GENERAL NOTES:

1. STRUCTURAL DESIGN BASED ON THE MANITOBA BUILDING CODE 2024. ALL CODES AND STANDARDS SHALL BE THE EDITIONS DESIGNATED IN DIVISION B TABLE 1.3.1.2.
   A. IMPORTANCE CATEGORY: HIGH
2. DO NOT SCALE DRAWINGS.
3. DO NOT BACKFILL UNTIL GROUND FLOOR STRUCTURE IS IN PLACE.
4. ALL DIMENSIONS ARE TO BE VERIFIED WITH THE ARCHITECTURAL DRAWINGS, PROJECT DRAWINGS AND EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION.
5. 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 INCLUDING BUT NOT LIMITED TO ALL TEMPORARY SHORING/BRACING.
6. THE EXISTING BUILDING SUPERSTRUCTURE AND FOUNDATIONS HAVE BEEN REVIEWED AND CAN SUPPORT ALL NEW LOADING CONDITIONS SHOWN ON THESE DRAWINGS IN ACCORDANCE WITH PART 4 OF THE 2020 NATIONAL BUILDING CODE OF CANADA, UNLESS NOTED OTHERWISE.

DESIGN NOTES

1. LIVE LOADS
   A. SEE NOTES ON PLANS. ALL LOADS ARE UNFACTORED UNLESS NOTED.
2. SNOW LOADS
   A. GROUND SNOW LOAD: Ss = 1.9 kPa
   B. ASSOCIATED RAIN LOAD: Sr = 0.2 kPa
   C. SNOW IMPORTANCE FACTOR, Is = 1.15 (ULS) 0.9 (SLS)
3. WIND LOADS
   A. WIND LOADS HAVE BEEN CALCULATED IN ACCORDANCE WITH THE STATIC PROCEDURE OUTLINED IN NBCC 2020 CLAUSE 4.1.7.3.
   B. HOURLY WIND PRESSURE, q50 = 0.45 kPa
   C. WIND IMPORTANCE FACTOR, Iw = 1.15 (ULS) 0.75 (SLS)
   D. EXPOSURE FACTOR, Ce, BASED ON OPEN TERRAIN
4. EARTHQUAKE LOADS
   A. EARTHQUAKE IMPORTANCE FACTOR, I_E = 1.3
   B. SITE CLASS: E BASED ON GEOTECHNICAL REPORT BY KGS GROUP DATED DECEMBER 23, 2020.
   C. PARAMETERS USED TO REPRESENT SEISMIC HAZARD ARE THE 5% DAMPED HORIZONTAL SPECTRAL ACCELERATIONS THAT HAVE A 10% PROBABILITY OF EXCEEDANCE IN 50 YEARS.
   D. SEISMIC HAZARD PARAMETERS (FOR NON-STRUCTURAL ELEMENTS – 2% PROBABILITY):
      Sa (0.2) = 0.112g
      Sa (0.5) = 0.106g
      Sa (1.0) = 0.0544g
      Sa (2.0) = 0.0214g
      Sa (5.0) = 0.00429g
      Sa (10.0) = 0.00125g
   E) SEISMIC HAZARD PARAMETERS (FOR ADDITIONS – 10% PROBABILITY IN ACCORDANCE WITH COMMENTARY L):
      Sa (0.2) = 0.033g
      Sa (0.5) = 0.0312g
      Sa (1.0) = 0.01464g
      Sa (2.0) = 0.00508g
      Sa (5.0) = 0.000862g
      Sa (10.0) = 0.000236g
   F) THE STRUCTURE IS DESIGNED USING THE EQUIVALENT STATIC FORCE PROCEDURE AS PER CLAUSE 4.1.8.11
   G) SEISMIC CATEGORY = SC1
   H) FUNDAMENTAL LATERAL PERIOD, Ta = 0.253s
   I) THE SEISMIC FORCE RESISTING SYSTEM FOR THIS STRUCTURE IS CONVENTIONAL CONSTRUCTION
      MASONRY SHEAR WALLS, Rd = 1.5 Ro = 1.5
5. LOADS ON FOUNDATION / RETAINING WALLS
   A. WALLS HAVE BEEN DESIGNED ASSUMING FREE DRAINING BACKFILL WHICH DOES NOT PERMIT THE BUILD-UP OF HYDROSTATIC PRESSURE.
   B. WALLS HAVE BEEN DESIGNED FOR A HORIZONTAL PRESSURE, P (kPa), AT DEPTH, H (m), GIVEN BY THE EXPRESSION, P = K (gH + Q) WHERE:
      SOIL PRESSURE COEFFICIENT K = 0.5
      UNIT WEIGHT OF SOIL G = 20 kN/m^3
      SURCHARGE Q = 12 kPa
6. STRUCTURAL MOVEMENTS
   A. TYPICAL HORIZONTAL ELEMENTS HAVE BEEN DESIGNED SO THAT THE THEORETICAL VERTICAL DEFLECTIONS WILL NOT EXCEED L/360.
   B. INTERIOR NON-LOAD BEARING WALLS AND PARTITIONS, INCLUDING MASONRY WALLS AND DRYWALL PARTITIONS ARE TO BE DETAILED TO ACCOMMODATE A MINIMUM OF 25mm OF VERTICAL MOVEMENT AT THE TOP OF THE PARTITION, UNLESS NOTED OTHERWISE.
   C. THE STRUCTURE HAS BEEN DESIGNED TO LIMIT THE MAXIMUM INTERSTORY DRIFT AT THE SERVICEABILITY LIMIT STATE TO H/500 FOR WIND LOADS WHERE 'H' IS THE FLOOR-TO-FLOOR HEIGHT BETWEEN ADJACENT FLOORS.
   D. THE STRUCTURE HAS BEEN DESIGNED TO LIMIT THE MAXIMUM INTERSTORY DRIFT AT THE SERVICEABILITY LIMIT STATE TO H/40 H/50 H/100 FOR EARTHQUAKE LOADS WHERE 'H' IS THE FLOOR-TO-FLOOR HEIGHT BETWEEN ADJACENT FLOORS.
   E. NON-STRUCTURAL ELEMENTS SUCH AS THE BUILDING ENCLOSURE, MECHANICAL AND ELECTRICAL SERVICES AND SUPPORTS MUST BE DESIGNED AND DETAILED TO ACCOMMODATE THE ANTICIPATED MOVEMENTS NOTED ABOVE.

FOUNDATIONS

1. FOUNDATION DESIGN BASED ON GEOTECHNICAL REPORT BY KGS GROUP DATED DECEMBER 23, 2020.
2. NOTWITHSTANDING THE INFORMATION PROVIDED IN THE GEOTECHNICAL REPORT, THE FOUNDATION AND GENERAL CONTRACTORS SHALL SATISFY THEMSELVES AS TO THE PREVAILING CONDITIONS AT THE SITE AS NO EXTRAS SHALL BE GRANTED SHOULD CONDITIOPNNS DIFFER FROM THOSE INDICATED.
3. ALL FRICTION PILES ARE DESIGNED BASED ON THE FOLLOWING:

	COMPRESSIVE DEPTH (M)	ULS (kPa)	SLS (kPa)
A.	0 - 2.5	0	0
	2.5 - 7	12	10
	7 - 11	10	8

   ULS SKIN FRICTION VALUES HAVE BEEN MULTIPLIED BY A GEOTECHNICAL RESISTANCE FACTOR OF 0.4.
   B. EFFECTIVE LENGTH OF FRICTION PILES IS TOTAL LENGTH AS SHOWN ON PLAN MINUS 3000 mm BELOW EXISTING GRADE.
   C. FRICTION PILE REINFORCING TO BE FULL LENGTH; REINFORCING TO BE 5-10M RINGS @ 1200 mm ON CENTRE AND 3-10M RINGS @ 150 mm ON CENTRE AT TOP, 4-15M VERTICAL DOWELS FROM PILE TO BEAM.
4. PRECAST CONCRETE PILES TO BE DRIVEN TO REFUSAL TO DEVELOP CAPACITIES AS SHOWN BELOW. ULS CAPACITIES HAVE BEEN MULTIPLIED BY THE NOTED GEOTECHNICAL RESISTANCE FACTOR:
   A. 300 mm HEX. - ULS = 700 kN SLS = 445 kN
   B. 350 mm HEX. - ULS = 980 kN SLS = 625 kN GEOTECHNICAL RESISTANCE FACTOR –0.5
   C. 400 mm HEX. - ULS = 1200 kN SLS = 800 kN
   D. DRIVEN PILING SHALL BE COMPLETED BEFORE ANY FRICTION OR BELLED PILING OPERATIONS COMMENCE.
   E. TO VERIFY GEOTECHNICAL RESISTANCE FACTOR, PDA TESTING WILL BE REQUIRED ON A MINIMUM OF 5% OF PILES. COORDINATE WITH GEOTECHNICAL ENGINEER SCHEDULING AND ACCESS TO SITE.
   F. DRIVEN PILING SHALL BE COMPLETED BEFORE ANY FRICTION OR BELLED PILING OPERATIONS COMMENCE.
5. ALL FOUNDATION INSTALLATIONS SHALL BE REVIEWED BY QUALIFIED GEOTECHNICAL PERSONNEL REPORTING TO THE GEOTECHNICAL ENGINEER THAT ISSUED THE SITE-SPECIFIC GEOTECHNICAL REPORT IN ACCORDANCE WITH THE REQUIREMENTS OF PART 4 OF THE NATIONAL BUILDING CODE OF CANADA / THE MANITOBA BUILDING CODE.
6. REMOVAL OF UNSUITABLE MATERIALS, SUBGRADE PREPARATIONS & COMPACTED GRANULAR FILL FOR ALL SLABS SUPPORTED ON GRADE AS PER SITE-SPECIFIC GEOTECHNICAL REPORT.
7. PROVIDE 2 LAYERS 10 MIL POLYETHYLENE WRAPPED SONOTUBE, GREASED COMPLETELY ON INSIDE FOR TOP 2800 mm OF PILES INDICATED ON PLAN.

CAST-IN-PLACE CONCRETE

I CONCRETE

1. 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".
2. 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.
3. 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.
4. CONCRETE PROPERTIES SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE ON THE DRAWINGS.

PILES:	35 MPa MIN. AT 56 DAYS CLASS OF EXPOSURE: S-1 ENTRAINED AIR/CATEGORY: 2 (4% TO 7%) CEMENT TYPE: HS AGGREGATE: MAX. 20 mm CURING TYPE: TYPE 2 - ADDITIONAL SLUMP: MIN. 120 mm
PRECAST DRIVEN PILES:	35 MPa MIN. AT 28 DAYS CEMENT TYPE: HS, HSb OR HSe - SEE NOTE BELOW SLUMP AND AGGREGATES TO MANUFACTURERS REQUIREMENTS
PILE CAPS:	35 MPa MIN. AT 56 DAYS CLASS OF EXPOSURE: S-1 ENTRAINED AIR/CATEGORY: 2 (4% TO 7%) CEMENT TYPE: HS AGGREGATE: MAX. 20 mm CURING TYPE: TYPE 2 - ADDITIONAL
EXTERIOR WALLS AND 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
EXTERIOR SLABS-ON-GRADE:	32 MPa MIN. AT 28 DAYS CLASS OF EXPOSURE: C-2 ENTRAINED AIR/CATEGORY: 1 (5% TO 8%) AGGREGATE MAX. 20 mm CURING TYPE: TYPE 2 - ADDITIONAL
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
BONDED TOPPING SLABS: ON HOLLOWCORE	30 MPa MIN. AT 28 DAYS MAX. 0.45 WATER TO CEMENTITIOUS RATIO CLASS OF EXPOSURE: N ENTRAINED AIR/CATEGORY: NONE AGGREGATE MAX. 20 mm CURING TYPE: TYPE 3 – 7 DAY WET CURE R/W 10M @ 450 O/C TOP (U/N OTHERWISE ON PLANS)
MASONRY FILL:	20 MPa MIN. AT 28 DAYS CLASS OF EXPOSURE: N ENTRAINED AIR/CATEGORY: NONE AIR CONTENT: LESS THAN 3% AGGREGATE 14 mm SLUMP: 200 mm ± 40 mm

   HSe CEMENT ONLY PERMITTED IF TESTING RESULTS ARE SUBMITTED PRIOR TO CASTING PILES AND CONFIRM CONFORMANCE TO MAXIMUM EXPANSION LIMITS NOTED IN CSA A23.1 TABLE 3 FOR TYPE S-2 EXPOSURE WHEN TESTING IN ACCORDANCE WITH CSA A3004-C8.

   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.

I CONCRETE (CONTINUED)

5. UNLESS NOTED OTHERWISE CONCRETE CURING TO CONFORM TO THE LATEST EDITION OF CSA-A23.1-09 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.
6. CONCRETE TOPPING SHALL BE BONDED & APPLIED AS OUTLINED.
7. CONTRACTOR TO SUBMIT TEMPERATURE MONITORING PROCEDURE FOR CONCRETE POURS CONSIDERED MASS CONCRETE IN ACCORDANCE WITH A23.1.

II REINFORCING STEEL

1. ALL REINFORCING STEEL TO CONFORM TO CSA G30.18, "CARBON STEEL BARS FOR CONCRETE REINFORCEMENT".
2. ALL REINFORCING STEEL TO BE CSA-G30.18M-M92 GRADE 400R DEFORMED BARS EXCEPT COLUMN TIES AND BEAM STIRRUPS WHICH SHALL BE GRADE 400W STEEL.
3. 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.
4. WELDED STEEL WIRE MESH SHALL BE TO ASTM A185/A185M-07, 400 MPa YIELD, FLAT SHEETS ONLY.
5. REINFORCING STEEL COVER IS TO CONFORM TO CAN/CSA A23.3-09 "DESIGN OF CONCRETE STRUCTURES FOR BUILDINGS" AND AS FOLLOWS:

PILES: EXPOSURE CLASS: S-1	75 mm TO TIES	
PILE CAPS: EXPOSURE CLASS: S-1	75 mm BOTTOM TO TIES AND BOTTOM REINFORCING	
EXTERIOR WALLS AND GRADE BEAMS: EXPOSURE CLASS: F-2	50 mm BOTTOM TO TIES	40mm SIDES AND TOP TO TIES
EXTERIOR STRUCTURAL SLABS: EXPOSURE CLASS: C-1	60 mm TOP	40 mm BOTTOM
EXTERIOR SLABS-ON-GRADE: EXPOSURE CLASS: C-2	60 mm TOP	40 mm BOTTOM
INTERIOR WALLS: EXPOSURE CLASS: N	20 mm EACH FACE	
INTERIOR BEAMS: EXPOSURE CLASS: N	30 mm BOTTOM TO TIES	30 mm SIDES AND TOP TO TIES

6. IN WALLS AND GRADE BEAMS, BEND ALL TOP, INTERMEDIATE, AND BOTTOM HORIZONTAL STEEL 600 mm AROUND CORNERS, OR USE EXTRA L BARS 1200 mm LONG. ALL OPENINGS IN WALLS TO HAVE 2-15M EACH SIDE AND 2-25M OVER, EXCEPT AS NOTED.
7. TOP STEEL IN BEAMS TO BE LAPPED AT CENTRE SPAN, WITH CLASS B SPLICES, BOTTOM STEEL CAN BE BUTTED AT SUPPORT.
8. IN WALLS, TOP STEEL TO BE LAPPED AT CENTRE SPAN WITH CLASS A TENSION SPLICES, BOTTOM STEEL TO BE BUTTED AT SUPPORT, HORIZONTAL STEEL TO BE LAPPED WITH CLASS A TENSION SPLICES, VERTICAL STEEL TO BE LAPPED WITH CLASS B TENSION SPLICES, EXCEPT AS NOTED.
9. IN SLABS ON GRADE, BARS TO BE LAPPED WITH CLASS A TENSION SPLICES, EXCEPT AS NOTED.
10. IN COLUMNS, VERTICAL BARS TO HAVE CLASS B SPLICES, EXCEPT AS NOTED.
11. 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.
12. ALL OPENINGS IN CAST-IN-PLACE CONCRETE FLATWORK TO BE TRIMMED WITH 2-15M ALL AROUND ON BOTH FACES, EXCEPT AS NOTED.
13. FOR ALL STRUCTURAL SLABS ON GRADE, BOTTOM STEEL SHALL BE CONTINUED A MINIMUM DISTANCE OF 150 mm INTO ALL SUPPORTING MEMBERS. 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.
14. ALL MISCELLANEOUS CONCRETE PADS AND CURBS ARE TO BE REINFORCED WITH A MINIMUM OF 10M AT 400 mm O/C EACH WAY, UNLESS NOTED.
15. WHEN CONCRETE BEAMS ARE CAST INTO A WALL / BEAM CHASE, DOWELS SIZE AND NUMBER SAME AS BEAM REINFORCING ARE TO BE PROVIDED FROM WALL, UNLESS OTHERWISE SHOWN ON PLAN.

III FORMWORK

1. SHEARMAT OR APPROVED CARDBOARD VOID FORM 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.
2. ACCESSORIES SUCH AS HI-CHAIRS, SPACERS, ETC. SHALL BE SUPPORTED BY PADS OF PLYWOOD OR TEMPERED HARDBOARD TO PREVENT PUNCTURING THE VOID FORM.
3. UNLESS NOTED OTHERWISE PROVIDE SLIP JOINT ALL PAVING OR CONCRETE SLABS ON GRADE AGAINST STRUCTURAL MEMBERS WITH 12 mm ASPHALT IMPREGNATED FIBREBOARD.
4. ALL CONSTRUCTION JOINT KEYS ARE TO BE A MINIMUM OF 40 mm DEEP.
5. ALL STRUCTURAL SLABS BRACED INTO BEAMS AND WALLS ARE TO HAVE A MINIMUM KEY OF 40 mm
6. ALL CONCRETE BEAMS FRAMING INTO CONCRETE WALLS / BEAMS ARE TO BE SUPPORTED BY A CHASE OF MINIMUM 100 mm DEPTH AND THE HEIGHT AND WIDTH OF THE BEAM.
7. 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

1. 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.
2. 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, ALL MASONRY/CONCRETE WALLS CONSTRUCTED, AND ALL HOLLOWCORE HAS BEEN ERECTED, JOINTS GROUTED, AND BEARING ENDS HAVE BEEN GROUTED AND CURED.
3. STRUCTURAL STEEL TO CONFORM TO CSA-G40.21-04, "STRUCTURAL QUALITY STEELS" AND CSA-G40.20 "GENERAL REQUIREMENTS FOR ROLLED OR WELDED STRUCTURAL QUALITY STEEL", ASTM A572/A572M "STANDARD SPECIFICATION FOR HIGH-STRENGTH LOW-ALLOY COLUMBIUM-VANADIUM STRUCTURAL STEEL" OR ASTM A992/A992M "STANDARD SPECIFICATION FOR STRUCTURAL STEEL SHAPES".
4. 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.
5. FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE PERFORMED IN ACCORDANCE WITH CSA S16, "DESIGN OF STEEL STRUCTURES".
6. 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".
7. 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.
8. ALL BOLTED CONNECTIONS TO USE A325 HIGH STRENGTH BOLTS. MINIMUM CONNECTION SHALL CONSIST OF 2 BOLTS.
9. 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. STEEL TO BE CLEANED IN CONFORMANCE WITH SSPC-SP7.
10. 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.
11. NO HOLES PERMITTED IN TOP FLANGE OF BEAMS AT COLUMNS WHERE BEAMS ARE CONTINUOUS OVER COLUMNS.
12. ALL BEAMS CONTINUOUS OVER COLUMNS ARE TO HAVE WEB STIFFENERS THE SAME SIZE AND ORIENTATION AS THE COLUMN BELOW, UNLESS OTHERWISE NOTED.
13. 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.
14. FABRICATOR TO NOTIFY ENGINEER OF ANY PROPOSED MEMBER SUBSTITUTIONS AND CHANGED CONNECTION DETAILS.
15. 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.
16. 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.
17. ALL OPENINGS LARGER THAN 450 mm x 450 mm THROUGH STEEL 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. WHEN STEEL DECK CHANGES ITS FRAMING DIRECTION, USE L65 x 65 x 6.4 ANGLE TO SUPPORT EDGE.
18. STRUCTURAL STEEL WHICH SUPPORTS ARCHITECTURAL FINISHES MUST BE DESIGNED TO BE SUFFICIENTLY ADJUSTABLE TO MEET REQUIRED INSTALLATION TOLERANCES. SEE ARCHITECTURAL FOR REQUIRED FINISH TOLERANCES.
19. STEEL STRUTS THAT BRACE TOP AND/OR BOTTOM FLANGES OF BEAMS MUST BE INSTALLED PRIOR TO ANY TEMPORARY CONSTRUCTION LOADING.
20. STRUCTURAL STEEL CONNECTIONS TO BE REVIEWED BY THIRD PARTY STRUCTURAL STEEL CONNECTION INSPECTION AGENCY.
21. 10 WEB STIFFENERS AT ENDS OF BEAMS BEARING ON BEARING PLATE IN BLOCK WALLS
22. ALL EXPOSED STEEL TO HAVE AESS (ARCHITECTURALLY EXPOSED STRUCTURAL STEEL) CONNECTIONS.
23. IF STEEL IS TO RECEIVE AN INTUMESCENT COATING OR SPRAY APPLIED FIREPROOFING, IT SHOULD BE PREPARED TO MEET THE DESIGN REQUIREMENTS OF THE FIREPROOFING MANUFACTURER.
24. FOR ALL STEEL CONNECTIONS, SUPPLIERS/DESIGNERS SHALL PROVIDE A FINAL INSPECTION AND A LETTER SEALED BY THE ENGINEERS RESPONSIBLE, CERTIFYING THAT STEEL CONNECTIONS ARE CONSTRUCTED AND INSTALLED AS PER DESIGN ASSUMPTIONS AND INSTALLATION REQUIREMENTS.

STEEL JOISTS

1. JOIST FABRICATOR TO CONSULT THE SUPPLEMENTS TO THE NATIONAL BUILDING CODE OF CANADA ON NON-UNIFORM SNOW LOADS.
2. JOISTS ARE TO BE CAMBERED FOR THE GREATER OF: FULL DEAD LOAD DEFLECTION OR FOR NOMINAL CAMBER AS SPECIFIED IN CSA S16-09.
3. ALL JOIST BRIDGING TO CONFORM WITH THE LATEST BUILDING CODE REQUIREMENTS, EXCEPT AS NOTED.
4. 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 13 mm
5. 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.
6. 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.
7. JOIST SUPPLIER IS TO SUBMIT ENGINEERING DRAWINGS BEARING THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA TO THE PROJECT DESIGN ENGINEER FOR REVIEW PRIOR TO FABRICATION.
8. 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".
9. ALL COLUMNS TO BE STRUTTED BY JOISTS OR BEAMS. WHERE JOISTS OR BEAMS DO NOT LINE UP WITH COLUMNS TOP OF COLUMNS TO BE STRUTTED TO JOISTS WITH L76 x 76 x 6.4 TO ADJACENT JOIST TOP CHORD AT PANEL POINTS.
10. ALL JOISTS LINING UP WITH COLUMNS ARE TO BE STRUT JOISTS, DESIGNED TO RESIST LOADS AS INDICATED ON THE DRAWINGS.
11. LIVE LOAD DEFLECTION CRITERIA SHALL BE L/360 UNLESS OTHERWISE NOTED.
12. CONTRACTOR SHALL REPORT TO ENGINEER ANY EQUIPMENT LOADS TO BE SUPPORTED BY JOISTS NOT SHOWN ON DRAWINGS..

METAL DECK

1. ROOF DECK SHALL HAVE A MINIMUM YIELD STRENGTH OF 230 MPa AND BE 38mm DEEP PROFILE, WITH RIB SPACING OF 150 mm UNLESS OTHERWISE NOTED ON PLANS
2. DECK SHALL BE MINIMUM GRADE A WITH A MINIMUM GALVANIZED ZINC COATING TO Z275.
3. DECK SHALL BE ARC SPOT WELDED TO BEARING SUPPORTS AT 300 mm O/C, UNLESS OTHERWISE NOTED. WELDS SHALL BE 20 mm DIAMETER.
4. SIDE LAPS SHALL BE MECHANICALLY FASTENED (BUTTON-PUNCHED) AT 600 mm ON-CENTRE, UNLESS OTHERWISE NOTED.
5. DECK FASTENING USING POWDER-ACTUATED DRIVE PINS TO STRUCTURAL MEMBERS AND SIDELAP SCREWS MAY BE PROPOSED AS AN ALTERNATE TO PUDDLE WELDS AND BUTTON-PUNCHING, EXCEPT IN AREAS WITH EXPOSED STRUCTURE. DECK SUPPLIER TO PROVIDE SEALED SHOP DRAWING INDICATING DETAILS OF PROPOSED SYSTEM, INCLUDING MANUFACTURER; TYPE, SIZE & SPACING OF DRIVE PINS AND SCREWS; DIAPHRAGM SHEAR CAPACITY; AND DIAPHRAGM STIFFNESS, FOR REVIEW AND ACCEPTANCE BY PROJECT ENGINEER PRIOR TO CONSTRUCTION. IF ACCEPTED FOR USE, DECK INSTALLER TO PROVIDE WRITTEN CONFIRMATION THAT INSTALLERS ARE CERTIFIED BY THE DRIVE-PIN SYSTEM MANUFACTURER FOR THE PROPER INSTALLATION OF THE SELECTED SYSTEM. ENGINEER OF PIN SYSTEM TO PROVIDE A SEALED LETTER INDICATING THE PINS AND SIDE LAP CONNECTIONS HAVE BEEN INSTALLED AS PER THE SEALED SHOP DRAWINGS
6. 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.
7. DECK SUPPLIER SHALL REINFORCE OPENINGS UP TO 450 mm ACROSS THE FLUTES WITH SUITABLE REINFORCEMENT BASED ON A STRUCTURAL ANALYSIS OF THE LOADS INVOLVED.
8. TOUCH UP DECK WITH ZINC RICH PAINT WHERE ZINC COATING HAS BEEN BURNED BY WELDING.
9. PUDDLE WELDS TO BE REVIEWED BY THIRD PARTY STRUCTURAL STEEL CONNECTION INSPECTION AGENCY.

STAIRS AND GUARDRAILS

1. FOR ALL STEEL STAIRS AND GUARDRAILS, SUPPLIERS ARE TO SUBMIT ENGINEERING DRAWINGS BEARING THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA FOR REVIEW BY THE PROJECT ENGINEER, PRIOR TO FABRICATION. ENGINEERING SHOP DRAWINGS SHALL INCLUDE DESIGN LOADS, LAYOUT PLAN, CONNECTION DETAILS, AND ALL OTHER PERTINENT INFORMATION.
2. FOR ALL STEEL STAIRS AND GUARDRAILS, SUPPLIERS/DESIGNERS SHALL PROVIDE A FINAL INSPECTION AND A LETTER SEALED BY THE ENGINEERS RESPONSIBLE FOR THE STAIR AND GUARDRAIL DESIGNS, CERT