

GENERAL NOTES

- STRUCTURAL DESIGN BASED ON THE NATIONAL BUILDING CODE OF CANADA 2011 EDITION.
 - IMPORTANCE CATEGORY: NORMAL
 - WIND LOAD: Q50 = 9.4 P.S.F.
 - GROUND SNOW LOAD: SS = 39.6 P.S.F.
 - ASSOCIATED RAIN LOAD: SR = 4.2 P.S.F.
- SEISMIC SITE CLASSIFICATION: NOT APPLICABLE
- DO NOT SCALE DRAWINGS.
- DO NOT BACKFILL UNTIL GROUND FLOOR STRUCTURE IS IN PLACE.
- 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 GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SAFETY ON AND AROUND THE JOBSITE DURING CONSTRUCTION.

FOUNDATIONS

- ALL FRICTION PILES ARE DESIGNED ON AN ALLOWABLE SKIN FRICTION OF 300 P.S.F.. EFFECTIVE LENGTH OF FRICTION PILES IS TOTAL LENGTH AS SHOWN ON PLAN MINUS 10'-0".
- FRICTION PILE REINFORCING TO BE 20'-0" LONG UNLESS NOTED IN PLANS; 10M RINGS AT 48 IN. ON-CENTRE AND 3-10M RINGS AT 6" ON-CENTRE AT TOP. EXTEND VERTICAL PILE REINFORCING 1'-6" INTO BEAMS OR WALLS. PILE REINFORCING TO BE 5-10M FOR 16 IN. DIAMETER PILES.
- PROVIDE 10 MIL POLYETHYLENE WRAPPED SONOTUBE PLASTIC TUBE, GREASED COMPLETELY ON INSIDE FOR TOP 6'-0" 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 CAN/CSA-A23.1-09 "CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION" AND CAN/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 CAN/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 CAN/CSA-A23.1. CERTIFICATION LETTER TO BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA.
- CONCRETE STRENGTHS AT 28 DAYS 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

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: F-2
 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

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 CAN/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".

II REINFORCING STEEL

- ALL REINFORCING STEEL TO BE CAN/CSA-G30.18M GRADE 400R DEFORMED BARS EXCEPT COLUMN TIES AND BEAM STIRRUPS WHICH SHALL BE GRADE 400M 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: F-2 1 1/2 IN. TOP 1 1/2 IN. BOTTOM

GRADE BEAMS / WALLS:
 EXPOSURE CLASS: F-2 2 IN. BOTTOM TO TIES 1 1/2 IN. SIDES AND TOP TO TIES.

PILES:
 EXPOSURE CLASS: S-1 S-2 75 MM 3 IN. TO TIES.

- IN WALLS AND GRADE BEAMS, BEND ALL TOP AND INTERMEDIATE HORIZONTAL STEEL 2'-0" AROUND CORNERS, OR USE EXTRA L BARS 4'-0" LONG. ALL OPENINGS IN WALLS TO 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 WALLED 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.
- FOR ALL STRUCTURAL SLABS A MINIMUM OF 50% OF THE BOTTOM STEEL SHALL BE CONTINUED A MINIMUM DISTANCE OF 6 IN. 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 12 IN. O/C SHALL BE PROVIDED WHICHEVER IS GREATER.
- ALL MISCELLANEOUS CONCRETE PADS AND CURBS ARE TO BE REINFORCED WITH A MINIMUM OF 10M AT 16 IN. 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.
- PROVIDE MINIMUM 2-10M BOTTOM INTEGRITY BARS THROUGHOUT STRUCTURES IN ACCORDANCE WITH CAN/CSA A23.3-04, CLAUSE 13.10.6.

III FORMWORK

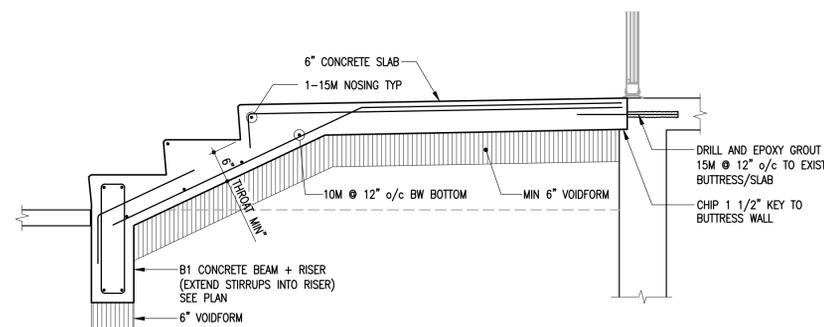
- SHEARWAT OR APPROVED CARDBOARD VOIDFORM WITH A MIN. DEPTH OF 6 IN. SHALL BE USED AS THE BOTTOM FORM FOR STRUCTURAL SLABS AT GRADE, GRADE BEAMS, AND WALLS IN CONTACT WITH SOIL. SELECT AND INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ACCESSORIES SUCH AS HI-CHAIRS, SPACERS, ETC. SHALL BE SUPPORTED BY PADS OF PLYWOOD OR TEMPERED HARDBOARD TO PREVENT PUNCTURING THE VOIDFORM.
- UNLESS NOTED OTHERWISE PROVIDE SLIP JOINT ALL PAVING OR CONCRETE SLABS ON GRADE AGAINST STRUCTURAL MEMBERS WITH 1/2 IN. ASPHALT IMPREGATED FIBREBOARD.
- ALL CONSTRUCTION JOINT KEYS ARE TO BE A MINIMUM OF 1 1/2 IN. DEEP.
- ALL STRUCTURAL SLABS FRAMING INTO WALLS ARE TO HAVE A MINIMUM KEY OF 1 1/2 IN.

STRUCTURAL STEEL

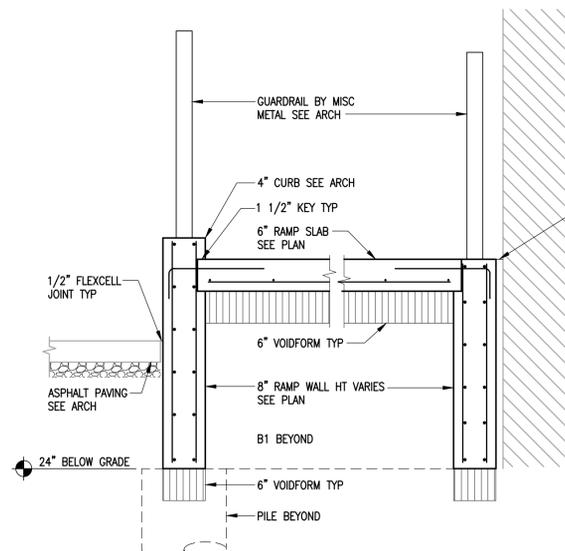
- THE STRUCTURAL STEEL FABRICATOR SHALL BE RESPONSIBLE FOR LOCATING AND DESIGNING PROVISIONS FOR ALL TEMPORARY FALL PROTECTION SYSTEMS REQUIRED DURING CONSTRUCTION TO MEET MANITOBA WORKPLACE HEALTH AND SAFETY REGULATIONS.
- STRUCTURAL STEEL TO CONFORM TO CSA-G40.21, "STRUCTURAL QUALITY STEELS" AND CSA-G40.20 "GENERAL REQUIREMENTS FOR ROLLED OR WELDED STRUCTURAL QUALITY STEEL".
- ALL ROLLED OR STEEL STRUCTURAL SECTIONS SHALL BE G40.21-50W. ALL HOLLOW STRUCTURAL SECTIONS TO BE G40.21-50W CLASS C. ALL ANGLES, CHANNELS AND PLATES SHALL BE G40.21-44W.
- FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE PERFORMED IN ACCORDANCE WITH CAN/CSA S16-09, "STEEL STRUCTURES FOR BUILDINGS".
- 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.
- FABRICATOR TO NOTIFY 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 DIRECTED AND APPROVED BY THE CONTRACT ADMINISTRATOR.
- 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.

MISCELLANEOUS METAL - STEEL STAIR AND GUARDRAILS

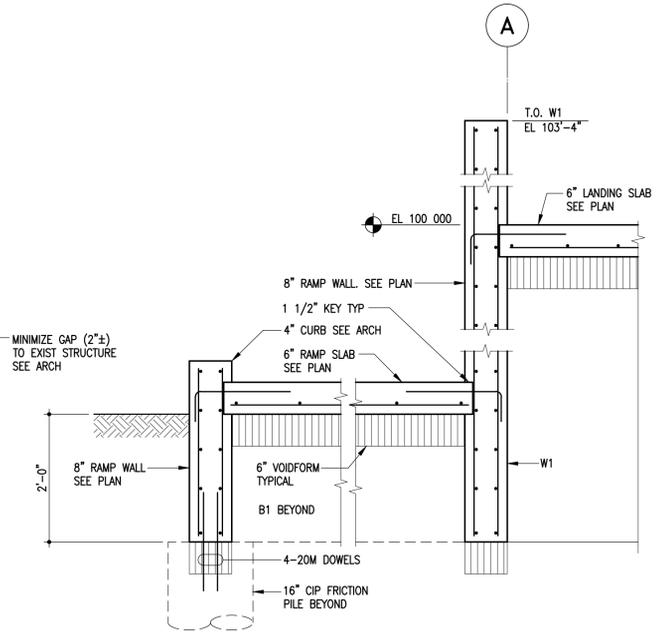
- STEEL GUARDRAIL SUPPLIER IS TO SUBMIT ENGINEERING DRAWINGS BEARING THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA FOR REVIEW BY THE CONTRACT ADMINISTRATOR, PRIOR TO FABRICATION. ENGINEERING SHOP DRAWINGS SHALL INCLUDE DESIGN LOADS, LAYOUT PLAN, CONNECTION DETAILS, AND ALL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



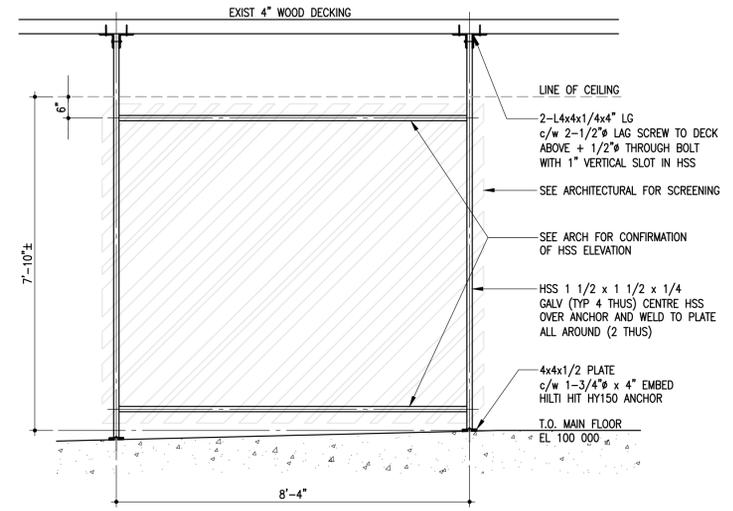
1 SECTION
 S-2 3/4" = 1'-0"



2 SECTION
 S-2 3/4" = 1'-0"



3 SECTION
 S-2 3/4" = 1'-0"



A METAL SCREEN ELEVATION DETAIL
 S-2 SCALE: 1/2" = 1'-0"



5	YY.MM.DD	-
4	YY.MM.DD	-
3	YY.MM.DD	-
2	YY.MM.DD	-
1	2012-03-15	ISSUED FOR TENDER
No.	DATE	REVISION / ISSUANCE



architect inc.
 411 St. Mary Ave. Winnipeg, Manitoba R3C 5R6
 T: 204.943.7501 F: 204.943.7507
 2011-0840

Crozier Kilgour & Partners Ltd.
 CONSULTING STRUCTURAL ENGINEERS

Project: BID OPPORTUNITY 139 - 2012
 ELMWOOD KILDONAN POOL
 Front Entrance Upgrades
 909 Concordia Ave

GENERAL NOTES
 SECTION AND DETAILS

Project No.	Sheet
1125	
Date	MARCH 15, 2012

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