

Issue # 46	DEB NEWSLETTER	October 2018
	Commonwealth of Virginia Department of General Services Division of Engineering & Buildings	 DIVISION OF ENGINEERING AND BUILDINGS

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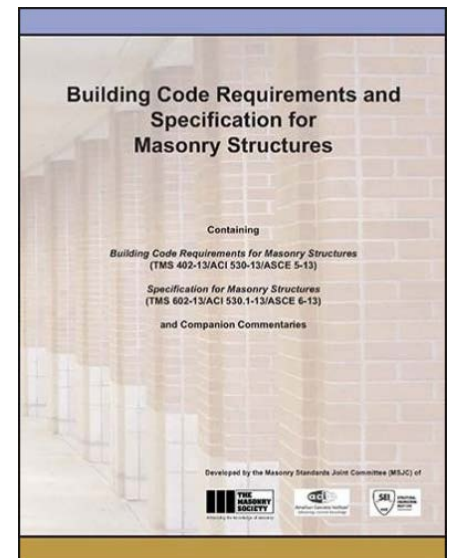
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Masonry – It Keeps Getting Better

There are many reasons we design with masonry. Masonry is strong, durable, low maintenance, aesthetically pleasing and economical. Now thanks to the adoption of the 2015 *Virginia Construction Code* (VCC), masonry can be even more economical than before. This article will highlight changes that have been incorporated into the VCC and how this can benefit building owners.

The 2015 VCC references the 2013 *Specifications for Masonry Structures*, ACI 530.1-13, where two methods are given for determining the compressive strength of assembled masonry: Masonry Prism Tests and the Unit Strength Method.

Masonry Prism tests use destructive testing to lab test the strength of assembled masonry. Prism tests require time and money for these laboratory tests.



The **Unit Strength Method** is often preferred because it is a quicker and more economical method of determining masonry strength as it only requires documentation of the strength of masonry blocks and mortar type. For Concrete Masonry (CMU), the Unit Strength Method uses Table 2 in ACI 530.1. This table correlates the masonry unit strength along with masonry mortar type to yield f'_m , the design compressive strength of the assembled CMU. Structural engineers use f'_m to determine requirements for wall thickness and reinforcing steel needed to build a wall strong enough to resist gravity and lateral loads.

Net area compressive strength of masonry ^A , psi (MPa)	Net area compressive strength of concrete masonry units, psi (MPa)	
	Type M or S mortar	Type N mortar
1,700 (11.72)	----	1,900 (13.10)
1,900 (13.10)	1,900 (13.10)	2,350 (14.82)
2,000 (13.79)	2,000 (13.79)	2,650 (18.27)
2,250 (15.51)	2,600 (17.93)	3,400 (23.44)
2,500 (17.24)	3,250 (22.41)	4,350 (28.96)
2,750 (18.96)	3,900 (26.89)	----
3,000 (20.69)	4,500 (31.03)	----

^A For units less than 4 in. (102 mm) nominal height, use 85% of the values listed.

Over the years, standards and reliability have improved in the masonry industry. More reliable production of components such as block and mortar allows for more accurate prediction of the strength of completed walls. Recognition of these improvements has resulted in new research and subsequent revisions to Table 2 in ACI 530.1 that allow structural design of masonry with less material and thus lower costs.

How does this work? In previous years, using the Unit Strength Method, a typical masonry wall compressive strength of 1500 psi required 1900 psi units with Type M or S mortar. In the newly adopted 2013 *Specifications for Masonry Structures*, using the same materials results in a design strength of 1900 psi, an increase of about 27% higher than in the superseded 2011 Specifications.

Imagine a 9-foot tall basement that retains earth with an equivalent fluid pressure of 45 pcf. The masonry must have a flexural capacity of 2100 pound-feet/foot. With the previous design value of $f'_m = 1500$ psi, an 8" basement wall, constructed with 1900 psi units and Type M mortar would be reinforced with #6 bars at 16". Using the same type materials and the updated design value of $f'_m = 1900$ psi, we find that we can build the same 8" wall using #5 bars at 16". In this example, the reinforcing steel tonnage is reduced by nearly 30%!

The inclusion of updated research results into the newly adopted building code can save owners money and increase confidence in the performance of our buildings.



VCCO Update

The following individuals recently passed the Virginia Construction Contracting Officer (VCCO) certification examination:

- **Doug Broyles** with Virginia Tech
- **Matthew Magruder** with Virginia Commonwealth University



Virginia Construction Contracting Officers are state and local government employees who have completed the necessary training and successfully passed a multi-part examination focused on state procurement law, policy and procedures. VCCOs perform several key functions in delivering projects including the procurement of professional services; the receipt, opening and review of bids; and in some cases the approval of CO-8 forms for recommending the award of construction contracts.

All agencies are encouraged to have at least one VCCO on staff. If an agency is temporarily without a VCCO, another agency may be able to provide VCCO assistance. When needed, DEB can provide the names of VCCO-certified individuals who may be able to assist other agencies. DEB has developed an interagency Memorandum of Understanding form ([DGS-30-002](#)) that can be edited and used by agencies for the sharing of VCCO services.

VCCO Training Update

The next **VCCO Training Seminar** is scheduled for **November 28-29** and will be held in the West Reading Room of the Patrick Henry Building in downtown Richmond. Any government employee who has completed the **VCCO Seminar Interest form as of October 23**, will be on the email distribution list to receive a **VCCO Seminar Application Form**. The **VCCO Seminar Application Form** will be emailed to the email distribution list on **October 24**. **Completed applications must be received by DEB no later than November 1**. Selected applicants will be notified on or before **November 8** and must **complete online registration and payment no later than November 15**.

In screening VCCO Seminar applicants, DEB gives consideration to the following factors:

- 1. Employer:** Must be a Virginia local or state government employee or an employee of an Authority operating within the Commonwealth
- 2. Prior CPSM Seminar attendance:** Attendance at a recent (within past 5 years) CPSM Seminar is required.
- 3. Applicability of training to current job duties:** Preference is given to those employees whose current job duties include the procurement and/or administration of construction and professional services contracts.
- 4. Specific agency needs:** Agencies without a VCCO on staff are given preference.
- 5. Other:** Individuals currently certified as a VCO may be given preference, if their current or proposed duties include procurement of construction and/or professional services.

Exceptions are at the sole discretion of the Director of DEB. Class-size must be economically viable and is typically limited to 20 to 24 attendees to encourage discussion and group participation in practical exercises.

Position Openings for Mechanical and Electrical Engineers

State Review Mechanical Engineer (EE049)

The Division of Engineering and Buildings seeks a qualified licensed engineer to perform tasks related to mechanical engineering review of building plans and specifications and performing construction inspections. The successful applicant holds: 1) a bachelor's degree in engineering with emphasis in mechanical engineering, 2) a professional engineering license in Virginia, and 3) a valid driver's license. In addition, the applicant has knowledge and experience in the application of the *Virginia Uniform State Building Code*, *Virginia Mechanical Code*, *Virginia Plumbing Code*, *Virginia Fuel Gas Code*, *Virginia Energy Conservation Code*, *Americans with Disabilities Act*, and state regulations.

State Review Electrical Engineer (EE025)

The Division of Engineering and Buildings seeks a qualified licensed engineer to perform tasks related to electrical engineering review of building plans and specifications and performing construction inspections. The successful applicant holds: 1) a bachelor's degree in engineering with emphasis in electrical engineering, 2) a professional engineering license in Virginia, and 3) a valid driver's license. In addition, the applicant has knowledge and experience in the application of the *Virginia Uniform State Building Code*, the *National Electric Code*, *Virginia Energy Conservation Code*, and state regulations.



Submit applications through
<http://jobs.virginia.gov>

DEB Staff Update

The Division welcomes two new Administrative Services staff members, **Sarah Burns** and **James McCue**.

Sarah comes to DEB from DARS. As a Senior Program Support Technician, Sarah is responsible for DEB purchases, submittal processing, EDR preprocessing, travel coordination, and numerous other administrative support activities for the Division.

James comes to DEB from VCU. As a Business Operations Specialist, James is responsible for overall coordination of CPSM and VCCO seminars. James is also responsible for the processing of selected capital outlay (CO) and building official (BO) forms, document management system administration, and other activities in support of the Division's business operations.

Forms Center Update

The following new or revised DEB forms are now available on the [DGS Forms Center](#). It is recommended to download the [DGS-30-000 form](#), as it contains hyperlinks to all other forms for quick access. The [DGS-30-000](#) also provides a brief description of the changes to the recently revised forms.

Form Number	Form Name	Description/Key Word	Rev. Date (mm/yy)
DGS-30-000	DEB Forms Master List		10/18
DGS-30-002	MOU for VCCO Services	VCCO-1	10/18
DGS-30-012	A/E Fee Proposal Worksheet	CO-2.3	10/18
DGS-30-072	Notice to Proceed	CO-9.2	10/18
DGS-30-112	Certificate Of Completion by Architect/Engineer or Project Manager	CO-13.1	10/18
DGS-30-116	Architect/Engineer's Certificate of Substantial Completion	CO-13.1a	10/18
DGS-30-128	Certificate of Partial or Substantial Completion by Construction Inspector, Manager, or Administrator	CO-13.1c	10/18
DGS-30-132	Certificate of Completion of Communication Tower/ Antenna by Architect/Engineer or Project Manager	CO-13.1-twr	10/18
DGS-30-136	Certificate of Completion by Contractor	CO-13.2	10/18
DGS-30-140	Certificate of Partial or Substantial Completion by Contractor	CO-13.2a	10/18
DGS-30-152	Checklist for Beneficial Occupancy	CO-13.3b	10/18
DGS-30-176	Permit for Demolition of Building on State Property	CO-17.1	10/18
DGS-30-326	Special Requirements for Low Slope Roofing Membranes		10/18
DGS-30-380	Transmittal for DEB Review Services		10/18
DGS-30-456	CM@Risk Procurement Review Submittal Form		10/18