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re:	Geotechnical Design of Proposed Terrablok II Segmental Retaining Walls Avalon Encore Stage 6 Development Ottawa (Cumberland), ON
date:	August 21, 2018
pages	9 page memo plus table and 3 drawings attached
file:	PG3947-MEMO.02R
from:	Andy Tovell

Introduction and Background

Paterson Group Inc. (Paterson) has been retained by Minto Communities Inc. (Minto) to be the geotechnical engineering consultants for the Avalon Encore Stage 6 Development, in Ottawa (Cumberland), Ontario. This revised memo-report provides the updated retaining wall design for geogrid reinforced Terrablok II segmental retaining walls that can be used to provide the required retaining walls for the site development.

An extension of the retaining wall adjacent to the north side of 2345 Mer Bleue Road, and along the south boundary of Block 233, has been included in this memo-report since our previous submission of PG3947-MEMO.02, dated April 12, 2018.

Paterson previously conducted a geotechnical investigation for the development, as detailed in our File PG3947-1, dated January 20, 2017. The retaining walls adjacent to the singles and towns are shown on Drawing No. 170401-GR2, Grading Plan, prepared by Atrél Engineering Ltd. (Atrél Project No. 170401), for Avalon Encore Stage 6 Subdivision.

The retaining wall adjacent to the north side of 2345 Mer Bleue Road is shown on Drawing No. 17099-GR, Grading and Drainage Plan, prepared by Robinson Consultants Inc., (RCI Project No. 17099), for Avalon Encore Stage 6, Block 233, Revision 2, dated July 17, 2018.

Summary of Retaining Wall Requirements

Retaining walls are required to provide the necessary grade separation between the proposed development and the existing residential properties at 2319, 2345 and 2351 Mer Bleue Road. The new development will be at a higher level than the existing adjacent residential properties.

2319 Mer Bleue Road

A 61± m long retaining wall is proposed just outside the south side lot line of 2319 Mer Bleue Road to retain the rear yard of town home block TH-135, and the side yard of TH-134. This retaining wall will be up to a net (exposed) height of the order of 0.7 m. A 2.5 m high wood noise barrier fence will also be installed above the retaining wall. A perforated pipe is also to be installed in the area behind this proposed wall as per City of Ottawa Drawing No. S29.

Construction of this retaining wall will require coordination with the noise fence installer, as the fence and wall construction will have to be completed concurrently.

2345 and 2351 Mer Bleue Road

A 61± m long retaining wall will also be required on the new development property behind (to the east of) 2345 and 2351 Mer Bleue Road to retain the development where a 3 m wide multi-use pathway will be located. The north end of this retaining wall was originally (previous memo) shown to wrap around just outside the north side yard of #2345 for a length of 5± m on the Atriel plan. The completion of the grading for Block 233, as shown on the RCI plan indicates a 61± m long retaining wall along the entire south side of Block 233, just outside the north side of #2345. The north and east sections of this retaining wall (total length of 122± m) will be part of the subject Encore Stage 6 development. These retaining walls will have a net height of up to 1.25 m.

The south end of the above-noted retaining wall will wrap around just outside the south side yard of #2351, with a noise fence, for the full south side yard. This latter south side retaining wall (and noise fence) will be constructed by others, as it is adjacent to lands being developed by others.

Reference should be made to Atriel Drawing No. 170401-GR2, and RCI Drawing No. 17099-GR, for the details of the grading along the proposed retaining walls adjacent to 2319, 2345 and 2351 Mer Bleue Road.

General Retaining Wall Comments

Retaining walls of less than 1 m in exposed height do not require engineered design. However, for completeness, Paterson has provided in this memo-report recommendations for the construction of Terrablok II retaining walls between net heights of 0.2 and 1.6 m. Recommendations for proper construction of the walls are also provided in this report.

Engineered Terrablok II (also called Pisa 2) retaining wall designs have been provided by this firm for gross wall heights of up to 1.75 m. This will provide an exposed or net wall height of up to 1.60 m, with a minimum of 0.15 m of wall embedment at the front of the wall. These wall heights include the thickness of the capping unit. Please note that "Terrablok II", "Terrablock II" and "Pisa 2" are essentially different names for the same segmental wall unit design and are interchangeable.

Segmental Wall Units and Reinforcing Material

Terrablok II segmental wall units are well known and frequently used in the Ottawa area and are 152 mm (6") in nominal height with a 76 mm (3") high cap or coping unit. The nominal depth of the blocks into the retained soil is 305 mm (12"). The blocks have a key on the top surface and a keyway on the bottom surface to provide interlock and this also imparts a "batter" of 19 mm (3/4") per course to the wall, or a face slope of 7 degrees to the vertical into the retained soil.

The wall units are dry-stacked using a running bond pattern (so the vertical joints are staggered). Geogrid fabric, placed between blocks over the keyway to the front face of the wall, and extending horizontally into the backfill, is used at multiple levels to provide additional support and reinforcement to the wall face and retained fill.

The geogrid type specified for the reinforcing of the walls is Stratagrid 200, which is a PVC coated high tenacity polyester fibre grid, that is compatible with the keyway system utilized with the Terrablok II system. Stratagrid 200 is uniaxial and must be installed with the primary reinforcement direction (also corresponding to the machine direction) perpendicular to the wall alignment direction.

Terrablok II Wall Designs

The attached Table 1 is a schematic wall design table that shows the geogrid position (thick line) and length (in italics) within the wall for walls of between 2 and 11 courses. The gross and net (maximum exposed) heights of each wall, including the cap or coping unit, are provided in the table for easy reference. Basic retaining wall construction procedures are also provided in the table notes.

The attached, engineer-sealed, detail cross section sketch, Drawing No. PG3947-3, shows the length and location of the required geogrid layers for a typical 10 course wall. This sketch also shows the essential construction details of the typical wall. For the 10 course retaining wall, four (4) geogrid layers are required. The locations and lengths of the grid can be compared with the attached Table 1 to clarify the application of the design table.

Drawing No. PG3947-3 has been modified to also show the case where a concrete curb and pavement will be installed behind the wall within the width of the upper geogrid layer. This will be the case for most of the wall along the south side of Block 233, where a driveway and parking area will be located close to the back of the wall and some modification to the geogrid installation is required.

The attached Drawing No. PG3947-4, shows the additional details for (up to 1.8 m high) privacy fence construction behind the walls and attached Drawing No. PG3947-5, shows the additional details for (up to 2.5 m high) noise fence construction.

The grading of the wall and surrounding surfaces for this project have been designed in a manner that ensures that there are negligible slopes either above or below the retaining wall, so no sloping ground allowances are required in the retaining wall design. Privacy or noise fences will be installed along the rear of the retaining walls and they can be installed adjacent to paved areas (such as the pavement on Block 233 and the multi-use path), so the wall sections have also been designed for a 12 kPa surcharge loading.

The proposed retaining walls will be founded on engineered fill, or well-consolidated inorganic native fill, over stiff silty clay soils. These short retaining walls have been checked for global stability and have adequate factors of safety well in excess of the required 1.5 for static conditions and 1.1 for seismic loading conditions, using a PGA of 0.32, as per OBC 2012.

The retaining walls are required to be backfilled with free-draining non frost susceptible granular fill, such as a clean sand, sand gravel, graded crushed stone, or a material meeting Ontario Provincial Standard Specifications (OPSS) Granular B Type I gradation requirements.

A drainage line, with a positive outlet, should be installed behind each wall to ensure that hydrostatic water pressures will not build up behind the walls. As these drainage lines are at the heel of the wall and are slightly below the grade in front of the wall they can be sleeved through the wall and outlet into a "French" drain. In the case of the wall adjacent to the south side of 2319 Mer Bleue, a perforated pipe will be installed under the swale, and that pipe can be used for an outlet to the wall drainage line.

Typical Wall Installation Procedures

Further details concerning the installation of the proposed Terrablok II segmental walls are as follows:

1. The first course of the wall is to be installed level, and uniformly bedded, on a minimum of 150 mm thick OPSS Granular A crushed stone, compacted to 95% of Standard Proctor maximum dry density, and extending a minimum of 150 mm beyond the front, 150 mm beyond the rear, faces of the wall. A suitable subgrade is to be provided, consisting of undisturbed soil and/or approved inorganic fill. Based on the investigation, very stiff silty clay is expected to be the native soil. It is recommended that the fill over the native soil should consist of one or a combination of engineered fill or well-consolidated inorganic native fill.
2. The wall is to have a minimum of one course of embedment (i.e. 0.15 m) below the finished grade in front of the wall.
3. The subject retaining wall has been designed to be subjected to lateral surcharges associated with wind loading from privacy fence or noise fence construction and/or 12 kPa traffic surcharges (OBC 2012).
4. Geotechnical field review should be conducted at the time of excavation, and prior to placing the granular bedding layer, to assess the bearing medium under the proposed wall. A bearing resistance at serviceability limit states of 70 kPa, and/or a factored bearing resistance at ULS of 105 kPa, is required. The bearing medium at the subgrade level for the retaining walls is expected to consist of engineered fill over very stiff native soil.
5. A 100 mm diameter drainage pipe, surrounded with clear stone and having positive gravity outlets, is to be provided behind the heel of the retaining wall, at the level of the grade in front of the wall. Outlets should be provided from the drainage pipe at the wall ends, as well as at 10 m maximum spacing along the length of long walls.
6. The geogrid type specified for the reinforcing of the walls is Stratagrid 200, which is a PVC coated high tenacity polyester fibre grid, that is compatible with the keyway system utilized with the Terrablock II system. Stratagrid 200 is uniaxial and must be installed with the primary reinforcement direction (also corresponding to the machine direction) perpendicular to the wall alignment direction.
7. All walls should be backfilled with free-draining clean sand, sand gravel, or material meeting OPSS Granular B Type I, or better, to serve as the reinforced fill zone.
8. In the case where it is necessary to install a perforated pipe drainage trench, as per City of Ottawa Drawing S29, in the area behind the wall, this trench should be constructed at the same time as the wall is constructed and backfilled to ensure that the geogrid layers from the wall are of the required length and are not damaged by digging for the trench later.

9. Where a concrete curb and pavement are to be installed behind the retaining wall, as is applicable for most of the wall along the south side of Block 233, it is important that the wall contractor and the curb and pavement contractor coordinate to ensure that the retaining wall is not damaged during curb installation. For a 400 mm high concrete curb, the base of the curb, as well as the thickness of the pavement granulars, will be generally be lower than the level of the upper geogrid. As such, the wall contractor should construct the granular base layers to the width of the wall reinforcing, as well as smoothly depress the geogrid around the curb location, as shown on Drawing No. PG3947-3.
10. The pavement contractor needs to be clearly instructed that there are geogrids associated with the adjacent retaining wall and their extent, and advised not to dig too deep and damage the upper geogrid.
11. A light-duty non-woven geotextile, such as Terrafix 270R, Linq 140EX, or equivalent, should be provided between the granular backfill (reinforced fill) and the retained soil, and between the granular backfill and the clear stone for a drainage trench. The granular backfill should be hydraulically connected to the drainage pipe in Note 5, above, to ensure proper wall drainage. The granular backfill must extend at least to the width of the reinforced fill zone.
12. The backfill materials should be well compacted to at least 95% of standard Proctor maximum dry density (SPMDD) with suitable compaction equipment. Keep the compaction equipment back 200 to 300 mm from the back of the wall to minimize any compaction-induced earth pressures. The fill should be compacted in lift thicknesses that are appropriate for the compaction equipment used.
13. Install geogrid reinforcing on a flat, compacted, surface at the appropriate levels. The adjacent backfill surface should be level, uniformly compacted (including hand tamping along the rear face of the blocks if necessary) and at the same grade as the horizontal joint in the wall where the geogrid is located, to ensure that the grid will provide resistance in the proper direction (horizontal) to support the facing and that the grid will not “sag” or “hog” behind the block after backfilling and abrade on the sharp edges of the blocks. Note that for the case where the curb will be present, the geogrid should start horizontally at the back of the wall and then be smoothly depressed lower to pass below the curb so the tension in the geogrid can be developed without any additional slack.
14. The geogrid is required to be cut to the required lengths (measured from the exterior wall face) shown in Table 1, and illustrated in the attached Drawing No. PG3947-3 for a 10 course wall, with the machine (strong) direction of the Stratagrid 200 in the direction perpendicular to the long axis of the wall.

15. Where the remaining grid length along the wall (i.e. to the location where the grid will be at a different level) is less than a roll width, the grid can be cut parallel to, and between, two primary strands. Similarly, if fence posts have to sleeve through the grid, slit the grid parallel to the primary strands and sleeve the post or fence base through, avoiding cutting the primary strands that provide the support to the wall (as shown in Drawing Nos. PG3947-4 and PG3947-5).
16. Ensure the grid passes fully over the key in the lower block and to the front wall face, in order to ensure the grid will be well-connected to the wall facing, place the next block course over to secure the grid in place, and take the slack out of the grid by pulling on the free end away from the rear of the wall, then hold the grid in place with shovels of granular fill over the free end, prior to placing and compacting the next lift of backfill.
17. The geogrid does not have to be stretched tight prior to backfilling, but the slack should be taken evenly out of the grid, without deforming its grid shape, to reduce the amount of movement that the face blocks can make before stressing the grid. Also, when dumping granular fill behind the wall, work from the back of the wall face outward to prevent pushing the grid toward the back of the wall and creating slack.
18. Continue with the installation of block courses and the compaction of the fill with each lift corresponding to a block course. Ensure that at all geogrid levels the fill is well compacted and level with the joint corresponding to the geogrid level.
19. **Note:** It is not recommended practice, either by the manufacturer or this firm, to assemble the block and install the grid in advance of the backfilling phase. For this method, the grid sections passing out of the back of the wall are temporarily wrapped over the top of the wall. Care must be taken to avoid damaging the grid during the backfilling procedure, as upper grid layers can get in the way of the work. Also, it is difficult to ensure that the compacted backfill lifts are located at the exact level of the grid to avoid sagging or hogging of the grid at the back of the wall facing. The requirement to avoid sagging or hogging of the grid is being repeated, but it is very important to the proper functioning of the wall.
20. It is recommended that this firm be retained to conduct geotechnical field review of the subgrade for the base of the wall, and testing or visual observations of the compaction methods for the base and backfill, and the grid installation and to ensure that the wall construction is following the proper procedures.

21. The joints of the cap block course, as well as the upper block courses to the joint having the uppermost geogrid should be glued together with construction adhesive. This is recommended to prevent vandalism and also to provide additional strength to the upper courses of the wall, above the upper geogrid layer, for overturning under seismic (earthquake) loading.
22. A fence may be installed behind the retaining walls. The type of fence has a distinct bearing on the installation requirements, as per this and the following notes. Chain link fences and others of a “flow-through” configuration, as well as guide rails will not impart significant wind loads on the wall. The post bases for these fences can generally be as shallow as 1.2 m.
23. Privacy fences, of up to 1.8 m in height, can impart significant lateral loads on the wall due to wind loading and require sufficient embedment (greater of 1.8 m depth or to 0.6 m deeper than the grade in front of the wall) for the fence to be essentially self-supporting. The recommendations in this regard are provided in the attached Drawing No. PG3947-4.
24. Noise fences, of up to 2.5 m in height, impart even greater lateral loads on the wall due to wind loading and require greater embedment (greater of 2.1 m depth or to 0.9 m deeper than the grade in front of the wall) for the fence to be essentially self-supporting. The recommendations in this regard are provided in the attached Drawing No. PG3947-5.
25. The fence posts or base forms (i.e. sonotube forms) should preferably be installed during the construction of the wall. This will prevent damage to the geogrid associated with drilling for the posts later. When the geogrid level is reached, the grid should be slit between primary reinforcing strands to allow it to accommodate the post base form without significantly reducing the grid strength. The backfill can then proceed in the regular manner. In this manner, the posts will also be well supported, as the fill around the bases will have been well compacted.
26. Privacy fences and noise fences will be required to resist wind loads, as previously noted. The post or bases can be installed as close as tight to the back of the wall, depending on available space, but increased separation will assist in distributing lateral loads from the fence posts or bases to the wall facing. Depending on the separation distance and the type of fence support, the base must avoid the drainage pipe at the heel of the wall. The drainage pipe can be moved further back from the heel of the wall, where necessary, to avoid the fence post or fence post base.

Mr. Thomas Couper
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In our opinion, Terrablok II segmental retaining walls, constructed as shown on the attached detail drawings, and with the geogrid reinforcing requirements detailed in Table 1, and as described above, will be suitable for the applications noted.

Please contact the undersigned with any questions regarding the contents of this report.

We trust this submission is sufficient for your current requirements.

Best regards,

Paterson Group Inc.



Andrew J. Tovell, P.Eng.



Attachment:

- | | | |
|--------------------------|-----------------------|-------------------------------------------------------------------------------|
| <input type="checkbox"/> | Table 1: | Schematic Wall Design Table Showing Geogrid Position for Various Wall Heights |
| <input type="checkbox"/> | Drawing No. PG3947-3: | Typical Detail: 10 Course Terrablok II SRW |
| <input type="checkbox"/> | Drawing No. PG3947-4: | Typical Privacy Fence Post Base Detail For Terrablok II SRW |
| <input type="checkbox"/> | Drawing No. PG3947-5: | Typical Noise Fence Post Base Detail For Terrablok II SRW |

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TABLE 1
SCHEMATIC WALL DESIGN TABLE SHOWING GEOGRID POSITION FOR VARIOUS WALL HEIGHTS
AVALON ENCORE STAGE 6 SUBDIVISION - OTTAWA, ON - PATERSON FILE: PG3947-MEMO.02R

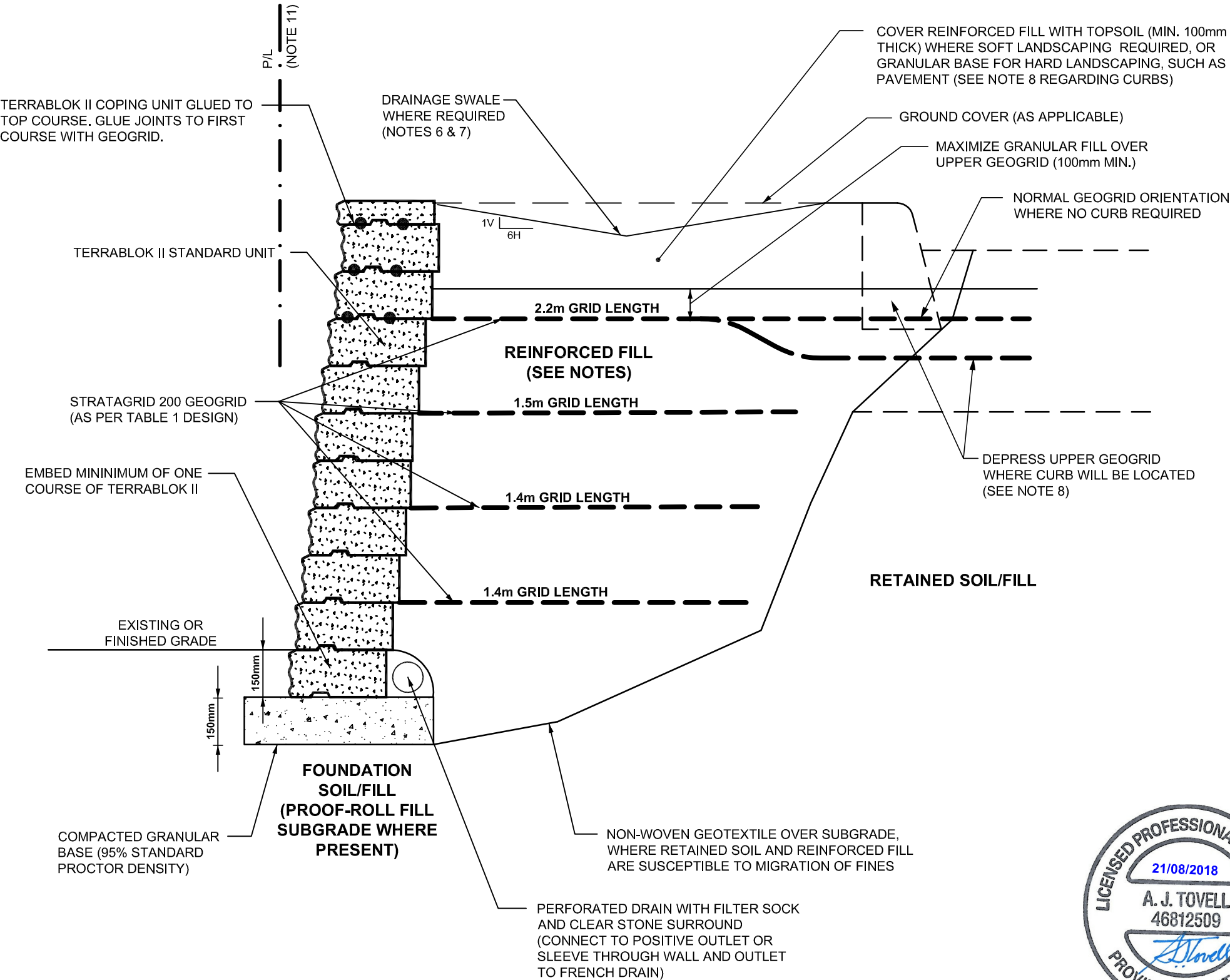
Number of Courses	2	3	4	5	6	7	8	9	10	11
Max. Net Wall Height:	0.23	0.38	0.53	0.68	0.84	0.99	1.14	1.29	1.44	1.60
Gross Wall Height:	0.38	0.53	0.68	0.84	0.99	1.14	1.29	1.44	1.60	1.75
		Schematic Elevation View of Range of Heights of Terrablok II Wall Panels Designed for Privacy Fence or Traffic Surcharge Support (Note: Minimum Geogrid Length 1.3 m for 2.5 m High Noise Fence) Showing Geogrid Locations Within Wall Height with Dark Lines And Geogrid Lengths (m) For Each Layer in <i>Italics</i>								
Course 11										11
Course 10									10	2.2 m
Course 9								9	2.2 m	
Course 8							8	2.0 m		
Course 7						7	2.0 m	7	1.5 m	1.5 m
Course 6					6	1.9 m	6			
Course 5				5	1.9 m		1.3m	1.3 m	1.4 m	1.4m
Course 4			4	1.8 m	4	4	4	4	4	4
Course 3		3	1.8 m		1.2 m	1.2 m	1.3 m	1.3 m	1.4m	1.4m
Course 2	2	1.4 m		1.2 m						
Course 1	1	1	1	1	1	1	1	1	1	1



- Notes:**
1. Terrablok II (or Pisa 2) segmental wall units have a nominal thickness of 6" (152 mm) and a cap thickness of 3" (76 mm), as specified in the Risa Stone Systems literature. Adjustments may have to be made if actual manufactured block dimensions, especially thickness, are different than assumed.
 2. Wall heights provided along top of this table include the cap. Net wall heights provided in this table are the maximum exposed height with 1 course embedded.
 3. Geogrid lengths (in italics) are measured with respect to the front face of the wall. Geogrid type is Stratagrid 200, or approved equivalent.
 4. Geogrids are to be placed over the keyway to the front face of the applicable block, to provide proper connection to the wall facing, and are to be stretched out horizontally over a level, compacted backfill lift to remove any slack in the geogrid prior to carefully backfilling the layer from the back of the wall facing outward to avoid pushing the grid toward the wall and creating slack in the grid.
 5. The backfill should be compacted at the level of each of the geogrid layers to ensure there is not "sag" or "hog" of the grid after backfilling. Backfill is to be placed/dumped over the grid carefully to avoid creating any slack in the grid as it is covered. Placing the fill starting behind the wall facing, and then moving back away from the wall is recommended.
 6. The cap and all upper courses to, and including, the joint with the uppermost geogrid, are required to be glued with a minimum of two (2) beads of Lepage's PL Premium construction adhesive (i.e. one bead on each side of the keyway).
 7. This table is to be read in conjunction with the accompanying engineering design drawings: Drawing Nos PG3947-3, PG3947-4 and PG3947-5, Revision 1.

NOTES:

1. WALL BLOCK STARTER COURSE IS TO BE BEDDED ON MINIMUM 150mm OPSS GRANULAR A CRUSHED STONE OVER SUITABLE NATIVE SOIL OR WELL CONSOLIDATED INORGANIC FILL SUBGRADE. WHERE EXTRA BUILDUP IS REQUIRED, USE SUITABLE SITE EXCAVATED SOIL, IF IT CAN BE COMPACTED, OR GRANULAR A OR B TYPE I OR II COMPACTED TO 95% SPMDD.
2. REINFORCED FILL TO CONSIST OF FREE-DRAINING GRANULAR FILL (i.e. OPSS GRANULAR B TYPE I OR BETTER).
3. COMPACT FILL TO 95% STANDARD PROCTOR DENSITY IN LIFTS AS WALL IS CONSTRUCTED.
4. KEEP HEAVY COMPACTION EQUIPMENT 200mm TO 300mm AWAY FROM BACK OF WALL.
5. GEOGRID IS TO BE PLACED OVER KEYWAY IN TERRABLOK II WITH PRIMARY STRENGTH DIRECTION PERPENDICULAR TO WALL ALIGNMENT. REMOVE ANY SLACK FROM GRID AND HOLD IN PLACE WHILE BACKFILLING OVER GRID. GEOGRID LENGTHS ARE MEASURED FROM WALL FACE.
6. WHERE SOFT LANDSCAPED YARD DRAINS TOWARDS WALL, INSTALL A SWALE TO INTERCEPT SURFACE WATER AND DRAIN IT AWAY. SWALE (IF PRESENT) IS TO BE MAINTAINED BY HOMEOWNER AND NOT BLOCKED. SWALE LOCATIONS AND GRADES ARE GENERALLY SHOWN ON GRADING PLANS.
7. NOTE THAT WHERE REAR YARD PERFORATED PIPE INSTALLATIONS (AS PER CITY OF OTTAWA DETAIL DWG. S29) ARE REQUIRED, THE DRAINAGE TRENCH SHOULD BE CONSTRUCTED IN CONJUNCTION WITH THE WALL (AND FENCE, IF APPLICABLE). GEOGRIDS ARE TO BE CONTINUOUS THROUGH CLEAR STONE TRENCH WITH GEOTEXTILE INSTALLED BETWEEN CLEAR STONE AND REINFORCED FILL.
8. WHERE CONCRETE CURBS WILL BE INSTALLED BEHIND A RETAINING WALL (i.e. BLOCK 233) COORDINATION WILL BE REQUIRED BETWEEN WALL AND CURB CONTRACTORS. ENSURE THAT UPPER GEOGRID LAYER SMOOTHLY DEPRESSES SUFFICIENTLY TO BE LOCATED UNDER THE CURB. ADDITIONAL GRANULAR FILL MAY BE REQUIRED TO ENSURE SUFFICIENT BASE FOR CURB AND PAVEMENT. ENSURE CURB/PAVEMENT CONTRACTOR KNOWS GEOGRIDS ARE PRESENT AND WILL NOT EXCAVATE TOO DEEP.
9. REFER TO DRAWING NOS. PG3947-4 AND PG3947-5 FOR FENCE INSTALLATION DETAILS.
10. REFER TO APPROVED GRADING PLANS PREPARED BY ATREL ENGINEERING (OR ROBINSON CONSULTANTS INC. FOR ENCORE BLOCK 233) FOR PROPOSED GRADING AND GENERAL TOP OF WALL LEVELS. NOTE UNDERSIDE OF WALL TO BE PROVIDED WITH MINIMUM OF 0.15m EMBEDMENT BELOW FINISHED GRADE IN FRONT OF WALL.
11. THESE DETAIL NOTES ARE APPLICABLE TO OTHER WALL HEIGHTS WITH REFERENCE TO TABLE 1 FILE PG3947-MEMO.02R FOR GEOGRID REINFORCING LEVELS AND LENGTHS. WALL DESIGNED FOR 12 kPa SURCHARGE FOR VEHICLE TRAFFIC AND/OR PRIVACY OR NOISE FENCE WIND LOADS, AS REQUIRED.
12. THE RETAINING WALL IS TO INSTALLED COMPLETELY WITHIN THE SUBJECT PROPERTY.
13. GEOTECHNICAL FIELD REVIEW IS REQUIRED DURING CONSTRUCTION.



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1	ADDED DETAILS FOR BLOCK 233	21/08/18	AJT
NO.	REVISIONS	DATE	INITIAL

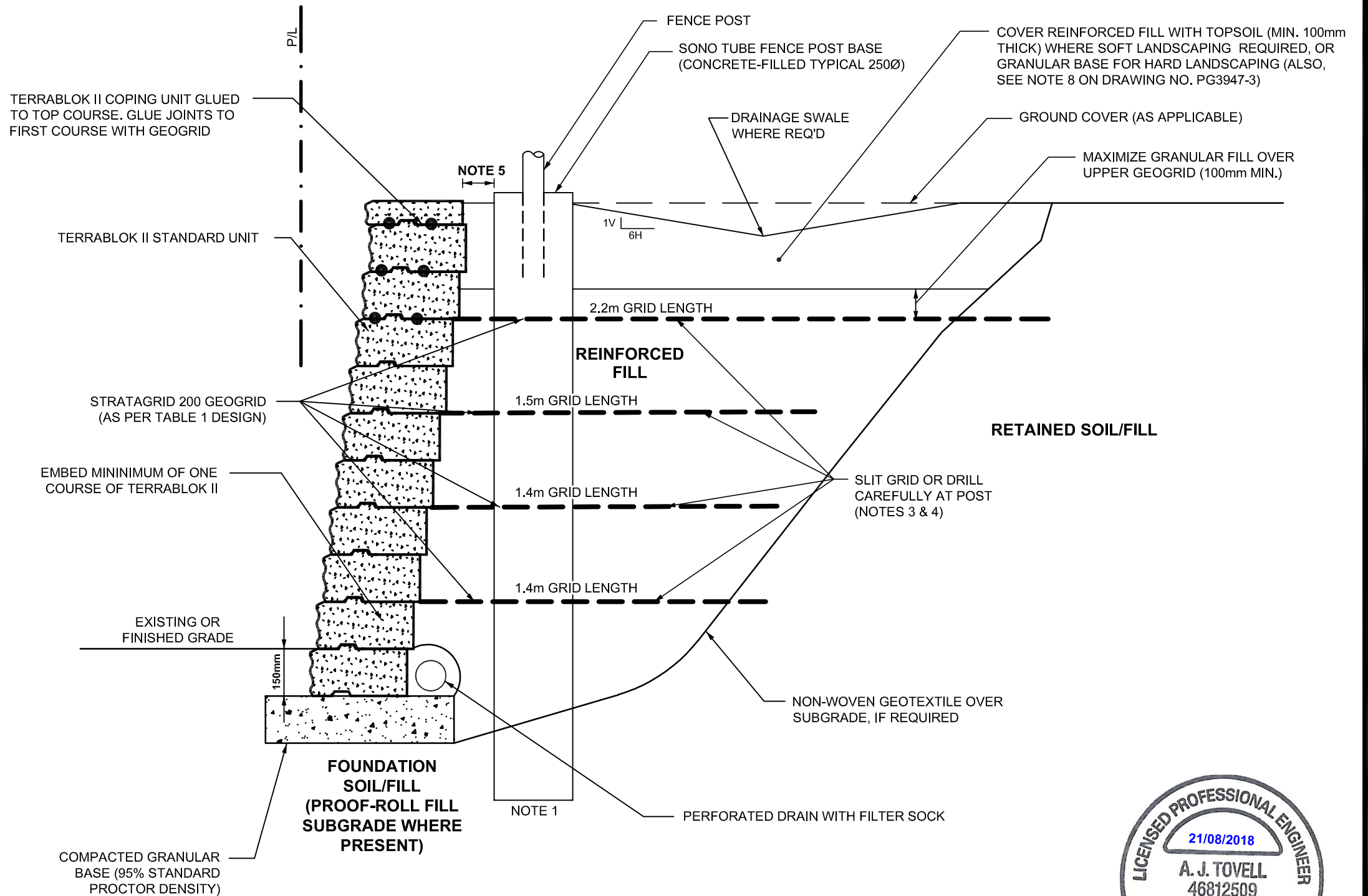
MINTO COMMUNITIES INC.	
GEOGRID REINFORCED TERRABLOK II WALL AVALON ENCORE STAGE 6 DEVELOPMENT	
OTTAWA,	ONTARIO
Title: TYPICAL DETAIL: 10 COURSE 1.60m GROSS; 1.44m NET HEIGHT TERRABLOK II SRW	

Scale:	1:15	Date:	04/2018
Drawn by:	MPG	Report No.:	PG3947-MEMO.02R
Checked by:	AJT	Dwg. No.:	PG3947-3
Approved by:	AJT	Revision No.:	1

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NOTES:

1. SONO TUBE POST BASES FOR PRIVACY FENCES UP TO 1.8m HIGH TO EXTEND TO GREATER OF 1.8m DEPTH OR 0.6m BELOW GRADE IN FRONT OF WALL. POST BASES MAY HAVE REINFORCING STEEL REQUIREMENT (BY OTHERS).
2. THIS DETAIL IS FOR PRIVACY FENCES TO RESIST WIND LOADS. GUIDE RAILS AND FLOW-THROUGH CHAIN LINK FENCES REQUIRE ONLY 1.2m DEEP POST BASES UNLESS GREATER DEPTH REQUIRED BY FENCE INSTALLER. REFER TO DRAWING NO. PG3947-5 FOR NOISE FENCE GUIDELINES.
3. WHERE POSSIBLE, FENCE POST SONO TUBE PIERS ARE TO BE INSTALLED DURING BACKFILLING. GRID CAN BE SLIT PERPENDICULAR TO WALL FACE AT PIER FORM TO FIT OVER FORM WITHOUT CUTTING PRIMARY GRID STRANDS.
4. WHERE INSTALLING SONO TUBE FENCE POST AFTER WALL CONSTRUCTION, THE HOLE IS TO BE DRILLED CAREFULLY THROUGH GEOGRID LAYERS TO ENSURE A MINIMUM OF DISTURBANCE.
5. BE CAREFUL TO KEEP 0.1m MINIMUM CLEAR FROM BACK OF WALL WITH POST BASE TO AVOID DRAINAGE PIPE.
6. REFER TO DRAWING NO. PG3947-3 FOR WALL BACKFILLING PROCEDURES, INCLUDING REQUIREMENTS WHERE CURBS WILL BE LOCATED BEHIND WALL.
7. CAUTION: GEOGRID LAYERS ARE AN ESSENTIAL PART OF THE WALL SUPPORT AND SHOULD NOT BE DISTURBED OR CUT EXCEPT AS PERMITTED UNDER NOTE 4, ABOVE.
8. NOTE THAT WHERE REAR YEAR PERFORATED PIPE INSTALLATIONS (AS PER CITY OF OTTAWA DETAIL DRAWING S29) ARE REQUIRED, THE DRAINAGE TRENCH SHOULD BE CONSTRUCTED IN CONJUNCTION WITH THE WALL (AND FENCE, IF APPLICABLE). GEOGRIDS AREA TO BE CONTINUOUS THROUGH CLEAR STONE TRENCH WITH GEOTEXTILE INSTALLED BETWEEN CLEAR STONE AND REINFORCED FILL.



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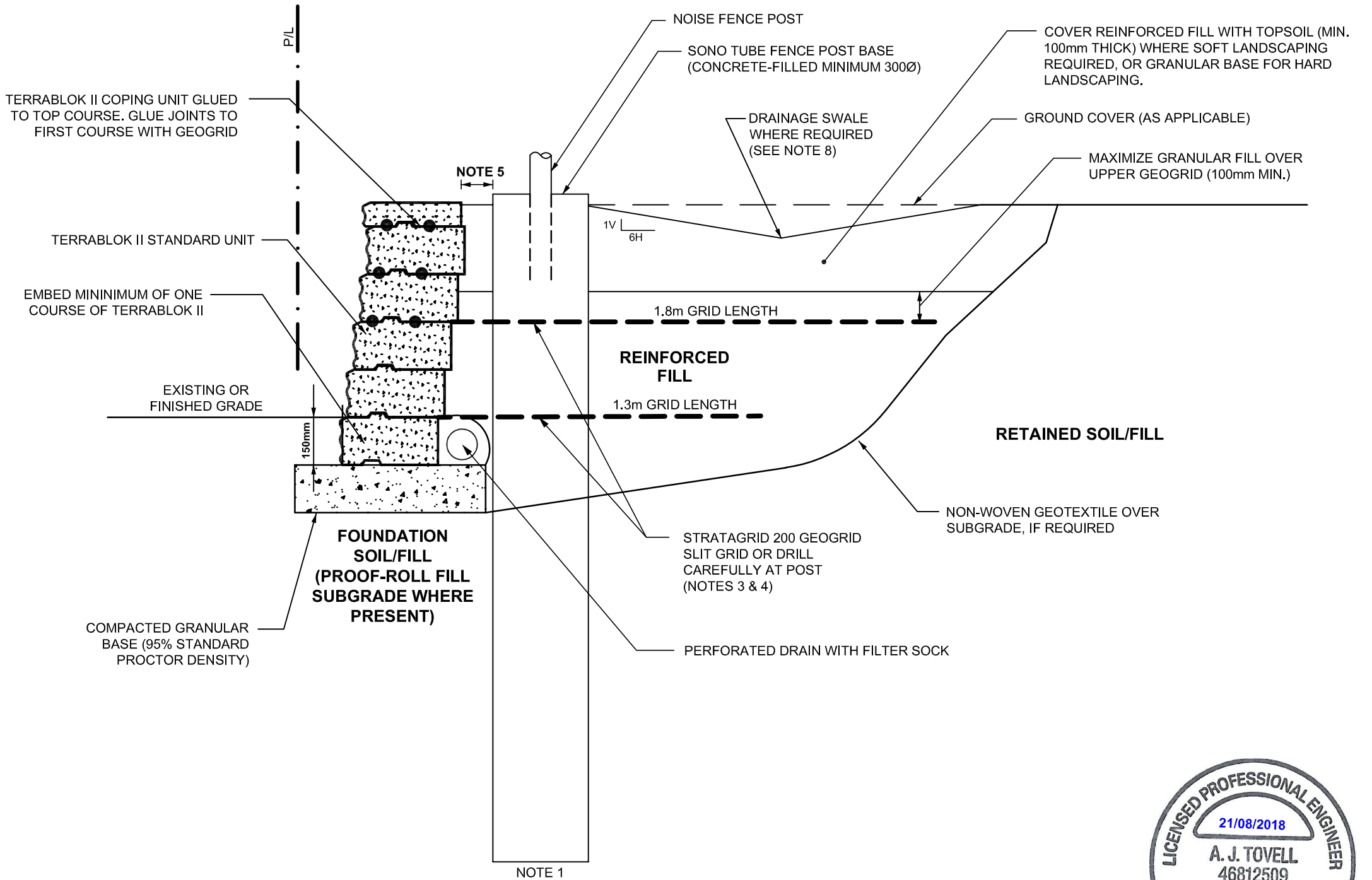
1	ADDED DETAILS FOR BLOCK 233	21/08/18	AJT
NO.	REVISIONS	DATE	INITIAL

MINTO COMMUNITIES INC.	
GEOGRID REINFORCED TERRABLOK II WALL AVALON ENCORE STAGE 6 DEVELOPMENT	
OTTAWA,	ONTARIO
Title: TYPICAL PRIVACY FENCE POST BASE DETAIL FOR TERRABLOK II SRW	

Scale:	1:15	Date:	04/2018
Drawn by:	MPG	Report No.:	PG3947-MEMO.02R
Checked by:	AJT	Dwg. No.:	PG3947-4
Approved by:	AJT	Revision No.:	1

NOTES:

- SONO TUBE POST BASES FOR NOISE FENCES UP TO 2.5m HIGH TO EXTEND TO GREATER OF 2.1m DEPTH OR 0.9m BELOW GRADE IN FRONT OF WALL. POST BASES MAY HAVE REINFORCING STEEL REQUIREMENTS (BY OTHERS).
- THIS DETAIL IS FOR NOISE FENCES TO RESIST WIND LOADS. GUIDE RAILS AND FLOW-THROUGH CHAIN LINK FENCES REQUIRE ONLY 1.2m DEEP POST BASES UNLESS GREATER DEPTH REQUIRED BY FENCE INSTALLER. REFER TO DRAWING NO. PG3947-4 FOR PRIVACY FENCE GUIDELINES.
- WHERE POSSIBLE, FENCE POST SONO TUBE PIERS ARE TO BE INSTALLED DURING BACKFILLING. GRID CAN BE SLIT PERPENDICULAR TO WALL FACE AT PIER FORM TO FIT OVER FORM WITHOUT CUTTING PRIMARY GRID STRANDS.
- WHERE INSTALLING SONO TUBE FENCE POST AFTER WALL CONSTRUCTION, THE HOLE IS TO BE DRILLED CAREFULLY THROUGH GEOGRID LAYERS TO ENSURE A MINIMUM OF DISTURBANCE.
- BE CAREFUL TO KEEP 0.1m MINIMUM CLEAR FROM BACK OF WALL WITH POST BASE TO AVOID DRAINAGE PIPE.
- REFER TO DRAWING NO. PG3947-3 FOR WALL BACKFILLING PROCEDURES.
- CAUTION: GEOGRID LAYERS ARE AN ESSENTIAL PART OF THE WALL SUPPORT AND SHOULD NOT BE DISTURBED OR CUT EXCEPT AS PERMITTED UNDER NOTE 4, ABOVE.
- NOTE THAT WHERE REAR YEAR PERFORATED PIPE INSTALLATIONS (AS PER CITY OF OTTAWA DETAIL DRAWING S29) ARE REQUIRED, THE DRAINAGE TRENCH SHOULD BE CONSTRUCTED IN CONJUNCTION WITH THE WALL (AND FENCE, IF APPLICABLE). GEOGRIDS AREA TO BE CONTINUOUS THROUGH CLEAR STONE TRENCH WITH GEOTEXTILE INSTALLED BETWEEN CLEAR STONE AND REINFORCED FILL.



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Scale:	1:15	Date:	04/2018
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Checked by:	AJT	Dwg. No.:	PG3947-5
Approved by:	AJT	Revision No.:	1