

ABBREVIATIONS

⊙	AT (SPACING)	E-W	EAST-WEST	O/C	ON CENTRE
AB	ANCHOR BOLT	EW	EACH WAY	OD	OUTSIDE DIAMETER
ADJ	ADJUSTABLE	EXIST	EXISTING	O/O	OUT TO OUT
AFF	ABOVE FINISHED FLOOR	EXP	EXPANSION	O/F	OUTSIDE FACE
ALT	ALTERNATE	EXT	EXTERIOR	OH	OVERHEAD
ARCH	ARCHITECT, ARCHITECTURAL	FDN	FOUNDATION	OPNG	OPENING
BOT, B	BOTTOM	FF	FAR FACE	OWSJ	OPEN WEB STEEL JOIST
B PL	BASE PLATE	FIN	FINISHED	P	PASCAL
BC	BOTTOM CHORD	FL	FLOOR	PC	PRECAST
BD	BOARD	FS	FAR SIDE	PERP	PERPENDICULAR
BTWN	BETWEEN	FT	FOOT/FEET	PL, t	PLATE
BLDG	BUILDING	FTG	FOOTING	PLF	POUNDS PER LINEAL FOOT
BLK	BLOCK	GA	GAUGE	PLYWD	PLYWOOD
BLL	BOTTOM LOWER LAYER	GALV	GALVANIZED	PREFAB	PREFABRICATED
BM	BEAM	GEN	GENERAL	PROJ	PROJECTION
BRDG	BRIDGING	GR	GRADE	PSF	POUNDS PER SQUARE FOOT
BRG	BEARING	GRAN	GRANULAR	PSI	POUNDS PER SQUARE INCH
BRG PL	BEARING PLATE	H	HIGH	PT	PRESSURE TREATED
BS	BOTH SIDES	H	HORIZONTAL FORCE (UNFACTORED)	R	RADIUS, REACTION
BSMT	BASEMENT	HC	HOLLOW CORE	REF	REFERENCE
BUL	BOTTOM UPPER LAYER	HEX	HEXAGON	REINF	REINFORCE, REINFORCEMENT
C	COMPRESSION (UNFACTORED)	HORIZ	HORIZONTAL	REM	REMAINDER
C/C	CENTRE TO CENTRE	HF	HORIZONTAL FORCE (FACTORED)	REQ	REQUIRED
C/W	COMPLETE WITH	HM	HOLLOW METAL	REV	REVISION, REVISED
z	CENTRE LINE	HP	HIGH POINT	RO	ROUGH OPENING
CANT	CANTILEVER	HT	HEIGHT	R/W	REINFORCE WITH
CAP	CAPACITY	IC	IN CENTRE	SCHED	SCHEDULE
CEM	CEMENT	ID	INSIDE DIAMETER	SECT	SECTION
Cf	COMPRESSIVE FORCE (FACTORED)	I/F	INSIDE FACE	SIM	SIMILAR
CHAN	CHANNEL	INSUL	INSULATION	SJ	STRUT JOIST
CI	CAST IRON	INT	INTERIOR	S1E	STRUT ONE END
CIP	CAST IN PLACE	JST	JOIST	SL	SLAB
CJ	CONTROL JOINT	JT	JOINT	SOG	SLAB ON GRADE
CLR	CLEAR	kg	KILOGRAM	SPEC	SPECIFICATIONS
CMU	CONCRETE MASONRY UNIT	KIP, K	1000 LB	SFF	SPRUCE-PINE-FIR
COL	COLUMN	KLF	kip(s) PER LINEAL FOOT	SQ	SQUARE
COMP	COMPOSITE	KN	KILONEWTION	STD	STANDARD
CONC	CONCRETE	KO	KNOCKOUT	STR	STAIR
CONN	CONNECT, CONNECTION	kPa	KILOPASCAL	STIFF	STIFFENER
CONSTR	CONSTRUCTION	KSF	kip(s) PER SQUARE FOOT	STIR	STIRRUP
CONT	CONTINUOUS	KSI	kip(s) PER SQUARE INCH	STL	STEEL
CORR	CORRIDOR	L	LOW	STRUCT	STRUCTURAL
DBL	DOUBLE	LB, #	POUND(S)	SYM	SYMETRICAL
DEFL	DEFLECTION	LG	LONG	T	TENSION (UNFACTORED)
DEMO	DEMOLISH, DEMOLITION	LL	LIVE LOAD	TOP	TOP
DEPR	DEPRESSION	LL	LOWER LAYER	T/O	TOP OF
DET	DETAIL	LLV	LONG LEG VERTICAL	T&B	TOP & BOTTOM
DEV	DEVELOP, DEVELOPMENT	LLH	LONG LEG HORIZONTAL	TEMP	TEMPORARY
ø, DIA	DIAMETER	LONG	LONGITUDINAL	Tf	TENSION FORCE (FACTORED)
DIAG	DIAGONAL	LP	LOW POINT	THRU	THROUGH
DIM	DIMENSION	m	METRE	TLL	TOP LOWER LAYER
DIR	DIRECTION	mm	MILLIMETRE	TRANS	TRANSVERSE
DL	DEAD LOAD	MAS	MASONRY	TS	TEMPERATURE STEEL
DN	DOWN	MAX	MAXIMUM	TUL	TOP UPPER LAYER
DP	DEEP	MECH	MECHANICAL	TYP	TYPICAL
DR	DOOR	MEZZ	MEZZANINE	UHMW	ULTRA HIGH MOLECULAR WEIGHT
DFIR	DOUGLAS FIR	MF	FACTORED MOMENT	UL	UPPER LAYER
DWG	DRAWING(S)	MIN	MINIMUM	U/N	UNLESS OTHERWISE NOTED
DWL	DOWEL(S)	MISC	MISCELLANEOUS	U/S	UNDERSIDE
EA	EACH	MK	MARK	V	VERTICAL SHEAR (UNFACTORED)
EE	EACH END	MO	MASONRY OPENING	VERT	VERTICAL
EF	EACH FACE	MOM	MOMENT	Vf	VERTICAL SHEAR (FACTORED)
EJ	EXPANSION JOINT	MPa	MEGAPASCAL	W	WIDE, WIDTH
EL	ELEVATION	NIC	NOT IN CONTRACT	W/	WITH
ELEV	ELEVATOR	NF	NEAR FACE	W/O	WITHOUT
ELEC	ELECTRICAL	NO	NUMBER	WD	WOOD
ENG	ENGINEER	NOM	NOMINAL	WP	WORK POINT
EQ	EQUAL	NTS	NOT TO SCALE	WT	WEIGHT
EQUIP	EQUIPMENT	N-S	NORTH-SOUTH	WWM	WELDED WIRE MESH
ES	EACH SIDE	NS	NELSON STUD	X-BRACE	CROSS BRACING

GENERAL NOTES

- STRUCTURAL DESIGN BASED ON THE NATIONAL BUILDING CODE OF CANADA 2015 EDITION.
A) IMPORTANCE CATEGORY: POST DISASTER
B) WIND LOAD: q50 = 0.45 kPa
C) GROUND SNOW LOAD: Ss = 1.9 kPa
D) ASSOCIATED RAIN LOAD: Sr = 0.2 kPa
- SEISMIC SITE CLASSIFICATION: NOT APPLICABLE
- DO NOT SCALE DRAWINGS.
- ALL DIMENSIONS ARE TO BE VERIFIED WITH THE EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION.
- THESE STRUCTURAL DRAWINGS SHOW THE COMPLETED STRUCTURE AND DO NOT INDICATE ALL COMPONENTS NECESSARY FOR SAFETY DURING CONSTRUCTION. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SAFETY ON AND AROUND THE JOBSITE DURING CONSTRUCTION.

CAST-IN-PLACE CONCRETE

I CONCRETE

- ALL CONCRETE IS TO BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF CSA-A23.1-14 "CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION" AND CSA-A23.2-14 "METHOD OF TEST FOR CONCRETE".
- PROVIDE CERTIFICATION THAT MIX PROPORTIONS SELECTED WILL PRODUCE CONCRETE OF QUALITY, YIELD AND STRENGTH AS SPECIFIED IN CONCRETE MIXES, AND WILL COMPLY WITH CSA-A23.1. CERTIFICATION LETTER TO BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA.
- PROVIDE CERTIFICATION THAT PLANT, EQUIPMENT, AND MATERIALS TO BE USED IN CONCRETE COMPLY WITH REQUIREMENTS OF CSA-A23.1. CERTIFICATION LETTER TO BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA.
- CONCRETE PROPERTIES SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE ON THE DRAWINGS.

INTERIOR WALLS AND BEAMS: 25 MPa MIN. AT 28 DAYS
CLASS OF EXPOSURE: N
ENTRAINED AIR/CATEGORY: NONE (LESS THAN 3%)
AGGREGATE MAX. 20 mm
CURING TYPE: TYPE 2 – ADDITIONAL

INTERIOR SLABS-ON-GRADE: 25 MPa MIN. AT 28 DAYS
CLASS OF EXPOSURE: C-1
ENTRAINED AIR/CATEGORY: 1 (5% TO 8%)
AGGREGATE MAX. 20 mm
CURING TYPE: TYPE 3 – EXTENDED

EXTERIOR SLABS-ON-GRADE: 32 MPa MIN. AT 28 DAYS
CLASS OF EXPOSURE: C-2
ENTRAINED AIR/CATEGORY: 1 (5% TO 8%)
AGGREGATE MAX. 20mm
CURING TYPE: TYPE 2 – ADDITIONAL

INTERIOR STRUCTURAL SLABS: 35 MPa MIN. AT 28 DAYS
CLASS OF EXPOSURE: C-1
ENTRAINED AIR/CATEGORY: 1 (5% TO 8%)
AGGREGATE MAX. 14 mm
CURING TYPE: TYPE 2 – ADDITIONAL
PLACEABILITY: SELF-CONSOLIDATING CONCRETE

STABILIZED FILL: 1.5 to 2.5 MPa MIN. AT 28 DAYS
CLASS OF EXPOSURE: C-2
ENTRAINED AIR/CATEGORY: 20% MIN.
AGGREGATE MAX. 5 mm
SLUMP: 200 MIN.
CURING TYPE: TYPE 2 – ADDITIONAL

CONCRETE REPAIRS, TO EXISTING STRUCTURAL SLABS AND BEAMS: 35 MPa MIN. AT 28 DAYS
CLASS OF EXPOSURE: C-1
ENTRAINED AIR/CATEGORY: 1 (5% TO 8%)
AGGREGATE MAX. 20 mm
CURING TYPE: TYPE 3 – EXTENDED WET CURE

UNLESS INDICATED OTHERWISE THE GENERAL CONTRACTOR SHALL SPECIFY CONCRETE SLUMP APPROPRIATE WITH PLACEMENT METHODS AND SITE CONDITIONS. THE GENERAL CONTRACTOR SPECIFIED SLUMP MUST BE SHOWN ON THE CERTIFICATION LETTER AND CONCRETE DELIVERY TICKET.

- UNLESS NOTED OTHERWISE CONCRETE CURING TO CONFORM TO THE LATEST EDITION OF CSA-A23.1-14 AS FOLLOWS:
A) TYPE 1 – BASIC: 3 DAYS ≥10°C AND FOR A TIME NECESSARY TO ATTAIN 40% OF THE SPECIFIED STRENGTH.
B) TYPE 2 – ADDITIONAL: 7 DAYS ≥10°C AND FOR A TIME NECESSARY TO ATTAIN 70% OF THE SPECIFIED STRENGTH.
C) TYPE 3 – EXTENDED: 7 DAYS WET CURING ≥10°C
- AIR ENTRAINING ADMIXTURES SHALL CONFORM TO THE REQUIREMENTS OF ASTM C260/C260M-10a "STANDARD SPECIFICATION FOR AIR ENTRAINING ADMIXTURES FOR CONCRETE". SUPERPLASTICIZING ADMIXTURES SHALL CONFORM TO ASTM C494/C494M "STANDARD SPECIFICATION FOR CHEMICAL ADMIXTURES FOR CONCRETE" OR ASTM C1017/C1017M "STANDARD SPECIFICATION FOR CHEMICAL ADMIXTURES FOR USE IN PRODUCING FLOWING CONCRETE" WHEN FLOWING CONCRETE IS APPLICABLE. AIR ENTRAINED ADMIXTURES TO HAVE A DURABILITY FACTOR GREATER THAN 75, WHEN TESTED TO ASTM STANDARDS C666/C666M PROCEDURE A. SPACING FACTOR FOR ANY AIR ENTRAINING ADMIXTURE MUST BE 0.17mm OR LESS WHEN TESTED IN ACCORDANCE WITH ASTM C457 "STANDARD TEST METHOD FOR MICROSCOPICAL DETERMINATION OF PARAMETERS OF THE AIR-VOID SYSTEM IN HARDENED CONCRETE".

II REINFORCING STEEL

- ALL REINFORCING STEEL TO BE CSA-G30.18M-09 GRADE 400R DEFORMED BARS EXCEPT COLUMN TIES AND BEAM STIRRUPS WHICH SHALL BE GRADE 400W STEEL.
- ALL REINFORCING IS TO BE DETAILED IN ACCORDANCE WITH THE LATEST EDITION OF THE REINFORCING STEEL INSTITUTE OF CANADA – MANUAL OF STANDARD PRACTICE, EXCEPT OTHERWISE NOTED. ALL LAPPED SPLICES TO BE CLASS B SPLICES, UNLESS NOTED.
- REINFORCING STEEL COVER IS TO CONFORM TO CAN/CSA A23.3-14 "DESIGN OF CONCRETE STRUCTURES FOR BUILDINGS" AND AS FOLLOWS:

INTERIOR BEAMS: EXPOSURE CLASS: N 30 mm BOTTOM TO TIES 30 mm SIDES AND TOP TO TIES

INTERIOR BEAMS: EXPOSURE CLASS: N 20 mm EACH FACE

INTERIOR SLABS-ON-GRADE: EXPOSURE CLASS: N 60 mm TOP 40 mm BOTTOM

EXTERIOR SLABS-ON-GRADE: EXPOSURE CLASS: F-2 40 mm TOP 40 mm BOTTOM

INTERIOR STRUCTURAL SLABS: EXPOSURE CLASS: N 20 mm TOP 20 mm BOTTOM

EXISTING SLABS AND BEAMS: EXPOSURE CLASS: C-1 19mm MIN. TO ALL STEEL (38mm PREFERRED).

- TOP STEEL IN BEAMS TO BE LAPPED AT CENTRE SPAN, WITH CLASS B SPLICES, BOTTOM STEEL TO BE BUTTED AT SUPPORT.
- IN SLABS ON GRADE, BARS TO BE LAPPED WITH CLASS A TENSION SPLICES, EXCEPT AS NOTED.
- FOR ALL STRUCTURAL SLABS A MINIMUM OF 50% OF THE BOTTOM STEEL SHALL BE CONTINUED A MINIMUM DISTANCE OF 150 mm INTO ALL SUPPORTING WALLS AND BEAMS. IF KEYS ARE USED AT JOINTS BETWEEN SLABS AND WALLS OR BEAMS, BOTTOM DOWELS EQUAL TO BOTTOM REINFORCEMENT OR 10M AT 300 mm O/C SHALL BE PROVIDED WHICHEVER IS GREATER.
- ALL MISCELLANEOUS CONCRETE PADS AND CURBS ARE TO BE REINFORCED WITH A MINIMUM OF 10M AT 400 mm O/C EACH WAY, UNLESS NOTED.
- WHEN CONCRETE BEAMS ARE CAST INTO A WALL CHASE, DOWELS SIZE AND NUMBER SAME AS BEAM REINFORCING ARE TO BE PROVIDED FROM WALL, UNLESS OTHERWISE SHOWN ON PLAN.

III FORMWORK

- ACCESSORIES SUCH AS HI-CHAIRS, SPACERS, ETC. SHALL BE SUPPORTED BY PADS OF PLYWOOD OR TEMPERED HARDBOARD TO PREVENT PUNCTURING THE VOIDFORM.
- UNLESS NOTED OTHERWISE PROVIDE SLIP JOINT ALL PAVING OR CONCRETE SLABS ON GRADE AGAINST STRUCTURAL MEMBERS WITH 12 mm ASPHALT IMPREGNATED FIBREBOARD.
- ALL CONSTRUCTION JOINT KEYS ARE TO BE A MINIMUM OF 40 mm DEEP.
- ALL STRUCTURAL SLABS FRAMING INTO BEAMS AND WALLS ARE TO HAVE A MINIMUM KEY OF 40 mm.
- ALL CONCRETE BEAMS FRAMING INTO CONCRETE WALLS ARE TO BE SUPPORTED BY A CHASE OF MINIMUM 100 mm AND THE HEIGHT AND WIDTH OF THE BEAM.
- PLACE 10 MIL POLYETHYLENE UNDER ALL SLABS ON FILL AND OVER TOP OF VOIDFORM.

STRUCTURAL STEEL

- THE STRUCTURAL STEEL FABRICATOR'S ENGINEER SHALL BE RESPONSIBLE FOR LOCATING AND DESIGNING PROVISIONS FOR ALL TEMPORARY FALL PROTECTION SYSTEMS REQUIRED DURING CONSTRUCTION TO MEET MANITOBA WORKPLACE HEALTH AND SAFETY REGULATIONS.
- STRUCTURAL STEEL TO CONFORM TO CSA-G40.21, "STRUCTURAL QUALITY STEELS" AND CSA-G40.20 "GENERAL REQUIREMENTS FOR ROLLED OR WELDED STRUCTURAL QUALITY STEELS", ASTM A572/A572M "STANDARD SPECIFICATION FOR HIGH-STRENGTH LOW-ALLOY COLUMBIUM-VANADIUM STRUCTURAL STEEL" OR ASTM A992/A992M "STANDARD SPECIFICATION FOR STRUCTURAL STEEL SHAPES".
- ALL ROLLED OR STEEL STRUCTURAL SECTIONS SHALL BE G40.21-350W, ASTM A992 OR ASTM A572 GRADE 50. ALL HOLLOW STRUCTURAL SECTIONS TO BE G40.21-350W CLASS C OR ASTM A500-C. ALL ANGLES, CHANNELS AND PLATES SHALL BE G40.21-300W.
- FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE PERFORMED IN ACCORDANCE WITH CSA S16-14, "DESIGN OF STEEL STRUCTURES".
- ALL WELDING SHALL CONFORM TO THE LATEST EDITION OF CSA W59, "WELDED STEEL CONSTRUCTION". FABRICATORS SHALL BE PROPERLY CERTIFIED IN ACCORDANCE WITH CSA W47.1, "CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES".
- ALL BOLTED CONNECTIONS TO USE A325 HIGH STRENGTH BOLTS. MINIMUM CONNECTION SHALL CONSIST OF 2 BOLTS.
- ALL STRUCTURAL STEEL IS TO RECEIVE ONE COAT OF CISC/CPMA 1-73a QUICK DRYING SHOP PRIMER. STEEL TO BE CLEANED IN CONFORMANCE WITH SSPC-SP2. STEEL RECEIVING FINISH PAINTING TO HAVE ONE COAT OF CISC/CPMA 2-75 QUICK DRYING SHOP PRIMER. STEEL TO BE CLEANED IN CONFORMANCE WITH SSPC-SP7.
- ALL STRUCTURAL STEEL INDICATED AS GALVANIZED IS TO BE HOT DIP GALVANIZED IN ACCORDANCE WITH CAN/CSA-G164 "HOT DIP GALVANIZING OF IRREGULARLY SHAPED ARTICLES" WITH A MINIMUM GALVANIZED COATING OF 610 GRAMS PER SQUARE METRE OF SURFACE AREA.
- NO HOLES PERMITTED IN TOP FLANGE OF BEAMS AT COLUMNS WHERE BEAMS ARE CONTINUOUS OVER COLUMNS.
- ALL BEAMS CONTINUOUS OVER COLUMNS ARE TO HAVE WEB STIFFENERS THE SAME SIZE AND ORIENTATION AS THE COLUMN BELOW, UNLESS OTHERWISE NOTED.
- ANCHOR BOLTS TO BE ASTM A307 GRADE C OR ASTM F1554 GRADE 36, WELDABLE, PROVIDED BY STEEL SUPPLIER AND SET BY THE GENERAL CONTRACTOR. WHERE ASTM F1554 GRADE 55 ANCHOR BOLTS ARE USED, BOLTS TO BE WELDABLE GRADE STEEL.
- FABRICATOR TO NOTIFY ENGINEER OF ANY PROPOSED MEMBER SUBSTITUTIONS AND CHANGED CONNECTION DETAILS.
- THE STRUCTURAL STEEL SUPPLIER SHALL PROVIDE AND BE RESPONSIBLE FOR ALL HOLES IN STEEL SECTIONS REQUIRED BY OTHER TRADES. SECTION SHALL BE STRENGTHENED WHERE REQUIRED TO GUARANTEE THE ORIGINAL STRENGTH OF THE BEAM. ANY CUTTING OF STEEL AT THE JOB SITE SHALL BE DONE ONLY AS DIRECTED AND APPROVED BY THE ENGINEER.
- STRUCTURAL STEEL SUPPLIER IS TO SUBMIT ENGINEERING DRAWINGS BEARING THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA COVERING THE DESIGN OF CONNECTIONS, TO THE PROJECT DESIGN ENGINEER FOR REVIEW PRIOR TO FABRICATION. CONNECTION DESIGN TO INCLUDE FOR ALL ADJUSTABLE CONNECTIONS REQUIRED TO SUIT FABRICATION AND ERECTION PROCEDURES AND TOLERANCES.
- IF REQUIRED TO FACILITATE INSTALLATION, STRUCTURAL STEEL SUPPLIER CAN INSTALL STEEL POSTS/GIRTS IN SECTIONS WITH APPROPRIATELY DESIGNED MOMENT AND SHEAR CONNECTIONS.

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0	ISSUED FOR TENDER AND CONSTRUCTION	2020/08/14
Revision	Description	Date
Client		client
<div>CORRECTIONAL SERVICE CANADA</div> <div>99 BANK STREET OTTAWA, ONTARIO</div>		
Project title	Projet	
<div>STONY MOUNTAIN STONY MOUNTAIN INSTITUTION BUILDING C12</div> <div>POWERHOUSE REPAIRS</div>		
Designed by BDH/KJP	Conçu par	
Drawn by MAH	Dessiné par	
Approved by JAW	Approuvé par	
PWSSC Project Manager MICHAEL STEINBORN	Administrateur de Projets TPSGC	
Drawing title	Titre du dessin	
<div>GENERAL NOTES & ABBREVIATIONS</div>		
Project no./No. du projet	Drawing no./No. du dessin	Revision no.
R.109027	S1.1 OF \$5.2	0

