

GENERAL NOTES

- STRUCTURAL DESIGN BASED ON THE MANITOBA BUILDING CODE OF CANADA 2011 EDITION.
 - IMPORTANCE CATEGORY: NORMAL
 - WIND LOAD: $q_{50} = 0.45 \text{ kPa}$
 - GROUND SNOW LOAD: $S_g = 1.9 \text{ kPa}$
 - ASSOCIATED RAIN LOAD: $S_r = 0.2 \text{ kPa}$
- SEISMIC SITE CLASSIFICATION: NOT APPLICABLE
- DO NOT SCALE DRAWINGS.
- DO NOT BACKFILL UNTIL GROUND FLOOR STRUCTURE IS IN PLACE AND BASEMENT SLABS HAVE BEEN POURED AND CURED.
- ALL DIMENSIONS ARE TO BE VERIFIED WITH THE ARCHITECTURAL DRAWINGS AND 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 CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SAFETY ON AND AROUND THE JOBSITE DURING CONSTRUCTION.

FOUNDATIONS

- A COPY OF THE GEOTECHNICAL REPORT COMMISSIONED BY THE CITY IS AVAILABLE FOR REVIEW AT THE OFFICES OF THE CONTRACTOR ADMINISTRATOR. NOTWITHSTANDING THE INFORMATION PROVIDED IN THE GEOTECHNICAL REPORT THE FOUNDATION AND CONTRACTORS SHALL SATISFY THEMSELVES AS TO THE PREVAILING CONDITIONS AT THE SITE AS NO EXTRAS SHALL BE GRANTED SHOULD CONDITIONS DIFFER FROM THOSE INDICATED.
- ALL FRICTION PILES ARE DESIGNED ON AN ULTIMATE FACTORED SKIN FRICTION OF 0.00 kPa FOR THE UPPER 3000 mm, 20.0 kPa BETWEEN 3000 mm TO 10000 mm AND 12.0 kPa BETWEEN 10000 mm TO 12000 mm. EFFECTIVE LENGTH OF FRICTION PILES IS TOTAL LENGTH AS SHOWN ON PLAN MINUS 3000 mm TYPICAL UNLESS NOTED.
- FRICTION PILE REINFORCING TO BE 6000 mm LONG UNLESS NOTED IN PLANS; 10M RINGS AT 1200 mm ON-CENTRE AND 3-10M RINGS AT 150 mm ON-CENTRE AT TOP. EXTEND VERTICAL PILE REINFORCING 450 mm INTO BEAMS TYPICAL UNLESS NOTED OTHERWISE ON PLAN. PILE REINFORCING TO BE 5-10M FOR 400 mm DIAMETER PILES, 6-10M FOR 450mm DIAMETER PILES.
- PRECAST CONCRETE PILES TO BE DRIVEN TO A FACTORED ULS LOAD CAPACITY AS SHOWN BELOW:
 - 300 mm HEX. - 440 kN
 - 350 mm HEX. - 625 kN
 - 400 mm HEX. - 800 kN
- A GEOTECHNICAL RESISTANCE FACTOR OF 0.5 WAS USED FOR DESIGN WITH CAPWAP TESTING TO BE COMPLETED DURING PILE INSTALLATION.
- DRIVEN PILING SHALL BE COMPLETED BEFORE ANY FRICTION PILING OPERATIONS COMMENCE.
- PROVIDE 10 MIL POLYETHYLENE WRAPPED SONOTUBE, GREASED COMPLETELY ON INSIDE FOR TOP 1800 mm OF PILES INDICATED ON PLAN.

CAST-IN-PLACE CONCRETE

1 CONCRETE

- ALL CONCRETE IS TO BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF CSA-A23.1-09 "CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION" AND CSA-A23.2-09 "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.

PRECAST DRIVEN PILES: 35 MPa MIN. AT 28 DAYS
CEMENT TYPE: HS
SLUMP AND AGGREGATES TO MANUFACTURERS REQUIREMENTS

PILE CAPS: 35 MPa MIN. AT 56 DAYS
CLASS OF EXPOSURE: S-2
ENTRAINED AIR/CATEGORY: 2 (4% TO 7%)
CEMENT TYPE: HS
AGGREGATE: MAX. 20 mm
CURING TYPE: TYPE 2 - ADDITIONAL

PILES: 32 MPa MIN. AT 56 DAYS
CLASS OF EXPOSURE: S-2
ENTRAINED AIR/CATEGORY: 2 (4% TO 7%)
CEMENT TYPE: HS
AGGREGATE: MAX. 20 mm
CURING TYPE: TYPE 2 - ADDITIONAL
SLUMP: MIN. 120 mm

GRADE BEAMS: 25 MPa MIN. AT 28 DAYS
CLASS OF EXPOSURE: F-2
ENTRAINED AIR/CATEGORY: 2 (4% TO 7%)
AGGREGATE MAX. 20 mm
CURING TYPE: TYPE 2 - ADDITIONAL

EXTERIOR STRUCTURAL SLABS: 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 2 - ADDITIONAL

BONDED TOPPING SLABS: 25 MPa MIN. AT 28 DAYS
ON HOLLOWCORE MAX. 0.45 WATER TO CEMENTITIOUS RATIO
CLASS OF EXPOSURE: N
ENTRAINED AIR/CATEGORY: NONE
AGGREGATE MAX. 20 mm 14 mm
CURING TYPE: 3

UNLESS INDICATED OTHERWISE THE CONTRACTOR SHALL SPECIFY CONCRETE SLUMP APPROPRIATE WITH PLACEMENT METHODS AND SITE CONDITIONS. THE 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-A23.1-09 AS FOLLOWS:
 - TYPE 1 - BASIC: 3 DAYS $\geq 10^\circ\text{C}$ AND FOR A TIME NECESSARY TO ATTAIN 40% OF THE SPECIFIED STRENGTH.
 - TYPE 2 - ADDITIONAL: 7 DAYS $\geq 10^\circ\text{C}$ AND FOR A TIME NECESSARY TO ATTAIN 70% OF THE SPECIFIED STRENGTH.
 - TYPE 3 - EXTENDED: 7 DAYS WET CURING $\geq 10^\circ\text{C}$.
- 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 ENTRAINING 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".
- CONCRETE TOPPINGS INDICATED AS BONDED SHALL HAVE A TENSILE BOND STRENGTH BETWEEN THE TOPPING AND BASE COURSE CONCRETE OF NOT LESS THAN 0.9 MPa AT 28 DAYS WHEN TESTED IN ACCORDANCE WITH CSA A23.2-68 AT A FREQUENCY OF NOT LESS THAN ONE TEST PER 100 m² 1,000 SQ.FT. PRIOR TO CONSTRUCTION SUBMIT DOCUMENTATION DEMONSTRATING MINIMUM PERFORMANCE REQUIREMENT WILL BE MET.
- CONCRETE TO RECEIVE BONDED TOPPINGS SHALL BE INTENTIONALLY ROUGHENED TO ACHIEVE A SURFACE PROFILE OF ICR-1-SP-6 OR GREATER.
- CONCRETE TOPPINGS INDICATED AS BONDED SHALL BE WET CURED FOR A MINIMUM OF 7 DAYS.

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.
- WELDED STEEL WIRE MESH SHALL BE TO ASTM A185/A185M-07, 400 MPa YIELD, FLAT SHEETS ONLY.
- REINFORCING STEEL COVER IS TO CONFORM TO CAN/CSA A23.3-04 "DESIGN OF CONCRETE STRUCTURES FOR BUILDINGS" AND AS FOLLOWS:

EXTERIOR STRUCTURAL SLABS: EXPOSURE CLASS: C-1	40 mm TOP	40 mm BOTTOM
GRADE BEAMS: EXPOSURE CLASS: F-2	50 mm BOTTOM TO TIES	40mm SIDES AND TOP TO TIES.
PILES: EXPOSURE CLASS: S-2	75 mm TO TIES.	

- IN WALLS AND GRADE BEAMS, BEND ALL TOP AND INTERMEDIATE HORIZONTAL STEEL 600 mm AROUND CORNERS, OR USE EXTRA L BARS 1200 mm LONG. ALL OPENINGS IN WALLS SHALL HAVE 2-15M EACH SIDE AND 2-25M OVER, EXCEPT AS NOTED.
- TOP STEEL IN BEAMS TO BE LAPPED AT CENTRE SPAN, BOTTOM STEEL TO BE BUTTED AT SUPPORT.
- ALL REINFORCING TO BE HELD IN PLACE, AND TIED BY THE USE OF PROPER ACCESSORIES, SUCH AS HI-CHAIRS, SPACERS, ETC. TO BE SUPPLIED BY THE REINFORCING STEEL FABRICATOR. HI-CHAIRS TO HAVE 4 LEGS AND TO BE STAPLED OR NAILED TO THE FORMWORK.
- ALL OPENINGS IN CAST-IN-PLACE CONCRETE FLATWORK TO BE TRIMMED WITH 2-15M ALL AROUND ON BOTH FACES, EXCEPT AS NOTED.
- ALL MISCELLANEOUS CONCRETE PADS AND CURBS ARE TO BE REINFORCED WITH A MINIMUM OF 10M AT 400 mm O/C EACH WAY, UNLESS NOTED.
- PROVIDE MINIMUM 2-10M BOTTOM INTEGRITY BARS THROUGHOUT STRUCTURES IN ACCORDANCE WITH CSA A23.3-04, CLAUSE 13.10.6.

III FORMWORK

- SHEARMAT OR APPROVED CARDBOARD VOIDFORM WITH A MIN. DEPTH OF 150 mm SHALL BE USED AS THE BOTTOM FORM FOR STRUCTURAL SLABS AT GRADE, GRADE BEAMS, AND WALLS IN CONTACT WITH SOIL. SELECT AND INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ACCESSORIES SUCH AS HI-CHAIRS, SPACERS, ETC. SHALL BE SUPPORTED BY PADS OF PLYWOOD OR TEMPERED HARDBOARD TO PREVENT PUNCTURING THE VOIDFORM.
- PLACE 10 MIL POLYETHYLENE UNDER ALL SLABS ON FILL AND OVER TOP OF VOIDFORM.
- PROVIDE 150 mm WIDE, RIBBED, PVC WATERSTOPS IN ALL HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS IN ALL EXTERIOR WALLS BELOW GRADE AND PIT WALLS.

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 STEEL".
- ALL ROLLED OR STEEL STRUCTURAL SECTIONS SHALL BE G40.21-350W. 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 S16-09, "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 IN CRAWLSPACES SHALL RECEIVE 2 COATS. 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.
- ALL STRUCTURAL STEEL INDICATED AS GALVANIZED OR GALV IS TO BE IN CONFORMANCE WITH CAN/CSA - G1 64 "HOT DIP GALVANIZING OF IRREGULARLY SHAPED ARTICLES" TO 610 g/m² COATING.
- 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 CONTRACTOR. WHERE ASTM F1554 GRADE 55 ANCHOR BOLTS ARE USED, BOLTS TO BE WELDABLE GRADE STEEL.
- FABRICATOR TO NOTIFY THE CONTRACT ADMINISTRATOR 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 UNDER THE DIRECTION OF THE PROJECT ENGINEER OF RECORD DIRECTED AND APPROVED BY THE ENGINEER CONTRACTOR ADMINISTRATOR.
- JOIST SEATS MAY BE BOLTED TO BEAM TOP FLANGES USING PAIRS OF 14.3 mm DIAMETER BOLT HOLES ORIENTED ACROSS THE FLANGE WIDTH. ALL HOLES MUST BE FILLED WITH 12.7 mm DIAMETER BOLTS.
- THE STRUCTURAL STEEL ERECTOR SHALL BE RESPONSIBLE FOR SUPPLYING AND ERECTING ALL TEMPORARY GUYING AND BRACING OF THE STEEL FRAMING TO PROVIDE STABILITY FOR THE STRUCTURE AS A WHOLE. THESE SHALL REMAIN IN PLACE UNTIL ALL STEEL DECKING IS ERECTED, WELDED IN PLACE AND ALL MASONRY/CONCRETE WALLS CONSTRUCTED.
- UNLESS NOTED OTHERWISE ON DRAWINGS PROVIDE L76 x 76 x 6.4 DIAPHRAGM CHORD ANGLE AROUND ENTIRE PERIMETER OF BUILDING.
- ALL DUCTS LARGER THAN 450 mm x 450 mm THROUGH ROOF DECK TO BE FRAMED WITH L76 x 76 x 6.4 ANGLES ALL AROUND, EXCEPT AS NOTED. SMALLER OPENINGS THROUGH STEEL DECK TO BE STIFFENED BY STEEL DECK SUPPLIER. WHERE STEEL DECK REVERSES ITS FRAMING DIRECTION, USE L65 x 65 x 6.4 ANGLE TO SUPPORT EDGE.
- 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 CONTRACT ADMINISTRATOR FOR REVIEW PRIOR TO FABRICATION. CONNECTION DESIGN TO INCLUDE FOR ALL ADJUSTABLE CONNECTIONS REQUIRED TO SUITE FABRICATION AND ERECTION PROCEDURES AND TOLERANCES.
- STRUCTURAL STEEL WHICH SUPPORTS ARCHITECTURAL FINISHES MUST BE DESIGNED TO BE SUFFICIENTLY ADJUSTABLE TO MEET REQUIRED INSTALLATION TOLERANCES. SEE ARCHITECTURAL FOR REQUIRED FINISH TOLERANCES.

MISCELLANEOUS METAL - STEEL STAIR AND GUARDRAILS

- STEEL STAIR AND GUARDRAIL SUPPLIER IS TO SUBMIT ENGINEERING DRAWINGS BEARING THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA FOR REVIEW BY THE CONTRACT ADMINISTRATOR, PRIOR TO FABRICATION. ENGINEERING SHOP DRAWINGS SHALL INCLUDE DESIGN LOADS, LAYOUT PLAN, CONNECTION DETAILS, AND ALL OTHER PERTINENT INFORMATION.
- STEEL STAIR AND GUARDRAIL SUPPLIER/DESIGNER SHALL PROVIDE A FINAL INSPECTION AND A LETTER SEALED BY THE ENGINEER RESPONSIBLE FOR THE STAIR AND GUARDRAIL DESIGN, CERTIFYING THAT STAIRS AND GUARDRAILS ARE CONSTRUCTED AND INSTALLED AS PER DESIGN ASSUMPTIONS AND INSTALLATION REQUIREMENTS.

STEEL JOISTS

- JOIST FABRICATOR TO CONSULT THE SUPPLEMENTS TO THE NATIONAL BUILDING CODE OF CANADA ON NON-UNIFORM SNOW LOADS.
- JOISTS ARE TO BE CAMBERED FOR THE GREATER OF: FULL DEAD LOAD DEFLECTION OR FOR NOMINAL CAMBER AS SPECIFIED IN CSA S16-14.
- ALL JOIST BRIDGING TO CONFORM WITH THE LATEST BUILDING CODE REQUIREMENTS, EXCEPT AS NOTED.
- JOISTS BEARING ON BEAMS TO REST ON THE MIDDLE THIRD OF THE FLANGE. JOISTS IN LINE TO BEAR END TO END ON THE SUPPORTING BEAMS WITH A MAXIMUM GAP OF 12 mm.
- JOIST SUPPLIER TO REFER TO MECHANICAL DRAWINGS FOR LOCATION AND WEIGHTS OF EQUIPMENT SUPPORTED BY JOISTS. JOISTS TO HAVE INTERNAL MEMBERS IN LINE WHERE REQUIRED BY MECHANICAL DUCTS.
- ALL STEEL JOISTS TO RECEIVE ONE COAT OF SHOP PRIMER CISC/CPMA 1-73a QUICK DRYING. JOISTS TO BE CLEANED IN CONFORMANCE WITH SSPC-SP2. JOISTS 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.
- JOIST SUPPLIER IS TO SUBMIT ENGINEERING DRAWINGS BEARING THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA TO THE CONTRACT ADMINISTRATOR FOR REVIEW PRIOR TO FABRICATION.
- JOISTS WHICH ARE RESISTANCE WELDED SHALL CONFORM TO CSA W55.2, "RESISTANCE WELDING PRACTICE" AND CSA-W55.3, "RESISTANCE WELDING QUALIFICATION CODE FOR FABRICATORS OF STRUCTURAL MEMBERS USED IN BUILDINGS".
- ALL COLUMNS TO BE STRUTTED BY JOISTS OR BEAMS, WHERE JOISTS DO NOT LINE UP WITH COLUMNS USE L76 x 76 x 6.4 ANGLE FROM COLUMN AT BOTTOM OF BEAM FLANGE TO ADJACENT JOIST TOP CHORD AT PANEL POINTS.
- ALL JOISTS LINING UP WITH COLUMNS ARE TO BE STRUT JOISTS, DESIGNED TO RESIST END MOMENTS AS INDICATED ON THE DRAWINGS.
- LIVE LOAD DEFLECTION CRITERIA SHALL BE L/360 UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL REPORT TO THE CONTRACT ADMINISTRATOR ANY EQUIPMENT LOADS TO BE SUPPORTED BY JOISTS NOT SHOWN ON DRAWINGS.

METAL DECK

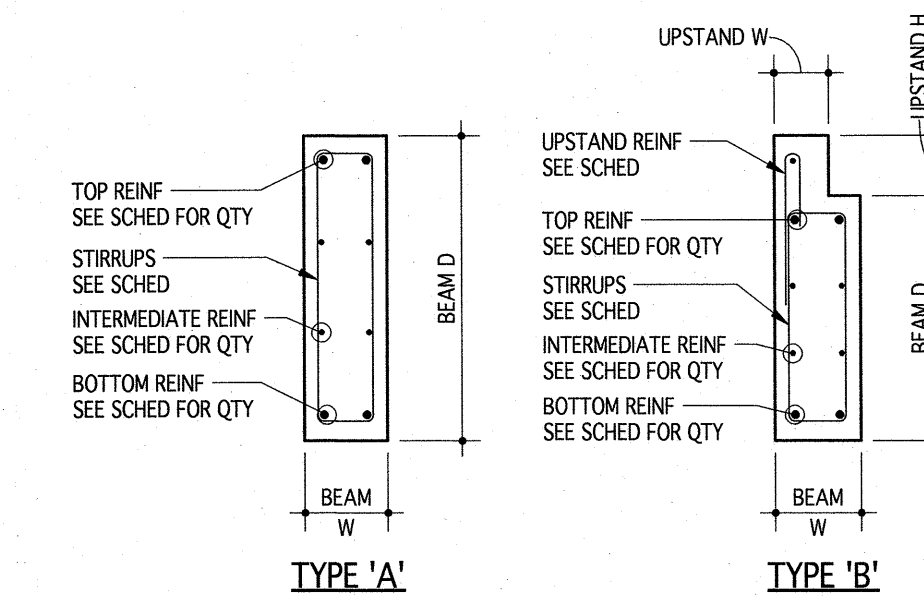
- ROOF DECK SHALL BE 38 mm DEEP PROFILE, 0.76 mm, WITH RIB SPACING OF 150 mm
- DECK SHALL BE MINIMUM GRADE A WITH A MINIMUM GALVANNEAL ZINC COATING TO ZF75.
- DECK SHALL BE ARC SPOT WELDED TO BEARING SUPPORTS AT 300 mm O/C. WELDS SHALL BE 20 mm DIAMETER.
- SIDE LAPS SHALL BE MECHANICALLY FASTENED (BUTTON-PUNCHED) AT 600 mm ON-CENTRE.
- DECK SUPPLIER SHALL REINFORCE OPENINGS OVER 150 mm TO 300 mm ACROSS THE FLUTES WITH MINIMUM L65 x 65 x 6.4 EACH SIDE OF OPENING PERPENDICULAR TO FLUTES. ANGLE SHALL BE WELDED TO AT LEAST TWO FLUTES ON EACH SIDE OF OPENING.
- DECK SUPPLIER SHALL REINFORCE OPENINGS OVER 300 mm TO 450 mm ACROSS THE FLUTES WITH SUITABLE REINFORCEMENT BASED ON A STRUCTURAL ANALYSIS OF THE LOADS INVOLVED.
- TOUCH UP DECK WITH ZINC RICH PAINT WHERE ZINC COATING HAS BEEN BURNED BY WELDING.

PRECAST CONCRETE

- PRECAST CONCRETE IS TO BE DESIGNED IN ACCORDANCE WITH CSA A23.3-04 "DESIGN OF CONCRETE STRUCTURES FOR BUILDINGS".
- ALL STRUCTURAL PRECAST ELEMENTS ARE TO BE PRODUCED BY A MANUFACTURING PLANT CERTIFIED BY CPCI AND TO MEET THE REQUIREMENTS OF CSA-A23.4-09(R2014) "PRECAST CONCRETE-MATERIALS AND CONSTRUCTION" (INCLUDING APPENDICES A & B).
- PRIOR TO FABRICATION THE MANUFACTURER SHALL SUBMIT LAYOUT AND ERECTION DRAWINGS TO THE CONTRACT ADMINISTRATOR FOR REVIEW BEARING THE SEAL OF AN ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA SHOWING THE FOLLOWING:
 - SPECIFIED LOADS ASSUMED IN THE DESIGN OF THE PRECAST;
 - EACH PRECAST ELEMENT SHALL BE IDENTIFIED BY A STANDARD MARK PLACED LEGIBLY ON THE UNIT AT THE TIME OF MANUFACTURE AND LOCATED ON THE MANUFACTURERS LAYOUT PLAN;
 - DIMENSIONS AND LOCATION OF ALL PRECAST PIECES INCLUDING AREAS WHERE PRECAST CANNOT BE USED DUE TO PRODUCT LIMITATIONS;
 - LOCATIONS WHERE SUPPORT IS REQUIRED IN ADDITION TO THAT SHOWN ON STRUCTURAL DRAWINGS;
 - ALL CONNECTION DETAILS NECESSARY FOR PROPER INSTALLATION;
 - DIMENSIONS AND LOCATION OF ALL PREFORMED OPENINGS OR EMBEDMENTS BEING PROVIDED;
 - LOCATIONS WHERE HANGERS WILL BE SUPPLIED TO PROVIDE OPENINGS; AND
 - LOCATIONS WHERE STRUCTURALLY COMPOSITE CONCRETE TOPPING IS REQUIRED FOR THE PRECAST TO SUPPORT SPECIFIED LOADS.
- ALL ANGLES, ANCHOR BOLTS AND OTHER MISCELLANEOUS METAL NECESSARY TO SUPPORT PRECAST SECTIONS TO ADJACENT PRECAST ELEMENTS SHALL BE DESIGNED, DETAILED AND SUPPLIED BY THE PRECAST SUPPLIER. WHERE APPLICABLE, THESE SHALL BE INSTALLED BY THE CONTRACTOR WHO SHALL ALLOW FOR INSTALLATION COST IN HIS PRICE.
- PRECAST SUPPLIER TO COORDINATE WITH MECHANICAL AND ELECTRICAL DRAWINGS AND TRADES FOR ANY FLOOR OPENINGS. ALL HOLES LARGER THAN 150 mm IN DIAMETER TO BE FORMED IN THE SHOP.
- ALL INSERTS, ANCHORS, HANGERS AND MISCELLANEOUS ATTACHMENTS FOR OTHER TRADES SHALL BE THE RESPONSIBILITY OF OTHERS.
- PRECAST FABRICATOR SHALL DESIGN FLOOR OR ROOF ELEMENTS FOR POSSIBLE CONCENTRATED LOADS AS DESCRIBED BY NBCC-10, CLAUSE 4.1.5.9 AND SHALL REVIEW ALL PROJECT DOCUMENTS TO CONFIRM LOCATION OF POINT LOADS IN EXCESS OF THOSE IDENTIFIED BY NBCC-10.
- INSTALLATION OF PRECAST UNITS SHALL BE BY THE SUPPLIER OR UNDER THEIR SUPERVISION, AND SHALL BE DONE BY A SKILLED ERECTION CREW. INSTALLATION TOLERANCES SHALL COMPLY WITH CSA-A23.4. SUPPLIER SHALL PROVIDE CERTIFICATION OF INSTALLATION UNDER SEAL OF PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA AFTER COMPLETION.
- THE CONTRACTOR SHALL PROVIDE TRUE AND LEVEL BEARING SURFACES BEFORE ANY PRECAST SLABS SHALL BE DELIVERED FOR ERECTION. ALL KEYS TO BE COMPLETELY CLEANED PRIOR TO INSTALLATION OF GROUT. PRECAST SLABS MUST BE ALIGNED AND LEVELED BEFORE GROUTING THE KEYS AND JOINTS WITH A GROUT MIX AS SPECIFIED BY THE PRECAST SUPPLIER/DESIGNER.
- DRAIN HOLES WITH A DIAMETER NOT LESS THAN 16 mm SHALL BE PROVIDED WITHIN 150 mm OF THE LOW ENDS OF CORES IN HOLLOWCORE PANELS PERMANENTLY EXPOSED TO MOISTURE OR WITHIN PARKING STRUCTURES TO DRAIN ANY WATER THAT FINDS ITS WAY INTO A CORE.
- MINIMUM DESIGN BEARING FOR PRECAST:
 - 75 mm ON MASONRY OR CONCRETE; 89 mm FOR 300 mm SLABS WITH SPANS EXCEEDING 11600 mm;
 - 75 mm ON STEEL.
- CONCRETE TOPPINGS INDICATED AS BONDED SHALL HAVE A TENSILE BOND STRENGTH BETWEEN THE TOPPING AND BASE COURSE CONCRETE OF NOT LESS THAN 0.9 MPa AT 28 DAYS WHEN TESTED IN ACCORDANCE WITH CSA A23.2-68 AT A FREQUENCY OF NOT LESS THAN ONE TEST PER 100 m² 1,000 SQ.FT. PRIOR TO CONSTRUCTION SUBMIT DOCUMENTATION DEMONSTRATING MINIMUM PERFORMANCE REQUIREMENT WILL BE MET.
- SURFACE OF PRECAST CONCRETE TO RECEIVE BONDED TOPPINGS SHALL BE INTENTIONALLY ROUGHENED AT THE TIME OF FABRICATION TO ACHIEVE A SURFACE PROFILE OF ICR-1-SP-6 OR GREATER.
- CONCRETE TOPPINGS INDICATED AS BONDED SHALL BE WET CURED FOR A MINIMUM OF 7 DAYS.

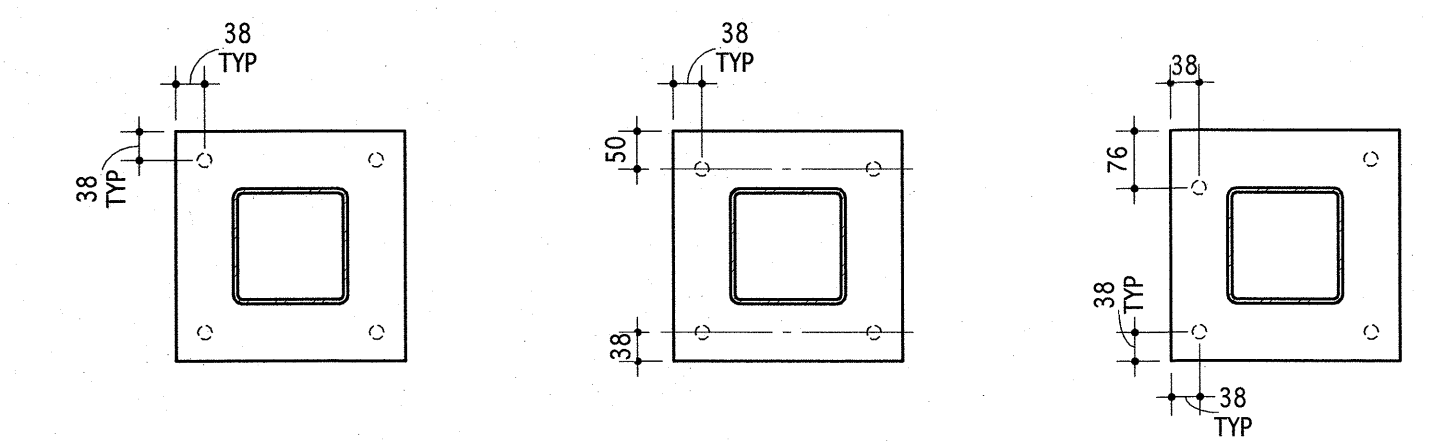
COLUMN SCHEDULE					
MARK	DESCRIPTION	BASE PLATE			REMARKS
		SIZE	TYPE	U/S ELEVATION	
C1	HSS 152x152x6.4	304x304x19	A	99 725	4-190x450 LONG + 75 HOOK ON MIN 25 NON-SHRINK GROUT
C2	HSS 152x152x6.4	304x304x19	B	99 725	4-190x450 LONG + 75 HOOK ON MIN 25 NON-SHRINK GROUT
C3	HSS 152x152x6.4	304x304x19	C	99 725	4-190x450 LONG + 75 HOOK ON MIN 25 NON-SHRINK GROUT
C4	HSS 1520x9.5	304x304x19	A	99 725	4-190x450 LONG + 75 HOOK ON MIN 25 NON-SHRINK GROUT

CONCRETE BEAM SCHEDULE					
MARK	WIDTH	HEIGHT	UPSTAND	REINFORCING	TYPE
B1	250	600		2-20M TOP & BOTTOM CONTINUOUS 10M STIRRUPS @ 300 O/C ON 150 CARDBOARD VOID FORM	A
B2	200	900		2-20M TOP & BOTTOM CONTINUOUS 2-15M HORIZONTAL EACH FACE 10M STIRRUPS @ 400 O/C ON 150 CARDBOARD VOID FORM	A
B3	250	900	300 HIGH x 150 WIDE	2-25M TOP & BOTTOM CONTINUOUS 2-15M HORIZONTAL EACH FACE 10M STIRRUPS @ 400 O/C 1-10M CONTINUOUS IN UPSTAND 10M HARPINS @ 300 O/C IN UPSTAND ON 150 CARDBOARD VOID FORM	B



STANDARD CONC BEAM DETAILS

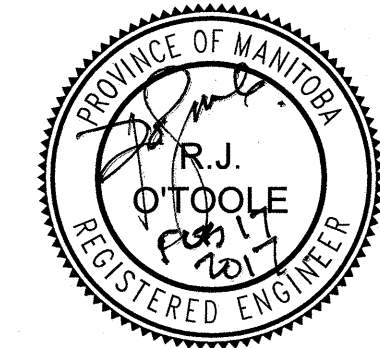
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BASE PLATE TYPE A

BASE PLATE TYPE B

BASE PLATE TYPE C



1 2017/02/17 ISSUED FOR CONSTRUCTION
No. DATE REVISION/ISSUANCE
Seal

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GENERAL NOTES

Project No.

Sheet

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