

TM-2013-01

Date: 12/20/13
(rev 2/12/15)

Technical Memorandum

Subject: Steel reinforcement in 24SF units on installations requiring geogrid

Technical Information:

Stone Strong Systems has investigated geogrid reinforced retaining walls using the 24SF units and have found some instances of cracking in the lower portion of tall walls. Our evaluation has determined that minor yielding in the foundation results in differential movement of the units in the lower course. This causes cracks to develop in one or more courses above the bottom course. This typically does not affect the structural integrity of the 24SF unit or the wall system, but can have an aesthetic impact.

For a geogrid retaining wall over 12 feet in height, internal reinforcement shall be utilized in all 24SF units below the top 12 feet of the wall. To maintain the structural stability of the wall it has been determined that a reinforcement cage should be placed in the 24SF units as part of the production process. Details are attached for a custom mesh cage that may be used in the face and webs for reinforced units. Stock mesh with an equivalent or greater steel area may be used instead, or rebar with an equivalent or greater horizontal steel area may be used.

For a geogrid retaining wall over 33 feet in height, heavy duty internal reinforcement shall be utilized in all 24SF units below the top 33 feet of the wall. As indicated on the details, HD reinforcement may consist of 2 layers of mesh in the face and webs, plus one layer of mesh in the back wall (custom face mesh will require trimming 2 inches from each end for use in rear wall), or equivalent.

The 6 SF block is not affected by this minor yielding and does not require reinforcement, regardless of wall height or placement within the wall.

The enclosed detail drawings of the reinforcement cage and design details are posted in the Detail section of the Engineering Manual on the Stone Strong web site. Stone Strong Systems recommends that reinforced blocks and HD reinforced blocks be designated where required on shop drawings or installation drawings for geogrid reinforced walls.

The reinforcing details depict the minimum recommended reinforcement area. As indicated, alternate reinforcing configurations are acceptable, based on the producer's preferred method of placing reinforcement. Where custom mesh configurations are provided, these units may also be reinforced with conventional mesh reinforcing or with deformed rebar. These alternate reinforcing schemes should provide equal or greater horizontal steel area. It is acceptable to provide reinforcing area that exceeds the equivalent mesh area.

Submitted By: DT

Approved By: JG

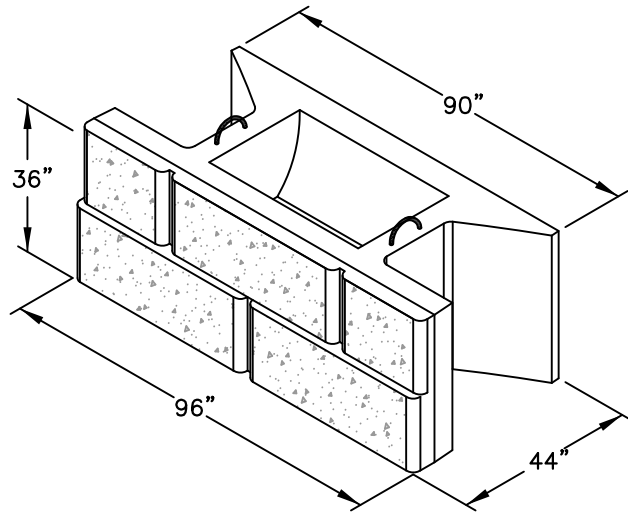
Approval Date: December 20, 2013

Distribution: All Dealers, wall designers

Total Pages: 5

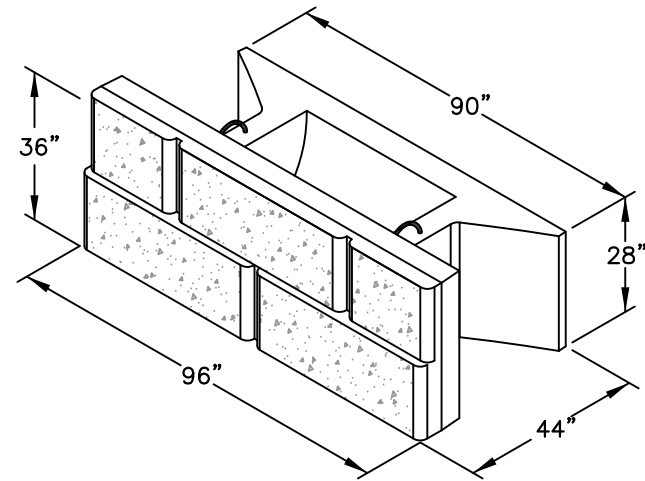
NOTES:

1. 24SF UNITS MUST BE REINFORCED BELOW THE TOP 12 FEET IN GEOGRID REINFORCED WALLS. HD REINFORCING REQUIRED FOR 24SF UNITS BELOW THE TOP 33 FEET. SEE FACE AND WEB MESH DETAILS FOR OPTIONAL REINFORCEMENT GRID.
2. CHISELLED GRANITE STYLE HAS 4 DIFFERENT FACE PATTERNS ON 24SF BLOCKS. INSTALL A, B, C, & D PATTERNS AT RANDOM IN WALL.



STONE STRONG 24SF UNIT
CHISELLED GRANITE FACE

NOT TO SCALE



STONE STRONG 24SF TOP UNIT
CHISELLED GRANITE FACE

NOT TO SCALE

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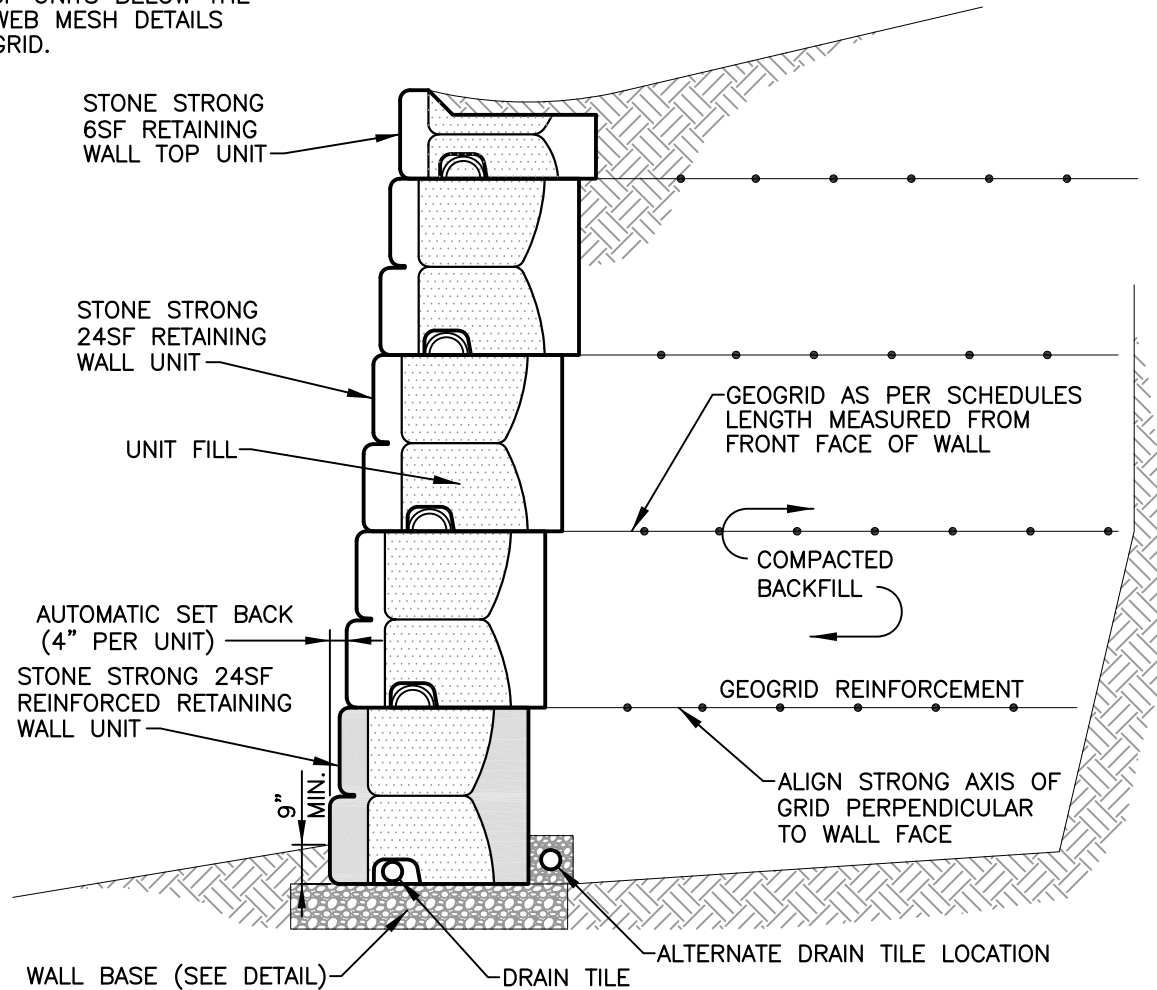
PROJECT

COMPONENTS
STONE STRONG SYSTEMS

DATE: 2/12/15 | FILE: 01_Block.24sf.CGF

NOTE:

24SF UNITS MUST BE REINFORCED BELOW THE TOP 12 FEET IN GEOGRID REINFORCED WALLS. HD REINFORCING REQUIRED FOR 24SF UNITS BELOW THE TOP 33 FEET. SEE FACE AND WEB MESH DETAILS FOR OPTIONAL REINFORCEMENT GRID.



24SF REINFORCED WALL CROSS SECTION

NOT TO SCALE

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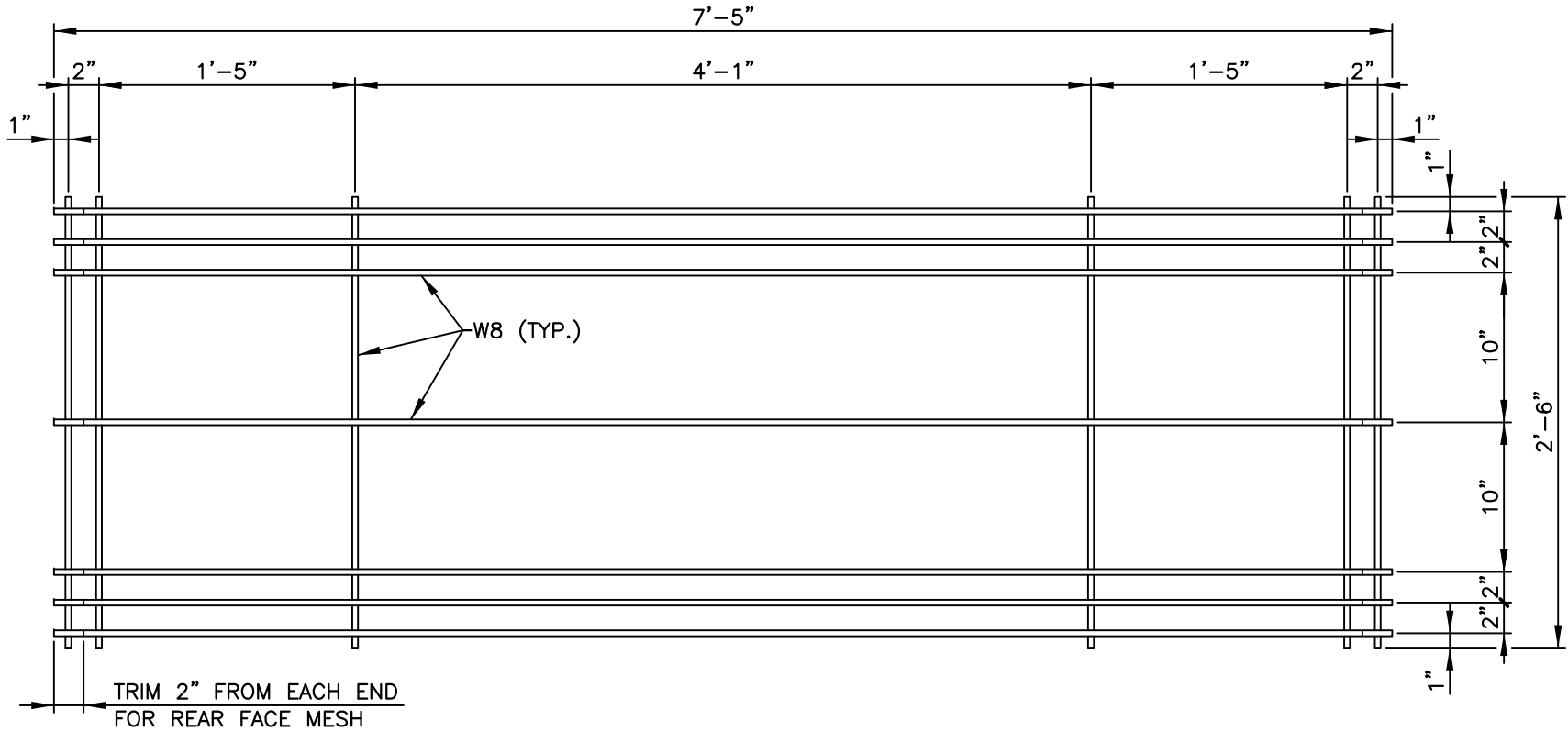
PROJECT

CROSS SECTIONS
STONE STRONG SYSTEMS

DATE: 2/12/15 | FILE: 08_24sf.XSec.Reinf

NOTES:

1. STOCK MESH OR REBAR WITH EQUIVALENT OR GREATER HORIZONTAL STEEL AREA MAY BE SUBSTITUTED FOR PREFABRICATED MESH.
2. ONE ASSEMBLY REQUIRED PER 24SF UNIT (FRONT FACE ONLY).
3. FOR HEAVY DUTY (HD) REINFORCING, THREE ASSEMBLIES REQUIRED (2 FRONT FACE, 1 REAR FACE).



STONE STRONG 24SF BLOCK REINFORCEMENT
FRONT FACE MESH
NOT TO SCALE

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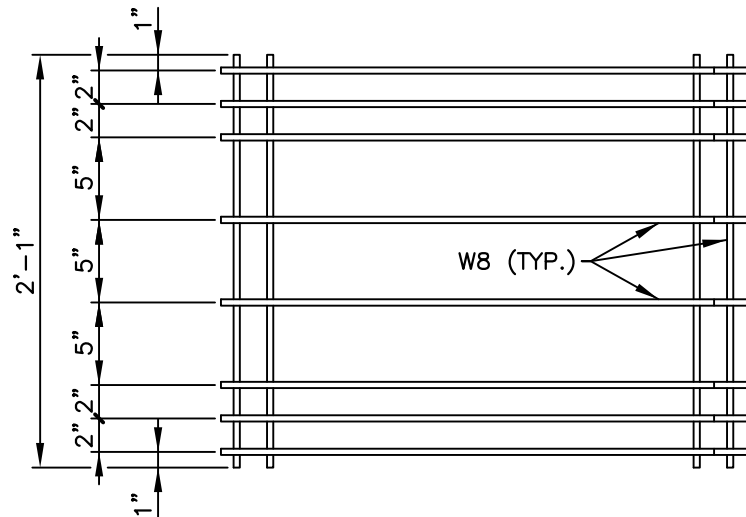
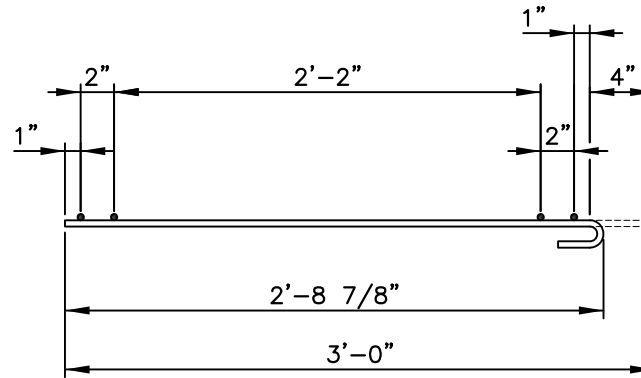
COMPONENTS
STONE STRONG SYSTEMS

DATE: 2/12/15

FILE: 06_24sf.FFM

NOTES:

- 1. STOCK MESH OR REBAR WITH EQUIVALENT OR GREATER HORIZONTAL STEEL AREA MAY BE SUBSTITUTED FOR PREFABRICATED MESH.
- 2. TWO ASSEMBLIES REQUIRED PER 24SF UNIT (ONE PER WEB).
- 3. FOR HEAVY DUTY (HD) REINFORCING, FOUR ASSEMBLIES REQUIRED (TWO PER WEB).



STONE STRONG 24SF BLOCK REINFORCEMENT

WEB MESH

NOT TO SCALE

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