

DESIGN STANDARD CODES:

- IF CONDITIONS ARE DIFFERENT THAN THOSE STATED IN THESE DRAWINGS AND SPECIFICATIONS, CONTRACTOR MUST CONTACT GROUNDWORK ENGINEERING LIMITED PRIOR TO PROCEEDING.
- WALLS REQUIRING PEDESTRIAN GUARDS ARE TO CONFORM WITH O.B.C. PART 4.1.5.14. AND PART 3.3.1.17.
- CANADIAN STANDARDS ASSOCIATION (CSA) A23.3-04
- REINFORCING STEEL INSTITUTE OF CANADA (RSIC), MANUAL OF STANDARD PRACTICE.

CALCULATIONS AND ASSUMPTIONS:

- SUBGRADE TO BE UNDISTURBED NATIVE SOIL AS PER GEOTECH REPORT. SUBGRADE TO BE INSPECTED BY GEOTECH ENG PRIOR TO PLACEMENT OF CONCRETE.
- EXPOSED WALL HEIGHT SHALL NOT EXCEED 1.70m OR OTHERWISE THE ENGINEER IS TO BE CONTACTED.
- CALCULATIONS WERE PERFORMED WITH THE ASSUMPTION THAT RETAINED SOILS HAVE A DENSITY OF 2039 KG/m³ & A FRICTION ANGLE OF 25°.
- THESE WALLS HAVE BEEN DESIGNED WITH CONSIDERATION OF SEISMIC LOADINGS PEAK GROUND ACCELERATION OF 0.16 AND A LIVE LOADING OF 5 KPA.

CLASS OF CONCRETE:

- CONCRETE CLASS OF EXPOSURE F-2, MAX. WATER/CEMENT RATIO 0.5, AIR ENTRAINMENT 5%-6%.
- ALL CAST IN PLACE CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF 30 MPa AT 28 DAYS.
- CLEAR COVER TO REINFORCING STEEL IS MINIMUM 75mm.

REINFORCING STEEL:

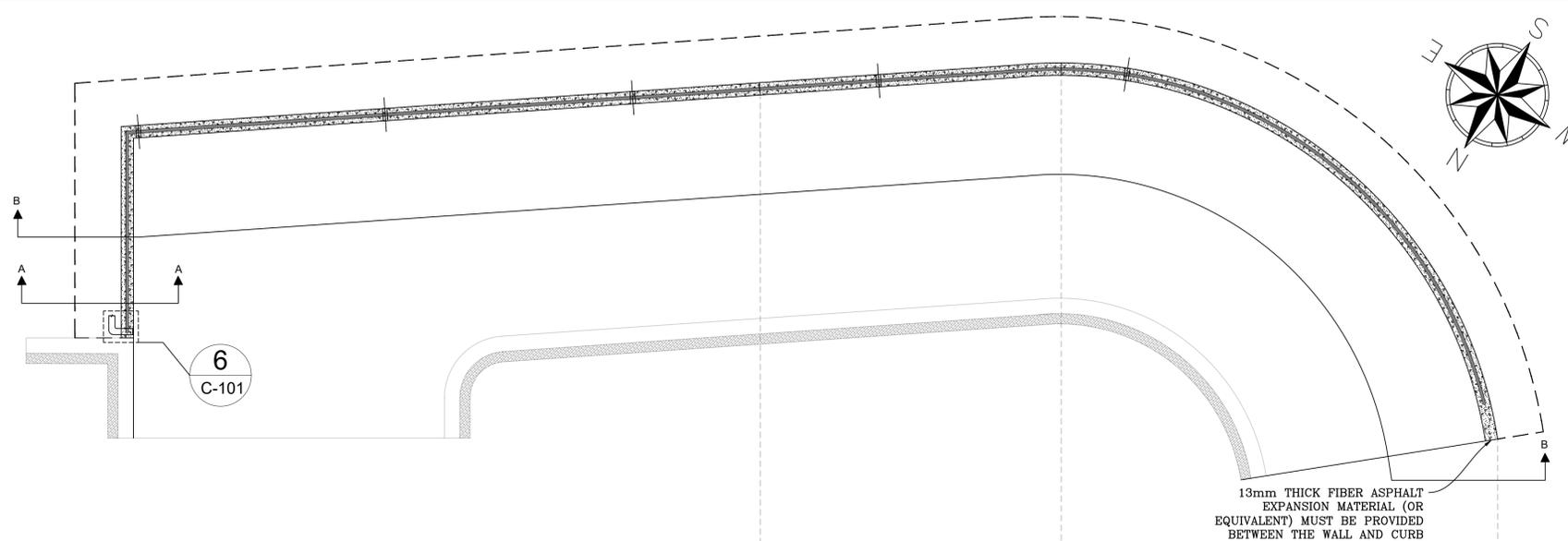
- REINFORCING STEEL SHALL BE GRADE 400W.
- SPLICE OVERLAP LENGTH 600mm MINIMUM.
- LONGITUDINAL STEEL SHALL NOT BE SPLICED IN TENSION ZONES.
- STANDARD HOOK DIMENSION SHALL BE 300mm MINIMUM.
- ALL REINFORCEMENT HOOKS SHALL BE DONE IN ACCORDANCE WITH RSIC TABLE 5A.

MATERIALS

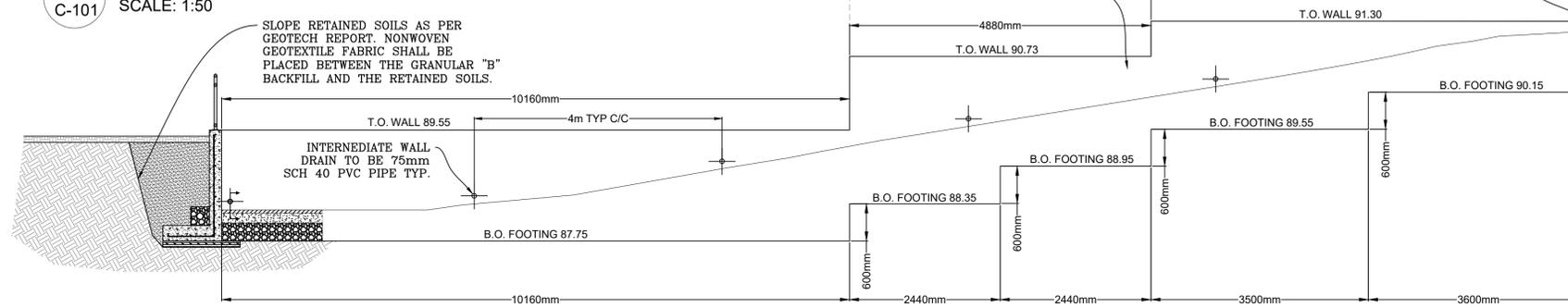
- GEOTEXTILE FABRIC TO BE CLASS 2 NON WOVEN TYPE WITH AN APPARENT OPENING SIZE OF 0.30mm AND WEIGHT OF 100g/m² CONFORMING TO OPSS 1860. TERRAFIX 270R OR EQUIVALENT.
- DRAINAGE PIPE SHALL BE 100mmØ PERFORATED HDPE WRAPPED IN GEOTEXTILE.
- DRAINAGE PIPE SHALL BE SURROUNDED BY A 300mm LAYER OF 19mm CLEAN STONE. DRAINAGE PIPE TO BE HDPE WITH A MINIMUM INTERIOR DIAMETER OF 100mmØ PERFORATED WITH FILTER SOCK. DRAINAGE PIPE TO SLOPE AT A MINIMUM OF 0.5% TO LOW POINT AND DRAIN TO OUTLET THROUGH WALL FACE, OUTLETS ARE TO BE LOCATED AS PER DRAWINGS AND HAVE RODENT GRATE INSTALLED ON OPENINGS.
- THE FILL MATERIAL PLACED AND COMPACTED BETWEEN THE BACK OF THE BLOCK AND THE EXCAVATED SOIL FACE IN THE RETAINING WALL SECTIONS, SHALL BE GRANULAR "B" TYPE II WITH MAXIMUM PERCENT PASSING OF 30% AT 4.75mm SIEVE, 15% AT 1.18mm SIEVE, 10% AT 0.30mm SIEVE AND 5% AT 0.075mm SIEVE.
- INSULATION TO BE RIGID EXTRUDED POLYSTYRENE CELLFORT® 300 OR EQUIVALENT.

CONSTRUCTION:

- THE GENERAL CONTRACTOR IS RESPONSIBLE TO ENSURE THAT SAFE EXCAVATIONS AND EMBANKMENTS ARE MAINTAINED THROUGHOUT THE COURSE OF THE PROJECT.
- RETAINING WALL INSTALLATION CONTRACTOR IS RESPONSIBLE FOR STRIPPING ALL VEGETATION, ORGANIC SOILS AND UNSUITABLE FILL SOILS FROM WALL ALIGNMENT AREA.
- PREP SUBGRADE FOR NEW FOOTING.
- RETAINING WALL INSTALLATION CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES REQUIRED FOR CONSTRUCTION OF THE WALL FOOTING AS SHOWN ON THE CONSTRUCTION DRAWINGS.
- IF WINTER CONSTRUCTION IS CONSIDERED, HEAT MUST BE MAINTAINED WHEN THE CONCRETE IS EXPOSED AND BE COVERED WITH INSULATION TARPS.
- DRAINAGE COMPONENTS, PIPE, GEOTEXTILE AND DRAINAGE AGGREGATE SHALL BE INSTALLED AS SHOWN.
- COMPACTION OF MATERIAL BEHIND THE WALL SHALL BE TO 98% SPD AND BE PLACED IN LIFTS WITH A THICKNESS NOT TO EXCEED 300mm.
- THE RETAINING WALL INSTALLATION CONTRACTOR SHALL MAKE ALL REQUIRED ALLOWANCES FOR OBSTRUCTIONS BEHIND AND THROUGH THE WALL FACE IN ACCORDANCE WITH THE APPROVED CONSTRUCTION SHOP DRAWINGS.



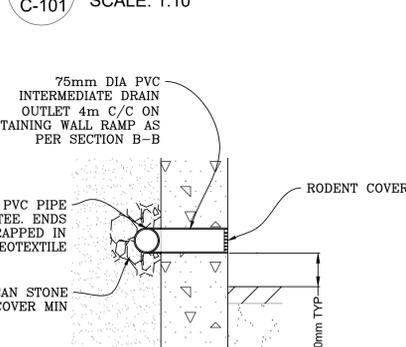
1 RETAINING WALL AT RAMP
C-101 SCALE: 1:50



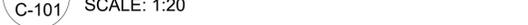
2 WALL SECTION B-B
C-101 SCALE: 1:50



6 DETAIL AT WALL
C-101 SCALE: 1:10



3 WALL SECTION A-A
C-101 SCALE: 1:20



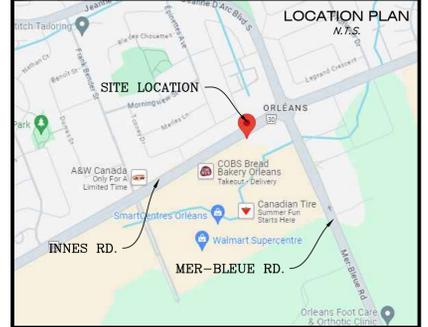
4 WALL SECTION C-C
C-101 SCALE: 1:10



5 WALL REINFORCEMENT DETAIL
C-101 SCALE: 1:10



GROUNDWORK ENGINEERING LIMITED
 GEOTECHNICAL • CIVIL • STORMWATER • ONSITE WASTEWATER
UNIT 640 - 654 NORRIS COURT
KINGSTON ONTARIO
OFFICE (613) 634-1789
www.groundengineer.ca



GEOTECHNICAL REPORT VS DESIGN ASSUMPTIONS

PARAMETERS	GEO REPORT VALUE	DESIGN VALUE USED
ACTIVE EARTH PRESSURE COEFFICIENT Ka	0.33	0.41
PASSIVE EARTH PRESSURE COEFFICIENT Kp	3	2.44
AT-REST EARTH PRESSURE COEFFICIENT Ko	0.5	N/A - MORE CONSERVATIVE
UNIT WEIGHT (γ) kN/m ³	20	20
SUBMERGED UNIT WEIGHT (γ _s) kN/m ³	13	NO WATER TABLE

- ADDITIONAL ASSUMPTIONS:**
- φs = 0.85 AS PER CSA
 - φc = 0.55 AS PER CSA
 - COEFFICIENT OF SOIL FRICTION, φ: 25°
 - SAFETY FACTOR OF 1.5 WAS APPLIED FOR FORCE CALCULATIONS.
 - DESIGN COMPLETED IN ACCORDANCE WITH GEOTECHNICAL INVESTIGATION BY PATTERSON GROUP.
 - CALCULATIONS PERFORMED BASED ON CAN CSA S6 LRFD & NBC 2015.

REVISIONS

No.	Description	Date
1.	RETAINING WALL DESIGN	2025/28/01
2.	DESIGN ASSUMPTIONS ADDED	2025/21/02

BENCHMARK:

No.	DESCRIPTION	ELEVATION
##.	XXX	XXX.XX

PROFESSIONAL ENGINEER
 M. H. BURGER
 PROVINCE OF ONTARIO

Client / Land Owner: **LOU FRANGIAN**

Project: **3996 INNES ROAD**
 KINGSTON ONTARIO
 Drawing Title: **RETAINING WALL & NOTES**

Drawn by: **VB** Project Number: **GW-24004-18**
 Checked By: **MB** Drawing Number: **C-101**
 Scale: **24"x36" AS NOTED**
 Date: **Jan 28, 2025** SHEET 1 of 1