

Key Plan

**COUNTERPOINT ENGINEERING INC.
SHOP DRAWING REVIEW**

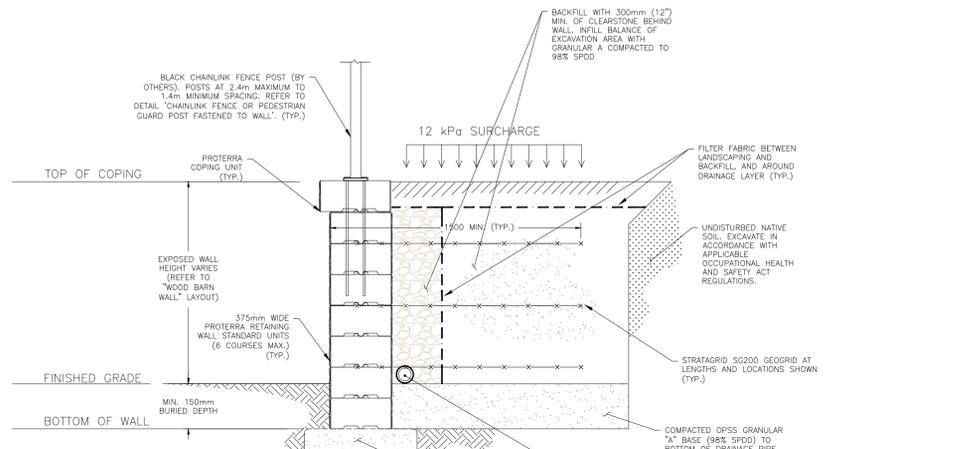
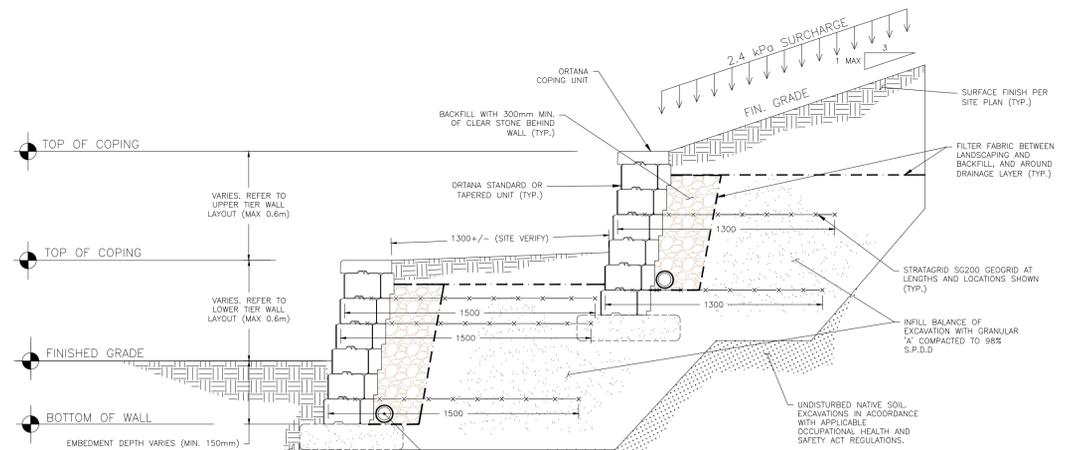
REVIEWED ONLY AS TO GENERAL COMPLIANCE WITH THE INTENT OF THE CONTRACT DOCUMENTS. THE ENGINEER DOES NOT WARRANT THAT THE INFORMATION CONTAINED ON THIS SHOP DRAWING IS EITHER ACCURATE OR CORRECT. SOLE RESPONSIBILITY FOR CORRECT DESIGN, DETAILS AND DIMENSIONS WILL REMAIN WITH THE PART SUBMITTING THE DRAWING.

- REVIEWED (including that grading)
- REVIEWED AS MODIFIED
- REVISE AND RESUBMIT
- NOT REVIEWED

DATE: 2020-12-13 BY: CHARLOTTE BUSH, P.Eng



PROPOSED RETAINING WALL PLAN SCALE: 1:200



NOTES:

No.	Description	Date
1	WOOD BARN WALL ADDED	8-JUN-20

Project Name DENISON CHILD CARE CENTRE NEW RETAINING WALLS



Client Address 900 MULOCK DRIVE/605 FERNBANK ROAD NEWMARKET, ON

Scale: AS NOTED Date: 06-MAR-20

Professional Engineer Seal for T. T. L. CHEUNG, License No. 100212242, Province of Ontario.

Designated: DH
 Drawn: DH
 Proj. Eng.: TC
 Approved: TC
 Sheet:

Title RETAINING WALL PLAN AND SECTIONS

Project Number 200219

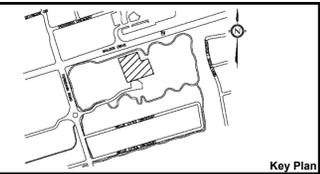
IMPORTANT NOTE:
 WALL LAYOUT, ELEVATIONS AND QUANTITIES PROVIDED IN THIS DRAWING SET, ARE BASED ON DOCUMENTATION AND INFORMATION PROVIDED TO DESIGN ENGINEER AT TIME OF DRAWING DATE. GENERAL CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DRAWING INFORMATION TO CONFIRM THAT THE INFORMATION AND WALL DESIGN SHOWN MATCH THE MOST RECENT GRADING AND SITE INFORMATION AVAILABLE.

COUNTERPOINT ENGINEERING INC.
SHOP DRAWING REVIEW

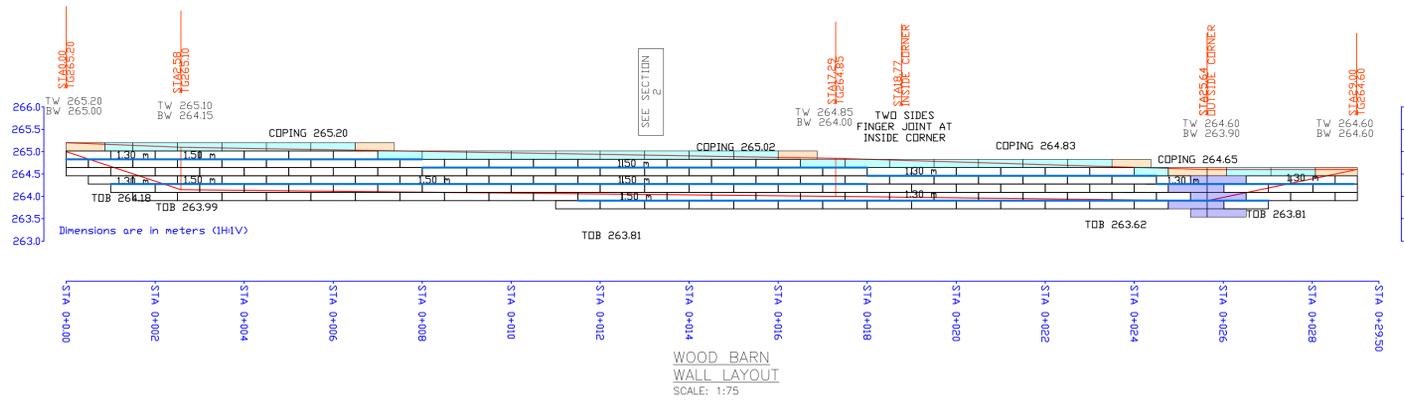
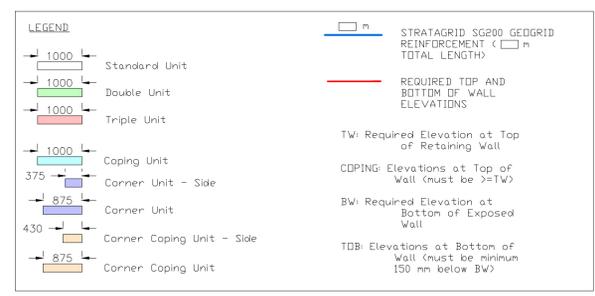
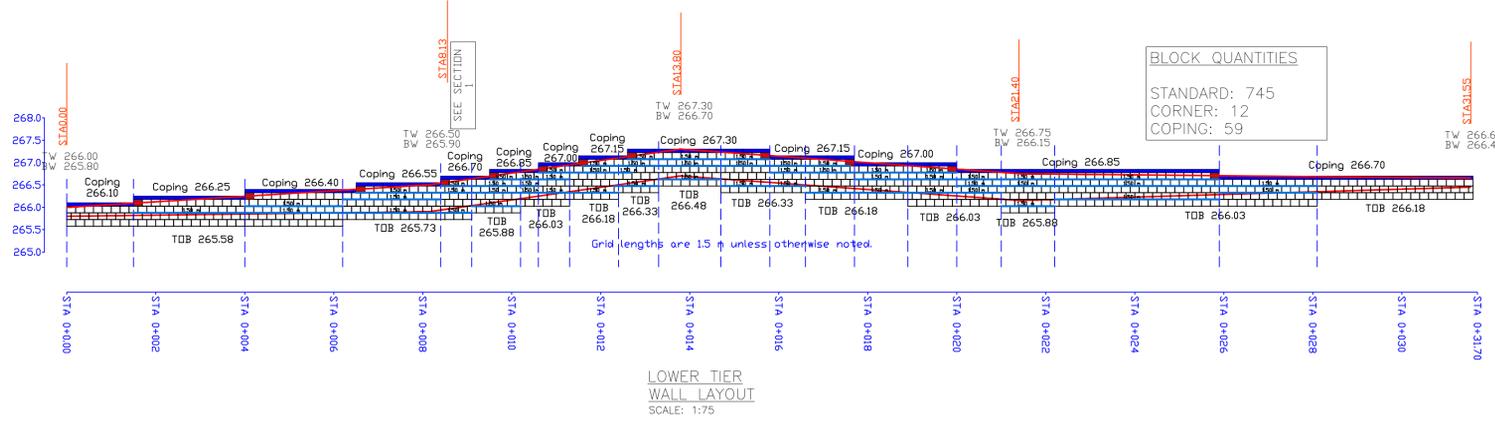
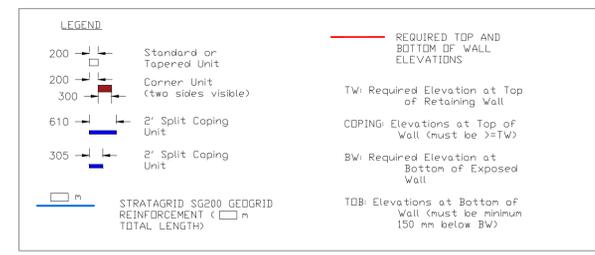
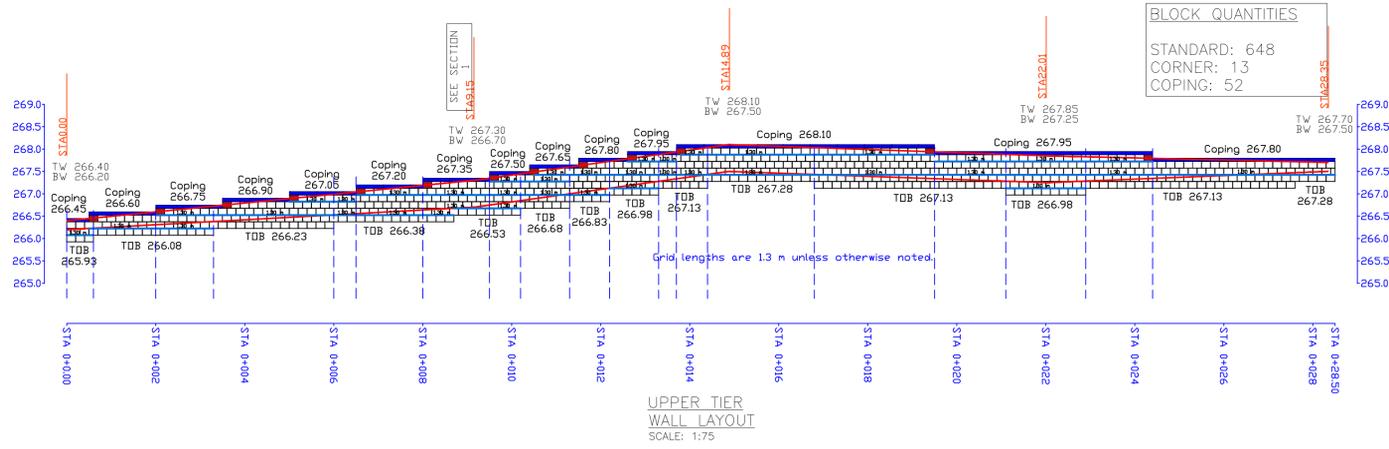
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(including that grading)
 REVIEWED conforms with drawing C1
 REVIEWED AS MODIFIED
 REVISE AND RESUBMIT
 NOT REVIEWED

DATE: 2020-12-13 BY: CHARLOTTE BUSH, P.Eng.



NOTES:



No.	Description	Date
1	WOOD BARN WALL ADDED	8-JUN-20

Project Name DENISON CHILD CARE CENTRE
 NEW RETAINING WALLS



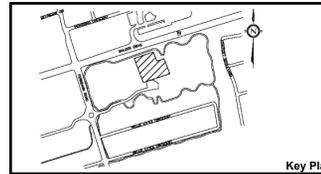
Address 900 MULOCK DRIVE/605 FERNBANK ROAD
 NEWMARKET, ON

Scale: AS NOTED	Date: 06-MAR-20
Designed: DH	Drawn: DH
Proj. Eng.: TC	Approved: TC
Sheet:	

Title RETAINING WALL LAYOUTS

Project Number 200219





Key Plan

NOTES:

1. GUARD AND FENCES TO BE DESIGN BY OTHERS IN ACCORDANCE WITH APPLICABLE ONTARIO BUILDING CODE (OBC) REGULATIONS AND CSA STANDARDS.
 2. FOR GUARDS, MAXIMUM HEIGHT 1,220mm (4'), MAXIMUM POST SPACING 1,296mm (4'-3"). FOR CHAIN LINK FENCES, MAXIMUM HEIGHT 1,830mm (6'), POST SPACING BETWEEN 1,372mm (4'-6") AND 2,440mm (8').
 3. PLACE COPING UNITS AND MARK BOLT HOLE LOCATIONS PRIOR TO WALL COMPLETION. BOLT HOLES TO BE A MINIMUM OF 62.5mm (2.5") FROM ANY EDGE OF A UNIT. CUT COPING UNITS AS REQUIRED TO MEET SPACING REQUIREMENTS.
 4. MARK LOCATION OF HOLES IN BASE PLATE ONTO COPING, AND DRILL TWO HOLES THROUGH TOP FIVE COURSES OF WALL BLOCK, OR TO FIRST COURSE OF DOUBLE UNIT. INSERT 10M H.D. GALVANIZED THREADED RODS INTO EACH DRILL HOLE AND EPOXY INTO PLACE. FASTEN BASE PLATE USING GALVANIZED NUTS. TRIM ROD AS REQUIRED.
 5. DO NOT USE EXPANSION FASTENERS. USE ONLY ADHESIVE OR SCREW TYPES.
 6. NOT INTENDED FOR VEHICLE IMPACT LOADS OR WHERE SOLID FENCES ARE BEING USED.

No.	Description	Date
1	WOOD BARN WALL ADDED	8-JUN-20

Project Name: DENISON CHILD CARE CENTRE NEW ORTANA RETAINING WALLS

Client: OAKS LANDSCAPE PRODUCTS

Address: 900 MULOCK DRIVE/605 FERNBANK ROAD NEWMARKET, ON

Scale: AS NOTED Date: 06-MAR-20

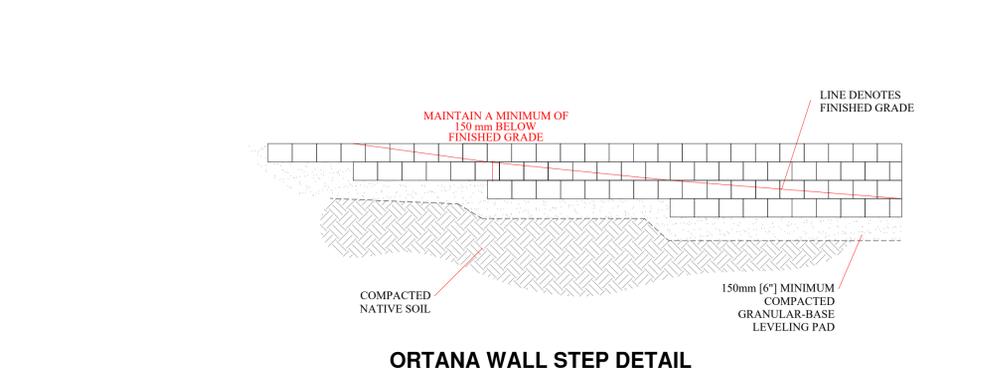
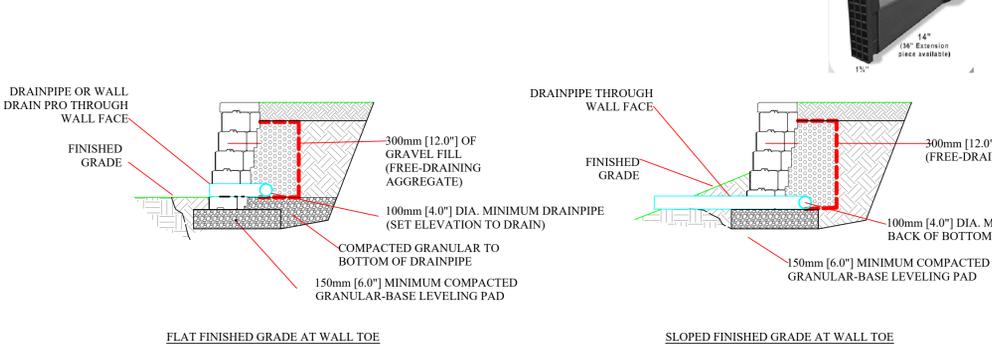
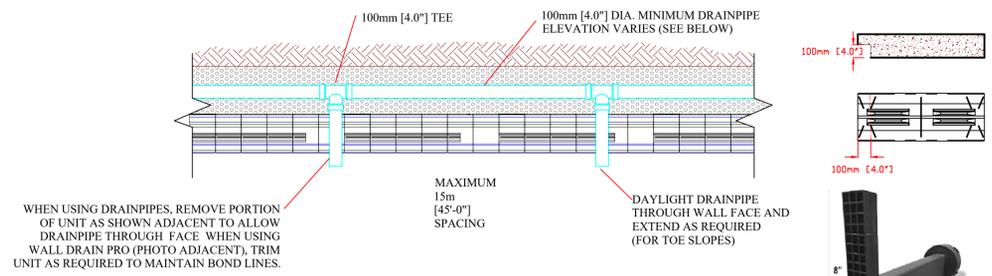
Designed: DH
 Drawn: DH
 Proj. Eng.: TC
 Approved: TC
 Sheet: RW3 (3 OF 3)

Title: TYPICAL DETAILS, NOTES RETAINING WALL

Project Number: 200219

Professional Engineer: T. T. CHEUNG 100212242

Province of Ontario



ORTANA WALL STEP DETAIL

GENERAL NOTES:

- CONSULT LOCAL BUILDING OFFICIAL(S) FOR INSTRUCTIONS REGARDING CERTIFICATION OF COMPLETED RETAINING WALL(S). RETAINING WALLS, BEING ENGINEERED STRUCTURES, MAY REQUIRE CERTIFICATION BY A QUALIFIED ENGINEER WHO MUST BE RETAINED PRIOR TO CONSTRUCTION OF THE RETAINING WALL SO AS TO BE ABLE TO INSPECT THE CONSTRUCTION OF THE ENTIRE WALL FROM START TO FINISH.
- AD ENGINEERING WILL NOT CERTIFY THE RETAINING WALL UNLESS RETAINED BY THE OWNER TO DO SO, ARE NOTIFIED PRIOR TO CONSTRUCTION OF THE WALL, AND INSPECTIONS ARE CONDUCTED BY AD ENGINEERING STAFF DURING THE WALL CONSTRUCTION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE LOCATION(S) AND ALIGNMENT(S) OF THE RETAINING WALL(S) IS/ARE PER THE APPROVED GRADING PLAN. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO VERIFY DIMENSIONS AND GRADES PRIOR TO CONSTRUCTION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE CERTIFYING ENGINEER PRIOR TO COMMENCING CONSTRUCTION TO DETERMINE THE QUANTITY AND TYPE OF INSPECTIONS REQUIRED TO ALLOW FOR FINAL CERTIFICATION OF THE RETAINING WALL CONSTRUCTION.
- WALL SYSTEM TO BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL INSPECTIONS, TESTING AND QUALITY VERIFICATIONS ARE PERFORMED DURING CONSTRUCTION BY QUALIFIED PERSONNEL.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE CONTRACTOR HAS BUDGETED ACCORDINGLY FOR THE INSPECTIONS AND TESTING NECESSARY TO CERTIFY THE CONSTRUCTION OF THE RETAINING WALL(S).
- MINOR ALTERATIONS MAY BE MADE TO THE LAYOUT OF THE WALLS PROVIDED THE MINIMUM BURIED DEPTH IS MAINTAINED, MAXIMUM EXPOSED HEIGHT IS NOT EXCEEDED, AND SLOPES IN THE AREA OF THE WALL(S) ARE WITHIN THE ASSUMED DESIGN PARAMETERS AS PROVIDED BY THE DESIGN CROSS SECTIONS.
- AD ENGINEERING MUST BE NOTIFIED TO PROVIDE THE NECESSARY REVISIONS AND RECOMMENDATIONS FOR ANY PROPOSED ALTERATIONS IF THE MAXIMUM WALL HEIGHT IS TO BE INCREASED, SLOPES BEHIND OR IN FRONT OF THE WALL EXCEED THOSE USED AS THE DESIGN PARAMETER, MINIMUM BURIED DEPTH REQUIREMENTS ARE REDUCED, OR A GUARD, FENCE OR BARRIER IS TO BE ADDED ON OR NEAR THE WALL THAT WAS NOT ACCOUNTED FOR IN THE DESIGN.
- THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION OF THE RETAINING WALLS. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE NECESSARY SUPPORT OR PROTECTION TO ANY EXISTING UTILITIES IN THE AREAS OF THE PROPOSED RETAINING WALLS.

DESIGN PARAMETERS:

- RETAINING WALLS HAVE BEEN DESIGNED IN ACCORDANCE WITH 2012 ONTARIO BUILDING CODE AND THE DESIGN MANUAL FOR SEGMENTAL RETAINING WALLS, 2ND EDITION BY THE NATIONAL CONCRETE MASONRY ASSOCIATION.
- ASSUMED SOIL PROPERTIES ARE AS LISTED BELOW AND MUST BE VERIFIED BY A QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO AND DURING CONSTRUCTION OF THE WALL.
 SOIL FRICTION ANGLE = 28°
 UNIT WEIGHT OF SOIL (DRAINED) = 20 KN/m³
 ACTIVE PRESSURE COEFFICIENT (external) (K_{ae})=0.32
- AD ENGINEERING MUST BE NOTIFIED OF ANY DISCREPANCY BETWEEN DESIGN PARAMETERS AND ACTUAL SITE CONDITIONS.
- RETAINING WALL HAS BEEN CHECKED FOR EXTERNAL AND INTERNAL STABILITY. WHEN IT IS STATED ON THESE DRAWINGS THAT 'A GLOBAL STABILITY ANALYSIS IS RECOMMENDED IN ACCORDANCE WITH THE NEMA SEGMENTAL RETAINING WALL BEST PRACTICES GUIDE', IT SHALL BE THE OWNER'S RESPONSIBILITY TO RETAIN A QUALIFIED GEOTECHNICAL CONSULTANT TO CONDUCT THE GLOBAL STABILITY ANALYSIS.

EXCAVATION NOTES:

- CONTRACTOR IS RESPONSIBLE FOR ENSURING EXCAVATIONS ARE IN ACCORDANCE WITH APPLICABLE OCCUPATIONAL HEALTH AND SAFETY ACT REGULATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ANY SHORING OR UNDERPINNING REQUIRED TO SUPPORT ANY EXISTING SLOPES OR STRUCTURES AGAINST MOVEMENT OR UNDERMINING IN THE AREAS OF THE PROPOSED RETAINING WALLS (IF REQUIRED).

FOUNDATION NOTES:

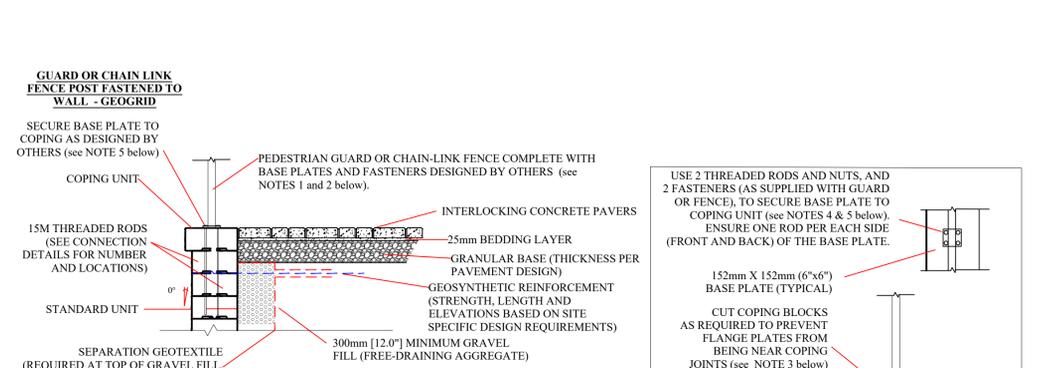
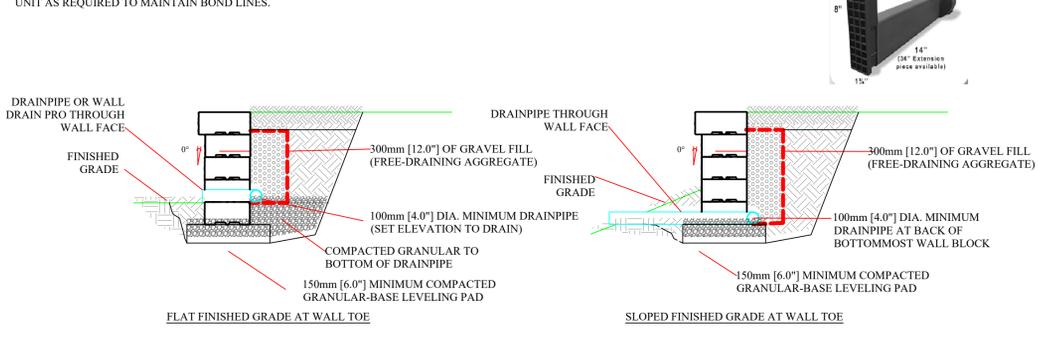
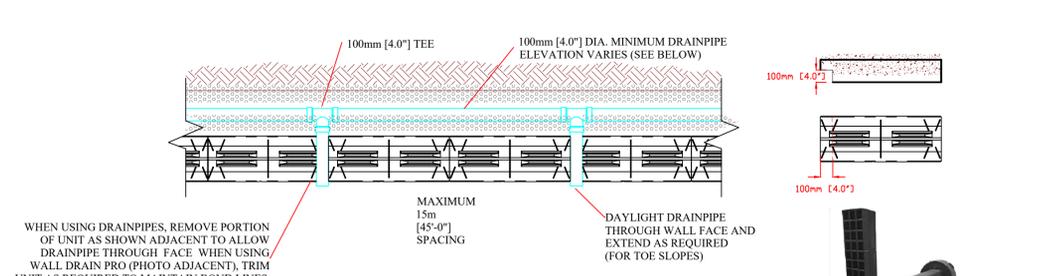
- RETAINING WALL TO BE USED AGAINST UNDISTURBED NATIVE SOIL UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- THE FOUNDATIONS HAVE BEEN DESIGN FOR AN ASSUMED MINIMUM ALLOWABLE NET BEARING CAPACITY OF 100 kPa (2000psf), UNLESS NOTED OTHERWISE ON SECTION DRAWINGS. FOUND ALL FOOTINGS ON NATURAL UNDISTURBED INORGANIC SOIL.
- A SOILS CONSULTANT SHALL APPROVE ON SITE THE ASSIGNED SAFE NET BEARING PRESSURE FOR EACH FOOTING. IF THE SAFE NET BEARING PRESSURE USED FOR DESIGN IS NOT APPROVED, ENGINEER TO BE NOTIFIED FOR REVISION OF RETAINING WALL DESIGN.
- ALL UNSUITABLE FILL SOILS CONTAINING ORGANICS OR DELETEDIOUS MATERIAL, OR THAT IS FROZEN, MUST BE SUBEXCAVATED FROM BENEATH THE PROPOSED RETAINING WALL BASE AND SUBSEQUENTLY REPLACED WITH APPROVED STRUCTURAL FILL OR MASS CONCRETE UNDER SUPERVISION OF THE GEOTECHNICAL ENGINEER.
- WHERE A SOIL INVESTIGATION WAS PROVIDED, THE SOIL PARAMETERS LISTED IN THE SOIL INVESTIGATION WERE USED FOR THE WALL DESIGN. WHERE NO SITE SPECIFIC INFORMATION WAS PROVIDED, IT WAS ASSUMED THAT THE FOUNDATION AND RETAINED SOILS CONSIST OF INORGANIC CLAYS WITH LOW TO MEDIUM PLASTICITY.

CONSTRUCTION NOTES:

- IF THE RETAINING WALLS ARE CONSTRUCTED DURING FREEZING CONDITIONS, ALL FILL MATERIALS MUST BE FREE OF SNOW, ICE AND FROZEN MATERIAL.
- CONTRACTOR IS RESPONSIBLE FOR DRAINAGE CONTROL DURING CONSTRUCTION IN AREAS OF THE PROPOSED RETAINING WALLS.
- FIRST COURSE OF BLOCKS TO BE FOUND ON MINIMUM 150mm [6.0"] OF COMPACTED DPSS GRANULAR "A" OVER UNDISTURBED NATIVE SOIL UNLESS OTHERWISE NOTED ON DRAWINGS.
- DRAINS ARE TO BE OUTLETTED VIA GRAVITY TO APPROVED LOCATIONS. DRAINS ARE RECOMMENDED TO BE SLOPED AT A MINIMUM OF 1.0% TO THE PROPOSED OUTLET LOCATIONS. THE DRAINS MUST BE OUTLETTED AT THE ENDS OF THE WALL AND/OR THROUGH THE FACE OF THE WALL AT GROUND SURFACE. IT IS RECOMMENDED THAT A DRAINAGE OUTLET BE PROVIDED EVERY 15m (50 FT).
- THE RETAINING WALLS ARE TO BE BACKFILLED AS RETAINING WALL BLOCKS ARE BEING PLACED IN LAYERS NOT EXCEEDING 200mm (8 in) AND COMPACTED TO THE SPECIFIED DENSITY. AT NO TIME SHOULD THE RETAINING WALL BLOCKS BE HIGHER THAN TWO COURSES ABOVE THE BACKFILL HEIGHT. THE BACKFILL MATERIAL MUST BE AT A SUITABLE MOISTURE CONTENT TO ACHIEVE THE MINIMUM REQUIRED FIELD COMPACTION. COMPACTION LEVELS TO BE VERIFIED BY THE GEOTECHNICAL ENGINEER.
- WHERE REQUIRED, INFILL SOIL IS TO BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 200mm (8 in) IN THICKNESS. REQUIRED COMPACTION: 98% OF THE STANDARD PROCTOR DENSITY OF THE MATERIAL.
- GEORGRID IS:
 STRATAGRID 200 (OR APPROVED ALTERNATIVE) = 1,250 LBS/FT TYP. MACHINE DIRECTION DESIGN STRENGTH. NO MORE THAN TWO COURSES BETWEEN LAYERS OF GEORGRID. GRID SHOULD BE EMBEDDED A MINIMUM OF 18" INTO THE WALL, OR
- HEAVY COMPACTION AND CONSTRUCTION EQUIPMENT ARE NOT ALLOWED TO BE WITHIN 1.5 M (5 FT) OF THE BACK SIDE OF THE RETAINING WALL.
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- THE TOP AND BOTTOM OF THE WALL MUST BE STABILIZED (DPSILED AND SEEDED, OR AS SPECIFIED IN THE DRAWINGS) IMMEDIATELY UPON COMPLETION OF THE WALL, OR PROVIDED WITH EQUIVALENT EROSION PROTECTION.

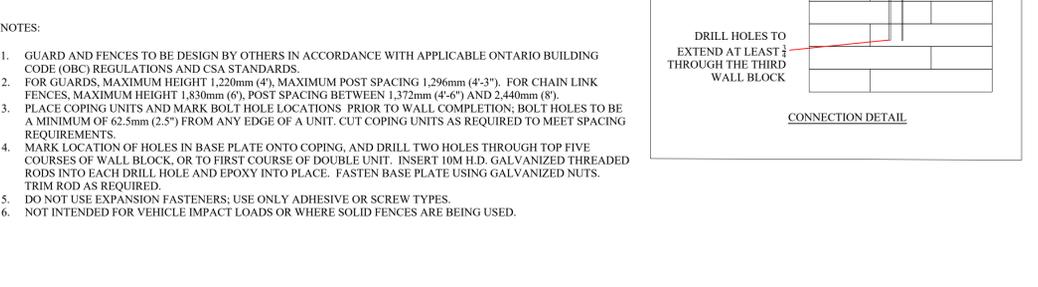
GUARDS, FENCES AND BARRIERS:

- CONTACT LOCAL MUNICIPALITY FOR GUARDRAIL REQUIREMENTS. IF REQUIRED, PROVIDE GUARDRAIL IN ACCORDANCE WITH 2012 O.B.C. REGULATIONS. NOTIFY AD ENGINEERING FOR APPROPRIATE CONNECTION TO TOP OF WALL IF GUARD IS TO BE PLACED IN WALL.
- WHERE FENCES ARE TO BE INSTALLED ON OR NEAR THE RETAINING WALLS, VERIFY THE FENCE WAS ACCOUNTED FOR IN THE WALL DESIGN (WILL BE SHOWN ON THE DESIGN DRAWINGS) AND THAT THE TYPE (CHAIN LINK, PRIVACY, OR NOISE), DIMENSIONS AND POST SPACING OF THE FENCE IS AS SPECIFIED.
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PROTERRA WALL STEP DETAIL

SHADING REPRESENTS COPING UNITS



GENERAL NOTES:

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- FOR GUARDS, MAXIMUM HEIGHT 1,220mm (4'), MAXIMUM POST SPACING 1,296mm (4'-3"). FOR CHAIN LINK FENCES, MAXIMUM HEIGHT 1,830mm (6'), POST SPACING BETWEEN 1,372mm (4'-6") AND 2,440mm (8').
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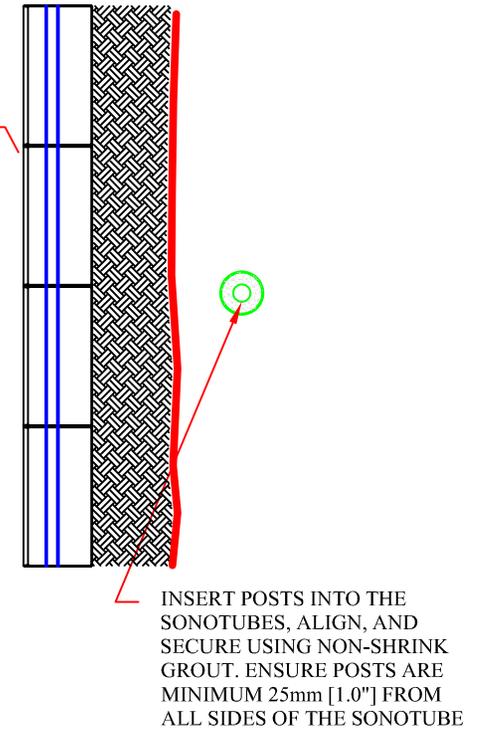
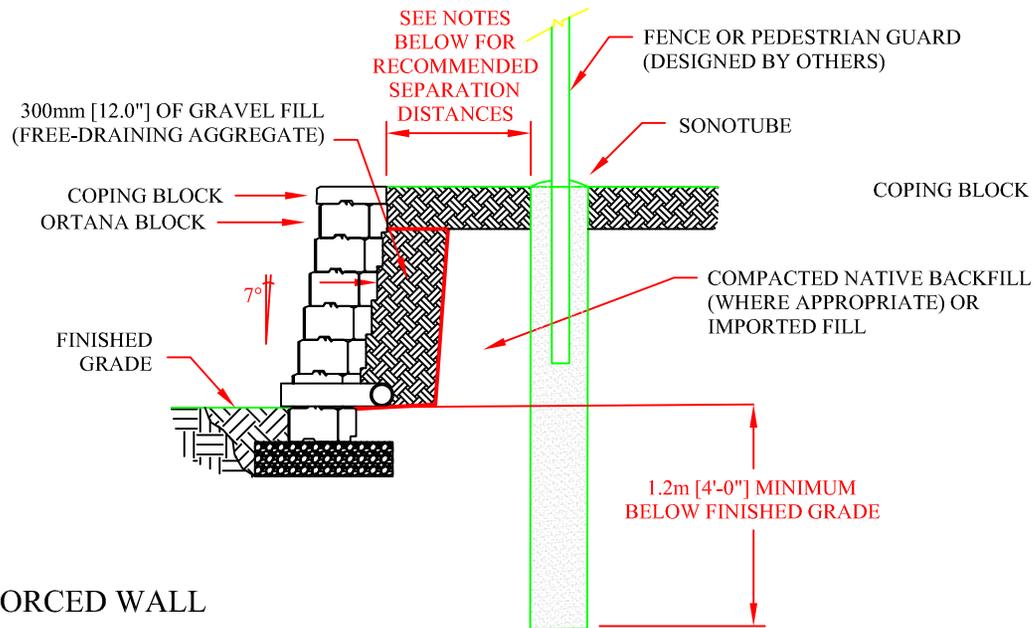
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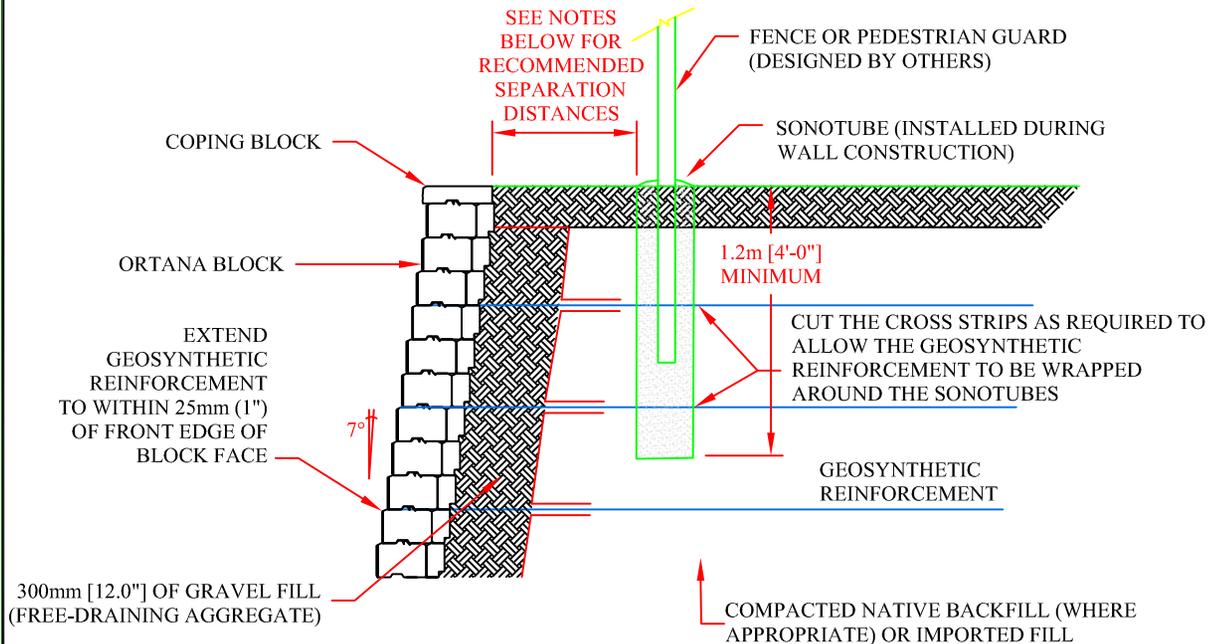
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GRAVITY WALL



GEOGRID REINFORCED WALL



NOTES:

1. FOR PEDESTRIAN GUARDS AND CHAIN LINK FENCES, RECOMMEND 300mm (12") SPACING BETWEEN BACK OF WALL AND SONO TUBES.
2. FOR PRIVACY FENCES, RECOMMEND 1000mm (3'-3") SPACING BETWEEN BACK OF WALL AND SONO TUBES.
3. WHERE THE GUARD OR FENCE IS INSTALLED CLOSER TO THE WALL THAN THE PREVIOUS RECOMMENDATIONS, ADDITIONAL REINFORCEMENT AROUND THE FENCE SONOTUBES AND/OR DEEPER SONOTUBES MAY BE REQUIRED.
4. WHEN THE SONO TUBE IS DIRECTLY BEHIND THE BACK OF WALL, EXPANSION MATERIAL IS REQUIRED BETWEEN THE TWO.



This graphic represents a preliminary, non site-specific design. If used for construction, a registered professional engineer must be retained to review & approve the design, confirm site conditions, and inspect construction.

Ortana Retaining Wall System
Fence or Pedestrian Guard Behind Wall