

GENERAL

- These notes are to be read in conjunction with the specifications.
- This building has been designed in accordance with the 2011 edition of the Manitoba Building Code.
- The Contractor shall be responsible for the design and installation of all necessary shoring, bracing and formwork. Formwork for new construction shall be bridged over existing services.
- Errors in drawings and/or specifications and/or previously unknown existing conditions shall be brought to the attention of the Contract Administrator before proceeding with the work. During the tender stage, Contractor shall request an interpretation of conflicts prior to tender. If no request is made, both provisions shall be presumed to be included in the tender and the Contract Administrator shall determine which provision governs, and the contractor shall perform the work at no additional cost to the owner.
- Any unsound structural conditions observed or created during construction are to be reported to Contract Administrator immediately.
- Contractor shall review, stamp, sign and date all shop drawings prior to forwarding to architect and/or Contract Administrator. The Contract Administrator's review is to be for conformance with the design concept and general compliance with the relevant contract documents. The Contract Administrator's review does not relieve the contractor of the sole responsibility to review, check and coordinate the shop drawings prior to submission. The Contractor remains solely responsible for errors and omissions associated with the preparation of shop drawings as they pertain to member sizes, details, dimensions, etc..
- Coordinate size and location of all openings in structural members with trades involved. All openings not indicated on structural drawings to be approved by Contract Administrator.
- Refer to Architectural, Mechanical and Electrical drawings for small openings, sleeves, recesses, depressions, sumps, trenches, curbs, housekeeping pads, equipment bases, and slopes not indicated on the structural drawings.
- Coordinate placement and location of items by subsequent trades. Relevant trades shall review prior to erection and/or installation.
- Confirm the location of all sub-grade services prior to commencing Site Work.
- Verify all dimensions and elevations with architectural drawings prior to construction. Any discrepancies to be reported to Contract Administrator immediately. Do not scale drawings.
- Do not backfill against structure until main floor is in place.
- Do not exceed, during construction, design live loads shown on plans. Reduce as necessary until materials reach design strength.
- Confirm all existing conditions prior to construction. Any discrepancies or conflicts to be reported to Contract Administrator immediately.
- Drawings indicate general and typical details of construction. Where conditions are not specifically shown, similar details of construction shall be used, subject to approval by the Contract Administrator.

DESIGN LOADS

- Unless noted otherwise, the loads noted on plan are unfactored. Design loads are noted on the plans.

2. Climate Data:

Ss	= 1.9 kPa
Sr	= 0.2 kPa
q (1/50)	= 0.45 kPa

FOUNDATION

- Pile design loads with a minimum safety factor of 2.5.
- Driven piles shall be standard hexagonal precast prestressed piles driven to refusal to develop the following unfactored (ultimate) resistance capacities:

3000 Hex pile = 1350 kN
3500 Hex pile = 1650 kN
4000 Hex pile = 2100 kN
- Concrete design strength for precast piles is 35MPa @ 28 days with Sulfate Resisting Type 50 cement.
- Prestressing strands shall be left protruding into pilecaps a minimum of 2'-0" after pile cut off unless noted otherwise.
- Precast driven piles shall be designed in accordance with the latest edition of CSA 135.
- Piles shall be no more than 2% out of plumb; and no more than 2" out of alignment.
- Slab sub-base to be built up of 'C-Base' granular fill compacted to 95% Standard Proctor Density in maximum 8' lifts. Final lift to be 6" 'A-Base' granular fill compacted to 98% Standard Proctor Density. All compaction densities to be confirmed by an independent testing agency prior to placement of any concrete.

CONCRETE

- Concrete Form shall be in accordance with CSA A23.1-09 for "Concrete Materials and Methods of Concrete Construction" including cold weather requirements when the temperature falls below 5°C.
- Provide one set of concrete test cylinders in accordance with CSA A23.1-09 for every 50 m³ of concrete placed and a minimum of one set for each structural component.
- Performance specification as per A23.1-09 Table 5:

a. Min. Concrete Strength @ 28 days:	
i. Precast conc.	35 MPa
ii. Piles & pile caps	32 MPa
iii. Pool area slabs & Water containment structures	35 MPa
iv. All other conc.	30 MPa

b. Exposure Class:	
i. Precast conc.	S-2
ii. Piles & pile caps	S-2
iii. Parking structures above grade	C-1
iv. Curbs/sidewalks/driveways	C-2
v. Pool area slabs & Water containment structures	C-1
vi. All other conc.	N
- For floor slabs, design the concrete mix with aggregate grading and water to cement materials ratio to minimize shrinkage.
- Walls, piers and columns shall be poured a minimum of 24 hours before slabs and beams.
- Provide dovetail anchor slots in concrete walls and columns where masonry abuts.
- All structural slabs framing into concrete walls or beams shall have a minimum 1 1/2" chase into supporting member x the height of the slab.
- Where concrete beams frame into concrete walls or other concrete beams and are poured later, provide 1 1/2" chase (height and width to match beam).
- The use of calcium chloride is not permitted.
- Construction joint keys in grade beams shall be formed at pile locations only.
- Construction joint keys in structural slabs to be formed at 1/3 span. Provide key width equal to half the thickness of the slab. Provide 15M dowels @ 24" o/c top & bottom.
- Saw cuts for slab on grade shall be 1" deep & 1/8" wide. Cutting to be done not sooner than 12 hours, and not later than 24 hours after the slab is poured. Cuts to be filled with approved bituminous compound or caulking.
- Slip joint all paving against structural members with 1/2" impregnated fiberglass.
- Coordinate the location of all items embedded in concrete work with Architectural, Mechanical & Electrical drawings.
- Contract Administrator to be notified at least 48 hours in advance of all major pours.
- Refer to architectural drawings for concrete surfaces requiring architectural finishes.
- Where void form is indicated on drawings use cardboard shearmat below structural slabs and low-density polystyrene below walls and gradebeams.
- For structural slabs at grade, plywood over biodegradable wax mat cardboard, complete with moisture resistant treated paper faces, with sufficient strength to support the weight of wet concrete until initial set.
- Exterior sidewalks to be 4" thick concrete on compacted granular fill reinforced with 10M @ 12" o/c each way mid depth. Provide tooled control joints @ maximum 5'-0" o/c and construction joints @ maximum 20'-0" o/c.
- Concrete slab at exterior refuse container to be 6" thick concrete on compacted granular fill reinforced with 15M @ 12" o/c each way mid depth.

REINFORCING

- All bars to conform to CSA G30.18-M92:

15M bars and larger to be grade 400
10M bars and supporting rods to be grade 300 or better
- All steel to be detailed in accordance with the current ACI Detailing Manual.
- Minimum clear cover to reinforcing – refer to table below:

EXPOSURE CONDITION	CLEAR CONCRETE COVER TO REINFORCEMENT		
	N	EXPOSURE CLASS 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 & permanently exposed to earth	-	3"	3"
Beams, girders, columns & piles to ties/stirrups (except as noted below)	1 1/4"	1 1/2"	2 3/8"
Slabs, walls, piers, shells, and folded plates (except as noted below)	3/4"	1 1/2"	2 3/8"
Ratio of cover to nominal bar diameter	-	-	1 1/2"
Ratio of cover to nominal maximum aggregate size	1"	1 1/2"	2"

Note: The largest cover required for any one element shall govern
- All reinforcing shall be held in place with proper accessories.
- Standard end hook lengths for reinforcement:

BAR SIZE	10M	15M	20M	25M	30M	35M	45M	55M
90° Hook Length	7"	10"	12"	16"	20"	26"	32"	41"
180° Hook Length	6"	7"	8"	12"	12"	22"	27"	35"
- In concrete beams, bend horizontal reinforcing 24" around corners, or use extra corner bars 36" x 36".
- All openings in concrete walls and/or slabs to have minimum 2-15M extra reinforcing all around, 1 each face, extend minimum 2'-0" past, plus additional 15M diagonal bars each face 1.5 times longer than shortest opening size or min. 20" and maximum 5'-0" in length at each corner unless noted otherwise. Maximum opening size 3'-0" wide; top of opening to be minimum 2'-0" below top of wall elevation. For all openings greater than 3'-0" contact the Contract Administrator for further instruction. Coordinate all openings with Architectural, Electrical and Mechanical drawings.
- Do not cut reinforcing at openings where it can be spread continuously around opening.
- All openings in grade beams to be confirmed by the Contract Administrator.
- Top steel in beams shall be lapped at centre span, bottom steel shall be lapped at support.
- All reinforcing steel shall be cleaned of all dirt, grease and other deleterious materials prior to placing.
- All reinforcing shall be new billet deformed bars.
- Minimum reinforcing for equipment bases 10M @ 12" o/c each way.
- All welded wire fabric shall be transported and delivered in flat sheets.
- Reinforcing steel supplier to confer with contractor as to desired construction joint locations and supply dowels and bar lengths to accommodate these joints.
- Reinforcing steel supplier shall submit shop drawings for review of fabrication, sizes, dimensions, placement and splice locations.

STRUCTURAL STEEL

- All 'W' and 'HSS' sections shall be in accordance with CAN/CSA G40.21-04 M350W, all other sections shall be in accordance with CAN/CSA G40.21-04 M300W.
- All welding shall conform to CSA W59-03 (R2008); fabricators to be certified in accordance with CSA W47.1-09.
- Fabrication and erection shall be in accordance with CAN/CSA S16-09, "Limit States Design of Steel Structures".
- Unless noted otherwise, design connections for non-composite beams for factored moment shear force equal to 67% of the total beam load tabulated in the CISC handbook of steel construction.
- Unless noted otherwise, design moment connections for non-composite beams for a factored moment equal to the full moment capacity of the smaller member joined.
- Supply steel with properties noted in steel grades table below.

MEMBER TYPE	STEEL GRADES	GRADE
Rolled W-Shape, Tees	CSA G40.21 350W OR ASTM A 992	GRADE 50
Welded Wide Flange Sections	CSA G40.21 350W	
Hollow Structural Shapes & Plates	CSA G40.21 350W CLASS C	
Other Structural Shapes & Plates	CSA G40.21 350W	
Bolts	ASTM A325	
Anchor Rods	ASTM F1554 GRADE 36	
Headed Stud Anchors	ASTM A108	
Threaded Rods	ASTM A36	
- Steel erector shall be responsible for supplying and erecting all temporary bracing to provide stability for the structure as a whole, until all related structural framing is erected and completely installed.
- Fabricator shall notify the engineer of any proposed member substitutions or changed connection details.
- Holes required in steel sections must be approved by the engineer.
- Provide 3/8"Ø weep holes at top and bottom of all HSS columns.
- All beams continuous over columns shall have 2 web stiffeners on each side, the same thickness as column unless noted, but not less than 3/8".
- No holes permitted in top of beams at columns where beams are continuous over columns, unless loss of section by holes is compensated by equal material area welded to side of flange.
- All columns passing thru concrete shall have compressive material to isolate it from surrounding concrete.
- All structural steel shall receive at least one coat primer to CISC/CPMA standard 1-73a 1975.
- Use asphalt base paint (flintkote 410-02 or eq.) at columns below slab.
- All high strength bolts to be in accordance with the latest edition of ASTM A325M.
- Provide minimum of 2 bolts in bolted connections.
- All bolted connections to use snug-tightened high-strength bolts unless noted on drawings.
- The shear capacity of all shear splices shall be at least equal to the shear capacity of the smaller beam, unless noted.
- The steel supplier shall shop weld 1 1/2" x 1/8" masonry anchors to all steel members in contact with masonry walls. Maximum spacing of ties shall be 32" o/c unless noted.
- Steel supplier is responsible for design and detailing of all structural steel connections not shown on drawings.
- All miscellaneous steel not detailed on drawings, such as: stairs, railings, awnings and non-structural architectural steel shall be detailed by the steel supplier.
- Anchor bolts shall be supplied by structural steel supplier & set by general contractor. Contractor to supply and install 1" non-shrink grout under all base plates unless noted.
- All grout under bearing plates and base plates shall be non-metallic, non-shrink type with minimum 28 day compressive strength of 4500 PSI, installed in accordance with the specification and manufacturer's recommendations.
- Expansion anchors to be zinc-plated steel wedge type with the following design values in 30 MPa concrete:

1/2"Ø	- 2000 lbs shear, 2000 lbs pull-out
3/4"Ø	- 4000 lbs shear, 4000 lbs pull-out
- All exposed portions of ledge angles and connections to be coated with bituminous paint.
- Provide 3" x 3" x 1/4" angle framing around all deck openings greater than 18" x 18" unless noted.
- All steel beams supporting masonry walls to have minimum 3/4"Ø x 12" long nelson studs welded to beam at 24" o/c unless noted otherwise on drawings.
- Provide minimum S8x18.4 Elevator Hoist beam c/w end bearing connections unless noted otherwise.
- Structural steel supplier shall submit shop drawings for review of fabrication, sizes, dimensions and placement. All connections not shown on drawings are to be sealed by a Professional Engineer registered in the Province of Manitoba.

PILE SCHEDULE

P-1: 300Ø PRECAST DRIVEN HEX PILE

P-2: 350Ø PRECAST DRIVEN HEX PILE

P-3: 400Ø PRECAST DRIVEN HEX PILE

P-4: 400 Ø x 8000 DP, CAST IN PLACE PILES
R/W 5-10M x 8000 LG, VERT.
W/ 10M RINGS @ 300 O/C
TOP 2 RINGS @ 150 O/C
PROVIDE MATCHING DOWELS 450 INTO CONC. ABOVE

P-4a: 400Ø x 8000 LG, CAST IN PLACE PILES
R/W 5-10M x 2400 LG, VERT.
W/TOP 6-10M RINGS @ 100 O/C
REMAINDER @ 300 O/C



NOTE:
1. ALL PILES TO BE P-1 U.N.O.
2. ALL PILES TO HAVE PC-1 U.N.O.
3. PC-1 PILECAPS NOT REQ'D @ DROP PANELS

CONC. PILECAP SCHEDULE

PC-1: 610Ø x 300 DP, C.I.P. PILECAP
R/W 5-15M VERT.
W/ 2-15M RINGS
EMBED T.O. PILE MIN. 50 INTO PILECAP

PC-2: 600 x 600 x 1400 LONG C.I.P. PILECAP
R/W 4-20M BOTT.
2-15M TOP
10M STIRR @ 300 O/C
EMBED T.O. PILE MIN 76 INTO PILECAP

CONC. PILASTER SCHEDULE

PIL-1: 600x600x HT. TO SUIT
R/W 9-20M VERT.
W/ 10M TIES @ 300 O/C VERT.
W/ 4-15M (800x200) HOOKED
DOWELS TO PILECAP BELOW

PIL-1A: 600x750x HT. TO SUIT
R/W AS PER PIL-2

CONC. GRADE BEAM SCHEDULE

NOTE:
ALL INTERIOR GRADE BEAM TO BE GB-1 U.N.O.

GB-1: 200x600 DP, C.I.P. CONC. G.B.
R/W 2-20M TOP & BOTT
W/ 10M STIRRUPS @ 400 O/C

GB-2: 250x760 DP, C.I.P. CONC. G.B.
R/W 2-20M TOP & BOTT
4-15M EXTRA HORIZ. (2 E.F.)
W/ 10M STIRRUPS @ 200 O/C

GB-2A:
SAME AS GB-2 EXCEPT TAPERING W/SLAB ELEVATION
MIN. DEPTH = 400

GB-3: 250x600 DP, C.I.P. CONC. G.B.
R/W 3-20M TOP & BOTT
W/ 10M STIRRUPS @ 200 O/C

GB-4: 200x900 DP, C.I.P. CONC. G.B.
R/W 2-20M TOP & BOTT
W/ 2-15M HORIZ. INT. 1 EA. FACE
W/ 10M STIRRUPS @ 400 O/C

GB-5: 250x900 DP, C.I.P. CONC. G.B.
R/W 2-25M TOP & BOTT
W/ 2-15M HORIZ. INT. 2 EA. FACE
W/ 10M STIRRUPS @ 300 O/C

CONC. WALL SCHEDULE

CW-1: 250x2200 DP, C.I.P. CONC. WALL
R/W 2-25M TOP & BOTT
W/ 15M @ 300 O/C, I.F. VERT.
W/ 10M @ 300 O/C, O.F. VERT.
10M @ 300 O/C, HORIZ. E.F.

CW-1a: 250x2600 DP, C.I.P. CONC. WALL
R/W 2-25M TOP & BOTT.
W/ 15M @ 300 O/C, I.F. VERT.
W/ 10M @ 300 O/C, O.F. VERT.
10M @ 300 O/C, HORIZ. E.F.

CW-2: 250x1625 DP, C.I.P. CONC. WALL
R/W 2-25M TOP & BOTT.
W/ 15M @ 300 O/C VERT. CRAWLSPACE SIDE
W/ 10M @ 300 O/C VERT. SOIL SIDE
W/ 10M @ 300 O/C HORIZ. E.F.

CONC. BEAM SCHEDULE

CB-1: 250x900 DP, CONC. BEAM
R/W 2-20M TOP & BOTT.
W/ 10M STIRRUPS @ 300 O/C

CB-2: 200x600 DP, CONC. BEAM
R/W 2-25M TOP & BOTT.
W/ 10M STIRRUPS @ 200 O/C

CB-3: 800x300 DP, CONC. BEAM
R/W 5-25M TOP & BOTT.
W/ 10M STIRRUPS @ 300 O/C

CONC. SLAB SCHEDULE

SL-1: 175 DP, CONC. STRUCTURAL SLAB
R/W 15M @ 350 O/C B.W. TOP & BOTT.
W/ 15M x 2000 LG. @ 350 O/C TOP
EA. WAY OVER SUPPORTS
HOOK TOP & BOTT. BARS UP 400 INTO PERIM. WALL

SL-2: 150 DP, CONC. STRUCTURAL SLAB
R/W 15M @ 300 O/C B.W. TOP & BOTT.
ON 150 VOIDFORM

SL-2a: 150 DP, CONC. STRUCTURAL SLAB
R/W 15M @ 300 O/C B.W. TOP & BOTT.

SL-3: 175 DP, CONC. STRUCTURAL SLAB
R/W 15M @ 350 O/C B.W. TOP & BOTT.
W/ 15M x 3000 LG. @ 350 O/C TOP
EA. WAY OVER SUPPORTS
HOOK TOP & BOTT. BARS 300 INTO PERIM. WALL

SL-3a: 175 DP, CONC. STRUCTURAL SLAB
R/W 15M @ 350 O/C B.W. TOP & BOTT.
W/ 15M x 3000 LG. @ 350 O/C TOP
EA. WAY OVER SUPPORTS
HOOK TOP & BOTT. BARS 300 INTO PERIM. WALL
ON 150 VOIDFORM

SL-4: 125 DP, CONC. SLAB ON GRADE
R/W 15M @ 400 O/C EA. WAY TOP
ON MIN. 300 COMPACTED GRANULAR LAYER
AS PER GEOTECHNICAL REPORT

NOTE: ALL SLABS TO BE SL-2 U.N.O.

CONC. DROP PANEL SCHEDULE

DP-1: 1500x1200x150 DP, CONC. DROP PANEL

DP-2: 1500x1500x150 DP, CONC. DROP PANEL

DP-3: 1200x1200x150 DP, CONC. DROP PANEL

STUD WALL SCHEDULE

SW-1: 600S162-43 STEEL STUD WALL @ 400 O/C
C/W GYPSUM WALL BOARD AS PER ARCH.

EXIST. CONC. PIER SCHEDULE

EP-1: 300x300 EXIST. CONC. PIER

EXIST. COLUMN SCHEDULE

EC-1: EXIST. HSS 102x102x6.4

EC-2: EXIST. 64ø

PIPE COLUMN SCHEDULE

C-1: HSS 102x102x6.4
SEE SECTION FOR ADDNL HSS FRAMING

C-2: HSS 127x127x6.4 COLUMN
C/W 300x300x19 B.PLATE
W/ 4-19ø x 457 LG. A. BOLTS

C-3: 2 - HSS 168ø x 9.5 DIAG. STRUT COLUMNS
CONTOUR WELDED @ BEAM ABOVE
Y' CONN. @ BASE

C-4: 2 - HSS 127ø x 9.5 FRAME COLUMNS
CONTOUR WELDED @ BEAM ABOVE
Y' CONN. @ BASE
C/W PL. 19x300x300 BASE W/ 4-19øx400 LG. A. BOLTS

C-5: HSS 127ø x 9.5 COLUMN
C/W WELDED GALV. PL. ABOVE EA. COL.
Y' CONN. @ BASE
C/W PL. 19x300x300 BASE W/ 4-19øx400 LG. A. BOLTS

C-6: HSS 203x152x13

EXIST. MASONRY WALL SCHEDULE

EMW-1: 190 MASONRY BLOCK WALL

MASONRY WALL SCHEDULE

MW-1: 190 CONC. BLOCK WALL
R/W 15M VERT. @ 800 O/C
FILLED SOLID W/ 25 MPa CONC.

MW-2: 190 CONC. BLOCK WALL
R/W 15M VERT. @ 400 O/C
FILLED SOLID W/ 25 MPa CONC.

ALL MASONRY WALL TO BE MW-1 U.N.O.

MASONRY COLUMN SCHEDULE

MC-1: 2-15M VERT. IN 2 ADJACENT CORES, 1 EA. CORE

MC-2: 4-15M VERT. 1 EA. CORE

MC-3: 3-15M VERT. IN CORNER CORES, 1 EA. CORE

MC-4: 4-15M VERT. IN 4 ADJACENT CORES, 1 EA. CORE

MASONRY LINTEL SCHEDULE

TYP. PROVIDE ML-1 AT ALL MASONRY
WALL DOOR OPENINGS U.N.O.

ML-1: 2 COURSE H/15/A/M FULLY GROUTED
C/W 25 MPa CONC. R/W 1-15M BOTT.
W/ MIN. 200 BEARING EA. SIDE

ML-2: 3 COURSE H/15/A/M FULLY GROUTED
C/W 25 MPa CONC. R/W 2-15M BOTT.
W/ MC-1 BELOW EA. END

ML-3: 4 COURSE H/15/A/M FULLY GROUTED
C/W 25 MPa CONC. R/W 2-25M BOTT.
W/ MC-1 BELOW EA. END

MASONRY BEAM SCHEDULE

MB-1: 2-20M BOTT. & 2-15M TOP @ U/S MEZZ.
W/ 15M VERT. @ 800 O/C
W/ 10M HORIZ. @ 600 O/C
FILL SOLID W/ 25 MPa CONC.

BEAM SCHEDULE

B-01: W460x60

B-02: W200x19

B-03: W410x46

B-04: W360x33

B-05: HSS 273ø x 9.5

B-06: HSS 203x203x9.5

B-07: 215x400 DP, GLULAM

JOIST SCHEDULE

J-1: 300 DP, O.W.S.J. @ 1220 O/C
C/W 38 DP, STEEL ACOUSTIC DECKING

J-2: 600 DP, O.W.S.J. @ 1220 O/C
C/W 38 DP, STEEL ACOUSTIC DECKING

PROVIDE BRIDGING LINES @ MAX 1220 O/C, TYP.

STEEL FRAME SCHEDULE:

FR-1: SHOP WELDED HSS 406x203x13 FRAME

FRAMES FR-1a, FR-2 & FR-2a ALL SIM.
SEE PLAN & SECTIONS FOR HORIZONTAL DIMS.

ALL FRAMES TO BE HOT DIPPED GALV.

EXIST. GLULAM ROOF FRAME SCHEDULE

GL-1: 171x800 DP, EXIST. GLULAM FRAME

LINTEL SCHEDULE

L-1: LOOSE SHELF ANGLE 2-L150x150x13 TOE TO TOE
W/ MIN. 200 BRG. EA. END

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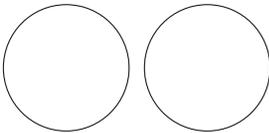
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Issue / rev.

#	date	issued notes
1	2016.08.16	ISSUED FOR ADDENDUM #1
0	2016.07.15	ISSUED FOR CONSTRUCTION

professional seals



project information

SEVEN OAKS POOL
RENOVATION &
ADDITION

444 ADSUM DRIVE
WINNIPEG, MB
CANADA

client

CITY OF WINNIPEG
4TH FLOOR - 85 KING ST.
WINNIPEG, MB

drawing information

General Notes & Schedules

drawn by: M.B./AVP

approved by: FDW

scale:

date issued: 2016.07.12