GENERAL:

1. PROJECT COORDINATES ARE SET IN, HORIZONTAL ; NAD83(CSRS) / MTM ZONE 9 - EPSG:2952.
   VERTICAL ; CGVD28
2. ALL COORDINATES AND ELEVATIONS ARE IN METERS UNLESS NOTED OTHERWISE.
3. ALL ELEVATIONS SHOWN ARE GEODETIC.
4. ALL WORK SHOWN SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT STANDARDS, SPECIFICATIONS, THE LATEST GEOTECHNICAL REPORT AND LOCAL LAWS AND REGULATIONS CONCERNING HEALTH AND SAFETY.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK AND VERIFY ALL DIMENSIONS AND EXISTING SITE CONDITIONS BEFORE CONSTRUCTION BEGINS. THE CONTRACTOR SHALL REPORT DISCREPANCIES TO THE ENGINEER OF RECORD.
6. THE CONTRACTOR SHALL IDENTIFY AND MARK AND PROTECT ALL MONUMENTS, U/G UTILITIES INCLUDING WATER, GAS, SANITARY, STORM SYSTEM, ELECTRICAL & COMMUNICATION CONDUITS PRIOR TO COMMENCEMENT OF ANY WORK UNDER THIS CONTRACT.
7. ENVIRONMENTAL PERMITTING TO BE COMPLETED BY OTHERS.
8. GEOTECHNICAL RECOMMENDATIONS ARE PROVIDED BY HATCH IN REPORT "SOUTH MARCH ROAD BATTERY ENERGY STORAGE SYSTEM (BESS) PRELIMINARY GEOTECHNICAL INVESTIGATION", PROJECT #H375142-0000-2A0-230-0001, REV.A, DATED FEBRUARY 28, 2025.
9. SITE SURVEY PROVIDED BY TULLOCK GEOMATCICS INC, ISSUED MARCH 11, 2025, SURVEY FILE #241451.

CLEARING AND GRUBBING

1. THE WORK TO BE DONE UNDER THIS ITEM COMPRISES THE SUPPLY OF ALL LABOUR, PLANT AND MATERIAL, AND THE PERFORMANCE OF ALL WORK NECESSARY FOR CLEARING AND GRUBBING THE CONSTRUCTION LIMIT AS SHOWN ON THE DRAWINGS.
2. CLEARING AND GRUBBING SHALL CONSIST OF CUTTING AND DISPOSING OF ALL TREES, HEDGES SHRUBS ALIVE OR DEAD, DEBRIS AND ALL OTHER PERISHABLE MATERIALS, INCLUDING FALLEN TREES AND LOGS WHICH MAY BE VISIBLE ON THE SURFACE OF THE GROUND WITHIN THE CONSTRUCTION LIMIT. ALL TREES, HEDGES, AND SHRUBS SHALL BE CUT OFF AT THE NATURAL GROUND SURFACE IN ALL AREAS OF THE CONSTRUCTION ZONE.
3. THE CONTRACTOR SHALL GIVE THE ENGINEER OF RECORD 3 DAYS NOTICE OF INTENT TO CLEAR AREAS. THE LIMITS OF CLEARING AS APPROVED BY THE ENGINEER OF RECORD AND AS SPECIFIED HEREIN SHALL BE STRICTLY ADHERED TO.
4. REMOVE ALL CLEARED MATERIAL FROM THE SITE AND DISPOSED OF ACCORDING TO LOCAL REGULATIONS, CLIENT PROCEDURES AND IN A MANNER ACCEPTABLE TO THE ENGINEER OF RECORD.

STRIPPING, STOCKPILING AND DISPOSING OF TOPSOIL

1. THE WORK TO BE DONE UNDER THIS ITEM SHALL COMPRISE THE SUPPLY OF ALL LABOUR, AND THE PERFORMANCE OF ALL WORK NECESSARY FOR THE STRIPPING AND STOCKPILING FOR SUBSEQUENT REUSE OR DISPOSAL FROM THE CONSTRUCTION ZONE.
2. NO STRIPPING OF ANY AREA SHALL START WITHOUT PRIOR APPROVAL FROM THE ENGINEER OF RECORD. TOPSOIL REMOVAL SHALL NOT BEGIN UNTIL EROSION AND SEDIMENTATION CONTROL (ESC) MEASURES ARE IMPLEMENTED.
3. THE CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION MEASURES TO TEMPORARY TOPSOIL STOCKPILES.
4. TEMPORARY TOPSOIL STOCKPILES SHALL BE CONSTRUCTED AS PART OF THE WORK UNDER THIS ITEM AND SHALL BE MAINTAINED AT ALL TIMES IN A CONDITION ACCEPTABLE TO THE OWNER OR OWNER'S REPRESENTATIVE AND/OR THE ENGINEER OF RECORD. STOCKPILES SHALL BE SLOPED SUFFICIENTLY FOR STABILITY. STOCKPILED MATERIAL SHALL NOT BLOCK DRAINAGE OF NATURAL EXISTING DRAINAGE COURSES.
5. STRIPPED TOPSOIL MATERIAL IS NOT SUITABLE FOR RE-USE AND SHALL BE DISPOSED OF BY THE CONTRACTOR OFF SITE, FOLLOWING LOCAL REGULATIONS AND BYLAWS AT AN APPROVED AREA BY THE OWNER.

UNDERGROUND UTILITIES

1. UTILITY INFORMATION IS PROVIDED FOR REFERENCE ONLY. THE CONTRACTOR IS REQUIRED TO OBTAIN THEIR OWN LOCATE DATA PRIOR TO COMMENCING ANY EARTHWORKS.
2. ALL UTILITY INFORMATION SHALL BE VERIFIED AND CONFIRMED ON SITE BY THE CONTRACTOR.
3. FOR PRIVATE UTILITY WORK, UNDER NO CIRCUMSTANCES SHALL THE SERVICE BE INTERRUPTED WITHOUT WRITTEN PERMISSION FROM THE UTILITY OWNER.
4. RELOCATION OF PRIVATE UTILITIES SHALL BE COMPLETED IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS OF EACH INDIVIDUAL UTILITY OWNER UNLESS OTHERWISE SPECIFIED. THE WORK SHALL BE COORDINATED WITH PRIVATE OWNER.

EXCAVATION AND GROUNDWATER MANAGEMENT

1. EXCAVATION AND GROUNDWATER MANAGEMENT WORKS SHALL BE COMPLETED IN ACCORDANCE WITH THE GEOTECHNICAL RECOMMENDATIONS BY HATCH AND UNDER THE SUPERVISION AND APPROVAL OF THE GEOTECHNICAL ENGINEER.
2. THE WORK SHALL INCLUDE TRANSPORTING AND STOCKPILING MATERIALS WHICH, IN THE OPINION OF THE GEOTECHNICAL ENGINEER, ARE SUITABLE FOR USE AS BACKFILL.
3. PRIOR TO COMMENCEMENT OF THE WORK, THE CONTRACTOR SHALL SUBMIT FOR REVIEW BY THE GEOTECHNICAL ENGINEER, DETAILS OF THE METHODS, SCHEDULE AND SEQUENCE OF OPERATIONS TO BE FOLLOWING FOR THE EXCAVATION TO BE CARRIED OUT AS SPECIFIED.
4. ALL FOUNDATION SUBGRADE CONDITIONS AFTER EXCAVATION AND CUT/FILL SLOPES SHALL BE REVIEWED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO ENGINEERED FILL MATERIAL PLACEMENT AND FOUNDATION CONSTRUCTION.
5. THE DETERMINATION OF ACCEPTABLE FOUNDATION SOILS WILL BE MADE BY THE GEOTECHNICAL ENGINEER. UNLESS OTHERWISE REQUIRED, EXCAVATION SHALL BE THE MINIMUM REQUIRED TO REMOVE ORGANIC AND OTHER UNSUITABLE MATERIAL TO EXPOSE COMPACT TO DENSE FOUNDATION SOILS CONSISTING OF NATIVE SILTY SAND TO SANDY SILT SOILS.
6. SOFTENED OR DISTURBED NATIVE SOILS OR OTHER DELETERIOUS MATERIALS ENCOUNTERED AT THE BASE OF EXCAVATIONS SHOULD BE REMOVED AND REPLACED WITH COMPACTED ENGINEERED FILLS UNDER THE DIRECTION OF THE GEOTECHNICAL ENGINEER.
7. NO EXCAVATION WITH A DEPTH GREATER THAN 1.2m SHALL BE LEFT UNATTENDED OR UNPROTECTED AT ANY TIME DURING THE PERFORMANCE OF THE WORK. ALL EXCAVATIONS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT (OHSA) AND REVIEWED SITE-SPECIFIC HEALTH AND SAFETY PLAN.
8. ALL TEMPORARY EXCAVATIONS MUST BE CARRIED OUT IN ACCORDANCE WITH THE FOLLOWING:
   - NATIVE SOILS ABOVE GROUNDWATER - TYPE 3 SOIL SLOPED FROM THE BOTTOM OF THE EXCAVATION NO STEEPER THAN 1H:1V (HORIZONTAL: VERTICAL); AND,
   - NATIVE SOILS BELOW GROUNDWATER - TYPE 4 SOIL SLOPED FROM THE BOTTOM OF THE EXCAVATION NO STEEPER THAN 3H:1V.
9. TEMPORARY EXCAVATIONS SHALL BE REVIEWED AND APPROVED BY THE GEOTECHNICAL ENGINEER. SOME LOCAL FLATTENING OF THE SLOPES OF OPEN CUT EXCAVATIONS MAY BE REQUIRED. THE CLASSIFICATION OF SOILS FOR OHSA PURPOSES SHALL BE CONFIRMED AT THE TIME THE EXCAVATION IS OPEN.
10. WHERE SIDE SLOPES OF EXCAVATIONS ARE REQUIRED TO BE STEEPENED, SUPPORT OF EXCAVATED WALLS MAY BE REQUIRED PER THE REVIEW AND RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER.
11. AT ALL TIMES DURING CONSTRUCTION, THE CONTRACTOR SHALL ADOPT EXCAVATION PROCEDURES SUCH THAT THE STABILITY OF ANY SLOPE IS NOT IMPAIRED. ENGINEER'S ACCEPTANCE OF EXCAVATION PROCEDURES AND/OR SHORING SHALL IN NO WAY RELIEVE THE CONTRACTOR OF ITS RESPONSIBILITY FOR SAFEGUARDING THE STABILITY OF ALL SLOPES EXCAVATED.
12. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO KEEP EXPOSED FOUNDATION SOILS AND EXCAVATIONS DRY AT ALL TIMES.
13. SURFACE WATER SHOULD BE DIRECTED FROM ANY OPEN EXCAVATION AND ALL TEMPORARY EXCAVATIONS IN ACCORDANCE WITH THE OHSA AND REGULATIONS FOR CONSTRUCTION PROJECTS.
14. GROUNDWATER SHOULD BE CONTROLLED BY CONVENTIONAL PUMPS AND SUMPS. CONSIDERATIONS MAY ALSO BE GIVEN TO REDUCING THE LENGTH OF AN OPEN EXCAVATION AT ONE TIME, OR THE USE OF A TREMIE PLUG AT THE BASE.
15. DISPOSAL AREAS SHALL BE WELL DRAINED AND LEFT IN A STABLE AND SAFE CONDITION, TO THE ENGINEER'S SATISFACTION, AT NO ADDITIONAL COST TO OWNER. THE SURFACES OF DISPOSAL AREAS SHALL BE TRIMMED TO LINES AND GRADES SATISFACTORY TO THE ENGINEER.

FOUNDATION PREPARATION

1. FOUNDATION PREPARATION SHALL BE COMPLETED IN ACCORDANCE TO THE GEOTECHNICAL RECOMMENDATIONS BY HATCH AND UNDER THE SUPERVISION AND APPROVAL OF THE GEOTECHNICAL ENGINEER.
2. ENGINEERED FILL SHALL NOT BE PLACED ON ANY PART OF AN EARTH FOUNDATION SURFACE UNTIL THE SURFACE HAS BEEN REVIEWED AND APPROVED BY THE GEOTECHNICAL ENGINEER. FINAL PREPARATION OF EARTH FOUNDATIONS SHALL BE PERFORMED IMMEDIATELY PRIOR TO FILL PLACEMENT.
3. SUBSEQUENT TO THE REMOVAL OF OVERBURDEN, THE EXPOSED SUBGRADE SURFACE SHOULD BE HEAVILY PROOF ROLLED WITH A SUITABLE EQUIPMENT, IN CONJUNCTION WITH INSPECTION BY A GEOTECHNICAL ENGINEER. LOOSE ZONES IDENTIFIED DURING THE PROOF-ROLLING ACTIVITIES SHOULD BE SUB-EXCAVATED AND REPLACED WITH ENGINEERED FILLS UNDER THE SUPERVISION AND DIRECTION OF THE GEOTECHNICAL ENGINEER.
4. THE CONTRACTOR SHALL NOT PLACE FILL MATERIAL ON FOUNDATION SURFACES WITHOUT WRITTEN ACCEPTANCE OF FOUNDATION PREPARATION FROM THE GEOTECHNICAL ENGINEER.
5. IF ANY AREA PREVIOUSLY ACCEPTED SHOULD BECOME SOFTENED OR CONTAMINATED AS A RESULT OF CONSTRUCTION ACTIVITIES OF THE GENERAL CONTRACTOR AND SUBCONTRACTORS WITH OBJECTIONABLE MATERIALS, THE PLACED MATERIALS SHALL BE REMOVED AND THE FOUNDATION PREPARED AGAIN TO THE SATISFACTION OF THE ENGINEER, AT NO ADDITIONAL COST TO OWNER.
6. ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO PRESERVE IN A SOUND, UNDISTURBED AND UNSHATTERED CONDITION ALL MATERIAL BELOW AND BEYOND THE LIMITS OF EXCAVATION.

ENGINEERED FILL

1. ENGINEERED FILL MATERIAL, PLACEMENT, AND QUALITY CONTROL SHALL BE COMPLETED IN ACCORDANCE WITH THE GEOTECHNICAL RECOMMENDATIONS BY HATCH AND UNDER THE SUPERVISION AND APPROVAL OF THE GEOTECHNICAL ENGINEER.
2. GRANULAR ENGINEERED FILL MATERIALS SHALL BE PLACED TO THE LINES AND GRADES SHOWN ON THE DRAWINGS AND AS REQUIRED BY THE ENGINEER AND GEOTECHNICAL ENGINEER.
3. THE CONTRACTOR SHALL CARRY OUT QUALITY CONTROL TESTING DURING CONSTRUCTION. THE CONTRACTOR SHALL VARY THE METHOD OF PLACING AND COMPACTING FILLS IN ORDER TO MEET THE REQUIREMENTS AS DETERMINED BY TESTING AND AS ACCEPTED BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE QUALITY OF WORK IN ACCORDANCE WITH THESE SPECIFICATIONS.
4. THE NATIVE SILTY CLAY SOILS ENCOUNTERED IN THE BOREHOLES ADVANCED AT THE SITE ARE NOT CONSIDERED SUITABLE AS ENGINEERED FILL IN SETTLEMENT SENSITIVE AREAS SUCH AS BENEATH PROPOSED FOUNDATIONS, ACCESS ROADS OR UTILITIES. HOWEVER, THIS MATERIAL COULD BE USED FOR GENERAL GRADE RAISES IN LANDSCAPE AREAS AROUND THE PROPOSED DEVELOPMENT.
5. NATIVE SOILS ARE CONSIDERED SUSCEPTIBLE TO OVER-WETTING AND SUBSEQUENT FREEZING. AS SUCH, SITE GRADING ACTIVITIES ARE RECOMMENDED TO NOT BE CARRIED OUT DURING LATE FALL, WINTER, EARLY SPRING SEASONS OR ANY PERIODS OF INCLEMENT WEATHER.
6. IMPORTED MATERIAL FOR ENGINEERED FILL PURPOSES SHOULD BE REVIEWED AND APPROVED BY THE GEOTECHNICAL ENGINEER AT ITS SOURCE PRIOR TO IMPORTING MATERIAL TO SITE. IMPORTED ENGINEERED FILL MATERIALS SHALL CONSIST OF NATURALLY OCCURRING (AS SPECIFIED HERE), OR CRUSHED, CLEAN, SOUND, MINERAL PARTICLES, NON-PLASTIC, FREE FROM ROOTS AND TOPSOIL OR OTHER DEBRIS. MATERIALS CONTAINING QUANTITIES OF ORGANIC MATTER, FLAT OR ELONGATED PARTICLES, DELETERIOUS MATERIAL, WHICH IN THE OPINION OF THE GEOTECHNICAL ENGINEER ARE UNACCEPTABLE, WILL BE REJECTED.
7. ENGINEERED FILL MATERIALS SHALL BE ONE OF THE FOLLOWING TYPES OR APPROVED EQUIVALENTS BY THE GEOTECHNICAL ENGINEER:
   a. GRANULAR A (OPSS.MUNI 1010)
   b. GRANULAR B TYPE I (OPSS.MUNI 1010)
   c. GRANULAR B TYPE II (OPSS. MUNI 1010)

   ANY MATERIAL USED AS ENGINEERED FILL AND/OR GENERAL BACKFILL SHOULD BE REVIEWED AND APPROVED BY THE GEOTECHNICAL ENGINEER
8. PLACING OF ENGINEERED FILL MATERIALS SHALL BE PERFORMED TO PREVENT PARTICULE SIZE SEGREGATION AND ENSURE A UNIFORM/WELL-BLENDED MASS
9. PLACEMENT OF FILL MATERIALS SHALL BE DIRECTED AT OBTAINING A STABLE AND HOMOGENEOUS FILL WHICH IS FREE OF HORIZONTAL STRATIFICATIONS AND LENSES OR POCKETS OF MATERIALS WHICH DO NOT SATISFY THE REQUIREMENTS OF THESE SPECIFICATIONS.
10. NON-WOVEN GEOTEXTILE MAY BE PLACED BETWEEN ENGINEERED FILLS AND NATIVE SOILS, OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
11. UNLESS OTHERWISE STATED, ENGINEERED FILLS SHOULD BE PLACED IN A MAXIMUM 300mm THICK LOOSE LIFTS AND UNIFORMLY COMPACTED TO 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD). FULL-TIME MONITORING AND IN-SITU DENSITY TESTING SHOULD BE CARRIED OUT DURING PLACEMENT OF ENGINEERED FILLS.
12. ALL ENGINEERED FILL MATERIALS SHOULD BE WITHIN ± 2% OF THE MATERIAL'S OPTIMUM MOISTURE CONTENT.
13. WHERE NECESSARY TO ACHIEVE THE SPECIFIED COMPACTION, WATER SHALL BE APPLIED OR REMOVED (I.E., DRYING OR WETTING) TO ENGINEERED FILL MATERIALS BY AMOUNTS AS APPROVED BY THE GEOTECHNICAL ENGINEER.
14. THE SELECTION OF COMPACTION EQUIPMENT SHALL BE SUBJECT TO THE APPROVAL OF THE GEOTECHNICAL ENGINEER AND THE CONTINUING SATISFACTORY PERFORMANCE.
15. STOCKPILING AND STORING OF FILL MATERIALS AT SELECT LOCATIONS SHALL FOLLOW THE RECOMMENDATIONS PROVIDED IN THE EROSION AND SEDIMENT CONTROL PLANS. THE CONTRACTOR SHALL EXERCISE EVERY PRECAUTION NECESSARY AND BEST PRACTICES TO PREVENT SEGREGATION OF PARTICLE SIZES. STOCKPILED MATERIAL SHALL MEET THE GRADATION REQUIREMENTS ABOVE.
16. GRANULAR FILL MATERIALS SHALL NOT BE CONTAMINATED BY MIXING WITH OTHER MATERIALS. FILL MATERIALS WHICH HAVE BECOME CONTAMINATED SHALL BE REMOVED AND REPLACED.
17. FINAL SURFACE OF ENGINEERED FILLS SHOULD BE PROTECTED FROM CONSTRUCTION TRAFFIC AND SLOPED TO PROVIDE POSITIVE DRAINAGE FOR SURFACE WATER DURING CONSTRUCTION PERIOD. ADDITIONAL SOIL COVER FOR SUBGRADE FROST PROTECTION MAY BE REQUIRED IF FINISHED SURFACED ARE LEFT EXPOSED DURING PERIODS OF FREEZING WEATHER.

FOUNDATION CONSIDERATIONS

1. EXCAVATED AREAS BEHIND ANY BELOW GRADE FOUNDATION ELEMENTS, SUCH AS THE SUBSTATION, SHOULD BE BACKFILLED WITH NON-FROST SUSCEPTIBLE GRANULAR MATERIAL SUCH AS GRANULAR B TYPE I TO PROTECT FROM FROST ADHESION AND HEAVING.
2. TO MINIMIZE DIFFERENTIAL FROST HEAVING NEAR STRUCTURES WHERE HARD SURFACING LIKE ASPHALT OR CONCRETE ABUTS, A FROST TAPER SHALL BE PLACED BY SLOPING THE BACKFILL FROM 1.8m BELOW FINISHED GRADE UP TO THE SUBGRADE LEVEL NO STEEPER THAN 3H:1V. BACKFILL SHALL BE PLACED IN 200mm LIFTS AND COMPACTED TO 98% OF SPMDD UTILIZING LIGHT COMPACTION EQUIPMENT. THE UPPER 0.3m OF BACKFILL IN LANDSCAPED AREAS SHOULD CONSIST OF LOW PERMEABLE SOILS AND THE EXTERIOR GRADE SHOULD SLOPE AWAY FROM THE STRUCTURE.
3. UNDER SLAB BACKFILL SHALL BE COMPLETED IN ACCORDANCE WITH THE GEOTECHNICAL RECOMMENDATIONS BY HATCH AND UNDER THE SUPERVISION AND APPROVAL OF THE GEOTECHNICAL ENGINEER.
4. UNDER SLAB BACKFILL SHALL CONSIST OF A 150mm THICK LAYER OF GRANULAR A BASE OR A CRUSHED GRANULAR AGGREGATE WITH A MAXIMUM PARTICLE SIZE OF 50mm OVERLAYING GRANULAR B TYPE II SUBBASE.
5. UNDER SLAB FILLS SHALL BE PLACED IN MAXIMUM 300mm THICK LOOSE LIFTS AND COMPACTED TO 98% SPMDD USING A SUITABLE VIBRATORY COMPACTION EQUIPMENT.
6. RAFT FOUNDATIONS SHOULD BE PROVIDED WITH A MINIMUM 1.8m OF SOIL COVER MEASURED PERPENDICULAR FROM THE GROUND SURFACE NEAREST TO THE OUTSIDE TOE OF THE FOOTING FOR FROST PROTECTION AS PER OPSD 3090.101. ALTERNATIVELY, RIGID STYROFOAM INSULATION MAY USED TO COMPENSATE FOR THE LACK OF SOIL COVER PER THE RECOMMENDATIONS OUTLINED IN THE GEOTECHNICAL REPORT.

PAVEMENT CONSIDERATIONS

1. PAVEMENT STRUCTURE PREPARATION AND INSTALLATION SHALL BE COMPLETED IN ACCORDANCE WITH GEOTECHNICAL RECOMMENDATIONS BY HATCH AND UNDER THE SUPERVISION AND APPROVAL OF THE GEOTECHNICAL ENGINEER AND SHALL CONSIST OF THE FOLLOWING:
   - 300mm THICK LAYER OF GRANULAR A BASE COURSE COMPACTED TO 100% SPMDD; AND,
   - 300mm THICK LAYER OF GRANULAR B TYPE II SUBBASE COURSE COMPACTED TO 98% SPMDD.
2. MATERIAL SHALL BE COMPACTED IN 200mm LOOSE LIFTS AND SHOULD BE WITHIN ± 2% OF THE MATERIALS OPTIMUM MOISTURE CONTENT.
3. FILL PLACEMENT AND COMPACTION DENSITY TESTING SHALL BE COMPLETED UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER FOR EACH LIFT, UNLESS OTHERWISE STATED OTHERWISE.
4. ROADWAY SURFACES SHALL BE SLOPED AT 2% OR GREATER TO PROMOTE RUNOFF. THE SUBGRADE SHOULD BE CROWNED AT THE CENTRELINE AND SLOPED BETWEEN 3% AND 5% TOWARDS THE ROADWAY PERIMETER.
5. DUE TO THE SILTY NATURE OF THE SUBGRADE SOILS (IN AREAS WHERE BEDROCK IS NOT EXPOSED AT THE SURFACE), IT WILL BE NECESSARY TO ADD A LAYER OF GEOTEXTILE REINFORCING (E.G., TERRAFIX 300R OR APPROVED EQUIVALENT) BETWEEN THE SUBGRADE AND GEOGRID (TENSAR BX1500 OR EQUIVALENT). ADJACENT SHEETS OF GEOTEXTILE SHOULD BE OVERLAPPED A MINIMUM 450 MM.

TRENCH BACKFILL

1. EMBEDMENT MATERIAL FOR ELECTRICAL UTILITIES SHALL BE SAND FILL WITH THE FOLLOWING PROPERTIES. THERMALLY ADAPTED SAND FILL SHALL HAVE A MAXIMUM THERMAL RESISTIVITY OF 0.75 °CM/W (RHO) WITH A MOISTURE CONTENT EQUAL OR LOWER THAN 2%, AS NOTED ON THE ELECTRICAL DRAWINGS. FILL TO BE COMPACTED TO 95% OF MODIFIED PROCTOR IN LAYERS OF 200mm MAX. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL DETAILS.
2. BEDDING AND COVER MATERIAL FOR DRAINAGE PIPES AND CULVERTS SHALL BE GRANULAR A PLACED AND COMPACTED AS NOTED ON THE CIVIL DRAWINGS. REFER TO CIVIL PLANS FOR ADDITIONAL DETAILS.
3. TRENCH BACKFILL MATERIAL SHALL COMPLETED IN ACCORDANCE WITH THE GEOTECHNICAL RECOMMENDATIONS BY HATCH AND UNDER THE SUPERVISION AND APPROVAL OF THE GEOTECHNICAL ENGINEER.
4 NON-WOVEN GEOTEXTILE MAY BE PLACED BETWEEN NATIVE SOILS AND ENGINEERED FILL, OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.

INSULATION STONE

1. INSULATION STONE SHALL BE CLEAN STONE 16-22mm, WITH NO GREATER THAN 2% CONTENT HAVING SIZE LESS THAN 10mm, AND AT LEAST 50% OF MATERIAL HAVING SIZE GREATER THAN 18mm, WITH A MINIMUM RESISTIVITY VALUE OF 3000 OHM-M.
2. THE CONTRACTOR SHALL CONFIRM RESISTIVITY PROPERTIES SHALL BE EVALUATED WITH ASTM G57 TEST "STANDARD TEST METHOD FOR FIELD MEASUREMENT OF SOIL RESISTIVITY USING THE WENNER FOUR-ELECTRODE METHOD".

GEOMEMBRANE

1. TEXEL 7612 GEOTEXTILE OR APPROVED EQUIVALENT WILL BE USED FOR THE VEGETATED DITCH. TEXEL 918 GEOTEXTILE OR APPROVED EQUIVALENT UNDER AND ABOVE GEOMEMBRANE TEXEL TM240 GEOMEMBRANE OR APPROVED EQUIVALENT TO BE USED FOR THE BESS AREA (THIS INCLUDES THE ENTIRE FACILITY, DITCHES AND WET POND)

ADAM BROWN
MANAGER , DEVELOPMENT REVIEW RURAL
PLANNING, DEVELOPMENT & BUILDING SERVICES
DEPARTMENT, CITY OF OTTAWA

APPROVED
By Adam Brown at 1:53 pm, Nov 23, 2026

ABBREVIATIONS	
BOD	BOTTOM OF DITCH
BW	BOTTOM OF WALL
CB	CATCH BASIN
CL	CENTRE LINE
COMM	COMMUNICATION
Dia,D	DIAMETER
E	EASTING
EG	EXISTING GROUND
EL	ELEVATION
FG	FINAL GRADE
HV	HIGH VOLTAGE
LV	LOW VOLTAGE
M	METERS
MH	MANHOLE
N	NORTHING
QL	QUALITY LEVEL
RC	REINFORCED CONCRETE
SAN	SANITARY
SRW	STATUTORY RIGHT OF WAY
STA	STATION
STM	STORM
TYP	TYPICAL

FOR PERMITTING

DRAWING No.	DESCRIPTION	REV	DESCRIPTION	VERIFIED BY	APPROVED BY	DATE
		AE	FOR PERMITTING	B. THOMAS	V. BRUNELLE P.E.O NO. 1006178	2026-11-18
		AD	FOR PERMITTING	B. THOMAS	V. BRUNELLE P.E.O NO. 1006178	2025-11-05
		AC	FOR PERMITTING	E. AMELI	M. SHAHRAKI	2025-06-19
		AB	FOR COMMENT	E. AMELI	M. SHAHRAKI	2025-06-04
		AA	FOR COMMENT	E. AMELI	M. SHAHRAKI	2025-03-03

REFERENCE DRAWINGS — REVISIONS

SEAL: LICENSED PROFESSIONAL ENGINEER — V. BRUNELLE 100617887 — PROVINCE OF ONTARIO — 2026-11-18

CLIENT: Evolugen by Brookfield Renewable

PROJECT: SOUTH MARCH BESS
2555 AND 2625 MARCHURST RD, OTTAWA

TITLE: CIVIL
GENERAL NOTES, LEGEND AND ABBREVIATIONS

DESIGNED BY: B. THOMAS	DRAFTED BY: G. NORMAND
VERIFIED BY: V. BRUNELLE	APPROVED BY: V. BRUNELLE
SCALE: AS SHOWN	DATE: 2025-03-03

DRAWING No.: 7154023-100000-41-D01-0002 | SHEET: 01 | SIZE: A1 | REV. AE

CITY FILE no.: D07-12-25-0096 PLAN no.: 19401

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BY:BOURGUIGNON, EMILY
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