

**A. GENERAL NOTES**

- THIS STRUCTURE IS DESIGNED IN ACCORDANCE WITH, AND SHALL BE CONSTRUCTED IN COMPLIANCE WITH THE NATIONAL BUILDING CODE OF CANADA 2005, ACI 350 AND ALL APPLICABLE LOCAL BYLAWS.
  - DO NOT SCALE DRAWINGS.
  - ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED PRIOR TO COMMENCING CONSTRUCTION. DISCREPANCIES OR AMBIGUITIES ON THE DRAWINGS AND/OR THE SITE, SHALL BE REPORTED TO THE DESIGN ENGINEER.
  - MODIFICATIONS, ALTERATIONS OR SUBSTITUTIONS MUST BE AUTHORIZED IN WRITING BY THE DESIGN ENGINEER.
  - LOCATE ALL EXISTING SITE SERVICES PRIOR TO CONSTRUCTION.
  - FOR OPENINGS IN SLAB, FLOOR, WALLS, ROOF, ETC. REFER TO ARCHITECTURAL, MECHANICAL, AND/OR OTHER PERTINENT DRAWINGS.
  - LOCATION OF CONSTRUCTION JOINTS IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR BUT APPROVAL MUST BE OBTAINED FROM THE ENGINEER BEFORE PROCEEDING.
  - 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. PROCEDURE MUST BE APPROVED BY THE DESIGN ENGINEER.
  - CONSTRUCTION SAFETY REQUIREMENTS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
  - THE GENERAL CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER AT LEAST 72 HOURS PRIOR TO ALL CONCRETE POURS TO ALLOW FOR SITE INSPECTIONS.
  - ANY DEFECTIVE OR UNACCEPTABLE WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AND THE OWNER AT NO COST TO THE OWNER OR ENGINEER.
  - DESIGN LOAD
    - WIND -  $q (1/50) = 0.45 \text{ kN/m}^2$
    - WIND LOAD IMPORTANCE FACTOR  $I_w = 1.25$
    - SNOW -  $S_s = 1.9 \text{ kN/m}^2$
    - $S_r = 0.2 \text{ kN/m}^2$
    - SNOW LOAD IMPORTANCE FACTOR  $I_s = 1.25$
  - WATERPROOFING/ DAMPPROOFING
    - A DAMPPROOFING AGENT (AS SPECIFIED IN THE SPECIFICATIONS) SHALL BE APPLIED TO ALL EXTERIOR UNDERGROUND WALLS AT FULL HEIGHT.
    - THE INTERIOR TANK WALLS, TOP OF TANK BASE SLAB AND UNDERSIDE OF TANK ROOF SLAB SHALL BE WATERPROOFED WITH XYPEX WATERPROOFING
- B. EXCAVATION AND BACKFILLING**
- RAFT FOUNDATION IS DESIGNED BASED ON AN ALLOWABLE BEARING OF 100kPa AS PER GEOTECHNICAL REPORT DATED, DECEMBER 21, 2009. PREPARED BY THE NATIONAL TESTING LABORATORIES LIMITED.
  - DEWATER SITE PRIOR TO, AND DURING CONSTRUCTION SEE GEOTECHNICAL REPORT.
  - REMOVE ALL TOPSOIL, ORGANIC MATERIAL AND LOOSE OR UNSUITABLE FILL TO THE APPROVAL OF THE GEOTECHNICAL ENGINEER.
  - PROVIDE BACKFILL MATERIAL AS NOTED IN SPECIFICATIONS.
  - PLACE A MINIMUM OF 75mm THICK LEAN MIX CONCRETE IN BOTTOM OF FOUNDATION SLAB.
  - CONSTRUCTION EQUIPMENT SHOULD NOT TRAVEL DIRECTLY ON THE FOUNDATION BEARING SURFACE. USE FLAT BUCKET EXCAVATION AT THE FOUNDATION LEVEL. TAKE MEASURES TO PREVENT CHANGES IN SOIL MOISTURE CONTENT AT THE FOUNDATION BEARING SURFACE.
  - PROVIDE BACKFILL AS FOLLOWS:
    - UNDER SLABS ON GRADE (MIN 200mm THICK)
    - COMPACT NATIVE SOIL SUBGRADE TO 98% STANDARD PROCTOR.

**AGAINST PERIMETER BEAMS/WALL (OUTSIDE)**

- TO WITHIN 300MM 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
- ALL BACKFILL AT WALLS TO BE PLACED IN 150MM LIFTS. BACKFILL UNDER STRUCTURAL SLABS MAY BE PLACED IN 200 MM LIFTS.
  - SUBMIT AN EXCAVATION AND SHORING PLAN PREPARED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN MANITOBA.
- C. REINFORCING STEEL**
- REINFORCING STEEL SHALL BE NEW BILLET, DEFORMED BARS IN ACCORDANCE WITH CSA STANDARDS G30.18 MINIMUM YIELD STRENGTH TO BE 400 MPa, EXCEPT 10M STIRRUPS MAY BE 300 MPa.
  - REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE LATEST A.C.I. DETAILING MANUAL.
- COVER TO REINFORCING STEEL:**
- |                                     |      |
|-------------------------------------|------|
| UNDERSIDE OF BEAMS                  | 50mm |
| TOPS AND SIDES OF BEAMS (DRY)       | 40mm |
| TOPS AND SIDES OF BEAMS (WET)       | 50mm |
| WALLS                               | 50mm |
| UNDERSIDE OF STRUCTURAL SLABS (DRY) | 25mm |
| UNDERSIDE OF STRUCTURAL SLABS (WET) | 50mm |
| TOP OF STRUCTURAL SLABS (DRY)       | 25mm |
| SLAB ON GRADE - TOP & BOTTOM        | 50mm |
- LAP TOP BARS AT CENTRE SPAN AND BOTTOM BARS OVER SUPPORTS, UNLESS NOTED OTHERWISE.
  - 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.
  - REINFORCING IN CONCRETE BEAMS/WALLS TO BE BENT 600 mm AROUND CORNERS OR USE 1000 x 1000 CORNER BARS, UNLESS NOTED OTHERWISE.
  - FRAME ALL OPENINGS IN CONCRETE, BEAMS, WALLS AND/OR SLABS WITH 2-20M BARS (EXTRA) EACH FACE, EACH SIDE, TOTAL 16. EXTEND BARS 600 mm BEYOND EDGES OF OPENING EXCEPT AS NOTED.
  - SUBMIT SHOP DRAWINGS WHICH CLEARLY INDICATE BAR SIZES, GRADE, SPACING, HOOKS, BENDS, AND SUPPORTING/SPACING DEVICES, ETC. FOR REVIEW TO THE DESIGN ENGINEER PRIOR TO FABRICATION OF THE REINFORCING STEEL.
  - HOUSEKEEPING PADS SHALL BE A MINIMUM OF 100 mm THICK AND REINFORCED WITH 10M @ 300 O/C EACH WAY AT CENTRE UNLESS OTHERWISE SHOWN. PROVIDE HATCHING DOWELS ALONG THE PERIMETER EMBEDDED MIN 125mm INTO CONCRETE SLAB.
  - PRIOR TO PLACING CONCRETE, ENSURE THAT ALL REINFORCING STEEL IS CLEAN, FREE OF LOOSE SCALE, RUST, MUD, OIL OR OTHER FOREIGN MATERIAL WHICH WOULD REDUCE BOND.
  - HEATING, QUENCHING AND BENDING OF REINFORCING STEEL ON THE SITE IS NOT ALLOWED.
  - WHERE NO SPLICE OR SPLICE TYPE IS INDICATED ON THESE DRAWINGS IT SHALL BE A TENSION SPLICE EXCEPT FOR COLUMNS WHICH SHALL BE A COMPRESSION SPLICE (UNLESS DETAILED OTHERWISE). SEE TABLE C.1
  - WHERE NO EMBEDMENT OR EMBEDMENT TYPE IS INDICATED ON THESE DRAWINGS IT SHALL BE A TENSION EMBEDMENT EXCEPT FOR COLUMNS WHICH SHALL BE A COMPRESSION EMBEDMENT. SEE TABLE C.2
- D. CAST-IN-PLACE CONCRETE**
- ALL CONCRETE WORK SHALL CONFORM TO CSA STANDARD A23.1 AND A23.2 (LATEST).
  - PROPORTION NORMAL DENSITY CONCRETE IN ACCORDANCE WITH CAN3-A23.1 (LATEST) TO GIVE

- THE FOLLOWING PROPERTIES:
- THE USE OF ANY ADDITIVES WITHIN THE CONCRETE MIX SHALL BE APPROVED BY THE C.A. PRIOR TO CONSTRUCTION.
  - VIBRATE ALL CONCRETE WORK WITH APPROPRIATE INTERNAL VIBRATORS.
  - CONCRETE WORKING TIME, FROM BATCHING TO PLACEMENT AND CONSOLIDATION, SHALL NOT EXCEED 1-1/2 HOURS.
  - CURE CONCRETE IN ACCORDANCE WITH CSA STANDARD A23.1
  - PROVIDE HOT AND COLD WEATHER CONCRETING IN ACCORDANCE WITH CSA STANDARD A23.1.
  - CONCRETE TESTING BE PERFORMED BY AN INDEPENDENT TESTING COMPANY. THREE CONCRETE TEST CYLINDERS AND ONE SLUMP TEST SHALL BE TAKEN FOR EVERY 50 (OR LESS) CUBIC METERS, OR EACH DAY CONCRETE IS PLACED, WHICHEVER IS GREATER. TESTING SHALL BE PERFORMED IN ACCORDANCE WITH CSA STANDARD A23.2 (LATEST), AND THE RESULTS SHALL BE FORWARDED TO THE DESIGN ENGINEER.
  - "VOID FORMS", AS DETAILED ON THE DRAWINGS SHALL BE CARDBOARD FORMS (MIN 150mm THICK) UNLESS OTHERWISE SPECIFIED.
  - PROVIDE DAMPPROOFING TO UNDERGROUND STRUCTURES AS PER SPECIFICATION 07 13 52.
  - PROVIDE WATERPROOFING TO THE INSIDE FACE OF TANK FLOOR AND SIDEWALLS AS PER SPECIFICATION SECTION 07 16 16.
- E. STRUCTURAL STEEL**
- STRUCTURAL STEEL SHALL CONFORM TO CSA STANDARD G40.21-350W AND G40.21-350W FOR H.S.S. CLASS "C".
  - ALL STRUCTURAL STEEL CONNECTIONS SHALL BE IN ACCORDANCE WITH CSA G40.21 GRADE 300W.
  - FABRICATION AND ERECTION SHALL CONFORM TO CSA STANDARD S16 (LATEST).
  - ALL WELDING SHALL BE PERFORMED BY QUALIFIED WELDERS FULLY APPROVED FOR STRUCTURAL WELDING BY THE CANADIAN WELDING BUREAU IN ACCORDANCE WITH CSA SPECIFICATIONS W47 AND W59.
  - SPLICING OF MEMBERS NOT PERMITTED UNLESS OTHERWISE NOTED.
  - ALL MEMBERS AND CONNECTIONS SHALL BE GALVANIZED AS PER CSA G164-M92.
  - SUPPLY AND INSTALL ALL TEMPORARY GUYING AND BRACING NECESSARY TO PROVIDE STABILITY FOR THE STRUCTURE AS A WHOLE. THESE SHALL REMAIN IN PLACE UNTIL PERMANENT BRACING IS INSTALLED.
  - MAINTAIN BURIED SERVICES IN THE UNDISTURBED STATE.
  - STRUCTURAL STEEL SUPPLIER SHALL SUBMIT SHOP DRAWINGS, SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA SHOWING ALL DESIGN AND FABRICATION DETAILS OF CONNECTIONS TO THE ENGINEER FOR REVIEW PRIOR TO START OF FABRICATION.
  - THE CONTRACTOR SHALL MAINTAIN EXISTING BURIED SERVICES IN AN UNDISTURBED STATE - DESIGN ENGINEER TO REVIEW AND PROVIDE THE NECESSARY REQUIREMENTS.
- F. MASONRY**
- MASONRY CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH CSA STANDARD CAN3-A371, UNLESS NOTED.
  - CONCRETE BLOCKS SHALL CONFORM TO CSA A165.1.
  - MORTAR SHALL CONFORM TO CSA A179M (TYPE S), 13 MPa @ 28 DAYS.
  - INSTALL NO. 9 A.S.W.G. "DUR-O-WALL" TRUSS TYPE JOINT REINFORCING OR EQUIVALENT WITHIN EVERY SECOND MORTAR JOINT (400 O/S MAX.) UNLESS NOTED.

- PROVIDE CLEAN-OUTS AT BOTTOM OF ALL FILLED CORES. REMOVE ALL MORTAR FLASH AND DEBRIS FROM WITHIN CORE PRIOR TO FILLING.
- PROVIDE MATCHING DOWELS EXTENDING FROM CONCRETE FOUNDATION INTO MASONRY WALLS AT ALL REINFORCED CORES.
- ALL REINFORCED CORES AND BLOCK COURSES SHALL BE FILLED WITH CONCRETE. VIBRATE WITH AN INTERNAL "PENCIL" TYPE VIBRATOR.
- CONCRETE LIFTS SHALL NOT EXCEED 2400 MM.
- LAP ALL REINFORCING 600 MM MINIMUM UNLESS NOTED. DETAIL TO SUIT CONCRETE LIFT CRITERIA WHERE APPLICABLE.
- WHERE MASONRY, CONCRETE OR STEEL LINTELS BEAR ON A MASONRY WALL, FILL TWO COURSES (400 MIN.) BELOW AND TWO CORES (400 MIN.) WIDE WITH CONCRETE UNLESS SHOWN OTHERWISE.
- FILL ONE CORE EACH SIDE OF WALL OPENINGS WITH CONCRETE AND REINFORCE 1-15M VERTICAL (FULL HEIGHT), TYPICAL UNLESS SHOWN OTHERWISE. EXTEND VERTICAL REINFORCING INTO LINTEL.
- BOND BEAMS SHALL BE A 200 DEEP U-BLOCK, FILLED WITH 20 MPa CONCRETE AND REINFORCED WITH 2-15M CONTINUOUS, TYPICAL UNLESS SHOWN OTHERWISE. PROVIDE A CONTINUOUS BOND BEAM AT THE TOP COURSE OF ALL WALLS UNLESS SHOWN OTHERWISE.
- CONTROL JOINT SPACING TO BE 7000 MM (MAXIMUM) ALONG EXTERIOR WALLS AND 9000 MM (MAXIMUM) ALONG INTERIOR WALLS.
- INTERLOCK ALL WALL INTERSECTIONS OR PROVIDE MECHANICAL TIES @ 400 O/C UNLESS NOTED.
- FILL CORES WITH CONCRETE WHERE REQUIRED TO SUPPORT EMBEDDED OR DRILLED ANCHORS, INSERTS, SERVICES, ETC.
- TEMPORARY BRACING SHALL BE PROVIDED FOR ALL WALLS UNTIL STRUCTURE IS CLOSED IN, AND PERMANENT SUPPORT IS PROVIDED. SUBMIT BRACING DETAILS UNDER THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA, TO THE DESIGN ENGINEER PRIOR TO THE START OF CONSTRUCTION.
- MORTAR TESTS SHALL BE TAKEN IN ACCORDANCE WITH CSA STANDARD A304 AND A COPY OF RESULTS SHALL BE SUBMITTED TO THE DESIGN ENGINEER.
- COLD-WEATHER REQUIREMENTS IN ACCORDANCE WITH THE NATIONAL BUILDING CODE OF CANADA (LATEST) SHALL BE IMPLEMENTED WHEN NECESSARY. NO "TORCHING TECHNIQUES" OR MORTAR ADMIXTURES SHALL BE ALLOWED.
- CAVITY WALL BRICK TIES - PROVIDE TIES AS MANUFACTURED BY FERRO HOLDINGS LTD. OR APPROVED EQUAL. MAXIMUM SPACING OF 600 MM VERTICALLY AND 800 MM HORIZONTALLY. U.N.O.
- PROVIDE CONCRETE FILLED MASONRY LINTEL BLOCKS FOR OPENINGS IN NON-BEARING WALLS AS FOLLOWS UNLESS OTHERWISE INDICATED:
  - OPENINGS UP TO 1200 - 200 DEEP LINTEL BLOCK 2-15M.
  - OPENINGS UP TO 2400 - 400 DEEP LINTEL BLOCK 4-15M-2T&2B.
  - OPENINGS UP TO 3600 - 600 DEEP LINTEL BLOCK 4-15M-2T&2B.

- G. WATERPROOFING**
- PROVIDE CRYSTALLINE WATERPROOFING TO ALL INTERIOR FACES OF HOLDING TANK WALLS AND FLOORS.

TABLE D.1

CONTROLLED CONCRETE

| CONCRETE LOCATION              | MAX. AGG. SIZE | 28 DAY STRENGTH | EXPOSURE CLASS | AIR CONTENT | CEMENT TYPE | SLUMP |
|--------------------------------|----------------|-----------------|----------------|-------------|-------------|-------|
| INTERIOR STRUCTURAL SLABS      | 20 mm          | 30 MPa          | N              | 0%          | GU          | 80±30 |
| EXTERIOR SLABS ON GRADE        | 20 mm          | 30 MPa          | S-1            | 4 - 7%      | HS          | 80±30 |
| WALLS & FOUNDATIONS            | 20 mm          | 35 MPa          | S-1            | 4 - 7%      | HS          | 80±30 |
| LEAN CONCRETE BELOW FOUNDATION | 20 mm          | 15 MPa          | S-1            | 4 - 7%      | HS          | 80±30 |
| FLOOR OVER TANK                | 20 mm          | 35 MPa          | S-1            | 4 - 7%      | HS          | 80±30 |
| BENCHING                       | 20 mm          | 30 MPa          | A-3            | 5 - 8%      | GU          | 80±30 |
| MASONRY FILL                   | 10-14 mm       | 20 MPa          | N              | 0%          | GU          | 80±30 |

SLAB REINFORCEMENT SCHEDULE

| MARK | THICKNESS | DESCRIPTION/ ASSEMBLY | REINFORCEMENT   |           | DIRECTION | T/O SLAB ELEVATION |
|------|-----------|-----------------------|---|-----------|-----------|--------------------|
|      |           |                       | REINFORCEMENT   | DIRECTION |           |                    |
| S1   | 350       | TWO WAY               | 20M @ 250 o/c TUL, BLL<br>20M @ 300 o/c TLL, BUL  | SEE BELOW | SEE PLAN  |                    |
| S2   | 350       | ONE WAY               | 20M @ 250 o/c TUL, BLL<br>15M @ 300 o/c TLL, BUL  | SEE BELOW | SEE PLAN  |                    |
| S3   | 250       | TWO WAY               | 15M @ 200 o/c TUL, BLL<br>15M @ 300 o/c TLL, BUL  | SEE BELOW | SEE PLAN  |                    |
| S4   | 250       | TWO WAY               | 20M @ 200 o/c TUL, BLL<br>15M @ 300 o/c TLL, BUL<br>20M @ 200 o/c TOP DOWELS FROM WALL ALL AROUND | SEE BELOW | SEE PLAN  |                    |
| S5   | 200       | ONE WAY               | 15M @ 300 o/c TUL, BLL<br>15M @ 400 o/c TLL, BUL  | SEE BELOW | SEE PLAN  |                    |

SLAB REINFORCEMENT NOTES:

NOTE 1. REFER TO DRAWINGS FOR ALL SLOPES AND ALL EXTERIOR ENTRANCE SLAB SIZES AND LOCATIONS

BAR PLACING ORDER:

|                                      |                          |
|--------------------------------------|--------------------------|
| MAIN REINF = ARROW DIRECTION ON PLAN | TOP UPPER LAYER (TUL)    |
|                                      | BOTTOM LOWER LAYER (BLL) |
| TRANSVERSE REINF                     | TOP LOWER LAYER (TLL)    |
|                                      | BOTTOM UPPER LAYER (BUL) |

TABLE C.1

READ IN CONJUNCTION WITH DESIGN NOTES SECTION C. STEEL REINFORCING

REINFORCEMENT SPLICES (UNLESS NOTED OTHERWISE)

| BAR DESIGNATION | REINFORCEMENT NT GRADE (MPa) | COMPRESSION SPLICE | REGULAR TENSION SPLICE (CLASS B) (BASED ON CONCRETE STRENGTH MPa) (SEE NOTE 1) |        |        |        |        |
|-----------------|------------------------------|--------------------|--|--------|--------|--------|--------|
|                 |                              |                    | 20 MPa   | 25 MPa | 30 MPa | 35 MPa | 40 MPa |
|                 |                              |                    | 10M  | 400    | 330    | 490    | 430    |
| 15M             | 400                          | 470                | 690  | 610    | 570    | 520    | 480    |
| 20M             | 400                          | 570                | 840  | 740    | 690    | 640    | 590    |
| 25M             | 400                          | 740                | 1350   | 1180   | 1090   | 1020   | 950    |
| 30M             | 400                          | 880                | 1600   | 1400   | 1290   | 1210   | 1130   |
| 35M             | 400                          | 1050               | 1910   | 1680   | 1540   | 1440   | 1350   |

NOTE 1: TOP BAR TENSION SPLICES ARE 1.3 TIMES REGULAR SPLICES. TOP SPLICE LENGTHS APPLY TO HORIZONTAL REINFORCEMENT CAST WITHIN 300 mm OR MORE OF CONCRETE BELOW THE BAR.

NOTE 2: FOR EPOXY REINFORCEMENT INCREASE THESE LENGTHS BY 1.5. INCREASE THESE LENGTHS BY 1.7 FOR EPOXY COATED TOP REINFORCEMENT.

TABLE C.2

READ IN CONJUNCTION WITH DESIGN NOTES SECTION C. STEEL REINFORCING

EMBEDMENT OF DOWELS

| BAR DESIGNATION | REINFORCEMENT GRADE (MPa) | COMPRESSION EMBEDMENT (BASED ON CONCRETE STRENGTH MPa) |        |                 |        | REGULAR TENSION EMBEDMENT (BASED ON CONCRETE STRENGTH MPa) (SEE NOTE 1) |        |        |        |
|-----------------|---------------------------|--|--------|-----------------|--------|---|--------|--------|--------|
|                 |                           | 20 MPa   | 25 MPa | 30 MPa AND OVER | 20 MPa | 25 MPa  | 30 MPa | 35 MPa | 40 MPa |
|                 |                           | 10M  | 400    | 250             | 225    | 200   | 325    | 300    | 300    |
| 15M             | 400                       | 350  | 300    | 275             | 490    | 440   | 400    | 380    | 380    |
| 20M             | 400                       | 430  | 385    | 350             | 650    | 580   | 530    | 490    | 450    |
| 25M             | 400                       | 540  | 480    | 440             | 1010   | 900   | 825    | 760    | 710    |
| 30M             | 400                       | 645  | 580    | 530             | 1210   | 1080  | 990    | 910    | 840    |
| 35M             | 400                       | 760  | 680    | 620             | 1690   | 1520  | 1400   | 1270   | 1200   |

NOTE 1: TOP EMBEDMENT VALUES ARE 1.3 TIMES REGULAR EMBEDMENT VALUES. TOP EMBEDMENT APPLIES TO HORIZONTAL REINFORCEMENT CAST WITHIN 300 mm OR MORE OF CONCRETE BELOW THE BAR.

NOTE 2: FOR EPOXY REINFORCEMENT INCREASE THESE LENGTHS BY 1.5. INCREASE THESE LENGTHS BY 1.7 FOR EPOXY COATED TOP REINFORCEMENT.

CONC WALL REINF SCHEDULE

| MARK | WALL THICKNESS (mm) | REINFORCEMENT (UNLESS NOTED OTHERWISE)  |
|------|---------------------|---|
| W1   | 300                 | 20M VERT. BARS @ 200 o/c EF<br>20M HORIZ. BARS @ 200 o/c IF, (@ BOTTOM 3 METERS)<br>20M HORIZ. BARS @ 300 o/c IF, (@ REMAINING TOP)<br>15M HORIZ. BARS @ 300 o/c OF, (@ WHOLE HEIGHT) |
| W2   | 300                 | 20M VERT. @ 300 o/c EF + MATCHING DOWELS AT BOTTOM OF WALL<br>15M HORIZ. @ 300 o/c EF + 20M CORNER BARS @ 300 o/c EF.   |
| W3   | 300                 | 15M VERT. @ 300 o/c EF<br>15M HORIZ. @ 300 o/c EF   |

NOTES:

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METRIC  
WHOLE NUMBERS INDICATE MILLIMETRES  
DECIMALIZED NUMBERS INDICATE METRES

**APEGM**  
Certificate of Authorization  
Stantec Consulting Ltd.  
No. 1301 Date: \_\_\_\_\_

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE DATE \_\_\_\_\_

NOTE:  
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

|     |                   |          |    |
|-----|-------------------|----------|----|
| A   | ISSUED FOR TENDER | 10.02.16 | WO |
| NO. | REVISIONS         | DATE     | BY |

**Stantec Consulting Ltd.**  
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|                      |                                  |
|----------------------|----------------------------------|
| DESIGNED BY: M.H.    | CHECKED BY: T.D.                 |
| DRAWN BY: L.L.       | APPROVED BY: M.H.                |
| HOR. SCALE: AS NOTED | RELEASED FOR CONSTRUCTION: _____ |
| VERTICAL: _____      | DATE: 09.11.23                   |

ENGINEER'S SEAL

**THE CITY OF WINNIPEG**  
WATER AND WASTE DEPARTMENT

**Winnipeg**

**NORTH END WATER POLLUTION CONTROL CENTRE**  
HAULED WASTEWATER RECEIVING FACILITIES  
HAULED WASTEWATER BUILDING  
GENERAL NOTES AND SCHEDULES

|                                 |  |                 |
|---------------------------------|--|-----------------|
| BID OPPORTUNITY NO.<br>822-2009 | CITY DRAWING NUMBER<br>1-0101A-S0001-001 | SHEET OF<br>1 4 |
|---------------------------------|--|-----------------|