

GENERAL NOTES:

- THE CONTRACTOR'S ENGINEER, APPROPRIATELY QUALIFIED AND REGISTERED IN THE PROVINCE OF MANITOBA, SHALL PROVIDE AN ALTERNATIVE TECHNICAL BASIS (INCLUDING BUT NOT LIMITED TO CALCULATIONS, DRAWINGS, DATA SHEETS, AND SPECIFICATIONS) UNDER SEAL FOR REVIEW BY THE CONTRACT ADMINISTRATOR AND ACCEPTANCE BY THE CITY, FOR WORK NOT UNDERTAKEN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- THESE NOTES ARE TO BE READ IN CONJUNCTION WITH OTHER PERTINENT CODES, SPECIFICATIONS, AND CONTRACT DOCUMENTS. IN THE EVENT OF A CONFLICT, THE MOST STRINGENT REQUIREMENT AS DETERMINED BY THE CONTRACT ADMINISTRATOR SHALL GOVERN.
- BY COMMENCING THE WORK, THE CONTRACTOR ASSERTS EXPERTISE IN THE TYPE OF WORK INVOLVED, FAMILIARITY WITH ALL RELEVANT ASPECTS AND CHARACTERISTICS OF THE SITE, AND FULL AWARENESS OF THE EXTENT AND SCOPE OF WORK INVOLVED.
- DO NOT SCALE DRAWINGS.
- VERIFY ALL DIMENSIONS SHOWN IN THE CONTRACT DOCUMENTS PRIOR TO COMMENCING CONSTRUCTION.
- VERIFY WEIGHT AND LOCATION OF ALL EQUIPMENT TO BE SUPPORTED AND REPORT ANY DISCREPANCIES TO THE CONTRACT ADMINISTRATOR PRIOR TO COMMENCING CONSTRUCTION.
- LOCATE UNDERGROUND SERVICES AND PROTECT THEM AT ALL TIMES DURING CONSTRUCTION.
- THE CONTRACTOR SHALL FOLLOW CONSTRUCTION PRACTICE FOR COLD AND HOT WEATHER REQUIREMENTS IN ACCORDANCE WITH THE APPLICABLE MATERIAL STANDARD.
- STRUCTURAL DRAWINGS SHOWING COMPLETED STRUCTURE DO NOT INDICATE COMPONENTS WHICH MAY BE NECESSARY FOR SAFETY DURING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE FOR THE PROTECTION OF THE CITY'S PERSONNEL AND PROPERTY DURING CONSTRUCTION. THE METHOD OF PROTECTION MUST BE APPROVED BY THE CONTRACT ADMINISTRATOR.
- THE CONTRACTOR SHALL RESTORE ALL ASPECTS OF PRIVATE PROPERTY ALTERED DURING CONSTRUCTION TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.
- THE CONTRACTOR IS RESPONSIBLE FOR SAFETY ON AND ABOUT THE JOB SITE DURING CONSTRUCTION AND SHALL COMPLY WITH ALL PROVINCIAL, FEDERAL, AND SITE-SPECIFIC WORKPLACE, SAFETY, AND HEALTH REGULATIONS.
- THE CONTRACTOR SHALL OBSERVE THE CITY'S REGULATIONS REGARDING FIRE PREVENTION, SAFETY AND SECURITY, AND PROVIDE ADEQUATE BARRICADES AND OTHER PROTECTION DEVICES AS REQUIRED.
- THE COMPLIANCE OF THE EXISTING STRUCTURE AND ITS ACCOUTREMENTS WITH ANY CURRENT OR APPLICABLE CODES OR STANDARDS IS NOT WITHIN THE SCOPE OF THIS PROJECT.

SUBMITTALS:

- THE CONTRACTOR SHALL SUBMIT SPECIFIED SHOP DRAWINGS TO THE CONTRACT ADMINISTRATOR FOR REVIEW. ALL SUBMISSIONS MUST BE IN METRIC UNITS. WHERE DATA IS IN IMPERIAL UNITS, THE CORRECT METRIC EQUIVALENT SHALL ALSO BE SHOWN ON ALL SUBMISSIONS FOR REVIEW.
- THE CONTRACTOR SHALL SUBMIT A CONCRETE MIX DESIGN (INCLUDING ADDITIVES AND ADMIXTURES) THAT MEETS THE MINIMUM PERFORMANCE CRITERIA AS INDICATED IN THE CONTRACT DOCUMENTS. THE CONCRETE MIX DESIGN SHALL BE SEALED, SIGNED AND DATED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA.
- ORIGINAL, PURPOSE-SPECIFIC SHOP DRAWINGS ARE TO BE PREPARED BY THE CONTRACTOR, FABRICATOR, SUBCONTRACTOR, SUPPLIER, DISTRIBUTOR, OR MANUFACTURER, TO ILLUSTRATE THE APPROPRIATE PORTIONS OF THE WORK SHOWING FABRICATION, LAYOUT, SETTING-UP, ERECTION DETAILS AS SPECIFIED IN APPROPRIATE SECTIONS.
- SHOP DRAWINGS FOR THE FOLLOWING COMPONENTS SHALL BE SEALED, SIGNED AND DATED BY A QUALIFIED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF MANITOBA:
  - REINFORCING STEEL.
  - METAL FABRICATIONS.
  - STRUCTURAL CONNECTION DETAILS

SHOP DRAWINGS NOT BEARING AN ENGINEER'S SEAL IN ACCORDANCE WITH THE ABOVE WILL BE RETURNED MARKED 'REJECTED'.

- THE CONTRACTOR SHALL REVIEW SHOP DRAWINGS, PRODUCT DATA AND SAMPLES PRIOR TO SUBMISSION AND STAMP AND SIGN DRAWINGS INDICATING CONFORMANCE TO THE CONTRACT REQUIREMENTS. THE CONTRACTOR SHALL VERIFY

FIELD MEASUREMENTS.  
FIELD CONSTRUCTION CRITERIA.  
CATALOGUE NUMBERS AND SIMILAR DATA.  
WEIGHTS AND LOADS.

SHOP DRAWINGS NOT BEARING THE CONTRACTOR'S REVIEW STAMP AND SIGNATURE IN ACCORDANCE WITH THE ABOVE WILL BE RETURNED MARKED 'NOT REVIEWED'.

- TERMS AND CONDITIONS THAT MAY EXIST IN ANY AGREEMENT BETWEEN THE CONTRACTOR AND HIS SUBCONTRACTORS SHALL NOT SUPERSEDE THE TERMS AND CONDITIONS SET FORTH IN THE CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL COORDINATE EACH SUBMISSION WITH REQUIREMENTS OF WORK AND CONTRACT DOCUMENTS. INDIVIDUAL SHOP DRAWINGS WILL NOT BE REVIEWED UNTIL ALL RELATED DRAWINGS ARE AVAILABLE.
- THE CONTRACTOR'S RESPONSIBILITY FOR ERRORS AND OMISSIONS IN SUBMISSION IS NOT RELIEVED BY THE CONTRACT ADMINISTRATOR REVIEW OF SUBMITTALS.
- NO DELAY OR CLAIMS WILL BE ALLOWED THAT ARISE BECAUSE OF DELAYS IN SUBMISSION, RE-SUBMISSION, AND REVIEW OF SHOP DRAWINGS.

DESIGN SPECIFICATIONS:

- UNLESS OTHERWISE NOTED, THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE LATEST EDITIONS AND ADDENDUM OF THE FOLLOWING CODES AND DOCUMENTS, WHICH ARE TO BE USED AND MADE AVAILABLE FOR REFERENCE ON SITE FOR THE DURATION OF THE WORK:

NATIONAL BUILDING CODE OF CANADA  
MANITOBA BUILDING CODE  
NATIONAL ENERGY CODE FOR BUILDINGS  
MANITOBA ENERGY CODE FOR BUILDINGS  
CONCRETE CODE CSA A23.1, A23.2 AND A23.3  
CANADIAN FOUNDATION ENGINEERING MANUAL  
STEEL CODE CSA S16, CSA G40.21 AND CSA-S136  
CSA-A371 MASONRY CONSTRUCTION FOR BUILDINGS  
ALL SPECIFICATIONS COMPLETE WITH ADDENDA AND CHANGE ORDERS.  
DRAWINGS WITH THE LATEST REVISIONS AS THEY OCCUR.

DESIGN LOADS:

## 1. CLIMATIC:

SNOW	$S_s = 1.9 \text{ kPa}$
RAIN	$S_r = 0.2 \text{ kPa}$
ROOF SNOW	$S = 2.15 \text{ kPa}$
IMP.	$I_s = 1.25 \text{ (POST DISASTER)}$
DRIFT	(AS INDICATED)
WIND	$Q_w = 0.45 \text{ kPa}$
IMP.	$I_w = 1.25 \text{ (POST DISASTER)}$

## 2. OCCUPANCY AND USE:

LIVE (S.O.G.)	$LL = 3.6 \text{ kPa}$
LIVE (TONNER FLOOR ADD'L FRAMING @ HVAC OPENINGS)	$LL = 12.0 \text{ kPa OR } 54\text{ kN OVER } 250\text{mm} \times 600\text{mm}$
DEAD	$DL = \text{SELF WEIGHT}$
COLLATERAL	$CL = 1.0 \text{ kPa}$
CHLORINE SCRUBBER	MAX. 13,500kg (INCLUDING VESSEL AND MEDIA)
RTUS	SEE PLANS

## 3. SEISMIC:

$S_a (0.2) = 0.113$	$S_a (5.0) = 0.00433$
$S_a (0.5) = 0.106$	$S_a (10.0) = 0.00126$
$S_a (1.0) = 0.0548$	$PGA = 0.0677$
$S_a (2.0) = 0.0216$	$PGA = 0.0542$
SITE CLASS 'E'	
IMP.	$I_e = 1.5 \text{ (POST DISASTER)}$
SEISMIC CATEGORY 'SC1'	
VESTIBULE:	
SCRUBBER:	

GEOTECHNICAL/FOUNDATIONS:

- VESTIBULE SLAB, SCRUBBER PAD FOUNDATION AND PARKING PAVING BASED ON TREK GEOTECHNICAL REPORT # 0019 01300 DATED AUG. 16, 2023.
- FACTORED SOIL BEARING RESISTANCES ( $\phi = 0.5, 25\text{mm} \text{ SETTLEMENT}$ )  
ULS = 125kPa  
SLS = 85kPa
- ORGANICS, DEBRIS, AND ALL OTHER DELETERIOUS MATERIALS SHOULD BE REMOVED SUCH THAT THE BEARING SURFACES CONSIST OF VERY STIFF CLAY FILL.
- EXCAVATION FOR THE MAT SHOULD BE COMPLETED BY AN EXCAVATOR EQUIPPED WITH A SMOOTH-BLADED BUCKET OPERATING FROM THE EDGE OF THE EXCAVATION.
- AFTER EXCAVATION, THE UPPER 200MM OF THE CLAY FILL SHOULD BE SCARIFIED, MOISTURE CONDITIONED AND COMPACTED TO A MINIMUM OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD).
- THE BEARING SURFACE SHOULD BE PROTECTED FROM FREEZING, DRYING, AND INUNDATION AT ALL TIMES. IF ANY OF THESE CONDITIONS OCCUR, THE DISTURBED MATERIAL SHOULD BE REMOVED IN ITS ENTIRETY AND THE CLAY FILL BEARING SURFACE SHOULD BE COMPACTED TO 95% OF THE SPMDD. IF GROUNDWATER SEEPAGE IS ENCOUNTERED, IT SHOULD BE CONTROLLED AND REMOVED FROM THE BEARING SURFACE, SUCH THAT CONCRETE IS PLACED UNDER DRY CONDITIONS.
- COMPACTED FILL MAY BE PLACED AS REQUIRED TO OBTAIN PROPER GRADE LEVEL. MAX 150MM, GRANULAR 'A' BASE, COMPACTED TO 95% SPMDD FOR FOUNDATIONS.
- NEW PAVEMENT AREA SHALL HAVE MIN. 300 MM. FINAL THICKNESS OF 'A' BASE COMPACTED TO 100% SPMDD IN MAX. 100MM LIFTS ON UNDISTURBED NATIVE SOIL OR ON CONDITIONAL SOIL PER #5 ABOVE.
- THE FINAL BEARING SURFACE SHOULD BE INSPECTED AND DOCUMENTED BY TREK PRIOR TO CONCRETE PLACEMENT TO VERIFY THE ADEQUACY OF THE BEARING SURFACE AND PROPER INSTALLATION OF THE FOUNDATION. THIS IS PARTICULARLY IMPORTANT DUE TO THE DISTANCE OF OUR CLOSEST TEST HOLE TO THE CHLORINE SCRUBBER LOCATION.

CAST-IN-PLACE CONCRETE:

- ALL CONCRETE TO BE MIXED, PLACED, AND TESTED ACCORDING TO CSA A23.1 AND CSA A23.2.
- CONCRETE: COMPRESSIVE STRENGTH = 35 MPa AT 28 DAYS, SLUMP = 80 +/- 20mm, MAXIMUM AGGREGATE SIZE = 20mm, ENTRAINED AIR = 7% +/- 1%, CEMENT = HS OR HSB SULPHATE RESISTANT (CLASS S2)
- ADVISE THE CONTRACT ADMINISTRATOR AT LEAST 48 HOURS IN ADVANCE OF CONCRETE POUR.
- SLABS TO HAVE MINIMUM 2% SLOPE TOWARDS DRAINS UNLESS NOTED OTHERWISE. REFER TO BUILDING AND MECHANICAL DRAWINGS IF NOT INDICATED ON STRUCTURAL SET.
- FORMS SHALL NOT BE STRIPPED UNTIL 75% OF THE SPECIFIED CONCRETE STRENGTH HAS BEEN REACHED.

ACCESSORIES EMBEDDED IN CONCRETE:

- THE CONTRACTOR IS RESPONSIBLE FOR SUPPLYING, LOCATING AND PLACING ALL PLATES, ANCHOR BOLTS, INSERTS, DOWELS, SLEEVES AND OPENINGS. COORDINATE ACCESSORY PLACEMENT REQUIREMENTS WITH THE SHOP DRAWINGS.
- ANCHOR BOLTS, INSERTS, SLEEVES DOWELS, ETC. SHALL BE SECURED IN POSITION BY MEANS OF TEMPLATES BEFORE CONCRETE IS PLACED.

REINFORCING STEEL:

- ALL REINFORCING STEEL TO CONFORM TO CSA G30.18M, GRADE 400.
- ALL REINFORCING STEEL TO BE DETAILED IN ACCORDANCE WITH THE LATEST RSIC REINFORCING STEEL MANUAL OF STANDARD PRACTICE, CSA-A23.1 AND CSA-A23.3.

CONCRETE CLEAR COVER (UNLESS NOTED OTHERWISE):

PILE	75MM
GRADE BEAMS (BOTTOM)	40MM
GRADE BEAMS (SIDE & TOP)	40MM
SLABS (BOTTOM)	75MM
SLABS (TOP)	30MM
WALLS	30MM

- SUBMIT TO THE CONTRACT ADMINISTRATOR SHOP DRAWINGS WHICH CLEARLY INDICATE BAR SIZES, GRADE, SPACING, HOOKS, BENDS, AND SUPPORTING / SPACING DEVICES, ETC., FOR REVIEW PRIOR TO THE FABRICATION OF REINFORCING STEEL.

- DO NOT PLACE REINFORCEMENT WITHOUT FIRST OBTAINING A COPY OF THE REVIEWED SHOP DRAWINGS FROM THE CONTRACT ADMINISTRATOR.

- ALL REINFORCING SHALL BE HELD IN PLACE AND TIED BY THE USE OF PROPER ACCESSORIES SUPPLIED BY THE REINFORCING STEEL FABRICATOR.

- ALL REINFORCING STEEL SHALL BE CLEANED OF ALL DIRT, GREASE AND OTHER DELETERIOUS MATERIALS PRIOR TO PLACING.

- REINFORCING STEEL SHALL NOT BE WELDED OR HEATED UNLESS NOTED OTHERWISE.

- EXTEND LONGITUDINAL STEEL IN GRADE BEAMS 450MM AROUND CORNERS, OR USE 900MM CORNER BARS UNLESS NOTED OTHERWISE.

- IF REINFORCING STEEL IS LAPPED, BOTTOM STEEL SHALL ONLY BE LAPPED OVER SUPPORTS, TOP STEEL SHALL ONLY BE LAPPED AT MID-SPAN.

MASONRY:

- ALL MASONRY WORK SHALL BE DONE IN ACCORDANCE WITH CSA-A371.
- CONCRETE BLOCKS TO CONFORM TO CSA-A165. STANDARD HOLLOW MASONRY UNITS TO BE H/15/A/M. FLUTE SIZE, NUMBER-PER-BLOCK, AND SPACING TO MATCH EXISTING FLUTED MASONRY BLOCK.
- MORTAR TO CONFORM TO CSA-A179, TYPES BASED ON PROPORTION SPECIFICATIONS, TYPE S.
- USE 9 GAUGE TRUSS TYPE REINFORCEMENT WITH DEFORMATIONS, TIES AND ANCHORS EVERY SECOND COURSE. ALL SPLICES SHALL BE LAPPED 750MM COURSE TO COURSE.
- JOINT REINFORCEMENT SHALL BE MADE CONTINUOUS AT ALL WALL CORNERS BY USE OF 'L' SHAPED PIECES SPECIFICALLY FABRICATED FOR THE APPLICATION.
- BOTTOM COURSE TO BE BOND BLOCK AND TOP COURSE TO BE 'U'-BLOCK LINTEL WALLS WITH 2 - 15M REINFORCING BARS AND 20 MPa CONCRETE FILL CONTINUOUS UNLESS OTHERWISE NOTED. FILL CONCRETE SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 10MM AND A MAXIMUM SLUMP OF 200MM.
- ALL MASONRY WALLS TO BE SECURELY BRACED UNTIL THE STRUCTURE IS CLOSED IN.
- PROVIDE 'U'-BLOCK LINTELS OVER ALL OPENINGS IN BLOCK WALL (INCLUDING THOSE FOR MECHANICAL OR ELECTRICAL SERVICES AND EQUIPMENT) AS FOLLOWS UNLESS OTHERWISE NOTED:
 

UP TO 1200MM	200MM 'U'-BLOCK, 2 - 15M BOTTOM, 20 MPa FILL, BEAR MINIMUM 200MM EACH END
UP TO 2400MM	400MM 'U'-BLOCK, 2 - 15M BOTTOM, 20 MPa FILL, BEAR MINIMUM 400MM EACH END

- VERTICAL REINFORCING: PROVIDE ONE 15M FULL HEIGHT VERTICAL BAR WITH MATCHING HOOKED DOWEL AND COREFILL AT:
 

900MM	OR AS PER DRAWINGS.
UNSUPPORTED ENDS OF WALLS AND AT CONTROL JOINTS.	
EACH CORNER AND AT WALL INTERSECTIONS.	
EACH SIDE OF DOORS.	
EACH SIDE OF OPENINGS	
- COREFILLS SHALL BE DONE IN MAXIMUM 1200MM LIFTS, AND SHALL BE RODDED TO AVOID HONEYCOMBING.

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DRAWINGS WITH THE LATEST REVISIONS AS THEY OCCUR.



AtkinsRéalis		148 Nature Park Way, Winnipeg, Manitoba Canada R3P 0X7 204-786-8080	ENGINEER'S SEAL
DESIGNED BY: K. KOTYK	CHECKED BY: F. MARSHALL		
DRAWN BY: B. DICKSON	APPROVED BY: V. ELIMBAN		
SCALE: N.T.S.	ISSUED FOR CONSTRUCTION BY: M. SKINNER		
DATE: 2023-10-05	DATE: 2023/04/30		
00 ISSUED FOR TENDER AND CONSTRUCTION	2023/04/30 KK FM		
NO. REVISIONS	DATE DESIGN CHECK	CONSULTANT NO.: 694715	

THE CITY OF WINNIPEG		Winnipeg
WATER AND WASTE DEPARTMENT		
MC PHILLIPS PUMPING STATION		
CHLORINE SYSTEM UPGRADES		
STRUCTURAL		
GENERAL NOTES		
CITY DRAWING NUMBER 1-0640C-S0001	HEET 001	