BRUCKER
ENGINEERING LIMITED
Since 1965

Geotechnical & Environmental Engineering
Soils, Concrete & Asphalt Testing

September 16, 2011

St. Louis County Department of Public Works
41 South Central
Clayton, MO 63105

Re: Gravity Stone Encore Master Plan
St. Louis County, Missouri

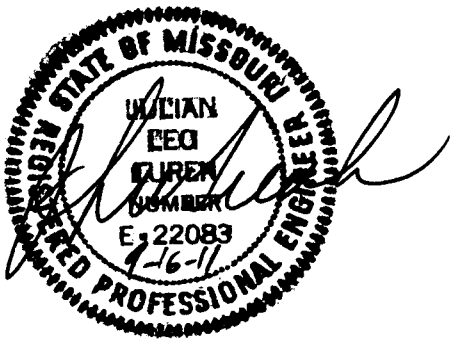
To Whom It May Concern:

Transmitted herewith is the master plan for the Gravity Stone Encore 6" and 8" blocks for review by St. Louis County. This plan is intended to provide a structural master plan.

This master plan has been prepared in accordance with the 2009 International Building Code. Specifically, this satisfies the sections regarding Soil Lateral Loads and Allowable Load-Bearing and Sliding Resistance Values of Soils in that the design soil parameters used in the calculations are based on specific minimum criteria to be field verified for each application. If the actual soil parameters are of a lesser strength than specified the master plan does not apply.

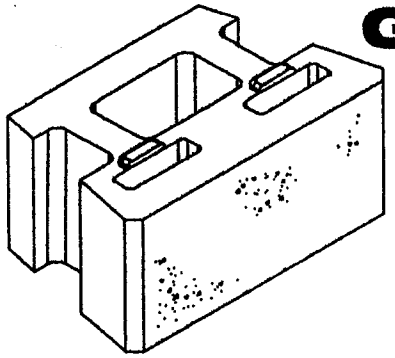
Please review and call with any questions.

Respectfully Submitted,
BRUCKER ENGINEERING, LTD.



J. Leo Turek, P.E.
President

dmf:FD/retaining walls/Gravity Stone Encore Master Plan/transletter



GRAVITY STONE ENCORE
RETAINING WALLS

St. Louis County Masterplan Construction Drawings

Index of Drawings:

This seal refers to this masterplan only and does not refer to any other plan or design relating to a specific project.

PREPARED BY:
BRUCKER ENGINEERING LIMITED
7265 DEVONSHIRE DRIVE
ST. LOUIS, MISSOURI 63119
PHONE: (314)781-0136
FAX: (314)781-0245

PREPARED FOR:
Lemay Concrete Block
7900 REILLY AVENUE
ST. LOUIS, MO 63111
PHONE: (314)638-9940 - FAX: (314)638-9619

TITLE AND INDEX

DATE: SEPT. 2011

DRAWN BY: DRC
APPROVED BY: JLT

NOTES:

General

This masterplan is for Gravity Stone Encore Retaining Walls at one or two family residential property only, to specify the structural requirements of single tier walls up to six feet exposed height and tiered walls up to eight feet exposed height, for the specific applications shown. Retaining walls that support a house or other structure or that apply a surcharge to a house or other structure, including a swimming pool, or retaining walls and walls in contact with water such as at lakes, rivers, or ponds, or any application outside of these specific design sections or soil parameters shown herein, are excluded. The user of this masterplan is responsible for confirming its applicability. Retaining wall projects not covered by this masterplan should be individually engineered. This plan is to be used in its entirity.

Existing utilities shall be field located. The contractor shall protect all utilities, and shall be responsible for all job site worker and public safety during the work. Contractor shall be responsible for compliance with OSHA regulations. Planting and erosion control shall be per owner's direction under separate plan. All installation shall be per the material manufacturer's construction recommendations, and as noted herein.

Site plan

All walls requiring a St. Louis County permit should include a site plan drawn to scale showing the location of the wall relative to the property lines, any easements, and existing or proposed structures. The site plan should show the elevations of top of wall and bottom of wall relative to an on-site benchmark. The site plan should show the ground surface inclinations above and below the wall for a lateral distance of at least 25 feet in front of the wall and behind the wall. Slope inclination shall be specified in percent, degrees, or ratio of horizontal units per unit vertical. The site plan shall clearly define management of surface water drainage. The site plan shall be confirmed to be in accordance with all applicable zoning regulations and/or setback requirements prior to construction.

Drainage

A drainage design is not part of this masterplan. However, drainage is an important component of the complete wall design. When feasible, it is recommended that surface water be diverted to not drain over the top of the wall, but rather that a swale or drainage inlets and piping be used to intercept and divert surface water. Any drain piping should be watertight piping to an acceptable outfall below the wall and should not be connected to perforated pipes used for internal wall drainage. Where water is directed over the top of the wall, the user should expect some periodic maintenance of the soil cap being required. If water is allowed to pond above the wall, or is forced to infiltrate through the wall, damages can occur.

Guard Rails

Guard rails shall be installed for safety and as required per code in accordance with Westblock Systems specifications. Wind loaded fences or vehicular guard rails can affect the retaining wall structure and should be designed by a qualified engineer.

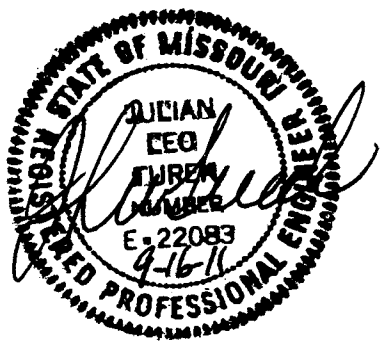
Materials

Leveling pad shall be one-inch minus, crushed limestone, compacted to at least 90 percent of the material's maximum dry density as determined by the Modified Proctor Compaction Test or ASTM D 1557-78.

Retaining wall units shall be only Gravity Stone Encore 8" or 6" units with concrete alignment nubs as manufactured by Lemay Concrete Block. The units must provide an infilled unit weight of at least 120 pounds per cubic foot (pcf). Concrete wall units shall meet the requirements of ASTM C 145-85. Concrete compressive strength shall be 3,000 pounds per square inch (psi) or greater. The maximum water absorption shall be limited to 6.0 percent. The concrete shall have adequate freeze-thaw resistance in accordance with ASTM C 666-90.

Reinforced Wall Backfill shall be 1" clean crushed limestone, mechanically tamped in 6"-8" layers, or low plastic soil (liquid limit less than 50%) compacted to at least 90% of the maximum dry density as determined by the Modified Proctor, as shown on the design sections. Clean rock backfill is preferred as compaction of soil can be difficult depending on soil moisture content. At tiered walls, clean rock backfill is required.

Additional backfill to be retained shall consist of low plastic soil compacted to at least 90% modified proctor and placed on ground stripped of any vegetation, and benched where the existing grade slopes steeper than 25%.



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Materials (cont.)

Geogrid shall be polyester based with a minimum ultimate tensile strength (machine direction) of 1500 lbs/ft confirmed by testing. Geogrid testing shall be per acceptable industry practice as defined by the Natonal Concrete Masonry Association (NCMA). This includes Geostar Optima HP200, Carthage Mills GX-150, Miragrid 2XT, Stratagrid SG150, or stronger variations, or equivalent approved in writing by Brucker Engineering Ltd.

Filter fabric shall be 4 oz, non-woven, such as Carthage Mills FX40 or Mirafi 140N.

Soil Cap and **Backfill of Buried Wall Block** shall consist of low plasticity soil compacted at least 88 percent of the soil's maximum dry density per ASTM D 1557-78.

Block Infill and **Drainage Rock** shall be 1" clean crushed limestone.

Drain Pipe for internal drainage shall be perforated HDPE coil pipe.

Wall Foundation and Excavation

The wall site shall be excavated to three inches below the bottom geogrid layer for walls with clean rock backfill, or to the bottom grid layer for walls with soil backfill, and laterally to allow for the required length of geogrid plus any additional lay-back excavation for OSHA safety, and trenched to the base of the leveling pad. The exposed bearing material and retained materials shall be observed prior to placing leveling pad rock to confirm the soil parameters are as good or better than the soil parameters used for the masterplan design. The base of the excavation beneath the leveling pad and reinforced fill zone, and the retained soils, must consist of low plastic material with an internal angle of friction (Φ) of at least 28-degrees. The foundation soils shall be cohesive and have an allowable bearing capacity of at least 2,000 pounds per square foot. Undercut any unsuitable materials as directed by the engineer and backfill with engineered fill consisting of low plastic soil or dense well graded crushed limestone with fines, compacted to at least 90% modified Proctor, or modify design as directed by Brucker Engineering Ltd. Prior to installing the wall the excavation must be free of loose soil, under-compacted fill, free water, high plasticity clay with less than 50 percent rock content, or frozen material. If flowing water or seepage is encountered, contact the engineer before proceeding.

Uncompacted backfill in any utility trenches in the wall vicinity can affect wall stability and/or settlement performance. The contractor shall locate any utilities at or in the vicinity of the wall to determine if any utility backfill could affect the wall. See sewer and utility backfill section below.

Wall Construction

Provide a six-inch thick, 1-inch minus, crushed limestone leveling pad a minimum of 18 inches wide and centered beneath the base block, compacted to at least 90 percent of the material's maximum dry unit weight per ASTM D 1557-78. Starting at the lowest block course, place blocks on leveling pad and check that units do not "rock" or "wobble" on the leveling pad and have full bearing. Backfill exterior and interior of leveling pad trench up to exterior finish grade with compacted soil. Install geogrid where necessary and the next course in a running bond stack. Blocks shall be infilled and backfilled as each course is laid as specified by Westblock Systems. See Manufacturer's Manuals, www.Westblocksystems.com - for additional details.

The geogrids shall be cut to the lengths shown and placed in accordance with the tables shown on the design sections. The geogrid's maximum strength direction will be directed perpendicular to the length of the wall face (into the fill). There shall be at least 8" of geogrid between the block layers. Walls using reinforced clean rock shall have a minimum 3" layer of clean rock beneath the bottom geogrid layer. At walls using reinforced soil backfill, the excavated surface shall be filled , compacted, and leveled up to the top of block prior to placing the first geogrid layer. The geogrids must be kept taut and level, matching the elevation of the block joints where reinforcement is to be placed. Any slack in the geogrid shall be removed prior to placing backfill. All geogrid installation details shall be in accordance with the geogrid manufacturer's specifications. Refer to manufacturer's literature for additional details.

All backfill shall be properly and thoroughly compacted per the above listed material specifications. Only hand-operated equipment, weighing less than 1,000 pounds shall be used within four feet of the concrete block. Any block pushed out by compaction should be removed and relaid.

Place and compact any additional backfill behind the reinforcement zone necessary to reach the proposed finish grade.

Filter fabric shall be placed between the soils and the clean drainage rock or reinforced rock backfill, and between the soil cap and the back of block, as shown to prevent migration of soil fines into open graded rock or block joints.

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GRAVITY STONE ENCORE
RETAINING WALLS
GRAVITY STONE ENCORE MASTERPLAN
ST. LOUIS COUNTY, MO

PREPARED BY:
BRUCKER ENGINEERING LIMITED
7266 DEVONSHIRE DRIVE
ST. LOUIS, MISSOURI 63119
PHONE: (314)781-0126
FAX: (314)781-0245

PREPARED FOR:
Lemay Concrete Block
7900 REILLY AVENUE
ST. LOUIS, MO 63111
PHONE: (314)638-9940 - FAX: (314)638-9619

SPECIFICATIONS (CONT.)

DATE: SEPT. 2011

DRAWN BY: DRC
APPROVED BY: JLT

NOTES:

Wall Construction (cont.)

Install drainage rock and soil caps as shown and specified herein. Finish grade for proper drainage per approved site plan.

Sewer and Utility Backfill

All sewer pipe and structure backfill and other utility trench backfill adjacent to the retaining wall, *i.e.*, within, below, in front of and behind the block and any reinforced fill, within a lateral distance of twice a given wall's total cumulative height, must be compacted to at least 90% of the maximum dry density as determined by the Modified Proctor Compaction Test or ASTM D 1557-78. Where utilities or drain pipes pass beneath the wall, the trench backfill should consist of compacted crushed limestone with fines, or as directed by Brucker Engineering Ltd.

Protection of Work

The surface of the wall backfill area shall be graded at the end of each day of work to provide positive surface drainage away from the wall. Grading shall include proper contouring of adjacent ground areas to prevent the flow of surface runoff toward the wall. Until the wall and finish grading is complete, the wall is at greater risk of storm water damage during construction.

The construction methods, and safety and stability of any temporary excavation are strictly the responsibility of the contractor.

Design Parameters

This design is based upon certain design parameters that should be field verified as part of the construction process. This verification is subject to standard limitations but should include both existing soils and new fill material. If any actual conditions are of lesser strength or quality than the design parameters the design may not function as intended. It should also be noted that if actual site conditions are of lesser strength or quality than the design parameters then remediation or redesign and additional expenses could be required to properly complete project. Pre-construction subsurface exploration and quality control monitoring during construction can reduce the risk of adverse conditions.

Field verification of design parameters should be performed by qualified personnel such as Brucker Engineering Ltd. or another Missouri registered professional engineer.

Brucker Engineering, Ltd. is available to confirm that the wall construction is done in accordance with these specifications. Brucker Engineering, Ltd. can make the field observations provided these services are requested and authorized sufficiently prior to the wall construction.

No changes shall be made to these plans without the written approval of Brucker Engineering, Ltd.

MINIMUM FACTORS OF SAFETY CALCULATED

Reinforcement Pullout = 1.5
Reinforcement Rupture = 1.5
Sliding = 1.5
Overturning = 2.0
Bearing Capacity = 2.0

SOIL PROPERTIES	Cohesion (lbs/ft²)	Unit Weight (lbs/ft³)	Friction Angle
Foundation	50	120	28°
Retained	0	120	28°
Reinforced (Clean Rock) -or- Reinforced (Silty Clay)	0	100	34°
	0	120	28°

STATE OF MISSOURI
JULIAN LEO TURNER
NUMBER E-22083
9-16-11
REGISTERED PROFESSIONAL ENGINEER

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RETAINING WALLS
GRAVITY STONE ENCORE MASTERPLAN
ST. LOUIS COUNTY, MO

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BRUCKER ENGINEERING LIMITED
7266 DEVONSHIRE DRIVE
ST. LOUIS, MISSOURI 63119
PHONE: (314)781-0126
FAX: (314)781-0245

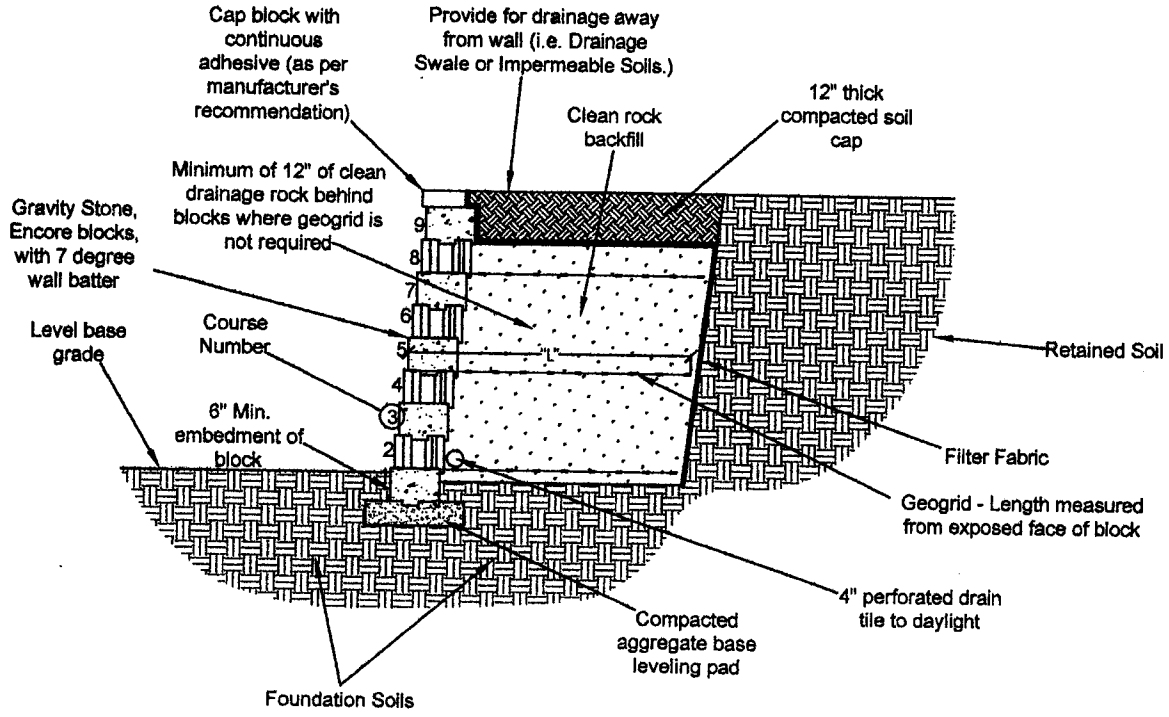
PREPARED FOR:
Lemay Concrete Block
7900 REILLY AVENUE
ST. LOUIS, MO 63111
PHONE: (314)638-9940 · FAX: (314)638-9619

SPECIFICATIONS (CONT.)

DATE: SEPT. 2011

DRAWN BY: DRC
APPROVED BY: JLT

NOTES:



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Geogrid Table - Level**, Clean Rock Backfill, No Surcharge

Refer to Specifications Sheets 2 through 4, and Construction Details Sheets 14 and 15 for additional requirements.

Exposed Wall Height (feet)	Encore 8"			Encore 6"		
	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)
2	No Geogrid Required			No Geogrid Required		
3	1	2.75	2	1	2.75	3
4	2	3.5	1, 4	2	3.5	1, 5
5	2	4.25	3, 6	2	4.25	4, 8
6	3	4.75	1, 4, 7	3	4.75	1, 5, 9

**Note: Level = Min. 2% slope for drainage to a Max. 20% slope (5 min. horizontal : 1 vertical).

GRAVITY STONE ENCORE
RETAINING WALLS
GRAVITY STONE ENCORE MASTERPLAN
ST. LOUIS COUNTY, MO

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BRUCKER ENGINEERING LIMITED Since 1988
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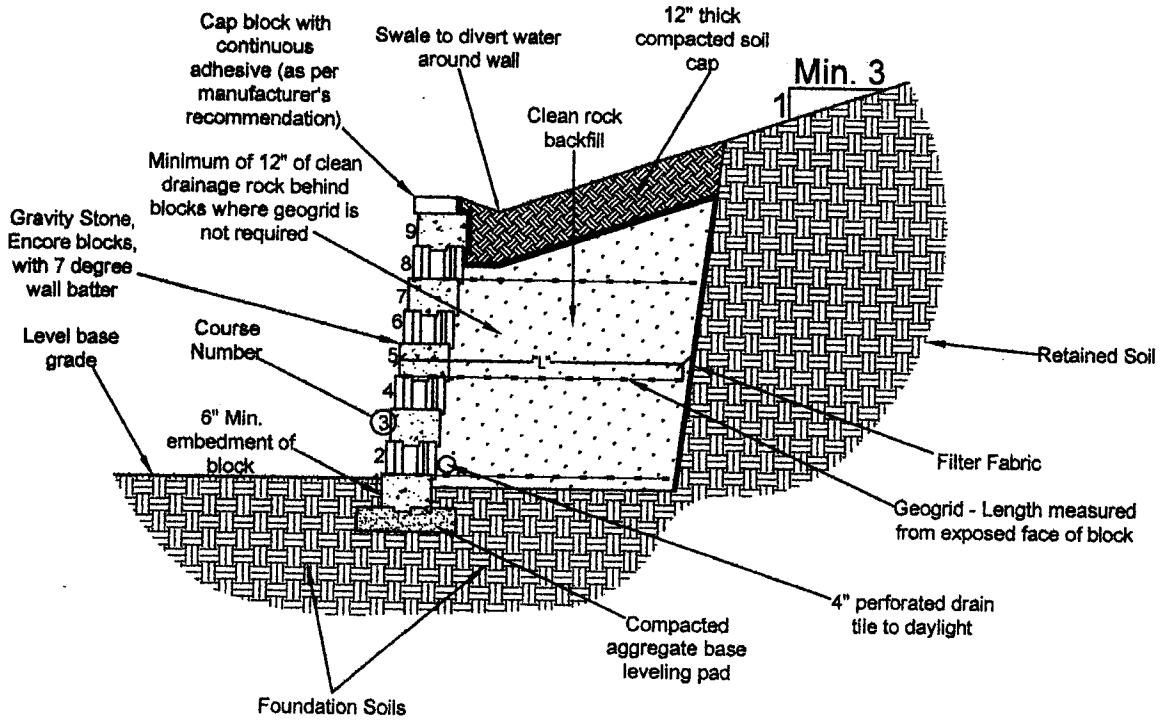
ST. LOUIS, MISSOURI 63119
PHONE: (314)781-0126
FAX: (314)781-0245

PREPARED FOR:
Lemay Concrete Block
7900 REILLY AVENUE
ST. LOUIS, MO 63111
PHONE: (314)638-9940 · FAX: (314)638-9619

TYPICAL CROSS SECTION
LEVEL, CLEAN ROCK BACKFILL, NO SURCHARGE

DATE: SEPT. 2011
DRAWN BY: DRC
APPROVED BY: JLT

NOTES:



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Geogrid Table - 3:1 Slope, Clean Rock Backfill, No Surcharge

Refer to Specifications Sheets 2 through 4, and Construction Details Sheets 14 and 15 for additional requirements.

Exposed Wall Height (feet)	Encore 8"			Encore 6"		
	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)
1	No Geogrid Required			No Geogrid Required		
2	1	3.0	2	1	3.0	3
3	1	3.0	2	1	3.0	3
4	2	4.0	1, 4	2	4.0	1, 5
5	2	4.75	3, 6	3	4.75	4, 8
6	3	5.25	1, 4, 7	3	5.25	1, 5, 9

GRAVITY STONE ENCORE
RETAINING WALLS
GRAVITY STONE ENCORE MASTERPLAN
ST. LOUIS COUNTY, MO

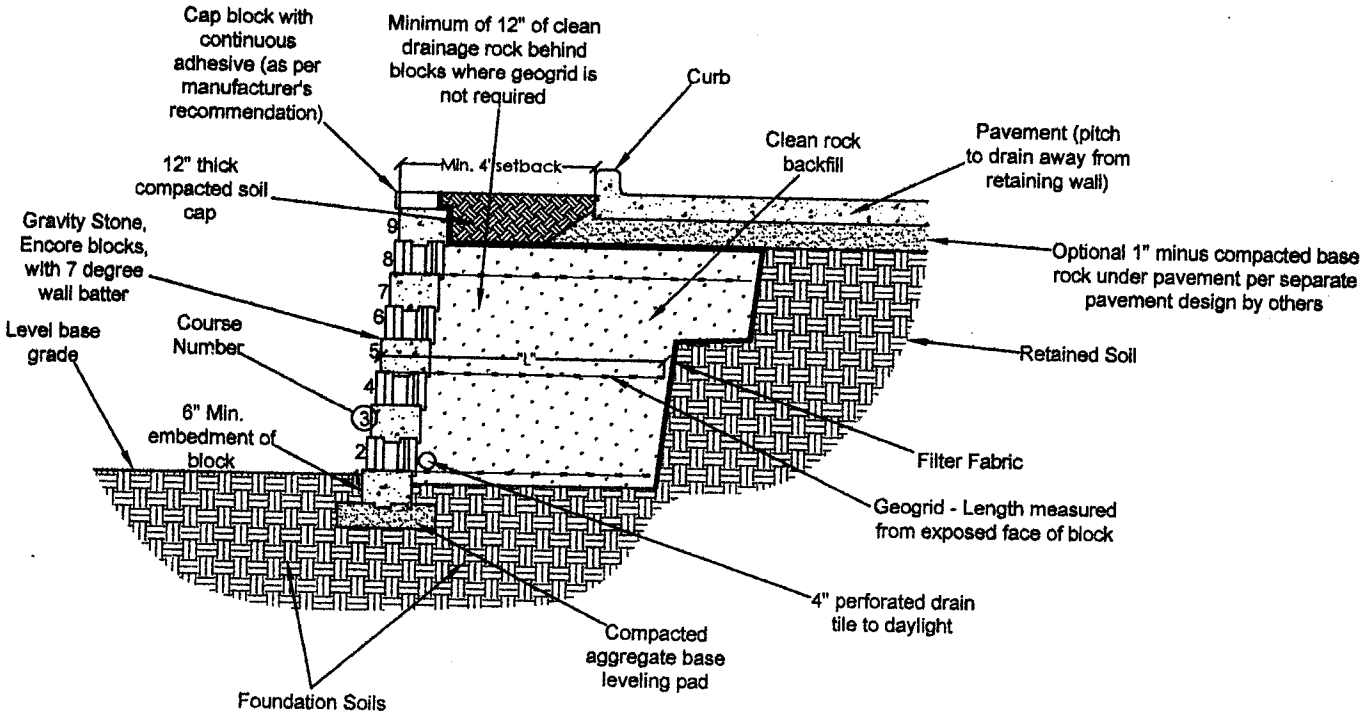
PREPARED BY:
BRUCKER ENGINEERING LIMITED Since 1946
7266 Devonshire Drive
St. Louis, Missouri 63119
Phone: (314)781-0126
Fax: (314)781-0245

PREPARED FOR:
Lemay Concrete Block
7900 Reilly Avenue
St. Louis, MO 63111
Phone: (314)638-9940 - Fax: (314)638-9619

TYPICAL CROSS SECTION
3:1 SLOPE, CLEAN ROCK BACKFILL, NO SURCHARGE

DATE: SEPT. 2011
DRAWN BY: DRC
APPROVED BY: JLT

NOTES:



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Geogrid Table - Level**, Clean Rock Backfill, 200 psf Live Load Surcharge

Refer to Specifications Sheets 2 through 4, and Construction Details Sheets 14 and 15 for additional requirements.

Exposed Wall Height (feet)	Encore 8"			Encore 6"		
	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)
2	No Geogrid Required			No Geogrid Required		
3	2	3.0	1, 3	2	3.0	1, 3
4	2	3.0 (4.5)*	1, 4	2	3.0 (4.5)*	1, 5
5	2	4.0 (5.0)*	3, 6	2	4.0 (5.0)*	4, 8
6	3	4.0 (5.5)*	1, 4, 7	3	4.0 (5.5)*	1, 5, 9

*Note: Geogrid length for top geogrid layer shown in ().

**Note: Level = Min. 2% slope for drainage to a Max. 20% slope (5 min. horizontal : 1 vertical).

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RETAINING WALLS
GRAVITY STONE ENCORE MASTERPLAN
ST. LOUIS COUNTY, MO

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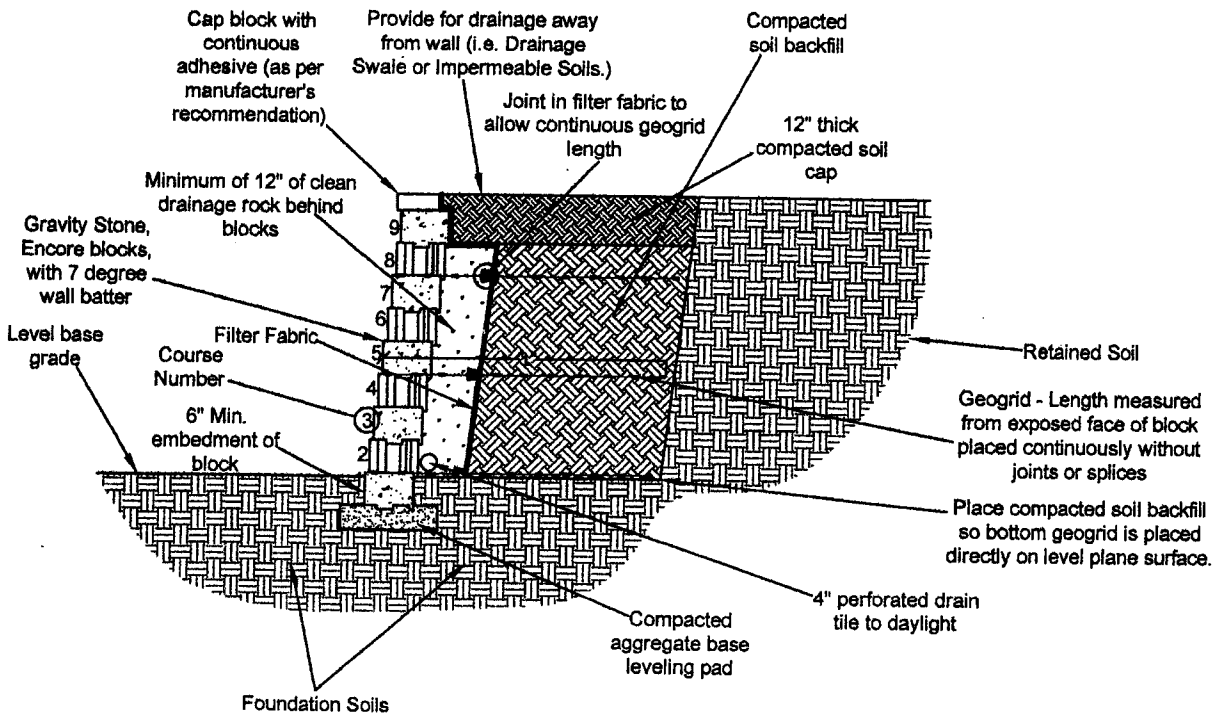
BRUCKER ENGINEERING LIMITED
7266 DEVONSHIRE DRIVE
ST. LOUIS, MISSOURI 63119
PHONE: (314)781-0126
FAX: (314)781-0245

PREPARED FOR:
Lemay Concrete Block
7900 REILLY AVENUE
ST. LOUIS, MO 63111
PHONE: (314)638-9940 - FAX: (314)638-9619

TYPICAL CROSS SECTION
LEVEL, CLEAN ROCK BACKFILL,
200 PSF LIVE LOAD SURCHARGE

DATE: SEPT. 2011
DRAWN BY: DRD
APPROVED BY: JLT

NOTES:



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Geogrid Table - Level**, Soil Backfill, No Surcharge

Refer to Specifications Sheets 2 through 4, and Construction Details Sheets 14 and 15 for additional requirements.

Exposed Wall Height (feet)	Encore 8"			Encore 6"		
	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)
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4	2	4.0	1, 4	2	4.0	1, 5
5	2	4.75	3, 6	2	4.75	4, 8
6	3	5.25	1, 4, 7	3	5.25	1, 5, 9

**Note: Level = Min. 2% slope for drainage to a Max. 20% slope (5 min. horizontal : 1 vertical).

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RETAINING WALLS
GRAVITY STONE ENCORE MASTERPLAN
ST. LOUIS COUNTY, MO

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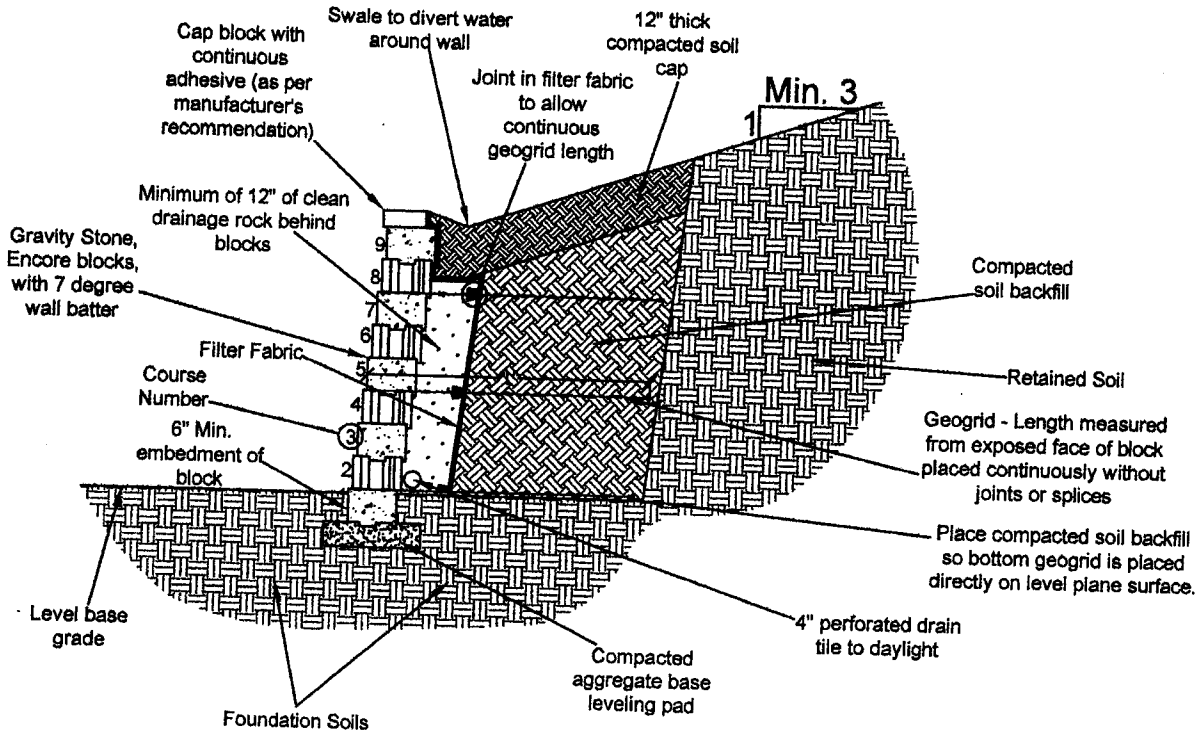
BRUCKER ENGINEERING LIMITED
7366 DEVONSHIRE DRIVE
ST. LOUIS, MISSOURI 63119
PHONE: (314)781-0126
FAX: (314)781-0245

PREPARED FOR:
Lemay Concrete Block
7900 REILLY AVENUE
ST. LOUIS, MO 63111
PHONE: (314)638-9940 - FAX: (314)638-9619

TYPICAL CROSS SECTION
LEVEL, SOIL BACKFILL, NO SURCHARGE

DATE: SEPT. 2011
DRAWN BY: DRC
APPROVED BY: JLT

NOTES:



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Geogrid Table - 3:1 Slope, Soil Backfill, No Surcharge

Refer to Specifications Sheets 2 through 4, and Construction Details Sheets 14 and 15 for additional requirements.

Exposed Wall Height (feet)	Encore 8"			Encore 6"		
	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)
1	No Geogrid Required			No Geogrid Required		
2	1	3.5	2	2	3.5	3
3	1	4.0	2	2	4.0	3
4	2	4.5	1, 4	2	4.5	1, 5
5	2	5.5	3, 6	3	5.5	4, 8
6	3	6.0	1, 4, 7	3	6.0	1, 5, 9

GRAVITY STONE ENCORE
RETAINING WALLS
GRAVITY STONE ENCORE MASTERPLAN
ST. LOUIS COUNTY, MO

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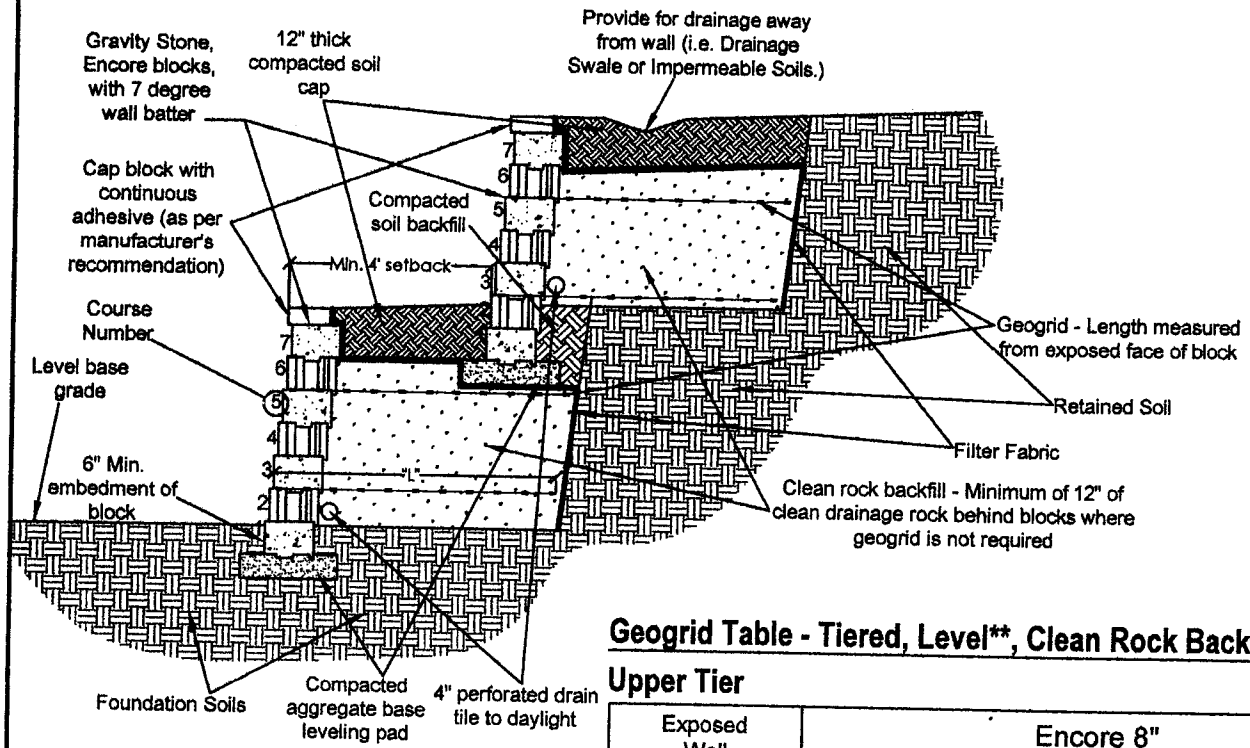
BRUCKER ENGINEERING LIMITED Since 1986
7265 Devonshire Drive
St. Louis, Missouri 63119
Phone: (314)781-0126
Fax: (314)781-0345

PREPARED FOR:
Lemay Concrete Block
7900 Reilly Avenue
St. Louis, MO 63111
Phone: (314)638-9940 - Fax: (314)638-9619

TYPICAL CROSS SECTION
3:1 SLOPE, SOIL BACKFILL, NO SURCHARGE

DATE: SEPT. 2011
DRAWN BY: ORD
APPROVED BY: JLT

NOTES:



Geogrid Table - Tiered, Level**, Clean Rock Backfill, No Surcharge

Refer to Specifications Sheets 2 through 4, and Construction Details Sheets 14 and 15 for additional requirements.

Upper Tier

Exposed Wall Height (feet)	Encore 8"			Encore 6"		
	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)
2	No Geogrid Required			No Geogrid Required		
3	1	2.75	2	1	2.75	3
4	2	3.5	1, 4	2	3.5	1, 5

Lower Tier

Exposed Wall Height (feet)	Encore 8"			Encore 6"		
	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)
2	No Geogrid Required			No Geogrid Required		
3	1	5.0	3	1	5.0	4
4	2	6.0	2, 4	2	6.0	3, 6

Note: Maximum exposed height of upper tier shall be less than or equal to maximum exposed height of lower tier.

**Note: Level = Min. 2% slope for drainage to a Max. 20% slope (5 min. horizontal : 1 vertical).

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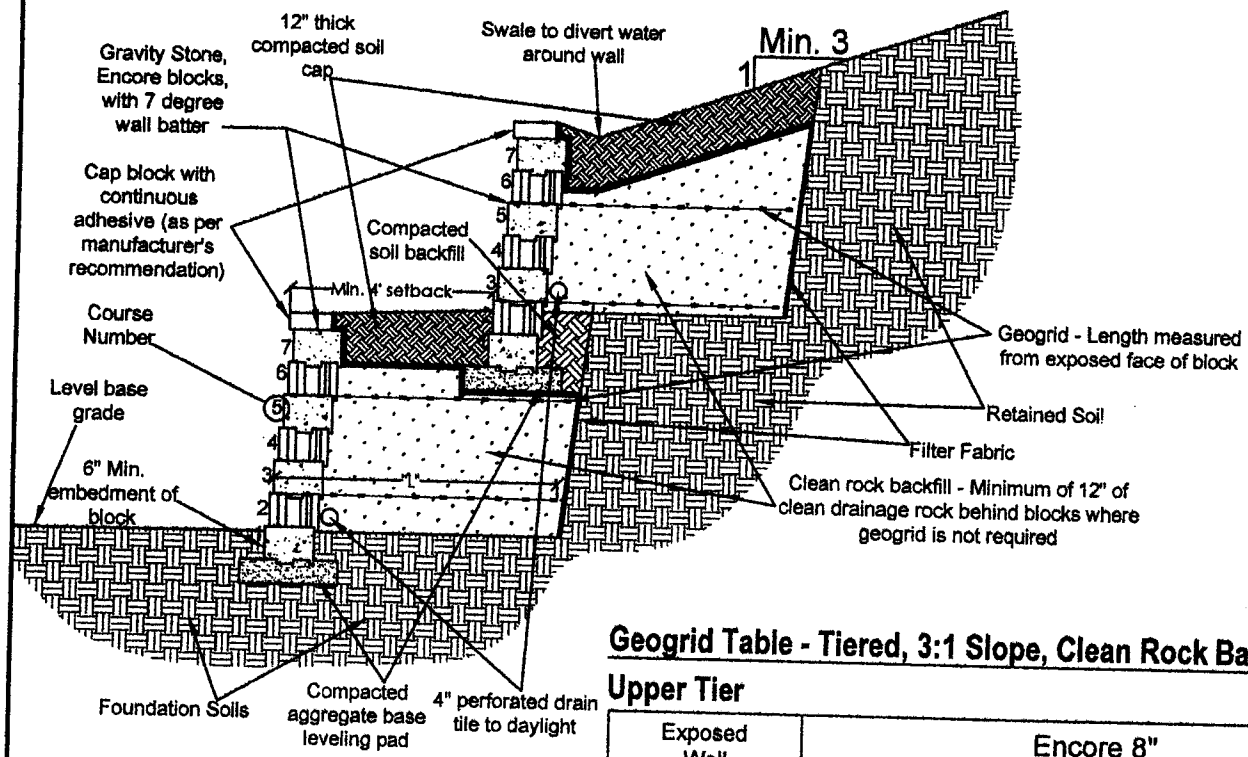
PHONE: (314)638-9940 · FAX: (314)638-9619

TYPICAL CROSS SECTION
TIERED, LEVEL, CLEAN ROCK BACKFILL, NO SURCHARGE

DATE: SEPT. 2011

DRAWN BY: DRC
APPROVED BY: JLT

NOTES:



Geogrid Table - Tiered, 3:1 Slope, Clean Rock Backfill, No Surcharge

Refer to Specifications Sheets 2 through 4, and Construction Details Sheets 14 and 15 for additional requirements.

Upper Tier

Exposed Wall Height (feet)	Encore 8"			Encore 6"		
	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)
2	No Geogrid Required			No Geogrid Required		
3	1	3.0	2	1	3.0	3
4	1	3.0	2	1	3.0	3

Lower Tier

Exposed Wall Height (feet)	Encore 8"			Encore 6"		
	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)
2	No Geogrid Required			No Geogrid Required		
3	1	5.0	3	1	5.0	4
4	2	6.0	2, 4	2	6.0	3, 6

Note: Maximum exposed height of upper tier shall be less than or equal to maximum exposed height of lower tier.

STATE OF MISSOURI
JULIAN LEE TURNER
NUMBER E-22083
REGISTERED PROFESSIONAL ENGINEER

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GRAVITY STONE ENCORE
RETAINING WALLS
GRAVITY STONE ENCORE MASTERPLAN
ST. LOUIS COUNTY, MO

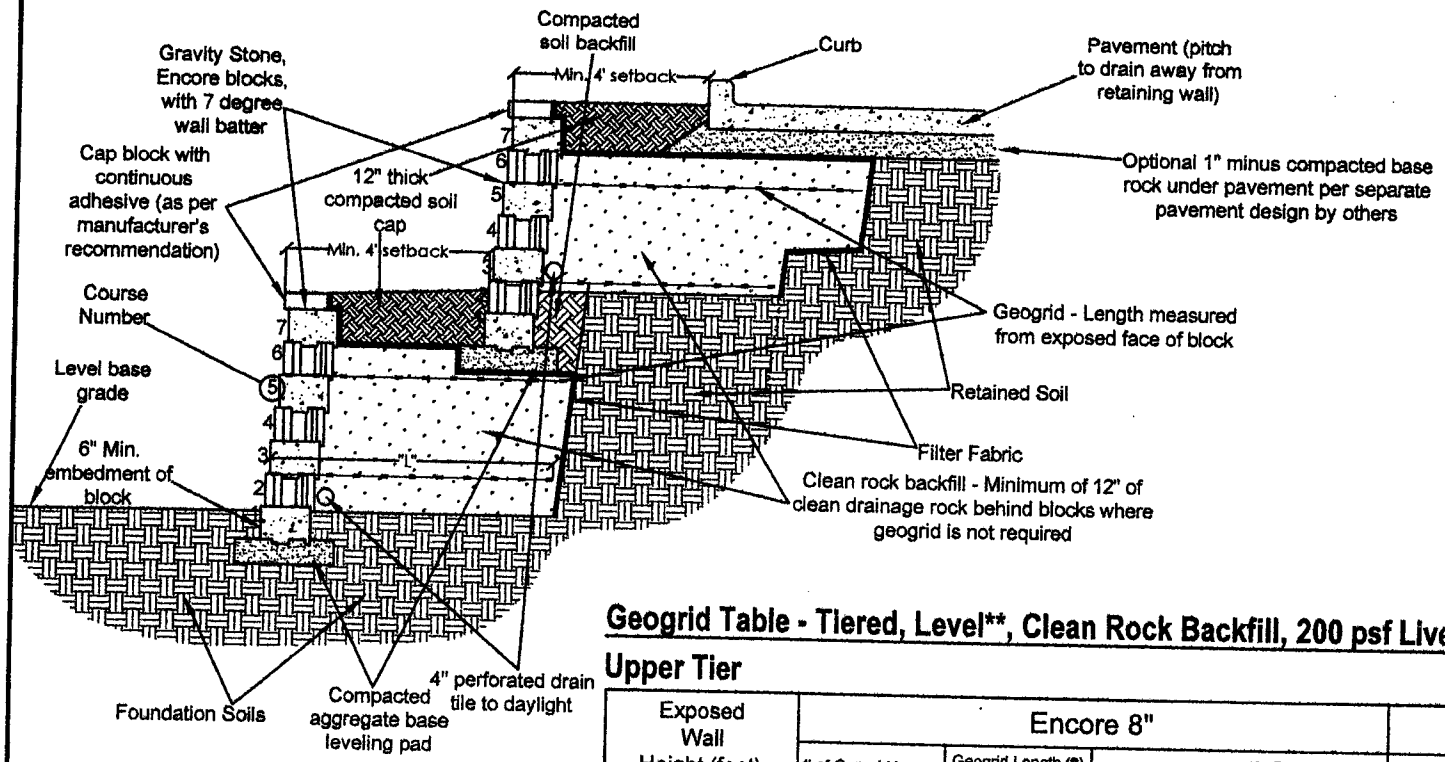
PREPARED BY:
BRUCKER ENGINEERING LIMITED
7266 DEVONSHIRE DRIVE
ST. LOUIS, MISSOURI 63119
PHONE: (314)781-0126
FAX: (314)781-0245

PREPARED FOR:
LEMAY CONCRETE BLOCK
7900 REILLY AVENUE
ST. LOUIS, MO 63111
PHONE: (314)638-9940 - FAX: (314)638-9619

TYPICAL CROSS SECTION
TIERED, 3:1 SLOPE, CLEAN ROCK BACKFILL, NO SURCHARGE

DATE: SEPT. 2011
DRAWN BY: DRC
APPROVED BY: JLT

NOTES:



Geogrid Table - Tiered, Level**, Clean Rock Backfill, 200 psf Live Load Surcharge

Refer to Specifications Sheets 2 through 4, and Construction Details Sheets 14 and 15 for additional requirements.

Upper Tier

Exposed Wall Height (feet)	Encore 8"			Encore 6"		
	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)
2	No Geogrid Required			No Geogrid Required		
3	2	3.0	1, 3	2	3.0	1, 3
4	2	3.0 (4.5)*	1, 4	2	3.0 (4.5)*	1, 5

Lower Tier

Exposed Wall Height (feet)	Encore 8"			Encore 6"		
	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)	# of Geogrid Layers	Geogrid Length (ft) "L"	Geogrid Location (On Top of Course Numbers Shown Below)
2	No Geogrid Required			No Geogrid Required		
3	1	5.0	3	1	5.0	4
4	2	6.0	2, 4	2	6.0	3, 6

Note: Maximum exposed height of upper tier shall be less than or equal to maximum exposed height of lower tier.
*Note: Geogrid length for top geogrid layer shown in ().
**Note: Level = Min. 2% slope for drainage to a Max. 20% slope (5 min. horizontal : 1 vertical).

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RETAINING WALLS
GRAVITY STONE ENCORE MASTERPLAN
ST. LOUIS COUNTY, MO

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BRUCKER ENGINEERING LIMITED Since 1985
7966 DEVONSHIRE DRIVE
ST. LOUIS, MISSOURI 63119
PHONE: (314)781-0126
FAX: (314)781-0245

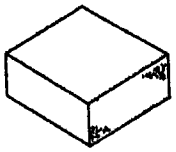
PREPARED FOR:
Lemay Concrete Block
7900 REILLY AVENUE
ST. LOUIS, MO 63111
PHONE: (314)638-9940 - FAX: (314)638-9619

TYPICAL CROSS SECTION
TIERED, LEVEL, CLEAN ROCK BACKFILL, 200 PSF LIVE LOAD SURCHARGE

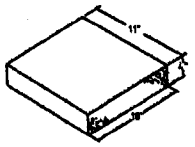
DATE: SEPT. 2011
DRAWN BY: DRC
APPROVED BY: JLT

NOTES:

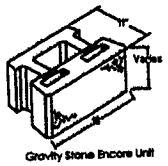
Typical Details



Gravity Stone Encore Corner



Gravity Stone Encore Cap



Gravity Stone Encore Unit

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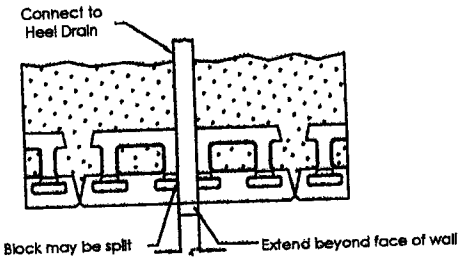
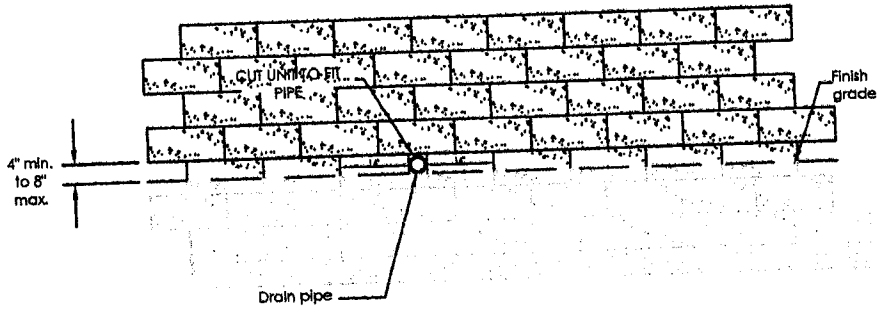
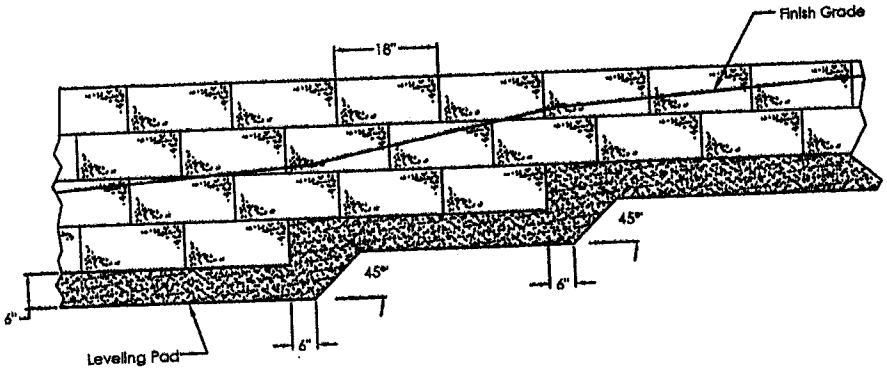
Drain Tile Outlet Through Wall





Note: Locate drain tile at lowest elevation above adjacent finish grade.

Leveling Pad Step Detail



Scale: None

GRAVITY STONE ENCORE
RETAINING WALLS
GRAVITY STONE ENCORE MASTERPLAN
ST. LOUIS COUNTY, MO

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ST. LOUIS, MO 63111
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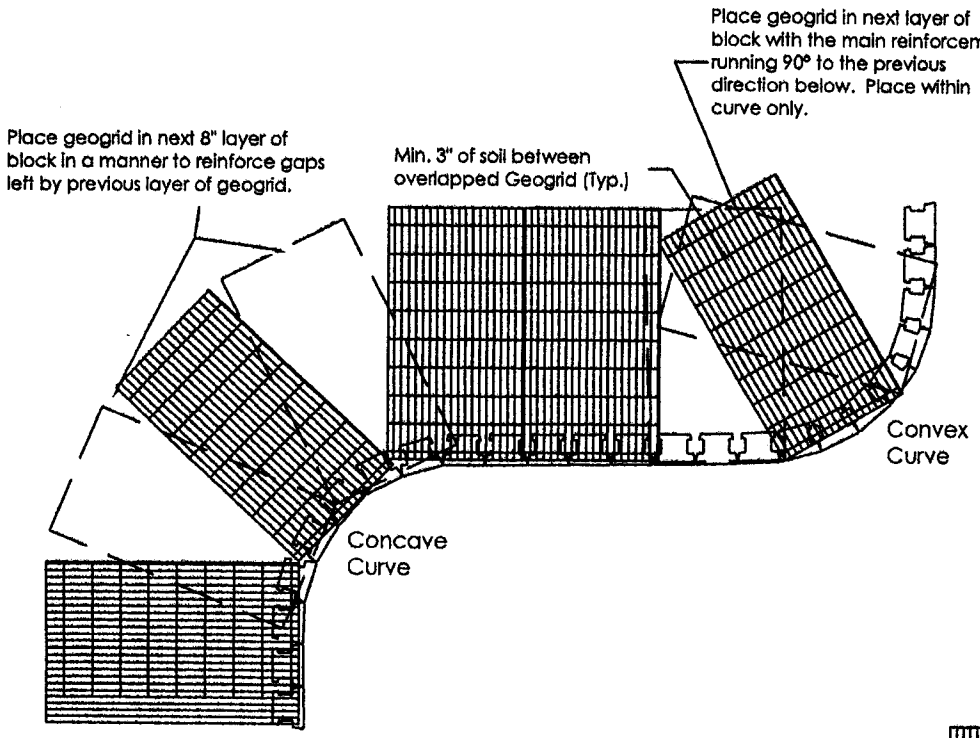
TYPICAL CONSTRUCTION DETAILS
TYPICAL BLOCK DIMENSIONS, DRAIN TILE OUTLET, AND STEPPING OF LEVELING PAD

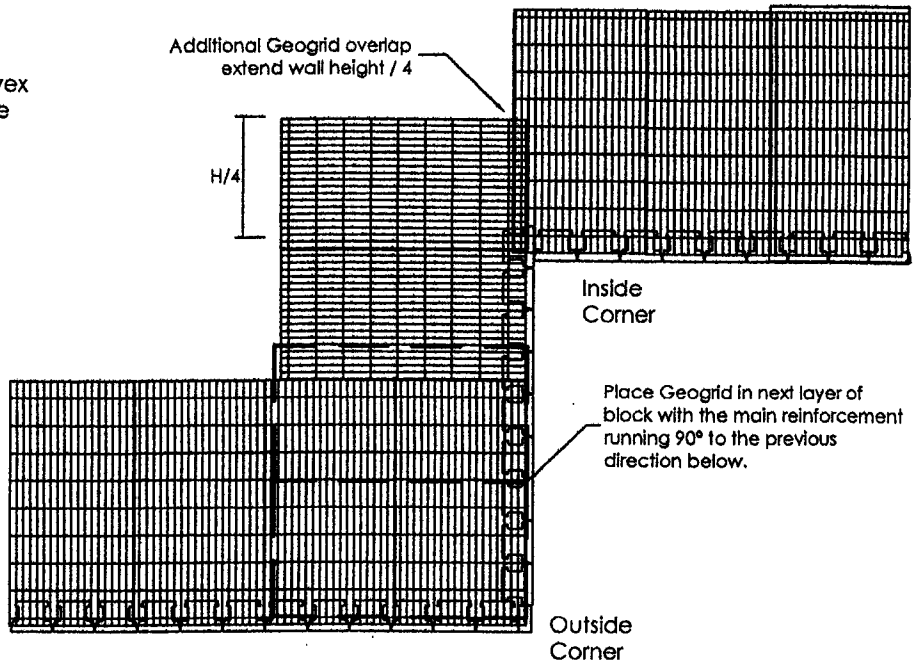
DATE: SEPT. 2011
DRAWN BY: DRD
APPROVED BY: JLT

NOTES:

Geogrid Details

GRAVITY STONE ENCORE





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TYPICAL CONSTRUCTION DETAILS
GEOGRID DETAILS

DATE: SEPT. 2011
DRAWN BY: DRC
APPROVED BY: JLT

NOTES: