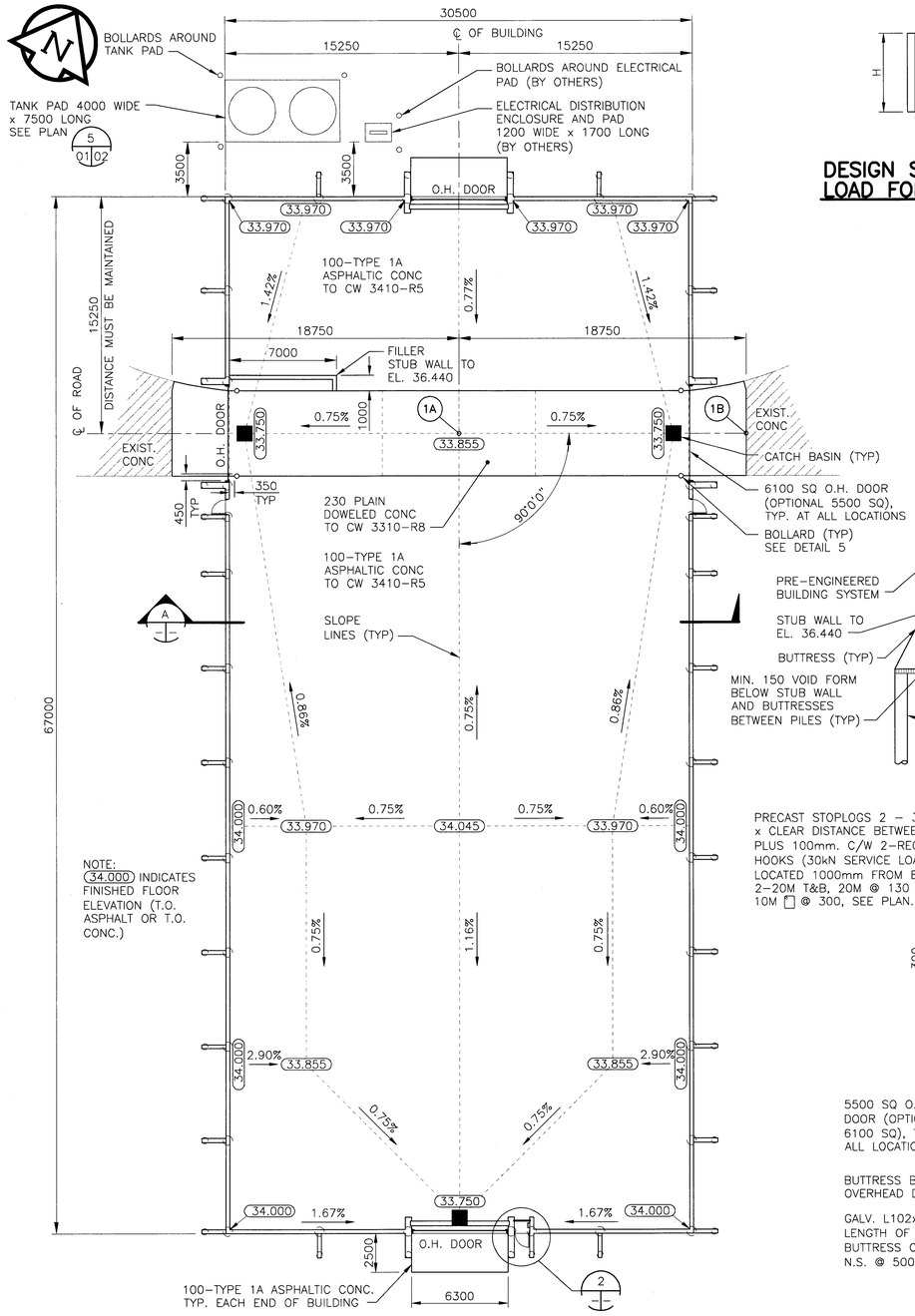
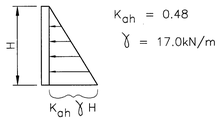


1 SALT/SAND STORAGE BUILDING FLOOR PLAN
1:200

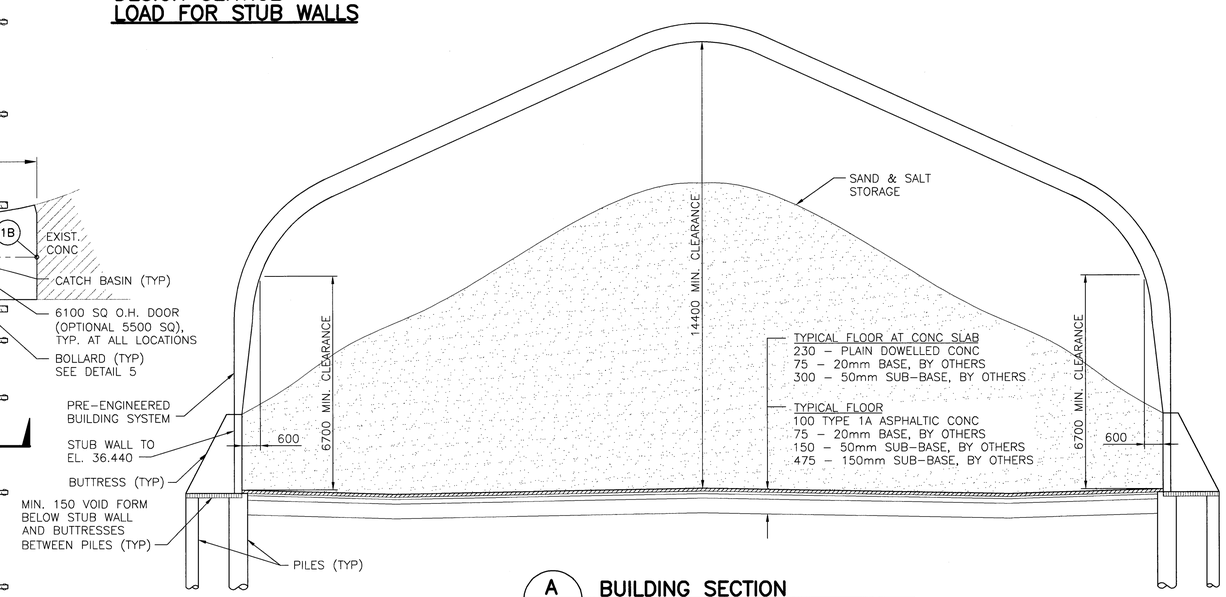


K_{ah} = 0.48

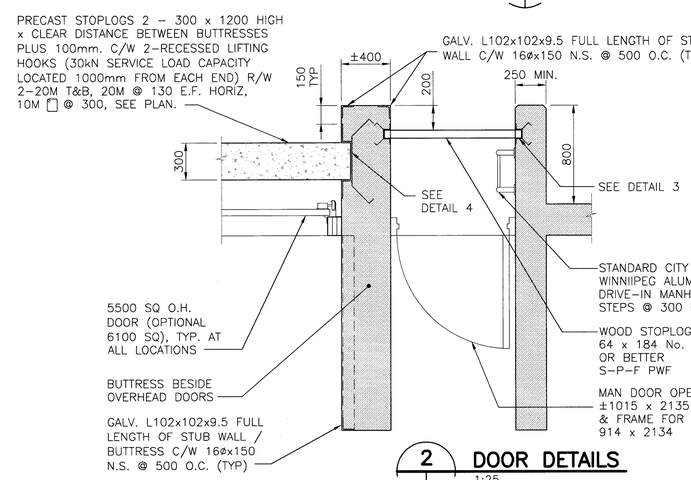
γ = 17.0kN/m

DESIGN SERVICE LOAD FOR STUB WALLS

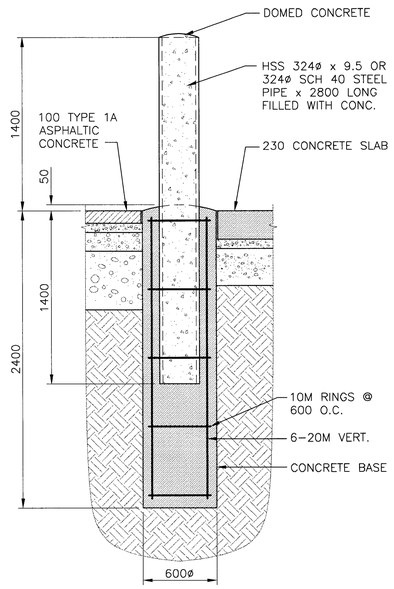
PAVEMENT COORDINATE LAYOUT			
POINT	DESCRIPTION	NORTHING	EASTING
1A	BLDG WORK POINT	1073.951	1045.235
1B	BLDG WORK POINT	1073.951	1063.985



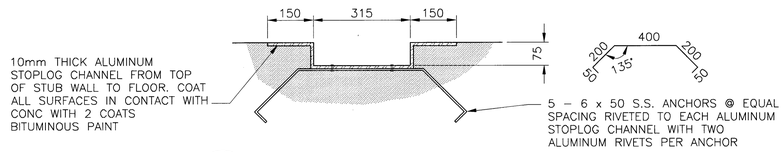
A BUILDING SECTION
1:100



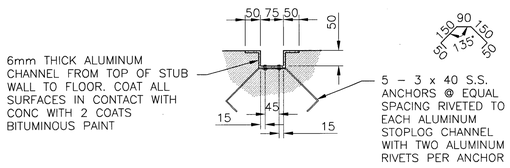
2 DOOR DETAILS
1:25



5 BOLLARD DETAIL
1:25



4 O.H. DOOR STOPLOG CHANNEL DETAIL
1:10



3 MAN DOOR STOPLOG CHANNEL DETAIL
1:10

DRAWING NOTES

GENERAL
1. DO NOT SCALE DRAWINGS.
2. VERIFY ALL DIMENSIONS SHOWN PRIOR TO COMMENCING CONSTRUCTION.
3. VERIFY WEIGHT AND LOCATION OF ALL EQUIPMENT ON STRUCTURE AND REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO CONSTRUCTION.
4. IF OTHER THAN THE PRE-ENGINEERED BUILDING SIZE DRAWN IS APPROVED AND USED, MAKE ALL NECESSARY CHANGES TO ASSOCIATED WORK INCLUDING FOUNDATIONS, PAVEMENTS, BASE & SUB-BASE WITHOUT ADDITIONAL COST TO THE OWNER.
5. LOCATE UNDERGROUND SERVICES AND PROTECT THEM AT ALL TIMES DURING CONSTRUCTION.
6. STRUCTURAL DRAWINGS SHOWING THE COMPLETED STRUCTURE DO NOT INDICATE COMPONENTS WHICH MAY BE NECESSARY FOR SAFETY DURING CONSTRUCTION.

EARTHWORK
1. EXCAVATE AS REQUIRED AND REMOVE FROM SITE MATERIALS NOT REQUIRED FOR BACK FILL OR GRADING.
2. BACKFILL WITH MATERIALS INDICATED ON DRAWINGS AND SPECIFICATIONS.
3. COMPACTION (STANDARD PROCTOR DRY DENSITY %)
   .1 SUB GRADE: 95%
   .2 BASE & SUB-BASE UNDER SLAB-ON-GRADE AND ASPHALT 100%
4. GRADE AND FILL SITE TO ELEVATION SHOWN ALLOWING FOR PAVEMENTS.
5. FILL IN 200mm LIFTS (LOOSE) AND COMPACT EACH LIFT TO REQUIRED DENSITY.

FOUNDATIONS
1. SOIL LOGS ARE PROVIDED FOR INFORMATION ONLY. EXAMINE PREVAILING CONDITIONS AT SITE PRIOR TO SUBMITTING BID. NO EXTRAS SHALL BE GRANTED SHOULD ACTUAL SITE CONDITIONS DIFFER FROM THOSE INDICATED.
2. ALL FRICTION PILES ARE TO BE DESIGNED ON BASIS OF 300 PSF (14.4kPa) SKIN FRICTION.
3. EFFECTIVE LENGTH OF FRICTION PILE IS LENGTH INSTALLED MINUS 3000mm.
4. MIN. PILE REINFORCING TO BE 5-10Mx6000mm LONG; 10M RINGS AT 1200mm ON CENTRE. EXTEND VERTICAL REINFORCING 460mm INTO BEAMS OR WALLS. REINFORCING SHALL BE DESIGNED TO SUIT VERTICAL & LATERAL LOADS ON PILES.

CAST-IN-PLACE CONCRETE
1. ALL CONCRETE TO BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH LATEST EDITION OF CSA A23.1 AND CSA A23.2.
2. CONCRETE STRENGTH AT 28 DAYS SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE ON DRAWINGS.
   PILES:
   MIN. 32MPa; TYPE 50 CEMENT; WATER/CEMENT RATIO 0.45;
   SLUMP MINIMUM 125mm;
   AGGREGATE MAXIMUM 40mm;
   ENTRAINED AIR 4-7%
   WALLS:
   32MPa; WATER/CEMENT RATIO 0.45;
   SLUMP MAX. 90mm;
   AGGREGATE MAX. 20mm;
   ENTRAINED AIR 4-7%
   CONCRETE PAVEMENT: TO CW 3310-R8
3. AIR ENTRAINING ADMIXTURES SHALL CONFORM TO REQUIREMENTS OF CSA A266.4.

REINFORCING STEEL
1. ALL REINFORCING STEEL TO BE CSA G30.18-M92 400MPa DEFORMED BARS EXCEPT STIRRUPS WHICH MAY BE 300 MPa GRADE STEEL. ALL REINFORCING TO BE DETAILED IN ACCORDANCE WITH LATEST EDITION OF ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.
2. REINFORCING STEEL COVER TO CONFORM TO LATEST EDITION OF CSA A23.3 AND AS FOLLOWS:
   WALLS: 50mm
   PILE: 75mm
3. IN WALLS BEND HORIZONTAL STEEL 460mm AROUND CORNERS, OR USE EXTRA CORNER BARS 900mm LONG.
4. BOTTOM STEEL IN CONCRETE BEAMS TO BE BUTT SPLICED OVER SUPPORT, TOP STEEL TO BE LAPPED AT CENTRE SPAN UNLESS NOTED OTHERWISE.
5. ALL REINFORCING TO BE HELD IN PLACE AND TIED WITH PROPER ACCESSORIES, SUCH AS HI-CHAIRS AND SPACERS. SUPPLY AND DETAIL ALL ACCESSORIES. HI-CHAIRS TO HAVE 4 LEGS AND TO BE STAPLED OR NAILED TO FORMWORK.
6. ALL OPENINGS THROUGH CAST-IN-PLACE CONCRETE TO BE TRIMMED WITH MIN. 2-15M EXTENDING A MINIMUM OF 600mm PAST OPENING UNLESS NOTED OTHERWISE.

FORM WORK
1. USE 150mm CARDBOARD VOID FORM WRAPPED IN POLYETHYLENE SHEETS AS BOTTOM FORM FOR WALLS. ACCESSORIES SUCH AS HI-CHAIRS, SPACERS, ETC., SHALL BE SUPPORTED USING PADS OF PLYWOOD OR TEMPERED FIBREBOARD TO PREVENT PUNCTURING FORM.
2. PROVIDE 12mm ASPHALT IMPREGNATED FIBREBOARD SLIP JOINT BETWEEN CONCRETE SLABS ON GRADE AND STRUCTURAL MEMBERS.
3. ALL CONSTRUCTION JOINTS TO HAVE KEY MINIMUM 40mm DEEP.

METAL FABRICATIONS
1. PROVIDE SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION.
2. MATERIAL: GALVANIZED STEEL AND ALUMINUM
3. WELDING: STEEL TO CSA W59-M1989, ALUMINUM TO CSA W59.2-M1991
4. STEEL SECTIONS AND PLATES: TO CAN3 G40.21-92 GRADE 300W.
5. STEEL PIPE: TO ASTM A53.
6. ALUMINUM: 6061-T4 ALLOY IN STRUCTURAL SHAPES.
7. BOLTS AND ANCHOR BOLTS: TO ASTM A307-76B FOR STEEL, STAINLESS STEEL FOR ALUMINUM.
8. ISOLATION COATING: ASPHALTIC PAINT, TO CAN/CGSB-1.108-M89. COAT ALUMINUM WHERE IN CONTACT WITH CONCRETE OR MASONRY.

PRE-ENGINEERED BUILDING
1. DESIGN BUILDING WALLS AND ROOF TO ALLOW FOR THERMAL MOVEMENT OF COMPONENT MATERIALS CAUSED BY AMBIENT TEMPERATURE RANGE OF +40°C TO -40° C, WITHOUT CAUSING BUCKLING, FAILURE OF JOINT SEALS, UNDUE STRESS OF FASTENERS OR OTHER DETRIMENTAL EFFECTS.
2. BUILDING SHALL BE WEATHERTIGHT IN ACCORDANCE WITH PART 5, NBC 1995.
3. PROVIDE FOR POSITIVE DRAINAGE OF CONDENSATION OCCURING WITHIN ALL CONSTRUCTION AND WATER ENTERING AT JOINTS, TO EXTERIOR FACE OF WALL IN ACCORDANCE WITH NRC "RAIN SCREEN PRINCIPLES".
4. CONTROL AIR LEAKAGE AND VAPOR DIFFUSION IN ACCORDANCE WITH NBC 1995 PART 5, COMPONENTS SUCH AS DOOR FRAMES, MECHANICAL VENTS AND LOUVERS, PIPE PENETRATIONS AND CONCRETE BASE.
5. MAXIMUM DEFLECTION:
   .1 ROOF CLADDING UNDER FULL DESIGN LOAD: 1/180 OF CLEAR SPAN.
   .2 WALL CLADDING UNDER FULL WIND LOAD AND SUCTION: 1/190 OF CLEAR SPAN.
6. ACCEPTABLE MATERIALS: PROPOSED ALTERNATIVE BUILDING TYPES MUST BE SUBMITTED FOR APPROVAL PRIOR TO CLOSE OF TENDERS.
7. SUBMIT FOLLOWING DOCUMENTS:
   .1 A STRUCTURAL ANALYSIS CERTIFICATION OF BUILDING SYSTEM.
   .2 CERTIFICATION STATING DESIGN CRITERIA USED AND LOADS ASSUMED IN DESIGN AND PLACING SOLE RESPONSIBILITY FOR DESIGN WITH BUILDING SYSTEMS MANUFACTURER.
   .3 BUILDING ERECTION AND SHOP FABRICATION DRAWINGS UNDER THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA.

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

BID OPORTUNITY No. 229-2004

APEGM Certificate of Authorization UMA Engineering Ltd. No. 256 Expiry: April 30, 2005

LOCATION APPROVED
UNDERGROUND STRUCTURES

SUPR. U/G STRUCTURES COMMITTEE DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE. BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

B.M.
ELEV.

NO.	REVISIONS	DATE	BY
1	ISSUED FOR BID	04May25	CGC
0	ISSUED FOR REVIEW	04May04	CGC

UMA Engineering Ltd.
• Consulting • Engineering • Construction • Management Services

DESIGNED BY	SBB	CHECKED BY	
DRAWN BY	CGC	APPROVED BY	
HOR. SCALE:	AS NOTED	RELEASED FOR CONSTRUCTION	
VERTICAL:	N/A		
Y/M/D:	04/03/22	DATE	

ENGINEER'S SEAL
PROVINCE OF MANITOBA
S.B. BISWANGER
04/05/25
REGISTERED PROFESSIONAL ENGINEER

CONSULTANT DRAWING NO.
41-09-0265-366-00

Winnipeg
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

SAND/SALT STORAGE FACILITY
PUBLIC WORKS YARD
1539 WAVERLEY STREET

STRUCTURAL
BUILDING PLAN, SECTIONS & DETAILS

CITY DRAWING NUMBER N/A
SHEET 1 OF 4
01 1

PLOT SCALE = 1:1
AutoCAD 15.06 P:\0265\366-00\ALD\Sand Salt Facility 1539 Waverley\dwg\Structural\S-Bldg Plan, Sections, Details.dwg 2004-05-25 10:34am CGC