

GENERAL NOTES

- 1. READ THE STRUCTURAL DRAWINGS IN CONJUNCTION WITH ALL OTHER PERTINENT CONTRACT DOCUMENTS.
2. ALL DIMENSIONS ARE IN METRIC UNITS UNLESS NOTED. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS AGAINST THE BUILDING, PROCESS, MECHANICAL, AND ELECTRICAL DRAWINGS...
3. THE DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MANITOBA BUILDING CODE 2010, ITS SUPPLEMENTS AND THE LATEST EDITIONS OF REFERENCED CODES AND STANDARDS THEREIN...
4. REFER TO THE BUILDING, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATIONS AND DIMENSIONS OF OPENINGS, SLEEVES AND OTHER BUILDING COMPONENTS NOT SHOWN ON THE STRUCTURAL DRAWINGS...
5. REFER TO BUILDING, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATION OF PITS, BASES, DRAINS, TRENCHES, SUMPS, HOUSEKEEPING PADS, DEPRESSIONS, GROOVES, CURBS, CHAMFERS AND SLOPES NOT SHOWN ON THE STRUCTURAL DRAWINGS...
6. CONTRACTOR TO CONFIRM WITH EQUIPMENT SUPPLIERS DIMENSIONS AND ALL OTHER CRITICAL DETAILS PRIOR TO CONSTRUCTION AND INSTALLATION...
7. NOTIFY THE CONTRACT ADMINISTRATOR 48 HOURS IN ADVANCE FOR SITE REVIEW.
8. DRAWINGS SHOW COMPLETED STRUCTURES ONLY. PROVIDE TEMPORARY BRACING FOR CONSTRUCTION LOADING CONDITIONS AND STABILITY OF THE STRUCTURE DURING CONSTRUCTION...
9. CONSTRUCTION METHODS REQUIRING TEMPORARY SHORING, OR BRACING, SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR REVIEW...
10. VERIFY LOCATION OF UNDERGROUND SERVICES AND BE RESPONSIBLE FOR DISRUPTIONS.
12. ALL SHOP DRAWING SUBMITTALS TO BE METRIC (MILLIMETERS) UNLESS NOTED.

EXCAVATION & BACKFILL

- 1. EXCAVATE TO LINES AND LEVELS NECESSARY TO PROPERLY COMPLETE THE WORK. CONTROL EXCAVATION TO ENSURE BOTTOM OF EXCAVATION DOES NOT SOFTEN DUE TO EXCESS MOISTURE. REFERENCE THE GEOTECHNICAL REPORT FOR FURTHER INFORMATION.
2. ALL BACKFILL SHALL BE COMPACTED USING MECHANICAL EQUIPMENT. ON THE EXTERIOR OF THE STRUCTURES, THE BACKFILLING SHALL BE PLACED WITH SUFFICIENT ALLOWANCE FOR SETTLEMENT AND IN GENERAL, ITS TOP SURFACE SHALL BE NEATLY GRADED.
3. MAINTAIN OPTIMUM MOISTURE CONTENT TO PERMIT COMPACTION TO ATTAIN SPECIFIED DENSITIES. PROTECT BACKFILLED GRADE, DURING AND AFTER COMPLETION OF BACKFILL OPERATION, FROM SOFTENING DUE TO EXCESS MOISTURE.
4. BACKFILL TO GRADES INDICATED IN LAYERS NOT EXCEEDING 300mm UNCOMPACTED, UNLESS NOTED OTHERWISE.

FOUNDATION

- 1. GEOTECHNICAL REPORT IS AVAILABLE AS REFERENCED IN THE CONTRACT SPECIFICATIONS.
2. ALLOWABLE BEARING CAPACITY FOR RAFT FOUNDATION IS AVAILABLE IN GEOTECHNICAL REPORT.
3. MODULUS OF SUBGRADE REACTION AT FOUNDATION LEVEL IS AVAILABLE IN GEOTECHNICAL REPORT.
4. BEARING SURFACES FOR RAFT FOUNDATIONS SHALL BE REVIEWED AND ACCEPTED BY THE CONTRACT ADMINISTRATOR PRIOR TO CASTING OF CONCRETE. PROTECT BEARING SURFACES. DO NOT PLACE CONCRETE ON FROZEN SOIL.
5. PREVENT SUBGRADE FROM FREEZING AFTER CASTING CONCRETE WORKS UNTIL CONSTRUCTION IS COMPLETE AND STRUCTURES ARE IN SERVICE.

DESIGN LOADS

- 1. THE STRUCTURE IS DESIGNED TO MEET THE REQUIREMENTS OF THE 2010 NATIONAL BUILDING CODE.
2. WIND LOADS - THE BUILDING STRUCTURE IS DESIGNED TO RESIST THE HORIZONTAL LOADS RESULTING FROM 1/50 AVERAGE HOURLY WIND PRESSURE BASED ON A q=0.45 kPa WITH AN IMPORTANCE CATEGORY OF 'NORMAL'.
3. SNOW LOADS: THE ROOF AREA ARE DESIGNED BASED ON: GROUND SNOW LOAD = 1.9kPa, RAIN LOAD = 0.20 kPa
4. FLOOR LOADS - REFER TO STRUCTURAL DRAWINGS.

CONCRETE

- 1. PROVIDE CONCRETE AND PERFORM WORK TO CSA A23.1. SUPPLY CONCRETE TO ALTERNATIVE (1) PERFORMANCE. THE CONTRACTOR SHALL HAVE A COPY OF THIS STANDARD ON SITE AT ALL TIMES.
2. TEST CONCRETE IN ACCORDANCE WITH CSA A23.2.

CONCRETE ACCESSORIES

- 1. GROUT: NON-SHRINK, NON-METALLIC GROUT WITH MINIMUM STRENGTH AT THREE DAYS OF 20 MPA AND MINIMUM STRENGTH AT 28 DAYS OF 50 MPA.
2. EXPANSION ANCHORS: OF DIAMETER & PENETRATION SHOWN. CAPACITIES ARE BASED ON HILTI CANADA ANCHOR SYSTEMS. SUBMIT ANCHOR LOAD RESISTANCE DATA FROM INDEPENDENT TESTING FIRM FOR REVIEW BY CONTRACT ADMINISTRATOR MINIMUM 2 WEEKS PRIOR TO INTENDED USE.
3. EPOXY ANCHORS: OF DIAMETER & PENETRATION SHOWN. SHEAR AND TENSION CAPACITIES ARE BASED ON HILTI HY-200 + HIT-HAS SUPER HARDWARE. SUBMIT ANCHOR LOAD RESISTANCE DATA FROM INDEPENDENT TESTING FIRM FOR REVIEW BY CONTRACT ADMINISTRATOR MINIMUM 2 WEEKS PRIOR TO INTENDED USE.

MASONRY

- 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 H115/A/M WITH A MINIMUM UNIT STRENGTH OF 15 MPa, UNLESS NOTED OTHERWISE.
3. ALL MORTAR SHALL CONFORM TO CSA A179 AND SHALL BE TYPE 'S'.
4. LINTELS, BOND BEAMS, AND REINFORCED CORES SHALL BE FILLED WITH CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 20 MPA.
5. PROVIDE DOWELS FROM CONCRETE BEAMS, WALL AND FLOORS TO MATCH MASONRY WALL REINFORCING UNLESS NOTED OTHERWISE.

CONCRETE REINFORCEMENT

- 1. DEFORMED BARS CONFORMING TO CSA G30.18 GRADE 400. LAP SPLICES SHALL BE CLASS B TENSION LAP TYPE AS NOTED IN THE BELOW TABLE, UNLESS NOTED OTHERWISE.
2. WELDABLE REINFORCING BARS SHALL CONFORM TO CSA G30.18 GRADE 400W. WELDING OF REINFORCING SHALL CONFORM TO CSA W186.
3. REINFORCING WORK SHALL BE IN ACCORDANCE WITH CSA A23.1 AND CSA A23.3.
4. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE LATEST EDITION OF THE REINFORCING STEEL INSTITUTE OF CANADA DETAILING MANUAL.
5. 90° HOOKS AND 180° HOOKS WHERE SHOWN SHALL BE DETAILED AS STANDARD HOOKS UNLESS NOTED OTHERWISE.
6. CONCRETE COVER TO REINFORCING STEEL SHALL CONFORM TO THE MOST STRINGENT REQUIREMENT LISTED BELOW UNLESS NOTED OTHERWISE.

Table with 2 columns: PUMP STATION - ITEM, COVERAGE (mm). Rows include LOWER LEVEL BASE SLABS (BOTTOM) 75, WALLS (BOTH FACES) 50, MAIN FLOOR, INTERMEDIATE LEVEL, AND LOWER LEVEL SLABS TOP 50, MAIN FLOOR, INTERMEDIATE LEVEL, AND LOWER LEVEL SLABS SIDES 50, MAIN FLOOR AND INTERMEDIATE LEVEL SLABS BOTTOM 50, CONCRETE BEAMS: SIDE (TO OUTSIDE FACE OF STIRRUP) 50, CONCRETE BEAMS: TOP AND BOTTOM (TO OUTSIDE FACE OF STIRRUP) 50, CURBS 50, FORMED SURFACES NOT EXPOSED TO GROUND, WATER, OR WEATHER NOT LISTED ABOVE 50, HOUSEKEEPING PADS 50.

Table: REINFORCING BAR DEVELOPMENT PER ACI 350. Columns: BAR SIZE, BAR DEVELOPMENT, COMPRESSION DEVELOPMENT, STANDARD HOOK DEVELOPMENT. Rows for 10M, 15M, 20M, 25M.

Table: REINFORCING BAR SPLICES PER ACI 350. Columns: BAR SIZE, CLASS 'B' SPLICE. Rows for 10M, 15M, 20M, 25M.

Table with 4 columns: MIX TYPE, INTENDED APPLICATION, MINIMUM COMPRESSIVE STRENGTH (MPa), CLASS OF EXPOSURE. Rows for STRUCTURAL CONCRETE, CONCRETE TOPPING SLAB, NON-STRUCTURAL INTERIOR HOUSEKEEPING PADS, CONCRETE UNIT MASONRY INFILL.

WATERSTOPS

- 1. WATER STOPS ARE SHOWN ON PLANS AND SECTIONS FOR INFORMATION ONLY. IN GENERAL ALL CONSTRUCTION JOINTS IN LIQUID RETAINING STRUCTURES AND ALL JOINTS BELOW GRADE ARE TO BE WATERSTOPPED.
2. CONSTRUCTION JOINTS ARE SHOWN FOR INFORMATION ONLY AND THE CONTRACTOR ENCOURAGED TO REVIEW CONSTRUCTION PROCEDURES AND PROPOSE ALTERNATIVE CONSTRUCTION JOINT LOCATION TO EXPEDITE THE WORK. THE CONTRACT ADMINISTRATOR MUST APPROVE ALL REVISED JOINT LOCATION.
3. WATERSTOPS TO BE 150 PVC AS PER CW2160. SUBSTITUTIONS WILL NOT BE ALLOWED WITHOUT WRITTEN APPROVAL FROM THE CONTRACT ADMINISTRATOR.

MISCELLANEOUS METALS

- 1. THE STEEL ERECTOR SHALL BE RESPONSIBLE FOR SUPPLING AND ERECTING ALL TEMPORARY WORKS REQUIRED FOR THE STRUCTURE DURING ERECTION.
2. WELD TO CSA W59 BY FABRICATORS QUALIFIED TO CSA W47.1, IN DIVISION 2.
3. ISOLATE MISC. METALS FROM FOLLOWING COMPONENTS BY MEANS OF 2 COATS OF ALKALI RESISTANT BITUMINOUS PAINT: .1 DISSIMILAR METALS EXCEPT STAINLESS STEEL, GALVANIZED STEEL, ZINC, OR WHITE BRONZE OF SMALL AREA. .2 CONCRETE, MORTAR AND MASONRY.
4. STEEL PLATES: CONFORMING TO CAN/CSA G40.21; TYPE W WITH A MINIMUM YIELD STRENGTH OF 300 MPA.
5. ANCHOR RODS: CONFORMING TO ASTM F1554.
6. WELDING MATERIALS: CONFORMING TO CSA W59.
7. WELDING OF ALL LOAD CARRYING ASSEMBLIES IS TO BE PERFORMED BY A FIRM CERTIFIED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA W47.1 IN DIVISION 2.
8. SUPPLY ALL COMPONENTS REQUIRED FOR PROPER ANCHORAGE OF STEEL FABRICATIONS. FABRICATE ANCHORAGE AND RELATED COMPONENTS OF SAME MATERIAL AND FINISH AS STEEL FABRICATIONS, UNLESS OTHERWISE SPECIFIED OR SHOWN.
9. NELSON STUDS: H4L HEADED STUDS BY NELSON STUD, A DONCASTERS GROUP LIMITED COMPANY.

STRUCTURAL STANDARD ABBREVIATIONS:

Table of structural standard abbreviations including ACUSTIC, ADD'L, ADH, ADJUSTABLE, AGGREGATE, AIR HANDLING UNIT, AIR VAPOUR BARRIER, ALTER, ALTERNATE, ALUMINUM, ANCHOR BOLT, APARTMENT, APPROXIMATE, BUILDING, AT, AVERAGE, BEARINGS, BENCH MARK, BETWEEN, BOARD, BOTH SIDES, BOTH WAYS, BOT, BOTTOM, BOTTOM LOWER LAYER, BOTTOM UPPER LAYER, BUILDING, BY (BETWEEN DIMS), CAST IN PLACE, CAST IRON, CATCH BASIN, CEMENT BOARD, CENTERLINE, CENTER TO CENTER, CIRC, CLEAN OUT, CLEAR SPAN, COLUMN, COMPLETE WITH, CONCRETE, CONCRETE MASONRY UNIT, CONCRETE PIPE, ORIGINAL, CONSTRUCTION JOINT, CONTINUOUS, CORRUGATED METAL PIPE, COUNTERSUNK, DEAD LOAD, DEGREE, DIAMETER, DIMENSION, DOWN, DOWEL, DRAWING, EACH FACE, EACH WAY, EAST, ELECTRICAL, ELEVATION, ELEVATOR, EQUAL, EQUAL SPACE, EXCAVATION, EXIST, EXPANSION, EXPANSION JOINT, EXTERIOR, FACE TO FACE, FACE OF CONCRETE, FAR SIDE, FIBREBOARD, FINISH, FLOOR DRAIN, FOUNDATION, FOOTING, GALVANIZE, GALVANIZED IRON, GAUGE, GRANULAR, GRANULAR BASE, GRANULAR BACK FILL, GRID LINE, GUARD RAIL, HANGER, HEIGHT, HEXAGON, HOLLOW STRUCTURAL STEEL, HORIZONTAL, INCLUSIVE, INSIDE DIAMETER, INSIDE FACE, INTERIOR, INVERT ELEVATION, JUNCTION, KILONEWTON, KNOCK DOWN, LIVE LOAD, LONG, LONG LEG HORIZONTAL, LONG LEG VERTICAL, LOUVER, MAKE UP AIR UNIT, MANUFACTURE, MARK, MASONRY OPENING, MATERIAL, MAXIMUM, MECHANICAL, METER, MILLIMETER, MINIMUM, MISCELLANEOUS, NEAR FACE, NEAR SIDE, NORTH, NOT APPLICABLE, NOT IN CONTRACT, NOT TO SCALE, NUMBER, ON CENTER, OPENING, OPEN WEB STEEL JOIST, OPPOSITE, ORIGINAL, OUTSIDE DIAMETER, OUTSIDE FACE, OUT TO OUT, OVERHEAD, PERPENDICULAR, PLATE, POUNDS PER LINEAR FOOT, POUNDS PER SQUARE FOOT, PLYWOOD, PRE-CAST, PREFABRICATED, PREFINISHED, PRELIMINARY, PROJECTION, QUANTITY, RADIUS, REFERENCE, REINFORCE WITH, REINFORCING, REQUIRED, RETAINING WALL, REVISION, ROOF DRAIN, ROUGH OPENING, SCHEDULE, SECTION, SELF ADHESIVE, SHEATHING, SHEET, SIMILAR, SKETCH, SOUTH, SPECIFICATION, SQUARE FEET, STAINLESS STEEL, STANDARD, STIFFENER, STIRRUP, STRUCTURAL, SYMMETRICAL, TANGENT, TEMPORARY, TO MATCH EXISTING, TOP OF, TOP LOWER LEVEL, TOP UPPER LEVEL, TYPICAL, UNDERCUT, UNLESS NOTED, VERTICAL, WEIGHT, WIND LOAD, WITH, WITH OUT, WOOD, WROUGHT IRON.

PLASTIC FABRICATIONS

- 1. INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S SHOP DRAWINGS.
2. FRP ANGLES BY FIBERGRATE. REFER TO DRAWINGS AND SPECIFICATIONS FOR LOCATIONS AND DETAILS.

ALUMINUM FABRICATIONS

- 1. DESIGN, FABRICATION AND INSTALLATION IN ACCORDANCE WITH CSA S157.
2. PERFORM WELDING OF ALUMINUM IN ACCORDANCE WITH REQUIREMENTS OF CSA W59.2 AND CSA S244.
3. ALUMINUM TO CSA/CAN 3-S157, 6061-T6 OR 6063-T6 ALUMINUM ALLOY.
4. BOLTS AND ANCHOR BOLTS: STAINLESS STEEL.
5. ISOLATE ALUMINUM FROM FOLLOWING COMPONENTS, BY MEANS OF BITUMINOUS PAINT: .1 DISSIMILAR METALS EXCEPT STAINLESS STEEL AND GALVANIZED STEEL. .2 CONCRETE, MORTAR AND MASONRY.

WOOD

- 1. WOOD CONSTRUCTION SHALL CONFORM TO CSA 086-09 AND PART 9 OF NBC 2010.
2. ROOF SHEATHING: DOUGLAS FIR PLYWOOD TO CSA-0121, OR CANADIAN SOFTWOOD PLYWOOD TO CSA-015.
3. WOOD FRAMING MATERIAL (UNLESS NOTED OTHERWISE SPECIFIED): S-P-F OR D.FIR.L.NO.1/NO.2 (S-DRY)
ROOF TRUSSES: KILN DRIED
4. ALL TRUSSES AND FRAMING DELIVERED TO THE SITE SHALL BE KEPT DRY. NO WARPED MATERIAL SHALL BE USED.
5. PREFABRICATE WOOD TRUSSES TO PROFILES, DIMENSIONS AND LOADS SHOWN ON DRAWINGS. SUPPLIER TO DESIGN TRUSSES WITH CONSIDERATION OF TRANSPORTATION, FABRICATION, AND ERECTION, UNDER PART 4 OF NBC 2010 AND IN ACCORDANCE WITH CSA 086-09.
6. SUBMIT SHOP DRAWINGS TO THE ENGINEER OR REVIEW PRIOR TO FABRICATION. SHOP DRAWINGS SHALL BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA. SHOP DRAWINGS SHALL INDICATE DESIGN LOADS, LUMBER SPECIES AND GRADES, SPACING OF TRUSSES, JOINT DETAILS AND CONNECTOR CAPACITIES, MEMBER FORCES, REACTIONS, AND CAMBER.
7. INSTALL SHEATHING TO PRIMARY FRAMING BEFORE INSTALLING VALLEY JACK RAFTERS AND SECONDARY FRAMING.
8. INSTALL ALL NECESSARY BRIDGING, BRACING AND BLOCKS.

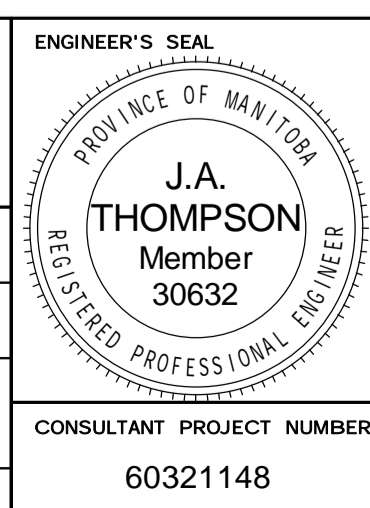
METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



Table: UNDERGROUND STRUCTURES. Columns: SUPPLY, U/G STRUCTURES, DATE. Includes location of underground structures as shown on drawings.

Table: AECOM project details. Includes columns for DESIGNED BY (KK/JT), CHECKED BY (SBB), DRAWN BY (KK), APPROVED BY (AN), HOR. SCALE (AS SHOWN), VERTICAL, ISSUED FOR TENDER (17/01/09), and REVISIONS.



THE CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT. WAVERLEY STREET UNDERPASS AT CN MILE 3.89 RIVERS SUB. CONTRACT 2: UNDERPASS STRUCTURE, RAILWORKS, ROADWORKS, LAND DRAINAGE SEWER, PUMPING STATION AND LANDSCAPING WORKS. CITY DRAWING NUMBER: U-239-2016-C2-BS-001. SHEET 1 OF 16. CONSULTANT DRAWING NUMBER: C2-BS-001.