

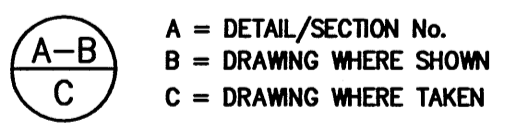
NOTE: CONTRACTOR SHALL CONFIRM ACTUAL PIPE INVERT AND NOTIFY CONTRACT ADMINISTRATOR OF ANY DISCREPANCY WITH THE INVERTS SHOWN.  
 GROUNDWATER ELEVATION REPORTED AT ELEVATION 223.18 ON COMPLETION OF DRILLING AND AT ELEVATION 223.66 ON FEBRUARY 13, 2004, (FIVE WEEKS AFTER DRILLING), BY KGS GROUP.



- GENERAL NOTES:**
- DESIGN IS IN ACCORDANCE WITH THE NATIONAL BUILDING CODE OF CANADA 1995 EDITION PLUS 1998 MANITOBA AMENDMENTS. CONCRETE WALLS ARE DESIGNED IN ACCORDANCE WITH THE RECOMMENDATIONS CONTAINED IN ACI 308R FOR WATERTIGHT STRUCTURES.
  - EXCAVATE ALL TOP SOIL, ORGANIC MATERIAL AND LOOSE OR UNSUITABLE FILL TO THE APPROVAL OF THE CONTRACT ADMINISTRATOR.
  - CONSTRUCTION JOINT LOCATIONS ARE TO BE APPROVED BY THE CONTRACT ADMINISTRATOR.
  - DO NOT SCALE THE DRAWINGS.
  - VERIFY ALL DIMENSIONS, ELEVATIONS AND SCOPE OF WORK PRIOR TO COMMENCEMENT OF CONSTRUCTION.
  - VERIFY ALL MECHANICAL OPENINGS.
  - VERIFY ANY MAJOR OPENINGS THAT ARE REQUIRED BUT NOT SHOWN ON THE DRAWINGS WITH THE CONTRACT ADMINISTRATOR.
  - STRUCTURAL DRAWINGS SHOW THE COMPLETED STRUCTURE. THEY DO NOT SHOW THE COMPONENTS WHICH MAY BE NECESSARY FOR SAFETY DURING CONSTRUCTION.
  - THE CONTRACTOR IS RESPONSIBLE FOR SAFETY IN AND ABOUT THE JOB SITE DURING CONSTRUCTION.
  - IF ANY UNSOUND STRUCTURAL CONDITIONS ARE OBSERVED OR CREATED DURING CONSTRUCTION, REPORT THEM IMMEDIATELY TO THE CONTRACT ADMINISTRATOR.
  - STRUCTURAL DRAWINGS MAY NOT SHOW ALL MECHANICAL OPENINGS. REFER TO MECHANICAL DRAWINGS FOR ACTUAL LOCATIONS AND ELEVATIONS OF OPENINGS. NOTIFY CONTRACT ADMINISTRATOR OF ANY ADDITIONAL OPENING REQUIREMENTS.
  - DESIGN LOADS ARE AS NOTED BELOW:  
 FLOOR LIVE LOADS: 3.6 kPa  
 HATCHES: 3.6 kPa  
 ALL OTHER AREAS: 3.6 kPa  
 ROOF LOADS: 0.42 kPa  
 SNOW LOAD: 1.6 kPa PLUS APPLICABLE NBC MODIFICATIONS.  
 WIND LOAD  $w = (1/20)$   
 FOUNDATION WALL LOADS:  
 LIVE LOAD: 6.0 kPa PLUS ADDITIONAL CONSTRUCTION LOAD  
 $P = K (\gamma_{soil} \times H + q)$   
 WHERE  $K = 0.7$ ,  $\gamma_{soil} = 20 \text{ kN/m}^3$ ,  $q = 6 \text{ kPa}$ ,  
 $H = \text{HT. OF FILL (m)}$   
 LATERAL FORCE  
 13. DESIGN FLOOD LEVELS:  
 300 YEAR FLOOD: 233.460  
 FLOOD PROTECTION: 232.260

- FOUNDATIONS:**
- FOUNDATIONS DESIGNED IN ACCORDANCE WITH RECOMMENDATIONS CONTAINED IN THE JULY 14, 2004, GEOTECHNICAL INVESTIGATION BY KGS GROUP.
- CAST IN PLACE CONCRETE:**
- TO BE READ IN CONJUNCTION WITH CW 2160 AND AS AMENDED IN ACCORDANCE WITH THESE NOTES.
  - CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF CSA A23.1.
  - CONCRETE MIX SHALL BE IN ACCORDANCE WITH ALTERNATIVE 1, AND SHALL HAVE THE FOLLOWING PROPERTIES:  
 I. CEMENT TYPE 50  
 II. CLASS OF EXPOSURE: S-1  
 III. MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS: 35MPa  
 IV. MAXIMUM COARSE AGGREGATE: 20mm  
 V. MAXIMUM SLUMP: 80mm ± 20mm  
 VI. AIR CONTENT: 5 - 8%  
 VII. MINIMUM CEMENT CONTENT: 335 kg/m<sup>3</sup>  
 VIII. MAXIMUM CEMENT/WATER RATIO: 0.40
  - CONCRETE COVER SHALL BE 50mm.
  - CHAMFER ALL EXTERIOR CORNERS: 20mm
  - FORMWORK, SHORING AND BRACING SHALL MEET DESIGN CODE AND CAN3-A23.1 REQUIREMENTS, AND BE CONSTRUCTED ACCURATELY SO THAT RESULTANT FINISHED CONCRETE CONFORMS TO THE SHAPES, LINES AND DIMENSIONS INDICATED ON THE DRAWINGS.
  - FOR COLD WEATHER CONCRETING, ALL ICE, SNOW AND FROST SHALL BE REMOVED FROM THE FORMWORK AND THE TEMPERATURE OF ALL CONTACT SURFACES INCLUDING REINFORCING STEEL SHALL BE RAISED ABOVE 10°C FOR AT LEAST 24 HOURS PRIOR TO CASTING CONCRETE. CONCRETE SHALL NOT BE LESS THAN 20°C NOR MORE THAN 30°C WHEN DEPOSITED. CONCRETE SHALL BE ENCLOSED, AND THIS AREA SHALL HAVE A TEMPERATURE OF NOT LESS THAN 20°C FOR 3 DAYS AND NOT LESS THAN 5°C FOR AN ADDITIONAL 4 DAYS.
  - THREE CONCRETE TEST CYLINDERS AND ONE SLUMP/AIR TEST SHALL BE TAKEN EACH DAY THAT CONCRETE IS PLACED, AND SHALL BE REPEATED FOR EVERY 20 CUBIC METRES OF CONCRETE PLACED EACH DAY UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR.
  - NOTIFY THE CONTRACT ADMINISTRATOR OR TESTING AGENCY 48 HOURS PRIOR TO PLACING CONCRETE.

- REINFORCING STEEL:**
- TO BE READ IN CONJUNCTION WITH CW 2160 AND AS AMENDED IN ACCORDANCE WITH THESE NOTES.
  - ALL REINFORCING STEEL SHALL CONFORM TO CSA G30.18M, GRADE 400.
  - PERFORM CONCRETE REINFORCING WORK IN ACCORDANCE WITH CSA A23.1.
  - LAPS SHALL BE AT LEAST 40 BAR DIAMETERS, LOCATE REINFORCING SPLICES NOT INDICATED IN THE DRAWINGS AT POINTS OF MINIMUM STRESS.
  - BEFORE PLACING CONCRETE, ENSURE REINFORCING IS CLEAN, FREE OF LOOSE SCALE, DIRT OR OTHER FOREIGN MATTER THAT WOULD REDUCE OR PREVENT BOND TO THE CONCRETE.
  - SHOP DRAWINGS SHALL BE SUBMITTED WHICH CLEARLY INDICATE BAR SIZES, SPACINGS, LOCATIONS AND QUANTITIES OF REINFORCING STEEL.
  - COPIES OF STRUCTURAL DRAWINGS WILL NOT BE ACCEPTED FOR USE AS SHOP DRAWINGS.
- STRUCTURAL STEEL:**
- ALL STRUCTURAL STEEL SHAPES AND PLATES SHALL BE IN ACCORDANCE WITH CSA G40.21-M, GRADE 300W, EXCEPT W, HP AND HSS SECTIONS WHICH SHALL BE GRADE 350W CLASS C.
  - ALL GALVANIZING SHALL COMPLY WITH THE LATEST EDITION OF CSA G164, WITH MINIMUM ZINC COATING OF 600g/m<sup>2</sup>. TOUCH UPS TO BE MADE WITH GALVALLOY OR GAL-MZ.
  - ALL BOLTS TO BE ASTM A316 STAINLESS STEEL, UNLESS OTHERWISE INDICATED.
- OTHER NOTES:**
- LOCATION AND SEWER DETAILS ARE SHOWN ON DRAWING NO. LD-3037
  - ALL ALUMINIUM IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH BITUMINOUS ISOLATION COATING AT THE ALUMINIUM / CONCRETE INTERFACE.



NOTE: These design documents are prepared solely for the use by the party with whom the design professional has entered into a contract and there are no representations of any kind made by the design professional to any party with whom the design professional has not entered into a contract.

**METRIC**  
 WHOLE NUMBERS INDICATE MILLIMETRES  
 DECIMALIZED NUMBERS INDICATE METRES

**APGM**  
 Certificate of Authorization  
 ND LEA Engineers & Planners Inc.  
 No. 2728 Expiry: April 30, 2005

Aug 04, 2004 - 3:00pm  
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<b>NDLEA Engineers &amp; Planners Inc.</b> Suite 111-93 Lombard Avenue Winnipeg, Manitoba R3B 3B1 Phone (204) 943-3178 Facsimile (204) 943-4948		
DESIGNED BY: MH DRAWN BY: RCS HOR. SCALE: AS SHOWN VERTICAL:	CHECKED BY: JPL APPROVED BY: [Signature] RELEASED FOR CONSTRUCTION: [Signature]	
NO. REVISIONS: 1 DATE: 04 08 05	DATE: 04 08 05	BID OPPORTUNITY 416-2004 PLOT DATE: 04 08 23

**THE CITY OF WINNIPEG**  
 WATER AND WASTE DEPARTMENT  
 2004 OUTFALL GATE CHAMBER UPGRADES  
 RICE ROAD  
 LDS OUTFALL GATE CHAMBER MODIFICATION  
 CONCRETE DETAILS

CONSULTANT DRAWING NUMBER	41333 04 S2
SHEET	6 OF 12
CITY DRAWING NUMBER	LD-3039