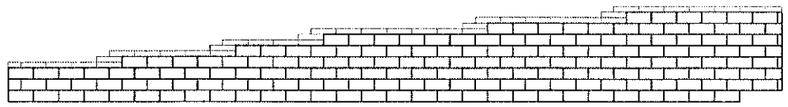
RETAINING WALL PLANS
FOR

NATURAL STONE DESIGN

RETAINING WALLS

148 JARCO DRIVE
FUQUAY-VARINA, NC



Retaining Wall Profile
Not To Scale
148 Jarco Drive
Natural Stone Design- Fuquay-Varina, NC

SHEET INDEX

GEOTECHNICAL GENERAL NOTE:

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2. A GLOBAL STABILITY ANALYSIS HAS NOT BEEN DONE FOR THIS PROJECT. WE RECOMMEND THAT A GLOBAL STABILITY ANALYSIS BE PERFORMED BY A 3RD PARTY GEOTECHNICAL ENGINEER FOR RETAINING WALLS THAT HAVE SLOPES ABOVE, BELOW, BOTH (SLOPES ABOVE & BELOW THE RETAINING WALL) & MULTI-TIERED RETAINING WALLS.

GENERAL DESIGN NOTE:

1. WALL PROFILES WERE CREATED & DESIGNED BY VENTURE ENGINEERING, P.A. PER EXISTING & PROPOSED GRADES AS SHOWN IN PLAN VIEW ON SHEET C-2 THRU C-2D AS PROVIDED BY REDLINE ENGINEERING, P.C. SEALED 01/14/21.
2. ALL GRADES SHOWN ON RETAINING WALL SITEPLAN IN THIS SET OF DRAWINGS ARE NOT KNOWN TO BE ORIGINAL DESIGN GRADES OR AS-BUILT GRADES. ALL GRADES TO BE SURVEY STAKED PRIOR TO CONSTRUCTION.

DESCRIPTIONS	DATE
REVISIONS	

NORTH CAROLINA PROFESSIONAL SEAL 27880 ENGINEER MARK MAGRATH
07/02/21

Venture Engineering, P.A.
312 WEST MILLBROOK ROAD SUITE 237
RALEIGH, NC 27609
P: 919-602-1894 F: 919-676-0301
EMAIL ADDRESS: MMAGRATH@VENTURE-E.COM
LICENSE NO. C-2590

NATURAL STONE DESIGN
RETAINING WALLS
148 JARCO DRIVE
FUQUAY-VARINA, NC

COVER SHEET
NATURAL STONE DESIGN - FUQUAY-VARINA, NC

DATE: JULY 2, 2021
DES: TLH
DRAWN: TLH
APPROVED: MJM

SCALE
HORIZONTAL: N/A
VERTICAL: N/A

DRAWING NUMBER
G-1

NATURAL STONE DESIGN RETAINING WALL CONSTRUCTION - FUQUAY-VARINA, NC
VE PROJECT NO: 00210001 NATURAL STONE DESIGN

Statement of Special Inspections

Project: Natural Stone Design
Location: 148 Jarco Drive (Pin #064674752)
Owner's Representative: Mark J. Magrath, P.E.
Owner's Address: 148 Jarco Drive

This Statement of Special Inspections is submitted as a condition for permit issuance in accordance with the Special Inspection requirements of the 2018 North Carolina State Building Code. It includes a Schedule of Special Inspection Services applicable to this project, the name of the Special Inspector, the identity of other approved agencies retained for conducting Special Inspections, and the required inspector qualifications. This Statement of Special Inspections was prepared by the following Designers of Record:

	(Type or print name)	(Signature)	(Date)
Structural	Mark J. Magrath, PE		07/02/21
Architectural	Redline Engineering, P.C.		07/02/21
Mechanical	N/A		
Other	N/A		

The Special Inspector shall keep records of all special inspections and tests and shall furnish reports to the State Construction Office and the Designers of Record. Reports shall indicate if the work inspected or tested was or was not completed in conformance with the approved construction documents. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the State Construction Office and the Designers of Record. The Special Inspections program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the State Construction Office, Owner, and the Designers of Record.

Interim Report Frequency: Monthly

A Final Report of Special Inspections documenting completion of all required Special Inspections, testing, and correction of any discrepancies should be submitted prior to issuance of a Certificate of Use and Occupancy.

Job Site safety and means and methods of construction are solely the responsibility of the Contractor.

Owner's Authorization

Signature Date 07/02/21

Accepted for the SCO by:

Signature Date

NORTH CAROLINA PROFESSIONAL SEAL 24480 ENGINEER MARK MAGRATH

Schedule of Special Inspection Services.

The following sheets comprise the required schedule of special inspections for this project. The construction divisions which require special inspections for this project are as follows.

- ☐ Structural Steel & High Strength Bolting
- ☐ Welding of Structural Steel
- ☐ Cold-Formed Steel Deck
- ☐ Open-Web Steel Joists & Joist Girders
- ☐ Cold-Formed Steel Framing
- ☐ Concrete Construction
- ☐ Masonry Construction a
- ☐ Wood Construction
- ☐ Soils
- ☐ Driven Deep Foundations
- ☐ Cast-in-Place Deep Foundations
- ☐ Helical Pile Foundations
- ☐ Rammed Aggregate Piers & Stone Columns
- ☐ Sprayed Fire-Resistant Material
- ☐ Mastic & Intumescent Fire-Resistant Coatings
- ☐ Exterior Insulation & Finish System
- ☐ Fire-Resistant Penetrations & Joints
- ☐ Smoke Control
- ☒ Retaining Wall & Systems > 5 Feet
- ☐ Special Inspections for Wind Resistance
- ☐ Special Inspections for Seismic Resistance

a. The inspection frequency indicated on the following inspection tables are "C" continuous, "P" periodic, & "O" random on a daily basis.
b. Level A is the minimum inspection program for empirically / prescriptively designed masonry in Risk Category I, II or III structures. Level B is the minimum inspection program for empirically / prescriptively designed masonry in Risk Category IV structures and engineered masonry in Risk Category I, II or III structures. Level C is the minimum inspection program for engineered masonry in Risk Category IV structures. Engineered masonry structures are those designed in accordance with portions of the TMS 402-13 / ACI 530-13/ASCE 5-13 other than Part 4 or Appendix A.

Inspection Agents	Firm Name & Point of Contact	Address / Phone / E-mail
1. Special Inspector (SI-1)	ATC Group Services, LLC. Kelly Lee (919-573-1184)	2725 East Millbrook Rd. Suite #121 - Raleigh, NC www.atcgroupservices.com (919) 871 - 0999
2. Testing Agency (TA-1)	ATC Group Services, LLC. Kelly Lee (919-573-1184)	Same
3. Testing Agency (TA-2)	ATC Group Services, LLC. Kelly Lee (919-573-1184)	Same
4. Geotechnical Engineer (GE-1)	ATC Group Services, LLC. Kelly Lee (919-573-1184)	Same
5. Other (O-1)		

Note: The inspection and testing agent(s) shall be engaged by the Owner or the Registered Design Professional of Record acting as the Owner's agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the State Construction Office, prior to commencing work.

Seismic Design Category: ☐ A ☐ B ☐ C ☐ D

Basic Wind Speed (V_{ult}): ☐ 90-109mph ☐ 110-119mph ☐ ≥120mph

Wind Exposure Category: ☐ B ☐ C ☐ D

Special Inspections Required:

Bearing Capacity Testing in ALL footings.
Compaction Texting In Reinforced Zone every 8" lift.
Segmental Block Retaining Walls (Ridgerock Units)
(Special Inspections By ATC)

Schedule of Special Inspection Services
Soils

Inspection Task	Task Req'd	Freq	Reference for Criteria		Agents
			Standard	NCBC	
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity	☒	P		1705.6	
2. Verify excavations extend to proper depth and have reached the correct soil material	☒	P		1705.6	
3. Perform classification and testing of compacted fill materials	☒	P		1705.6	
4. Verify that materials used, densities, lift thickness and procedures used during placement and compaction of compacted fill are in accordance with the approved soils report and the construction documents	☒	C		1705.6	
5. Prior to placement of compacted fill, verify that the subgrade has been prepared in accordance with the approved soils report and the construction documents	☒	P		1705.6	

Schedule of Special Inspection Services
Retaining Walls Exceeding 5 Feet a,b,c,d

Inspection Task	Task Req'd	Freq(a)	Reference for Criteria		Agent
			Standard	NCBC	
1. Foundation support system is adequate for the intended site conditions	☒	P		1807.2.5.1	
2. Verify that retaining wall materials and installations are in compliance with the construction documents	☒	P		1807.2.5.2	
3. Verify that actual soil conditions are similar to those anticipated by the approved engineered design	☒	P		1807.2.5.3	
4. Examination of backfill materials for compliance with the approved specifications	☒	P		1807.2.5.4	
5. Confirm that all subsoil drainage piping is undamaged, drains freely to the designated outlet or structure, and has been installed per the approved engineered design	☒	P		1807.2.5.4	

a. All retaining walls exceeding 5 feet in height require special inspections.
b. For concrete retaining walls and footings, perform additional inspections in accordance with Section 1705.3 of the North Carolina Building Code and the applicable Schedules included herein.
c. For masonry retaining walls, perform additional inspections in accordance with Section 1705.4 of the North Carolina Building Code and the applicable Schedules included herein.
d. For soils, perform additional inspections in accordance with Section 1705.6 of the North Carolina Building Code and the applicable Schedules included herein.

Special Inspections Required:

Bearing Capacity Testing in ALL footings.
Compaction Texting In Reinforced Zone every 8" lift.
Segmental Block Retaining Walls (Ridgerock Units)
(Special Inspections By ATC)

ATC Group Services, LLC.
2725 East Millbrook Rd.
Suite #121 - Raleigh, NC
www.atcgroupservices.com
(919) 871 - 0999

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REVISIONS	

NORTH CAROLINA PROFESSIONAL SEAL 24480 ENGINEER MARK MAGRATH 07/02/21

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NATURAL STONE DESIGN
RETAINING WALLS
148 JARCO DRIVE
FUQUAY-VARINA, NC

SCHEDULE OF SPECIAL INSPECTIONS
SUMMARY SHEET INFORMATION
(Required By The Town Of Fuquay-Varina)
NATURAL STONE DESIGN - FUQUAY-VARINA, NC

DATE: JULY 2, 2021
DES: TLH
DRAWN: TLH
APPROVED: MJM

SCALE
HORIZONTAL: N/A
VERTICAL: N/A

DRAWING NUMBER
B-1

NATURAL STONE DESIGN RETAINING WALL CONSTRUCTION - FUQUAY-VARINA, NC

VE PROJECT NO: 00210001 NATURAL STONE DESIGN

1.1 GENERAL

RIDGEROCK RETAINING WALL SYSTEMS ARE DESIGNED AS A GRAVITY RETAINING WALL UTILIZING A HIGH DENSITY POLYESTER GEOGRID TO REINFORCE THE SOIL ZONE BEHIND THE WALL. THE GEOGRID IS POSITIVELY CONNECTED TO THE MODULAR CONCRETE BLOCK CREATING A REINFORCED SOIL MASS CAPABLE OF RESISTING LATERAL EARTH PRESSURES AND SURCHARGED LOADS. ALL REFERENCES TO THE ENGINEER REFER TO VENTURE ENGINEERING, P.A.

1.2 QUALITY ASSURANCE

CONTRACTOR SHALL BE QUALIFIED TO BUILD RETAINING WALLS AND SHALL SUBMIT CERTIFICATION, PRIOR TO START OF WORK THAT THEY HAVE SUCCESSFULLY INSTALLED ON A MINIMUM OF 5 SIMILAR PROJECTS, I.E., HEIGHT, SOIL FILL TYPES, ERECTION TOLERANCES, ETC.

1.3 BACK FILL MATERIALS

THE SOIL MATERIAL ASSOCIATED WITH THE RETAINING WALL IN THE REINFORCED ZONE, THE RETAINED ZONE, OR THE FOUNDATION BEDDING SHALL HAVE THE FOLLOWING PROPERTIES:

A.) FOUNDATION SOILS Ø = 28 DEGREES, COHESION = 0 PSF, UNIT WEIGHT = 120 LBS/CU.F.T.

B.) RETAINED SOILS Ø = 28 DEGREES, COHESION = 0 PSF, UNIT WEIGHT = 120 LBS/CU.F.T.

C.) REINFORCED SOILS Ø = 28 DEGREES, COHESION = 0 PSF, UNIT WEIGHT = 120 LBS/CU.F.T.

D.) UNIT FILL SHALL CONSIST OF CLEAN 1" MINUS CRUSHED STONE OR CRUSHED GRAVEL MEETING THE FOLLOWING:

THE SOILS CHARACTERISTICS ABOVE WERE ASSUMED BASED ON SOILS CONDITIONS ON SIMILAR PROJECTS IN THAT AREA. IF THIS INFORMATION DOES NOT REPRESENT THE ACTUAL SOIL TO BE USED, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY AND THE WALL SHALL BE REDESIGNED.

SIEVE SIZE	% PASSING
2"	100
3/4"	75-100
No. #4	0-10
No. #50	0-5

E.) REINFORCED BACKFILL SOILS SHALL BE FREE OF DEBRIS OR ORGANIC MATERIAL MEETING THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING
2"	100
3/4"	100-75
No. #40	< 0-60
No. #200	< 25-30

1.4 FOUNDATION LOADS

RETAINING WALLS UNDER 20 FEET IN HEIGHT SHALL HAVE A MINIMUM BEARING OF 3,000 PSF.
RETAINING WALLS OVER 20 FEET IN HEIGHT SHALL HAVE A MINIMUM BEARING OF 5,000 PSF.

1.5 CONCRETE MASONRY WALL UNITS

CONCRETE WALL UNITS SHALL BE RIDGEROCK UNITS MANUFACTURED IN ACCORDANCE WITH ASTM-C1372 AND ASTM C140 AND SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI.

1.6 GEOGRID REINFORCEMENT

THE GEOGRID REINFORCING MATERIAL SHALL BE HIGH TENACITY POLYESTER MANUFACTURED BY SYNTEEN AND SHALL MEET THE SPECIFICATION REQUIREMENTS PUBLISHED BY STRATAGRID FOR:

GRIDLOCK 370 *(APPROVED EQUAL)*

1.7 WALL BATTER

BATTER FOR THE ENTIRE WALL SHALL BE MAINTAINED AT A 4.4° SETBACK.

2.0 FOUNDATION REQUIREMENTS

THE FOUNDATION BEARING CAPACITY THAT WAS ASSUMED FOR DESIGN SHALL BE VERIFIED IN THE FIELD, AND COPIES OF THE TEST DATA FILED WITH THE ENGINEER. THE FOOTING SHALL BE CLEARED OF LOOSE SOIL. A MINIMUM OF 12" OF WASHED STONE SHALL BE PLACED AT THE BACK OF EACH BLOCK AS INDICATED ON THE DETAILS.

2.1 LEVELING PAD

MATERIAL SHALL CONSIST OF COMPACTED SAND, GRAVEL, CRUSHED ROCK, OR UNREINFORCED CONCRETE. THE PAD SHALL BE 4"- 6" THICK . SAND OR GRAVEL MATERIAL SHALL BE COMPACTED TO 95% STANDARD PROCTOR. AGGREGATE MATERIAL SHALL RECEIVE A MINIMUM OF ONE PASS OF THE COMPACTION EQUIPMENT.

2.2 UNIT FILL

THE VOID WITHIN EACH UNIT SHALL BE FILLED WITH A WASHED STONE HAVING 100% OF THE AGGREGATE PASSING THE 2" SIEVE. A MINIMUM OF 3/8" WASHED STONE SIZE IS REQUIRED (NO MORE THAN 5% PASSING THE #200 SIEVE.) PLACE THIS MATERIAL BEHIND THE BLOCK AS WELL. ALL EXCESS MATERIAL SHALL BE SWEPT CLEAN FROM THE TOP OF THE BLOCK PRIOR TO INSTALLING THE NEXT COURSE. EACH COURSE OF BLOCK SHALL BE COMPLETELY FILLED BEFORE PROCEEDING TO THE NEXT COURSE.

2.3 FIRST BLOCK COURSE

THE FIRST COURSE OF BLOCK SHALL BE PLACED ON TOP OF AND IN FULL CONTACT WITH THE LEVELING PAD. THE UNITS SHALL MAINTAIN A DISTANCE OF MINIMUM 6" FROM THE FRONT AND BACK OF THE LEVELING PAD. PROPER ALIGNMENT MAY BE ACHIEVED WITH THE AID OF A STRING LINE. AFTER PLACING PINS IN EACH OF THE APPROPRIATE HOLES PROCEED TO THE NEXT COURSE OF BLOCK. EACH UNIT SHALL CONTACT THE UNITS ON BOTH SIDES AS WELL AS ABOVE AND BELOW. SOME ADJUSTMENTS MAY BE REQUIRED FOR WALLS WITH CURVES AND A BATTER.

2.4 CAPS

APPLY A CONSTRUCTION ADHESIVE TO THE UNITS TO PREVENT THEIR REMOVAL.

3.0 GEOGRID INSTALLATION

THE GEOGRID REINFORCEMENT SHALL BE LAID HORIZONTALLY ON COMPACTED BACK FILL AND CONNECTED TO THE CONCRETE WALL UNITS(RIDGEROCK UNITS SHALL BE USED FOR THIS PROJECT). GEOGRID SHALL BE PULLED TAUT REMOVING ALL SLACK FROM THE MATERIAL AND ANCHORED BEFORE ADDING FILL. GEOGRID SHALL BE INSTALLED AT THE ELEVATIONS AND LENGTHS REQUIRED AS SHOWN ON THE PLANS. (REFER TO DETAILS FOR THE APPROPRIATE ORIENTATION) SOIL SURFACE SHALL BE SMOOTH AND LEVEL AND HAVE COMPACTED TO 95% STANDARD PROCTOR BEFORE INSTALLING THE GRID.

3.1 FILL PLACEMENT

BACK FILL MATERIAL SHALL BE AND COMPACTED 95% STANDARD PROCTOR ON EVERY GEOGRID LIFT LAYER INTERVAL. ONLY HAND OPERATED EQUIPMENT SHALL BE ALLOWED WITHIN 3 FEET OF THE KEYSTONE UNITS. BACK FILL SHALL BE PLACED FROM THE WALL REARWARD TO INSURE TAUTNESS OF THE GEOGRID. CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOGRID.

3.2 UNSUITABLE MATERIAL

SOILS CONTAINING ROOTS, BRUSH, SOD, OR THE OTHER ORGANIC MATERIAL SHALL NOT BE ALLOWED. FROZEN SOILS, SNOW, ICE, HEAVY CLAYS, OR WET SOILS SHALL NOT BE ALLOWED. MATERIAL PASSING THE #40 SIEVE SHALL HAVE A LIQUID LIMIT OF LESS THAN 30 AND A PLASTIC LIMIT OF LESS THAN 15, UNLESS WRITTEN CONSENT IS OBTAINED FROM THE ENGINEER PRIOR TO PLACEMENT.

3.3 SOIL PROPERTIES

MINIMUM INTERNAL ANGLE OF FRICTION SHALL EQUAL OR BE GREATER THAN REFERENCE IN SECTION 1.3 VERIFICATION SHALL BE FILED WITH THE ENGINEER THAT THE SOIL WILL MEET THIS CRITERIA.

4.0 SOIL TESTING

COMPACTION TESTING SHALL BE PERFORMED FOR EVERY LIFT ELEVATION REQUIRING GEOGRID OR EVERY 3RD LIFT AS A MINIMUM TEST SHALL BE FILED WITH THE ENGINEER'S OFFICE.

5.0 HYDROSTATIC PRESSURE POTENTIAL

THE ENGINEER SHALL BE NOTIFIED IF ANY OF THE FOLLOWING SHOULD BECOME EVIDENT:

- WATER OR WETNESS FROM OR IN A CUT BANK.
- LOCAL SPRINGS, LOCAL STORM DRAINS, SEWER, WATER LINES UNDER OR BEHIND THE WALL

6.0 ACCEPTABLE BLOCK

RIDGEROCK UNITS SHALL BE USED & KEPT FREE OF DEFECTS THAT WOULD INTERFERE WITH THW PLACING OR POSITIONING OF THE UNIT OR IMPAIR ITS STRENGTH. MINOR CRACKS INCIDENTAL TO THEIR USUAL METHOD OF MANUFACTURING OR MINOR CHIPPING RESULTING FROM SHIPMENT & DELIVERY ARE NOT GROUNDS FOR REJECTION.

7.0 ACCEPTABLE GEOGRID

GEOGRID SHALL BE REJECTED IF 20% OR MORE OF A STRUCTURAL RIB HAS BEEN CUT OR RIPPED. THE CONTRACTOR SHALL INSPECT ALL GEOGRID DELIVERED TO THE SITE AND REJECT MATERIALS THAT MEET THIS CRITERIA. IF THE GEOGRID IS DAMAGED ON THE CONSTRUCTION SITE, IT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

8.0 DRAINAGE COMPOSITE

(APPLIES TO CUT WALL APPLICATIONS ONLY), WHERE SITE CONDITIONS WARRANT, DRAINAGE COMPOSITE SHALL BE INSTALLED TO COVER 30% OF THE CUT BEHIND THE GEOGRID LAYERS. STRATA-DRAIN (6 FT. WIDE SECTIONS) PROVIDE 30% COVERAGE WHEN INSTALLED ON 15 FT. CENTERS AND 2/3 THE WALL HEIGHT.

9.0 SPECIAL PROVISIONS

A. GENERAL CONTRACTOR SHALL COORDINATE UPPER GEOGRID LAYERS INSTALLATION WITH PAVING INSTALLATION.

B. MAINTAIN THE DIRECTION OF DRAINAGE AWAY FROM THE WALL FACE AT TIMES DURING CONSTRUCTION OF THE WALL AND FINISH GRADING AS SHOWN ON PLANS.

C. PLACEMENT OF GEOGRID SHALL BE AS PER PLANS REFERENCE TO LENGTH AND ELEVATIONS.

D. THE ENGINEER SHALL BE NOTIFIED BY THE INSTALLING CONTRACTOR SHOULD THE EMBEDMENT DEPTH OF THE BLOCK BE LESS THAN 8" FOR WALLS UNDER OR EQUAL TO 7 FT., 12" FOR WALLS GREATER THAN 7 FT. AND 2'-0" FOR WALLS GREATER THAN OR EQUAL TO 14 FT.

E. THE REINFORCED SOIL IS ASSUMED TO BE SANDY TYPE MATERIAL.

10.0 QUALIFICATION OF DESIGN

A. STABILITY OF ANY TEMPORARY SLOPES REQUIRED BY THE INSTALLATION OF A SEGMENTAL RETAINING WALL SHALL BE ADDRESSED BY A QUALIFIED GEOTECHNICAL ENGINEER. RESPONSIBILITY OF THESE TEMPORARY SLOPES RESTS WITH THE OWNER AND/OR ARCHITECT OF THIS PROJECT AND THE SLOPES SHALL MEET ALL OSHA STANDARDS. SLOPES STEEPNESS = 1.5H:1V.

B. HANDRAIL/GUARDRAIL REQUIREMENTS SHALL BE DETERMINED BY THE CIVIL SITE ENGINEER OF RECORD, NOT VENTURE ENGINEERING, P.A.

C. NOTIFY VENTURE ENGINEERING, P.A. PRIOR TO MODIFYING IF EXISTING SITE TOPOGRAPHY DOES NOT MATCH CONDITIONS OUTLINED ON RETAINING WALL PROFILE.

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DESCRIPTIONS	DATE
REVISIONS	

NORTH CAROLINA PROFESSIONAL SEAL 037602 ENGINEER MARK MAGRATH
07/02/21

Venture Engineering, P.A.
312 WEST MILLBROOK ROAD SUITE 237
RALEIGH, NC 27609
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EMAIL ADDRESS: MMAGRATH@VENTURE-E.COM
LICENSE NO. C-2590

NATURAL STONE DESIGN
RETAINING WALLS
148 JARCO DRIVE
FUQUAY-VARINA, NC

SPECIFICATIONS
NATURAL STONE DESIGN - FUQUAY-VARINA, NC

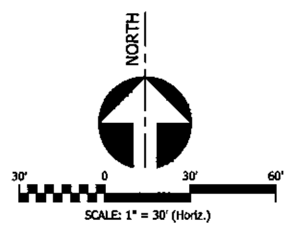
DATE: JULY 2, 2021
DES: TLH
DRAWN: TLH
APPROVED: MJM

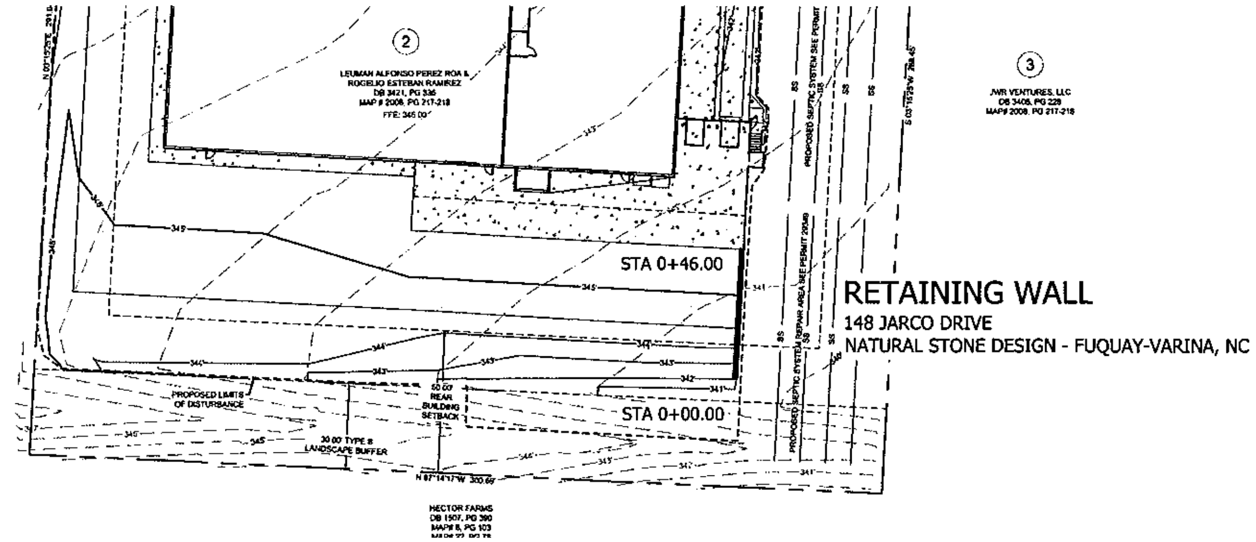
SCALE
HORIZONTAL: N/A
VERTICAL: N/A

DRAWING NUMBER
C-1

NATURAL STONE DESIGN RETAINING WALL CONSTRUCTION - FUQUAY-VARINA, NC

VE PROJECT NO: 00210001 NATURAL STONE DESIGN



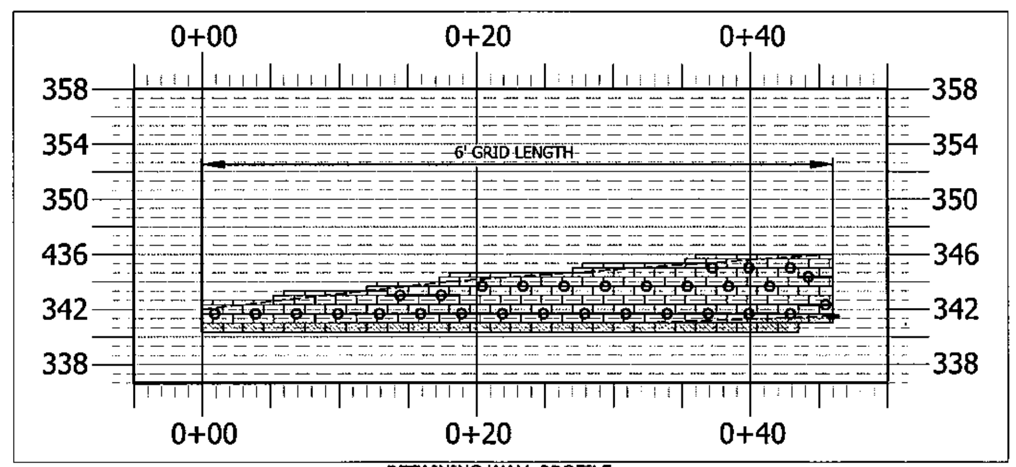


RETAINING WALL SITE PLAN - NATURAL STONE DESIGN

SCALE: 1"= 30'
148 JARCO DRIVE
NATURAL STONE DESIGN - FUQUAY-VARINA, NC

NOTE:

THIS CIVIL SITE GRADING PLAN SHOWN HERE & PLAN VIEWS WERE DONE BY REDLINE ENGINEERING, P.C. SEALED 01/14/21. VENTURE ENGINEERING, P.A. IS NOT RESPONSIBLE FOR ERRORS/OMMISIONS ON CIVIL ENGINEERING GRADING PLAN. VENTURE ENGINEERING, P.A. IS NOT RESPONSIBLE FOR ERRORS/OMMISIONS ON CIVIL ENGINEERING GRADING PLAN.



RETAINING WALL PROFILE

NOT TO SCALE
148 JARCO DRIVE
NATURAL STONE DESIGN - FUQUAY-VARINA, NC

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GENERAL DESIGN NOTE:

1. WALL PROFILES WERE CREATED & DESIGNED BY VENTURE ENGINEERING, P.A. PER EXISTING & PROPOSED GRADES AS SHOWN IN PLAN VIEW ON SHEET C-2 THRU C-2D AS PROVIDED BY REDLINE ENGINEERING, P.C. SEALED 01/14/21.
2. ALL GRADES SHOWN ON RETAINING WALL SITEPLAN IN THIS SET OF DRAWINGS ARE NOT KNOWN TO BE ORIGINAL DESIGN GRADES OR AS-BUILT GRADES. ALL GRADES TO BE SURVEY STAKED PRIOR TO CONSTRUCTION.

LEGEND

-o—o—o- GRIDLOK 370

DESCRIPTIONS	DATE

REVISIONS

Venture Engineering, P.A.
312 WEST MILLBROOK ROAD SUITE 237
RALEIGH, NC 27609
P: 919-602-1894 F: 919-676-0301
EMAIL ADDRESS: MMAGRATH@VENTURE-E.COM
LICENSE NO. C-2590

NATURAL STONE DESIGN
RETAINING WALLS
148 JARCO DRIVE
FUQUAY-VARINA, NC

RETAINING WALL SITE PLAN & PROFILE
NATURAL STONE DESIGN - FUQUAY-VARINA, NC

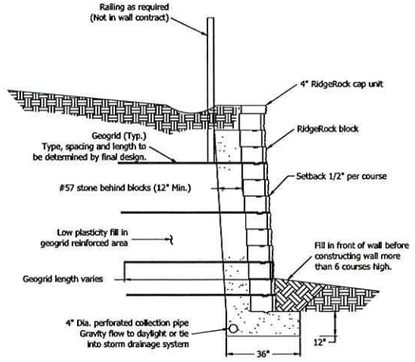
DATE: JULY 2, 2021
DES: TLH
DRAWN: TLH
APPROVED: MJM

SCALE
HORIZONTAL: 1" = 30'
VERTICAL: N/A

DRAWING NUMBER
C-2

VE PROJECT NO: 00210001 NATURAL STONE DESIGN

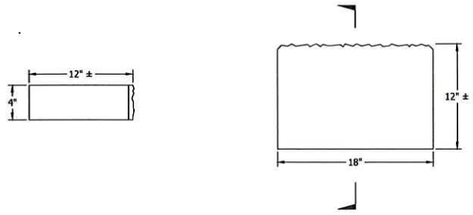
NATURAL STONE DESIGN RETAINING WALL CONSTRUCTION - FUQUAY-VARINA, NC



RidgeRock
Retaining Walls Inc.
P.O. Box 241233
Charlotte, NC 28224
704-504-3358
Fax: 504-3038

RIDGEROCK RETAINING WALL
TYPICAL CROSS SECTION

RIDGEROCK DETAIL	1 of 1 SHEET NO.	1/15/07 DATE

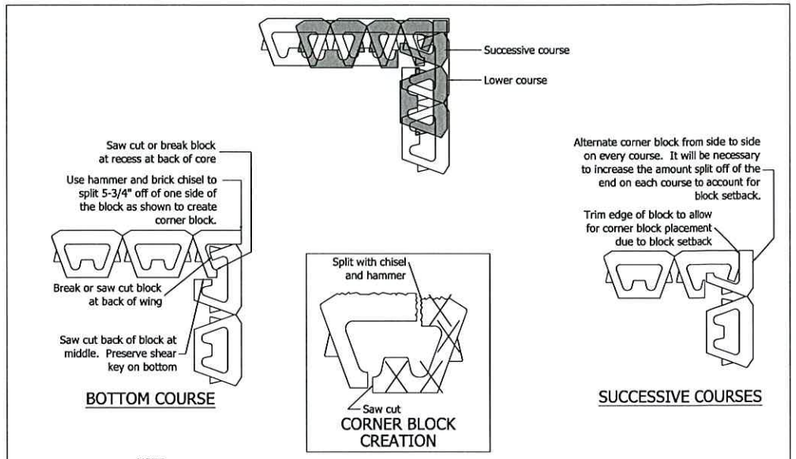


SECTION PLAN

RidgeRock
Retaining Walls Inc.
P.O. Box 241233
Charlotte, NC 28224
704-504-3358
Fax: 504-3038

RIDGEROCK CAP UNIT DETAILS

RIDGEROCK DETAILS	1 of 1 SHEET NO.	2/2008 DATE

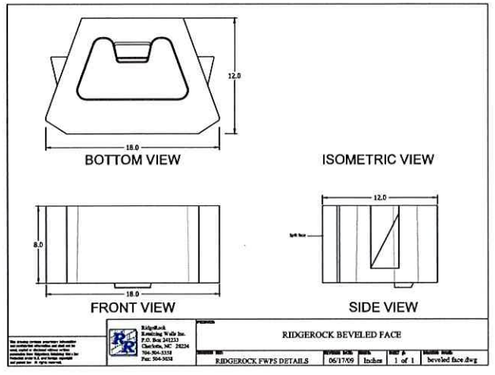


NOTE:
This detail illustrates one method of constructing outside corners with the RidgeRock retaining wall system. Other methods may be acceptable provided that the final wall design engineer approves them during final design.

RidgeRock
Retaining Walls Inc.
P.O. Box 241233
Charlotte, NC 28224
704-504-3358
Fax: 504-3038

DRAWING NAME: OUTSIDE CORNER CONSTRUCTION

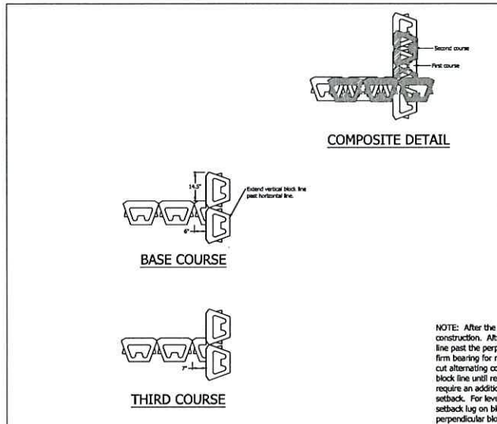
DRAWING SET:	REVISION DATE:	UNITS:	SHEET #:	DRAWING NAME:
RIDGEROCK FWPS DETAILS	7/7/10	Feet	1 of 1	corner detail.dwg



RidgeRock
Retaining Walls Inc.
P.O. Box 241233
Charlotte, NC 28224
704-504-3358
Fax: 504-3038

RIDGEROCK BEVELED FACE

DRAWING SET:	REVISION DATE:	UNITS:	SHEET #:	DRAWING NAME:
RIDGEROCK FWPS DETAILS	06/17/09	Inches	1 of 1	beveled face.dwg



NOTE: After the third course continue construction. Alternate extending each block line past the perpendicular block line to provide firm bearing for next course. Continue to cut alternating courses to butt into perpendicular block line until reaching top of wall. Each cut will require an additional 1/2" to accomodate block setback. For level block placement remove the setback lug on blocks that extend past the perpendicular block line.

NOTE:
This detail illustrates one method of constructing inside corners with the RidgeRock retaining wall system. Other methods may be acceptable provided that the final wall design engineer approves them during final design.

RidgeRock
Retaining Walls Inc.
P.O. Box 241233
Charlotte, NC 28224
704-504-3358
Fax: 504-3038

DRAWING NAME: INSIDE CORNER CONSTRUCTION

DRAWING SET:	REVISION DATE:	UNITS:	SHEET #:	DRAWING NAME:
RIDGEROCK FWPS DETAILS	4/3/14	Feet	1 of 1	corner detail.dwg

GEOTECHNICAL GENERAL NOTE:

1. GEOTECHNICAL INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. THEREFORE, ASSUMPTIONS WERE MADE BASED ON SOIL CHARACTERISTICS IN THE AREA (REFER TO SHEET C-1). IF SOILS ARE DIFFERENT IN THE FIELD THAN LISTED IN THE GEOTECHNICAL REPORT, VENTURE ENGINEERING, P.A. MUST BE NOTIFIED IMMEDIATELY BEFORE WORK CAN CONTINUE.
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GENERAL DESIGN NOTE:

1. WALL PROFILES WERE CREATED & DESIGNED BY VENTURE ENGINEERING, P.A. PER EXISTING & PROPOSED GRADES AS SHOWN IN PLAN VIEW ON SHEET C-2 THRU C-2D AS PROVIDED BY REDLINE ENGINEERING, P.C. SEALED 01/14/21.
2. ALL GRADES SHOWN ON RETAINING WALL SITEPLAN IN THIS SET OF DRAWINGS ARE NOT KNOWN TO BE ORIGINAL DESIGN GRADES OR AS-BUILT GRADES. ALL GRADES TO BE SURVEY STAKED PRIOR TO CONSTRUCTION.

DESCRIPTIONS	DATE
REVISIONS	

NORTH CAROLINA PROFESSIONAL SEAL 027880 ENGINEER MARK MAGRATH 07/02/21

Venture Engineering, P.A.
312 WEST MILLBROOK ROAD SUITE 237
RALEIGH, NC 27609
P: 919-602-1894 F: 919-676-0301
EMAIL ADDRESS: MMAGRATH@VENTURE-E.COM
LICENSE NO. C-2590

NATURAL STONE DESIGN
RETAINING WALLS
148 JARCO DRIVE
FUQUAY-VARINA, NC

DETAIL SHEET - SHEET 1 OF 2
NATURAL STONE DESIGN - FUQUAY-VARINA, NC

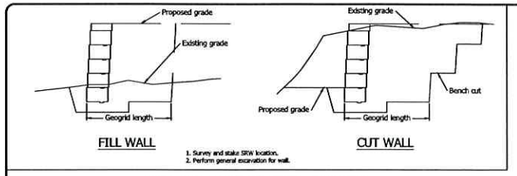
DATE: JULY 2, 2021
DES: TLH
DRAWN: TLH
APPROVED: MJM

SCALE
HORIZONTAL: N/A
VERTICAL: N/A

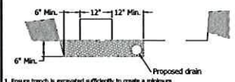
DRAWING NUMBER: C-3

NATURAL STONE DESIGN RETAINING WALL CONSTRUCTION - FUQUAY-VARINA, NC

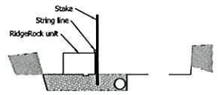
VE PROJECT NO: 00210001 NATURAL STONE DESIGN



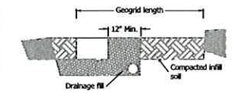
STEP 1, WALL LAYOUT AND GENERAL EXCAVATION



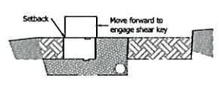
STEP 2, LEVELING PAD



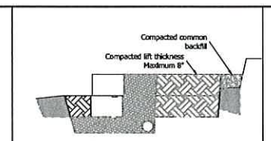
STEP 3, SETTING FIRST RIDGEROCK COURSE



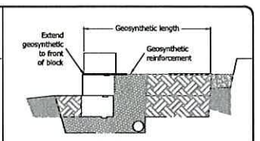
STEP 4, BACKFILLING FIRST COURSE



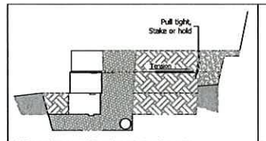
STEP 5, SETTING NEXT RIDGEROCK COURSES



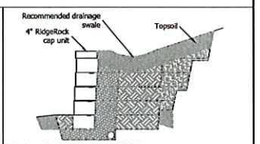
STEP 6, FILL PLACEMENT ON NEXT COURSES



STEP 7, PLACEMENT OF GEOSYNTHETIC



STEP 8, BACKFILLING OVER GEOSYNTHETIC

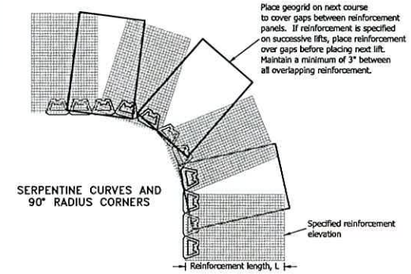


STEP 9, COMPLETE THE WALL

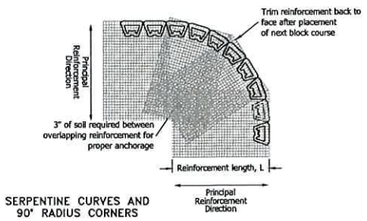
RIDGEROCK RETAINING WALL
INSTALLATION PROCEDURE

RIDGEROCK DETAILS	1 of 1 SHEET NO.	7/2001 DATE

RidgeRock Retaining Walls Inc.
P.O. Box 241233
Charlotte, NC 28224
704-504-3358
Fax: 504-3038



REINFORCEMENT PLACEMENT FOR CONCAVE CORNERS AND RADII

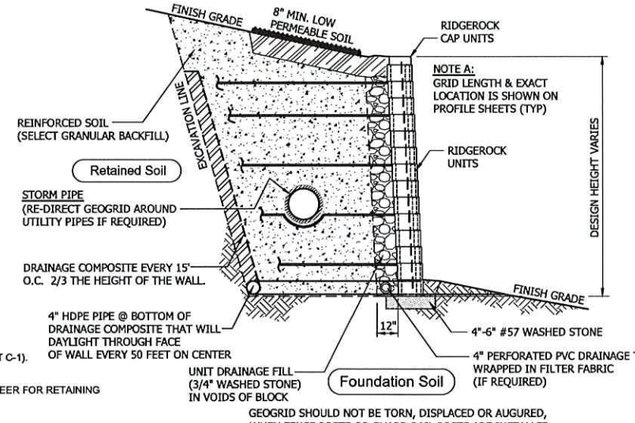


REINFORCEMENT PLACEMENT FOR CONVEX CORNERS AND RADII

RIDGEROCK RETAINING WALL
GEOGRID PLACEMENT ON CORNERS AND RADII

RIDGEROCK DETAILS	1 of 1 SHEET NO.	12/2005 DATE

RidgeRock Retaining Walls Inc.
P.O. Box 241233
Charlotte, NC 28224
704-504-3358
Fax: 504-3038



TYPICAL DRAINAGE COMPOSITE DETAIL (For Cut Walls Only)
NOT TO SCALE

GEOTECHNICAL GENERAL NOTE:

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DESCRIPTIONS	DATE
REVISIONS	

NORTH CAROLINA PROFESSIONAL SEAL 27880 ENGINEER MARK MAGRATH 07/02/21

Venture Engineering, P.A.
312 WEST MILLBROOK ROAD SUITE 237
RALEIGH, NC 27609
P: 919-602-1894 F: 919-676-0301
EMAIL ADDRESS: MMAGRATH@VENTURE-E.COM
LICENSE NO. C-2590

NATURAL STONE DESIGN
RETAINING WALLS
148 JARCO DRIVE
FUQUAY-VARINA, NC

DETAIL SHEET - SHEET 2 OF 2
NATURAL STONE DESIGN - FUQUAY-VARINA, NC

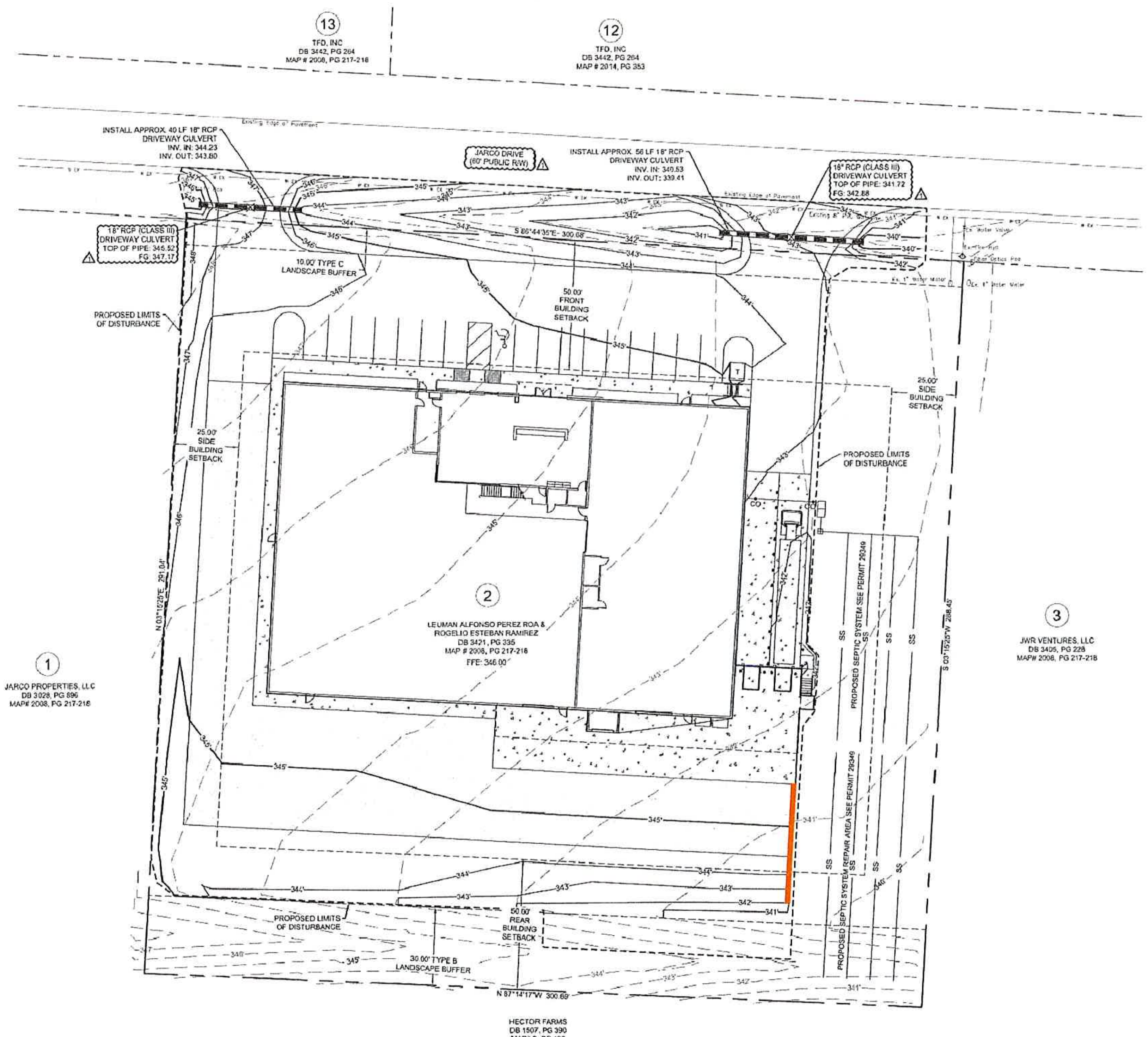
DATE:	JULY 2, 2021
DES:	TLH
DRAWN:	TLH
APPROVED:	MJM

SCALE
HORIZONTAL: N/A
VERTICAL: N/A

DRAWING NUMBER C-4

NATURAL STONE DESIGN RETAINING WALL CONSTRUCTION - FUQUAY-VARINA, NC

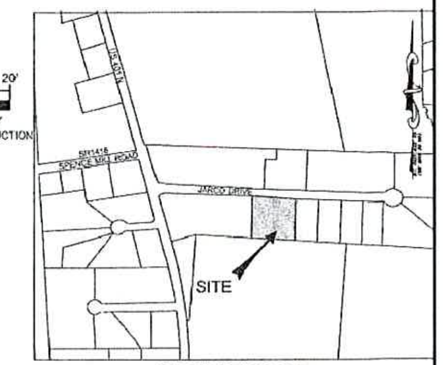
VE PROJECT NO: 00210001 NATURAL STONE DESIGN



SCALE: 1" = 20'

20' 0 20'

SCALE OF MAP MAY VARY DUE TO METHODS OF REPRODUCTION



VICINITY MAP

SCALE: 1"=500'

NPDES STABILIZATION TIME FRAMES		
SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1 - 14 DAYS ARE ALLOWED
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE EXCEPT FOR PERIMETERS AND HQW ZONES

WATER SUPPLY WATERSHED SPECIAL INTENSITY ALLOCATION PERMIT (SNIA2006-0001) APPROVED AUGUST 10, 2018, FOR 60% MAX. IMPERVIOUS AREA.

EROSION CONTROL NOTE: AN APPROVED SEDIMENTATION AND EROSION CONTROL PERMIT SHALL WAS APPROVED FROM NCDEQ-DEMLR ON JULY 24, 2017. THE OWNER SHALL PROVIDE A COPY OF THIS PERMIT TO HARNETT COUNTY PRIOR TO CONSTRUCTION.

811 Know what's below. Call before you dig.

PRELIMINARY DRAWING NOT RELEASED FOR CONSTRUCTION

RED LINE ENGINEERING, P.C. (C-3075)
123 RALEIGH STREET
FUQUAY-VARINA, NORTH CAROLINA 27526
PHONE - (919) 779-4951

NATURAL STONE DESIGN

148 JARCO DRIVE
FUQUAY-VARINA, NORTH CAROLINA 27526

PROPOSED GRADING PLAN

REVISIONS:	DATE:
PER DRB	01/14/21

ISSUED FOR:	DATE:
REVIEW/APPROVAL	12/15/20

PROJECT NO.: 20-019 20-019
DRAWN BY: GJM/TAL
REVIEWED BY: GJM

SHEET NUMBER:

C5

OF 10 SHEETS