A1 SIZE - 594mm x 847mm

NOTES:

GENERAL

1. THE CONTRACTOR SHALL READ STRUCTURAL DRAWINGS IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL DRAWINGS, SPECIFICATIONS, AND OTHER CONTRACT DOCUMENTS.
2. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO COMMENCING WITH CONSTRUCTION WORK.
3. TEMPORARY SUPPORT AND BRACING FOR CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR U.N.O. ON DRAWING.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING AND PROTECTION OF THE EXISTING FACILITIES AND UTILITIES WHICH MAY BE AFFECTED BY THE WORK OF THIS CONTRACT.
5. ALL WORK SHALL CONFORM TO THE MANITOBA BUILDING CODE 2011 AND THE ASSOCIATED NATIONAL BUILDING CODE.
6. DO NOT CONSTRUCT FROM THESE DRAWINGS UNLESS MARKED "ISSUED FOR CONSTRUCTION".
7. DO NOT SCALE FROM THE DRAWINGS.

DESIGN LOAD

CLIMATIC DATA WINNIPEG, MANITOBA
LOADING CRITERIA

| | | | |
|---|---|---|---|
| IMPORTANCE CATEGORY | | | POST-DISASTER |
| SNOW | Ss | = | 1.9 kPa, |
| | Sr | = | 0.2 kPa |
| WIND | q 1/50 | = | 0.45 kPa |
| ONE DAY RAIN | | | 108 mm |
| SEISMIC | $S_a$ (0.2) | | 0.054 |
| | $S_a$ (0.5) | | 0.032 |
| | $S_a$ (1.0) | | 0.016 |
| | $S_a$ (2.0) | | 0.0066 |
| | $S_a$ (5.0) | | 0.0013 |
| | $S_a$ (10.0) | | 0.0007 |
| | PGA | | 0.032 |
| | PGV | | 0.021 |

DEAD LOAD
1st FLOOR 4.8 kPa
ROOF 1.0 kPa
LIVE LOAD
1st FLOOR 4.8 kPa
ROOF 0.5 kPa

SITE REVIEW AND SHOP DRAWING REVIEW

1. PREPARE AND SUBMIT ALL REQUIRED SHOP DRAWINGS FOR REVIEW 7 DAYS PRIOR TO FABRICATION.
2. THE REVIEW IS ONLY FOR THE WORK SHOWN ON THE DRAWINGS AND IS TO ASCERTAIN THAT THE WORK IS IN GENERAL CONFORMANCE WITH THE DRAWINGS.
3. THE REVIEW DOES NOT RELIEVE THE CONTRACTOR RESPONSIBILITY TO PERFORM THE WORK IN CONFORMANCE WITH THE CONTRACT DOCUMENTS.

DEMOLITION

1. PROVIDE TEMPORARY SHORING TO UNDRGROUND CONCRETE WALL AS PER DRAWING PRIOR TO DEMOLITION
2. PROVIDE TEMPORARY SUPPORTING STRUCTURES AND SHORING SYSTEMS, WHERE REQUIRED AND NOT SHOWN ON DRAWINGS, DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF MANITOBA.
3. PREVENT MOVEMENT, SETTLEMENT OR DAMAGE OF ADJACENT STRUCTURES, SERVICES, AND PART OF EXISTING BUILDING TO REMAIN.
4. IF SAFETY OF BUILDING BEING DEMOLISHED OR ADJACENT STRUCTURES OR SERVICES APPEARS TO BE ENDANGERED, CEASE OPERATIONS AND NOTIFY THE CONTRACT ADMINISTRATOR IMMEDIATELY.
5. RELOCATE ELECTRICAL SUPPLY TO PUMPING STATION TO ALLOW CONTINUOUS OPERATION OF PUMPING STATION DURING DEMOLITION.

CAST-IN-PLACE CONCRETE

1. CONC. MATERIAL, QUALITY, MIXING, PLACING, FORMWORK, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CSA A23.1/A23.2.
2. ALL CONC. SHALL BE NORMAL WEIGHT CONC.
3. ADMIXTURES CONTAINING CALCIUM CHLORIDE ARE NOT PERMITTED.
4. CONC. STRENGTH AND MIX SPECIFICATIONS ARE AS FOLLOWS:

| EXP. CLASS | SUPPLY AND USE | W/C RATIO | STRENGTH | CEMENT TYPE | SLUMP | MAX. AGG. SIZE | AIR ENTRAINMENT | MAX. FLY ASH CONTENT |
|---|---|---|---|---|---|---|---|---|
| C1 | CONCRETE REPAIR & HOUSEKEEPING PADS | 0.4 | 35 MPa @ 28 DAYS | GU | 110mm +/- 25 | 19 mm | 5-8% | 25% |

5. DO NOT ADD WATER TO CONC. ON SITE UNLESS AUTHORIZED BY SUPPLIER.
6. PROTECT CONC. FROM ADVERSE WEATHER CONDITIONS.
7. WHEN THE AMBIENT TEMPERATURE IS AT OR ABOVE 25°C OR WHEN THERE IS A PROBABILITY OF THE AMBIENT TEMP. RISING TO OR ABOVE 25°C, HOT WEATHER REQUIREMENTS APPLY. MOIST CURE CONC. ONLY. CURING CONPOUND IS NOT PERMITTED.
8. WHEN THE AMBIENT TEMPERATURE IS AT OR BELOW 5°C OR WHEN THERE IS A POSSIBILITY OF THE AMBIENT TEMP. FALLING TO OR BELOW 5°C, COLD WEATHER REQUIREMENTS APPLY.

CONCRETE FORMWORK

1. FORM WORK TO CONFORM TO CSA A23.1/A23.2.
2. FORM STRIPPING AGENT - COLORLESS MINERAL OIL, NON-TOXIC, BIODEGRADABLE, FREE OF KEROSENE.
3. PROVIDE BRACING TO ENSURE STABILITY OF FORMWORK.
4. DO NOT PLACE SHORING AND MUD SILLS ON FROZEN GROUND.
5. FORM WORK SHALL BE CLEANED OF DEBRIS BEFORE PLACING CONCRETE.
6. LEAVE FORM WORK IN PLACE FOR THE FOLLOWING MINIMUM OF 7 DAYS FOR GRADE BEAMS AND SLABS OR UNTIL THE CONCRETE HAS REACHED 70% OF ITS DESIGN STRENGTH.
7. DO NOT WEDGE PRY BARS OR HAMMERS AGAINST CONCRETE SURFACES.

CONCRETE REPAIR, CUTTING, AND CORING

1. FILL ALL HOLES FROM PIPE REMOVAL WITH NON-SHRINK HIGH STRENGTH GROUT.
2. SUBMIT PATCHING PRODUCT TECHNICAL DATA SHEET FOR REVIEW PRIOR TO COMMENCING WORK.
3. PREPARE SURFACE RECEIVING REPAIR IN ACCORDANCE WITH THE MANUFACTURER INSTRUCTION.
4. NO OVER-SAWCUT IS ALLOWED.
5. NO CORING THROUGH CONCRETE BEAM MAIN REINFORCEMENT IS ALLOWED.
6. SCAN REINFOCEMENT PRIOR TO CORING. NOTIFY THE ENGINEER ANY CONFLICT OR POSSIBILITY OF CORING THROUGH REINFORCEMENT.

REINFORCING STEEL

1. ALL REINFORCING STEEL SHALL BE CONFORM TO CSA G30.18 GRADE 400W.
2. ALL REBAR SHALL BE STORED ON WOOD BLOCKING AT THE SITE.
3. REINFORCEMENT SHALL BE FREE OF CLAY, DIRT AND FROM OIL OR OTHER DELETERIOUS MATERAIL WHICH WOULD REDUCE THE BOND OF CONCRETE.
4. CONCRETE COVER SHALL CONFORM TO THE FOLLOWING LIST:

| | |
|---|---|
| CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH | 75 mm |
| FORMED SURFACES EXPOSED TO EARTH | 40 mm |
| SLAB, WALLS, BEAMS NOT EXPOSED TO EARTH | 20 mm |
| SIDEWALKS, CURBS AND GUTTERS, SPLASH PADS AND SUMP PITS | 30 mm |
| RATIO OF COVER TO NOMINAL BAR DIAMETER<br>EXPOSURE CLASS N<br>EXPOSURE CLASS F, S<br>EXPOSURE CLASS C, A | <br>1.0<br>1.5<br>2.0 |
| RATIO OF COVER TO MAXIMUM AGGREGATE SIZE<br>EXPOSURE CLASS N<br>EXPOSURE CLASS F, S<br>EXPOSURE CLASS C, A | <br>1.0<br>1.5<br>2.0 |

5. UNLESS NOTED OTHEWISE, MINIMUM EMBEDMENT AND LAP LENGTHS SHALL BE AS FOLLOW:

| BAR SIZE | EMBEDMENT | LAP SPLICE |
|---|---|---|
| 10M | 400 mm | 500 mm |
| 15M | 600 mm | 750 mm |
| 20M | 750 mm | 1000 mm |
| 25M | 1200 mm | 1550 mm |
| 30M | 1450 mm | 1850 mm |
| 35M | 1500 mm | 2150 mm |

6. CLEAR SPACING SHALL BE GREATER THAN 2 BAR DIAMETER.
7. CONTRACTOR SHALL PREPARE AND SUBMIT DETAILED REINFORCING STEEL DRAWINGS FOR REVIEW PRIOR TO FABRICATION.
8. DO NOT FIELD BEND REINFORCEMENT EXCEPT WHERE INDICATED OR AUTHORIZED BY THE CONTRACT ADMINISTRATOR.
9. NOTIFY ENGINEER 24 HOURS PRIOR TO PLACING CONCRETE FOR SITE REVIEW.

MASONRY

1. ALL MASONRY WORK SHALL BE PERFORMED IN ACCORDANCE WITH CSA A371.
2. CONCRETE BLOCK SHALL CONFORM TO CAN3-A165. STANDARD HOLLOW MASONRY UNIT H/15/A/M.
3. FACE BRICK TO CSA A82.14, ASTM C216. TYPE FBS GRADE SW. ACCEPTABLE MATERIAL: I-XL INTERSTATE BRICK'S MOUNTAIN RED BRICK.
4. LIME STONE TO ASTM C568. ACCEPTABLE MATERIAL: TYNDALL STONE GILLIS QUARRIES.
5. MORTAR AND GROUT TO CSA A179.
6. MASONRY CONNECTORS TO CSA A370 AND CSA A304.
7. MASONRY REINFORCEMENT TO CSA A371 TRUSS TYPE
8. BAR REINFORCEMENT TO CSA G30.18 GRADE 400.
9. TOP COURSE OF ALL BLOCK WALLS TO BE 400 DEEP "U" BLOCK WITH 2-15M REINFORCING BARS AND 20 MPa CONCRETE FILL CONTINUOUS.
10. MINIMUM HORIZONTAL JOINT REINFORCEMENT: 3.8 MM TRUSS TYPE WIRE REINFORCEMENT AT EVERY 200 MM.
11. ALL MASONRY WALLS TO BE SECURELY BRACED UNTIL STRUCTURE IS CLOSED IN.
12. PROVIDE 15M VERTICAL REINFORCEMENT FULL HEIGHT WITH MATCHING DOWEL AND COREFILL AT 800 mm O/C; EACH WALL CORNER; EACH SIDE OF DOORS AND OPENINGS.

STRUCTURAL STEEL

1. STRUCTURAL STEEL WORK SHALL CONFORM TO CSA S16-14.
2. ALL FABRICATION, ERECTION, AND WELDINGS SHALL BE IN ACCORDANCE WITH THE LATEST CODES AND STANDARDS.
3. ALL STRUCTURAL SHAPES SHALL CONFORM TO CSA G40.21-13 GRADE 350W.
4. ALL STRUCTURAL PLATES SHALL CONFORM TO CSA G40.21-13 GRADE 300W.
5. CONNECTION DETAILS NOT SHOWN ON DRAWINGS SHALL BE DESIGNED UNDER THE SUPERVISION OF AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF MANITOBA.
6. UNLESS NOTED OTHERWISE, DESIGN ALL CONNECTIONS FOR NON-COMPOSITE BEAMS FOR 50% OF THE SHEAR RESISTANCE OF THE BEAM AND USE A MINIMUM OF 3-19 mm DIA BOLTS IN EACH BOLTED CONNECTION.
7. ALL STRUCTURAL STEEL AND CONNECTIONS, INCLUDING ANCHOR BOLTS EXPOSED TO ENVIRONMENT TO BE GALVANIZED.
8. THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS FOR CONTRACT ADMINISTRATOR TO REVIEW PRIOR TO FABRICATION.
9. THE CONTRACTOR SHALL ARRANGE FOR MATERIALS AND WORKMANSHIP TESTING BY AN INDEPENDENT INSPECTION FIRM.
10. WELDERS' CERTIFICATES; ORGANIZATION CERTIFIED BY THE CANADIAN WELDING BUREAU IN ACCORDANCE WITH CSA W47.1-09 (R2014).
11. ALL STRUCTURAL STEEL TO BE GALVANIZED TO CSA G164.2 ASTM A123/A123M.
12. SHOP GALVANIZING: HOT DIPPED GALVANIZING WITH A MINIMUM COATING OF 700 g/m².
13. TOUCH UP DAMAGED GALVANIZED COMPONENTS WITH COLD GALVANIZING SPRAY (TYPICALLY 2-COATS OF ZINC RICH PRIMER).

ALUMINUM CHECKER PLATE HATCH OPENING COVERS

1. ALUMINUM TO BE 6061-T6 FOR STRUCTURAL APPLICATION
2. PANEL TO BE DESIGNED FOR UNIFORM DISTRIBUTED LOAD OF 4.8 KPA WITH MAXIMUM DEFLECTION OF 1 mm.
3. PANEL TO BE DESIGNED FOR CONCENTRATED LOAD OF 10 kN APPLIED OVER AREA OF 25x25 mm AT ANY LOCATION WITH MAXIMUM DEFLECTION OF 2.54 mm.
4. LIFTING HANDLE TO BE RECESSED.
5. ALUMINUM MUST BE ISOLATED FROM CONTACT WITH CONCRETE.

EXCAVATION AND BACKFILL

1. ALL EXCAVATIONS SHALL BE MADE TO ALLOW SAFE ACCESS TO COMPLETE ALL PHASES OF THE WORK.
2. THE CONTRACTOR SHALL CONFIRM LOCATIONS OF EXISTING UTILITIES PRIOR TO EXCAVATNG.
3. THE CONTRACTOR SHALL SECURE THE WORK AREA WITH BARRICADE TAPE AND WARNING SIGNS SUPPORTED WITH FENCING AND/OR POSTS NECESSARY TO PRECLUDE ENTRY BY UNAUTHORIZED INDIVIDUALS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY SHORING OF EXCAVATION
5. BACKFILL MATERIALS TO BE NON-FROST SUSCEPTIBLE MATERIALS.
6. BACKFILL MATERIALS SHALL BE BASE COURSE GRANULAR MATERIALS IN ACCORDANCE WITH CW3110.
7. COMPACT BACKFILL MATERIALS IN LAYERS TO A MINIMUM OF 99% STANDARD PROCTOR DENSITY.

SHOP FABRICATED WOOD TRUSSES

1. DESIGN ROOF TRUSSES, BRACING, BLOCKING, BRIDGING, FRAMED OPENINGS, CAMBERS, AND CONNECTIONS IN ACCORDANCE WITH CSA O86.
2. LIMIT LIVE LOAD DEFLECTION L/360.
3. DESIGN FOR ALL DEFLECTION AND PROVIDE CAMBER TO ALLOW FOR SATISFACTORY PERFORMANCE OF TRUSSES.
4. DESIGN FOR THE FOLLOWING CASES:
   - CASE 1: FULL UNIFORMLY DISTRIBUTED SNOW LOAD OF 1.72 kPa
   - CASE 2: UNBALANCED SNOW LOAD OF 2.10 kPa
5. TRUSSES SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF MANITOBA.
6. ALL FLUSH FRAMED TRUSSES SHALL BE SUPPORTED WITH METAL HANGERS. ALL HANGERS AND TRUSS TO TRUSS CONNECTIONS TO BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF MANITOBA.
7. SUBMIT SHOP DRAWINGS FOR CONTRACT ADMINISTRATOR OF RECORD PRIOR TO FABRICATION.
8. VERTICAL AND HORIZONAL BRACING SHALL BE INSTALLED AS PER TRUSS SUPPLIER REQUIREMENT.
9. ALL ROOF TRUSSES SHALL BE TIED TO SUPPORTING STRUCTURES WITH 18 GA. GALV. "HURRICANE" TIES AT EACH END IN ADDITIONAL TO NORMAL TOE-NAILING.
10. TRUSSES SHALL NOT BE FIELD MODIFIED IN ANY WAY WITHOUT WRITTEN CONSENT OF THE DESIGN ENGINEER AND THE MANUFACTURER.
11. SHIP, STORE, HANDLE AND INSTALL TRUSSES AND RELATED COMPONENTS IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTION.

## STEEL LINTEL SCHEDULE

| CLEAR SPAN | 190 THICK WALL | |
|---|---|---|
| | TYPE | MATERIAL |
| UP TO 1200 |  | (2) L89x89x7.9 L.L.V. |
| 1200 TO 1800 |  | (2) L102x76x7.9 L.L.V. |
| 1800 TO 3050 |  | W200x35.9 + 9.5 x 190 PLATE |

NOTES:
1. USE ONLY FOR 190 WALLS.
2. LINTELS DESCRIBED ON THIS DETAIL SHALL ONLY BE USED IF HEIGHT OF MASONRY ABOVE THE OPENING IS EQUAL TO OR GREATER THAN HALF THE CLEAR SPAN OF THE OPENING.
3. MINIMUM BEARING FOR LINTELS SHALL BE 200mm.
4. PROVIDE STEEL PACKING PLATES TO ENSURE EVEN BEARING.
5. BOLT DOUBLE ANGLES BACK TO BACK USING 16 DIA. BOLTS AT 150mm O.C. PROVIDE BOLTS 76mm FROM EACH END. ALTERNATE - 6mm x 50mm LG. FILLET WELDS AT 450mm O.C. TOP AND BOTTOM.
6. 9.5mm PLATE WELDED TO UNDERSIDE OF LINTELS (INCLUDING EXTERIOR WYTHE ANGLE) WITH CONTINUOUS FILLET WELDS EACH SIDE OF BOTTOM FLANGE. CENTER PLATE ON CENTERLINE OF WALL

| DRAWING NUMBER | REFERENCE DRAWINGS |
|---|---|
| 1-0178L-S0002 | STRUCTURAL – STANDARD DETAILS |
| 1-0178L-S0003 | STRUCTURAL – PLANS AND SECTIONS |
| 1-0178L-S0004 | STRUCTURAL – PLAN, SECTIONS AND DETAILS |

NOT FOR CONSTRUCTION

ISSUED FOR TENDER

ENGINEERS GEOSCIENTISTS MANITOBA
Certificate of Authorization
Dillon Consulting Limited (MB)
No. 1789 Date: _____

| NO. | REVISIONS | DATE | DESIGN | CHECK |
|---|---|---|---|---|
| 0 | ISSUED FOR TENDER | 2023/07/20 | BLM | BLM |

DILLON CONSULTING

| | |
|---|---|
| DESIGNED BY: LTA | CHECKED BY: XXX |
| DRAWN BY: MGS | APPROVED BY: BLM |
| SCALE: | RELEASED FOR CONSTRUCTION BY: |
| DATE: NOV. 2022 | DATE: |
| CONSULTANT NO: 223229 | |

ENGINEER'S SEAL
PROVINCE OF MANITOBA
L.T. ANTLE
Member 47773
2023/07/20
REGISTERED PROFESSIONAL ENGINEER

Winnipeg
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

RIVERBEND LIFT PUMPING STATION
2022 UPGRADES

STRUCTURAL
GENERAL NOTES

| CITY DRAWING NUMBER | SHEET | REV. | SIZE |
|---|---|---|---|
| 1-0178L-S0001 | 001 | 0 | A1 |

PLOT DATE: 2023-07-20 4:32:04 PM
FILE NAME: 223229-01-ARCH-CON_detached.rvt