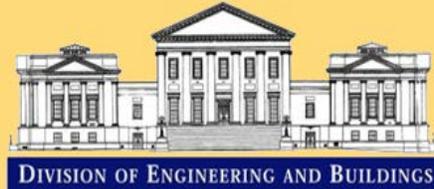


# DEB NEWSLETTER



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## Join DEB in Wytheville for “DGS on the Road”

DEB’s April Newsletter provided information on the inaugural “DGS on the Road” event at Wytheville Community College on June 18. DEB Director W. Michael Coppa will present information about DEB and take your questions from 9:00 to 10:00 a.m. Other DGS business units will present information from 9:00 a.m. until noon. There is no fee for this event and free parking is available.

**UPDATE:** The event has been relocated to another building on the Wytheville Community College campus. The sessions will now be held in Galax Hall rather than Grayson Hall. Please visit <https://dgs.virginia.gov/dgsontheroad> for additional information, directions, and to register.



The DEB Newsletter is a monthly publication of the Department of General Services’ Division of Engineering & Buildings. Prior Newsletter issues are available on the [DEB Newsletter](#) webpage. To subscribe, visit the self-service [DEB Newsletter Subscription](#) webpage.

## DEB Welcomes Three New Professionals

DEB welcomes Stuart Jones, Yusufu Lere, and Steve L'Heureux to our project review group.



**Stuart Jones** is a Professional Engineer who recently joined DEB as a State Review Mechanical Engineer. Stuart earned both his Bachelor of Science in Mechanical Engineering and his Master of Engineering degrees from the University of Virginia. Stuart has over 30 years of engineering experience with a broad background, including work in commercial consulting and nuclear power generation. He previously worked for Hankins and Anderson, Hanover Engineers and HS Engineering. He is an active member of the Richmond chapter of ASHRAE.



**Yusufu Lere** is a Professional Engineer who recently joined DEB as a State Review Civil/Structural Engineer. Yusufu earned both his Bachelor of Science degree in Civil Engineering and his Master of Engineering degree (majoring in Civil Engineering and Minor in Structural Engineering) from Howard University. Prior to that, Yusufu earned a Nigerian National Diploma in Civil Engineering from Kaduna Polytechnic in Nigeria. Yusufu has over 25 years of engineering experience with McKinney and Company in Ashland and prior work experience with various engineering consulting firms in Baltimore, Washington, DC, and New York.



**Steve L'Heureux** is a Licensed Architect who recently joined DEB as a State Review Architect. Steve has his Bachelor of Architecture degree from Syracuse University. Steve worked for Commonwealth Architects in Richmond for over 12 years. Prior to that, Steve worked at Platt Architecture in North Carolina and also for Upper Loft Design in Georgia. Steve has served on the Board of the Construction Specifications Institute, Richmond Chapter, in various capacities, including 2016 President. Steve's assigned agencies include:

- 146 - Science Museum of Virginia
- 156 - Department of State Police
- 203 - Wilson Workforce and Rehabilitation Center
- 214 - Longwood University
- 423 - Department of Historic Resources
- 720 - Department of Behavioral Health & Developmental Services
- 777 - Department of Juvenile Justice

## Public Service Recognition



*For DGS/DEB engineer, public service is about 'helping people be successful' ...*

DEB civil/structural engineer, **Fred Kirby**, was featured recently as one of several DGS employees honored during Public Service Recognition Week. In November, Fred celebrated his 20-year anniversary with the Department of General Services. He works with agencies to help assure the plans submitted by their design consultants comply with the applicable codes and standards.

Fred also administers the Virginia Construction Contracting Officer (VCCO) examination and has served as a blood drive coordinator for nearly two decades.

[View the complete article about Fred on the DGS website.](#)

## VCCO Update

**Marcia Powers** with the Virginia Community College System recently passed the Virginia Construction Contracting Officer (VCCO) certification examination.

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.

## CPSM Forms 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 #	Form Name	aka	Rev. Date (mm/yy)
<a href="#">DGS-30-000</a>	DEB Forms Master List		06/19
<a href="#">DGS-30-199</a>	Project Planner	CR-1	06/19
<a href="#">DGS-30-199 Example</a>	Project Planner - Example	CR-1 - Example	06/19
<a href="#">DGS-30-380</a>	Transmittal for DEB Review Services		06/19

## Interim Fire Safety in Occupied Buildings

In terms of fire safety, it is fair to say that most designers devote the bulk of their efforts to ensuring that the finished building project is in compliance with the VUSBC and the governing design standards. And rightly so. But, what about the safety of occupants who remain inside of a building undergoing a renovation? Does the building code speak to this, or is this just a means and methods issue that the Contractor is required to address? The purpose of this article is to illustrate that the design team as well as the Agency do, in fact, have a responsibility to think about and make provisions for interim fire safety during construction. This charge originates in the VUSBC and draws upon provisions from the International Fire Code as well as other standards.

VUSBC 2015 Part I – the Virginia Construction Code (VCC) – Section 103.1.1 indicates that VUSBC Part II – the Virginia Existing Building Code (VEBC) – is applicable to construction and rehabilitation activities in existing building and structures. In the case of building renovation projects, all subsequent code requirements therefore stem from the VEBC, including interim fire safety-related items. Chapter 12 of the VEBC is dedicated solely to Construction Safeguards. VEBC 1201.5 states that “fire safety during construction shall comply with the applicable requirements of the International Building Code (incorporated by reference into the VCC) and the applicable provisions of Chapter 33 of the International Fire Code (IFC).”

Herein lies the bridge between the VUSBC and the IFC with respect to fire safety during construction. Consider this the starting point by which the designer is charged to account for such requirements in the Working Drawings phase of a project. Keep in mind that the overarching intent is to protect occupants within existing buildings undergoing demolition and construction activities. While there is certainly value in protecting the property itself, the primary objective is life safety. IFC 3301.2 puts it this way: “This chapter prescribes minimum safeguards for construction, alteration and demolition operations to provide reasonable safety to life and property from fire during such operations.” For items not specifically addressed in Chapter 33, IFC 3301.1 requires compliance with NFPA 241 – Standard for Safeguarding Construction, Alteration, and Demolition Operations.

Now that the interconnection between the VUSBC, the IFC, and NFPA 241 has been clearly established, what does this mean in practical terms for a real project? While a number of fire safety-related items are discussed in these referenced codes and standards, the remainder of this article will focus on three of the most common applications encountered on state building renovation projects: 1) Maintenance of the Required Means of Egress, 2) Impairment of Fire Protection Systems, and 3) Temporary Separation of Construction Areas.

### INTERIM FIRE SAFETY CODE HIERARCHY

**VCC 103.1.1**

**VEBC 1201.5**

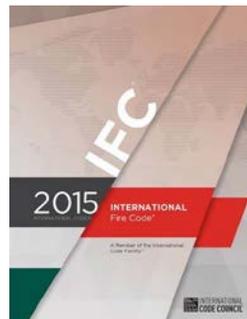
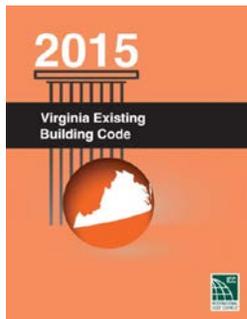
**IFC 3301.1**

**NFPA 241**

## Maintenance of the Required Means of Egress

A means of egress serving building occupants is only as good as its ability to be accessed and utilized. The premise of this requirement is that, if occupants are in the building, then they must be able to get out of the building in an emergency scenario. VEBC 1205.2 and IFC 3311.2 contain virtually identical language, stating that “required means of egress shall be maintained at all times during construction, demolition, remodeling or alterations and additions to any building.” The only exception to this is when a temporary means of egress arrangement has been approved by the State Building Official.

Designers and Agencies must work together during the development of a project to understand which portions of the building must remain occupied with respect to the area of work, and which portions can be temporarily unoccupied in order to accommodate the required work. Interim life safety plans may be required in order to convey the intent for occupancy, the proposed phasing of work, and all temporary measures necessary to ensure continual maintenance of and access to all required means of egress. For example, there are times when it may be acceptable to restrict access to a particular door. However, it must be demonstrated that common path of travel distance, dead end corridor distance, temporary relocation of exit signs, and similar requirements have been accounted for. The incorporation of interim life safety plans can accomplish this.



## Impairment of Fire Protection Systems

Required fire sprinkler, fire alarm, and other fire protection systems must remain fully operational if a building undergoing a renovation is to remain occupied. In other words, the systems must be installed and must function in accordance with their governing design standards, such as NFPA 13 for fire sprinkler systems and NFPA 72 for fire alarm systems. Otherwise, the fire protection system is considered to be “impaired.” IFC 3308.6 states that “impairments to any fire protection system shall be in accordance with IFC Section 901.”

For example, the removal of a ceiling membrane for the replacement of an HVAC system would compromise existing pendant sprinklers since they would not be positioned properly with respect to the structure above. An option typically employed in this scenario is to temporarily replace all impacted existing pendant sprinkler heads with upright heads and turn the piping up so that they are within an NFPA 13-compliant distance from the structure above. Similarly, ceiling-mounted fire alarm devices such as smoke detectors would not be positioned properly to respond to smoke while the ceiling is removed and may require temporary relocation to maintain functionality. Any project involving the full or partial replacement of a fire protection system, such as the replacement

of a fire pump, a fire alarm control panel, or even a complete fire alarm and detection system, is bound to result in temporary system impairments, particularly during system changeover.

IFC 901.7 requires the building to be evacuated or an approved fire watch provided for all occupants left unprotected when a fire protection system is impaired in any way. This, too, requires coordination between the design team, the Agency, and the Contractor since fire watch services can be costly the longer they are required. Solutions such as the temporary modifications to fire sprinkler piping described above should be documented clearly in the Working Drawings to convey the intent for interim fire safety during construction.

Depending on the nature of the renovation work and the intended occupancy of the building it has at times been acceptable for the Contractor to perform the fire watch duties during construction work hours since their personnel are present within the area of work and can respond in the case of a fire (response protocol must be communicated in writing to the State Building Official for approval). This presumes that the fire protection systems remain fully functional throughout the remainder of the building at all times. After construction work hours (i.e. when the workers go home for the day) an approved fire watch must then be employed if the building will continue to be occupied while the fire protection systems remain impaired. For more information on the definition and duties of approved fire watch personnel, refer to IFC 202, 403.12.1, and 3304.5.

## **Temporary Separation of Construction Areas**

Portions of an occupied building that are undergoing renovations are required to be separated from adjacent occupied areas via temporary separation walls. This requirement is found in NFPA 241-8.6.2 and is intended to protect building occupants from the inherently higher hazards associated with construction areas. In buildings that are equipped with an automatic sprinkler system, these temporary walls are not required to be fire resistance rated but shall nonetheless be constructed of materials that are permitted based on the Type of Construction of the building. Temporary separation walls in non-sprinklered buildings are required to be rated for a minimum of 1 hour with at least 45-minute opening protectives. Though not explicitly stated in NFPA 241, rated separation walls are assumed to extend from the floor to the underside of the deck or floor-ceiling assembly above, similar to the requirements for fire barriers found in VCC 707.5.

It is important for the design team to understand where temporary separation walls are required to be located based on the proposed scope of work. The addition of these elements may easily encroach upon or restrict access to required means of egress in the building and must be carefully planned. If these walls are not shown on the Working Drawings, code compliance issues may arise in the field resulting in costly changes to the program and, ultimately, the ability of the Agency to fully occupy their building in a timely manner.

In conclusion, fire safety during demolition and construction activities, particularly within occupied buildings, is a critical consideration that involves the expertise of the design team, the Agency, and the Contractor. A prudent project team will recognize the significance of weighing these factors early in the design process and provide as much direction as possible on the Working Drawings to convey the intent. The main takeaway is that interim fire safety cannot simply be pushed down the road as an afterthought to be addressed in the field. It is a design requirement that originates from the VUSBC and is the responsibility of all parties involved.

## Project Planner (CR-1) Guidance

When a major project need is identified by an agency, the agency provides justification and a proposed project budget to the Department of Planning & Budget (DPB) during the annual budget development cycle. The Capital Outlay Reviewers at DGS/DEB assist DPB and the Six-Year Capital Outlay Planning Advisory Committee (aka, "6-PAC") in reviewing the various agencies' proposed project budgets and provide cost recommendations for funding the bond pools. Most major capital projects that employ state funds receive those funds via the "pool process".

Under the "pool process", rather than an outcome of individual funding for projects at the conceptual budget development phase, the funding recommendations for approved projects are consolidated into one or more pools. When more detailed design information is available at the Schematic Design Phase, budget targets can be established, and at the Preliminary Design Phase, firm recommendations for individual project construction budgets can be established. At these phases, as more detailed design information is available, project systems, features, and components can be quantified and hence more accurate estimates of cost can be developed. The budget outcome of the Preliminary cost review phase is an individual, fully-approved construction budget for the project.

At the conceptual budget development phase, the program needs for the project can be well-defined by the agency, but translating those needs into an accurate, detailed, quantifiable estimate is not possible. Rather the agency knows the "type" of facility needed (e.g., classroom, laboratory, office, etc.), the proposed location, the general timeframe for its design and construction, and the approximate size (square footage) required. However, the agency has very few, if any, quantifiable building components and system details that can be priced. Hence, the most widely-employed process for developing conceptual project budgets is to use similar types of comparable projects (aka, "comps") and adjust the comps' unit costs (\$'s per square foot, typically) for size, location, and escalation to align with the proposed project. The agencies likely know certain special conditions that will be encountered on their project (e.g., demolition, poor soils, security needs, and phased construction) that were not factors on the model projects. Adjustments to accommodate these special conditions/requirements must also be made to fine-tune the conceptual project estimate.

To establish a framework for agencies to develop their Capital Budget Requests, last year DEB released the CR-1 Project Planner (see article in DEB Newsletter #37). This spreadsheet model (in Excel format) allows agencies to enter construction and soft costs to produce a complete project budget and to identify the proposed building attributes and architectural program.

A new version of the CR-1, Project Planner ([DGS-30-199](#)) and an associated completed Example ([DGS-30-199 – Example](#)) were recently uploaded to the DGS Forms Center as noted on Page 3 of this Newsletter. To further assist agencies, in better understanding and using this valuable tool, DEB Capital Outlay Reviewer, Ron Semel, developed a [CR-1 Cost Calculation Guidance](#) document. This more detailed Guidance document is now available on the DEB website for reference and use by state agency personnel during the upcoming budget development cycle.