

GENERAL NOTES:

1. THE STRUCTURAL WORK UNDER THIS PROJECT HAS BEEN DESIGNED AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF PART 4 OF THE MANITOBA BUILDING CODE-2024, NATIONAL BUILDING CODE OF CANADA-2020.
2. ALL SPECIFICATIONS AND CODES SPECIFIED SHALL BE THE LATEST REVISION AVAILABLE.
3. SITE VERIFY ALL DIMENSIONS, ELEVATIONS, DETAILS, QUANTITIES AND CONDITIONS PRIOR TO START OF ANY DEMOLITION, CONSTRUCTION OR PREFABRICATION OF ANY BUILDING OR STRUCTURAL COMPONENT.
4. EXISTING STRUCTURAL SUPPORTS WHICH INTERFERE WITH NEW WORK SHALL BE RELOCATED UPON APPROVAL BY THE DESIGN ENGINEER.
5. THE CONTRACTOR SHALL ENSURE THAT ALL BURIED SERVICES ARE LOCATED AND MARKED PRIOR TO EXCAVATION.
6. ALL BUILDING SYSTEMS COMPONENTS SHALL BE THE PRODUCTS OF A SINGLE MANUFACTURER UNLESS SPECIFIED OTHERWISE.
7. SHIP, STORE, HANDLE, ERECT, INSTALL, ETC. ALL BUILDING MATERIALS, COMPONENTS, FIXTURES, EQUIPMENT, ETC. AS PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
8. ALL DEMOLITION, FABRICATION, CONSTRUCTION, ETC. SHALL BE CARRIED OUT IN ACCORDANCE WITH ALL PERTINENT BUILDING CODES, AND LOCAL BYLAWS AND ORDINANCES.
9. EACH TRADE SHALL BE RESPONSIBLE TO PROVIDE ADEQUATE PROTECTION FOR THE EXISTING FACILITY/PROPERTY TO PREVENT PHYSICAL DAMAGE AND LOSS OF VALUE OR USE OF ANY KIND, AS A RESULT OF DEMOLITION, CONSTRUCTION AND RELATED ACTIVITIES.
10. TIME AND DURATION OF ANY NECESSARY DISRUPTION IN THE USE OF ANY ROOM, SPACE, SERVICE, EQUIPMENT, ETC. SHALL BE COORDINATED WITH, AND APPROVED BY THE OWNER AT THE START OF THE PROJECT. PROVIDE OWNER WITH MINIMUM ONE WEEK NOTICE (OR AS REQUIRED) PRIOR TO EACH ACTUAL OCCURRENCE.
11. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY THE OWNER AND THE DESIGN ENGINEER OF ANY PREVIOUSLY UNNOTICED PRE-EXISTING FLAW OR CONDITION THAT MIGHT INCREASE THE SCOPE OF WORK OR COMPROMISE NEW CONSTRUCTION, PRIOR TO THE START OF DEMOLITION AND CONSTRUCTION, OR AS SOON AS IT IS DISCOVERED.
12. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE PROJECT TECHNICAL SPECIFICATIONS.

DEMOLITION:

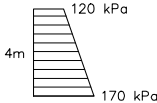
1. ALL DEMOLITION WORK SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF ALL PERTINENT BUILDING CODES, THE MANITOBA DEPARTMENT OF LABOUR, AND ANY OTHER PROVINCIAL AND LOCAL BY-LAWS, REGULATIONS AND ORDINANCES.
2. DEMOLITION SHALL INCLUDE THE SAFE REMOVAL, HAULING AND DUMPING OF ALL DEBRIS, ETC. TO AN APPROVED SITE. ALL COSTS ASSOCIATED WITH THIS OPERATION, INCLUDING TRANSPORT, LICENSES AND FEES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. COORDINATE THE MOVING AND STORAGE OF SALVAGED ITEMS, MATERIALS, EQUIPMENT, ETC. WITH THE OWNER.

DESIGN LOADS:

SOIL PRESSURE:

ROOF: 174 kPa (VERTICAL)

WALL (LATERAL):



EXCAVATION & BACKFILL:

1. PERFORM EXCAVATION IN ACCORDANCE WITH PROVINCE OF MANITOBA "W210 THE WORKPLACE SAFETY AND HEALTH ACT".
2. ENSURE THE BOTTOM OF THE EXCAVATION IS SMOOTH, FREE FROM DEPRESSIONS, LUMPS, AND PROTRUDING OBJECTS. REMOVE UNSUITABLE SOIL FROM BOTTOM OF EXCAVATION AS DIRECTED BY THE CONTRACT ADMINISTRATOR.
3. INSTALL 50mm LEAN MIX WORKING SLAB UNDER THE CONCRETE STRUCTURE.
4. BACKFILL CONCRETE CHAMBER WITH CLASS 1 BACKFILL.
5. DO NOT COMPACT FROZEN BACKFILL OR PLACE ON FROZEN SUBGRADE.

REINFORCING STEEL:

1. REINFORCING STEEL TO BE NEW DEFORMED BILLET STEEL BARS CONFORMING TO CSA G30.18-09 (R2014). GRADE TO BE 400 MPa.
2. REINFORCING STEEL SHALL BE CLEAN, FREE OF RUST, DIRT, LOOSE SCALE, OIL, GREASE OR ANY OTHER MATERIAL WHICH WOULD REDUCE BOND WITH THE CONCRETE.
3. SUBMIT SHOP DRAWINGS WHICH CLEARLY INDICATE BAR SIZES, SPACINGS, LOCATIONS & QUANTITIES OF REINFORCING STEEL, BENDING & CUTTING SCHEDULES, SUPPORTING & SPACING DEVICES, ETC. FOR REVIEW PRIOR TO FABRICATION. DETAIL: FABRICATE AND PLACE REINFORCING IN ACCORDANCE WITH CSA A23.1-19, CSA A23.3-19 AND ACI SP-66 (2004) UNLESS NOTED. LAP STEEL 36 BAR DIAMETERS (MINIMUM) UNLESS NOTED.
4. LAP BEAM AND STRUCTURAL SLAB TOP REINFORCING AT CENTER SPAN, AND BOTTOM STEEL AT SUPPORTS.
5. BEND ALL HORIZONTAL REINFORCING 305mm AROUND CORNERS OR PROVIDE ADDITIONAL 610mm X 610mm ANGLE BARS.
6. PROVIDE AT EACH FACE, 2-20M E.F. EXTRA BARS ALONG ALL SIDES, AND 2-20M E.F. DIAGONAL BARS AT ALL CORNERS OF OPENINGS UNLESS NOTED. PROJECT ALL BARS 610mm PAST CORNERS.
7. TIE, SUPPORT AND SPACE ALL REINFORCING STEEL WITH PROPER APPROVED DEVICES DESIGNED FOR USE IN REINFORCED CONCRETE, TO PREVENT DISPLACEMENT OF REINFORCING AND ENSURE SPECIFIED CONCRETE COVER.
8. PROVIDE MINIMUM CONCRETE COVER FOR REINFORCING STEEL AS FOLLOWS:

BASE SLAB (BOTTOM)	75mm
BASE SLAB (TOP)	50mm
WALLS	50mm
PRECAST PANELS AND BEAMS	50mm

CONCRETE:

1. CONCRETE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH CSA A23.1-19. SEE BELOW FOR MIX REQUIREMENTS.
2. ADMIXTURES SHALL NOT BE USED UNLESS SPECIFIED HEREIN OR APPROVED BY THE DESIGN ENGINEER. CALCIUM CHLORIDE SHALL NOT BE USED.
3. MIX WATER SHALL BE POTABLE.
4. DESIGN, FABRICATE AND ERECT FORMWORK/SHORING IN ACCORDANCE WITH CAN/CSA-S269.1-16. ALLOW SUFFICIENT CONCRETE CURING TIME PRIOR TO REMOVAL.
5. CONCRETE FINISHING SHALL MEET THE REQUIREMENTS OF CSA A23.1-19.
6. FORM RELEASE AGENT SHALL BE BIODEGRADABLE, NON-STAINING AND NON-VOLATILE.
7. PROVIDE ADEQUATE COLD/HOT WEATHER PROTECTION AS REQUIRED DURING CURING PERIOD.
8. PLACE AND SECURE ALL EMBEDDED ANCHORS, WELD PLATES, SLEEVES, BUCKS, DOWELS, INSERTS, WATERSTOPS, ETC., PRIOR TO PLACING CONCRETE. CO-ORDINATE WITH ALL TRADES FOR EMBEDDING OF ALL OTHER, CONDUIT, SERVICES, BLOCKING, ETC.
9. LOCATE AND FABRICATE ALL CONSTRUCTION JOINTS, CONTROL JOINTS AND EXPANSION JOINTS AS DETAILED ON THE DRAWINGS. JOINTS NOT SHOWN SHALL BE APPROVED BY THE DESIGN ENGINEER PRIOR TO THE PLACEMENT OF CONCRETE.
10. GROUT REINFORCING DOWELS WITH EPOXY GROUT HILTI HIT-HY 200, OR APPROVED EQUAL. GROUT BASE PLATES WITH NON-SHRINK GROUT SIKAM-BED STANDARD, OR APPROVED EQUAL. PLACE AND CURE ALL GROUT WITHIN TEMPERATURE RANGE RECOMMENDED BY MANUFACTURER.
11. BONDING AGENTS SHALL BE USED TO ADHERE NEW CONCRETE TO EXISTING CONCRETE OR STEEL. ACCEPTABLE PRODUCT: SIKADUR 32 HI-MOD (EPOXY), SIKALATEX R (ACRYLIC, MIX INTO GROUT) OR APPROVED EQUAL.
12. THE CONCRETE SUPPLIER SHALL BE CERTIFIED TO MEET THE REQUIREMENTS OF CSA A23.1-19.
13. THE CONCRETE SUPPLIER SHALL SUBMIT CONCRETE MIX DATA SUBMISSION FORMS FOR EACH TYPE OF CONCRETE SPECIFIED FOR REVIEW PRIOR TO BATCHING ANY CONCRETE.
14. CONCRETE STRENGTH TESTS SHALL BE ARRANGED BY THE CONTRACTOR. PROVIDE ONE SET OF TEST CYLINDERS IN ACCORDANCE WITH CSA A23.1-19 FOR EVERY 50 CUBIC METERS OF CONCRETE PLACED AND A MINIMUM OF ONE SET PER STRUCTURAL COMPONENT.

CONCRETE MIX DESIGNS:

CONCRETE MIX DESIGN SHALL BE PROPORTIONED TO MEET THE FOLLOWING PERFORMANCE REQUIREMENTS:

MANHOLE CHAMBER:

EXPOSURE CLASS	S-1
MIN. 56 DAY COMP. STRENGTH	35 MPa
CEMENT TYPE	HS
MAX. W/C RATIO	0.4
MAX. AGGREGATE SIZE	20mm
ENTRAINED AIR CONTENT	4%-7%

STRUCTURAL AND MISCELLANEOUS STEEL:

1. STRUCTURAL AND MISCELLANEOUS STEEL FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH CAN/CSA S16-19.
2. STRUCTURAL STEEL SHALL MEET THE REQUIREMENTS OF CAN/CSA G40.20/G40.21 (2013).
- ROLLED SHAPES & PLATES CSA G40.21-300W  
WELDING ELECTRODES CSA W48-14
3. WELDING SHALL BE IN ACCORDANCE WITH CSA W59-19 (2013), BY WELDERS CERTIFIED AND QUALIFIED IN ACCORDANCE WITH CSA W47.1-19. ALL WELDS TO BE 6mm UNLESS NOTED OTHERWISE.
4. FIELD CONNECTIONS SHALL BE BOLTED 19mm DIAMETER A325 BEARING TYPE UNLESS NOTED OTHERWISE. BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH CSA S16.
5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION.
6. STRUCTURAL AND MISCELLANEOUS STEEL SHALL BE FINISHED AS INDICATED BELOW, UNLESS OTHERWISE NOTED, OR APPROVED EQUAL:

GALVANIZED STEEL

- SURFACE PREP. TO SP8 (PICKLING).
- HOT DIPPED GALVANIZED TO ASTM A123-13.

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NO.	DRAWING NUMBER	REFERENCE DRAWING TITLE
REFERENCE DRAWINGS		



VERTICAL DATUM: CGVD28 (HT2.0 Geoid)		
HORIZONTAL DATUM: NAD83 (June 1990), Zone 14		
0	ISSUED FOR CONSTRUCTION	2026/03/10
NO.	REVISIONS	DATE (YY/MM/DD) BY

<b>KGS GROUP</b>	
DESIGNED BY	JMW
CHECKED BY	SS
DRAWN BY	FBV
APPROVED BY	JMW
SCALE:	RELEASED FOR CONSTRUCTION
HORIZONTAL	Duane Baker
VERTICAL	
DATE	25/09/05
DATE	March 12th, 2026
PLOT DATE:	

ENGINEER'S SEAL
CONSULTANT DRAWING NUMBER
S1

THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT ENGINEERING SERVICES DIVISION	
ARMSTRONG SEWER RELIEF WORKS CONTRACT 1	SHEET 42 OF 46
MANHOLE CHAMBER AT MAIN ST. SPECIFICATION NOTES	CITY DRAWING NUMBER 13686