



DEPARTMENT OF  
GENERAL SERVICES

BUREAU OF CAPITAL OUTLAY MANAGEMENT

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# BCOM Newsletter

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## **WHAT IS AN ADDENDUM?**

The CPSM defines an Addendum as: "a written or graphic instrument issued prior to the opening of bids that clarifies, corrects or changes the bid documents". Often, more than one Addendum is issued for a construction project. Addenda and Addendums are both acceptable plural forms of Addendum.

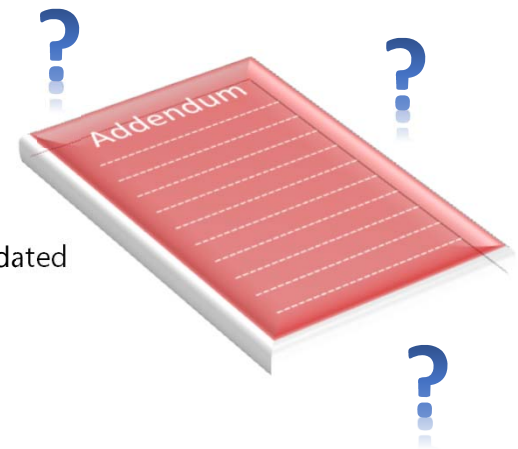
The purpose of an Addendum is to clarify or change information in the bid documents, often to respond to questions raised by potential bidders. Addenda may also modify the bid receipt date. The State Agency/Owner shall approve the items contained in each Addendum prior to issuance.

With the Design-Bid-Build method of project delivery, Addenda are issued during the bidding period. Addenda must be acknowledged by the bidder on the Bid Form. After bids are received, changes are made and communicated by change orders, field orders, or change directive letters.

BCOM Lead Reviewers are often asked: "Is there a state-issued Addendum form or format the A/E could use?" There is no BCOM form or standard format currently available. The next question asked is: "What should an Addendum contain?"

The first page of the Addendum requires the:

- 1) Project title,
- 2) Agency-project code number,
- 3) Addendum number,
- 4) Date of issuance,
- 5) Responsible licensed design professional seal(s) - signed and dated
- 6) Directive statement that orders the document changes and clarifications, that are then listed by items:
  - a. Amendments to earlier Addenda, if applicable,
  - b. Changes to the Drawings,
  - c. Changes to the Project Manual.



The directive language typically requires that an item be clarified, added, deleted, or replaced. These changes often reference attached documents, such as:

- 1) Small-sized drawings/sketches,
- 2) Re-issued large or small drawing sheets,
- 3) Project manual documents (CSI Division 0 and 1 Documents that include CO-Forms),
- 4) New or revised specification sections,
- 5) Portions of the Project Manual Appendices.

Often an Addendum is issued after a Pre-Bid Meeting of the facility/site to answer questions raised by the attendees. These Addenda provide a list of the attendees, minutes of the Pre-Bid Meeting and answers to bidders' questions raised at the meeting. All of this information is made available to the listed attendees, the listed holders of project Bid Documents, the Owner/State Agency, the State Fire Marshal's Office and BCOM – acting for the State Building Official.

The CPSM requires each Addendum page/sheet/sketch/drawing to contain:

- 1) Licensed responsible design professional seal(s),
- 2) Project title,
- 3) Project code,
- 4) Addendum number,
- 5) Date of issuance with page or sequence number to clearly indicate that the material is a part of the bid documents.

Addenda longer than three pages and those containing multiple or large-sized attachments shall be provided by hard copy in triplicate. Each Addendum requiring minor clarifications, corrections or changes shall be issued and sent to BCOM and the appropriate Regional Office of the State Fire Marshal on the date of issuance following the time frames below:

- 1) At least six days prior to the bid receipt date for clarifications,
- 2) A minimum of ten days prior to the bid receipt date for major project changes (referencing price, time, quality and/or quantity changes) or the bid receipt date must be delayed at least ten days.
- 3) Change of the bid receipt date, or bid date cancellation only requires 24 hours' notice prior to the bid receipt date.

Failure to provide Addenda in a timely manner may cause a significant delay in the issuance of a Building Permit. BCOM reviews the content of each Addendum, because the Addenda reflect changes to the approved Bid Documents and become part of the approved stamped Building Permit Documents.

**Summary:** An Addendum offers a concise way to make bid period changes to the Bid Documents and is an effective way to communicate updates to all parties connected with the project during bidding. Each Addendum may be issued in its entirety electronically or by hard copy, depending on the scope and complexity of changes that need to be communicated. Currently, re-issued drawing sheets or large sized change drawings require an entire Addendum to be submitted to BCOM as a minimum of three hard copies. For further guidance on this topic, contact the [BCOM Lead Reviewer](#) assigned to your agency. □

### A/E Contracts and MOUs Reminder

**REMINDER:** Agencies are to submit copies of A/E Contracts (i.e., forms CO-3, CO-3.1, or CO-3.2) to BCOM within 10 days after the contract is executed. Please remember to also include a copy of the associated Memorandum of Understanding (MOU). For CO-3.1 Contracts, please also include a copy of the initial Project Order (CO-3.1a).

This data is compiled by BCOM to create a "Summary of A/E Rates". This summary provides average rates by position type, by year, and is available to agencies by request for their information/use. Individual firm data is not disclosed.

When submitting in electronic format, please submit these documents to the following email address: [coforms@dgs.virginia.gov](mailto:coforms@dgs.virginia.gov) □

## CONSIDERATIONS IN CHOSING A PATH FOR ENERGY CODE COMPLIANCE

The 2012 Virginia Construction Code (section 1301.1.1) requires that every building must be designed and constructed in accordance with the 2012 Virginia Energy Conservation Code (VECC). The VECC in turn states that buildings must comply with either the requirements of the VECC or ASHRAE 90.1-2010. When considering whether to use the VECC or ASHRAE 90.1 for basic energy code compliance, it is important to note that the entire building must comply with the chosen path. That path should be determined early in the design so that the entire design team and the Agency are working to the same standard. There are several differences between the VECC and ASHRAE 90.1 that may make one standard a better fit to a particular project than the other. This article will attempt to highlight some of the primary differences between the prescriptive requirements of the two standards and then shed some light on how the Virginia Energy Conservation and Environmental Standards (VEES) works with them.

Each standard is subdivided into separate systems that effect the energy consumption of the building – Building Envelope; Mechanical; Service Water Heating (Domestic Hot Water); Electrical Power; and Lighting.

### Building Envelope

The opaque thermal envelope requirements of ASHRAE 90.1 are more relaxed than those of the VECC for Virginia's climate as can be seen in Table 1. Fenestration (windows and glass doors) requirements, however, are similar and very only slightly between the two standards.

BUILDING THERMAL ENVELOPE COMPARISON - CLIMATE ZONE 4					
Assembly Component	Comercial Building		Group R		Semiheated <sup>1</sup>
	2012 VECC	ASHRAE 90.1 - 2010	2012 VECC	ASHRAE 90.1 - 2010	ASHRAE 90.1 - 2010
<b>Roofs</b>					
Insulation Above Deck	R-25ci	R-20ci	R-25ci	R-20ci	R-5.0ci
Metal Building	R-19 + R-11 LS	R-13 + R-13 LS	R-19 + R-11 LS	R-13 + R-13 LS	R-10
Attic/Other	R-38	R-38	R-38	R-38	R-19
<b>Walls</b>					
Mass	R-9.5ci	R-9.5ci	R-11.4ci	R-11.4ci	NR
Metal Building	R-13 + R-13ci	R-19	R-13 + R-13ci	R-19	R-13
Metal Framed	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13 + R-7.5ci	R-13
Wood Framed/Other	R-13 + R-3.8ci OR R-20	R-13	R-13 + R-3.8ci OR R-20	R-13 + R-3.8ci	R-13
Below Grade	R-7.5ci	NR	R-7.5ci	R-7.5ci	NR
<b>Floors</b>					
Mass	R-10ci	R-8.3ci	R-10.4ci	R-10.4ci	R-4.2ci
Joist/Framing	R-30	R-30	R-30	R-30	R-13
<b>Slabs-On-Grade</b>					
Un-heated	R-10 for 24" below	NR	R-10 for 24" below	R-10 for 24" below	NR
Heated	R-15 for 24" below	R-15 for 24" below	R-15 for 24" below	R-15 for 24" below	R-7.5 for 24" below
<b>Doors</b>					
Swinging	U-0.61	U-0.7	U-0.61	U-0.7	U-0.7
Roll-Up/Sliding	R-4.75	U-0.5	R-4.75	U-0.5	U-1.45
Notes: 1: VECC does not recognize semiheated spaces. ASHRAE90.1 permits semiheated spaces only where approved by the building official. Semiheated space is defined as a space with sensible cooling capacity is < 5 Btu/h-ft <sup>2</sup> and heating capacity is ≥ 3.4 Btu/h-ft <sup>2</sup> and < 15 Btu/h-ft <sup>2</sup> .					

**Table 1**

The prescriptive requirements of the VECC must be met by each assembly comprising the thermal envelope, while ASHRAE 90.1 offers the designer a Building Envelope Trade-Off Option. This option is essentially a simplified energy model that only focuses on the thermal envelope and allows the designer to “trade off” better performance in one envelope assembly for lesser performance in another. Such as exceptional fenestration performance may make up for an under-performing wall assembly.

### **Mechanical Systems**

For mechanical systems, the most notable difference between the VECC and ASHRAE 90.1 is the economizer threshold. VECC requires economizers on systems with cooling capacities of 2.75 Tons or more, while ASHRAE 90.1 does not require economizer until the cooling capacities equal at least 4.5 Tons. However, while ASHRAE has a less stringent economizer threshold, it also does not permit the relatively simple “Fixed Dry-Bulb” type of economizer control, while the VECC does.

ASHRAE 90.1 also has additional requirements for exhaust systems that serve kitchens and laboratories that are not addressed in the VECC.

Both the VECC and ASHRAE 90.1 require commissioning on mechanical systems, but like economizers they disagree on the threshold requirement. The VECC requires commissioning when the total mechanical equipment capacity is equal to or exceeds 40 Tons in cooling or 600 MBH in heating. ASHRAE 90.1 requires that all HVAC controls systems are tested calibrated and adjusted, but uses 50,000 square feet as the threshold where detailed commissioning is required.

It should also be noted that in general ASHRAE 90.1 is clearer to read than the VECC and is often a good resource when attempting to understand the intent of an equivalent section in the VECC, when the requirements of that section appear confusing. A great example is when to backdraft dampers may be used in lieu of the required motorized damper at outdoor air intakes and exhaust air outlets. Both the VECC and ASHRAE 90.1 have the same exceptions, but ASHRAE 90.1 has presented them in a manner that is more easily understood.

There are some cases, where ASHRAE 90.1 is more comprehensive than the VECC as well. For instance ASHRAE 90.1 has equipment efficiency tables for VRF systems while the VECC does not.

### **Service Water Heating (Domestic Hot Water)**

While there are differences between the two standards for service water heating, they are minor in nature and will not be discussed here.

### **Electrical Power**

The VECC is fairly silent on electrical power requirements, while ASHRAE 90.1 has an entire section devoted to the topic. Most notably ASHRAE 90.1 requires 50% of receptacles in offices and computer classrooms to be controlled by an automatic control device and Addendum “bz” to ASHRAE 90.1 also requires energy monitoring for buildings that are 10,000 square feet or greater.

### **Lighting**

ASHRAE 90.1 lighting power densities tend to be stricter than those allowed by the VECC. Though ASHRAE does permit increases for tall spaces based on room cavity ratios.

### **Other**

For new construction, the VECC also requires the design to meet one of three additional efficiency packages: improved HVAC performance, lower lighting power densities, or onsite renewable energy. ASHRAE 90.1 does not have this requirement.

## VECC and VEES

When new construction is greater than 5,000 sf or a renovation exceeds 50% of the value of the building it must also comply with the High Performance Buildings Act (HPBA). This act provides three different compliance paths: LEED; Green Globes; and VEES. LEED and Green Globes are administered by third parties, and VEES is administered by BCOM. Regardless of the HPBA compliance path, the building must also comply with the energy code by the VECC or ASHRAE 90.1 as shown above. Like the energy code compliance path, the HPBA compliance path must also be chosen carefully and early in the design process.

LEED and Green Globes have rating systems that allow the project to excel in one area to make up for shortcomings in another; VEES on the other hand only offers a prescriptive path to compliance. This means that, like the construction code, each requirement of VEES must be met as it applies to the building.

VEES is based on the 2012 International Green Construction Code, which is intended to be used as an overlay code, and as such mandates compliance with certain sections of the VECC, regardless of energy code compliance path. This does not mean that VEES is incompatible with ASHRAE 90.1, only that some of reasons for selecting ASHRAE 90.1 as the energy code compliance path become moot; such as the relaxed building envelope requirements or the HVAC economizer thresholds.

Following are a few of the highlights where VEES requirements are above and beyond those of the VECC. As VEES is intended to overlay the VECC comparison to ASHRAE 90.1 will not be duplicated below.

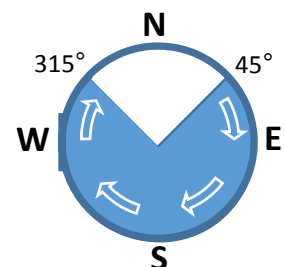
## Building Envelope

VEES requires that the building envelope exceed the U-factor and SHGC requirements of the VECC by 10% as shown in Table 2. This is not an insulation R-Value adjustment but rather an adjustment in the entire assembly's U-factor and as such this will require U-factor calculations for assemblies.

BUILDING THERMAL ENVELOPE COMPARISON - VECC/VEES				
Assembly Component	Commercial Building		Group R	
	2012 VECC	2012 VEES	2012 VECC	2012 VEES
<b>Roofs</b>				
Insulation Above Deck	U-0.039	U-0.035	U-0.039	U-0.035
Metal Building	U-0.035	U-0.032	U-0.035	U-0.032
Attic/Other	U-0.027	U-0.024	U-0.027	U-0.024
<b>Walls</b>				
Mass	U-0.104	U-0.094	U-0.090	U-0.081
Metal Building	U-0.052	U-0.047	U-0.052	U-0.047
Metal Framed	U-0.064	U-0.058	U-0.064	U-0.058
Wood Framed/Other	U-0.064	U-0.058	U-0.064	U-0.058
Below Grade	C-0.119	C-0.107	C-0.119	C-0.107
<b>Floors</b>				
Mass	U-0.076	U-0.068	U-0.074	U-0.067
Joist/Framing	U-0.033	U-0.030	U-0.033	U-0.030
<b>Slabs-On-Grade</b>				
Un-heated	F-0.540	F-0.486	F-0.540	F-0.486
Heated	F-0.650	F-0.585	F-0.650	F-0.585
<b>Fenestration</b>				
Fixed	U-0.380	U-0.342	U-0.380	U-0.342
Operable	U-0.450	U-0.405	U-0.450	U-0.405
Entrance Doors	U-0.770	U-0.693	U-0.770	U-0.693
Skylights	U-0.500	U-0.450	U-0.500	U-0.450
SHGC (All)	0.400	0.360	0.400	0.360

Table 2

VEES also requires permanent exterior shading projections (0.25 projection factor) for vertical fenestration facing from Northeast to Northwest (45° - 315° from North). Depending on the size and location of the fenestration relative to other building construction, this can be done simply by recessing the windows, increasing soffit overhangs or may require horizontal projections (fins).



### **Mechanical Systems**

Similar to ASHRAE 90.1, VEES does not permit the use of the “Fixed Dry-Bulb” economizer control logic. Also similar to ASHRAE 90.1, VEES imposes additional restrictions on kitchen and laboratory exhaust systems when the total exhaust rate is greater than 5,000 cfm.

VEES reduces the threshold for VAV fan control to all fans with motors equal to or greater than 1.0hp. (VECC threshold is  $\geq 7.5$  hp)

### **Service Water Heating (Domestic Hot Water)**

VEES requires waste water heat recover systems for group A-2, F, R-1, R-2, A-3 and I-2 facilities except single story facilities on grade or crawl space. The types of controls permitted to be used on recirculation systems are limited under VEES.

The developed length of hot water piping from the heating source (recirculation loop or water heater) to the plumbing fixtures is restricted under VEES. Normally the plumbing code allows up to 50 feet of developed pipe length from the source to a plumbing fixture. However, to limit the amount of water wasted by users waiting for hot water to reach the plumbing fixture, VEES restricts the length of piping to that shown in Table 3.

NOMINAL PIPE OR TUBE SIZE (inch)	LIQUID OUNCES PER FOOT OF LENGTH	MAXIMUM PIPE OR TUBE LENGTH		
		System without a circulation loop or heat-traced line (feet)	System with a circulation loop or heat-traced line (feet)	Lavatory faucets – public (metering and nonmetering) (feet)
$\frac{1}{4}$ <sup>a</sup>	0.33	50	16	6
$\frac{5}{16}$ <sup>a</sup>	0.5	50	16	4
$\frac{3}{8}$ <sup>a</sup>	0.75	50	16	3
$\frac{1}{2}$	1.5	43	16	2
$\frac{5}{8}$	2	32	12	1
$\frac{3}{4}$	3	21	8	0.5
$\frac{7}{8}$	4	16	6	0.5
1	5	13	5	0.5
$1\frac{1}{4}$	8	8	3	0.5
$1\frac{1}{2}$	11	6	2	0.5
2 or larger	18	4	1	0.5

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m, 1 ounce = 29.6 ml.

a. The flow rate for  $\frac{1}{4}$ -inch size pipe or tube is limited to 0.5 gallons per minute; for  $\frac{5}{16}$ -inch size, it is limited to 1 gpm; for  $\frac{3}{8}$ -inch size, it is limited to 1.5 gpm.

**Table 3**  
**( IgCC Table 702.8.2 )**

### **Electrical Power**

VEES adds requirements for plug load controls and electrical system efficiencies. These are similar to, but not the same as ASHRAE 90.1 plug load controls.

### **Lighting**

VEES makes some modifies to lighting control requirements but does not reduce the maximum installed lighting power densities.



### Other

Commissioning requirements under VEES are more comprehensive and are expanded to cover electrical, lighting, and envelope systems as well as mechanical and are required on all buildings covered by VEES.

Renewable energy systems or renewable energy credit ownership is required on all VEES buildings as well as energy metering and monitoring. VEES also adds requirements for specific appliances and equipment not governed by the VECC such as elevators and escalators.

### Summary

In an effort to not limit the designers into a particular design, the energy code and the HPBA provide multiple paths to compliance. It is critical that both of these paths to compliance be determined early in the design and communicated to all parties involved, including BCOM. There are significant differences between VECC and ASHRAE 90.1 that make changing compliance paths more difficult as the design progresses.

Please note: The Construction and Professional Services Manual requires that the design team notify BCOM of the selected compliance paths for both the energy code and the HPBA at schematic designs and identify those paths on the title sheets to the drawings. □

## ADDITIVE BID ITEMS

As the economy strengthens, inflation follows. An effective method to ensure contract award when prices are escalating is to include Additive Bid Items within the project Bid Form. When project cost estimates indicate the planned project scope may not be had within the current budget and available funding, consider restructuring the project to separate out certain desirable, but non-essential, project elements as Additive Bid Items.

Section 5.10 of the *Construction and Professional Services Manual* (CPSM) addresses the use of Additive Bid Items in more detail. Key limitations in the use of Additive Bid Items are as follows:

- A maximum of four (4) Additive Bid Items may be included in the Bid Form.
  - Additive Bid Items shall not be used to provide essential elements or elements without which the building would not be habitable, functional or safe (e.g., water supply connection, required lighting levels, adequate HVAC capacity, etc.).
  - Additives shall not be used as a shopping list for upgrades or substitutes.
  - The scope of each Additive Bid Item must be a complete component of Work.
  - Additive Bid Items shall be independent from each other.
  - Additive Bid Items shall be sequenced such that the most essential Additive is listed first.
  - Additives must be exercised in sequential order up to the amount the Owner, in its sole discretion, decides to award.
  - Negotiation of Additive Bid Items is prohibited; only the Base Bid Amount may be negotiated.
- Refer to the [CPSM](#) Section 5.10 for more detailed guidance on the use of Additive Bid Items. □