

GENERAL NOTES

1. ALL CODES REFERENCES ARE TO BE THE LATEST VERSION AT THE DATE OF ISSUE.
2. DESIGN IS BASED ON THE NATIONAL BUILDING CODE.
3. READ THESE DESIGN NOTES IN CONJUNCTION WITH THE CONTRACT SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS.
4. OBTAIN ENGINEER'S APPROVAL BEFORE CUTTING, BORING, OR SLEEVING LOAD-BEARING MEMBERS UNLESS NOTED OTHERWISE.
5. THE STRUCTURAL DRAWINGS ARE FOR THE COMPLETED PROJECT. STABILITY OF THE EXISTING AND/OR NEW STRUCTURE DURING CONSTRUCTION REMAINS THE RESPONSIBILITY OF THE CONTRACTOR OR TRADE CONTRACTOR.
6. REFER TO ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR SMALL OPENINGS, SLEEVES, RECESSES, DEPRESSIONS, SLUMPS, TRENCHES, CURBS, HOUSEKEEPING PADS, EQUIPMENT BASES, AND SLOPES NOT INDICATED ON THE STRUCTURAL DRAWINGS.
7. OPENINGS AND SLEEVES INDICATED ON THE STRUCTURAL DRAWINGS ARE FOR REFERENCE ONLY. COORDINATE ALL OPENING LOCATIONS AND DIMENSIONS WITH THE APPROPRIATE CONSULTANT AND THE SUB-CONTRACTOR OR TRADE CONTRACTOR PRIOR TO CONSTRUCTION.
8. REVIEW ALL DRAWINGS AND CHECK DIMENSIONS PRIOR TO IMPLEMENTING THE WORK. REPORT ANY DISCREPANCIES TO THE CONSULTANT FOR CLARIFICATION BEFORE PROCEEDING.
9. COORDINATE PLACEMENT AND LOCATION OF ITEMS BY SUBSEQUENT TRADES. RELEVANT TRADES SHALL REVIEW PRIOR TO ERECTION AND/OR INSTALLATION.
10. NOTIFY THE ENGINEER A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY REQUIRED SITE REVIEWS.
11. STRUCTURAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PRE-ENGINEERED METAL BUILDING SHOP DRAWINGS, AND ANY DISCREPANCIES ARE TO BE BROUGHT TO THE DEPARTMENTAL REPRESENTATIVE'S ATTENTION.
12. ENTIRE FOUNDATION TO BE REVIEWED ONCE STAMPED PEMB DRAWINGS ARE PROVIDED. FOUNDATIONS ARE NOT TO START PRIOR TO ISSUE OF FC DRAWINGS AND THE DEPARTMENTAL REPRESENTATIVE'S APPROVAL.

EXISTING STRUCTURES

1. THE STRUCTURAL DESIGN IS BASED ON INFORMATION GATHERED FROM LIMITED VISUAL OBSERVATION ON SITE AND/OR ARCHITECTURAL DRAWINGS.
2. VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS ON SITE PRIOR TO IMPLEMENTING AFFECTED WORK.
3. NOTIFY THE CONSULTANT OF ANY SITE CONDITIONS THAT DIFFER FROM THE CONTRACT DOCUMENTS OR THE RECORD DRAWINGS.
4. SHORE AND UNDERPIN EXCAVATIONS AS REQUIRED TO PREVENT DISTURBANCE TO ADJACENT STRUCTURES, STREETS, SIDEWALKS AND UTILITIES.

DESIGN LOADS

1. CLIMATIC INFORMATION - REFER TO TABLE BELOW
2. SITE INFORMATION - REFER TO TABLE BELOW
3. DESIGN LOADS - REFER TO TABLE BELOW
4. LATERAL LOADS:
 - a. LATERAL LOADS FROM WIND AND SEISMIC LOADS ARE RESISTED BY THE FOLLOWING COMBINATION OF ELEMENTS: STEEL CROSS-BRACINGS AND STEEL MOMENT FRAMES.
 - b. FORCE MODIFICATION FACTORS - REFER TO TABLE BELOW
5. CONSTRUCTION LOADS SHALL NOT EXCEED THE LOADS NOTED ON THE DRAWINGS.
6. UNLESS NOTED OTHERWISE, THE LOADS NOTED IN TABLES AND ON DRAWINGS ARE UNFACTORED.
7. WHERE PERMISSIBLE, LIVE LOADS HAVE BEEN REDUCED IN ACCORDANCE WITH THE NATIONAL BUILDING CODE 2015.

CLIMATIC INFORMATION	
SNOW LOAD, S _s (150)	2.0 kPa
SNOW LOAD, S _i (150)	0.1 kPa
ONE DAY RAIN (150)	86 mm
HOURLY WIND PRESSURE (11/10)	0.30 kPa
HOURLY WIND PRESSURE (1/50)	0.39 kPa
SEISMIC RESPONSE, S _s (0.2)	0.10
SEISMIC RESPONSE, S _s (0.5)	0.06
SEISMIC RESPONSE, S _s (1.0)	0.03
SEISMIC RESPONSE, S _s (2.0)	0.01
SEISMIC RESPONSE, P _{GA}	0.04

SITE INFORMATION	
IMPORTANCE CATEGORY	NORMAL
WIND EXPOSURE TYPE	OPEN TERRAIN
INTERNAL PRESSURE CATEGORY	2
FOUNDATION SITE CLASS	F

DESIGN LOADS	
MAIN FLOOR	
SUPERIMPOSED DEAD LOAD *	1.5 kPa
LIVE LOAD ***	7.2 kPa
CONCENTRATED LIVE LOAD	18 kN
ROOF	
SUPERIMPOSED DEAD LOAD *	AS PER PEMB SPECIFICATIONS
SNOW LOAD **	1.7 kPa + DRIFT
LIVE LOAD ***	1.0 kPa
CONCENTRATED LIVE LOAD ***	1.3 kN
NET FACTORED WIND UPLIFT LOAD ***	AS PER PEMB SPECIFICATIONS

- * SUPERIMPOSED DEAD LOADS ARE ADDITIONAL LOADS APPLIED TO THE SELF WEIGHT OF THE STRUCTURE. THE SELF WEIGHT TYPICALLY INCLUDES ALL CONCRETE ELEMENTS (EXCLUDING LIGHTWEIGHT CONCRETE TOPPING), STRUCTURAL STEEL BEAMS, JOISTS, AND/OR DECKING FASTENED TO THE JOISTS.
- ** SNOW ACCUMULATION LOADS AND RAIN PONDING LOADS WILL BE CONSIDERED WHERE THERE ARE NON-UNIFORM ROOF SHAPES AND/OR ELEVATIONS.
- *** THE UNIFORM LIVE LOAD OR THE CONCENTRATED LIVE LOAD TO BE APPLIED TO THE APPLICABLE STRUCTURAL ELEMENTS TO DETERMINE WHICH PRODUCES THE MOST CRITICAL EFFECT (REFER TO ABC 4.1.5.1), TO ACCOMMODATE MISCELLANEOUS SUSPENDED ITEMS, DESIGN ELEMENTS TO SUPPORT AN ADDITIONAL LIVE LOAD OF 1.3 kN AT ANY POINT ALONG THE SPAN (FROM THE TOP OR BOTTOM CHORD).

NOTE: IF THE BUILDING OCCUPATION USE CHANGES, A PROFESSIONAL ENGINEER MUST BE CONSULTED.

DELEGATED DESIGN

1. PORTIONS OF THE DETAILED DESIGN ARE DELEGATED TO THE CONTRACTOR AND/OR TRADE CONTRACTOR. RETAIN A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF ALBERTA TO COMPLETE THE DESIGN.
2. SUBMIT SHOP DRAWINGS FOR COMPONENTS REQUIRING DELEGATED DESIGN UNDER THE SEAL AND SIGNATURE OF THE ENGINEER RESPONSIBLE FOR THE DESIGN.
3. THE ENGINEER RESPONSIBLE FOR THE DESIGN IS ALSO RESPONSIBLE FOR REVIEW OF FABRICATION AND INSTALLATION OF THE COMPONENTS. UPON COMPLETION OF THE WORK, CERTIFY IN WRITING TO THE CONSULTANT THAT SUCH REVIEW HAS BEEN COMPLETED.
4. ALL DELEGATED DESIGN SHOP DRAWINGS MUST BE REVIEWED PRIOR TO FABRICATION AND INSTALLATION.
5. THE FOLLOWING COMPONENTS REQUIRE DELEGATED DESIGN:
 - a. PRE-ENGINEERED METAL BUILDINGS
 - b. MORTAR GROUT, AND CONCRETE MIX DESIGNS
6. REFER TO SPECIFICATIONS FOR FURTHER REQUIREMENTS.

RADON GAS VAPOUR BARRIER

1. PROVIDE 15mil POLY VAPOUR BARRIER BELOW CONCRETE SLAB.
2. VAPOUR BARRIER IS NOT TO BE PUNCTURED.
3. PROVIDE ROUGH IN EXHAUSTING STACK AND COLLECTION CHAMBER.

FOUNDATION AND GEOTECHNICAL NOTES

1. SUGGESTED GRANULAR AGGREGATE GRADATION - REFER TO TABLE BELOW - CONTRACTOR TO FOLLOW THE GRANULAR AGGREGATE GRADATION REQUIREMENTS AND RADON GRANULAR AGGREGATE GRADATION AND CSA S283.1.
2. THE CONTRACTOR IS TO HIRE A GEOTECHNICAL CONSULTANT TO REVIEW EXISTING SOIL CONDITIONS AT THE TIME OF CONSTRUCTION AND REVIEW THE STRUCTURAL DESIGN NOTES AND DRAWINGS TO ENSURE COMPLIANCE IS MET BASED ON THE SITE CONDITIONS.
3. BEARING SURFACES TO BE INSPECTED AND APPROVED IN THE FIELD BY A PROFESSIONAL GEOTECHNICAL ENGINEER REGISTERED IN THE PROVINCE OF ALBERTA PRIOR TO PLACING CONCRETE. IMPROVE SUBGRADE AS DIRECTED IN WRITING BY THE GEOTECHNICAL ENGINEER TO BE SUBMITTED TO DEPARTMENT REPRESENTATIVE.
4. GEOTECHNICAL TESTING AGENCY TO BE APPROVED BY AND RESPONSIBLE TO THE DEPARTMENT REPRESENTATIVE AND PAID FOR BY THE CONTRACTOR. GEOTECHNICAL AGENCY TO SUBMIT SITE REPORTS TO THE DEPARTMENT REPRESENTATIVE.
5. REMOVE ALL ORGANIC FILL MATERIAL FROM THE BUILDING AREA UNLESS DIRECTED OTHERWISE FROM THE CONTRACTOR'S GEOTECHNICAL CONSULTANT.
6. REMOVE ALL LOOSE OR SATURATED MATERIAL AND GROUNDWATER FROM THE BASE OF FOOTING EXCAVATIONS BY APPROVED METHODS PRIOR TO PLACING FOUNDATIONS.
7. PROTECT EXCAVATIONS FOR FOOTINGS AND CONCRETE SLABS FROM RAIN, SNOW, FREEZING TEMPERATURES, STANDING WATER, LOSS OF MOISTURE AND DEGRADATION BY APPROVED METHODS.
8. FOOTINGS:
 - a. PAD / SPREAD FOOTINGS HAVE BEEN DESIGNED BASED ON A FACTORED BEARING RESISTANCE OF 75 kPa AND A SERVICEABILITY LIMIT STATES BEARING RESISTANCE OF 60 kPa.
 - b. STRIP FOOTINGS ARE DESIGNED TO BE BEARING IN STIFF CLAY AT A DEPTH OF 1500. FACTORED BEARING CAPACITY IS TAKEN AS 75 kPa.
 - c. BEAR ALL FOOTINGS ON UNDISTURBED SOIL NOTWITHSTANDING THE ELEVATIONS INDICATED ON THE DRAWINGS.
 - d. FOOTINGS BEARING ON FILL OR ORGANIC MATERIAL IS NOT ACCEPTABLE.
 - e. BRING OVER-EXCAVATION AND CAVITIES IN THE FOOTING BASE UP TO THE REQUIRED LEVELS WITH 10 MPa CONCRETE.
9. FOUNDATION AND RETAINING WALLS:
 - a. FOUNDATION AND RETAINING WALLS HAVE BEEN DESIGNED BASED ON THE FOLLOWING SOIL DATA:
 - ENGINEERED FILL: $\gamma = 20.35 \text{ kN/m}^3$, $k_{\phi} = 0.58$
 - b. FOUNDATION AND RETAINING WALLS HAVE BEEN DESIGNED BASED ON A SURFACE SURCHARGE LOAD OF 6 kPa.
 - c. FOUNDATION AND RETAINING WALLS HAVE BEEN DESIGNED ASSUMING AN EFFECTIVE DRAINAGE SYSTEM IS PROVIDED BEHIND THE WALLS.
10. SUBGRADE:
 - a. BACKFILL MATERIAL TO CONSIST OF LOW PLASTIC CLAY OR A WELL GRADED GRAVEL AS PER THE SPECIFICATIONS AND BE COMPACTED TO 98% OF STANDARD PROCTOR MAXIMUM DRY DENSITY IN MAXIMUM LIFTS OF 150 mm. DEEPER NEW FILL IN THE PROPOSED BUILDING PAD AREA INCLUDING TRENCH BACKFILLS MORE THAN 10 m THICK, SHOULD BE PLACED TO 100% OF STANDARD PROCTOR MAXIMUM DENSITY LIFTS OF 150 mm.
 - b. BACKFILL WALLS BELOW GRADE SIMULTANEOUSLY ON BOTH SIDES ENSURING THAT NO PORTION OF THE FILL IS PLACED MORE THAN 600 mm ABOVE ANY OTHER PORTION OF THE FILL DURING BACKFILLING.
 - c. DO NOT BACKFILL BEHIND FOUNDATION WALLS UNTIL THE FLOOR SLAB(S) TO WHICH THEY ARE TIED AND COMPLETED AND THE CONCRETE HAS REACHED ITS 28-DAY DESIGN STRENGTH.
 - d. SUBGRADE UNDER INTERIOR SLABS TO HAVE ALL UNACCEPTABLE MATERIAL REMOVED AND PROOF-ROLLED. GEOTECHNICAL AGENCY TO VERIFY SUBGRADE PREPARATION (IF APPLICABLE).
 - e. ANY FILL AND TOPSOIL MATERIAL SHOULD BE REMOVED FROM THE BUILDING AREA. THE EXPOSED SURFACE SHOULD BE PROOF-ROLLED AND COMPACTED TO A DENSITY OF 98% STANDARD PROCTOR MAX. DRY DENSITY.
 - f. ANY SOFT SUBGRADE SOIL IS TO BE REMOVED AND REPLACED WITH LOW PLASTIC CLAY OR WELL GRADED GRAVEL. BACKFILL MATERIAL TO BE PLACED IN 200 mm LIFTS COMPACTED TO 98% SPMD. SEE GEOTECHNICAL REPORT FOR OPTIMUM MOISTURE CONTENT (IF APPLICABLE).
 - g. ALL IMPORTED FILL SHOULD BE TESTED FOR SOLUBLE SULPHATE CONCENTRATIONS AND APPROVED BEFORE TRANSPORT TO SITE.
 - h. PARTICLES OF CRUSHED GRAVEL, MIX RETAINED ON THE PLUS # 75 mm SIEVE ARE TO CONSIST OF DURABLE PARTICLES OF CRUSHED STONE, GRAVEL, OR SLAG CAPABLE OF WITHSTANDING THE EFFECTS OF HANDLING, SPREADING AND COMPACTING WITHOUT DEGRADATION THAT PRODUCES DELETERIOUS FINES, AND AT LEAST 50% BY WEIGHT IS TO HAVE TWO OR MORE FRACTURED FACES.
11. PROVIDE DOWELS FROM FOOTINGS TO MATCH ALL VERTICAL PILASTER AND FOUNDATION WALL REINFORCEMENT OR AS NOTED ON THE DRAWINGS.
12. UNLESS OTHERWISE SHOWN ON THE PLAN, FOUNDATION ELEMENTS ARE TO BE CENTERED UNDER PILASTERS, COLUMNS, FOUNDATION WALLS, AND/OR GRADE BEAMS.

SUGGESTED EXTERIOR GRANULAR AGGREGATE GRADATION		
SEIVE SIZE (mm)	% PASSING BY WEIGHT	
25	100	
20	95 - 100	
10	60 - 80	
5	40 - 60	
2.5	28 - 48	
0.630	13 - 29	
0.314	9 - 21	
0.160	6 - 15	
0.080	4 - 10	

SUGGESTED INTERIOR GRANULAR AGGREGATE GRADATION USING SIZE #5		
SEIVE SIZE (mm)	% PASSING BY WEIGHT	
25	90 - 100	
20	20 - 55	
14	0 - 10	
10	0 - 5	
5	-	
4	-	
2.5	-	
0.080	< 2	

SLAB-ON-GRADE CONSTRUCTION

1. THE CONTRACTOR IS TO ENSURE THAT THE GEOTECHNICAL ENGINEER IS ON SITE TO INSPECT THE SLAB SUBGRADE AND WATER CONDITIONS PRIOR TO ANY COMPACTION BEING DONE TO DETERMINE WHETHER OR NOT THE EXPOSED SUBGRADE IS ACCEPTABLE AND TO DETERMINE IF FURTHER EXCAVATION, FILL OR COMPACTION IS REQUIRED. ALL SUBGRADE MATERIAL AND SLAB BASE GRAVEL, AND THEIR COMPACTION ARE REVIEWED, TESTED AND APPROVED BY THE GEOTECHNICAL ENGINEER.
2. ANY FILL AND TOPSOIL MATERIAL SHOULD BE REMOVED FROM THE BUILDING AREA. THE EXPOSED SURFACE SHOULD BE PROOF-ROLLED AND COMPACTED TO A DENSITY OF 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.
3. ALL SLABS ARE TO BE UNDERLAIN BY AN 150 mm THICK, WELL GRADED GRAVEL BASE, COMPACTED TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY. SOFT SPOTS ARE TO BE FILLED WITH GRAVEL IN MAXIMUM LIFTS OF 150 mm, AND COMPACTED TO 100% STANDARD PROCTOR MAXIMUM DRY DENSITY.
4. PROVIDE MINIMUM 15 ml POLYOLEFIN BASE RESIN SHEET RADON VAPOUR RETARDER MEMBRANE UNDER BUILT-UP FLOORS, GLEUED DOWN WOOD FLOORS, AND/OR TUNNEL FLOORS AS INDICATED ON THE DRAWINGS. TAPE MEMBRANE JOINTS LAPPED 300 mm OVER MINIMUM 150 mm GAS PERMEABLE VENTING LAYER (RADON ROCK). AGGREGATE TO CONFORM TO ASTM C33-90, SIZE #5. POLYOLEFIN SHEETS TO BE CHEMICALLY COMPATIBLE WITH THE SOIL ENVIRONMENT (ASTM E154-88). MEMBRANES TO BE SEALED TO PERIMETERS TO PROVIDE CONTINUOUS AIR BARRIER AS PER MANUFACTURER'S REQUIREMENTS.
5. PROVIDE 6 mm WIDE x 25% SLAB THICKNESS DEPTH SAW CUT CONTROL JOINTS AT MAX 4.5 m CENTERS EACH WAY, UNLESS NOTED OTHERWISE.
6. SAW CUT CONTROL JOINTS ARE TO BE FILLED WITH FLEXIBLE JOINT CAULKING.
7. JOINTS SHALL BE SAW CUT NO LATER THAN 12 HOURS AFTER CONCRETE HAS BEEN POURED.
8. DISCREPANCIES BETWEEN SITE PREPARATIONS NOTES AND THE GEOTECHNICAL REPORT ARE TO BE REPORTED TO THE ENGINEER FOR COMMENT.
9. ALL EXTERIOR SIDEWALKS TO BE A MINIMUM 100 THICK AND REINFORCED WITH 10M @ 300 O.C. ALL SIDEWALKS IN CONTACT WITH FOUNDATION WALLS TO BE DOWELED IN 150 mm AND EPOXIED WITH HLT HIT HY-200.

CONSTRUCTION JOINTS (CJ)

1. VERTICAL CONSTRUCTION JOINTS IN WALLS SHALL BE AT MID-SPAN EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS OR WHERE AUTHORIZED BY THE CONSULTANT.
2. VERTICAL CONSTRUCTION JOINTS IN BEAMS AND SLABS SHALL BE AT 1/3 OF THE SPAN EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS OR WHERE AUTHORIZED BY THE CONSULTANT.
3. HORIZONTAL CONSTRUCTION JOINTS IN BEAMS AND WALLS ARE NOT PERMITTED EXCEPT WHERE SHOWN ON THE DRAWINGS OR WHERE AUTHORIZED BY THE CONSULTANT.
4. PROVIDE CONSTRUCTION JOINTS WHERE SHOWN ON DRAWINGS OR AS APPROVED BY THE DEPARTMENT REPRESENTATIVE AFTER COMPLETE SUBMISSION OF DETAILS AND LOCATIONS.
5. CONSTRUCTION JOINTS IN GRADE BEAMS TO BE A MAXIMUM OF 25 m (82').
6. THOROUGHLY CLEAN CONCRETE SURFACE. ROUGHEN TO 6 mm (1/4") AMPLITUDE.
7. DAMPEN SURFACE TO A SATURATED SURFACE DRY CONDITION.

CONCRETE FORMWORK

1. DESIGN, FABRICATION, ERECTION, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CAN / CSA-S269.3-M92 AND CSA S283.1.
2. PROVIDE VOID FORM BELOW ALL STRUCTURAL SLABS AT GRADE, WALLS, GRADE BEAMS, PILE CAPS, AND WHERE SHOWN ON THE DRAWINGS PRIOR TO INSTALLATION OF REINFORCEMENT.
 - a. STRUCTURAL SLABS AT GRADE - PLYWOOD OR 6 mm HARDBOARD OVER BIODEGRADABLE WAX MAT CARDBOARD. COMPLETE WITH MOISTURE RESISTANT TREATED PAPER FACES, WITH SUFFICIENT STRENGTH TO SUPPORT THE WEIGHT OF WET CONCRETE UNTIL SET. PROVIDE 12 mm THICK PRESSURE TREATED PLYWOOD AROUND PERIMETER OF SLAB TO PROTECT VOID SPACE.
 - b. OTHER LOCATIONS - EXPANDED POLYSTYRENE CRUSHABLE FILL MATERIAL.
3. PROVIDE CAMBER OF SPAN/60 FOR ALL BEAMS AND GIRDERS WITH A SPAN GREATER THAN OR EQUAL TO 8 m. CAMBER BOTH THE TOP AND UNDERSIDE OF CONCRETE TO MAINTAIN SPECIFIED DEPTH UNLESS NOTED OTHERWISE.
4. LEAVE FORMS IN PLACE OR PROVIDE SHORING FOR ALL SLABS, BEAMS, AND GIRDERS UNTIL CONCRETE HAS REACHED SPECIFIED 28-DAY COMPRESSIVE STRENGTH.
5. REFER TO SPECIFICATIONS AND ARCHITECTURAL DRAWINGS FOR CHAMBERS ON CORNERS FOR BEAMS, COLUMNS, AND WALLS.

CAST-IN-PLACE REINFORCED CONCRETE

1. CONTROLLED CONCRETE - REFER TO TABLE BELOW
2. SUPPLY CONTROLLED CONCRETE IN ACCORDANCE WITH CSA-A23.1 / A23.2.
3. CONCRETE MATERIALS, QUALITY, MIXING, PLACING, FORMWORK AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CSA-A23.1.
4. USE TYPE HS CEMENT FOR ALL CONCRETE CLASSIFIED EXPOSURE OF S-1, S-2 OR S-3. USE TYPE GU CEMENT FOR ALL CONCRETE UNLESS NOTED OTHERWISE IN CONTROLLED CONCRETE TABLE.
 - a. MAXIMUM FLY ASH CONTENT NOT TO EXCEED 25% OF THE TOTAL CEMENTITIOUS MATERIAL EXCEPT AS FOLLOWS:
 - CONCRETE FOR FOOTINGS, PILES, COLUMNS, WALLS, GRADE BEAMS: MAXIMUM 30%.
 - CONCRETE WITH EXPOSURE CLASSES C-XL, C-1 AND C-2: MAXIMUM 15%.
 - EXPOSED CONCRETE FLOORS: MAXIMUM 15%.
 - b. LIMIT C₆₀ CONTENT IN FLY ASH TO LESS THAN 12% FOR CONCRETE WITH EXPOSURE CLASSES S-1, S-2 AND S-3.
5. NOTIFY CONSULTANT 2 BUSINESS DAYS PRIOR TO CONCRETE POURS TO ALLOW FOR REVIEW OF REINFORCEMENT.
6. DO NOT USE ADMIXTURES CONTAINING CALCIUM CHLORIDE.
7. FOR FLOOR SLABS, DESIGN THE CONCRETE MIX WITH AGGREGATE GRADING AND WATER TO CEMENTING MATERIALS RATIO TO MINIMIZE SHRINKAGE.
8. FIELD AND LABORATORY TESTING OF CONCRETE TO BE COMPLETED BY A THIRD PARTY TESTING AND INSPECTION AGENCY APPROVED BY AND RESPONSIBLE TO THE ENGINEER. TESTING AGENCY SHALL BE CERTIFIED TO CSA-A283 AND TESTING TO BE COMPLETED IN ACCORDANCE WITH CSA-A23.2. TESTING PAID FOR BY CONTRACTOR.

CONTROLLED CONCRETE						
CONCRETE ELEMENT	EXPOSURE CLASS	MIN (MPa) @ #DAYS	MAX AGGREGATE SIZE (mm)	AIR CONTENT CATEGORY	MAX W/C RATIO	CEMENT TYPE
EXTERIOR CONCRETE						
SPREAD / STRIP FOOTINGS	F-1 / S-2	30 @ 28 32 @ 56	20	1/2	0.45	HS
FOUNDATION WALLS	F-1 / S-2	30 @ 28 32 @ 56	20	1/2	0.45	HS
PILASTERS	F-1 / S-2	30 @ 28 32 @ 56	20	1/2	0.45	HS
SIDEWALKS / APRONS	C-2	32 @ 28	20	1	0.45	GU
INTERIOR CONCRETE						
SLAB ON GRADE	N	25 @ 28	20	1	0.50	GU

CONCRETE REINFORCEMENT

1. CLEAR CONCRETE COVER TO REINFORCEMENT - REFER TO TABLE BELOW
2. STANDARD END HOOK LENGTHS - REFER TO TABLE BELOW
3. REINFORCEMENT SPLICES - REFER TO TABLE BELOW.
4. REINFORCEMENT STEEL TO CONFORM TO CSA-G30.18 GRADE 400.
5. DO NOT WELD REINFORCEMENT UNLESS APPROVED IN WRITING BY THE ENGINEER. REINFORCEMENT TO BE WELDED TO CONFORM TO CSA G30.18, GRADE 400W. WELDING ONLY PERMITTED BY AN ORGANIZATION CERTIFIED TO CSA W186-M1990.
 - a. WHERE SPLICES ARE INDICATED ON THE DRAWINGS, SUCH DIMENSIONS SHALL APPLY.
 - b. WHERE THE DRAWINGS INDICATE TENSION OR COMPRESSION SPLICES, IT SHALL BE AS INDICATED IN REINFORCEMENT SPLICES TABLE.
 - c. WHERE NO SPLICE TYPE IS INDICATED ON THE DRAWINGS, IT SHALL BE A TENSION SPLICE EXCEPT FOR COLUMNS WHICH SHALL BE A COMPRESSION SPLICE.
6. NOTIFY THE ENGINEER PRIOR TO CONCRETE PLACEMENT TO ALLOW FOR REVIEW OF REINFORCING.
7. SUBMIT SHOP DRAWINGS AND DETAILS FOR ALL REINFORCEMENT FOR REVIEW PRIOR TO FABRICATION.
8. REINFORCEMENT SPLICES (REFER TO REINFORCEMENT SPLICES TABLE).
 - a. WHERE SPLICES ARE INDICATED ON THE DRAWINGS, SUCH DIMENSIONS SHALL APPLY.
 - b. WHERE THE DRAWINGS INDICATE TENSION OR COMPRESSION EMBEDMENT, IT SHALL BE AS NOTED IN THE REINFORCEMENT SPLICES TABLE.
 - c. WHERE NO EMBEDMENT OR EMBEDMENT TYPE IS INDICATED ON THE DRAWINGS, IT SHALL BE A TENSION EMBEDMENT EXCEPT FOR COLUMNS WHICH SHALL BE A COMPRESSION EMBEDMENT.
9. EMBEDMENT OF DOWELS (REFER TO REINFORCEMENT SPLICES TABLE).
 - a. WHERE EMBEDMENT IS DIMENSIONED ON THE DRAWINGS, SUCH DIMENSIONS SHALL APPLY.
 - b. WHERE THE DRAWINGS INDICATE TENSION OR COMPRESSION EMBEDMENT, IT SHALL BE AS NOTED IN THE REINFORCEMENT SPLICES TABLE.
 - c. WHERE NO EMBEDMENT OR EMBEDMENT TYPE IS INDICATED ON THE DRAWINGS, IT SHALL BE A TENSION EMBEDMENT EXCEPT FOR COLUMNS WHICH SHALL BE A COMPRESSION EMBEDMENT.
10. WELDED WIRE MESH TO CONFORM TO ASTM A675/A678M.
11. REINFORCE ALL INTERIOR AND EXTERIOR SLABS ON GRADE WITH 10M @ 300 o.c. UNLESS NOTED OTHERWISE. SIDEWALKS AND SMALL SLABS TO BE REINFORCED WITH 10M @ 300 mm o.c. UNLESS NOTED OTHERWISE.
12. OPENINGS IN WALLS AND SLABS - PROVIDE 2 - 15M BARS EACH SIDE, ONE EACH FACE, EXTENDING 600 mm PAST THE OPENINGS, PLUS 2 - 15M DIAGONAL BARS 1.5 TIMES THE LENGTH OF THE SHORTEST SIDE OF OPENING OR MINIMUM 600 mm AND MAXIMUM 1500 mm LENGTH AT EACH CORNER.
13. DO NOT CUT REINFORCEMENT AT OPENINGS WHERE IT CAN BE SPREAD CONTINUOUS AROUND OPENING.
14. TYPICAL BEAM REINFORCEMENT UNLESS NOTED OTHERWISE - TOP REINFORCEMENT TO BE CONTINUOUS OVER SUPPORTS; SPLICE 600 mm AT MID-SPAN. BOTTOM REINFORCEMENT TO BE CONTINUOUS BETWEEN SUPPORTS; SPLICE 600 mm AT SUPPORTS.
15. ALL REINFORCEMENT TO BE SUPPORTED AT 800 mm MAXIMUM SPACING PRIOR TO CONCRETE POUR.

CLEAR CONCRETE COVER TO REINFORCEMENT				
EXPOSURE CONDITION	N	F-1, F-2, S-1, S-2, S-3	C-XL, C-1, C-2, C-3, A-1, A-2, A-3	
CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH - EARTH FORMED FACES	-	75 mm	75 mm	
BEAMS, GIRDERS, COLUMNS, AND PILES TO TIES/STIRRUPS - FORMED FACES (EXCEPT AS NOTED BELOW)	30 mm	40 mm	60 mm	
SLABS, WALLS, JOISTS, SHELLS, AND FOLDED PLATES - FORMED FACES (EXCEPT AS NOTED BELOW)	30 mm	40 mm	60 mm	
RATIO OF COVER TO NOMINAL BAR DIAMETER	1.0	1.5	2.0	
RATIO OF COVER TO NOMINAL MAXIMUM AGGREGATE SIZE	1.0	1.5	2.0	

STANDARD END HOOKS								
IMPORTANCE CATEGORY	10M	15M	20M	25M	30M	35M	45M	55M
90 HOOK LENGTH	180	260	310	400	510	640	790	1020
180 HOOK LENGTH	140	180	210	280	390	550	670	860

REINFORCEMENT SPLICES					
BAR SIZE	COMPRESSION SPLICE (mm)	TENSION SPLICE (mm)			
		VERTICAL OR BOTTOM HORIZONTAL BARS		TOP HORIZONTAL BARS *	
		UNCOATED BARS	EPOXY COATED BARS	UNCOATED BARS	EPOXY COATED BARS
10M	300	400	600	500	650
15M	450	550	850	750	950
20M	600	700	1000	900	1150
25M	750	1100	1650	1400	1850
30M	900	1300	1950	1700	2200
35M	1025	1550	2300	2000	2600

- NOTES:
- a. THIS TABLE IS BASED ON NORMAL WEIGHT CONCRETE $f_c = 30 \text{ MPa}$ AND ON REINFORCING STEEL $f_y = 400 \text{ MPa}$.
 - b. * TOP HORIZONTAL BARS ARE DEFINED AS HORIZONTAL REINFORCEMENT PLACED SUCH THAT MORE THAN 300 mm OF CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCEMENT.
 - c. FOR STANDARD EMBEDMENT DEPTH INTO CONCRETE, DIVIDE BASIC TENSION LAP SPLICE NUMBER BY 1.3.

STRUCTURAL ABBREVIATIONS

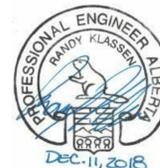
THE FOLLOWING STRUCTURAL ABBREVIATIONS SHALL BE USED BUT NOT LIMITED TO IN DRAWING PREPARATION:

ADDL	ADDITIONAL	LLV	LONG LENGTH VERTICAL
ALUM	ALUMINUM	LONG	LONGITUDINAL
APPROX	APPROXIMATELY	MAX	MAXIMUM
ARCH	ARCHITECT	MECH	MECHANICAL
BOT	BOTTOM	MEZZ	MEZZAINE
BL	BOTTOM LOWER LAYER	MIN	MINIMUM
BRG	BEARING	MISC	MISCELLANEOUS
BTWN	BETWEEN	N.I.C.	NOT IN CONTRACT
BUL	BOTTOM UPPER LAYER	N.T.S.	NOT TO SCALE
CIP	CAST IN PLACE	No.	NUMBER
CJ	CONSTRUCTION JOINT	o.c.	ON CENTER
COL	COLUMN	O.D.	OUTSIDE DIAMETER
CONC	CONCRETE	O.F.	OUTSIDE FACE
CONN	CONNECTION	OPP	OPPOSITE
CONT	CONTINUOUS	OPNG	OPENING
ow	COMES WITH	DWSJ	OPEN WEB STEEL JOIST
DIA OR Ø	DIAMETER	PERIM	PERIMETER
DIAG	DIAGONAL	PROJ	PROJECTION
DO	DITTO	PIT	POST-TENSIONED
DWG	DRAWING	rw	REINFORCED WITH
DWL	DOWEL	REINF	REINFORCING
E.F.	EACH FACE	REQD	REQUIRED
E.W.	EACH WAY	SIM	SIMILAR
ELEV	ELEVATION	S.J.	SAWCUT JOINT
EXIST	EXISTING	S.O.G.	SLAB ON GRADE
EOR	ENGINEER OF RECORD	SPMD	STANDARD PROCTOR MAXIMUM DRY DENSITY
EQ	EQUAL	S.S.	STAINLESS STEEL
EQ SP	EQUAL SPACING	STD	STANDARD
EXIST	EXISTING	STIFF	STIFFENER
EXT	EXTERIOR	SYM	SYMMETRICAL
FDN	FOUNDATION	T&B	TOP AND BOTTOM
FTG	FOOTING	THK	THICK
F.T.S.	FULL TENSION SPLICE	TLL	TOP LOWER LAYER
FMC	FULL MOMENT CONNECTION	T.O.	TO OF
GA	GAUGE	TUL	TOP UPPER LAYER
GALV	GALVANIZED	TYP	TYPICAL
HORIZ	HORIZONTAL	U.N.O.	UNLESS NOTED OTHERWISE
I.D.	INSIDE DIAMETER	UIS	UNDER SIDE
I.F.	INSIDE FACE	VERT	VERTICAL
INCL	INCLUDING	W.O.	WORKING POINT
INSUL	INSULATION	WWM	WELDED WIRE MESH
INT	INTERIOR		
LLH	LONG LENGTH HORIZONTAL		



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DO NOT SCALE DRAWINGS

Revision/Revision	Description/Description	Date/Date
4	ISSUED FOR TENDER	18/12/11
3	ISSUED FOR 99% CLIENT REVIEW	18/11/13
2	ISSUED FOR 100% REVIEW	15/11/13
1	ISSUED FOR 99% REVIEW	15/07/29
0	ISSUED FOR 50% REVIEW	15/06/16

Client/client

PUBLIC WORKS GOVERNMENT SERVICES CANADA

Project title/Titre du projet

PÈ SÁKÁSTÈW CENTRE MASKWACIS, ALBERTA VOCATIONAL FACILITY DESIGN



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**PUBLIC WORKS
GOVERNMENT SERVICES
CANADA**

Project Title/Titre du projet

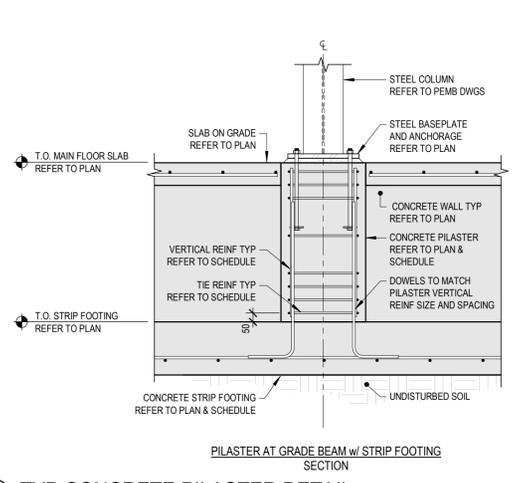
**PÈ SÁKÁSTÈW CENTRE
MASKWACIS, ALBERTA
VOCATIONAL FACILITY DESIGN**

Approved by/Approuvé par
RJK
Designed by/Concept par
RJK
Drawn by/Dessiné par
ML
PWGSC Project Manager/Administrateur de Projets TPWGC
JAMES PATTISON

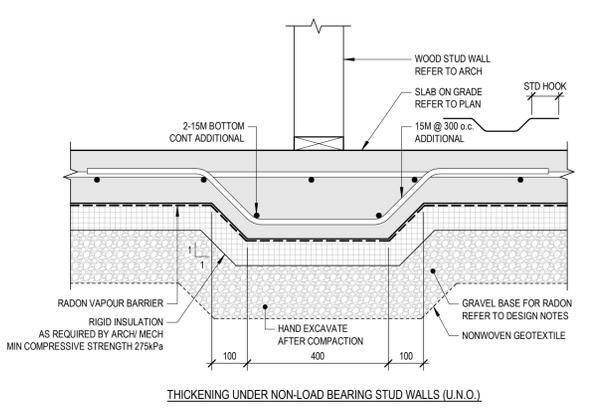
PWGSC, Architectural and Engineering Resources Manager/
Ressources Architectural et de Directeur d'ingénierie, TPWGC
PWGSC

Client/client
PWGSC
Drawing title/Titre du dessin
**VOCATIONAL FACILITY
TYPICAL DETAILS**

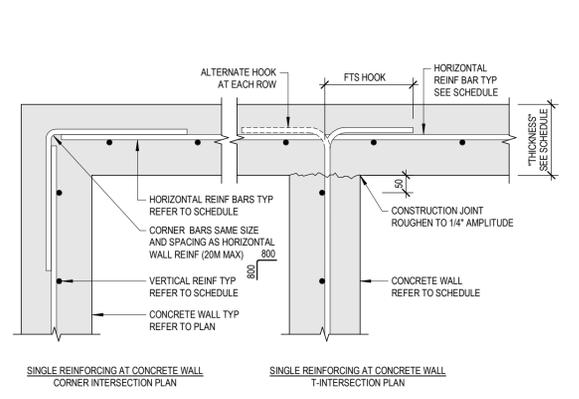
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R.072604.001	S102 2 OF 3	4



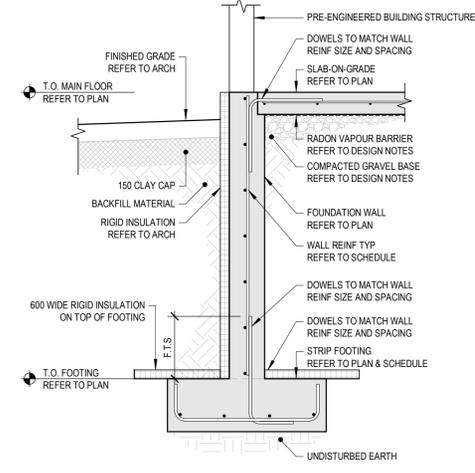
4 TYP CONCRETE PILASTER DETAIL
1: 20



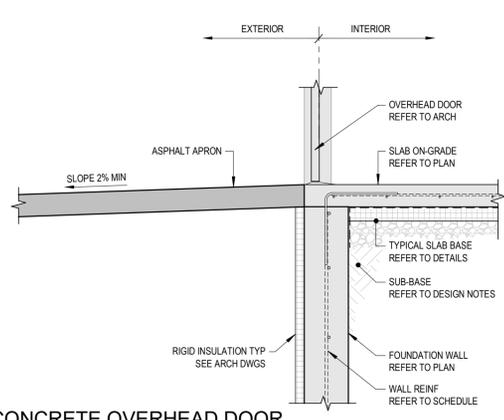
3 TYP SLAB-ON-GRADE THICKENING
1: 10



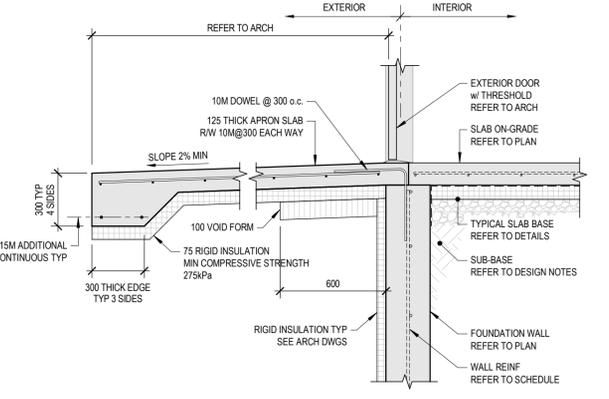
2 TYP CONCRETE WALL SINGLE REINFORCEMENT
1: 10



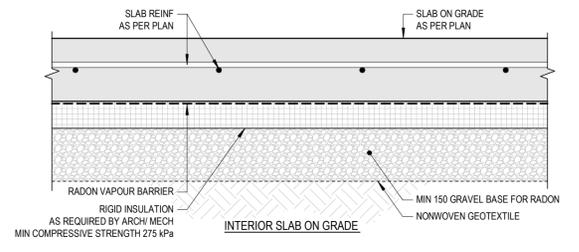
1 TYP EXTERIOR FOUNDATION WALL
1: 20



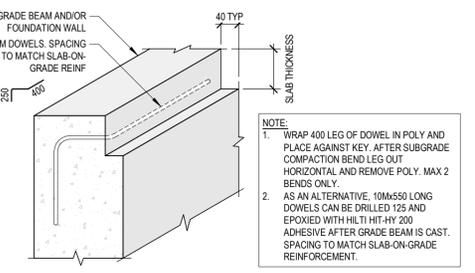
8 CONCRETE OVERHEAD DOOR
1: 20



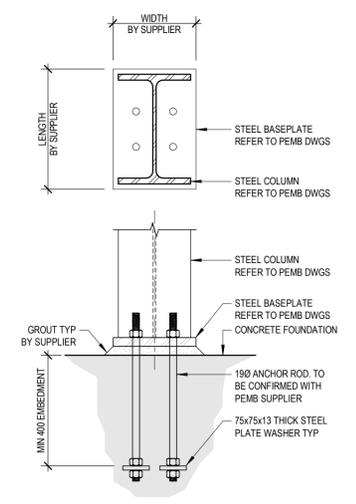
7 CONCRETE MANDOR APRON
1: 20



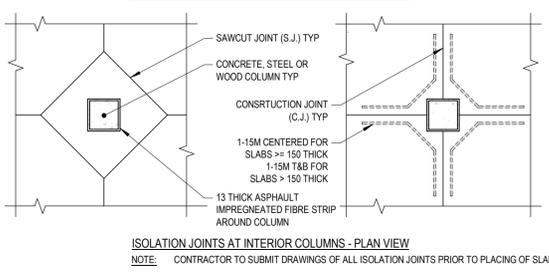
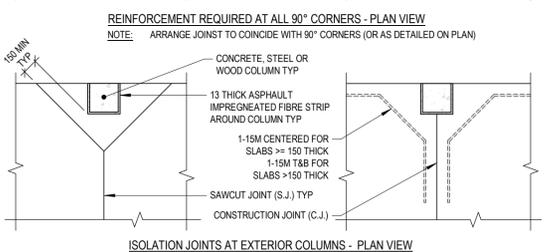
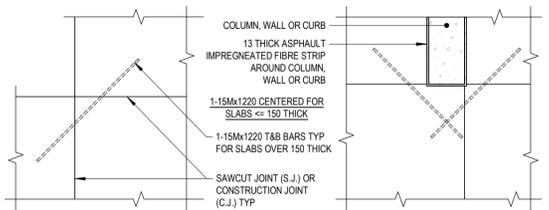
6 TYP SLAB-ON-GRADE DETAIL
1: 10



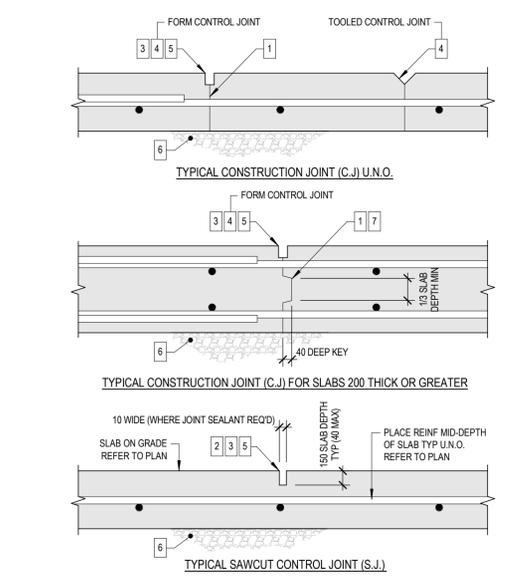
5 TYP DOWEL TO SLAB-ON-GRADE
N.T.S.



11 TYP PEMB COLUMN BASE
1: 10



10 TYP ISOLATION JOINT DETAILS
N.T.S.



9 TYP S.O.G. CONSTRUCTION & SAWCUT CONTROL JOINTS
N.T.S.

- PROVIDE C.J. AS SHOWN, BUT NEVER EXCEED 24m O.C. CONSTRUCTION JOINT (C.J.) MAY BE LOCATED AT S.J. LOCATIONS. CONTRACTOR TO PROVIDE C.J. & S.J. LAYOUT FOR REVIEW TO THE CONSULTANT PRIOR TO SLAB PLACEMENT.
 - PROVIDE S.J. AS SHOWN, BUT NEVER EXCEED 4.5m O.C. CUT S.J. A MAXIMUM OF 12 HRS AFTER PLACING SLAB. CONTRACTOR TO PROVIDE C.J. & S.J. LAYOUT FOR REVIEW TO THE CONSULTANT PRIOR TO SLAB PLACEMENT.
 - C.J. AND S.J. PATTERNS MUST BE COORDINATED WITH CERAMIC, QUARRY TILE (OR SIMILAR FINISH) PATTERN JOINTS.
 - TOOL OR FORM ALL C.J. ON EXPOSED SLAB ON GRADE CONCRETE FLOORS.
 - JOINT SEALANT REQUIRED FOR ALL EXPOSED FLOORS, AND FOR FLOORS WITH CERAMIC TILE, QUARRY TILE, AND OTHER SIMILAR FINISHES WITH JOINT PATTERNS THROUGH THE FINISH. JOINT SEALANT NOT REQUIRED WITH CARPET FINISH. FOR EXTERIOR CONDITION, USE SELF-LEVELLING, ONE PART POLYURETHANE SEALANT.
 - SUBGRADE PER SPECIFICATIONS.
 - CONTINUOUS KEY.
- NOTES:
a. REFER TO ISOLATION JOINT DETAILS FOR JOINT LAYOUT AROUND STRUCTURAL ELEMENTS.
b. JOINTS SHALL BE SAWCUT NOT LATER THAN 12 HOURS AFTER CONCRETE HAS BEEN POURED.





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Client/client

**PUBLIC WORKS
GOVERNMENT SERVICES
CANADA**

Project title/Titre du projet

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MASKWACIS, ALBERTA
VOCATIONAL FACILITY DESIGN**

Approved by/Approuvé par

RJK

Designed by/Concept par

RJK

Drawn by/Dessiné par

ML

PWGSC Project Manager/Administrateur de Projets TFSGC

JAMES PATTISON

PWGSC, Architectural and Engineering Resources Manager/
Ressources Architectural et de Directeur d'ingénierie, TFSGC

Client/client

PWGSC

Drawing title/Titre du dessin

**VOCATIONAL FACILITY
PLANS AND SCHEDULES**

Project No./No.
du projet

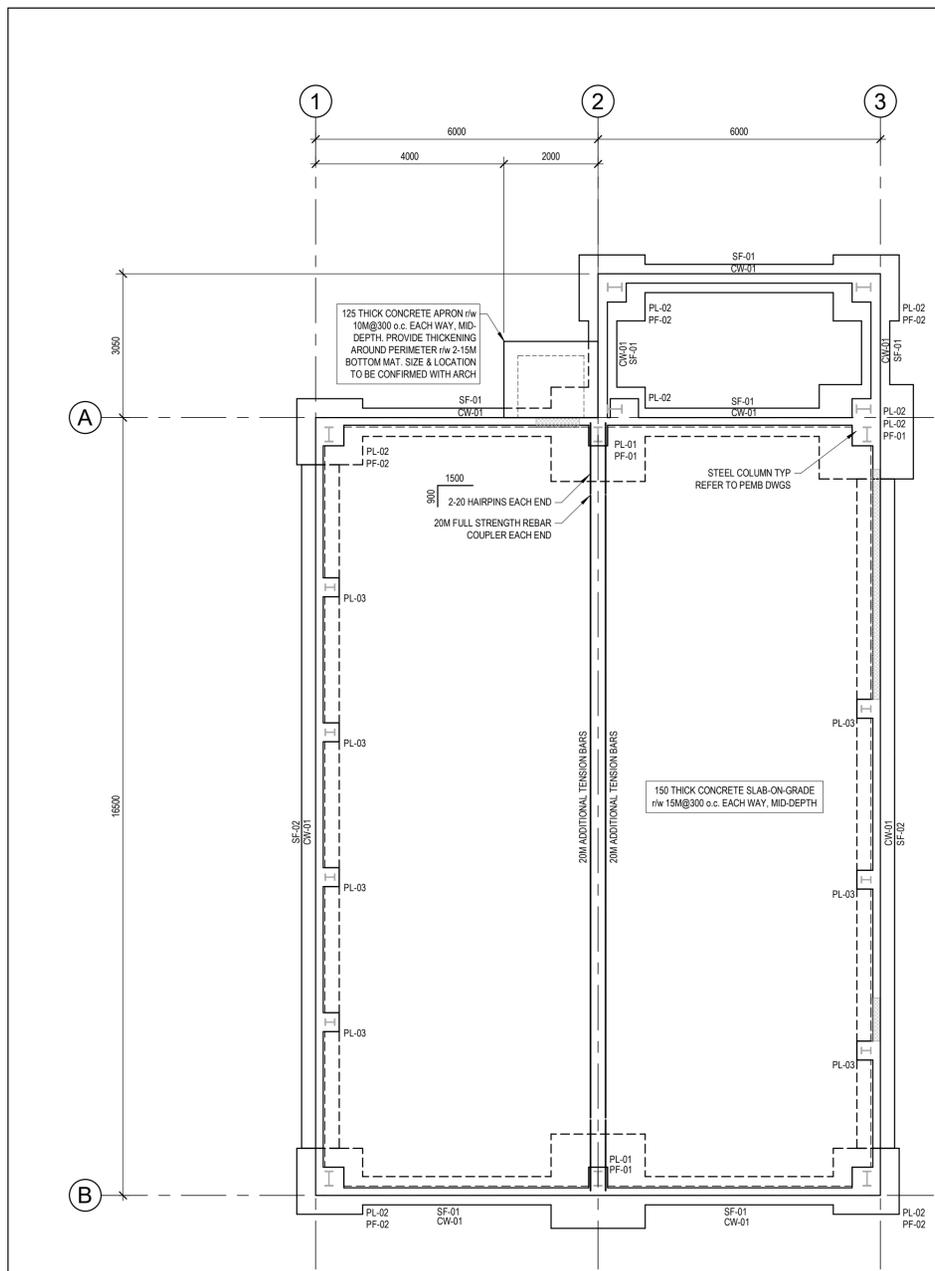
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S201
3 OF 3

Revision no./
La Révision
no.

4



1 VOCATIONAL FLOOR PLAN
1 : 75



FOUNDATION PLAN - LEGEND

SF-01 INDICATES CONCRETE STRIP FOOTING TYPE REFER TO PLAN & SCHEDULE

PF-01 INDICATES CONCRETE PAD FOOTING TYPE REFER TO PLAN & SCHEDULE

CW-01 INDICATES CONCRETE WALL TYPE REFER TO PLAN & SCHEDULE

PL-01 INDICATES CONCRETE PILASTER TYPE REFER TO PLAN & SCHEDULE

INDICATES DOOR BLOCKOUT LOCATIONS REFER TO PLAN

- FOUNDATION PLAN - SHEET NOTES**
- TOP OF MAIN FLOOR CONCRETE SLAB-ON-GRADE REFERENCE ELEVATION = 100.000 = GEODETIC ELEVATION = **TBD**
 - TOP OF CONCRETE FOUNDATION WALL ELEVATION = 100.000
 - TOP OF STRIP FOOTING ELEVATION = 98.500
 - STRUCTURAL DRAWINGS ARE TO BE FULLY REVIEWED IN CONJUNCTION WITH THE PEMB SHOP DRAWINGS, ANY DISCREPANCIES SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD.
 - PEMB MANUFACTURER TO PROVIDE SHOP DRAWINGS WITH FACTORED REACTIONS FOR LEX3 TO REVIEW AND CONFIRM FOUNDATION DESIGN ASSUMPTIONS MEET PEMB BUILDING LOADS. INSTALLATION OF FOUNDATIONS ARE NOT TO COMMENCE PRIOR TO A STRUCTURAL REVIEW.
 - REFER TO DRAWING S101 FOR DESIGN NOTES, AND TABLES.
 - REFER TO DRAWING S102 FOR TYPICAL DETAILS.

CONCRETE STRIP FOOTING SCHEDULE

TYPE MARK	SIZE (mm)			REINFORCING BOTTOM	REMARKS
	WIDTH (b)	LENGTH	DEPTH (d)		
SF-01	600		300	15M@300 o.c. U-BARS TRANSVERSE; 3-15M LONGITUDINAL	15M@300 o.c. DOWEL TO FOUNDATION WALL
SF-02	600		300	15M@300 o.c. U-BARS TRANSVERSE; 3-15M LONGITUDINAL	15M@300 o.c. DOWEL TO FOUNDATION WALL

CONCRETE PAD FOOTING SCHEDULE

TYPE MARK	SIZE (mm)			REINFORCING BOTTOM	REMARKS
	WIDTH	LENGTH	DEPTH		
PF-01	2000	2000	300	15M@300 o.c. U-BARS EACH WAY	
PF-02	1400	1400	300	15M@300 o.c. U-BARS EACH WAY	

CONCRETE FOUNDATION WALL SCHEDULE

TYPE MARK	WIDTH	REINFORCING		REMARKS
		VERTICAL	HORIZONTAL	
CW-01	200	15M@300 o.c. MID-DEPTH	15M@300 o.c. MID-DEPTH	

CONCRETE PILASTER SCHEDULE

TYPE MARK	DESCRIPTION	DETAIL
PL-01	400 WIDE x 600 LONG CONCRETE PILASTER r/w 8-20M VERTICAL BARS, 3-10M TIES @ 75 TOP, 10M @ 300 o.c. REMAINING	
PL-02	600 WIDE x 600 LONG CONCRETE PILASTER r/w 12-20M VERTICAL BARS, 3-10M TIES @ 75 TOP, 10M @ 300 o.c. REMAINING	
PL-03	400 WIDE x 500 LONG CONCRETE PILASTER r/w 8-20M VERTICAL BARS, 3-10M TIES @ 75 TOP, 10M @ 300 o.c. REMAINING	

