

GENERAL NOTES

UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS, THE FOLLOWING NOTES SHALL APPLY.

1. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
2. BEST WAY STONE RIDGE WALL BLOCKS DIMENSIONS: 1000L X 435W X 195H (STANDARD).
3. BEST WAY STONE RIDGE WALL COPING BLOCKS DIMENSIONS: 1000L X 500W X 195H.
4. THE CONSTRUCTION OF THE RETAINING WALL SHALL ADHERE TO THE GUIDELINES OUTLINED IN THE BEST WAY STONE INSTALLATION MANUAL.
5. THE CONSTRUCTION OF THE RETAINING WALL MUST BE CERTIFIED BY A QUALIFIED ENGINEER. PRIOR TO CONSTRUCTION, A QUALIFIED ENGINEER MUST BE ENGAGED TO CONDUCT FIELD REVIEWS.
6. FOR VARIATIONS IN WALL HEIGHTS, SOIL PARAMETERS, AND SURCHARGE LOADING NOT DEPICTED ON THESE DRAWINGS, CONTACT BEST WAY STONE.
7. IT IS THE CONTRACTOR’S RESPONSIBILITY TO COORDINATE WITH THE CERTIFYING ENGINEER BEFORE COMMENCING CONSTRUCTION TO DETERMINE THE NECESSARY INSPECTIONS FOR FINAL CERTIFICATION.
8. ALL CONSTRUCTION OPERATIONS, INCLUDING SUBGRADE PREPARATION, GEOGRID PLACEMENT, BACKFILLING, AND COMPACTION, MUST BE CARRIED OUT UNDER GEOTECHNICAL SUPERVISION.
9. THE RETAINING WALL MUST NOT BE BUILT ON A FROZEN BASE OR BACKFILLED WITH FROZEN MATERIAL. VERIFICATION OF THIS REQUIREMENT MUST BE MADE BY THE GEOTECHNICAL ENGINEER DURING CONSTRUCTION.
10. ASSUMED DESIGN PARAMETERS MUST BE VERIFIED BY QUALIFIED GEOTECHNICAL PERSONNEL BEFORE AND DURING WALL CONSTRUCTION.
11. DRAINAGE SHOULD BE GRAVITY–FED TO AN APPROVED OUTLET LOCATION, WITH A RECOMMENDED MINIMUM SLOPE OF 1.0%.
12. POOR SOIL CONDITIONS AND EXCESSIVE MOISTURE MAY NECESSITATE ALTERNATIVE DRAINAGE REQUIREMENTS AND DESIGN MODIFICATIONS, WHICH MUST BE VERIFIED BEFORE AND DURING WALL CONSTRUCTION.
13. A GEOTEXTILE SHOULD BE ADDED BETWEEN THE RETAINED MATERIAL AND BACKFILL TO AVOID CONTAMINATION OF THE GRANULAR "B" (BACKFILL MATERIAL).
14. ADEQUATE MEASURES MUST BE TAKEN TO PREVENT PEDESTRIAN ACCESS TO THE TOP OF THE WALL. OTHERWISE, MODIFICATIONS TO THE DESIGN, SUCH AS ADDING AN ENGINEERED HANDRAIL, MAY BE NECESSARY FOR SAFETY COMPLIANCE.
15. ADEQUATELY ENGINEERED GUIDE RAIL BE INSTALLED IN CASE OF THE PRESENCE OF A ROADWAY RETAINED BY REINFORCED WALL (THE GUIDE RAIL TO BE MINIMUM 1.0m AWAY FROM THE CLOSEST EDGE OF THE RETRAINING WALL).
16. DESIGN FOR SERVICE LIFE OF 75 YEARS.

ASSUMPTIONS AND CONDITIONS

1. THE DESIGN PROVIDED HERE RELIES ON SPECIFIED SOIL PARAMETERS, FOUNDATION CONDITIONS, GROUNDWATER CONDITIONS, AND LOADING DETAILS AS OUTLINED BELOW:

a. BACKFILL MATERIAL (GRANULAR "B")

$\phi_r = 34^\circ$, $\gamma_r = 21\text{kN/m}^3$

b. FOUNDATION MATERIAL:

$\phi_f = 32^\circ$, $\gamma_f = 21\text{kN/m}^3$

c. LEVELING PAD (GRAVEL FILL)

$\phi_l = 40^\circ$, $\gamma_l = 20\text{kN/m}^3$

2. LOAD AND RESISTANCE FACTOR DESIGN (BASED ON THE CHBDC CODE):

2.1. LOAD FACTOR:

2.1.1. EARTH PRESSURE: 1.25

2.1.2. DEAD LOAD: 1.1

2.1.3. LIVE LOAD: 1.7

2.2. RESISTANCE FACTOR:

2.2.1. EXTERNAL STABILITY:

2.2.1.1. RESISTANCE FACTOR FOR SLIDING: 0.8

2.2.1.2. RESISTANCE FACTOR FOR OVERTURNING: 0.65

2.2.1.3. RESISTANCE FACTOR FOR FOR BEARING: 0.5

2.2.2. INTERNAL STABILITY:

2.2.1.1. RESISTANCE FACTOR FOR RUPTURE: 0.9

2.2.1.2. RESISTANCE FACTOR FOR PULLOUT: 0.9
- 2.3. COMPOUND STABILITY: 0.65
- 2.4. GLOBAL STABILITY IS THE RESPONSIBILITY OF OTHERS.

3. SURCHARGE LOADING: LANDSCAPING: 2.5 kPa (GRAVITY WALL) AND TRAFFIC:12.0 kPa (REINFORCED WALL).

4. THE RETAINING WALL MUST STAND DIRECTLY ON SOIL SUITABLE FOR A BEARING PRESSURE OF 150 kPa (GRAVITY WALL) AND 300 kPa (REINFORCED WALL) AT SLS, UNLESS SPECIFIED OTHERWISE. SOIL BEARING CAPACITY MUST BE VERIFIED BY THE PROJECT GEOTECHNICAL ENGINEER BEFORE PLACING BASE MATERIALS.

5. THE RETAINING WALL MAY REST ON SOUND BEDROCK, CONFIRMED BY THE PROJECT GEOTECHNICAL ENGINEER. FOUNDING ELEVATION MAY BE ADJUSTED IF SOUND BEDROCK IS FOUND ABOVE THE SPECIFIED FOUNDING ELEVATION. ERRATIC BOULDERS OR FRACTURED WEATHERED ROCK ARE UNSUITABLE AS BEARING MATERIALS.

6. RETAINED SOILS ARE ASSUMED TO BE FULLY DRAINED.

7. BACKFILLING AND COMPACTION OPERATIONS SHOULD BE CONDUCTED UNDER THE SUPERVISION OF A GEOTECHNICAL ENGINEER.

8. EXCAVATE TO ACCOMMODATE THE THICKNESS OF THE WALL PLUS AN ADDITIONAL DISTANCE TO ACCOMMODATE COMPACTED GRANULAR BACKFILL BEHIND THE WALL. ENSURE EXCAVATION IS DONE AT A SUITABLE BACKWARD ANGLE TO REACH THE ORIGINAL COMPETENT SOIL DEPTH. PRIOR TO CONSTRUCTION, THE FOUNDING SOIL MUST UNDERGO INSPECTION BY A GEOTECHNICAL ENGINEER TO VERIFY SLOPE STABILITY.

9. LEVELING PAD DIMENSIONS: THE LEVELING PAD SHOULD BE 200mm THICK AND AT LEAST 152mm WIDE FROM THE HEEL OF THE BLOCKS AND 305mm WIDE FROM THE TOE (TOTAL: 900mm WIDE).

10. THE LEVELING PAD SHOULD BE GRAVEL FILL COMPACTED TO A MINIMUM OF 98% OF STANDARD PROCTOR DENSITY (TYPICALLY GRANULAR "A" MATERIAL).

11. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT LATEST REVISION.

BACKFILL PLACEMENT AND COMPACTION GUIDELINES

1. BEFORE CONSTRUCTION, THE CONTRACTOR MUST CLEAR, GRADE, AND COMPACT THE REINFORCED BACKFILL AREA, REMOVING TOPSOIL, BRUSH, AND ANY OTHER ORGANIC DELETERIOUS MATERIALS. UNSTABLE SOILS SHOULD BE EXCAVATED, REPLACED, AND COMPACTED WITH BACKFILL MATERIAL AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
1. BACKFILL MATERIAL MUST BE FREE–DRAINING GRANULAR "B" TYPE I OR IMPORTED MATERIAL WITH LESS THAN 5% SILT CONTENT, TO BE VERIFIED BY THE GEOTECHNICAL ENGINEER BEFORE PLACEMENT. COMPACTION SHOULD ACHIEVE A DENSITY OF 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (S.P.M.D.D.).
2. BACKFILL SHOULD BE LAID IN HORIZONTAL LAYERS, NOT EXCEEDING 200mm IN UNCOMPACTED THICKNESS FOR AREAS WHERE HEAVY COMPACTION EQUIPMENT IS UTILIZED. ONLY HAND–OPERATED EQUIPMENT IS PERMITTED WITHIN ONE METER OF THE FRONT FACE.

3. AT THE END OF EACH WORKDAY, THE SURFACE OF THE BACKFILL SHOULD BE GRADED WITH A MINIMUM SLOPE OF 2% AWAY FROM THE WALL FACE. FOLLOWING GRADING, THE SURFACE SHOULD BE COMPACTED USING A SMOOTH DRUM ROLLER TO MINIMIZE ANY POTENTIAL PONDING.
4. THE DESIGN ASSUMES THAT THE REINFORCED BACKFILL MATERIAL WILL BE FREE OF SUBSURFACE MOISTURE/WATER. IT IS THE RESPONSIBILITY OF THE CONSTRUCTOR TO ENSURE PROPER SURFACE DRAINAGE IS PROVIDED.
5. FOR REINFORCED WALLS: REINFORCEMENT MATERIAL MUST BE MONITORED DURING BACKFILL PLACEMENT AND COMPACTION. MODIFICATIONS TO COMPACTION EQUIPMENT AND PROCEDURES MAY BE NECESSARY TO PREVENT EXCESSIVE DEFORMATION OF THE REINFORCING.

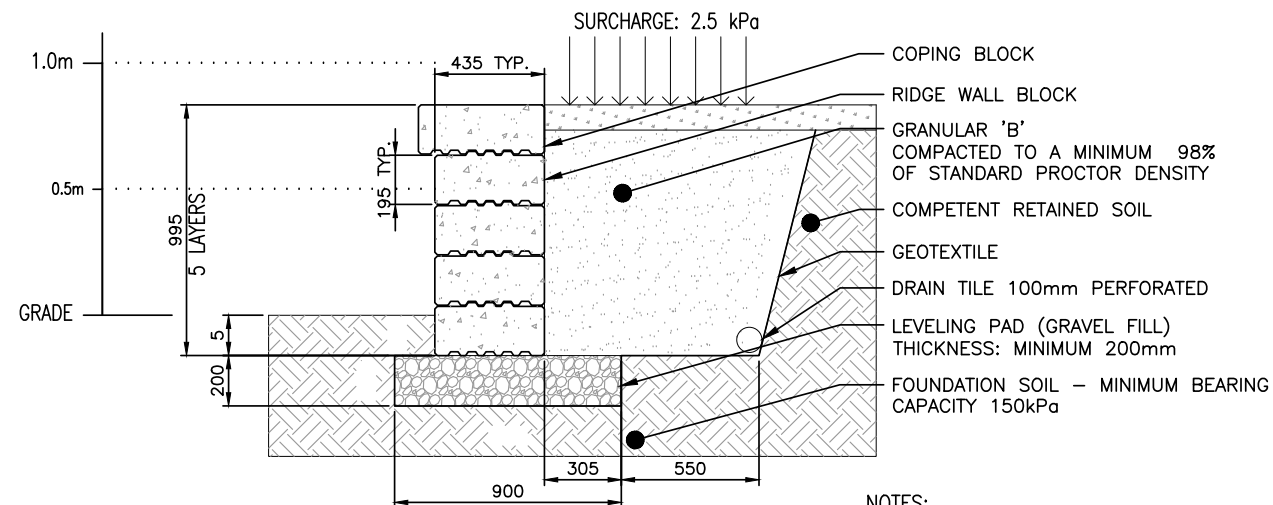
GEOGRID INSTALLATION

1. UNROLL THE GEOGRID AND CUT TO THE SPECIFIED LENGTH OUTLINED IN THE DRAWINGS.
2. POSITION THE GEOGRID ON LEVEL AND COMPACTED BACKFILL AT DESIGNATED LOCATIONS AS INDICATED IN THE DRAWINGS.
3. ENSURE THAT THE PRIMARY STRENGTH DIRECTION OF THE GEOGRID IS PERPENDICULAR TO THE FACE OF THE WALL OR ALIGNED AS DEPICTED IN THE APPROVED SHOP DRAWINGS.
4. AFTER SECURING THE GEOGRID UNDER TO THE BLOCK, PULL IT TAUT TO ELIMINATE ANY SLACK.
5. STAKE OR PIN THE GEOGRID NEAR THE END TO MAINTAIN ALIGNMENT AND PREVENT SLACK DEVELOPMENT DURING BACKFILL PLACEMENT.
6. ADJACENT STRIPS OF GEOGRID MUST GUARANTEE 100% COVERAGE AT ELEVATIONS REQUIRING GEOGRID REINFORCEMENT, AS SPECIFIED IN THE DRAWINGS.
7. CONSTRUCTION VEHICLES MUST NOT TRAVERSE DIRECTLY ON THE GEOGRID. A MINIMUM OF 200mm OF BACKFILL COVER OVER THE GEOGRID IS NECESSARY FOR THE OPERATION OF CONSTRUCTION VEHICLES IN THE REINFORCED ZONE.
8. AVOID TURNING VEHICLES TO PREVENT DISLOCATION OR DAMAGE TO THE GEOGRID.
9. THE PRIMARY GEOGRID SHOULD NOT BE OVERLAPPED OR MECHANICALLY CONNECTED TO FORM SPLICES IN THE PRIMARY STRENGTH DIRECTION.

REV.:	DESCRIPTION:	DATE:	BY:	REVIEW:	P.ENG.STAMP
A	ISSUED FOR CLIENT REVIEW	01/04/2024	KB	BG	
B	REVISED AS PER CLIENT COMMENTS	12/04/2024	KB	BG	

CLIENT:	BEST WAY STONE RIDGE WALL
SITE LOCATION:	WOODBIDGE ONTARIO
DWG TITLE:	GENERAL NOTES STANDARD SECTIONS

 Safe Roads ENGINEERING						
DESIGN BY:	KB	PROJECT No.:	J24C027	DATE:	01/04/2024	REV.
DRAWN BY:	KB	CONTRACT No.:	—	SHEET No.:	1 OF 4	A
REVIEWED BY:	BG	DRAWING No.:	COVER	SCALE:	AS SHOWN	



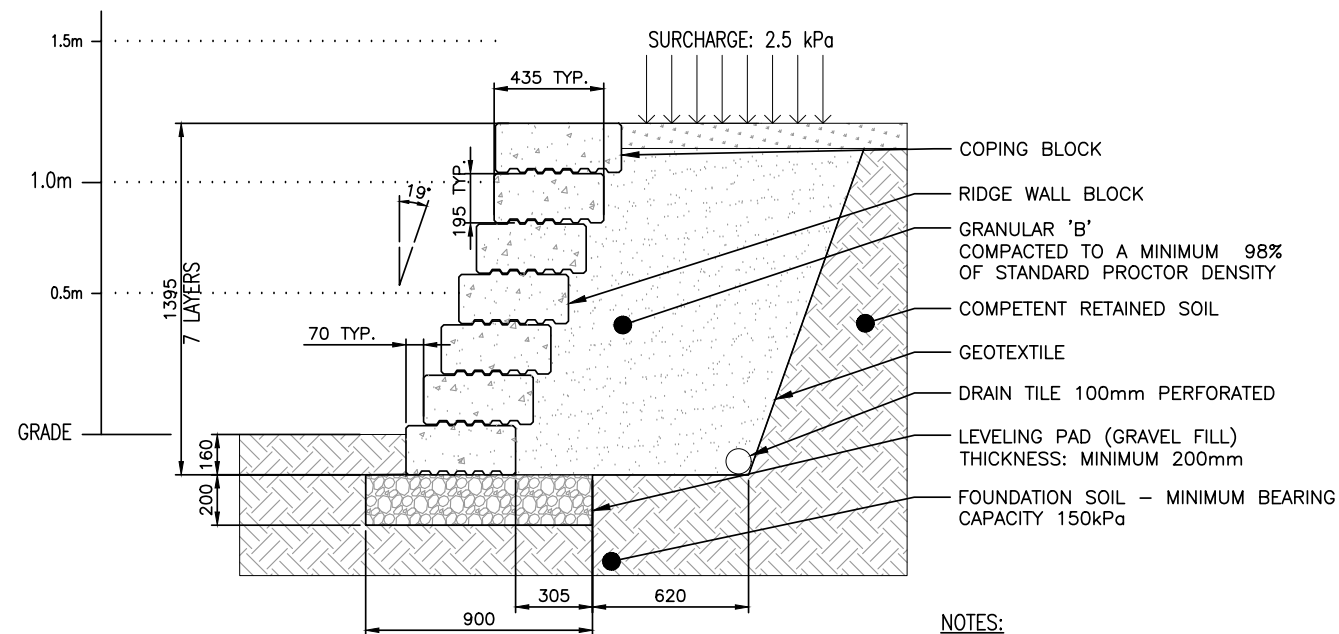
SECTION P1 – GRAVITY WALL

1:30

P1 – VERTICAL FACE

NOTES:

1. MAXIMUM HEIGHT OF THE WALL WITH FACING 90° FROM HORIZONTAL: 1m (OR 5 BLOCKS).
2. BLOCKS SHOULD BE PLACED AT 90° FROM HORIZONTAL WITHOUT SETBACK.



SECTION P2 – GRAVITY WALL

1:30

P2 – SETBACK

NOTES:

1. MAXIMUM HEIGHT OF THE WALL WITH FACING 19° FROM VERTICAL: 1.4m (OR 7 BLOCKS).
2. BLOCKS SHOULD BE PLACED WITH A 19° SETBACK FROM VERTICAL (SETBACK OF 70mm).

NOTES:

1. LEVELING PAD DIMENSIONS: THE LEVELING PAD SHOULD BE 200mm THICK AND AT LEAST 152mm WIDE FROM THE HEEL OF THE BLOCKS AND 305mm WIDE FROM THE TOE (TOTAL: 900mm WIDE).
2. WALL EMBEDMENT SHOULD BE A MINIMUM OF 160mm.
3. PLATE TAMPER SHOULD BE USED TO COMPACT THE BACKFILL.
4. PERFORATED DRAIN TILE MINIMUM 100mm DIAMETER.
5. THE SLOPE SHOULD BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT LATEST REVISION.

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CLIENT:	BEST WAY STONE RIDGE WALL
SITE LOCATION:	WOODBIDGE ONTARIO
DWG TITLE:	GRAVITY WALL STANDARD SECTIONS



DESIGN BY:	KB	PROJECT No.:	J24C027	DATE:	01/04/2024	REV.	
DRAWN BY:	KB	CONTRACT No.:	–	SHEET No.:	2 OF 4		
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P3 – VERTICAL FACE

1. MAXIMUM HEIGHT OF THE REINFORCED WALL WITH FACING 90° FROM HORIZONTAL: 6.1m (OR 31 BLOCKS).
2. BLOCKS SHOULD BE PLACED AT 90° FROM HORIZONTAL WITHOUT SETBACK.
3. WALL EMBEDMENT SHOULD BE A MINIMUM OF 600mm.
4. PERFORATED DRAIN TILE MINIMUM 100mm DIAMETER.
5. GEOGRID MIRIFI 8XT T_{ULT} : 108.0 kN/m WITH A MINIMUM LENGTH: 5.5m FOR THE FOUR (4) BOTTOM LAYERS AND 6.5m FOR OTHER LAYERS.
6. GEOGRID MIRIFI 5XT T_{ULT} : 68.6 kN/m WITH A MINIMUM LENGTH: 6.5m FOR THE FOUR (4) TOP LAYERS.
7. MAXIMUM VERTICAL SPACING BETWEEN GEOGRID MUST BE 3 COURSES (585mm) FOR TOP LAYERS AND FOR THE BOTTOM LAYERS 2 COURSES (390mm).
8. THE GEOGRID MUST BE ANCHORED UNDER THE ENTIRE BLOCK OF THE COURSE (AS SHOWN IN DRAWINGS).
9. THE SLOPE SHOULD BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT LATEST REVISION.

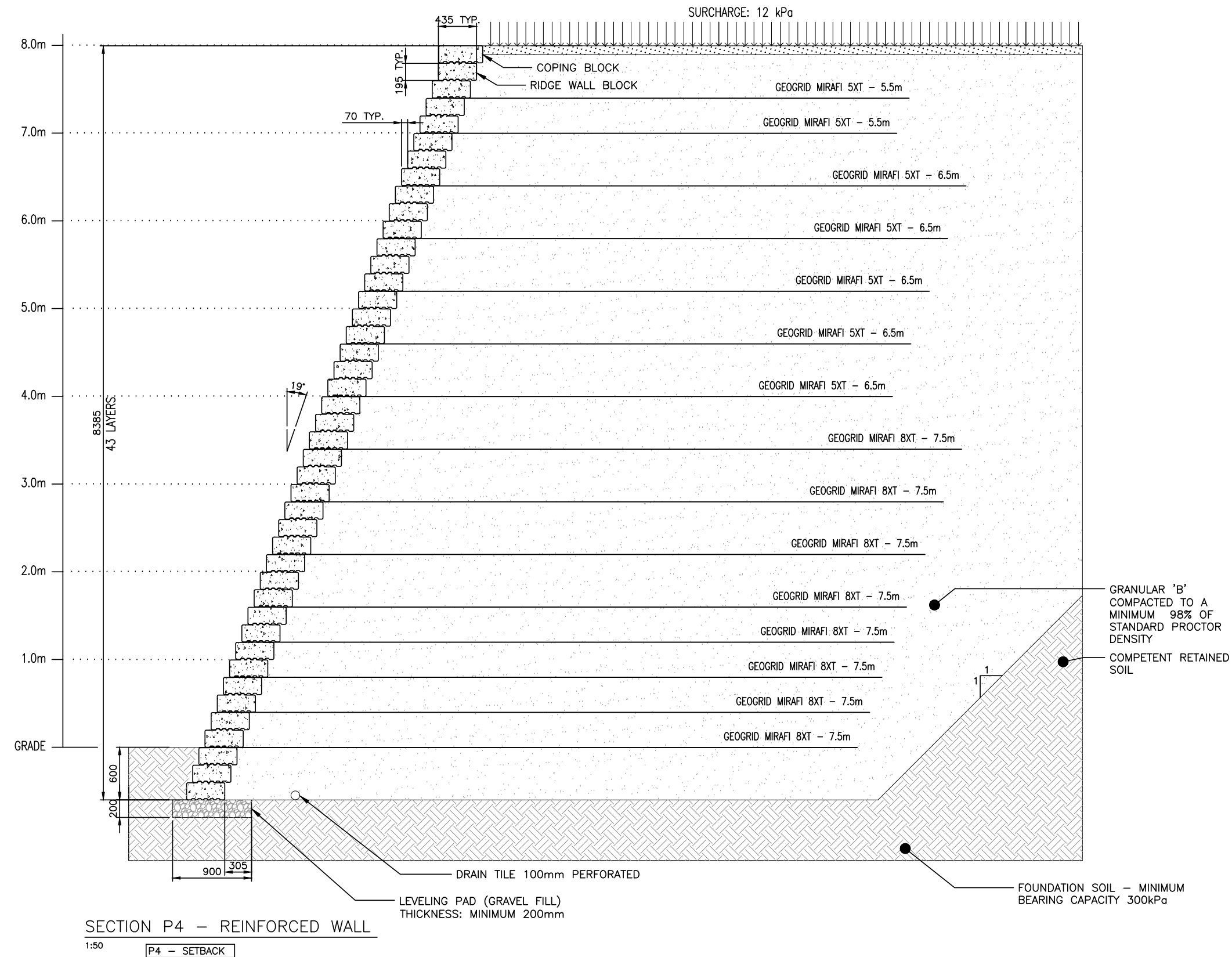
CLIENT:	BEST WAY STONE RIDGE WALL
SITE LOCATION:	WOODBIDGE ONTARIO
DWG TITLE:	REINFORCED WALL VERTICAL BATTER



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ENGINEERING

DESIGN BY:	KB	PROJECT No.:	J240C27	DATE:	01/04/2024	REV.
DRAWN BY:	KB	CONTRACT No.:	—	SHEET No.:	3 OF 4	A
REVIEWED BY:	BG	DRAWING No.:	002	SCALE:	AS SHOWN	



- NOTES:
1. MAXIMUM HEIGHT OF THE WALL WITH FACING 19 DEGREES FROM VERTICAL: 8.4m (OR 43 BLOCKS).
 2. BLOCKS SHOULD BE PLACED WITH A 19-DEGREE SETBACK FROM VERTICAL (SETBACK OF 70mm).
 3. WALL EMBEDMENT SHOULD BE A MINIMUM OF 600mm.
 4. PERFORATED DRAIN TILE MINIMUM 100mm DIAMETER.
 5. GEOGRID MIRIFI 8XT T_{ULT} : 108.0 kN/m WITH A MINIMUM LENGTH: 7.5m FOR THE EIGHT (8) BOTTOM LAYERS.
 6. GEOGRID MIRIFI 5XT T_{ULT} : 68.6 kN/m WITH A MINIMUM LENGTH: 6.5m FOR THE FIVE (5) MIDDLE LAYERS AND 5.5m FOR THE TWO (2) TOP LAYERS.
 7. MAXIMUM VERTICAL SPACING BETWEEN GEOGRID MUST BE 3 COURSES (585mm) FOR TOP LAYERS AND FOR THE BOTTOM LAYERS 2 COURSES (390mm).
 8. THE GEOGRID MUST BE ANCHORED UNDER THE ENTIRE BLOCK OF THE COURSE (AS SHOWN IN DRAWINGS).
 9. THE SLOPE SHOULD BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT LATEST REVISION.

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CLIENT:	BEST WAY STONE RIDGE WALL
SITE LOCATION:	WOODBIDGE ONTARIO
DWG TITLE:	REINFORCED WALL SETBACK 0.07m



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ENGINEERING

BY:	KB	PROJECT No.:	J24C027	DATE:	01/04/2024	REV.
BY:	KB	CONTRACT No.:	—	SHEET No.:	4 OF 4	A
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