB-GRADE WITH SUB-BASE MATERIAL, COMPACT TO 98%. COMPACT BASE AND SHOULDER MATERIAL TO DENSITY NOT LESS THAN 100% CORRECTED MAXIMUM DRY DENSITY.
6.8 IN AREAS NOT ACCESSIBLE TO ROLLING EQUIPMENT, COMPACT TO SPECIFIED DENSITY WITH MECHANICAL TAMPERS.
6.9 REPLACE PAVEMENT DISTURBED BY CONSTRUCTION AND REPLACE WITH PAVEMENT STRUCTURE ABOVE.
6.10 WHERE NEW ASPHALT COMES IN CONTACT WITH EXISTING PAVEMENT: SAWCUT EXISTING ASPHALT LAYER TO CREATE A CLEAN STRAIGHT EDGE. TACK COAT SHALL BE APPLIED TO ASPHALT SURFACES AT WHICH JOINTS ARE TO BE MADE INCLUDING EXISTING PAVEMENT SURFACES THAT HAVE BEEN CUT, GROUND OR MILLED. TACK COAT THE SURFACE OF ALL BINDER COURSES AND BUTTING CONCRETE SURFACES. SURFACES TO BE TACK COATED SHALL BE FREE OF STANDING WATER AND CONTAMINATION, SUCH AS MUD, LOOSE AGGREGATE OR DEBRIS



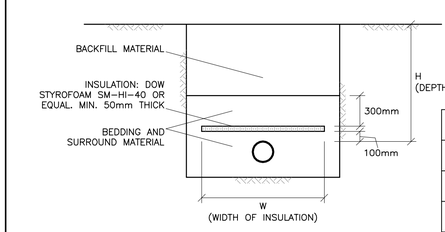
SILT FENCE BARRIER
AS PER OPSD 219.110
(MODIFIED FOR FROZEN GROUND)
N.T.S.



H (DEPTH OF COVER)	INSULATION THICKNESS	W (WIDTH OF INSULATION)
1800 TO 2400mm	50mm	1200mm
1500 TO 1800mm	75mm	1800mm
1200 TO 1500mm	100mm	2400mm
900 TO 1200mm	125mm	3000mm
600 TO 900mm	150mm	3600mm

INSULATE FORCEMAIN AS INDICATED AND WHERE DEPTH OF COVER COVER IS LESS THAN 2400mm CENTER INSULATION OVER PIPE. JOINTS BETWEEN SHEETS OF INSULATION SHALL BE STAGGERED.

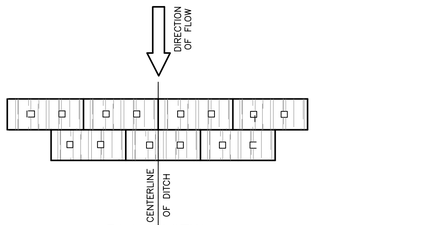
INSULATION OF SANITARY FORCEMAIN IN SHALLOW TRENCHES
N.T.S.



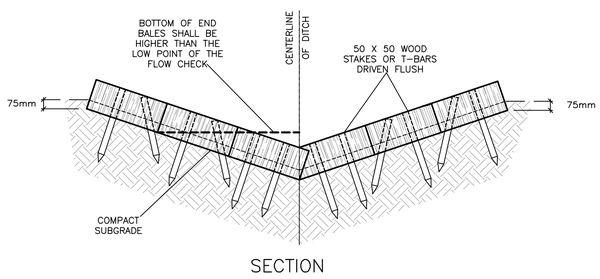
H (DEPTH OF COVER)	INSULATION THICKNESS	W (WIDTH OF INSULATION)
1400 TO 2000mm	50mm	1200mm
1100 TO 1400mm	75mm	1800mm
800mm TO 1100mm	100mm	2400mm
500mm TO 800mm	125mm	3000mm
LESS THAN 500mm	150mm	3600mm

INSULATE SEWER AS INDICATED AND WHERE DEPTH OF COVER IS LESS THAN 1800mm. CENTER INSULATION OVER PIPE. JOINTS BETWEEN SHEETS OF INSULATION SHALL BE STAGGERED.

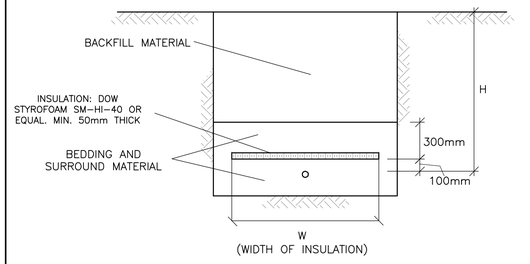
INSULATION OF SEWERS IN SHALLOW TRENCHES
N.T.S



1. STRAW BALES SHALL BE BUTTED TIGHTLY AGAINST ADJOINING BALES AND SHAPED TO CONFORM TO THE SIDES OF THE DITCH TO PREVENT WATER FLOW THROUGH BARRIER.
2. THE NUMBER OF BALES VARIES AND SHALL SUIT SHAPE OF DITCH.
3. STAKES SHALL BE EQUALLY SPACED
4. BALE TIES SHALL NOT BE IN CONTACT WITH GROUND.



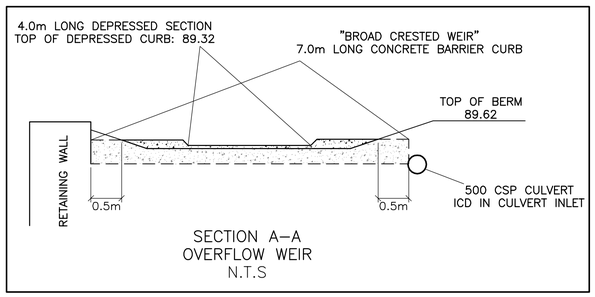
STRAW BALE FLOW CHECK DAM
AS PER OPSD 219.180
N.T.S.



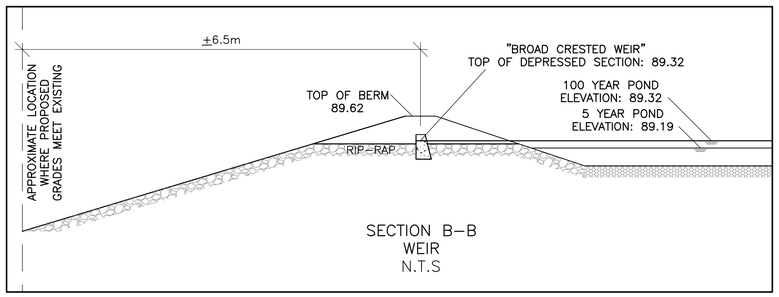
H (DEPTH OF COVER)	INSULATION THICKNESS	W (WIDTH OF INSULATION)
1800 TO 2400mm	50mm	1200mm
1500 TO 1800mm	75mm	1800mm
1200 TO 1500mm	100mm	2400mm

INSULATE SEWER AS INDICATED AND WHERE DEPTH OF COVER COVER IS LESS THAN 2400mm. CENTER INSULATION OVER PIPE. JOINTS BETWEEN SHEETS OF INSULATION SHALL BE STAGGERED.

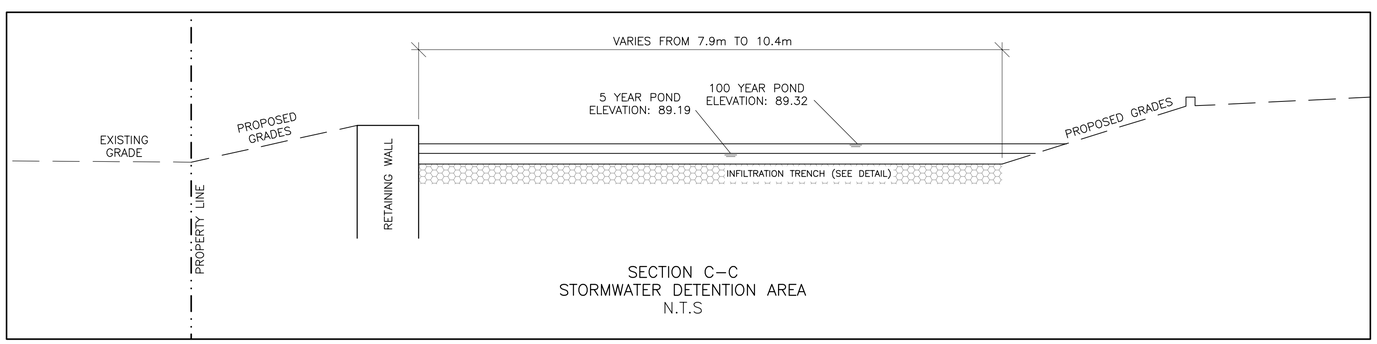
INSULATION OF WELL WATER LINE SHALLOW TRENCHES
N.T.S.



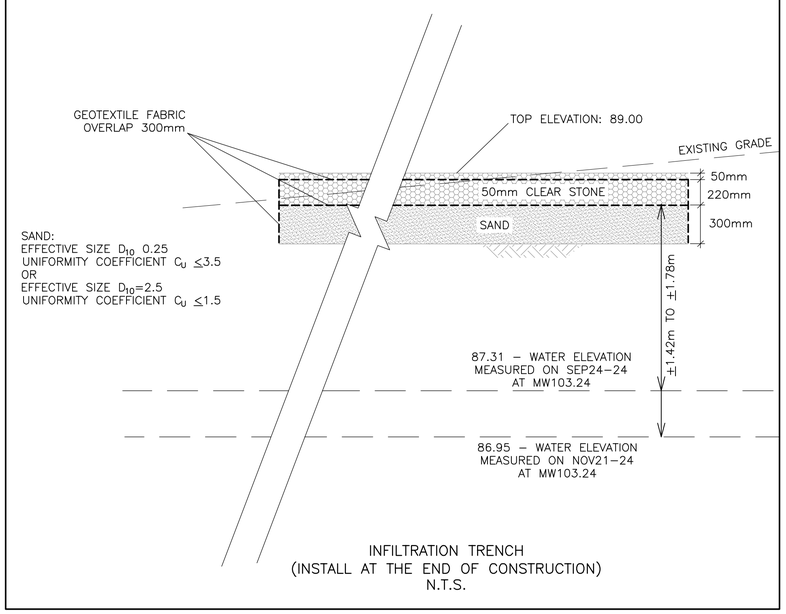
SECTION A–A
OVERFLOW WEIR
N.T.S



SECTION B–B
WEIR
N.T.S

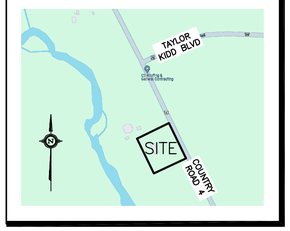


SECTION C–C
STORMWATER DETENTION AREA
N.T.S



INFILTRATION TRENCH
(INSTALL AT THE END OF CONSTRUCTION)
N.T.S.

KEY PLAN



No.	DATE	REVISION
2	FEB 23–26	ISSUED FOR APPROVAL
1	JAN 27–25	ISSUED FOR COORDINATION

D. B. GRAY ENGINEERING INC.
Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains
700 Long Point Circle 613-425-8044
Ottawa, Ontario d.gray@dbgrayengineering.com

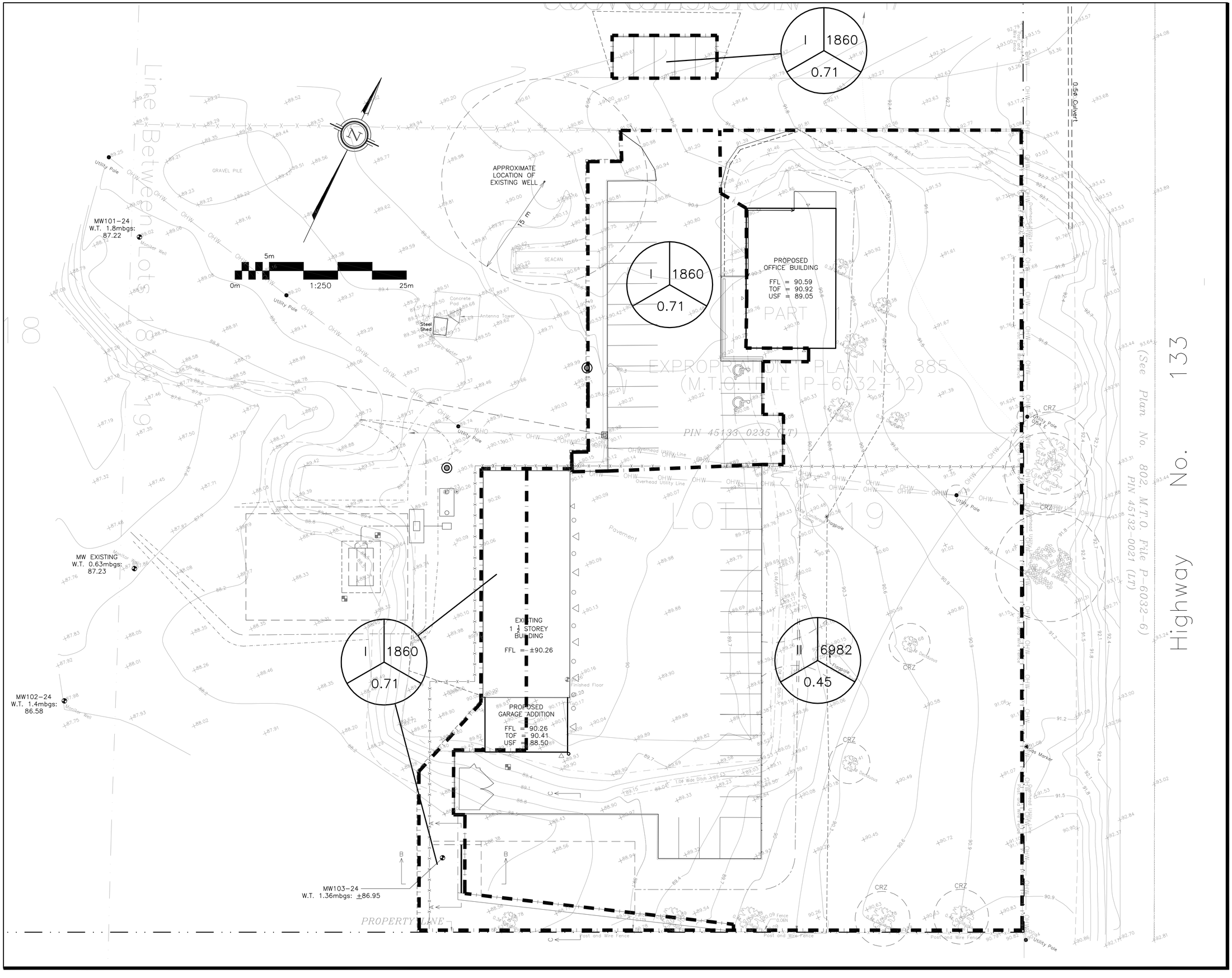
Project
LOYALIST TOWNSHIP
MILLHAVEN OFFICE BUILDING & GARAGE ADDITION
240 COUNTY ROAD 4
BATH, ONTARIO

Drawing Title
DETAILS

Engineer's Seal
LICENSED PROFESSIONAL ENGINEER
D.B. GRAY
17016502
FEB 23-26
PROVINCE OF ONTARIO
NOT VALID UNLESS SIGNED & DATED

Drawn	D.B.G
H. Scale	
V. Scale	
Date	JAN 27–25
Job No.	22100B

Drawing No.
C–6
of 7



LEGEND

DRAINAGE AREA | AREA (sq.m)

X | XXX

0.XX

5 YEAR RUNOFF COEFFICIENT

KEY PLAN

No.	DATE	REVISION
2	FEB 23–26	ISSUED FOR APPROVAL
1	JAN 27–25	ISSUED FOR COORDINATION

D. B. GRAY ENGINEERING INC.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle 613-425-8044

Ottawa, Ontario d.gray@dbgrayengineering.com

Project

LOYALIST TOWNSHIP
MILLHAVEN OFFICE BUILDING
& GARAGE ADDITION
240 COUNTY ROAD 4
BATH, ONTARIO

Drawing Title

POST–DEVELOPMENT DRAINAGE PLANS

Engineer's Seal

LICENSED PROFESSIONAL ENGINEER
D.B. GRAY
1701652
FEB 23–26
PROVINCE OF ONTARIO

NOT VALID UNLESS SIGNED & DATED

Drawn	D.B.G
H. Scale	1:250
V. Scale	
Date	JAN 27–25
Job No.	22100B

Drawing No.

C–7
of 7