A1 SIZE – 594mm x 841mm

FACILITIES SITEWORK (P/C DUCT VAULT)

1. EXCAVATE AS REQUIRED TO INSTALL P/C DUCT VAULT. BRING P/C DUCT BANK BASE TO FINAL ELEVATION USING 150MM MIN COMPACTED PROVIDE 150MM TYPE 2 FILL. COMPACT TO 95% MPDD
2. INSTALL CONCRETE FRICTION PILE
3. INSTALL 200MM VOID FORM
4. PROVIDE 0.25MM PEVB BENEATH DUCT VAULT. EXTEND 300MM BEYOND BASE
5. INSTALL P/C DUCT VAULT. P/C DUCT VAULT INSTALL IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS
6. PROVIDE BLUESKIN BY BAKOR OR APPD EQ MEMBRANE TO SIDES AND ROOF OF DUCT VAULT AND OVERLAP 25MM MIN. PEVB UP ON SIDES ALL AROUND. INSTALL IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS
7. INSTALL CCW MIRADRAIN 6000 BY CARLISLE OR APPD EQ ON ALL SIDES. INSTALL IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS
8. INSTALL PERFORATED DRAIN PIPE AT BASE OF DUCT VAULT. INSTALL CONTINUOUSLY ALL AROUND ALL SIDES
9. PROVIDE 'PEA GRAVEL' DRAINAGE LAYER, EXTEND 300MM BEYOND PERFORATED DRAIN PIPE AND PROVIDE 150MM MIN COVER OVER PERFORATED DRAIN PIPE. 'PEA GRAVEL' TO BE ENCLOSED WITH NON–WOVEN GEOTEXTILE
10. BACKFILL SIDES OF DUCT VAULT WITH 25MM CLEAN CRUSH IN 150MM MAX LIFTS TO PRODUCE A RELATIVE DENSITY OF 70% TO 75%
11. BACKFILL TOP OF DUCT VAULT AND P/C RINGS WITH TYPE 2 FILL. COMPACT TO 95% SPDD.
12. PROVIDE 150MM TYPE 2 FILL, COMPACT TO 95% SPDD
13. INSTALL GROUNDING GRID AS REQUIRED
14. PROVIDE 150MM TYPE 2 FILL, COMPACT TO 95% SPDD
15. PROVIDE 200MM MIN INSULATING STONE, COMPACT TO 90% SPDD

EXCAVATION, SHORING, AND BACKFILLING

1. EXCAVATE AS REQUIRED TO CARRY OUT WORK. REMOVE ALL DELETERIOUS MATERIAL FROM THE AREA OF THE WORK
2. THE CONTRACTOR SHALL DESIGN, SUPPLY, FABRICATE AND INSTALL ALL TEMPORARY STRUCTURES NECESSARY TO SAFELY SUPPORT ALL EXCAVATIONS AND TRENCHING REQUIRED TO CONSTRUCT BELOW GRADE STRUCTURES. CONTRACTOR SHALL SUBMIT AN EXCAVATION PLAN UNDER ENGINEERING SEAL TO THE CA FOR APPROVAL.
3. THE CONTRACTOR SHALL CONTROL AND PREVENT UNDERMINING AND MOVEMENT OF ADJACENT EXISTING STRUCTURES
4. ALL EXCAVATION AND SHORING SHALL BE IN COMPLIANCE WITH ALL LOCAL REGULATIONS
5. PROVIDE 25MM CLEAN CRUSH IN BACKFILL ZONE U/N
6. REPORT ANY INCONSISTENCIES IN THE FOUNDING SOIL MATRIX TO THE CA AND PROCEED ONLY ON THE CA'S INSTRUCTIONS
7. KEEP BOTTOMS OF EXCAVATIONS CLEAN, DRY, UNDISTURBED AND FROSTFREE
8. REMOVE SURPLUS SOIL FROM THE SITE AND PLACE TO THE CA'S APPROVAL
9. PLACE OTHER BACKFILL IN 150MM LIFTS U/N. COMPACT EA LIFT TO 90% SPDD U/N
10. MATERIAL IN THE BACKFILL ZONE PLACED WITHIN 600MM OF THE STRUCTURE SHALL BE FREE OF ALL DELETERIOUS DEBRIS, FROZEN CLUMPS, AND BOULDERS LARGER THAN 150MM DIA
11. DO NOT BACKFILL AGAINST WALLS RETAINING EARTH UNTIL ELEMENTS PROVIDING LATERAL SUPPORT ARE COMPLETED. PLACE BACKFILL SIMULTANEOUSLY ON BOTH SIDES OF OTHER WALLS OR BEAMS BELOW GRADE

TEMPORARY DEWATERING

1. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY MEANS, METHODS, AND EQUIPMENT NECESSARY TO MAINTAIN A FULLY DEWATERED EXCAVATION THROUGHOUT THE EXECUTION OF THE WORK
2. PROVIDE HEATING AND INSULATION OF ALL TEMPORARY PUMPING EQUIPMENT AS NECESSARY TO MAINTAIN OPERATION DURING WINTER MONTHS. PROVIDE STANDBY EQUIPMENT WHERE NECESSARY FOR ALL CRITICAL STAGES OF THE WORK

HYDROVAC OPERATION

1. WORK TO BE UNDERTAKEN IN ACCORDANCE WITH ALL RELEVANT SAFETY CODES, PROVIDE SAFETY BARRIERS AND
2. PROVIDE 'WARNING/DANGER' SIGNAGE AS REQUIRED
3. ALL LOCATE DOCUMENTATION MUST BE CURRENT AND MUST BE WITH THE PERSON DOING THE EXCAVATION AT ALL TIMES
4. ASSUME ALL CABLES TO BE EXPOSED DURING THE HYDROVACING ARE ENERGIZED. SAFE WORK PRACTICES SHALL BE DEVELOPED BETWEEN THE OWNER AND THE CONTRACTOR TO ENSURE SAFETY WHILE WORKING AROUND LIVE CABLES.
5. CONTRACTOR TO ENSURE ALL EQUIPMENT AND CABLES ARE NON–ENERGISED AT ALL TIMES INCLUDING PERIODS OF INACTIVITY
6. HYDROVAC TRUCK SHALL BE SUITABLY GROUNDED INTO THE EQUIPOTENTIAL ZONE. PROVIDE GROUNDING PADS FOR ALL WORKERS AS REQUIRED
7. HYDROVAC AS REQUIRED TO EXPOSE ALL BURIED UTILITIES. TAKE CARE TO PREVENT OVER EXCAVATION
8. ABSOLUTELY NO MECHANICAL EXCAVATION WITHOUT PERMISSION FROM THE CA
9. REMOVE EXCAVATED MATERIAL AND DISPOSE AS DIRECTED BY CA.
10. HYDROVAC EQUIPMENT SHALL HAVE SUITABLY SIZED WATER RESERVOIR AND DISCHARGE TANK FOR THE WORK
11. WAND TIP SHALL BE EQUIPPED WITH A HIGH PRESSURE NOZZLE WITH A SINGLE JET OSCILLATING HEAD. DIRECTION OF WAND SHALL BE ACROSS CONDUCTORS AND NOT PARALLEL TO THEM. DIRECT HIGH PRESSURE NOZZLE IN A CIRCULAR PATTERN TO AVOID PROLONGED CONTACT WITH CONDUCTORS.
12. WATER TEMPERATURE FOR HYDROVAC OPERATION SHALL NOT EXCEED 40°. WATER PRESSURE SHALL NOT EXCEED 1500 PSIG
13. IF DAMAGE OCCURS TO CONDUCTOR, STOP WORK, AND PROCEED AS DIRECTED BY THE CA

GEOTEXTILES

1. GEOTEXTILE FILTER FABRIC TO BE A NON–WOVEN POLYESTER WITH A MIN THICKNESS OF 2.3MM AND A MIN EQUIVALENT OPENING SIZE OF 0.15MM AND A MAX EQUIVALENT OPENING SIZE OF 0.25MM
2. MATERIAL TO BE PLACED WITH 150MM MIN LAP OR LAP TO MANUFACTURERS INSTRUCTIONS
3. GEOTEXTILE FABRIC SHALL HAVE THE FOLLOWING MINIMUM STRENGTHS:
   –GRAB TENSILE STRENGTH 1400 N
   –PUNCTURE STRENGTH 530 N
   –TRAPEZOIDAL TEAR STRENGTH 500 N
   –MULLEN BURST VALUE 3500 KPA

GEOGRID

1. GEOSYNTHETIC REINFORCEMENT SHALL BE BIAXIAL GRID, CONSTRUCTED OF POLYESTER (PET), POLYPROPYLENE (PP) OR HIGH DENSITY POLYETHYLENE (HDPE)
2. GEOSYNTHETIC REINFORCEMENT SHALL CONFORM TO ASTM SPEC D6637; STANDARD TEST METHOD FOR DETERMINING TENSILE PROPERTIES OF GEOGRIDS BY THE SINGLE OR MULTI–RIB TENSILE METHOD
3. GEOSYNTHETIC REINFORCEMENT SHALL BE 'PUNCHED' OR WOVEN, MAXIMUM APERTURE SIZE SHALL BE 50MM X 50MM
4. MINIMUM TENSILE STRENGTH AT 5% ELONGATION SHALL BE 16 KN/M
5. MINIMUM ULTIMATE TENSILE STRENGTH SHALL BE 25 KN/M
6. GEOSYNTHETIC REINFORCEMENT SHALL HAVE 100% RESISTANCE TO BOTH LONG TERM DEGRADATION AND UV DEGRADATION

DRAINAGE

1. PLASTIC PIPE AND FITTINGS TO CAN/CSA STD B182.1, CAN/CGSB 41–GP–29M, TYPE 1, NOMINAL INSIDE DIA 100MM MIN U/N
2. SUBSURFACE DRAINAGE SYSTEM CONSISTS OF PERFORATED PERIMETER DRAINAGE PIPES AND NON–PERFORATED LATERAL DRAINAGE PIPES. THE PERIMETER DRAINAGE PIPES ARE CONNECTED TO THE SUMP PIT OR TO FREE DRAINAGE BY MEANS OF THE LATEREAL DRAINAGE PIPES
3. THE SUBSURFACE DRAINAGE SYSTEM SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH GOOD PRACTICE
4. SHAPE BED TRUE TO GRADE AND PROVIDE UNIFORM SLOPED CONTINUOUS BEARING AS REQUIRED FOR DRAINAGE PIPES.
5. HAND PLACE FILL MATL WITHIN 300MM OF PIPE. MATL TO BE PLACED EVENLY ON EACH SIDE OF PIPE TO PREVENT TRANSLATION
6. SUBSURFACE DRAINAGE SYSTEM TO LEAD TO FREE DRAINAGE
7. INSTALL CLEANOUT CONNECTIONS AT THE ENDS OF ALL PERFORATED DRAINAGE TILE OR AS NOTED OTHERWISE

PERFORATED DRAINAGE PIPES

1. PERFORATED DRAINAGE PIPES TO BE FLEXIBLE 150MMø MIN U/N C/W GEOTEXTILE FABRIC 'SOCK'
2. BED PIPES ON UNDISTURBED NATIVE SOIL. BACKFILL TO MID HEIGHT OF PIPE WITH 25 CLEAN CRUSH STONE. PROVIDE 25MM MIN OF 25 CLEAN CRUSH STONE OVER PIPES
3. LAY PERFORATED PIPES TO A MIN SLOPE TO DRAIN OF 1:100 U/N

NON–PERFORATED DRAINAGE PIPES

1. LATERAL DRAINAGE PIPES TO BE 150MMø RIGID NON–PERFORATED PIPES U/N
2. PIPES SHALL BE BEDDED ON UNDISTURBED NATIVE SOIL. BACKFILL TO MID HEIGHT OF PIPE WITH TYPE 2 FILL. REMAINING GRANULAR BASE AS SPECIFIED
3. LAY DRAIN PIPES TO A MIN SLOPE OF 1:50 U/N

SUBSURFACE DRAINAGE (ESTERWEB)

1. SUBSURFACE DRAINAGE SYSTEM CONSISTS OF PERFORATED DRAIN PIPE CONNECTED TO A NON–PERFORATED LATERAL DRAINAGE PIPE. NON–PERFORATED LATERAL DRAIN TILES CONNECT TO OTHER DRAINAGE
2. ALL JOINTS SHALL BE WATERTIGHT
3. THE SUBSURFACE DRAINAGE SYSTEM SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH GOOD PRACTICE
4. SHAPE BED TRUE TO GRADE AND PROVIDE UNIFORM SLOPED CONTINUOUS BEARING AS REQ'D FOR DRAINAGE PIPES
5. HAND PLACE FILL MATL WITHIN 300MM OF DRAIN TILES. MATL TO BE PLACED EVENLY ON EACH SIDE OF TILE TO PREVENT TRANSLATION
6. INSTALL CLEANOUT CONNECTIONS AT THE ENDS OF ALL DRAINAGE TILE OR AS NOTED OTHERWISE

PERFORATED DRAINAGE PIPE (ESTERWEB)

1. PERFORATED DRAINAGE PIPE TO BE FIVE 25MMø PERFORATED PIPES PLACED SIDE BY SIDE ENCASED IN A GEOTEXTILE FABRIC 'SOCK' U/N
2. BED TILES ON 25MM CLEAN SAND FILL. BACKFILL TO PROVIDE 25MM OF CLEAN SAND FILL COVER OVER PERFORATED DRAINAGE PIPE
3. LAY PERFORATED TILES TO A MIN SLOPE TO DRAIN OF 1:100 U/N

NON–PERFORATED DRAINAGE PIPES (ESTERWEB)

1. LATERAL DRAINAGE PIPE TO BE RIGID NON–PERFORATED U/N. SIZE AS NOTED ON THE DRAWINGS U/N
2. PIPES TO BE BEDDED ON 100MM MIN CLEAN SAND FILL. BACKFILL TO MID HEIGHT OF PIPE WITH CLEAN SAND FILL. FILL OVER PIPE TO BE GRANULAR 'A' FILL COMPACTED TO 90% SPDD
3. LAY DRAIN PIPES TO A MIN SLOPE OF 1:100 U/N

CONSTRUCTION TOLERANCES

1. THE MAX DEVIATION FROM THE STRUCTURAL LINES AND SURFACES SHOWN ON THE DWGS SHALL NOT EXCEED THE TOLERANCE SHOWN BELOW. CLOSER TOLERANCES SHALL BE MAINTAINED WHERE DETAILS REQUIRE
2. WHERE ANY DEVIATION OCCURS, THE CONTRACTOR IS RESPONSIBLE FOR ANY ADJUSTMENT OF OTHER ELEMENTS TO ACCOMMODATE SUCH DEVIATION
3. VARIATION FROM PLUMB:
   –THE TOLERANCE GIVEN IS THE MAX VARIATION FROM PLUMB LINE
   –IN THE LINES AND SURFACES OF COLS, PILE CAPS, PIERS, WALLS AND IN ARRISES 0.2% OF THE HEIGHT (2 IN 1000) WITH A MAX OF 20MM
4. VARIATION FROM LEVEL OR FROM GRADES SPECIFIED:
   –IN SUPPORTS FOR TRANSFORMERS, MECH EQUIP, ELECT EQUIP, ETC WITHIN THE AREA OF SUPPORT +/– 0.1% (1 IN 1000) OF SPAN WITH A MAX OF 6MM
   –TOLERANCES GIVEN ARE MAX VALUES FROM SPECIFIED LEVELS. CLOSER TOLERANCES MAY BE REQUIRED TO GIVE THE QUALITY OF FINISH OR SUPPORT REQUIRED
   –FOUNDATION VARIATION IN PLAN –15MM, +50MM.
5. MISPLACEMENT OR ECCENTRICITY:
   2% OF FOUNDATION WIDTH IN THE DIRECTION OF MISPLACEMENT BUT NOT MORE THAN 50MM
   –REDUCTION IN THICKNESS: –5% OF SPECIFIED THICKNESS

GEOTECHNICAL

1. FOUNDATION DESIGN IS IN ACCORDANCE WITH THE GEOTECHNICAL REPORT SUPPLIED BY CH2M HILL CANADA LIMITED AND PREPARED BY THE KGS GROUP, REPORT NUMBER B–0338–002, DATED OCTOBER 2014, OR LATEST REVISION. THE CONTRACTOR SHALL REFER TO THE INFORMATION CONTAINED IN THIS GEOTECHNICAL REPORT AND SUPPLEMENT IT AS REQUIRED. THE CONTRACTOR SHALL REVIEW THE GEOTECHNICAL REPORT AND FOLLOW THE RECOMMENDATIONS WITHIN THE REPORT PRIOR TO PROCEEDING WITH ANY FOUNDATION WORK
2. FOUNDATION WORK SHALL BE INSPECTED BY THE CA TO CONFIRM THE DESIGN ASSUMPTIONS PRIOR TO PLACING CONCRETE

FOUNDATIONS (GENERAL)

1. REPORT ANY INCONSISTENCIES IN THE FOUNDATION SOIL MATRIX TO THE CA AND PROCEED ONLY ON THE CA'S INSTRUCTIONS
2. IF UNSUITABLE MATERIAL OR GROUNDWATER IS ENCOUNTERED DURING FOUNDATION EXCAVATION, CONTRACTOR SHALL NOTIFY THE CA IMMEDIATELY BEFORE CONTINUING WITH CONSTRUCTION
3. PROTECT FOUNDATIONS AND ADJACENT SOIL AGAINST FREEZING AND FROST ACTION AT ALL TIMES DURING CONSTRUCTION
4. FOUNDATIONS SHALL BE PLACED:
   –NOT MORE THAN 50MM OFF CENTRE
   –NOT MORE THAN 2% OF THEIR LENGTH OUT OF PLUMB
5. THE CONTRACTOR SHALL MECHANICALLY VIBRATE ALL FOUNDATION CONC TO CONSOLIDATE IT AND TO CREATE AN UNINTERRUPTED INTERFACE WITH SOIL.
6. FOUNDATIONS SHALL NOT BE CONSTRUCTED ON/IN FROZEN SOIL. THE CONTRACTOR SHALL ADEQUATELY PROTECT FOUNDATIONS AND FILL MATERIALS AGAINST FREEZING
7. ROCK OBSTRUCTIONS MAY BE PRESENT ON SITE. CONTRACTOR SHALL INCLUDE FOR THE REMOVAL OF ALL ROCK OBSTRUCTIONS ENCOUNTERED HAVING A MAXIMUM VOLUME OF 0.1 CU–M
8. PROVIDE 1.9M MIN OF BACKFILL FOR FROST PROTECTION U/N
9. WHERE REQUIRED, THE CONTRACTOR WILL MAKE ALL NECESSARY PROVISIONS TO ALLOW DIRECT INSPECTION OF THE FOUNDATION INSTALLATION.
10. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUT–OFF ELEVS FOR ALL PILES

FOUNDATIONS (DRIVEN STEEL H PILES)

1. STEEL H PILES TO CONFORM TO CSA STD G40.21–300W
2. LIMIT STATES DESIGN LOADING ON STEEL PILES IS 100 MPa AND SERVICE DESIGN LOADING IS 80 MPa. MATERIAL FACTOR ASSUMED IS 0.4
3. PILING INSTALLATION SHALL BE SUPERVISED BY THE CA WHO WILL ESTABLISH THE POINT OF REFUSAL. ELEVATION OF REFUSAL IS APPROXIMATE 212.0M. PILE LENGTH SHALL BE SHORTENED OR EXTENDED TO ACCOMMODATE DEPTH OF REFUSAL
4. PROVIDE DRIVING HAMMER CUSHION OR HELMET AS REQ'D TO PREVENT DAMAGE TO STEEL H PILE
5. MEASURE INSTALLED TOP OF PILE ELEVATION AND MEASURE ANY 'HEAVE' WHEN DRIVING ADJACENT PILES. RE–DRIVE ADJACENT PILES AS REQ'D TO REFUSAL
6. STEEL H PILE SHOE OR END PLATE SHALL BE PRUYN CAST STEEL POINTS OR APPD EQ
7. SPLICES SHALL BE AS SHOWN ON THE DRAWING. ALTERNATIVE SPLICES MAY USE CHAMPION SPLICER USING THEIR PROCEDURE FOR INSTALLATION
8. WELDING TO BE UNDERTAKEN BY A COMPANY CERTIFIED TO CSA STD W47.1, CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES. WELDING SHALL MEET THE REQUIREMENTS OF CSA STD W59, WELDED STEEL CONSTRUCTION (METAL ARC WELDING). PROVIDE CA WITH COPY OF CERTIFICATION FOR FUSION WELDING IN ACCORDANCE WITH CSA STD W47.1
9. MATERIALS INSPECTED OR TESTED BY THE CA WHICH FAIL TO MEET CONTRACT REQUIREMENTS SHALL BE REJECTED
10. SHOP CUT ALL HOLES, AND OPENINGS IN THE PILING SYSTEM PRIOR TO HDG
11. SUBMIT FULL DETAILS OF METHOD AND SEQUENCE OF INSTALLATION OF PILING TO THE CA FOR REVIEW PRIOR TO START OF PILE INSTALLATION WORK. DETAILS MUST INCLUDE GUIDE FRAMES, BRACING, SETTING AND DRIVING SEQUENCE TO BE DESIGNED BY A PROFESSION ENGINEER, KNOWLEDGEABLE OF THE PRACTICES OF THE TRADE
12. USE SLINGS FOR LIFTING PILING SO THAT MASS IS EVENLY DISTRIBUTED AND PILING IS NOT SUBJECTED TO EXCESSIVE BENDING STRESSES. STORE PILING ON LEVEL GROUND OR PROVIDE SUPPORTS SO THAT PILING IS LEVEL WHEN STORED. PROVIDE BLOCKING AT SPACING NOT EXCEEDING 5 M SO THAT THERE IS NO EXCESSIVE SAGGING IN PILING. OVERHANG AT ENDS NOT TO EXCEED 1.0 M. BLOCK BTN LIFTS DIRECTLY ABOVE BLOCKING IN LOWER LIFT
13. PROVIDE TEMPORARY GUIDE FRAMES OR BRACING TO HOLD PILES IN ALIGNMENT DURING SETTING AND DRIVING AS REQ'D. PRE–DRILL PILING 'HOLE' FOR A DEPTH OF 3.0 M OR AS NECESSARY TO MAINTAIN STABILITY DURING DRIVING.
14. ADVISE CA IMMEDIATELY IF IMPOSSIBLE TO DRIVE PILE TO FULL PENETRATION, AND OBTAIN DIRECTION FROM CA ON FURTHER STEPS REQUIRED TO COMPLETE WORK

FOUNDATIONS (FRICTION PILES)

1. THE FOUNDATION DESIGN IS BASED ON USING DRILLED CAST–IN–PLACE CONC FRICTION PILES
2. FRICTION PILES HAVE BEEN DESIGNED ASSUMING A LIMIT STATES SKIN FRICTION VALUE OF 20 KPA AND AN SLS SKIN FRICTION OF 16 KPA. A GEOTECHNICAL MATERIAL FACTOR IS INCLUDED IN THESE VALUES
3. FOR EXTERIOR PILES, THE TOP 3.0M BELOW FINISHED GRADE HAS BEEN NEGLECTED, FOR PILES MORE THAN 3.0M BELOW FINISHED GRADE, THE TOP 0.5M HAS BEEN NEGLECTED.
4. FRICTION PILES SHALL BE PLACED NOT CLOSER THAN 3 PILE ø C/C FROM ADJACENT PILE U/N
5. PROVIDE A GREASED SONOTUBE SLEEVE FOR THE TOP 2.0 M OF ALL EXTERIOR PILES
6. WHERE NECESSARY, THE FOUNDATION CONTRACTOR SHALL USE FORMWORK TO EXTEND PILES ABOVE EXIST EXCAVATED SURFACES TO THE REQUIRED CUT–OFF ELEV

WELDING GALVANISED MATERIAL

1. CONTRACTOR SHALL PROVIDE A WRITTEN WELDING PROCEDURE FOR WELDING GALVANISED MATERIAL WHICH SHALL BE REVIEWED BY THE CA
2. REMOVE GALVANISING FROM WELD AREA BY GRINDING
3. BURN OFF ALL REMAINING ZINC FROM THE WELD AREA BY TORCH
4. WORK SHALL BE DONE IN ACCORD WITH AWS RECOMMENDATION WZC
5. REMOVE ALL GALVANIZING FROM AREAS TO BE WELDED, TOP AND BOT AS REQD, TO PROVIDE 25MM MIN BASE METAL AROUND ALL WELDS. CLEAN FINISHED WELD AND TOUCH UP WITH TWO COATS OF ZINC RICH PRIMER. PRIMER SHALL OVERLAP EXIST GALVANISING BY 12MM MIN

CONCRETE

1. WORK AND MATERIALS SHALL BE IN CONFORMANCE WITH THE FOLLOWING STANDARDS/SPECIFICATIONS AS APPLICABLE:
   –CONCRETE TO CSA STDS A23.1, A23.2, A23.3 AND A23.4
   –WELDING REBAR TO CSA STD W186
   –LIQUID CURING MEMBRANE TO ASTM SPEC C309
   –PORTLAND CEMENT AND SUPPLEMENTAL CEMENTITIOUS MATERIALS TO CAN/CSA STD–A3000 COMPENDIUM
   –SLAG TO CAN/CSA STD A363
   –CONCRETE SEALER TO CAN/CGSB–25.20
2. IF A TOTAL LENGTH IS NOT STIPULATED, THEN THE LENGTH SHALL BE AS REQ'D BY CODE
3. CONC SHALL BE READY MIXED, CONFORMING TO CSA STD A23.1 (ALTERNATIVE 1), EXCEPT AS NOTED HEREIN:

TYPE OF CONST	CEMENT TYPE	MIN F'c AT 28 DAYS (MPa)	MAX SIZE AGG (mm)	MAX SLUMP (mm)	AIR (%)
PRECAST CONCRETE	HSb	30	20	100	5–7
ALL OTHER CONCRETE	HSb	30	20	100	5–7

4. PORTLAND CEMENT – LIMESTONE CEMENT SHALL NOT BE USED UNLESS AUTHORIZED IN WRITING BY THE CA
5. GUb CEMENT MAY BE USED IN LIEU OF HSb OR GU CEMENT WHEN AUTHORIZED IN WRITING BY THE CA
6. CONC MIX PROPORTIONS SHALL BE PROPORTIONED FOR THE CLASS OF EXPOSURE
7. CONCRETE EXPOSED TO SULPHATES SHALL BE DESIGNED FOR PROPER CLASS OF SULPHATE EXPOSURE. CLASS S–1 SHALL BE USED U/N
8. CLASS OF CHLORIDE EXPOSURE IS C–2 U/N
9. W/C RATIO SHALL BE 0.4 MAX
10. WATER SHALL NOT BE ADDED TO THE CONCRETE MIX ON SITE UNLESS APPD IN WRITING BY THE CONCRETE SUPPLIER AND AUTHORIZED BY THE CA
11. GROUT FOR BEARING PLATES AND BASE PLATES OR FOR DRYPACKING SHALL BE 'M–BED' AS MANUFACTURED BY SIKA, 'IN–PAKT PRE–MIX' AS MANUFACTURED BY CC CHEMICALS OF CANADA, OR APPD EQ. MINIMUM THICKNESS SHALL BE 20MM.
12. FLOWABLE GROUT FOR BEARING PLATES, EQUIPMENT BASES AND TRANSFORMER BASES SHALL BE SIKAGROUT 300PT AS MANUFACTURED BY SIKA OR AN APPD EQ. PROVIDE CONFINEMENT AS REQ'D. MINIMUM THICKNESS SHALL BE 3MM.
13. CONCRETE TOLERANCES SHALL BE IN ACCORDANCE WITH ACI 117 U/N
14. ALL CONCRETE SHALL BE CONSOLIDATED USING SUITABLE MECHANICAL VIBRATION.

CONCRETE QC

1. PROVIDE HISTORY OF CONCRETE MIX USE IN ACCORDANCE WITH CSA STD A23.1
2. TESTING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CSA STD A23.1 U/N.
3. TEST CYLINDERS SHALL BE 150MM DIA X 300MM HIGH U/N
4. SLUMP TESTS SHALL BE TAKEN WITH EACH SET OF CYLINDERS TAKEN FOR STRENGTH TESTING
5. AIR CONTENT TESTS SHALL BE TAKEN FROM EACH LOAD UNLESS A REDUCED FREQUENCY IS AUTHORIZED IN WRITING BY THE CA

REFERENCE DRAWINGS	DESCRIPTION
1–0102–DDTL–A007–004	AREA CODE INDEMTIFICATION
1–0102–DDTL–A007–002	ABBREVIATIONS AND SYMBOLS
1–0102–DDTL–A007–001	ABBREVIATIONS
1–0102–DDTL–A005–030	COVER SHEET
1–0102–SGAD–Y001	GENERAL NOTES (SHEET 3 OF 3)
1–0102–SGAD–Y001	GENERAL NOTES (SHEET 2 OF 3)
1–0102–SGAD–Y001	GENERAL NOTES (SHEET 1 OF 3)

APEGM Certificate of Authorization
SNC-Lavalin Inc.
No. 4489

NO.	REVISIONS	DATE	DESIGN	CHECK
00	ISSUED FOR CONSTRUCTION – 976–2016	2017/04/05	RC	RC

CH2MHILL.
SNC·LAVALIN
KGS GROUP CONSULTING ENGINEERS

DESIGNED BY: R. COATES	CHECKED BY: R. COATES
DRAWN BY: L. GAO	APPROVED BY: E. RYCZKOWSKI
SCALE: N.T.S.	ISSUED FOR CONSTRUCTION BY: J. SHUMKA
DATE: 2016/01/20	DATE: 2017/04/05
CONSULTANT NO.: 474248	

ENGINEER'S SEAL
PROVINCE OF MANITOBA
R. A. COATES
Member
31681
REGISTERED PROFESSIONAL ENGINEER

Winnipeg
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

SOUTH END WATER POLLUTION CONTROL CENTRE
SEWPCC UPGRADING/EXPANSION PROJECT
STRUCTURAL
66 kV SUBSTATION
GENERAL NOTES (SHEET 2 OF 3)

CITY DRAWING NUMBER	SHEET	REV.	SIZE
1–0102–SGAD–Y001	002	00	A1

LAST SAVE: 2017/03/31 – 2:26pm
PATH: C:\pw_workdir\ch2mhill_wbg\ve006717\d0356742\1–0102–SGAD–Y001–002.dwg

PLOT DATE: Mar 31, 2017 – 2:26pm
FILE NAME:1–0102–SGAD–Y001–002.dwg