

Sam Page
County Executive

Saint Louis
COUNTY
TRANSPORTATION
PUBLIC WORKS

Stephanie Leon Streeter, P.E.
Acting Director

Joseph W. Kulesa, P.E.
Acting Deputy Director

August 26, 2022

Mr. Michael Yount, PE
Engineering Solutions, P.C.
5393 Old Baumgartner Road
Saint Louis, MO 63129

Re: Permit Application #22BLD-05084: **Residential Master Plans for Rockwood Classic 6" Block Retaining Wall System's**

Dear Mr. Yount:

I am pleased to inform you that the plans submitted for review of the Retaining Walls are **approved** and the new master plan numbers are as follows:

Single Tier, 6' high max, 5:1 Max Slope, Compacted Rock Backfill, No Surcharge	711-22-34
Single Tier, 6' high max, 3:1 Max Slope, Compacted Rock Backfill, No Surcharge	711-22-35
Single Tier, 6' high max, No Slope, Compacted Rock Backfill, 120psf LL Surcharge	711-22-36
Double Tier, 4' high max, 5:1 Max Slope, Compacted Rock Backfill, No Surcharge	711-22-37
Double Tier, 4' high max, 3:1 Max Slope, Compacted Rock Backfill, No Surcharge	711-22-38
Double Tier, 4' high max, No Slope, Compacted Rock Backfill, 120psf LL Surcharge	711-22-39

Please inform your customers of the following **procedures they need to follow** when applying for a residential retaining wall permit with Saint Louis County:

1. Submit a **completed permit application** form that includes the **selected master plan number.**
2. Submit **four (4) site plans** showing the location and length of the wall, drawn to scale, with the top-of-wall and bottom-of-wall elevations noted at the ends and midpoint of each wall, at a minimum. Dimension the wall(s) distance from any structures, parking lots, easements and property lines. Show with arrows the existing and proposed direction of site drainage at and around the proposed wall area.
3. Submit **four (4) copy sets** of the approved master plan (13 pages total).
4. Your customers should be made aware that a **Saint Louis County Pre-grading Inspection may be required** to assess any potential major changes on the site grading and drainage when a retaining wall is proposed closer than 10-feet to a property line. Conditions on the site plans submitted may also indicate a Saint Louis County Pre-grading Inspection is needed.

Please call me at 314-615-7821 or e-mail at to'keefe@stlouiscountymo.gov if you have any questions.

Sincerely,



Timothy R. O'Keefe
Building Code Review Section
Division of Code Enforcement

St. Louis County Masterplan Construction Drawings

Index of Drawings:

Sheet 1	Title & Index
Sheet 2	Specifications
Sheet 3	Specifications (cont.)
Sheet 4	Specifications (cont.)

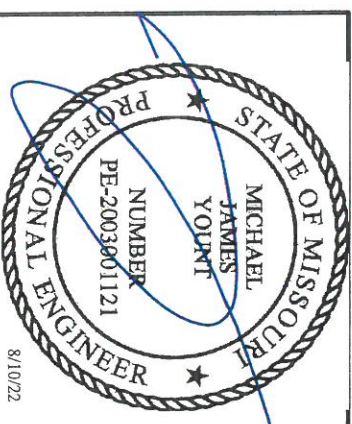
GENERAL CONSTRUCTION DETAILS

Sheet 5	Details
Sheet 6	Details (cont.)
Sheet 7	Details (cont.)

DESIGN SECTIONS

Sheet 8	Level Backslope, No Surcharge
Sheet 9	3:1 Slope Above Wall, No Surcharge
Sheet 10	Level Backslope, 120 psf Live Load Surcharge (Residential Driveway)
Sheet 11	2-terrace Level Backslope, No Surcharge
Sheet 12	2-terrace 3:1 Slope Above Wall, No Surcharge
Sheet 13	2-terrace Level Backslope, 120 psf Live Load Surcharge (Residential Driveway)

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Michael James Yount - Engineer
Mo# PE-2003901121

Title & Index

Sheet 1 of 13

Rockwood
Classic 6

Lemay Concrete
Block Co.

Phone (314) 638-9940

Engineering
Solutions, P.C.

5393 Old Baumgartner Rd
St Louis, Mo. 63129
Phone (314) 280-7748
Mo. State Certificate of Authority #P00565746

General

The contractor shall protect all existing utilities, and shall be responsible for all worker and public safety at the retaining wall site. All installation shall be per the retaining wall manufacturer's construction recommendations and/or as noted herein.

Materials

The **Leveling Pad** shall be constructed 1" minus compacted to 95% Standard Proctor with minimum dimensions of 6" thick and 24" wide.

Retaining Wall Units shall be Rockwood Classic 6. Units must be 6" tall x 12" deep with a 1" per course setback. Minimum compressive strength = 3,000 psi.

The **reinforced wall backfill** material shall be compacted 1" clean clean crushed limestone.

Geogrid shall be Mirafit 3XT, or approved equivalent.

Filter Fabric shall be Mirafit 140N.

Drain Tile shall be 4" HDPE, perforated.

The **Soil Cap** shall consist of compacted low plastic impervious soil above the granular backfill in areas not to be paved.

Wall Foundation Excavation

Foundation soil shall be excavated as required for the leveling pads and the reinforcing zone. Any soils that are soft, plastic (LL > 50%), frozen, or wet and untested fills shall be removed and recompact to 90% modified Proctor under the direction of the geotechnical engineer.

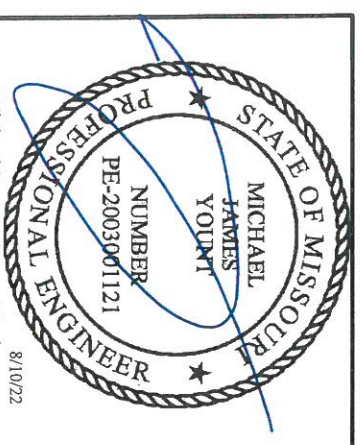
Wall Construction

Install toe first course of units on the leveling pad. Install the next course in a running bond stack. Adjust for setback per course. Backfill, install reinforcement as shown and continue construction. Filter fabric shall separate the granular backfill from the retained soil and the soil cap. Filter fabric shall not cover the foundation materials.

Geogrid Reinforcing

The geogrids shall be cut to the design lengths "L" and placed between the blocks at the elevations shown on the plans. The geogrid's primary strength direction shall be perpendicular to the wall face (into the fill). The geogrid shall be placed horizontally and laid flat on the reinforcing fill material. The geogrid shall be placed so that a minimum of 10" of grid is between the block layers. Slack in the geogrid shall be removed prior to placing backfill.

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Mo# PE-2003001121

Rockwood

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Specifications

Sheet 2 of 13

Wall Backfill

Backfill material shall be placed in maximum 8" lifts and compacted. Backfill shall be placed, spread and compacted in such a manner that minimizes wrinkles and movement of the geogrid. During backfill placement only hand operated equipment shall be used in the 4' zone directly behind the wall. The front of the wall shall be backfilled and compacted to finished grade.

Protection of Work

The surfaces surrounding the wall shall be graded at the end of each day to provide positive drainage away from the wall. Grading shall include proper contouring of fills in adjacent areas to prevent the flow of excessive surface water toward the wall. Finish grading should be completed in accordance with the approved site development plan.

Miscellaneous

If a fence or guardrail is be installed along the top of the wall under a separate plan. We recommend that PVC or sonotube sleeves be placed as the wall is being backfilled to prevent a need to excavate post holes after wall construction which could damage the geogrid.

General Notes

Existing utilities are not shown. The contractor shall locate and protect all utilities. The contractor shall notify Engineering Solutions, P.C. of any utility conflict affecting this work.

Unless otherwise noted all temporary shoring is strictly the responsibility of the contractor under a separate design.

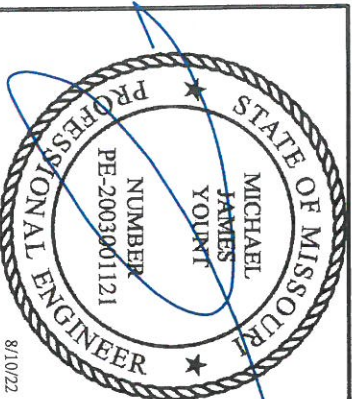
All job site worker and public safety is strictly the responsibility of the contractor. The contractor shall comply with all OSHA regulations & requirements.

Engineering Solutions, P.C. is available upon request to confirm construction compliance with this plan. Please notify Engineering Solutions, P.C. in advance of the work if field inspection is requested.

The Owner or Owner's Representative is responsible for ensuring that construction by others adjacent to the wall does not disturb the wall or place temporary construction loads on the wall that exceed design loads, including loads such as water pressure, temporary grades, or equipment loading. Heavy paving or grading equipment shall be kept a minimum of 3 feet behind the back of the wall face. Equipment with wheel loads in excess of 150 psf live load shall not be operated within 10 feet of the face of the retaining wall during construction adjacent to the wall. Care should be taken by the Owner or Owner's Representative to ensure water runoff is directed away from the wall structure until final grading and surface drainage collection systems are completed.

Global stability and settlement are outside of the scope of this design.

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St Louis, Mo. 63129
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Specifications
(cont.)

Sheet 3 of 13

SOIL PROPERTIES

<u>SOIL</u>	<u>FRICTION ANGLE</u>	<u>UNIT WEIGHT</u>	<u>COHESION</u>
DRAINAGE FILL (1" Clean crushed limestone)	34°	100 PCF	0 PSF
RETAINED BACKFILL (Low plastic silty clay)	26°	120 PCF	0 PSF
FOUNDATION SOIL (Low plastic silty clay)	26°	120 PCF	0 PSF

MINIMUM FACTORS OF SAFETY

EXTERNAL SLIDING = 1.5
 INTERNAL SLIDING = 1.5
 OVERTURNING = 1.5
 BEARING CAPACITY = 1,500 PSF

Rockwood Classic 6

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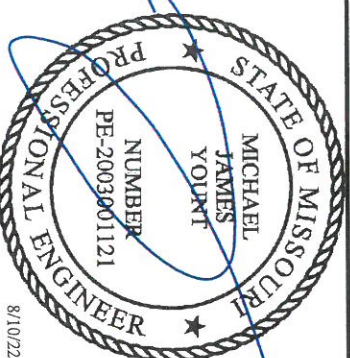
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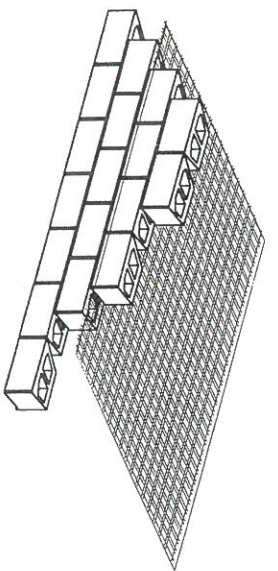
Specifications
(cont.)

Sheet 4 of 13

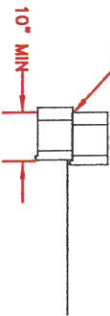


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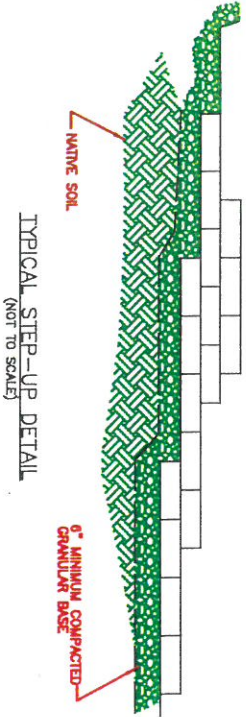
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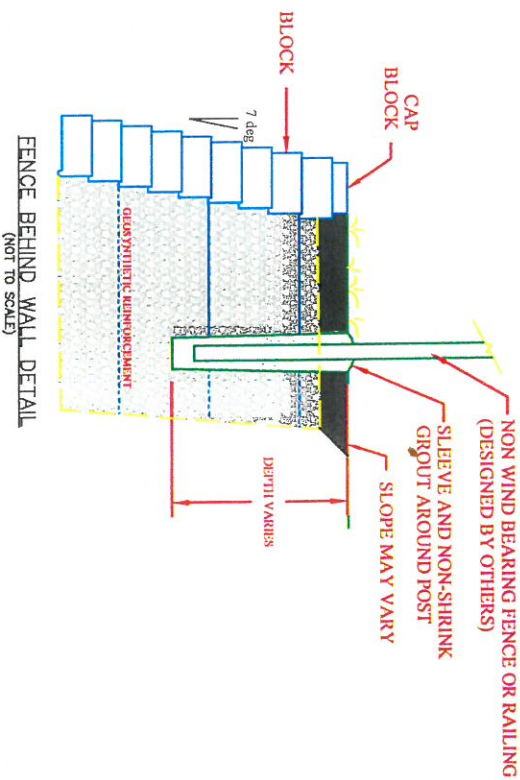
EXTEND GEOSYNTHETIC REINFORCEMENT TO WITHIN 1" OF THE UPPER BLOCK FACE



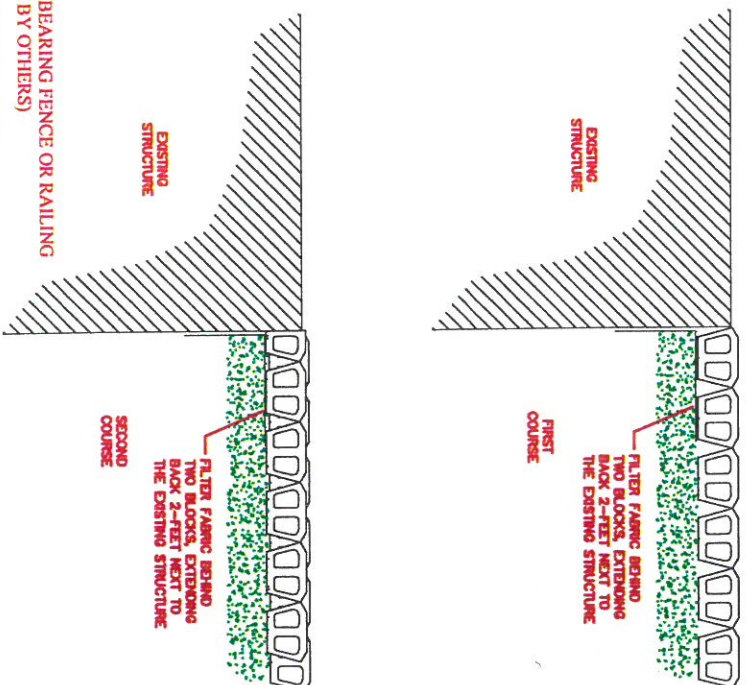
REINFORCEMENT CONNECTION DETAIL
(NOT TO SCALE)



TYPICAL STEP-UP DETAIL
(NOT TO SCALE)

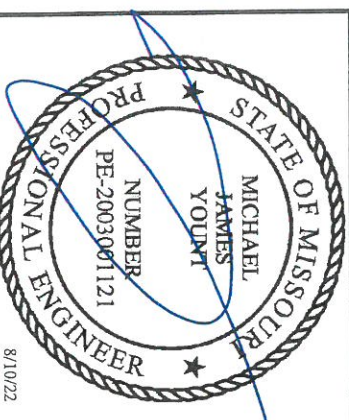


FENCE BEHIND WALL DETAIL
(NOT TO SCALE)



WALL ABUTTING EXISTING STRUCTURE
(NOT TO SCALE)

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Typical Details

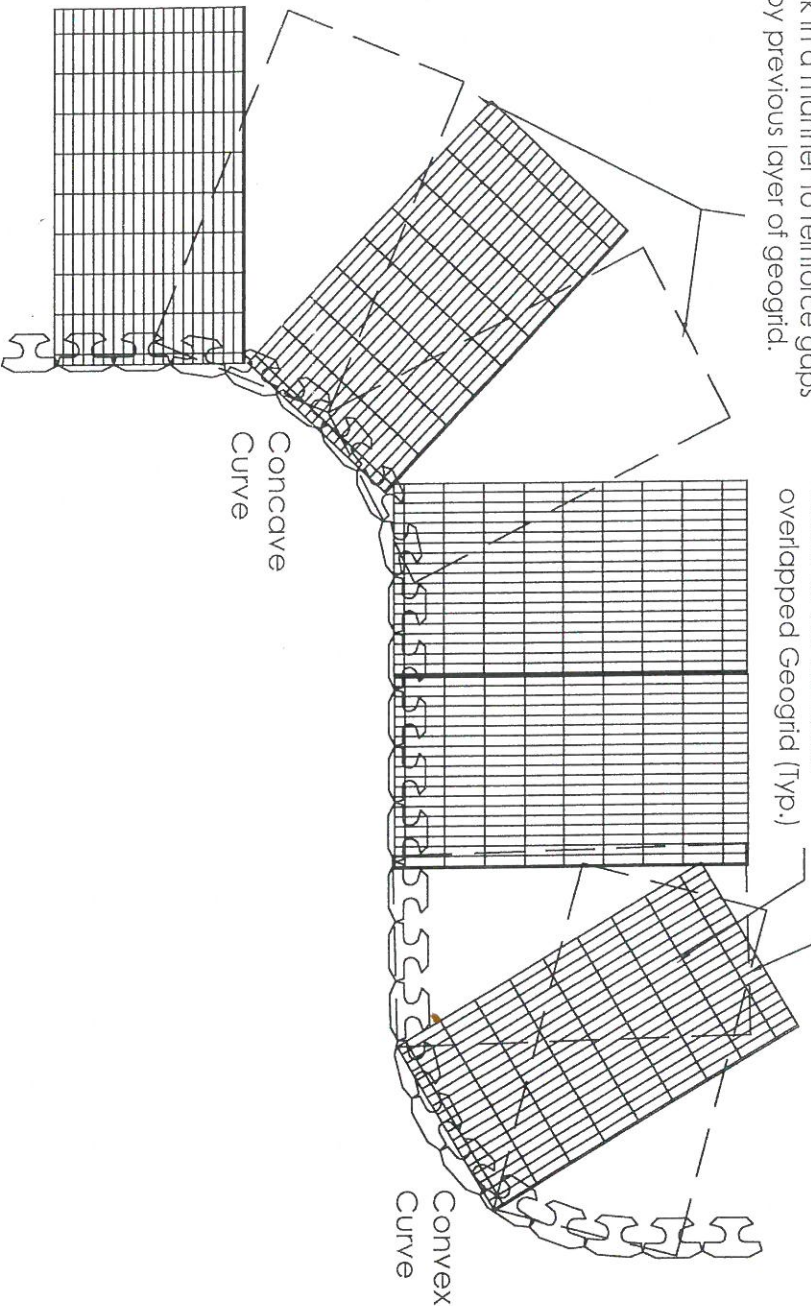
Sheet 5 of 13

Geogrid Details Classic™

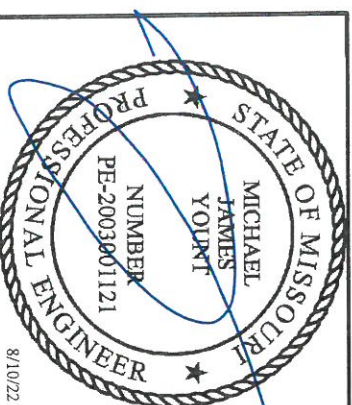
Place geogrid in next 8" layer of block in a manner to reinforce gaps left by previous layer of geogrid.

Min. 3" of soil between overlapped Geogrid (Typ.)

Place geogrid in next layer of block with the main reinforcement running 90° to the previous direction below. Place within curve only.



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8/10/22
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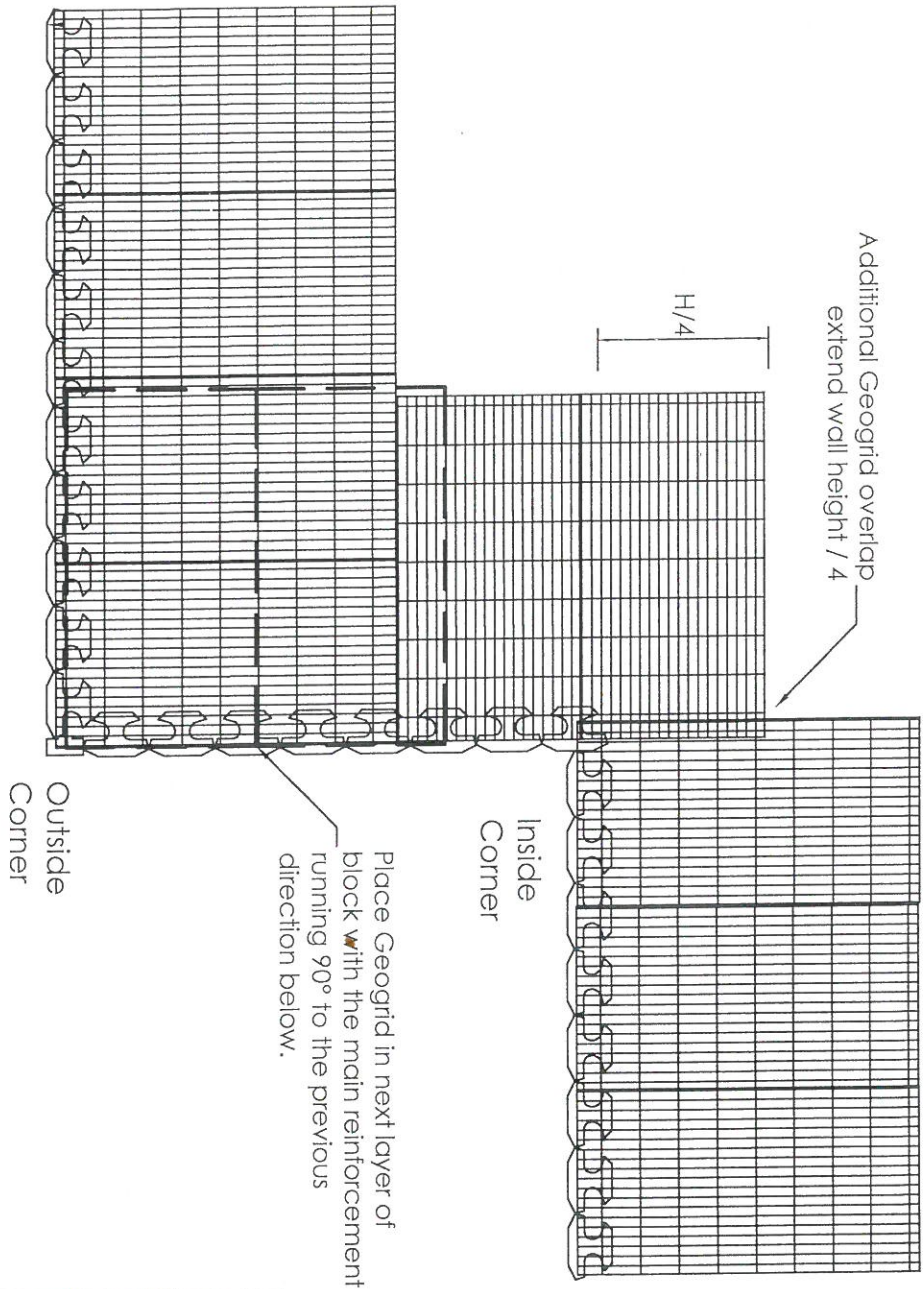
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Typical Details
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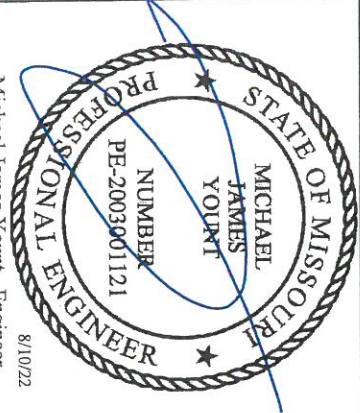
Sheet 6 of 13

Geogrid Details

Classic™

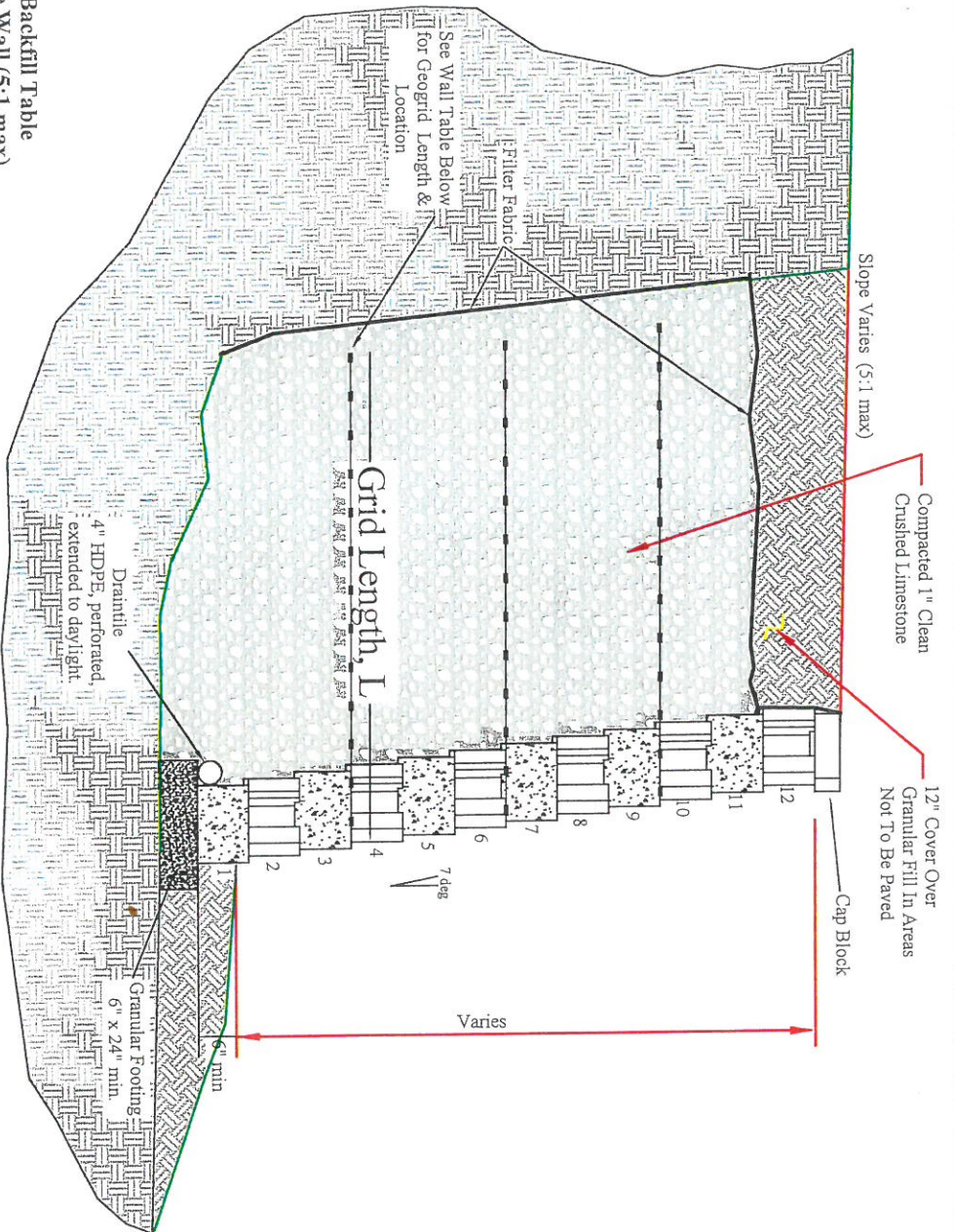


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Reinforcing Backfill Table
No Slope Above Wall (5:1 max)

Wall Height (feet) (without cap)	# of Geogrid Layers	Geogrid Location (on top of course #)	Geogrid Length (ft)
3.0	1	3	4.0
4.0	1	4	4.0
5.0	2	3,7	4.0
6.0	3	3,6,9	4.5

**Rockwood
Classic 6**

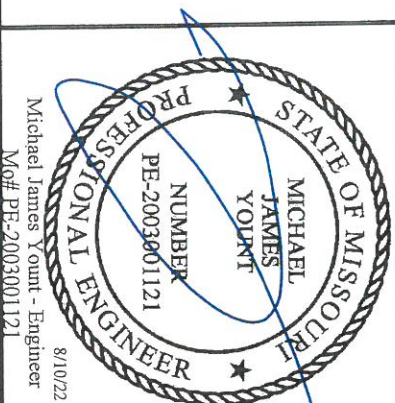
**Lemay Concrete
Block Co.**
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**Engineering
Solutions, P.C.**

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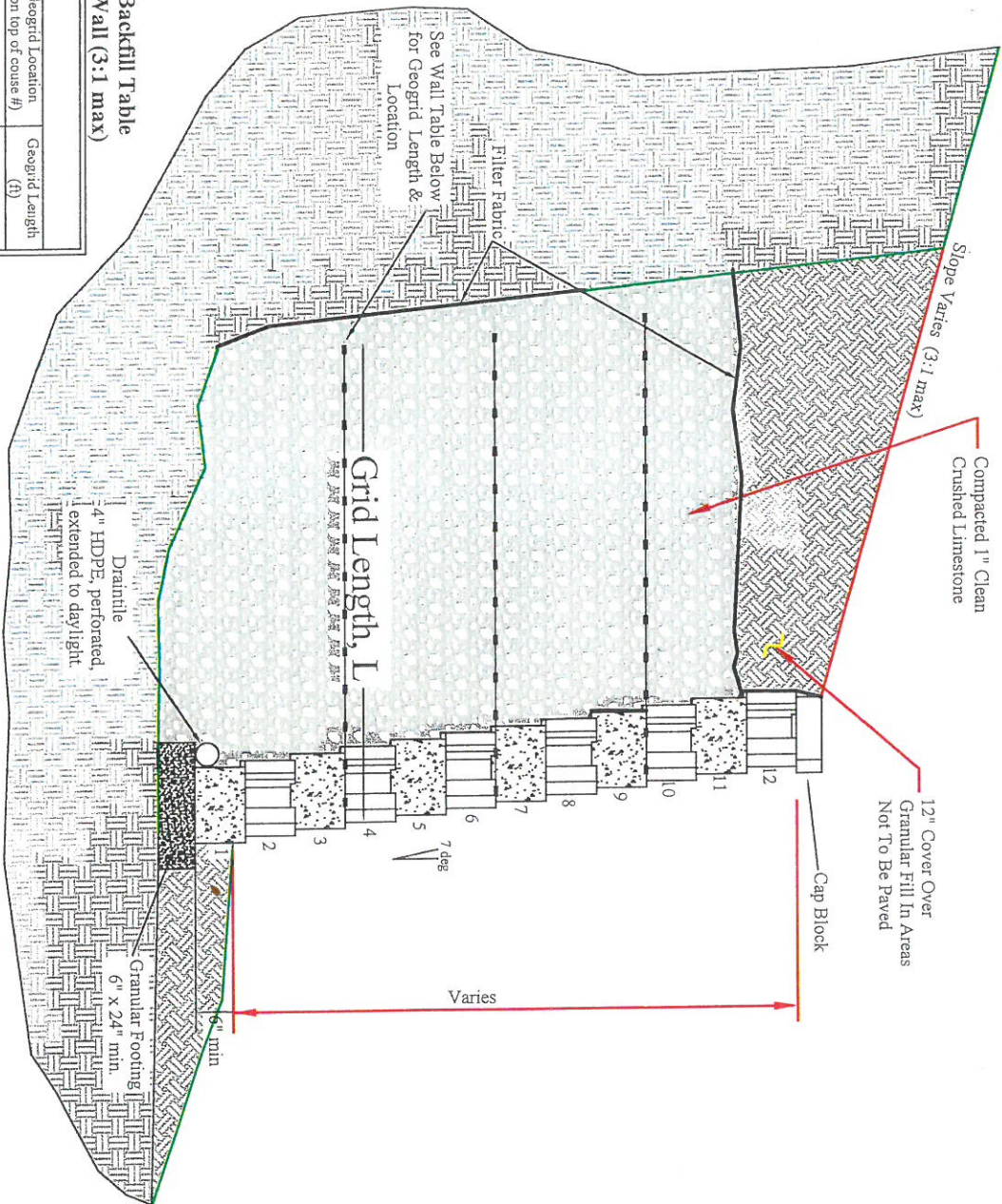
Refer to Specifications Sheets 2-4 &
Construction Details Sheets 5-7 for
Additional Requirements



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Typical Cross Section
Level Backslope, No Surcharge

Sheet 8 of 13

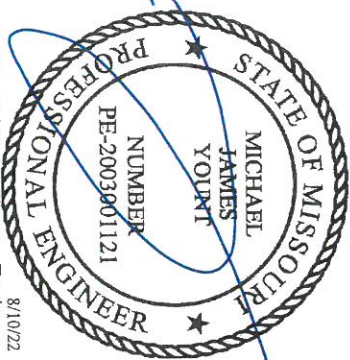


Reinforcing Backfill Table
Slope Above Wall (3:1 max)

Wall Height (feet) (without cap)	# of Geogrid Layers	Geogrid Location (on top of course #)	Geogrid Length (ft)
3.0	1	3	4.0
4.0	2	3,6	4.5
5.0	2	3,7	5.5
6.0	3	3,6,9	6.5

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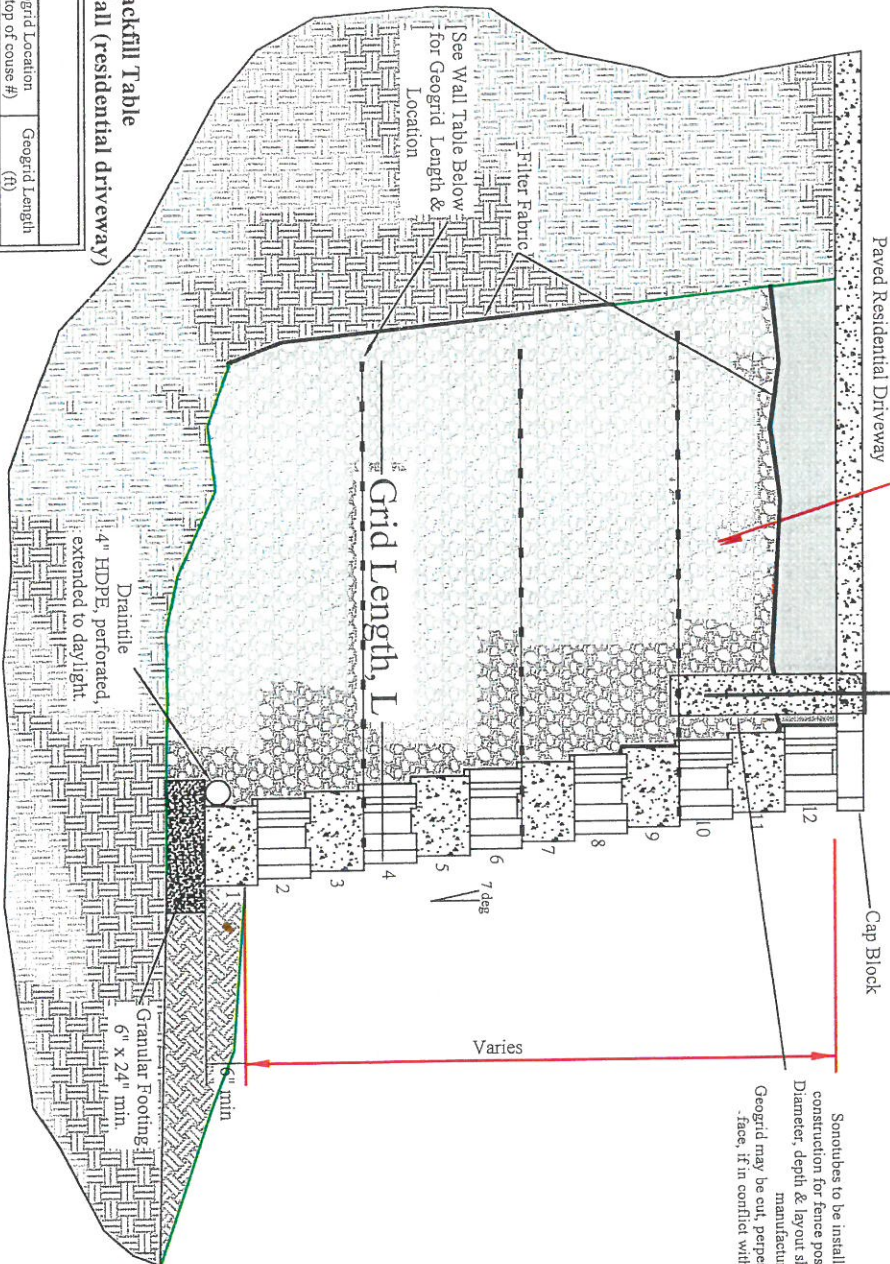
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Typical Cross Section
3:1 Backslope, No Surcharge

Sheet 9 of 13

Retaining walls more than 4' in height are required to have a 42" guard rail or other approved protective measure when closer than 2' to a sidewalk, path, parking area or driveway on the high side. No openings are permitted in the guardrail that will allow the passage of a 4" diameter sphere.



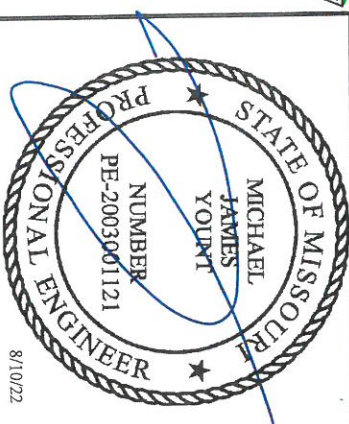
Sonotubes to be installed during wall construction for fence post base installation. Diameter, depth & layout shall be per the fence manufacturer. Geogrid may be cut, perpendicular to the wall face, if in conflict with the sonotube.

Reinforcing Backfill Table
0 psf Live Load Above Wall (residential driveway)

Wall Height (feet) without cap)	# of Geogrid Layers	Geogrid Location (on top of course #)	Geogrid Length (ft)
3.0	1	3	4.0
4.0	1	4	4.0
5.0	2	3,7	4.0
6.0	3	3,6,9	4.5

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Rockwood Classic 6

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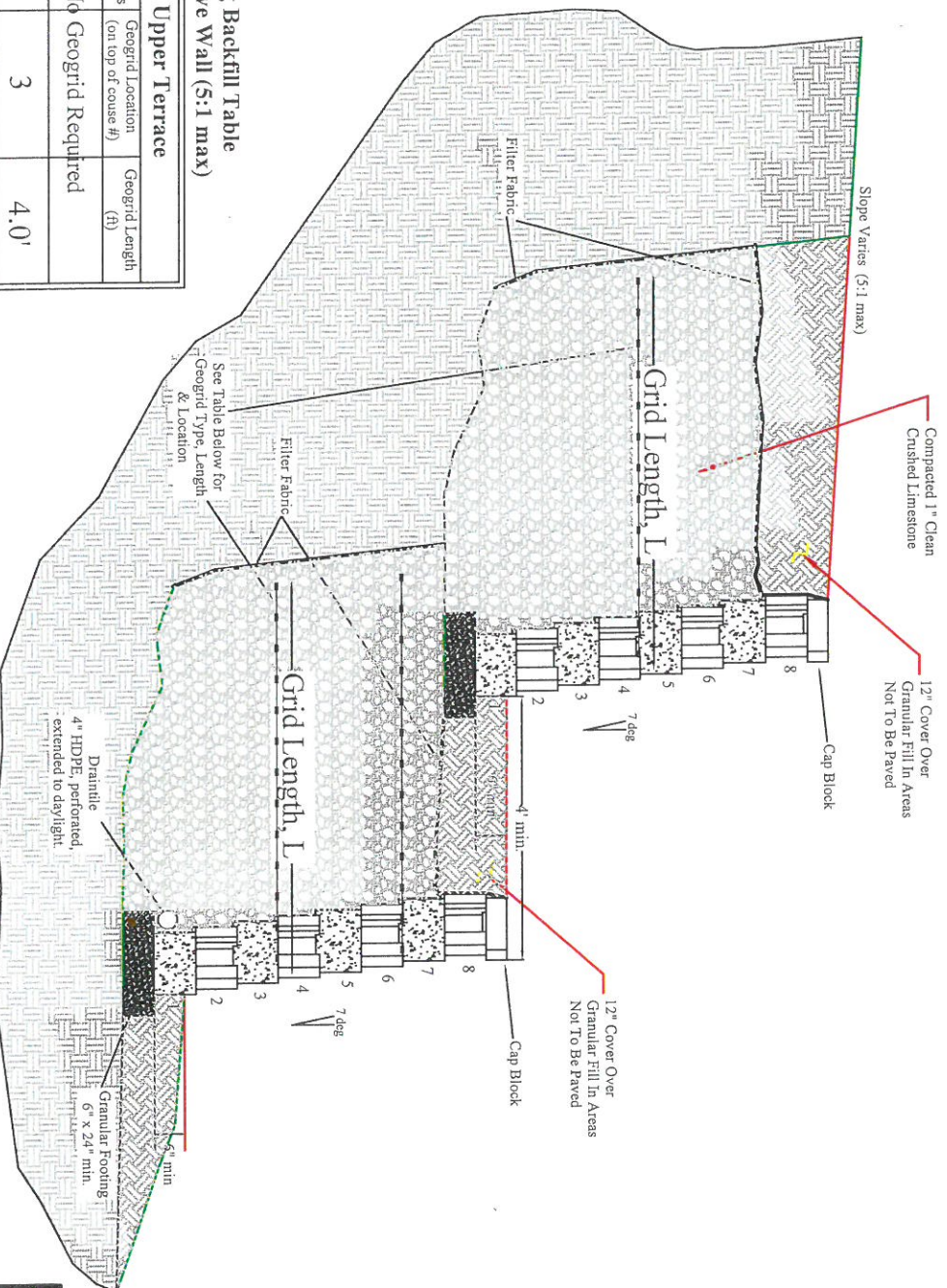
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Typical Cross Section
Level Backslope, 120 psf Surcharge
(Residential Driveway)

Sheet 10 of 13

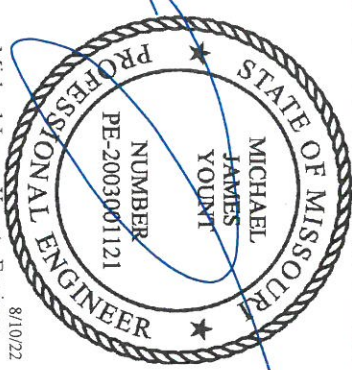


Reinforcing Backfill Table
No Slope Above Wall (5:1 max)

Wall Height (feet) (without cap)	Upper Terrace	
	# of Geogrid Layers (on top of course #)	Geogrid Length (ft)
2.0	No Geogrid Required	
3.0	1	3
4.0	1	4

Wall Height (feet) (without cap)	Lower Terrace	
	# of Geogrid Layers (on top of course #)	Geogrid Length (ft)
2.0	1	2
3.0	1	3
4.0	2	3,6

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**Rockwood
Classic 6**

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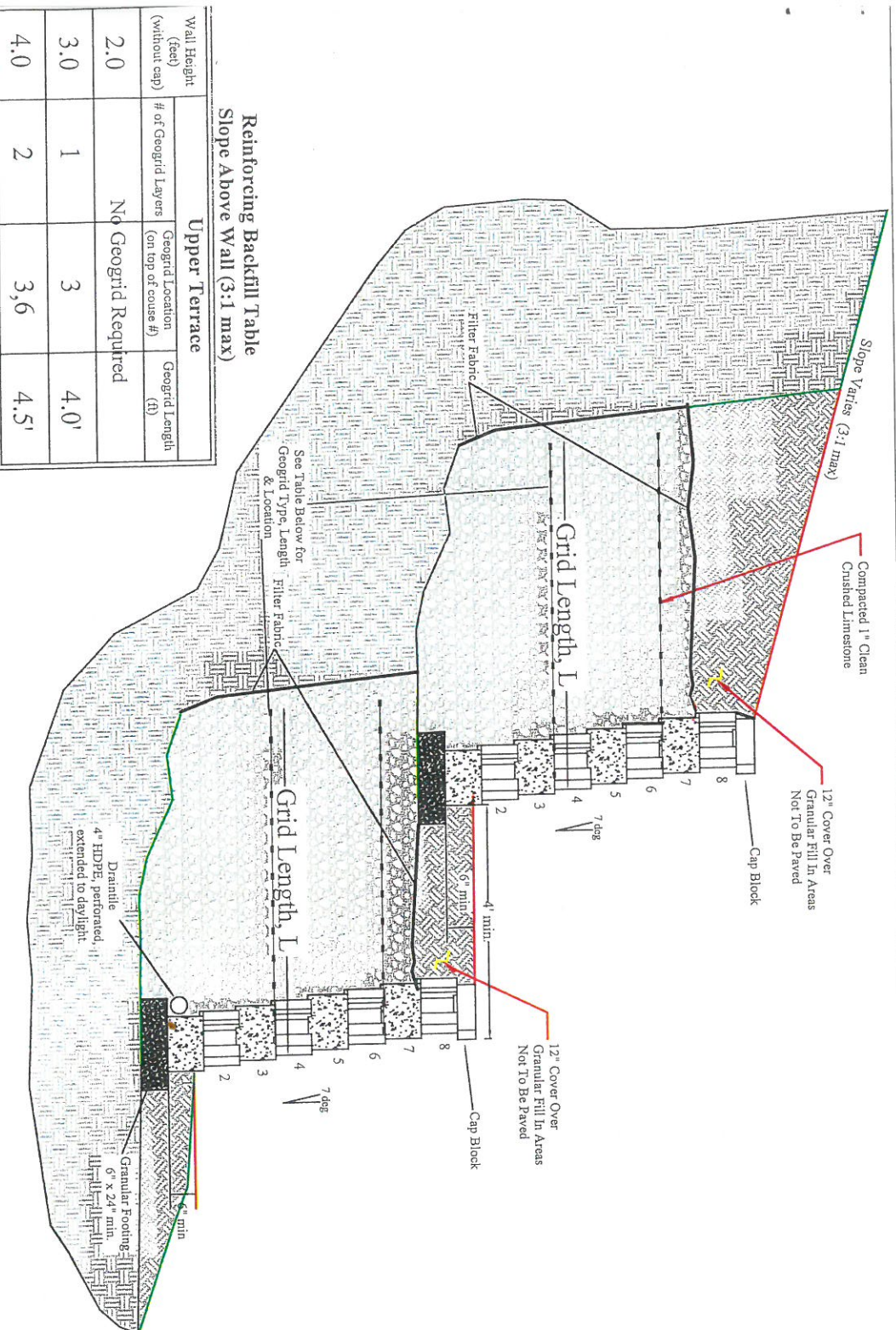
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**Typical Cross Section
Level Backslope, No Surcharge**

Sheet 11 of 13



Reinforcing Backfill Table
Slope Above Wall (3:1 max)

Wall Height (feet) (without cap)	Upper Terrace	
	# of Geogrid Layers	Geogrid Length (ft)
2.0	No Geogrid Required	
3.0	1	3
4.0	2	3, 6

Wall Height (feet) (without cap)	Lower Terrace	
	# of Geogrid Layers	Geogrid Length (ft)
2.0	1	2
3.0	1	3
4.0	2	3, 6

**Rockwood
Classic 6**

**Lemay Concrete
Block Co.**

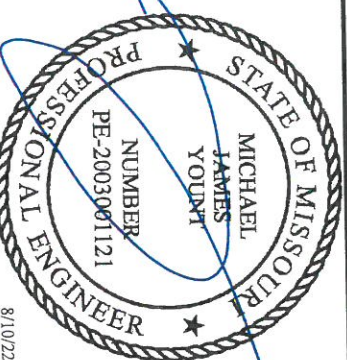
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Michael James Yount - Engineer
Mo# PE-2003001121
8/10/22

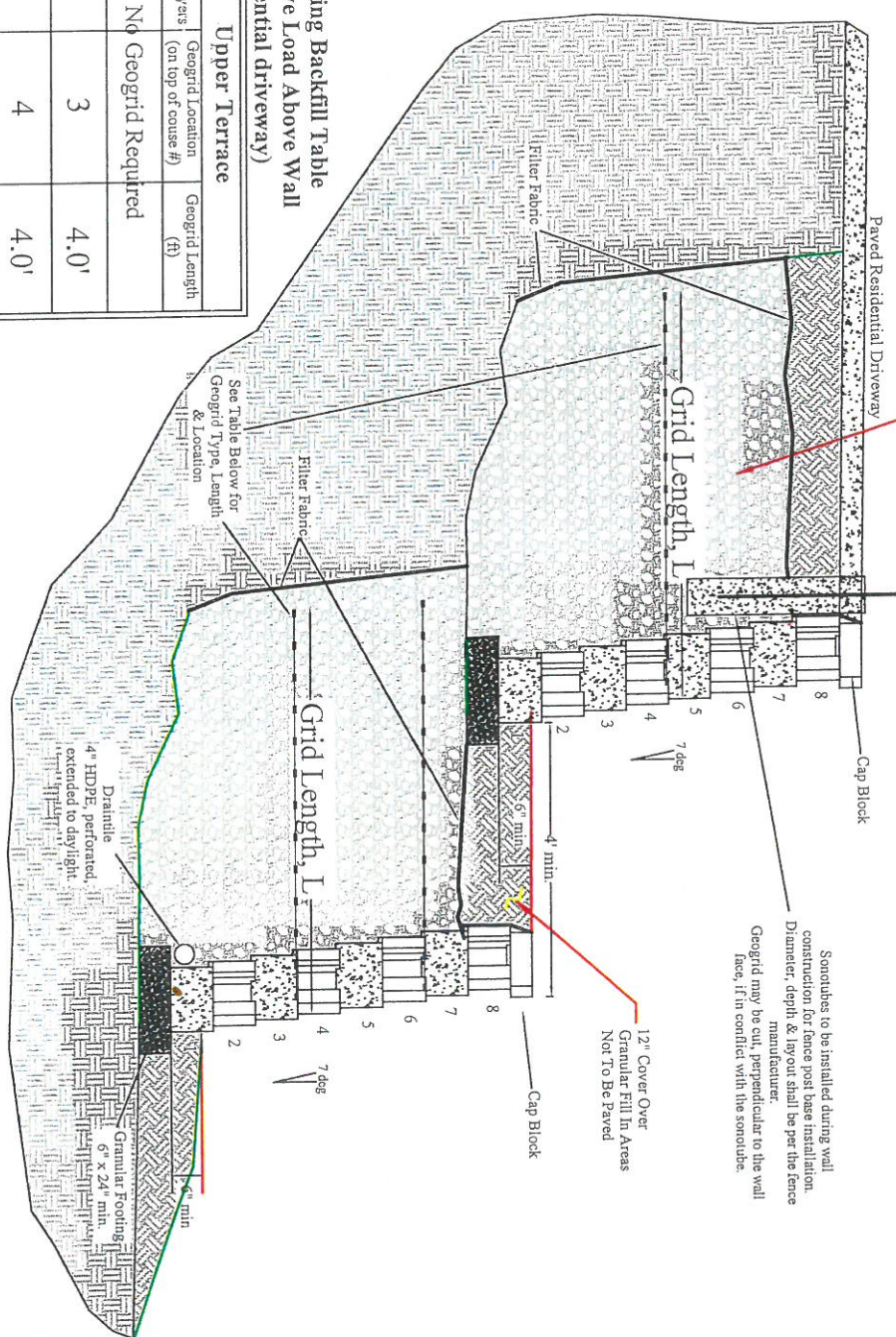
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Typical Cross Section
3:1 Backslope, No Surcharge

Sheet 12 of 13

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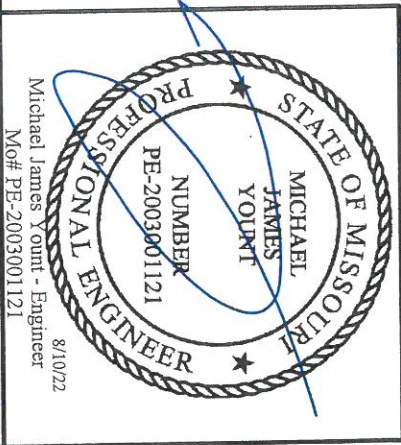
Reinforcing Backfill Table
 120 psf Live Load Above Wall
 (residential driveway)

Wall Height (feet) without cap)	Upper Terrace	
	# of Geogrid Layers (on top of course #)	Geogrid Length (ft)
2.0	No Geogrid Required	
3.0	1	3
4.0	1	4

Wall Height (feet) without cap)	Lower Terrace	
	# of Geogrid Layers (on top of course #)	Geogrid Length (ft)
2.0	1	1
3.0	1	2
4.0	2	3,6

Refer to Specifications Sheets 2-4 &
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Typical Cross Section
 Level Backslope, 120 psf Surcharge
 (Residential Driveway)

Sheet 13 of 13

KEEP THESE PLANS IN READABLE
CONDITION ON JOB SITE UNTIL FINAL
INSPECTION IS COMPLETE.

APPLICANT MUST CONTACT FIRE DISTRICT
FOR THEIR PERMIT REQUIREMENTS.
A SEPARATE SPECIAL USE PERMIT FROM HIGHWAYS &
TRAFFIC IS REQUIRED FOR ANY NEW ENTRANCE, MODIFIED
ENTRANCE, OR TEMPORARY CONSTRUCTION ENTRANCE ON
TO A COUNTY ROAD, AND FOR ANY ENCROACHMENT INTO
COUNTY RIGHT-OF-WAY

Plan Set #2

Building Address **41 S CENTRAL AVE**

Builder **MICHELLE DAVIDSON** Phone (314) -84-2-8200

BLDG _____ MECH _____

ELEC _____ PLMB _____

Conditions of Approval _____

Approved for Issuance (Signature Below) Date 8/16/22

Residential - Non-Habitable

Clayton

New Construction

0

LEMAY CONCRETE BLOCK

22BLD-05084