GENERAL NOTES:

1. READ THE STRUCTURAL DRAWINGS IN CONJUNCTION WITH ALL OTHER PERTINENT CONTRACT DOCUMENTS. IN THE EVENT OF A CONFLICT, THE SPECIFICATION SHALL GOVERN.

2. ALL DIMENSIONS ARE IMPERIAL UNLESS NOTED OTHERWISE. DO NOT SCALE DRAWINGS. ALL INFORMATION CONCERNING EXISTING STRUCTURES HAVE BEEN TAKEN FROM ORIGINAL DRAWINGS AND SITE MEASUREMENTS. CONTRACTOR TO CONFIRM ON SITE ALL EXISTING DIMENSIONS, ELEVATIONS AND DETAILS PRIOR TO COMMENCING WORK. SHOULD INFORMATION DIFFER SIGNIFICANTLY FROM THAT SHOWN, CONTACT CONTRACT ADMINISTRATOR PRIOR TO PROCEEDING.

3. THE DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NATIONAL BUILDING CODE OF CANADA 2010, ITS SUPPLEMENTS AND THE LATEST EDITIONS (UNLESS OTHERWISE NOTED) OF REFERENCED CODES AND STANDARDS THEREIN.

4. REFER TO THE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATIONS AND DIMENSIONS OF OPENINGS, SLEEVES AND OTHER BUILDING COMPONENTS NOT SHOWN ON THE STRUCTURAL DRAWINGS. REPORT DISCREPANCIES TO THE CONTRACT ADMINISTRATOR BEFORE PROCEEDING WITH CONSTRUCTION.

5. NOTIFY THE CONTRACT ADMINISTRATOR A MINIMUM 48 HOURS IN ADVANCE FOR REVIEWS.

6. CONSTRUCTION METHODS REQUIRING TEMPORARY SHORING, OR BRACING SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR REVIEW. THE CONTRACTOR SHALL RETAIN A PROFESSIONAL ENGINEER, REGISTERED IN THE PROVINCE OF MANITOBA, TO PERFORM AND TAKE RESPONSIBILITY FOR ANY SHORING OR OTHER DESIGNS REQUIRED TO COMPLETE THE CONSTRUCTION.

7. VERIFY LOCATION OF ALL UNDERGROUND SERVICES PRIOR TO COMMENCING CONSTRUCTION AND BE RESPONSIBLE FOR DISRUPTIONS.

DESIGN LOADS:

1. DEAD LOADS
   - .1) STRUCTURE SELF WEIGHT
   - .2) MECHANICAL AND ELECTRICAL ALLOWANCE — 0.5 kPa

2. LIVE LOADS
   - .1) WIND q(1/50) = — 0.45 kPa
   - .2) MAIN FLOOR U/N = — 10.0 kPa
   - .3) CRAWL SPACE FLOOR U/N = — 2.4 kPa
   - .4) FLOOR HATCH COVER = — 2.4 kPa

FOUNDATION NOTES:

1. GENERAL
   - 1.1. THE CONTRACTOR IS RESPONSIBLE FOR SHORING AND UNDERPINNING DOCUMENTS RELATING TO THE WORK SHALL BE SEALED BY PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA.

CONCRETE NOTES:

1. PROVIDE CONCRETE AND PERFORM WORK TO CSA A23.1, TEST CONCRETE TO CSA A23.2. THE CONTRACTOR SHALL HAVE COPIES OF THESE STANDARD ON SITE AT ALL TIMES. TEST RESULTS WILL BE ISSUED TO CONTRACT ADMINISTRATOR AND OWNER.

2. PROVIDE CLEAR CONCRETE COVER OVER REBAR AS FOLLOWS:
   - A) SURFACE POURED AGAINST GROUND — 75 mm
   - B) FORMED SURFACES EXPOSED TO GROUND OR WEATHER: — 50 mm
   - C) FORMED SURFACES NOT EXPOSED TO GROUND OR WEATHER:
     - BEAMS, COLUMNS (TO STIRRUPS OR TIES) — 40 mm
     - WALLS — 40 mm
     - SLABS — 40 mm

3. PROVIDE 20 mm CHAMFER ON ALL EXPOSED CONCRETE CORNERS.

4. ALL STRUCTURAL CONCRETE SHALL BE AS PROVIDED IN TABLE 1

5. CONSTRUCTION JOINTS: SURFACE PREPARATION SHALL BE BY SAND BLASTING TO EXPOSE FINE AGGREGATE. WATERSTOPS SHALL BE PROTECTED WITH SUITABLE 12 mm BOARD SANDWICH. REINFORCING STEEL SHALL BE CLEANED BY SAND BLASTING METHOD AS WELL.

6. GROUT: NON–SHRINNK, NON–METALLIC GROUT WITH MINIMUM STRENGTH AT 28 DAYS OF 50 MPa.

MASONRY NOTES:

1. ALL MASONRY WORK SHALL CONFORM TO CSA S304.1, A371 AND TO DETAILS SHOWN ON DRAWINGS.

2. MASONRY BLOCK UNITS SHALL CONFORM TO CSA A165. CLASSIFICATION H/15/C/M WITH A MINIMUM UNIT STRENGTH OF 15 MPa, UNLESS NOTED OTHERWISE. (COMPRESSIVE STRENGTH IS BASED ON LOST AREA)

3. ALL MORTAR SHALL CONFORM TO CSA A 179 AND SHALL BE TYPE 'S', MORTAR WITH MINIMUM STRENGTH OF 12 MPa AT 28 DAYS.

4. ALL LINTELS, BOND BEAMS, AND PILASTERS SHALL BE FILLED WITH CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 20 MPa.

5. PROVIDE DOWELS FROM CONCRETE BEAMS OR WALLS TO MATCH MASONRY REINFORCING.

MASONRY WALL REINFORCING NOTES:

1. REINFORCE 190 CONCRETE BLOCK WALLS WITH 15M AT 800 mm O.C. VERTICALLY IN 15 MPa GROUT FILLED CELLS. LOCATED REINFORCING IN CENTER OF WYTHE.

2. PROVIDE 15M VERTICAL REINFORCING BARS IN 15 MPa GROUT FILLED CELLS EACH SIDE OF OPENING AT CORNERS AND AT INTERSECTING WALLS.

3. PROVIDE DOWELS AT MATCH WALL VERTICALS. LOCATE IN SAME CELLS. EMBED DOWELS INTO CONCRETE STRUCTURE AND LAP WITH VERTICAL REINFORCING IN MASONRY WALLS.

4. PROVIDE 915 mm LAP FOR ANY SPLICED VERTICAL MASONRY WALL REINFORCING.

5. PROVIDE HORIZONTAL REINFORCING, 2 WIRE, TRUSS TYPE WITH W 1.7 SIDE RODS AND CROSS RODS. REINFORCING TO BE HOT DIPPED GALVANIZED. INSTALL HORIZONTAL REINFORCING AT 400 mm O.C. VERTICALLY.

STRUCTURAL STEEL NOTES:

1. FABRICATE AND ERECT STRUCTURAL STEEL TO CSA–S16.1.

2. PROVIDE STRUCTURAL STEEL SHAPES AND PLATES TO CSA–G40.21, GRADE 350W.

3. WELD TO CSA–W59 BY FABRICATORS CERTIFIED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA–W47.1, IN DIVISION 1 OR DIVISION 2.1.

4. STRUCTURAL PLATES TO CSA G40.21–04 GRADE 300W (MINIMUM)

MISCELLANEOUS METALS – ALUMINUM:

1. DESIGN, FABRICATION AN INSTALLATION IN ACCORDANCE WITH CSA S157–M83 (R2002)

2. PERFORM WELDING OF ALUMINUM IN ACCORDANCE WITH REQUIREMENTS OF CSA W59.2.

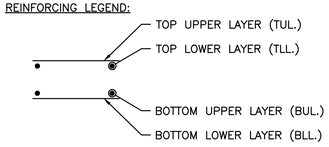
3. ALUMINUM: CONFORMING TO ALUMINUM ASSOCIATION ALLOY AND TEMPER DESIGNATION 6061–T6 OR 6351–T6.

4. BOLTS AND ANCHOR BOLTS: CONFORMING TO STAINLESS STEEL C/W ISOLATION WASHERS.

5. BITUMINOUS PAINT: TO CAN/CGSB–1.108.

6. ISOLATE ALUMINUM FROM FOLLOWING COMPONENTS, BY MEANS OF BITUMINOUS PAINT:
   - 6.1. DISSIMILAR METALS EXCEPT STAINLESS STEEL, ZINC, OR WHITE BRONZE OF SMALL AREA.
   - 6.2. CONCRETE, MORTAR AND MASONRY.

REINFORCING LEGEND:



REINFORCING STEEL NOTES:

1. DEFORMED BARS CONFORMING TO CSA–G30.18, GRADE 400.

2. REINFORCING WORK SHALL BE IN ACCORDANCE WITH CSA–23.1 AND CSA 23.3.

3. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE RSIC "REINFORCING STEEL MANUAL OF STANDARD PRACTICE".

4. REINFORCING TO BE CONTINUOUS UNLESS NOTED. LAP TOP BARS AT MIDSPAN, BOTTOM BARS AT SUPPORTS. MINIMUM LAP FOR 10M BARS TO BE 450. MINIMUM LAPS FOR OTHER BARS TO BE CLASS B SPLICES BUT NOT LESS THAN LAPS AS NOTED IN DRAWINGS:
   WHERE REINFORCEMENT LAPS ARE REQUIRED IN ADJACENT BARS, STAGGER LAPS MINIMUM 1200 UNLESS NOTED OTHERWISE.

5. PLACE NON–METALLIC REBAR CHAIR FOR SLAB REINFORCING NOT FURTHER THAN 1000 mm IN EITHER DIRECTION. SUPPLY SUPPORT BARS, CHAIRS AND CARRIERS AS NECESSARY.

6. DOWELS AND ANCHOR BOLTS SHALL BE SECURED IN POSITION BY MEANS OF TEMPLATES BEFORE CONCRETE IS CAST.

7. 90 DEGREE HOOKS AND 180 DEGREE HOOKS WHERE SHOWN SHALL BE DETAILED AS STANDARD HOOKS UNLESS NOTED OTHERWISE.

8. MINIMUM REINFORCING AROUND OPENING LARGER THAN 300 mm (IF NOT DETAILED) 1–15M EACH SIDE AND EACH FACE OF OPENING AND 1–15M DIAGONAL AT EACH CORNER, EXTENDED 600 mm PAST CORNERS BUT NOT LESS THAN AS NOTED ON DRAWINGS.

9. UNLESS SPECIFIED OTHERWISE HEREIN, TOLERANCES FOR REINFORCING STEEL REQUIREMENTS:
   - A) CONCRETE PROTECTION
     - SECTIONS < 300 — ± 6 mm
     - ALL OTHERS — ± 10 mm
   - B) LOCATION
     - SECTIONS < 300 — ± 8 mm
     - SECTIONS 300 TO 600 — ± 12 mm
     - ALL OTHERS — ± 20 mm
   - C) LOCATION OF BAR ENDS — ± 50 mm

EXCAVATION, BACKFILLING AND COMPACTION NOTES:

1. EXCAVATE TO LINES AND LEVELS NECESSARY TO PROPERLY COMPLETE THE WORK. MINIMUM SIDE SLOPES OF TEMPORARY EXCAVATIONS SHALL COMPLY WITH EXCAVATION AND TRENCHING REGULATIONS OF PROVINCIAL AUTHORITIES.

CONTROL EXCAVATION TO ENSURE BOTTOM OF EXCAVATION DOES NOT SOFTEN DUE TO EXCESS MOISTURE. CONSTRUCT SLOPES IN BOTTOM OF EXCAVATION FOR DRAINAGE AS REQUIRED.

2. THE CONTRACTOR SHALL PROVIDE SHORING DURING EXCAVATION AS REQUIRED AND ALSO STATED ON DRAWINGS.

3. EXCAVATION BETWEEN PILES SHALL BE DONE WITH SUITABLE EQUIPMENT AND CARE SO AS NOT TO DAMAGE PILES.

4. PROVIDE BACKFILL AS FOLLOWS:

UNDER SLABS ON GRADE (MIN 200 mm THICK)
– COMPACT NATIVE SOIL SUBGRADE TO 95% STANDARD PROCTOR.

AGAINST PERIMETER BEAMS/WALL (OUTSIDE)
– TO WITHIN 300 mm OF FINISHED GRADE:
SUITABLE EXCAVATED MATERIAL COMPACTED TO 95% STANDARD PROCTOR
– TO FINISHED GRADE:
TYPE 2 MATERIAL TO UNDERSIDE CONCRETE SLABS, TOPSOIL AT UNPAVED AREAS

5. ALL BACKFILL AT WALLS TO BE PLACED IN 150 mm LIFTS. BACKFILL UNDER STRUCTURAL SLABS MAY BE PLACED IN 200 mm LIFTS

CAST–IN–PLACE PILING NOTES:

1. ALL PILE CONSTRUCTION TO BE IN ACCORDANCE WITH THE INFORMATION PROVIDED ON THE DRAWINGS INCLUDING TEST HOLES PROVIDED ON SMITH CARTER DRAWING S16 (INCLUDED).

2. PILE DESIGN PARAMETERS:

   2.1. DESIGN SKIN FRICTION
   11.1 kPa ALLOWABLE SKIN FRICTION
   14.0 kPa FACTORED RESISTANCE SKIN FRICTION

   2.2. DESIGN PILES FOR MINIMUM BENDING MOMENT OF 0.07 X THE SPECIFIED VERTICAL LOAD.

   2.3. MINIMUM PILE LENGTH IS AS PROVIDED ON THE DRAWINGS.

3. CENTER PILES UNDER WALLS OR COLUMNS UNLESS SHOWN OTHERWISE.
   TOLERANCES:
   - OUT OF POSITION — 50 mm
   - OUT OF PLUMB — 2% OF PILE LENGTH
   - CUT–OFF ELEVATION — ± 25 mm

4. PROVIDE CASING AT ALL TIMES ON SITE AND USE IF REQUIRED DUE TO WATER AND SLOUGHING SOILS.

5. CONTRACT ADMINISTRATOR SHALL INSPECT PILE EXCAVATION PRIOR TO PLACING REINFORCING CAGE AND CONCRETE. REMOVE LOOSE MATERIAL, FOREIGN MATTER, AND WATER AS DIRECTED BY CONTRACT ADMINISTRATOR.

6. ALL PILES TO BE REINFORCED AS INDICATED ON DRAWINGS, REINFORCING STEEL TO CAN.CSA–G30.18–M92 GRADE 400. REINFORCING TO BE CONTINUOUS UNLESS NOTED OTHERWISE. MINIMUM LAPS TO BE CLASS B TENSION SPLICES.

7. PILE DOWELS SHALL NOT DEVIATE MORE THAN 50 mm OFF CENTER FROM TRUE LOCATION.

8. INCREASE OR DECREASE THE LENGTH OF THE REINFORCING CAGE AS REQUIRED BY SPLICING OR CUTTING REBAR AT THE BASE OF THE REINFORCING CAGE ONLY. SPLICE 100% OF VERTICAL PILE REINFORCING USING CLASS B TENSION SPLICES. ADD 10M TIES AS REQUIRED TO MAINTAIN REINFORCING ALIGNMENT. PILE SHAFT EXTENSIONS LESS THAN 0.5 m DO NOT REQUIRE LENGTHENING THE REINFORCING CAGE.

9. CONCRETING OPERATIONS TO PROCEED WITHIN 3 HOURS OF EXCAVATION OR IMMEDIATELY IF GROUNDWATER EXISTS, USE TREMIE PIPE FOR PLACEMENT OF CONCRETE UNDERWATER WHEN PILE SHAFT CANNOT BE KEPT FREE FROM GROUNDWATER.

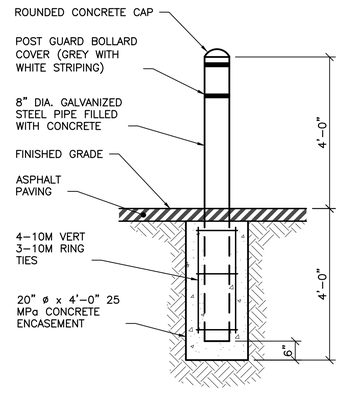
10. CASTING OF ALL PILES SHALL BE CONTINUOUS. CONSTRUCTION JOINTS IN PILES SHALL NOT BE ALLOWED.

11. PILE CONCRETE SHALL BE AS PROVIDED IN TABLE 1.

LINTEL SCHEDULE

MARK	OPENING WIDTH (mm)	MATERIAL	ARRANGEMENT	NOTES
L1	16"–96"	W 200 x 15 + 190 x 10 THK. PLATE		PROVIDE A MINIMUM END BEARING OF 150 mm EACH END ON 2 COURSES. SOLID FILL FOR SPANS UP TO 1050 mm AND MINIMUM BEARING OF 200 mm EACH END ON 2 COURSES SOLID FILLED BLOCK FOR SPANS BETWEEN 1050 mm AND 2440 mm.
L2	16"	2 – L 125 x 90 x 6		WELD 190 WIDE PLATE TO UNDERSIDE OF LINTEL WITH 5 mm CONTINUOUS FILLET WELDS EACH SIDE OF BOTTOM FLANGE.

CONCRETE LOCATION	MAX. AGG. SIZE (mm)	28 DAY STRENGTH (MPa)	EXPOSURE CLASS	AIR CONTENT (%)	CEMENT TYPE	SLUMP (mm)
CAST–IN–PLACE PILES	20	30	S–1	4–7	HS	80 ± 30
CRAWL SPACE SLAB	20	35	N	0	GU	80 ± 30
EXTERIOR WALLS AND FOUNDATION	20	35	N	0	GU	80 ± 30
INTERIOR STRUCTURAL SLAB AND BEAMS	20	35	N	0	GU	80 ± 30
HOUSEKEEPING PADS	20	30	N	0	GU	80 ± 30
MASONRY FILL	10–14	20	N	0	GU	80 ± 30



X/X BOLLARD DETAIL (TYP.)
1/2" = 1'-0"

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PROVINCE OF MANITOBA — R. B. ERIC — Member 22665 — REGISTERED PROFESSIONAL ENGINEER — Nov 20, 2013

APEGM Certificate of Authorization — Dillon Consulting Limited (MB) — No. 1789 — Date: 2013–11–20

DILLON CONSULTING

No.	ISSUED FOR	DATE	BY
0	ISSUED FOR BID OPPORTUNITY NUMBER 850-2013	13-11-20	RE

DESIGN: BWD — REVIEWED BY: RE
DRAWN: JZH — CHECKED BY: CGC
DATE: AUGUST 2013
SCALE: AS NOTED

PAN AM POOL ELECTRICAL UPGRADE

STRUCTURAL GENERAL NOTES

PROJECT NO. 137300

SHEET NO. S1