

re: Retaining Wall Certification
Proposed Residential Development - Morgan's Creek Stage 1
762 March Road - Ottawa

to: Minto Communities - **Mr. Kevin Harper** - kharper@minto.com

date: July 8, 2019

file: PG2234-MEMO.09

Paterson Group (Paterson) prepared the current memo to provide certification of the retaining wall design prepared for this project, as requested by the Mississippi Valley Conservation Authority (MVCA).

Comment 4 from the MVCA letter dated July 4, 2019 indicated the following:

Comment: *We acknowledge the applicant's June 12, 2019 response, however, continue to recommend that the retaining wall design be updated to include the adjusted floodplain and certification from the responsible engineer that the wall will not be adversely affected by flooding or erosion associated with Shirley's Brook. This will be a required of our permit approval.*

Our revised retaining wall drawing, the attached Paterson Group Drawing PG2234-6 Revision 2, has been updated to include the adjusted floodplain.

Further, we certify that the proposed retaining wall will not be adversely affected by flooding or erosion associated with Shirley's Brook.

We trust that this information satisfies your immediate requirements.

Paterson Group Inc.



Scott S. Dennis, P.Eng.



Paterson Group Inc.

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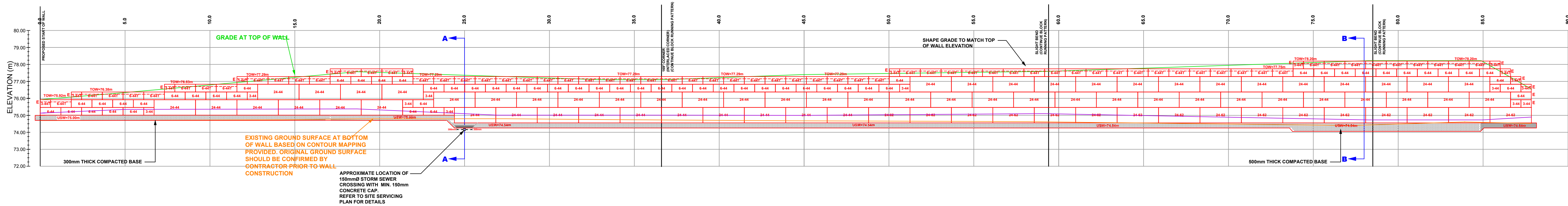
Northern Office and Laboratory
63 Gibson Street
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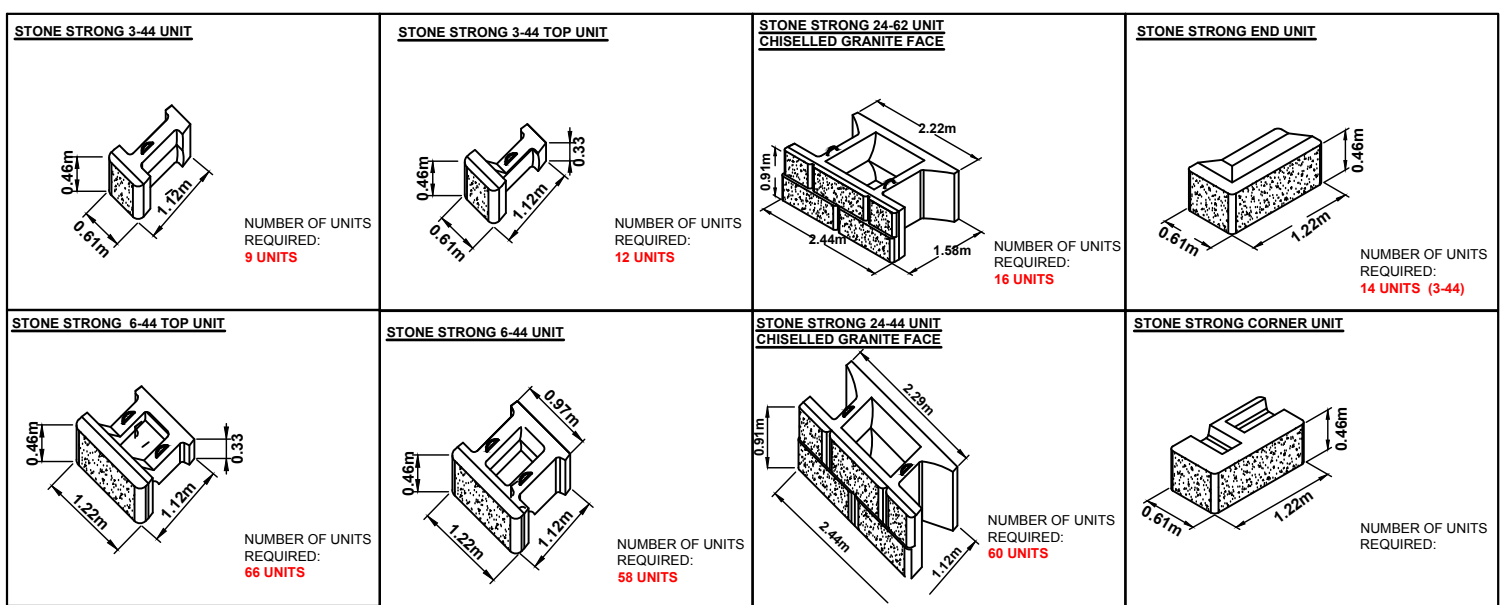
PROFILE VIEW

SCALE 1:125

ISSUED FOR REVIEW

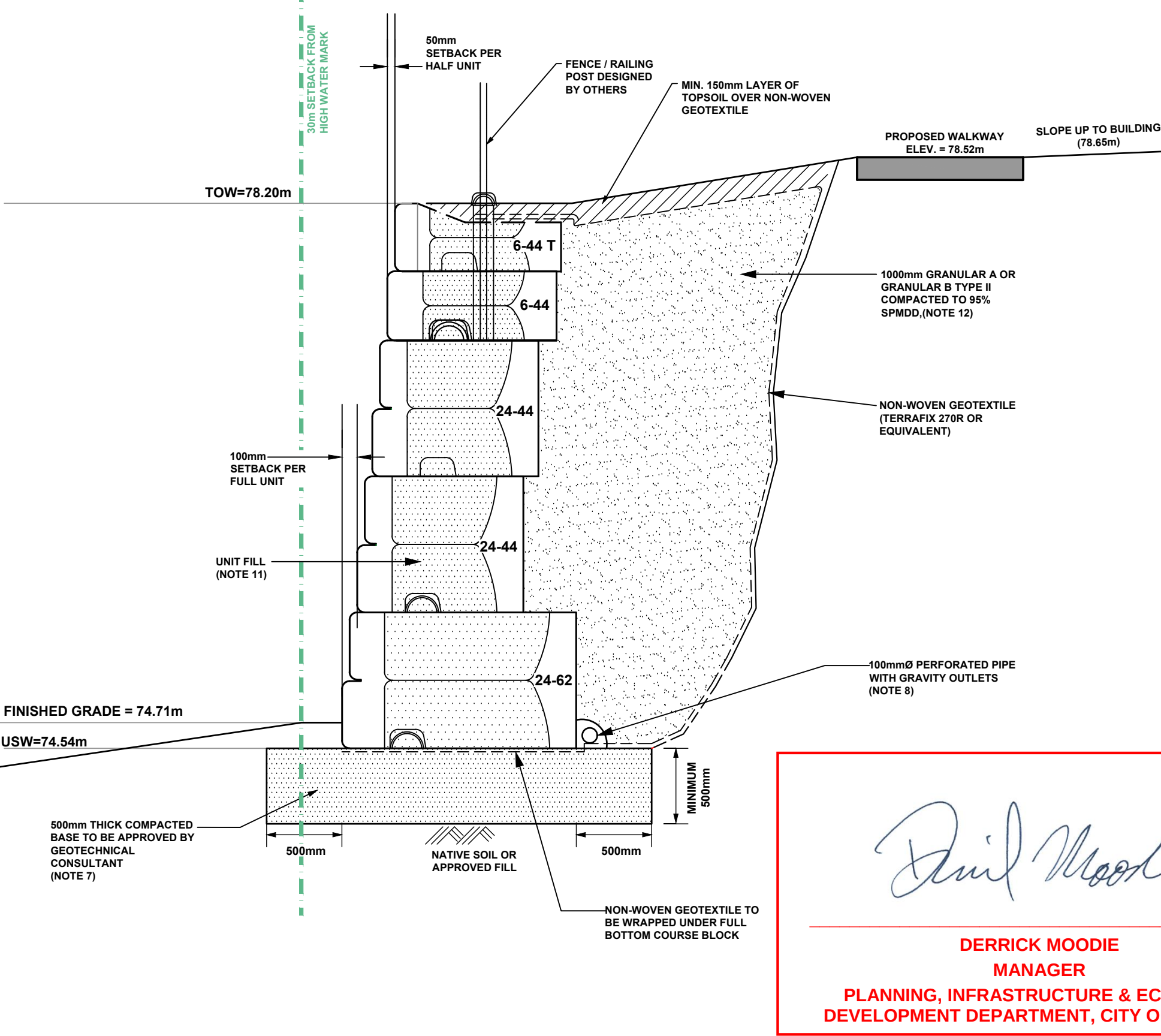


BLOCK DETAILS AND COUNT



CROSS SECTION B-B

SCALE 1:30



Derrick Moodie

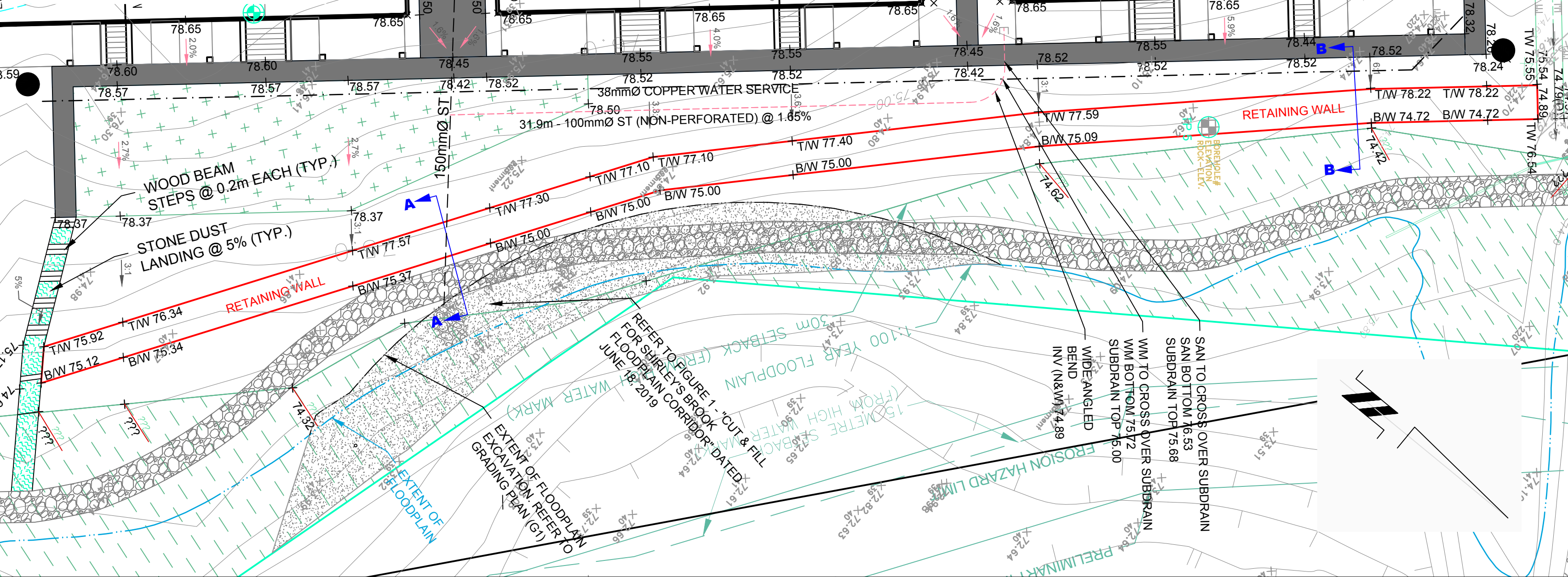
DERRICK MOODIE
MANAGER
PLANNING, INFRASTRUCTURE & ECONOMIC
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

APPROVED

By Samantha Gatchene at 2:17 pm, Aug 09, 2019

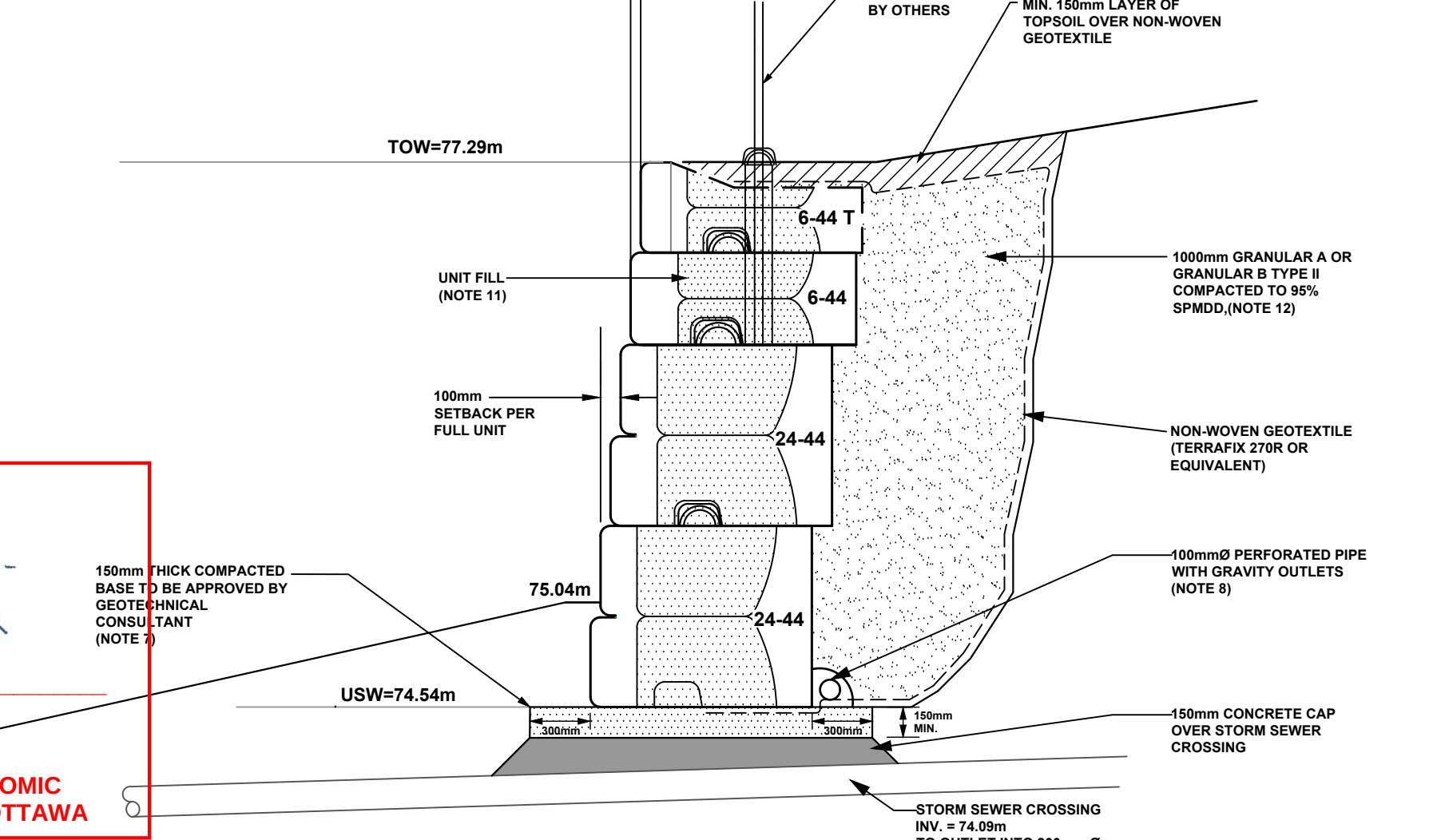
GRADING PLAN

SCALE 1:200



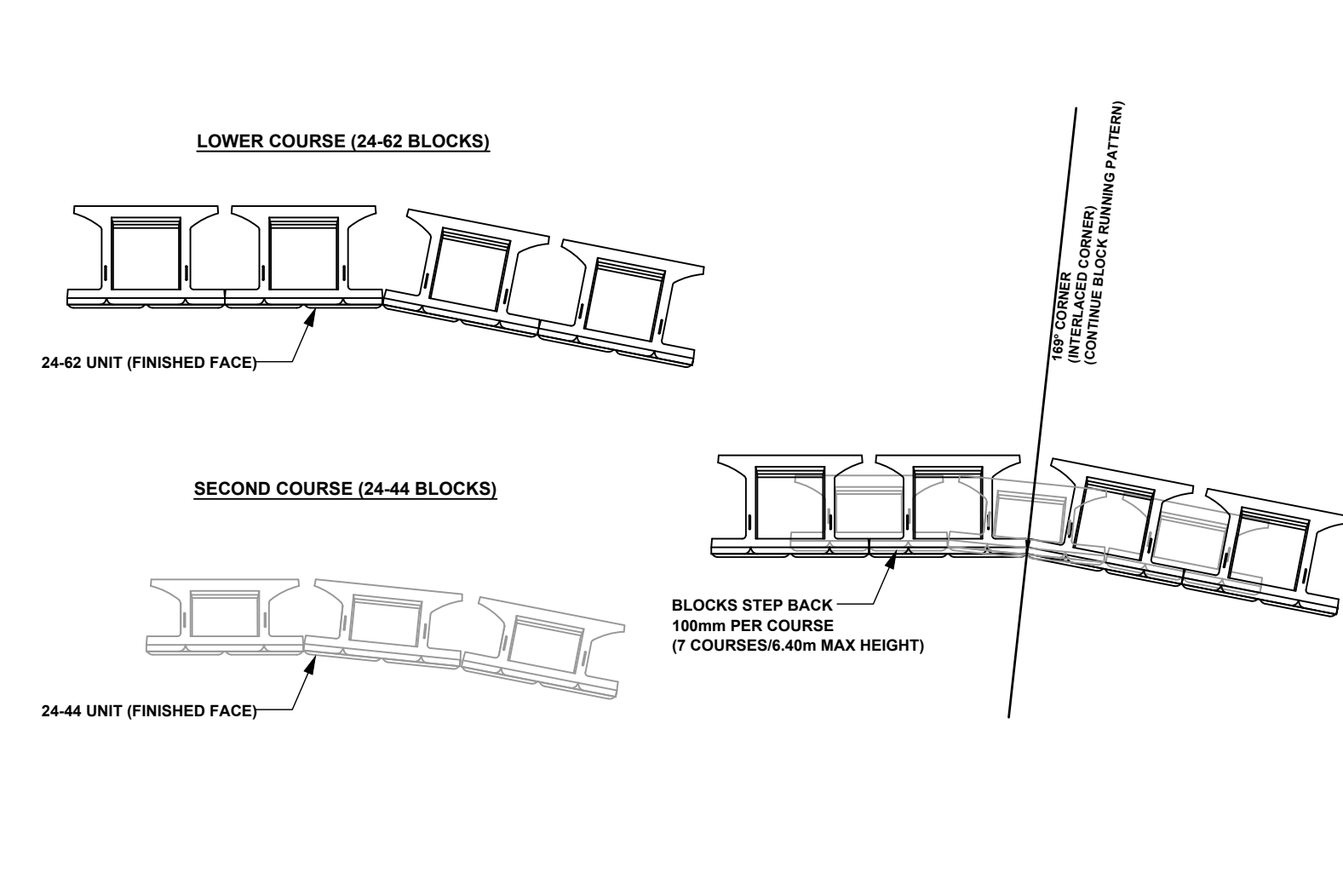
CROSS SECTION A-A

SCALE 1:30



169 ° CORNER DETAIL

SCALE - N.T.S



- NOTES:
1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR UTILITY CLEARANCE AND CONSTRUCTION SITE SAFETY. MCON PRODUCTS INC. AND PATERSON GROUP SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR OF THE PUBLIC.
 2. THIS DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES:

PROPERTY	RETAINED FILL	FOUNDATION MEDIUM
FRICITION ANGLE - PHI	33	33
UNIT WEIGHT -	21 KN/m ³	18 KN/m ³
COHESION - C	0	5 kPa
SOIL TYPE	GRANULAR B TYPE II & NATIVE FILL	STIFF SILTY CLAY
 3. MATERIAL PROPERTIES ARE BASED ON SITE EVALUATION BY THE PATERSON GROUP. SEISMIC LOADING WAS EVALUATED ACCORDING TO THE ONTARIO BUILDING CODE 2012 WITH A PEAK GROUND ACCELERATION VALUE OF 0.32. NO SURCHARGE LOAD IS APPLICABLE FOR THIS WALL.
 4. THE WALL BASE DESIGN ASSUMES A BEARING RESISTANCE AT SLS OF 150 KPa. THE SITE GEOTECHNICAL ENGINEER SHOULD OBSERVE THE BEARING CONDITIONS AND ADJUST THE THICKNESS OF THE GRANULAR BASE OR RECOMMEND CONCRETE BEDDING TO ACCOMMODATE THE SITE CONDITIONS, IF NECESSARY.
 5. THE DESIGN IS FOR STABILITY OF THE PRECAST MODULAR RETAINING WALL SYSTEM ONLY. SITE STABILITY (GLOBAL STABILITY) IS THE RESPONSIBILITY OF THE SITE GEOTECHNICAL ENGINEER. WALL GEOMETRY AND GRADE ELEVATIONS ABOVE AND BELOW THE WALL SHOULD CONFORM WITH THE GRADING PLAN PROVIDED HEREIN. IF ACTUAL SITE GRADES VARY SIGNIFICANTLY FROM THOSE SHOWN OR IF THE BACK SLOPE DOES NOT CONFORM, INSTALLATION SHALL NOT PROCEED UNTIL THE ALL DESIGN IS VERIFIED OR MODIFIED IN THE APPLICABLE AREA.
 6. HORIZONTAL LAYOUT DIMENSIONS ARE MEASURED ALONG THE FACE OF THE WALL, CORRESPONDING TO A HORIZONTAL REFERENCE ESTABLISHED BY PATERSON GROUP BASED ON DRAWINGS BY J.L. RICHARDS.
 7. PRECAST UNITS SHALL BE STONE STRONG RETAINING WALL UNITS MANUFACTURED UNDER LICENSE FROM STONE STRONG SYSTEMS. UNITS SHALL HAVE A MOLDED GRANITE FACE. THE BLOCKS MAY BE STAINED IN PLACE TO ACHIEVE THE DESIRED COLOR.
 8. THE WALL BASE SHALL CONSIST OF A MINIMUM OF 300 TO 500mm OF OPSS GRANULAR A OR GRANULAR B TYPE II. THE BASE SHALL BE COMPACTED AS TO PROVIDE A LEVEL AND HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS. GRANULAR BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 98% OF STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMD). THE BASE SHALL BE SMOOTHED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH BASE. SURFACE OF GRANULAR BASE MAY BE DRESSED WITH FINER AGGREGATE TO AID LEVELING. ENSURE GRADATION OF DRESSING MATERIAL IS SUCH AS TO PRECLUDE LOSS OF FINES INTO BASE. THE THICKNESS OF DRESSING LAYER SHOULD NOT EXCEED 3 TIMES THE MAXIMUM PARTICLE SIZE USED. THE CONTRACTOR MAY SUBSTITUTE CONCRETE WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 20 MPa AND AIR ENTRAINMENT FOR THE GRANULAR BASE MATERIAL.
 9. INSTALL 100 MM DIAMETER PERFORATED PIPE DRAIN UNDER LOWER COURSE OF WALL (OR ALTERNATIVELY BEHIND HEEL OF WALL). PROVIDE CLEAR STONE SURROUNDING THE DRAIN TO PROTECT PIPE FROM CLOGGING AND DAMAGE. PROVIDE OUTLETS THROUGH WALL BASE LAYER AT LOW AREAS, NO FURTHER APART THAN 15m CENTRES.
 10. WALL IS DESIGNED FOR A MINIMUM OF 300 mm TOE EMBEDMENT WITH A MINIMUM HORIZONTAL LEDGE OF 300mm BEYOND THE FACE AND REAR OF BASE BLOCK. WHERE GRANULAR BEDDING WILL NOT BE SUFFICIENT, THE USE OF CONCRETE BEDDING MAY BE REQUIRED. EXTRA PRECAUTIONS MUST BE TAKEN TO PROVIDE TOE EMBEDMENT IN AREAS WHERE BASE OF WALL STEPS.
 11. THE RETAINING WALL IS A BATTERED WALL. ALIGNMENT OF THE BOTTOM WALL UNIT COURSE SHOULD BE PLANNED TO CONSIDER THAT A NOMINAL 100 mm AUTOMATIC SETBACK WILL OCCUR WITH EACH 0.31 m HIGH UNIT. AS SUCH, THE LOWEST WALL BASE WITHIN A CONTINUOUS SECTION SHOULD BE WITHIN WALL CORRIDOR, INCLUDING REQUIREMENT FOR BASE EXTENT IN FRONT OF WALL. SIMILARLY, THE FACE OF THE HIGHEST WALL (TW LEVEL) WITHIN THE SECTION SHOULD ALSO BE AT LEAST WITHIN 0.31 m WITHIN THE WALL CORRIDOR (OR AS REQUIRED BY OWNER).
 12. UNIT FILL SHALL BE A CLEAN, COURSE GRANULAR MATERIAL. UNIT FILL SHALL BE 19mm^Ø CLEAR STONE MEETING THE SATISFACTION OF THE GEOTECHNICAL ENGINEER. UNIT FILL SHALL FILL CAVITIES WITHIN AND BETWEEN THE UNITS AND MAY EXTEND BEHIND THE FACING UNITS FOR THE CONTRACTOR'S CONVENIENCE.
 13. BACKFILL MATERIAL SHALL BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO USE AND SHOULD CONSIST OF OPSS GRANULAR B TYPE II BUFFER OF 100mm (AS SHOWN) WIDTH. ALL FILL WITHIN A 1H:1V ZONE UP AND BACK FROM THE HEEL SHOULD ALSO BE COMPACTED. BACKFILL SHALL BE PLACED IN MAXIMUM 300 mm LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF THE MATERIAL'S SPMD. MOISTURE CONTENT SHOULD BE CONTROLLED AND MAINTAINED WITHIN -3 TO +4 PERCENT OF OPTIMUM.
 14. ENSURE EACH COURSE IS COMPLETELY FILLED AND BACKFILL IS PLACED TO THE SAME LEVEL PRIOR TO PROCEEDING TO THE NEXT COURSE. ENSURE ADJACENT UNITS ARE IN CONTACT SO THAT UNIT FILL MAY NOT ESCAPE THROUGH THE JOINT BETWEEN UNITS. GAPS GREATER THAN 5 mm BETWEEN UNITS AT THE FACE SHALL NOT BE ALLOWED. AT THE INTERSECTIONS WITH STRUCTURES, CUT UNITS TO OBTAIN A NEAT FIT. PULL BLOCK UNITS FORWARD TO ENGAGE THE ALIGNMENT LOOPS ON THE UNIT BELOW BEFORE INFILLING IN ALL CASES.
 15. MAINTAIN TEMPORARY GRADES TO DIVERT SURFACE WATER AWAY FROM THE RETAINING WALL EXCAVATION. SLOPE FINAL BACKFILL TO PROVIDE POSITIVE DRAINAGE AND TO ELIMINATE PONDING. WHERE THE UPPER COURSE FOR THE RETAINING WALL CONSISTS OF DUAL FACE (DF) BLOCKS WHICH ALLOW FOR THE GRADE BEHIND THE TOP OF THE WALL TO VARY, WHILE PRESENTING A FINISHED REAR WALL FACE.
 16. IF WINTER CONSTRUCTION IS CONSIDERED, HEAT MUST BE MAINTAINED WHEN THE BASE IS EXPOSED. THE WALL BASE MUST BE COVERED WITH INSULATION TARPS TO MAINTAIN HEAT AND PROTECT THE BASE FROM POTENTIAL FROST HEAVE. ONCE THE BASE IS BACKFILLED, THE TOP OF WALL MUST BE COVERED WITH INSULATION TARPS OVERNIGHT UNTIL THE WALL CONSTRUCTION IS COMPLETED.
 17. THE GEOTECHNICAL CONSULTANT SHOULD BE NOTIFIED AT THE BEGINNING OF THE WALL CONSTRUCTION TO COMPLETE PERIODIC INSPECTIONS AND PROVIDE GEOTECHNICAL RECOMMENDATIONS AS THE WALL CONSTRUCTION PROGRESSES.
 18. DURING THE CONSTRUCTION OF THE RETAINING WALL, THE CONTRACTOR MUST ENSURE THAT A SAFE SLOPE IS PROVIDED BEHIND THE RETAINING WALL. PATERSON GROUP SHOULD COMPLETE PERIODIC INSPECTIONS TO ENSURE A PROPER SLOPE IS PROVIDED AS PER THE SITE GEOTECHNICAL RECOMMENDATIONS.
 19. ANY INADEQUATE PERFORMING SUBGRADE SHOULD BE SUB-EXCAVATED AND REPLACED WITH OPSS GRANULAR B TYPE II, COMPACTED TO 98% OF THE MATERIAL'S SPMD.
 20. ANY CUTTING OF BLOCKS TO SUIT SITE CONDITIONS OR WALL DESIGN WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. REMOVAL/CUTTING OF LIFTING LOOPS ON THE FINAL ROW OF BLOCKS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

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NO.	REVISIONS	DATE	INITIAL
2	REVISED GRADING	03/07/2019	SD
1	REVISED GRADING	11/06/2019	SD

Title:

MINTO COMMUNITIES INC.
RETAINING WALL DESIGN - PROPOSED RESIDENTIAL DEVELOPMENT
762 MARCH ROAD
OTTAWA, ONTARIO

STONE STRONG RETAINING WALL DESIGN

Stamp:



Scale: AS SHOWN
Drawn by: RCG
Checked by: SD
Approved by: DJG
Date: 04/2019

Report No.: PG2234
Drawing No.: PG2234-6
Revision No.: 2