STANDARDS THEREIN.

- 3. NOTIFY THE STRUCTURAL ENGINEER A MINIMUM OF 2 WORKING DAYS IN ADVANCE FOR SITE REVIEWS.
- 4. DRAWINGS SHOW COMPLETED STRUCTURES ONLY. PROVIDE TEMPORARY BRACING FOR CONSTRUCTION LOADING CONDITIONS AND STABILITY OF THE STRUCTURE DURING CONSTRUCTION. CONSTRUCTION LOADS SHALL NOT EXCEED THE DESIGN LOADS.
- 5. CONTRACTOR TO CONFIRM WITH EQUIPMENT SUPPLIER DIMENSIONS AND ALL OTHER CRITICAL DETAILS PRIOR TO CONSTRUCTION. REPORT DISCREPANCIES AND OBTAIN APPROVAL PRIOR TO PROCEEDING WITH CONSTRUCTION.
- 6. GEODETIC ELEVATIONS REFERENCED TO RECORD DRAWINGS WERE CONVERTED TO METERS. MAIN FLOOR ELEVATION OF 766'-0" CONVERTED TO ELEVATION OF 233.476 METERS AND ALL OTHER LEVELS ACCORDINGLY.

DEMOLITION

- 1. CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, INSTALLATION AND REMOVAL OF ALL SHORING. CONTRACTOR TO PROVIDE SHORING DRAWINGS WITH THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN MANITOBA.
- 2. REFER TO SPECIFICATIONS AND DRAWINGS.

DELEGATED DESIGN OF STRUCTURAL ELEMENTS

- 1. THE FOLLOWING ITEMS REQUIRE DELEGATED DESIGN BY SPECIALIZED ENGINEERS REGISTERED AND LICENSED TO PRACTICE IN THE PROVINCE OF MANITOBA (SPECIALIZED ENGINEER):
- CONCRETE MIX DESIGN CONSTRUCTION LOADING AND SHORING
- 2. DELEGATED DESIGN ELEMENTS ARE TO BE DESIGNED ACCORDING TO INDUSTRY BEST PRACTICES AND TO ALL RELEVANT CODES AND STANDARDS ASSOCIATED WITH THE DELEGATED DESIGN ELEMENT.
- 3. DELEGATED DESIGN IS TO INCLUDE EITHER THE SUPPLIED LOADING OR CALCULATED LOADING (WHICHEVER PRODUCES THE MOST CRITICAL EFFECT).
- 4. ALL DELEGATED DESIGN PROFESSIONAL WORK PRODUCTS (PWP) ARE TO BE SEALED BY THE SPECIALIZED ENGINEER AND SUBMITTED TO MPE, A DIVISION OF ENGLOBE ALONG WITH THE REQUIRED LETTER OF ASSURANCE.
- 5. ADMINISTRATION OF THE DELEGATED DESIGN, INCLUDING BUT NOT LIMITED TO FIELD REVIEWS AND RESPONSES TO RFI'S ASSOCIATED WITH THE SPECIALIZED ENGINEER'S PWP. SHALL BE THE RESPONSIBILITY OF THE SPECIALIZED ENGINEER OR AN AUTHORIZED AGENT.

REFERENCE STANDARDS

- 1. THIS LIST IS NOT EXHAUSTIVE AND CONTAINS A GENERAL 4. NOTIFY CONSULTANT WHERE PLACEMENT OF OVERVIEW OF STANDARDS REFERENCED WITHIN THE DRAWINGS. SHOULD A DISCREPANCY OCCUR, THE NATIONAL BUILDING CODE 2020 GOVERNS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- 2. STEEL DESIGN AND CONSTRUCTION TO CONFORM TO THE FOLLOWING STANDARDS AND REFERENCED STANDARDS CSA S16:19 - DESIGN OF STEEL STRUCTURES CSA G40.21-13 - STRUCTURAL QUALITY STEEL CSA W47.1-09 (R2014) - CERTIFICATION OF COMPANIES
- FOR FUSION WELDING OF STEEL CSA W59-18 - WELDED STEEL CONSTRUCTION (METAL ARC WELDING) SSPC - SP6/NACE No. 4 (2007) - COMMERCIAL
- BLAST CLEANING ASTM A123/A124M-15 - STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS
- 3. CONCRETE DESIGN AND CONSTRUCTION TO: CSA A23.3:19 — DESIGN OF CONCRETE STRUCTURES CSA G30.18-09 - CARBON STEEL BARS FOR CONCRETE REINFORCEMENT.
- CSA A23.1:24 CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION TEST METHODS. 4. MASONRY DESIGN AND CONSTRUCTION TO

CSA S304-14 - DESIGN OF MASONRY STRUCTURES

- CSA A 165.1-14 CONCRETE BLOCK MASONRY UNITS CAN/CSA-A176-14 - MORTAR AND GROUT FOR UNIT MASONRY CAN/CSA-A370-14 - CONNECTORS FOR MASONRY CAN/CSA-A371-14 - MASONRY CONSTRUCTION FOR
- BUILDINGS CSA G30.18-09 - CARBON STEEL BARS FOR CONCRETE REINFORCEMENT

DRAWING NUMBER

CONCRETE

- 1. CONCRETE MIX DESIGN TO FOLLOW THE REQUIREMENTS OF CSA A23.1.
- 2. OWNER WILL APPOINT AND PAY FOR SERVICES OF TESTING AGENCY, FROM CONSTRUCTION CONTINGENCY RESERVE, TO DO THE FOLLOWING: 1. TEST FINE COARSE AGGREGATE
- 2. TAKE THREE TEST CYLINDERS PER 40m³ OF LOAD, OR FRACTION THEREOF OF EACH TYPE OF CONCRETE PLACED IN ANY ONE DAY. TEST CYLINDERS WILL BE CURED ON JOB-SITE UNDER SAME CONDITIONS AS CONCRETE IT REPRESENTS
- 3. TAKE AT LEAST ONE SLUMP TEST AND ONE ENTRAINED AIR TEST FOR EACH SET OF TEST CYLINDERS TAKEN.
- 3. PROVIDE 20 CHAMFER TO ALL EXTERIOR CORNERS.

OPENINGS IN EXISTING STRUCTURE

- 1. PRIOR TO CUTTING OPENINGS IN EXISTING STRUCTURE, CONTRACTOR TO CLEARLY MARK PROPOSED LOCATIONS AND REQUEST ON SITE REVIEW BY THE CONSULTANT.
- 2. OPENING, CUTTING OR ALTERATION OF BEAMS, COLUMNS, CORE-FILLED MASONRY, TRUSSES OF ANY OTHER STRUCTURAL ASSEMBLY IS PROHIBITED, UNLESS AUTHORIZED IN WRITING BY THE ENGINEER.
- 3. NOTIFY ENGINEER A MINIMUM OF 3 WORKING DAYS IN ADVANCE FOR SITE REVIEWS.
- 4. UNLESS DETAILED OTHERWISE WHERE CONCEALED BY CEILINGS OR BULKHEADS, OPENINGS THROUGH NON-LOAD BEARING UNREINFORCED MASONRY SHALL BE REINFORCED WITH L76x76x6.4 BOTH FACES ALL SIDES, WITH CORNERS WELDED. PROVIDE 25x6 PLATE TIE STRAPS (WELDED) AT CORNERS TO TIE FRAMES ON OPPOSITE SIDES OF THE WALL. MAXIMUM OPENING SIZE 1000x1000.
- 5. NOTIFY CONSULTANT OF OPENINGS IN EXCESS OF 1000x1000 WHERE SPECIFIC REINFORCEMENT IS NOT INDICATED. UNLESS SPECIFICALLY DETAILED OTHERWISE FOR OPENINGS THROUGH EXISTING MASONRY WALLS, WHERE OPENING IS NOT CONCEALED, PROVIDE 2-L89x89x4.8 CUT INTO MORTAR JOINT AND EXTENDING MINIMUM 400 PAST EACH SIDE OF OPENING, VERTICAL LEG UP. PROVIDE CONTINUOUS 3mm COVER PLATE x WALL THICKNESS AT THE EXPOSED UNDERSIDE OF ANGLES, C/W CONTINUOUS WELD EACH FACE GROUND SMOOTH, PRIMED READY FOR FINISH PAINT. MAXIMUM OPENING WIDTH 1000.
- 6. SEE TYPICAL DETAILS FOR PIPE, DUCT AND DOOR PENETRATION DETAILS.

REINFORCING

STEEL CAGE.

REFERENCE DRAWINGS TITLE

- 1. CHAIR SLAB REINFORCING NOT FURTHER THAN 1.0m IN EITHER DIRECTION. SUPPLY SUPPORT BARS, CHAIRS AND CARRIERS AS REQUIRED.
- 2. DOWELS AND ANCHOR BOLTS SHALL BE SECURED IN POSITION BY MEANS OF TEMPLATES BEFORE CONCRETE IS POURED. "WET DOWELING" IS NOT PERMITTED.
- 3. ANCHOR BOLTS MUST BE LOCATED WITHIN REINFORCING
- REINFORCING STEEL CONFLICTS WITH WORK OF OTHER TRADES.
- 5. MINIMUM REINFORCING AROUND OPENINGS LARGER THAN 300: 1-15M EACH SIDE AND EACH FACE OF OPENINGS EXTENDED 600 PAST CORNERS UNLESS NOTED OTHERWISE.
- 6. PROVIDE DOWELS FROM CONCRETE COMPONENTS TO MATCH BLOCK REINFORCING. DOWEL LENGTH MINIMUM 1200, EMBED 600 INTO CONCRETE UNLESS NOTED OTHERWISE. SEE DRAWINGS FOR LOCATIONS.
- 7. UNLESS NOTED OTHERWISE, ALL DOWELS TO PROJECT A MINIMUM OF 40 BAR DIAMETERS INTO SLAB OR WALL FROM FACE OF SUPPORT. REFER TO SPECIFICATIONS.
- 8. REFER TO SPLICE TABLES IN THIS DRAWING PACKAGE.

CONCRETE CONSTRUCTION JOINTS

1. THE CONTRACTOR SHALL SUBMIT DRAWINGS INDICATING LOCATIONS OF ALL PROPOSED CONSTRUCTION JOINTS FOR APPROVAL.

MASONRY

A 165, CLASSIFICATION H/15/C/M WITH A MINIMUM UNIT

STRENGTH OF 15MPa, UNLESS NOTED OTHERWISE.

2. ALL MORTAR FOR MASONRY BLOCK SHALL CONFORM TO

CSA A179 AND SHALL BE TYPE 'S' WITH A MINIMUM

3. ALL LINTELS, BOND BEAMS, AND PILASTERS SHALL BE

STRENGTH OF 20MPa. CONCRETE SHALL HAVE A MAXIMUM

AGGREGATE SIZE OF 10 AND A MAXIMUM SLUMP OF 175.

4. PROVIDE 1-15M VERTICAL AND CORE FILL AT EACH SIDE

5. CORE FILLS SHALL BE DONE IN MAXIMUM 1200 LIFTS AND

DRAWINGS, UNLESS NOTED OTHERWISE. REINFORCE EACH

BOND BEAM WITH 2-15M CONTINUOUS, WITH MATCHING

PROVIDE 2-COURSE LINTELS C/W 2-15M BARS OVER

BEYOND EDGES OF OPENINGS. INCLUDING THOSE FOR

MECHANICAL OR ELECTRICAL SERVICES AND EQUIPMENT.

B. EXTEND ALL LINTEL REINFORCEMENT AND CONCRETE 400

PAST EDGE OF OPENINGS BOTH SIDES, UNLESS NOTED

9. REINFORCEMENT TO EXTEND FULL HEIGHT OF WALL AND

BE ANCHORED 200 INTO CONTINUOUS BOND BEAMS AT

10. PROVIDE VERTICAL CONTROL JOINTS AT MAXIMUM 9m

11. EXTEND ALL NON-LOAD BEARING MASONRY WALLS TO

OF STRUCTURE ABOVE. FILL GAP WITH COMPRESSIBLE

12. PROVIDE SOLID BLOCK OR CONCRETE FILLED BLOCK

13. PROVIDE CONCRETE FILLED CORES AT ALL LOCATIONS

WHERE METAL FABRICATIONS OR OTHER EQUIPMENT

UTILITIES, ETC., FASTEN TO BLOCK WALLS. PROVIDE

HAS BEEN ANCHORED TO PERMANENT STRUCTURE.

14. REFER TO SPECIFICATIONS FOR OTHER REQUIREMENTS.

TEMPORARY BRACING FOR ALL WALLS UNTIL MASONRY

UNDER ALL CONCENTRATED LOADS BEARING ON

ACOUSTIC OR FIRE-STOP MATERIAL TO MAINTAIN WALL

FORM A 25 GAP BETWEEN TOP OF WALL AND UNDERSIDE

CONTROL JOINT. CUT ALTERNATE WIRE JOINT

SPACING, BOND BEAM REINFORCING CONTINUES THROUGH

EVERY PENETRATION. EXTEND LINTEL MINIMUM 400

FILLED WITH CONCRETE HAVING A COMPRESSIVE

COMPRESSIVE STRENGTH OF 15MPa.

MECHANICALLY VIBRATE CORE FILL.

HONEYCOMBING AND VOIDS.

CORNER BARS.

TOP OF WALL.

REINFORCEMENT.

RATING.

MASONRY.

OF EVERY OPENING AND AT EACH CORNER.

SHALL BE RODDED AND VIBRATED TO AVOID

6. PROVIDE CONCRETE FILLED AND REINFORCED BOND

BEAMS AT TOP OF WALLS AND WHERE SHOWN ON

- 2. PROVIDE HORIZONTAL REINFORCING BARS EXTENDING A MINIMUM OF 40 BAR DIAMETERS PAST CONSTRUCTION JOINT. BAR SIZE AND SPACING TO MATCH REINFORCING SPECIFIED FOR FOOTING OR FOUNDATION WALL.
- 3. SLAB JOINTS TO BE LOCATED AS PER DRAWINGS.
- 4. REFER TO SPECIFICATIONS AND DRAWINGS FOR OTHER REQUIREMENTS.

CONCRETE COVER	CONCRETE COVER							
CONDITION	SPECIFIED COVER							
FORMED EDGES NOT EXPOSED TO SOIL	50mm							
FORMED EDGES EXPOSED TO SOIL	50mm							
CONCRETE CAST AGAINST SOIL	75mm							
SLAB TOP REINFORCEMENT	50mm							
SLAB BOTTOM REINFORCEMENT	50mm							
SLUDGE TANK INTERIOR FACE	40mm							

EMBEDMENT AND SPLICE CONDITIONS								
CONCRETE	REINFORCEMENT DESIGNATION							
STRENGTH		10M	15M	20M	25M	30M	35M	
25 MPa	EMBEDMENT	300	435	580	900	1080	1260	
	SPLICE	390	565	750	1170	1405	1640	
32 MPa	EMBEDMENT	300	395	530	825	990	1155	
	SPLICE	390	515	685	1070	1285	1500	
35 MPa	EMBEDMENT	300	370	490	765	915	1065	
	SPLICE	390	475	635	990	1190	1385	

1. INCREASE ABOVE LENGTHS BY 1.3 TIMES IF HORIZONTAL

- REINFORCING BARS ARE CAST WITH ≥ 300mm OF CONCRETE CAST BELOW THE BAR.
- STRUCTURAL STEEL
- 1. FABRICATE AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH CSA S16.
- 2. PROVIDE STRUCTURAL STEEL TO CSA G40.21 WITH THE FOLLOWING GRADES:
- 1. BEAMS 350W 2. CHANNELS AND ANGLES - 300W
- 3. HSS SECTIONS (CLASS "C") 350W
- 4. STRUCTURAL BARS AND PLATES 300W 5. ANCHOR BOLTS - TO CSA G40.21.7
- 3. SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION.
- 4. ALL GROUT UNDER BEARING PLATES AND BASE PLATES SHALL BE NON-METALLIC, NON-SHRINK TYPE WITH 28 DAY COMPRESSIVE STRENGTH OF 50 MPa, INSTALLED IN ACCORDANCE WITH SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATION.
- 5. STEEL TO BE HOT-DIP GALVANIZED TO ASTM A123/A123M WITH COATING GRADE 100 (705 g/m²).
- 6. DESIGN CONNECTIONS AND OTHER WORK NOT DETAILED ON DRAWINGS, BUT NECESSARY FOR COMPLETION OF THE WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL BUILDING CODE 2020 AND CSA S16.
- 7. SUBMIT SHOP DRAWINGS AND PRODUCT DATA PRIOR TO COMMENCEMENT OF FABRICATION.
- 8. WELDING SHALL BE UNDERTAKEN ONLY BY A COMPANY APPROVED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA W47.1, CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES.
- 9. IT IS THE RESPONSIBILITY OF THE STEEL SUPPLIER TO DESIGN AND SUPPLY CONNECTIONS BETWEEN STEEL MEMBERS TO RESIST THE LOADS GIVEN IN THE TABLE BELOW OR AS NOTED IN THE CONSTRUCTION DRAWINGS. CONNECTIONS ARE PINNED UNLESS NOTED OTHERWISE. WHERE LOADS ARE NOT GIVEN, DESIGN THE CONNECTION FOR 67% OF THE SHEAR CAPACITY OF THE MEMBER.
- 10. PROVIDE 10mm WEB STIFFENER AT ALL BEAM CONNECTIONS.

DESIGN LOADS

1. MASONRY BLOCK UNITS SHALL CONFORM TO CSA CAN3-1. UNIFORM LOADING (UNLESS NOTED OTHERWISE ON PLANS) PER THE NATIONAL BUILDING CODE OF CANADA 2020:

> **LOCATION** <u>LIVE LOAD (kPa)</u> <u>¹S.D.L. (kPa)</u> ROOF: REFER TO ENVIRONMENTAL 1.2

MAIN FLOOR: 12.0

1S.D.L.: SUPER IMPOSED DEAD LOAD

LOADING NOTES

- EXISTING DOUBLE T CONCRETE ROOF: 2kPa + SUSPENDED
- LOADS – ROOF SUSPENDED LOADS:
- MECHANICAL/ ELECTRICAL COLLATERAL LOADS: 0.25kPa 200 CMU WALLS 2.10 kPa (SQUARE METER OF WALL)

3. CONCENTRATED LOADS (UNLESS NOTED OTHERWISE ON PLANS): ROOF: 1.3kN FLOORS: 9.0kN

4. LIVE LOAD (FLOOR): 16.8 kPa (350 PSI)

5. ENVIRONMENTAL LOADS:

- LOCATION: WINNIPEG, MANITOBA

IMPORTANCE CATEGORY: POST DISASTER

PONDING: BASED ON A 24 RAINFALL OF 108mm (1/50 YEAR RETURN PERIOD)

2.15kPa (MINIMUM UNFACTORED) ls = 1.25 ULS, 0.9 SLSSs = 1.9kPaSr = 0.2kPaSEE PLAN FOR DRIFT LOADING

INDICATED PER THE FOLLOWING:

BUILDING: LOW RISE TERRAIN: OPEN lw = 1.25 ULS, 0.75 SLSq50 = 0.45kPa (1/50 YEAR)RETURN PERIOD)

Ce= 0.9 TO 1.0

SEISMIC: SITE CLASS: D

SITE LOCATION LATITUDE: 49.89 LONGITUDE: -97.15

CONVENTIONAL CONSTRUCTION OF MOMENT RESISTING FRAMES, BRACED FRAMES OR PLATE WALLS (OTHER OCCUPANCIES)

SEISMIC CATEGORY: SC1

le = 1.5Sa(0.2, XD) = 0.104Sa(0.5, XD) = 0.091Sa(1.0, XD) = 0.046Sa(2.0, XD) = 0.018Sa(5.0, XD) = 0.004Sa(10.0, XD) = 0.001

PGA(XD) = 0.062

PGV(XD) = 0.047

CONCRETE SCHEDULE COMPONENT MINIMUM **EXPOSURE** MAXIMUM AIR | SLUMP | NOMINAL WATER TO | CONTENT | RANGE | AGGREGATE COMPRESSIVE CLASS STRENGTH **CEMENT** (mm) | SIZE (mm) **RATIO** (MPa) STRUCTURAL SLAB 35 @ 28 A-1< 4% | 50-80 | 20-5 AND BEAMS DAYS (INTERIOR) < 4% | 50-110 | 5 @ 28 LEAN CONCRETE FOR MUD SLABS DAYS MAX 10–5 **MECHANICAL** 25 **@** 28 < 4% 150 HOUSEKEEPING DAYS PADS AND INTERIOR TOPPING

1. STRUCTURAL SLABS AND BEAMS TO BE CURED A MINIMUM OF 7 DAYS OR THE TIME NECESSARY TO ATTAIN 70% OF THE SPECIFIED STRENGTH.

2. CONCRETE AND MAINTAINED AT A TEMPERATURE BETWEEN 10°C AND 27°C WHILE CURING. 3. CONCRETE SHOULD BE ALLOWED TO AIR DRY FOR A PERIOD OF AT LEAST ONE MONTH AFTER THE END OF

THE CURING PERIOD BEFORE EXPOSURE TO DE-ICING CHEMICALS.

No. 4968 Date: 2025-06-04

a division of Englobe DESIGNED BY B. ANDERSON M. BAKER M. BAKER C. HURD RELEASED FOR CONSTRUCTION NOT TO SCALE 2025-02-21 00 ISSUED FOR CONSTRUCTION, TENDER NUMBER: 387-2025 8400-010-00



Winnipèg water and waste department SOUTH END SEWAGE TREATMENT PLANT (SEWPCC) SEWPCC SLUDGE HOLDING TANKS REFURBISHMENT AREA D - FERMENTERS/SLUDGE THICKENERS STRUCTURAL

GENERAL NOTES TY DRAWING NUMBER SHEET REV. SIZE 1-0102-SAAA-D00° 00 A1

THE CITY OF WINNIPEG

ENGINEERS GEOSCIENTISTS **MANITOBA** Certificate of Authorization MPE, a division of Englobe Corp.

REV 00