SGI TESTING SERVICES
A Georgia Limited Liability Company

18 November 2022

Mr. David Agee
Geostone Retaining Wall Systems, Inc.
P.O. Box 325
Westover, AL 35185

Subject: Laboratory Test Results Transmittal
Block Shear Testing
Geostone G10 Blocks

Dear Mr. Agee,

SGI Testing Services, LLC (SGI) is pleased to present the attached test results for the above-mentioned testing program. The note section below addresses sample preparation, sample disposal and a disclosure statement.

SGI appreciates the opportunity to provide laboratory testing services to Geostone Retaining Wall Systems, Inc. Should you have any questions regarding the attached document(s), or if you require additional information, please do not hesitate to contact the undersigned.

Sincerely,

Zehong Yuan, Ph.D., P.E.
Laboratory Manager

Attachments

NOTES:
(1) Unless otherwise noted in the test results the sample(s)/specimen(s) were prepared in accordance with the applicable test standards or generally accepted sampling procedures.
(2) Materials that are not contaminated will be discarded after test specimens and archived specimens are obtained. Archived specimens will be discarded 30 days after the completion of the testing program, unless long-term storage arrangements are specifically made with SGI.
(3) The reported results apply only to the materials and test conditions used in the laboratory testing program. The results do not necessarily apply to other materials or test conditions. The test results should not be used in engineering analysis unless the test conditions model the anticipated field conditions. The testing was performed in accordance with general engineering testing standards and requirements. The reported results are submitted for the exclusive use of the client to whom they are addressed.

SGI22051.REPORT.2022.02

ATTACHMENT 1

GRAIN-SIZE CURVE OF AASHTO #57 STONE, AND SCHEMATIC DIAGRAMS OF BLOCK SHEAR TEST SETUP

SGI Testing Services, LLC

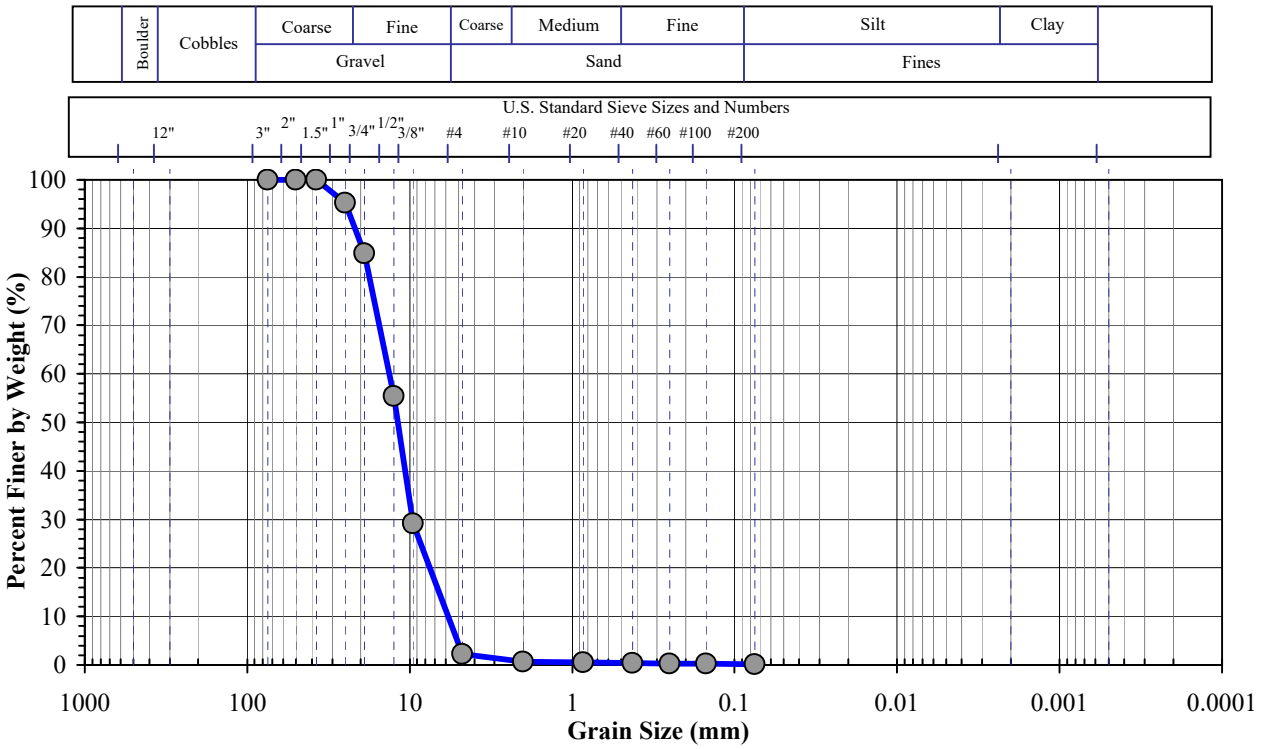
4405 International Blvd., Suite B-117, Norcross, GA 30093
Ph: (770) 931 8222 Fax: (770) 931 8240

Project Name:	SRW Testing
Project No:	SGI2022
Client Sample ID:	AASHTO #57 Stone
Lab Sample No:	SGIGP

ASTM D 421, D 422, D 4318

SOIL INDEX PROPERTIES

Moisture Content, Grain Size, Atterberg Limits, Classification

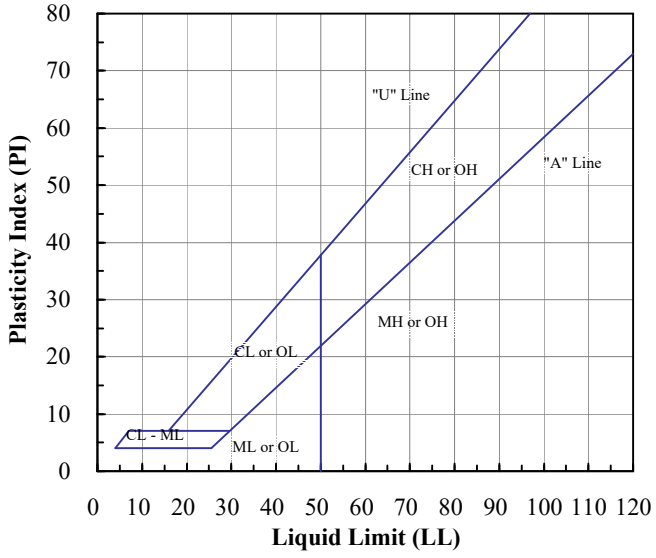


Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	95.2
3/4"	19	84.8
1/2"	12.5	55.4
3/8"	9.5	29.2
#4	4.75	2.3
#10	2.00	0.7
#20	0.850	0.5
#40	0.425	0.3
#60	0.250	0.3
#100	0.150	0.3
#200	0.075	0.1

Hydrometer Particle Diameter (mm)	% Finer
0.0500	
0.0200	
0.0050	
0.0020	
0.0012	

Gravel (%):	97.7
Sand (%):	2.2
Fines (%):	0.1
Silt (%):	0.1
Clay (%):	

Coeff. Unif. (Cu):	2.3
Coeff. Curv. (Cc):	1.2



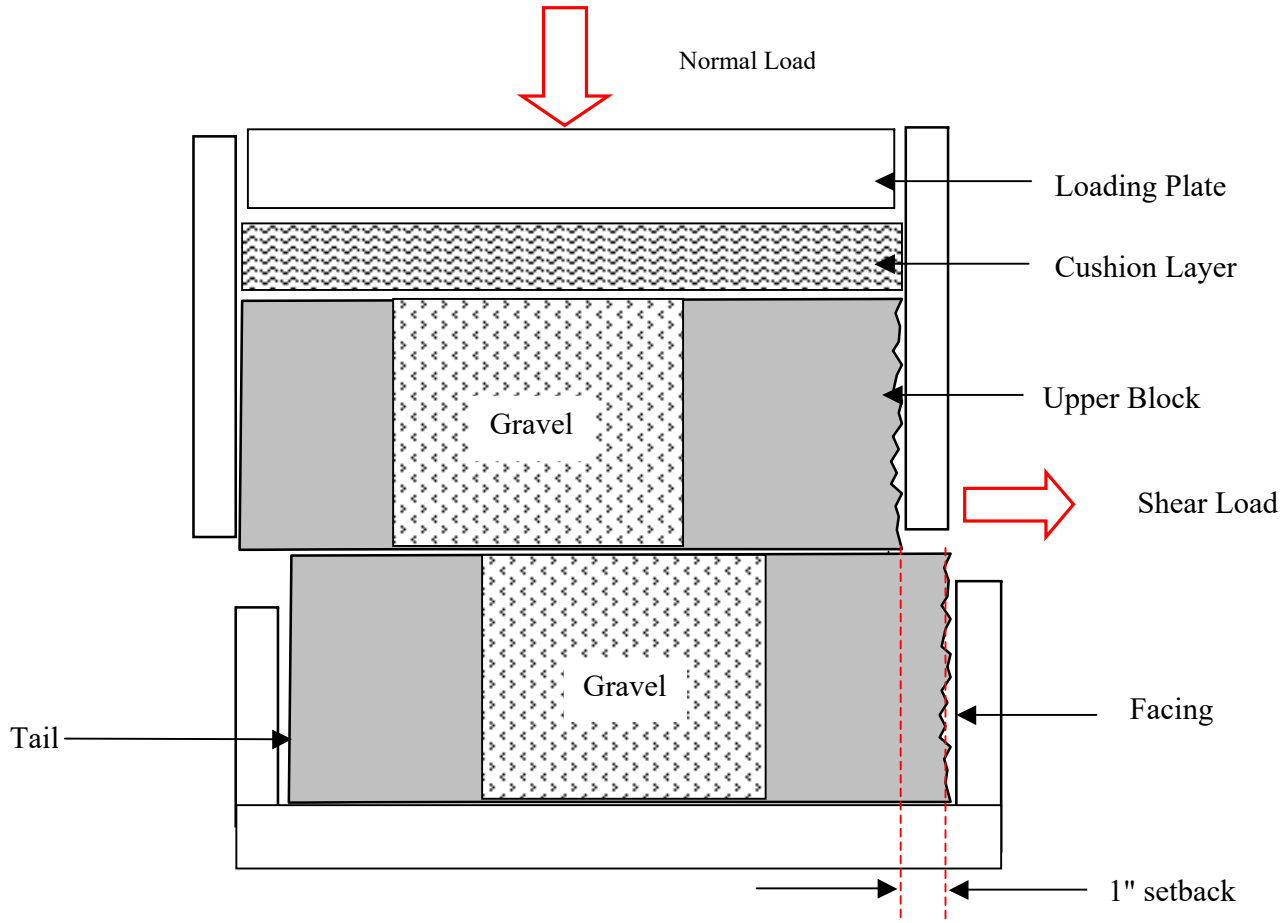
Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (%)	Atterberg Limits PL (%)	Atterberg Limits PI (-)	Engineering Classification
AASHTO #57 Stone		-	0.1	NP	NP	NP	GP (Poorly Graded Gravel)

Note(s):

SCHEMATIC DIAGRAM OF BLOCK/BLOCK SHEAR TEST - CROSS-SECTION

BLOCK TYPE: G10 Block

BLOCK SIZE: (17.625" Wide x 10" Deep x 8" High)



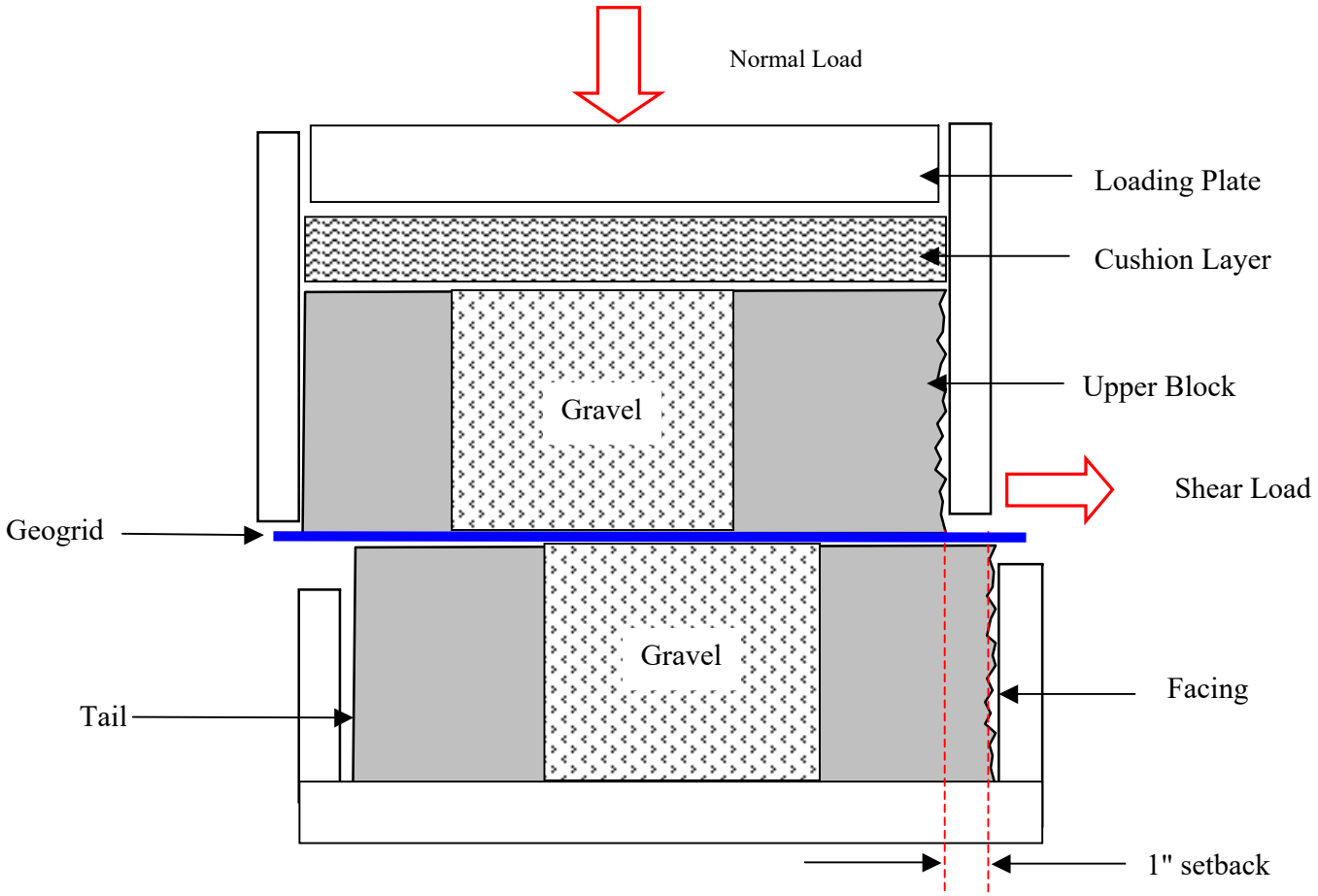
DATE REPORTED:	11/18/2022
FIGURE NO.	A-2
PROJECT NO.	SGI22051
DOCUMENT NO.	
FILE NO.	

SGI TESTING SERVICES, LLC

SCHEMATIC DIAGRAM OF BLOCK/GEOGRID/BLOCK SHEAR TEST - CROSS-SECTION

BLOCK TYPE: G10 Block

BLOCK SIZE: (17.625" Wide x 10" Deep x 8" High)



DATE REPORTED:	11/18/2022
FIGURE NO.	A-3
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FILE NO.	

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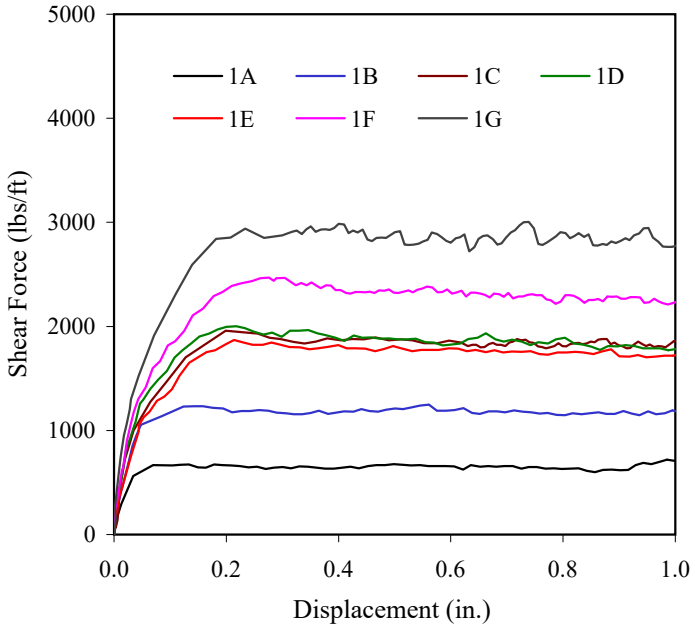
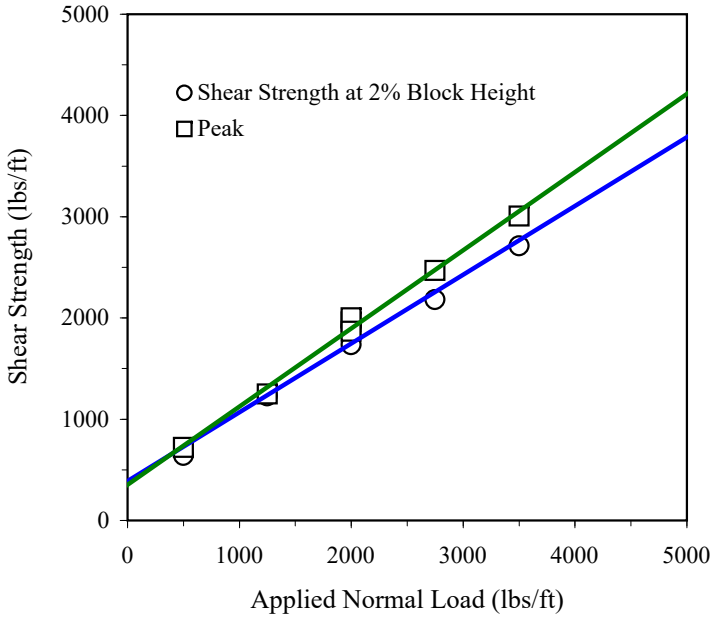
ATTACHMENT 2

SUMMARY OF BLOCK SHEAR TEST RESULTS

GEOSTONE RETAINING WALL SYSTEMS, INC.
BLOCK SHEAR TESTING (ASTM D 6916)

TEST SERIES NO. 1: Geostone G10 block against Geostone G10 blocks with 1" setback and compacted AASHTO #57 stone within block apertures and space between blocks





Test No.	Test Specimen Width (inch)	Test Normal Stress (psi)	Equivalent Normal Load (lb/ft)	Shear Load at 0.16" Displacement 2% x Block Height (lbs)	Peak Shear Load (lbs)	Shear Strength at 0.16" Displacement (2% x Block Height) (lb/ft)	Peak Shear Strength (lb/ft)	Shear Strength Equations Strength assumed to be linearly related to *N*
1A	17.6	4.2	500	944	1058	643	720	
1B	17.6	10.4	1250	1808	1835	1231	1250	$S_{0.16"}$ = 390 + (N) tan (34 °)
1C	17.6	16.7	2000	2672	2879	1819	1960	
1D	17.6	16.7	2000	2815	2938	1916	2001	S_{peak} = 350 + (N) tan (38 °)
1E	17.6	16.7	2000	2550	2744	1736	1868	
1F	17.6	22.9	2750	3204	3626	2181	2469	
1G	17.6	29.2	3500	3985	4413	2713	3005	

NOTES:

Dimensions of Block:	17.625" wide by 10" deep by 8" high.
Weight of Full-Size Block: .	55 lbs
Approximate Unit Weight of Facing (block & gravel):	120 pcf
Failure Mode:	Sliding of the upper block along lower blocks.

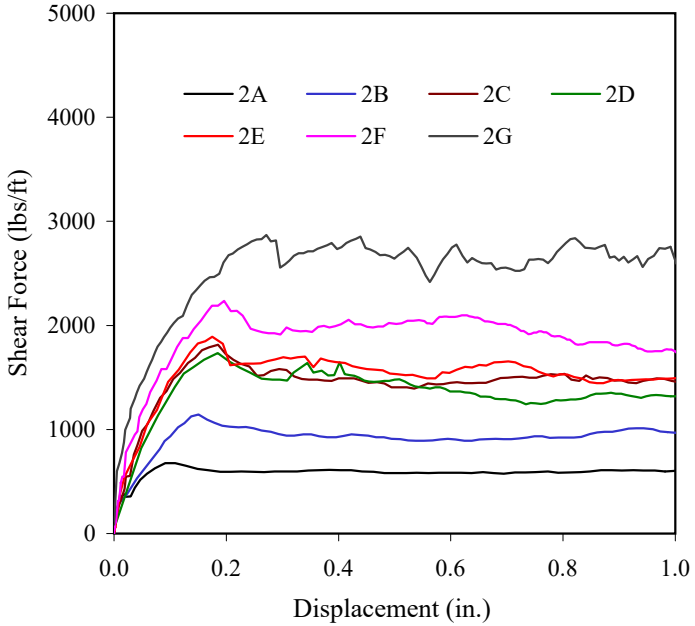
DATE REPORTED: 11/18/2022

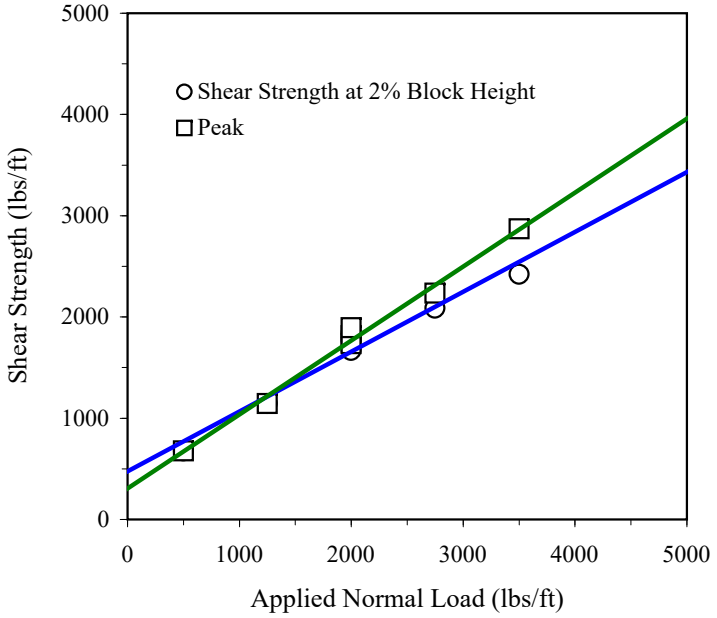
SGI TESTING SERVICES, LLC

FIGURE NO.	1
PROJECT NO.	SGI22051
DOCUMENT NO.	
FILE NO.	

GEOSTONE RETAINING WALL SYSTEMS, INC.
BLOCK SHEAR TESTING (ASTM D 6916)

TEST SERIES NO. 2: Geostone G10 block against Synteen SF80 geogrid #222-030-02-220 in MD against Geostone G10 blocks with 1" setback and compacted AASHTO #57 stone within block apertures and space between blocks





Test No.	Test Specimen Width (inch)	Test Normal Stress (psi)	Equivalent Normal Load (lb/ft)	Shear Load at 0.16" Displacement 2% x Block Height (lbs)	Peak Shear Load (lbs)	Shear Strength at 0.16" Displacement (2% x Block Height) (lb/ft)	Peak Shear Strength (lb/ft)	Shear Strength Equations Strength assumed to be linearly related to *N*
2A	17.6	4.2	500	1350	1350	675	675	
2B	17.6	10.4	1250	2288	2288	1144	1144	$S_{0.16"}$ = 475 + (N) tan (31 °)
2C	17.6	16.7	2000	2599	2666	1770	1815	
2D	17.6	16.7	2000	2450	2548	1668	1735	S_{peak} = 305 + (N) tan (36 °)
2E	17.6	16.7	2000	2708	2779	1844	1892	
2F	17.6	22.9	2750	3063	3283	2086	2235	
2G	17.6	29.2	3500	3555	4214	2420	2869	

NOTES:

Dimensions of Block:	17.625" wide by 10" deep by 8" high.
Weight of Full-Size Block: .	55 lbs
Approximate Unit Weight of Facing (block & gravel):	120 pcf
Failure Mode:	Sliding of the upper block along lower blocks.

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FIGURE NO.	2
PROJECT NO.	SGI22051
DOCUMENT NO.	
FILE NO.	