AMERICAN ENGINEERING TESTING, INC.

CONSULTANTS
- ENVIRONMENTAL
- GEOTECHNICAL
- MATERIALS
- FORENSICS

PROJECT:
MATERIAL CHECK

REPORTED TO:
REALSTONE SYSTEMS
560 KIRTS BOULEVARD
SUITE 120
TROY, MI 48084

ATTN: STEVE HODGES

AET PROJECT NO: 20-11101

DATE: November 1, 2012

Product Type: White Birch
Date Tested: 10/22/10 to 10/26/12

Conformance: The stone samples meet ASTM:C568-10 medium-density requirements for Limestone dimension stone.

Sample	A	B	C	D	E	Average	Requirements ASTM C568
Strength Properties: ASTM C170– WET CONDITION - PERPENDICULAR							
Compression Strength, psi:	9,920	10,780	10,860	12,350	9,500	10,680	4,000 Min
Strength Properties: ASTM C170 – DRY CONDITION – PERPENDICULAR							
Compression Strength, psi:	15,220	3,560	16,160	6,590		10,380	4,000 Min
Strength Properties: ASTM C170 – WET CONDITION - PARALLEL							
Compression Strength, psi:	15,170	10,810	5,890	17,270	12,030	12,230	4,000Min
Strength Properties: ASTM C170 – DRY CONDITION - PARALLEL							
Compression Strength, psi:	15,030	14,440	13,570	9,100	15,280	13,480	4,000 Min
Strength Properties: ASTM C99 & C880 – WET CONDITION -							
Modulus of Rupture, psi:	1,290 1,300	1,040 2,100	300 1,150	1,650 1,460	1,240 860	1,240	500 Min
Flexural Strength, psi:	1,100 120	1,110 890	790 900	1,070 1,130	1,040 1,100	930	
Strength Properties: ASTM C99 & C880 – DRY CONDITION							
Modulus of Rupture, psi:	1,270 2,240	2,300 1,990	1,250 2,250	2,410 2,440	1,720 2,610	2,050	500 Min
Flexural Strength, psi:	1,140 790	1,270 1,120	1,020 1,110	230 1,190	1,080 940	990	

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Sample	A	B	C	Average	Requirements ASTM C568
		Physical Properties: ASTM:C97			
Specific Gravity:	2.364	2.397	2.296	2.352	
Bulk Density, pcf:	147.5	149.6	143.2	146.8	135 Min
Absorption, %	5.5	5.0	6.6	5.7	7.5 Max

Remarks: The samples were destroyed during testing and discarded.

Report Prepared By:

John J. Haupt, PE
Staff Engineer II

Report Reviewed By:

John Amundson
Principal Engineer

AMERICAN ENGINEERING TESTING, INC.

CONSULTANTS
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REPORT OF FREEZE-THAW TESTING OF STONE

PROJECT:

FREEZE-THAW TESTING
WHITE BIRCH STONE

REPORTED TO:

REALSTONE SYSTEMS
560 KIRTS BOULEVARD
SUITE 120
TROY, MI 48084

ATTN: KURT FEIN

AET JOB NO: 29-01290

DATE: OCTOBER 11, 2013

INTRODUCTION

This report presents the results of testing performed on five stone units. Samples were submitted to our laboratory by you. The scope of our work consisted of performing freeze-thaw testing and reporting our results. Testing was conducted in accordance with ASTM C67 "Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile" and evaluated according to ASTM C 216 " Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)". Our work was authorized by you on June 14, 2013.

SAMPLE INFORMATION

American Engineering Testing, Inc. received 1 box of 5 samples of stone from Realstone Systems labeled as White Birch on June 19, 2013.

TESTING METHODS

The specimens were subjected to freeze-thaw cycling in accordance with ASTM C67.

1. The samples were placed in a pan with water at a depth of ½" and frozen for 20 hours. Next the samples were immersed in a thawing tank for 4 hours. This process is continued for 50 cycles or until the specimens develop a crack or appears to have lost more than 3% of its original weight by disintegration as judged by visual inspection.

2. Final weight loss percentages are calculated by dividing the oven dry weight of dislodged materials by the final oven dried sample weight, plus the total dislodged materials.

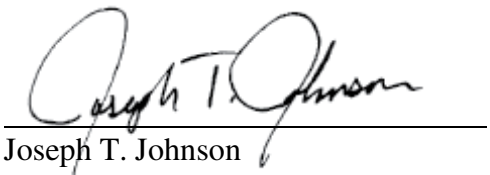
TEST RESULTS

WHITE BIRCH STONE			
Cycles	**Weight Loss %**	**Full Width Cracking**	**Rating**
1	0.0	No	See Remarks
2	0.0	No	See Remarks
3	0.0	No	See Remarks
4	0.0	No	See Remarks
5	0.0	No	See Remarks
Average	0.0		

REMARKS

The samples were tested to 50 freeze thaw cycles and found to meet the specifications of ASTM C216 "Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)" for SW facing material. This report represents specifically the samples tested. According to ASTM C216 section 6.1.3.1 No individual unit separates or disintegrates resulting in a weight loss greater than 0.5% of its original dry weight. Also section 6.1.3.2 No individual unit develops a crack that exceeds, in length, the units least dimension. If you have any questions, please feel free to call us.

Report Prepared By:
American Engineering Testing, Inc.



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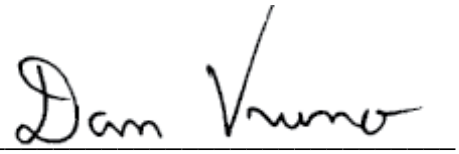
Report Reviewed By:
American Engineering Testing, Inc.



Daniel M. Vruno, P.E.
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AMERICAN ENGINEERING TESTING, INC.

CONSULTANTS
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REPORT OF STONE TESTING

PROJECT:
MATERIAL CHECK

REPORTED TO:
REALSTONE SYSTEMS
560 KIRTS BOULEVARD
SUITE 120
TROY, MI 48084

AET PROJECT NO: 20-11101

DATE: November 1, 2012

Product Type: Latte
Date Tested: 10/22/10 to 10/26/12

Conformance: The stone samples meet ASTM:C568-10 medium-density requirements for Limestone dimension stone.

Sample	A	B	C	D	E	Average	Requirements ASTM C568
Strength Properties: ASTM C170– WET CONDITION - PERPENDICULAR							
Compression Strength, psi:	3,110	6,870	8,490	6,720	9,540	6,950	4,000 Min
Strength Properties: ASTM C170 – DRY CONDITION – PERPENDICULAR							
Compression Strength, psi:	6,460	8,200	12,380	12,860	9310	9,840	4,000 Min
Strength Properties: ASTM C170 – WET CONDITION - PARALLEL							
Compression Strength, psi:	4,820	7,350	6,800	5,300	3,850	5,620	4,000 Min
Strength Properties: ASTM C170 – DRY CONDITION - PARALLEL							
Compression Strength, psi:	13,910	11,550	9,930	11,030	7,780	10,840	4,000 Min
Strength Properties: ASTM C99 & C880 – WET CONDITION -							
Modulus of Rupture, psi:	1,670 1,640	1,220 1,490	1,720 1,490	1,060 1,480	1,940 1,340	1,510	500 Min
Flexural Strength, psi:	1,560 1,460	1,840 1,270	1,380 1,390	200 1,230	1,160 1,730	1,320	
Strength Properties: ASTM C99 & C880 – DRY CONDITION							
Modulus of Rupture, psi:	1,430 1,230	1,030 1,380	1,350 870	1,550 1,020	1,270 1,650	1,280	500 Min
Flexural Strength, psi:	980 1,050	900 1,120	1,110 1,160	1,160 1,110	970 980	1,050	

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Physical Properties: ASTM:C97

Specific Gravity:	2.374	2.294	2.372	2.347	
Bulk Density, pcf:	148.1	143.2	148.0	146.4	135 Min
Absorption, %	2.26	4.23	2.60	3.03	7.5 Max

Remarks: The samples were destroyed during testing and discarded.

Report Prepared By:

John J. Haupt, PE
Staff Engineer II

Report Reviewed By:

John Amundson
Principal Engineer

AMERICAN ENGINEERING TESTING, INC.

CONSULTANTS
· ENVIRONMENTAL
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REPORT OF FREEZE-THAW TESTING OF STONE

PROJECT:

MATERIAL EVALUATION
LATTE-STONE UNITS

REPORTED TO:

REALSTONE SYSTEMS
560 KIRTS BLVD
SUITE 120
TROY, MI 48084

ATTN: STEVE HODGES

AET JOB NO: 20-11101

DATE: JANUARY 29, 2013

INTRODUCTION

This report presents the test results on five stone units. Samples were submitted and identified by you. The scope of our work consisted of conducting freeze-thaw testing in accordance with ASTM C67-12, "Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile" and evaluated according to ASTM C 216-12a "Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)." Our work was authorized by you on February 20, 2012.

SAMPLE INFORMATION

American Engineering Testing, Inc. received 5 stone samples identified as Latte #1 through #5 from Realstone Systems.

TESTING METHODS

The specimens were subjected to freeze-thaw cycling in accordance with ASTM C67, Section 9.

1. The samples were placed in a pan with water at a depth of ½" and frozen for 20 hours. Next the samples were immersed in a thawing tank for 4 hours. This process continued for 50 cycles or until the specimens develop a crack or appears to have lost more than 3% of its original weight by disintegration as judged by visual inspection.

2. Final weight loss percentages are calculated by dividing the oven dry weight of dislodged material by the final oven dried sample weight, plus the total dislodged material.

TEST RESULTS

Sample	Weight Loss %	Full Width Cracking	Rating
L1	0.005%	No	See Remarks
L2	0.010%	No	See Remarks
L3	0.004%	No	See Remarks
L4	0.007%	No	See Remarks
L5	0.005%	No	See Remarks
Average	0.006%		

REMARKS

The samples were tested for 50 freeze thaw cycles. The test results meet the specifications of ASTM C216-12a "Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)" for SW facing material. This report represents specifically the samples tested. The ASTM C216 requirements for freeze-thaw durability in section 6.1.3.1 state that no individual unit separates or disintegrates resulting in a weight loss greater than 0.5% of its original dry weight. Additionally, ASTM C216, Section 6.1.3.2 states that no individual unit develops a crack that exceeds, in length, the units least dimension. If you have any questions, please feel free to call us.

Report Prepared By:
American Engineering Testing, Inc.

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Report Reviewed By:
American Engineering Testing, Inc.

Daniel M. Vruno, P.E.
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AMERICAN ENGINEERING TESTING, INC.

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REPORT OF STONE TESTING

PROJECT:
MATERIAL CHECK

REPORTED TO:
REALSTONE SYSTEMS
560 KIRTS BOULEVARD
SUITE 120
TROY, MI 48084

AET PROJECT NO: 20-11101

DATE: November 1, 2012

Product Type: Mocha
Date Tested: 10/20/10 to 10/26/12

Conformance: The stone samples meet ASTM:C616-08 requirements for Quartzitic Sandstone dimension stone.

Sample	A	B	C	D	E	Average	Requirements ASTM C616
Strength Properties: ASTM C170– WET CONDITION - PERPENDICULAR							
Compression Strength, psi:	11,840	12,340	13,370	12,760	14150	12,890	10,000 Min
Strength Properties: ASTM C170 – DRY CONDITION – PERPENDICULAR							
Compression Strength, psi:	20,240	18,980	23,210	20,910	20,440	20,760	10,000 Min
Strength Properties: ASTM C170 – WET CONDITION - PARALLEL							
Compression Strength, psi:	13,030	13,140	12,280	14,530	13,140	13,220	10,000 Min
Strength Properties: ASTM C170 – DRY CONDITION - PARALLEL							
Compression Strength, psi:	19,590	17,400	17,440	20,320	17,150	18,380	10,000 Min
Strength Properties: ASTM C99 & C880 – WET CONDITION -							
Modulus of Rupture, psi:	2,100 2,040	2,470 2,040	2,030 2,330	2,050 2,190	2,190 2,050	2,150	1,000 Min
Flexural Strength, psi:	1,090 1,110	1,380 1,280	1,130 1,040	1,430 1,350	1,440 1,070	1,230	
Strength Properties: ASTM C99 & C880 – DRY CONDITION							
Modulus of Rupture, psi:	2,550 2,560	2,630 2,540	2,550 2,220	2,700 2,590	2,690 2,890	2,590	1,000 Min
Flexural Strength, psi:	1,860 1,860	1,700 1,910	1,760 1,720	1,640 1,940	1,730 1,830	1,800	

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Sample	A	B	C	Average	Requirements ASTM C616
			Physical Properties: ASTM:C97		
Specific Gravity:	2.621	2.618	2.625	2.078	
Bulk Density, pcf:	163.5	163.4	163.8	163.6	150 Min
Absorption, %	1.06	1.13	1.03	1.08	3.0 Max

Remarks: The samples were destroyed during testing and discarded.

Report Prepared By:

John J. Haupt, PE
Staff Engineer II

Report Reviewed By:

John Amundson
Principal Engineer

AMERICAN ENGINEERING TESTING, INC.

CONSULTANTS
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· MATERIALS
· FORENSICS

REPORT OF FREEZE-THAW TESTING OF STONE

PROJECT:

MATERIAL EVALUATION
MOCHA-STONE UNITS

REPORTED TO:

REALSTONE SYSTEMS
560 KIRTS BLVD
SUITE 120
TROY, MI 48084

ATTN: STEVE HODGES

AET JOB NO: 20-11101

DATE: JANUARY 29, 2013

INTRODUCTION

This report presents the test results on five stone units. Samples were submitted and identified by you. The scope of our work consisted of conducting freeze-thaw testing in accordance with ASTM C67-12, "Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile" and evaluated according to ASTM C 216-12a "Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)." Our work was authorized by you on February 20, 2012.

SAMPLE INFORMATION

American Engineering Testing, Inc. received 5 stone samples identified as Mocha #1 through #5 from Realstone Systems.

TESTING METHODS

The specimens were subjected to freeze-thaw cycling in accordance with ASTM C67, Section 9.

1. The samples were placed in a pan with water at a depth of ½" and frozen for 20 hours. Next the samples were immersed in a thawing tank for 4 hours. This process continued for 50 cycles or until the specimens develop a crack or appears to have lost more than 3% of its original weight by disintegration as judged by visual inspection.

2. Final weight loss percentages are calculated by dividing the oven dry weight of dislodged material by the final oven dried sample weight, plus the total dislodged material.

TEST RESULTS

Sample	Weight Loss %	Full Width Cracking	Rating
M1	0.000%	No	See Remarks
M2	0.002%	No	See Remarks
M3	0.004%	No	See Remarks
M4	0.007%	No	See Remarks
M5	0.014%	No	See Remarks
Average	0.005%		

REMARKS

The samples were tested for 50 freeze thaw cycles. The test results meet the specifications of ASTM C216-12a "Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)" for SW facing material. This report represents specifically the samples tested. The ASTM C216 requirements for freeze-thaw durability in section 6.1.3.1 state that no individual unit separates or disintegrates resulting in a weight loss greater than 0.5% of its original dry weight. Additionally, ASTM C216, Section 6.1.3.2 states that no individual unit develops a crack that exceeds, in length, the units least dimension. If you have any questions, please feel free to call us.

Report Prepared By:
American Engineering Testing, Inc.

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Report Reviewed By:
American Engineering Testing, Inc.

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AMERICAN ENGINEERING TESTING, INC.

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REPORT OF STONE TESTING

PROJECT:
MATERIAL CHECK

REPORTED TO:
REALSTONE SYSTEMS
560 KIRTS BOULEVARD
SUITE 120
TROY, MI 48084

AET PROJECT NO: 20-11101 **DATE:** November 1, 2012

Product Type: Roman Beige
Date Tested: 10/22/10 to 10/26/12

Conformance: The stone samples meet ASTM:C568-10 medium-density requirements for Limestone dimension stone.

Sample	A	B	C	D	E	Average	Requirements ASTM C568
Strength Properties: ASTM C170– WET CONDITION - PERPENDICULAR							
Compression Strength, psi:	13,330	14,910	11,480	7,430	8,710	11,170	4,000 Min
Strength Properties: ASTM C170 – DRY CONDITION – PERPENDICULAR							
Compression Strength, psi:	11,190	14,450	21,820	21,050	12,560	16,210	4,000 Min
Strength Properties: ASTM C170 – WET CONDITION - PARALLEL							
Compression Strength, psi:	6,590	6,600	7,450	4,260	7,260	6,430	4,000 Min
Strength Properties: ASTM C170 – DRY CONDITION - PARALLEL							
Compression Strength, psi:	19,490	23,440	27,260	17,290	11,700	19,840	4,000 Min
Strength Properties: ASTM C99 & C880 – WET CONDITION -							
Modulus of Rupture, psi:	810 700	800 880	720 930	810 690	810	790	500 Min
Flexural Strength, psi:	850 1,130	840 730	1,170 980	910 1,070	990	960	
Strength Properties: ASTM C99 & C880 – DRY CONDITION							
Modulus of Rupture, psi:	1,740 1,960	1,300 1,480	1,750 1,220	1,390 1,730	1,280 910	1,450	500 Min
Flexural Strength, psi:	1,500 1,020	1,400 1,170	1,460 1,450	1,250 1,730	1,480 1,510	1,400	

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Sample	A	B	C	Average	Requirements ASTM C568
		Physical Properties: ASTM:C97			
Specific Gravity:	2.408	2.417	2.425	2.417	
Bulk Density, pcf:	150.3	150.8	151.3	150.8	135 Min.
Absorption, %	4.1	4.2	3.9	4.1	7.5 Max

Remarks: The samples were destroyed during testing and discarded.

Report Prepared By:

John J. Haupt, PE
Staff Engineer II

Report Reviewed By:

John Amundson
Principal Engineer

AMERICAN ENGINEERING TESTING, INC.

CONSULTANTS
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· FORENSICS

REPORT OF FREEZE-THAW TESTING OF STONE

PROJECT:

MATERIAL EVALUATION
ROMAN BEIGE-STONE UNITS

REPORTED TO:

REALSTONE SYSTEMS
560 KIRTS BLVD
SUITE 120
TROY, MI 48084

ATTN: STEVE HODGES

AET JOB NO: 20-11101

DATE: JANUARY 29, 2013

INTRODUCTION

This report presents the test results on five stone units. Samples were submitted and identified by you. The scope of our work consisted of conducting freeze-thaw testing in accordance with ASTM C67-12, "Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile" and evaluated according to ASTM C 216-12a "Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)." Our work was authorized by you on February 20, 2012.

SAMPLE INFORMATION

American Engineering Testing, Inc. received 5 stone samples identified as Roman Beige #1 through #5 from Realstone Systems.

TESTING METHODS

The specimens were subjected to freeze-thaw cycling in accordance with ASTM C67.

1. The samples were placed in a pan with water at a depth of ½" and frozen for 20 hours. Next the samples were immersed in a thawing tank for 4 hours. This process continued for 50 cycles or until the specimens develop a crack or appears to have lost more than 3% of its original weight by disintegration as judged by visual inspection.

2. Final weight loss percentages are calculated by dividing the oven dry weight of dislodged material by the final oven dried sample weight, plus the total dislodged material.

TEST RESULTS

Sample	Weight Loss %	Full Width Cracking	Rating
RB1	0.42%	Yes	See Remarks
RB2	1.74%	Yes	See Remarks
RB3	62.83%	Yes	See Remarks
RB4	55.27%	Yes	See Remarks
RB5	0.47%	Yes	See Remarks
Average	24.14%		

REMARKS

The samples were tested for 50 freeze thaw cycles and did not to meet the specifications of ASTM C216-12a "Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)" for SW facing material. This report represents specifically the samples tested. The ASTM C216 requirements for freeze thaw durability in 6.1.3.1 state that no individual unit separates or disintegrates resulting in a weight loss greater than 0.5% of its original dry weight. Additionally, ASTM C216, Section 6.1.3.2 states that no individual unit develops a crack that exceeds, in length, the units least dimension. All samples exhibited unsatisfactory weight loss, full width cracking or both. If you have any questions, please feel free to call us.

Report Prepared By:
American Engineering Testing, Inc.

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Report Reviewed By:
American Engineering Testing, Inc.

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AMERICAN ENGINEERING TESTING, INC.

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* FORENSICS

REPORT OF STONE TESTING
ASTM C616-10 "STANDARD SPECIFICATION FOR QUARTZ-BASED DIMENSION STONE"

PROJECT:
STONE TESTING

REPORTED TO:
REALSTONE SYSTEMS
560 KIRTS BOULEVARD
SUITE 120
TROY, MI 48084

ATTN: MIKE QUARTON

AET PROJECT NO: 20-13398

DATE: NOVEMBER 16, 2015

Product Type: Greystone Gold Quartzite
Date Tested: November 9 to 16, 2015

Conformance: The stone samples meet ASTM:C616-11 Quarzite modulus of rupture, absorption and density requirements for Quartz-based dimension stone.

Modulus of Rupture (psi): ASTM C99-15 "Standard Test Method for Modulus of Rupture of Dimension Stone"

Sample	A	B	C	D	Average	Requirements ASTM C616
			Perpendicular to Bedding Rift			
Dry	3,010	2,830	3,200	3,090	3,030	2,000

Physical Properties: ASTM C97-15 " Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone"

Sample	A	B	C	D	Average	Requirements ASTM C616
Specific Gravity:	2.667	2.720	2.717	2.718	2.705	
Bulk Density, pcf:	166.4	169.8	169.5	169.6	168.8	160 Min
Absorption, %	0.2	0.1	0.1	0.2	0.2	1 Max

Remarks: The samples were destroyed during testing and discarded. The ASTM standards for the respective tests require 5 samples to be tested for each orientation and conditions. Four samples were submitted for each condition and orientation. It is our understanding the material source could not provide the dimensions required for the tests.

Report Prepared By:

John J. Haupt
Senior Engineer

Report Reviewed By:

David G. Wirth
Manager, Construction Services

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REPORT OF STONE TESTING
ASTM C616-10 "STANDARD SPECIFICATION FOR QUARTZ-BASED DIMENSION STONE"

PROJECT:
STONE TESTING

REPORTED TO:
REALSTONE SYSTEMS
560 KIRTS BOULEVARD
SUITE 120
TROY, MI 48084

ATTN: MIKE QUARTON

AET PROJECT NO: 20-13398

DATE: NOVEMBER 16, 2015

Product Type: Berkshire Buff Quartzite
Date Tested: November 9 to 16, 2015

Conformance: The stone samples meet ASTM:C616-11 Quarzite modulus of rupture, absorption and density requirements for Quartz-based dimension stone.

Modulus of Rupture (psi): ASTM C99-15 "Standard Test Method for Modulus of Rupture of Dimension Stone"

Sample	A	B	C	D	Average	Requirements ASTM C616
			Perpendicular to Bedding Rift			
Dry	4,490	4,860	3,220	3,750	4,080	2,000

Physical Properties: ASTM C97-15 " Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone"

Sample	A	B	C	D	Average	Requirements ASTM C616
Specific Gravity:	2.882	2.875	2.881	2.882	2.880	
Bulk Density, pcf:	179.8	179.4	179.8	179.8	179.7	160 Min
Absorption, %	0.1	0.1	0.1	0.1	0.1	1 Max

Remarks: The samples were destroyed during testing and discarded. The ASTM standards for the respective tests require 5 samples to be tested for each orientation and conditions. Four samples were submitted for each condition and orientation. It is our understanding the material source could not provide the dimensions required for the tests.

Report Prepared By:
John J. Haupt
Senior Engineer

Report Reviewed By:
FOR
David G. Wirth
Manager, Construction Services

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REPORT OF STONE TESTING
ASTM C615-11 "STANDARD SPECIFICATION FOR GRANITE DIMENSION STONE"

PROJECT:
STONE TESTING

REPORTED TO:
REALSTONE SYSTEMS
560 KIRTS BOULEVARD
SUITE 120
TROY, MI 48084

ATTN: MIKE QUARTON

AET PROJECT NO: 20-13398

DATE: NOVEMBER 16, 2015

Product Type: Bristol Black Granite
Date Tested: November 9 to 16, 2015

Conformance: The stone samples meet ASTM:C615-11 modulus of rupture, absorption and density requirements for granite dimension stone.

Modulus of Rupture (psi): ASTM C99-15 "Standard Test Method for Modulus of Rupture of Dimension Stone"

Sample	A	B	C	D	Average	Requirements ASTM C615
			Perpendicular to Bedding Rift			
Dry	3,000	2,400	2,410	2,750	2,720	1,500

Physical Properties: ASTM C97-15 " Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone"

Sample	A	B	C	D	Average	Requirements ASTM C615
Specific Gravity:	2.671	2.680	2.673	2.688	2.739	
Bulk Density, pcf:	166.7	167.2	166.8	167.7	167.1	160 Min
Absorption, %	0.5	0.3	0.5	0.3	0.4	0.4Max

Remarks: The samples were destroyed during testing and discarded. The ASTM standards for the respective tests require 5 samples to be tested for each orientation and conditions. Four samples were submitted for each condition and orientation. It is our understanding the material source could not provide the dimensions required for the tests.

Report Prepared By:

John J. Haupt
Senior Engineer

Report Reviewed By:

David G. Wirth
Manager, Construction Services

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REPORT OF SLATE STONE TESTING

PROJECT:
STONE TESTING

REPORTED TO:
REALSTONE SYSTEMS
560 KIRTS BOULEVARD
SUITE 120
TROY, MI 48084

ATTN: MIKE QUARTON

AET PROJECT NO: 20-13398

DATE: December 22, 2015

Product Type: Somerset Sage
Date Tested: November 16 to December 21, 2015

Conformance: The stone samples meet ASTM:C629-10 absorption and acid resistance requirements for exterior slate dimension stone.

The stone samples meet ASTM C406-15 physical requirements for Grade S_1.

Physical Properties: ASTM C121 " Standard Test Methods for water Absorption of Slate"

Sample	A	B	C	D	E	F	Average	Requirements ASTM C629
Specific Gravity:	2.707	2.712	2.754	2.714	2.719	2.729	2.721	
Bulk Density, pcf:	168.9	169.2	171.3	169.4	167.7	170.3	169.8	
Absorption, %	.25	0.23	0.0	0.34	0.19	0.25	0.21	0.25Max

Roofing Slate

	A	B	C	Average	Requirements ASTM C406
Span, in	2	2	2		
Width, in	4.01	4.01	4.02		
Average Thickness, in	0.515	0.505	0.50		
Breaking Load, lb	598	518	561	559	575 Min
Depth of Softening, in	See attached report from CTL Group			0.0010	Grade S_1 0.002 Max

Remarks: The samples were destroyed during testing and discarded.

Report Prepared By:
John J. Haupt
Senior Engineer

Report Reviewed By:
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Manager, Construction Services

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CTLGROUP

Client:	**American Engineering Testing**	CTL Project No:	**391352**
Project:	**Production Check**	CTL Project Mgr.:	**J. L. Jones**
		Analyst:	**G. Neiweem**
Contact:	**John Haupt**	Approved:	**J. L. Jones**
Submitter:	**John Haupt**	Date Analyzed:	**December 21, 2015**
Date Received:	**November 17, 2015**	Date Reported:	**December 21, 2015**

ASTM C217
Standard Test Method for Weather Resistance of Slate

Specimen Identification

Sample Identification	Reference Point	Before Acid Soak			After 7 Day Acid Soak			Depth of Softening, in.
		Initial Thickness, in.	Thickness after Scraping, in.	Depth of Scraping, in.	Thickness after Acid Soak, in.	Thickness after Scraping, in.	Depth of Scraping, in.	
Summerset Sage - 1	1 to 3	0.6387	0.6387	0.0000	0.5587	0.5577	0.0010	0.0010
Summerset Sage - 2	1 to 3	0.5556	0.5556	0.0000	0.6335	0.6322	0.0013	0.0013
Summerset Sage - 3	1 to 3	0.5952	0.5940	0.0012	0.5906	0.5893	0.0013	0.0001
Summerset Sage - 4	1 to 3	0.5724	0.5720	0.0004	0.5673	0.5651	0.0022	0.0018

Average Values for all Samples

Average Depth of Scraping Before Acid Soak (4 Specimens), in.	***0.0004***
Average Depth of Scraping After Acid Soak (4 Specimens), in.	***0.0014***
Average Depth of Softening (4 Specimens), in.	***0.0010***

Notes:
1. This report may not be reproduced except in its entirety.
2. Testing was performed in general accordance with ASTM C217/C217M - 15a.
3. Thicknesses are an average of three measurements at 3 different reference points.

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REPORT OF STONE TESTING
ASTM C568-10 "STANDARD SPECIFICATION FOR LIMESTONE DIMENSION STONE"

PROJECT:
STONE TESTING

REPORTED TO:
REALSTONE SYSTEMS
560 KIRTS BOULEVARD
SUITE 120
TROY, MI 48084

ATTN: MIKE QUARTON

AET PROJECT NO: 20-13398

DATE: NOVEMBER 16, 2015

Product Type: Carbon Limestone
Date Tested: November 9 to 16, 2015

Conformance: The stone samples meet ASTM:C568-10 high-density requirements for Limestone dimension stone.

Modulus of Rupture (psi): ASTM C99-15 "Standard Test Method for Modulus of Rupture of Dimension Stone"

Sample	A	B	C	D	Average	Requirements ASTM C568
			Perpendicular to Bedding Rift			
Dry	3,390	3,500	3,760	3,400	3,510	1,000

Compressive Strength (psi): ASTM C170-15a "Standard Test Method for Compression Strength of Dimension Stone"

Sample	A	B	C	D	Average	Requirements ASTM C568
			Perpendicular to Bedding Rift			
Dry	15,150	15,590	15,360	18,360	16,120	8,000

Physical Properties: ASTM C97-15 " Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone"

Sample	A	B	C	D	Average	Requirements ASTM C568
Specific Gravity:	2.732	2.739	2.746	2.740	2.739	
Bulk Density, pcf:	170.4	170.9	171.4	171.0	170.9	160 Min
Absorption, %	0.1	0.2	0.0	0.1	0.1	3 Max

Remarks: The samples were destroyed during testing and discarded. The ASTM standards for the respective tests require 5 samples to be tested for each orientation and conditions. Four samples were submitted for each condition and orientation. It is our understanding the material source could not provide the dimensions required for the tests.

Report Prepared By:
John J. Haupt
Senior Engineer

Report Reviewed By:
David G. Wirth
Manager, Construction Services

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REPORT OF SLATE STONE TESTING

PROJECT:
STONE TESTING

REPORTED TO:
REALSTONE SYSTEMS
560 KIRTS BOULEVARD
SUITE 120
TROY, MI 48084

ATTN: MIKE QUARTON

AET PROJECT NO: 20-13398

DATE: December 22, 2015

Product Type: Charcoal Slate
Date Tested: November 16 to December 21, 2015

Conformance: The stone samples meet ASTM:C629-10 requirements for exterior slate dimension stone. The stone samples meet ASTM C406-15 physical requirements for Grade S_1.

Modulus of Rupture (psi): ASTM C120-12 "Standard Test Methods of Testing of Slate (Breaking Load, Modulus of Rupture, Modulus of Elasticity"

Sample	A	B	C	D	E	F	G	H	Average	Requirements ASTM C629
					Across the Grain					
Dry	14,880	16,740	13,600	12,960	12,420	14,850	14,370	8,050	13,480	9,000

Physical Properties: ASTM C121 " Standard Test Methods for water Absorption of Slate"

Sample	A	B	C	D	Average	Requirements ASTM C629
Specific Gravity:	2.776	2.776	2.761	2.778	2.773	
Bulk Density, pcf:	173.2	173.2	172.3	173.3	173.0	
Absorption, %	0.12	0.00	0.15	0.03	0.07	0.25 max

Roofing Slate

Charcoal Ledge

	A	B	C	D	Average	Requirements ASTM C406
Span, in	2	2	2	2		
Width, in	4.03	4.03	4.02	4.02		
Average thickness, in	0.67	0.73	0.61	0.55		
Breaking Load, lb	2,210	2,080	1,570	1,560	1,860	575 Min
Depth of softening, in	See attached report from CTL Group				0.0012	Grade S_1 0.002 Max

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	Charcoal Shadow					
	A	B	C	D	Average	**Requirements ASTM C406**
Span, in	2	2	2	2		
Width, in	4.02	4.02	4.03	4.01		
Average thickness, in	0.21	0.23	0.24	0.23		
Breaking Load, lb	10,190	5,830	7,410	6,790	6,040	575 Min
Depth of softening, in	See attached report from CTL Group				0.0012	Grade S_1 0.002 Max

Remarks: The samples were destroyed during testing and discarded.

Report Prepared By:

John J. Haupt
Senior Engineer

Report Reviewed By:

David G. Wirth
Manager, Construction Services

CTL GROUP

Client:	American Engineering Testing	CTL Project No:	391352
Project:	Production Check	CTL Project Mgr.:	J. L. Jones
		Analyst:	G. Neiweem
Contact:	John Haupt	Approved:	J. L. Jones
Submitter:	John Haupt	Date Analyzed:	December 21, 2015
Date Received:	November 17, 2015	Date Reported:	December 21, 2015

ASTM C217
Standard Test Method for Weather Resistance of Slate

Specimen Identification

Sample Identification	Reference Point	Before Acid Soak			After 7 Day Acid Soak			Depth of Softening, in.
		Initial Thickness, in.	Thickness after Scraping, in.	Depth of Scraping, in.	Thickness after Acid Soak, in.	Thickness after Scraping, in.	Depth of Scraping, in.	
Charcoal - 1	1 to 3	0.6407	0.6404	0.0003	0.6455	0.6426	0.0029	0.0026
Charcoal - 2	1 to 3	0.6312	0.6297	0.0015	0.6288	0.6262	0.0026	0.0011
Charcoal - 3	1 to 3	0.6290	0.6276	0.0014	0.6308	0.6294	0.0014	0.0000
Charcoal - 4	1 to 3	0.6351	0.6347	0.0004	0.6376	0.6362	0.0014	0.0011

Average Values for all Samples

Average Depth of Scraping Before Acid Soak (4 Specimens), in.	***0.0009***
Average Depth of Scraping After Acid Soak (4 Specimens), in.	***0.0021***
Average Depth of Softening (4 Specimens), in.	***0.0012***

Notes:
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2. Testing was performed in general accordance with ASTM C217/C217M - 15a.
3. Thicknesses are an average of three measurements at 3 different reference points.