



Concrete Masonry & Hardscapes Association  
13750 Sunrise Valley Drive  
Herndon, VA 20171  
703.713.1900  
MasonryAndHardscapes.org

August 16, 2023

Adam Wildhaber  
Stockman Stoneworks Inc.  
3918 Stockman Lane  
Jefferson City, MO 65109

Please find enclosed the test report conducted in accordance with ASTM C140/C140M-22c, *Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units*, that we performed at your request on the following product that you supplied to the CMHA Research and Development Laboratory:

NCMA Project Number: 23-282-1A  
8x8x16 inch CMU  
Mark "HW"

The attached report includes results documenting the tested compressive strength of the concrete masonry units submitted for evaluation. The compressive strength of a masonry assembly constructed using these units can be calculated using the Unit Strength Method as outlined in Section 1.4 B.2.b of *Specification for Masonry Structures* (TMS 602-13/ACI 530.1-13/ASCE 6-13) as referenced in the 2015 *International Building Code*; or as outlined in Section 1.4 B.2.b of *Specification for Masonry Structures* (TMS 602-16) as referenced in the 2018 and 2021 *International Building Codes*.

The net area compressive strength of these concrete masonry units is: 3,840 psi

Using the Unit Strength Method, the net area compressive strength of masonry constructed with these units can be considered to be the following for projects designed under the 2015, 2018, or 2021 *International Building Codes*:

|  |       |     |
|--|-------|-----|
| Net Area Compressive Strength of Masonry When Used with Type M or S Mortar = | 2,730 | psi |
| Net Area Compressive Strength of Masonry When Used with Type N Mortar =      | 2,370 | psi |

The values provided above can be compared directly to the specified compressive strength of masonry,  $f'_m$ . If these values exceed  $f'_m$ , compliance with the specified compressive strength of masonry has been demonstrated. Please note that the contents of this report are not to be reproduced, except in full, without the written approval of the NCMA Research and Development Laboratory.

We take pride in meeting your product evaluation requirements and look forward to continuing to service your testing needs for years to come. Thank you for choosing CMHA's Research and Development Laboratory. Please feel free to contact me directly with any comments or questions at: 571-224-0924 or [tjones@ncma.org](mailto:tjones@ncma.org).

Sincerely,

Timothy Jones  
Manager, Research and Development Laboratory



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 13750 Sunrise Valley Drive  
 Herndon, VA 20171  
 703.713.1900  
 MasonryAndHardscapes.org

**ASTM C140/C140M-22c Test Report**  
**Sampling and Testing Concrete Masonry Units and Related Units**

CMHA Project Number: 23-282-1A  
 Report Date: 8/16/2023

Client: Stockman Stoneworks Inc.  
 Address: 3918 Stockman Lane  
 Jefferson City, MO 65109

Testing Agency: Concrete Masonry and Hardscapes Association  
 Research and Development Laboratory  
 Address: 13750 Sunrise Valley Drive  
 Herndon, VA 20171-4662

Standard Specification: ASTM C90-22

Sampling Party: Stockman Stoneworks Inc.  
 Date Samples Produced: 3/1/2023  
 Date Samples Received: 7/14/2023

Sample Description: 8x8x16 inch CMU  
 Mark "HW"

**Summary of Test Results**

|   | ASTM C90-22   |                |                  | Average | Units                                       | ASTM C90-22   |                |                                   |
|---|---------------|----------------|------------------|---------|---|---------------|----------------|-----------------------------------|
|   | Specified     | Test           | Results          |         |   | Specified     | Test           | Results                           |
| <b>Physical Property</b>                  | <u>Values</u> | <u>Results</u> |                  |         | <b>Physical Property</b>                    | <u>Values</u> | <u>Results</u> |                                   |
| Net Compressive Strength                  | 2,000 min     | 3,840          | psi              |         | Min. Face Shell Thickness ( $t_{fs}$ )      | 1.25 min      | 1.25           | in.                               |
| Gross Compressive Strength                | ****          | 1,990          | psi              |         | Min. Web Thickness ( $t_w$ )                | 0.75 min      | 0.99           | in.                               |
| Density                                   | ****          | 129.1          | pcf              |         | Equivalent Web Thickness                    | ****          | 2.72           | in.                               |
| Absorption                                | 13 max        | 10.2           | pcf              |         | Normalized Web Area ( $A_{wn}$ )            | 6.5 min       | 30.2           | in. <sup>2</sup> /ft <sup>2</sup> |
| Percent Solid                             | ****          | 51.8           | %                |         | Equivalent Thickness                        | ****          | 3.95           | in.                               |
| Full-Size Unit Net Cross-Sectional Area   | ****          | 61.72          | in. <sup>2</sup> |         | Maximum Variation from Specified Dimensions | .125 max      | 0.05           | in.                               |
| Full-Size Unit Gross Cross-Sectional Area | ****          | 119.06         | in. <sup>2</sup> |         |   |               |                |                                   |

**Individual Unit Test Results**

| Compression Units | Specimen No. | Received Weight lb | Cross-Sectional Area* |                     | Maximum Load lb | Compressive Strength |         |
|-------------------|--------------|--------------------|-----------------------|---------------------|-----------------|----------------------|---------|
|                   |              |                    | Gross in <sup>2</sup> | Net in <sup>2</sup> |                 | Gross psi            | Net psi |
|                   |              |                    | Date Tested: 8/7/2023 | 1                   |                 | 35.0                 | 119.1   |
|                   | 2            | 35.2               | 119.1                 | 61.7                | 224,280         | 1,880                | 3,630   |
|                   | 3            | 35.6               | 119.1                 | 61.7                | 273,320         | 2,300                | 4,430   |
|                   | Average      | 35.3               | 119.1                 | 61.7                | 236,910         | 1,990                | 3,840   |

\* Unit areas determined as the average of the three absorption units and are assumed to be the same as those units tested in compression.

| Absorption Units | Specimen No. | Average Width in. | Average Height in. | Average Length in. | Minimum Web Height in. | Avg./Min. Face Shell Thickness** |                    | Minimum Web Area in. <sup>2</sup> | Normalized Web Area in. <sup>2</sup> /ft <sup>2</sup> |
|------------------|--------------|-------------------|--------------------|--------------------|------------------------|----------------------------------|--------------------|-----------------------------------|---|
|                  |              |                   |                    |                    |                        | Min. Web Thickness in.           | Avg. Thickness in. |                                   |   |
|                  |              |                   |                    |                    |                        | Date Tested: 7/27/2023           | 4                  |                                   |   |
|                  | 5            | 7.61              | 7.57               | 15.63              | 7.57                   | 1.25                             | 0.99               | 26.77                             | 30.1  |
|                  | 6            | 7.63              | 7.61               | 15.63              | 7.61                   | 1.25                             | 0.99               | 26.92                             | 30.3  |
|                  | Average      | 7.62              | 7.59               | 15.63              | 7.59                   | 1.25                             | 0.99               | 26.84                             | 30.2  |

\*\*Where the thinnest points of opposite face shells differ in thickness by less than 0.125 inches, their measurements are averaged.

| Date Tested: | Specimen No. | Received  | Immersed  | Saturated | Oven-Dry  | Absorption pcf | Density pcf | Net Volume ft <sup>3</sup> | Percent Solid % |
|--------------|--------------|-----------|-----------|-----------|-----------|----------------|-------------|----------------------------|-----------------|
|              |              | Weight lb | Weight lb | Weight lb | Weight lb |                |             |                            |                 |
| 8/1/2023     | 4            | 35.0      | 20.6      | 37.5      | 34.6      | 10.7           | 127.6       | 0.271                      | 51.9            |
| to           | 5            | 35.3      | 20.8      | 37.6      | 34.9      | 10.3           | 129.1       | 0.270                      | 51.8            |
| 8/4/2023     | 6            | 36.0      | 21.2      | 38.1      | 35.5      | 9.6            | 130.7       | 0.272                      | 51.8            |
|              | Average      | 35.4      | 20.8      | 37.8      | 35.0      | 10.2           | 129.1       | 0.271                      | 51.8            |

Timothy Jones  
 Manager, Research and Development Laboratory

Nicholas R. Lang  
 Vice President of Engineering, Masonry



Representative Test Specimen



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Please find enclosed the test report conducted in accordance with ASTM C140/C140M-22c, *Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units*, that we performed at your request on the following product that you supplied to the CMHA Research and Development Laboratory:

NCMA Project Number: 23-282-2A  
8x8x16 inch CMU  
Mark "LW"

The attached report includes results documenting the tested compressive strength of the concrete masonry units submitted for evaluation. The compressive strength of a masonry assembly constructed using these units can be calculated using the Unit Strength Method as outlined in Section 1.4 B.2.b of *Specification for Masonry Structures* (TMS 602-13/ACI 530.1-13/ASCE 6-13) as referenced in the 2015 *International Building Code*; or as outlined in Section 1.4 B.2.b of *Specification for Masonry Structures* (TMS 602-16) as referenced in the 2018 and 2021 *International Building Codes*.

The net area compressive strength of these concrete masonry units is: 2,840 psi

Using the Unit Strength Method, the net area compressive strength of masonry constructed with these units can be considered to be the following for projects designed under the 2015, 2018, or 2021 *International Building Codes*:

|  |       |     |
|--|-------|-----|
| Net Area Compressive Strength of Masonry When Used with Type M or S Mortar = | 2,340 | psi |
| Net Area Compressive Strength of Masonry When Used with Type N Mortar =      | 2,060 | psi |

The values provided above can be compared directly to the specified compressive strength of masonry,  $f'_m$ . If these values exceed  $f'_m$ , compliance with the specified compressive strength of masonry has been demonstrated. Please note that the contents of this report are not to be reproduced, except in full, without the written approval of the NCMA Research and Development Laboratory.

We take pride in meeting your product evaluation requirements and look forward to continuing to service your testing needs for years to come. Thank you for choosing CMHA's Research and Development Laboratory. Please feel free to contact me directly with any comments or questions at: 571-224-0924 or [tjones@ncma.org](mailto:tjones@ncma.org).

Sincerely,

Timothy Jones  
Manager, Research and Development Laboratory



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**ASTM C140/C140M-22c Test Report**  
**Sampling and Testing Concrete Masonry Units and Related Units**

CMHA Project Number: 23-282-2A  
 Report Date: 8/16/2023

Client: Stockman Stoneworks Inc.  
 Address: 3918 Stockman Lane  
 Jefferson City, MO 65109

Testing Agency: Concrete Masonry and Hardscapes Association  
 Research and Development Laboratory  
 Address: 13750 Sunrise Valley Drive  
 Herndon, VA 20171-4662

Standard Specification: ASTM C90-22

Sampling Party: Stockman Stoneworks Inc.  
 Date Samples Produced: 2/1/2023  
 Date Samples Received: 7/14/2023

Sample Description: 8x8x16 inch CMU  
 Mark "LW"

**Summary of Test Results**

|   | ASTM C90-22 Specified Values |         |                  | ASTM C90-22 Average Test Results            |          |  |
|---|------------------------------|---------|------------------|---|----------|--|
|   | Values                       | Results |                  | Values                                      | Results  |  |
| Physical Property                         |                              |         |                  |   |          |  |
| Net Compressive Strength                  | 2,000 min                    | 2,840   | psi              | Min. Face Shell Thickness ( $t_{fs}$ )      | 1.25 min | 1.25 in.                               |
| Gross Compressive Strength                | ****                         | 1,460   | psi              | Min. Web Thickness ( $t_w$ )                | 0.75 min | 1.01 in.                               |
| Density                                   | ****                         | 101.9   | pcf              | Equivalent Web Thickness                    | ****     | 2.73 in.                               |
| Absorption                                | 18 max                       | 13.7    | pcf              | Normalized Web Area ( $A_{wn}$ )            | 6.5 min  | 30.4 in. <sup>2</sup> /ft <sup>2</sup> |
| Percent Solid                             | ****                         | 51.3    | %                | Equivalent Thickness                        | ****     | 3.90 in.                               |
| Full-Size Unit Net Cross-Sectional Area   | ****                         | 61.05   | in. <sup>2</sup> | Maximum Variation from Specified Dimensions | .125 max | 0.04 in.                               |
| Full-Size Unit Gross Cross-Sectional Area | ****                         | 119.10  | in. <sup>2</sup> |   |          |  |

**Individual Unit Test Results**

| Compression Units | Specimen No. | Received Weight lb | Cross-Sectional Area* |                     | Maximum Load lb | Compressive Strength |         |
|-------------------|--------------|--------------------|-----------------------|---------------------|-----------------|----------------------|---------|
|                   |              |                    | Gross in <sup>2</sup> | Net in <sup>2</sup> |                 | Gross psi            | Net psi |
|                   |              |                    | Date Tested: 8/7/2023 | 1                   |                 | 28.7                 | 119.1   |
|                   | 2            | 27.7               | 119.1                 | 61.1                | 165,070         | 1,390                | 2,700   |
|                   | 3            | 27.9               | 119.1                 | 61.1                | 160,430         | 1,350                | 2,630   |
|                   | Average      | 28.1               | 119.1                 | 61.1                | 173,270         | 1,460                | 2,840   |

\* Unit areas determined as the average of the three absorption units and are assumed to be the same as those units tested in compression.

| Absorption Units | Specimen No. | Average Width in. | Average Height in. | Average Length in. | Minimum Web Height in. | Avg./Min. Face Shell Thickness** |                    | Minimum Web Area in. <sup>2</sup> | Normalized Web Area in. <sup>2</sup> /ft <sup>2</sup> |
|------------------|--------------|-------------------|--------------------|--------------------|------------------------|----------------------------------|--------------------|-----------------------------------|---|
|                  |              |                   |                    |                    |                        | Min. Web Thickness in.           | Avg. Thickness in. |                                   |   |
|                  |              |                   |                    |                    |                        | Date Tested: 7/28/2023           | 4                  |                                   |   |
|                  | 5            | 7.61              | 7.59               | 15.62              | 7.59                   | 1.25                             | 1.01               | 26.95                             | 30.3  |
|                  | 6            | 7.61              | 7.58               | 15.64              | 7.58                   | 1.25                             | 1.00               | 27.05                             | 30.4  |
|                  | Average      | 7.62              | 7.59               | 15.64              | 7.59                   | 1.25                             | 1.01               | 27.01                             | 30.4  |

\*\*Where the thinnest points of opposite face shells differ in thickness by less than 0.125 inches, their measurements are averaged.

| Date Tested: | Specimen No. | Received Weight lb | Immersed Weight lb | Saturated Weight lb | Oven-Dry Weight lb | Absorption pcf | Density pcf | Net Volume ft <sup>3</sup> | Percent Solid % |             |   |      |      |      |      |      |       |       |      |
|--------------|--------------|--------------------|--------------------|---------------------|--------------------|----------------|-------------|----------------------------|-----------------|-------------|---|------|------|------|------|------|-------|-------|------|
|              |              |                    |                    |                     |                    |                |             |                            |                 | 8/1/2023    | 4 | 28.0 | 14.4 | 31.2 | 27.5 | 13.8 | 102.1 | 0.269 | 51.3 |
|              |              |                    |                    |                     |                    |                |             |                            |                 | to 8/4/2023 | 5 | 27.7 | 14.2 | 30.9 | 27.2 | 13.6 | 101.6 | 0.268 | 51.3 |
|              | 6            | 27.7               | 14.3               | 30.9                | 27.3               | 13.8           | 102.1       | 0.267                      | 51.1            |             |   |      |      |      |      |      |       |       |      |
|              | Average      | 27.8               | 14.3               | 31.0                | 27.3               | 13.7           | 101.9       | 0.268                      | 51.3            |             |   |      |      |      |      |      |       |       |      |

Timothy Jones  
 Manager, Research and Development Laboratory

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 Vice President of Engineering, Masonry



Representative Test Specimen