DEPARTMENT OF GENERAL SERVICES

Division of Engineering & Buildings

DEB Newsletter

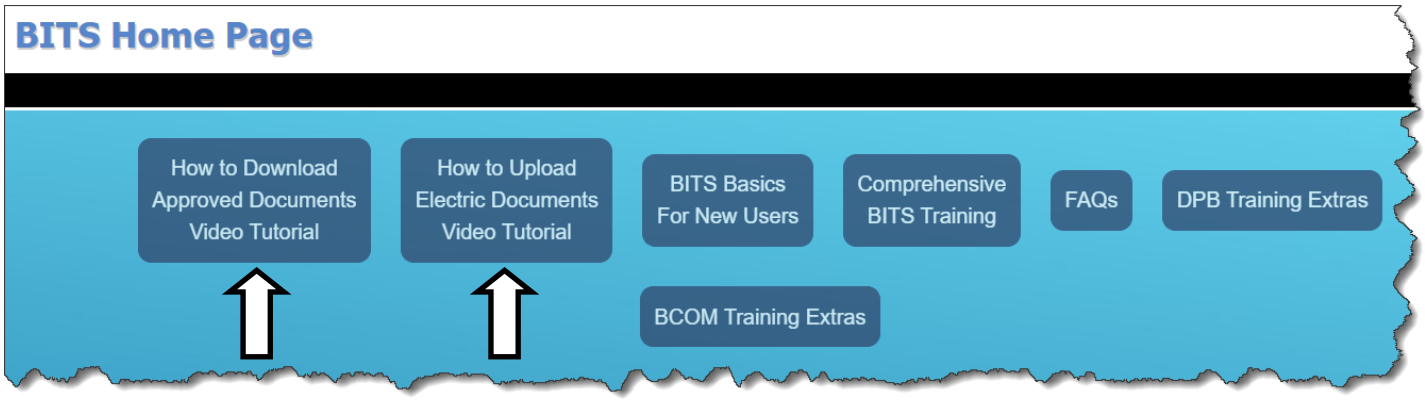
#80

Summer 2023

Energy Reviews

In August of 2022, the State Review Energy Engineer position was created. The primary role of the State Review Energy Engineer is to provide Virginia Energy Conservation Code (VECC) and Virginia Energy Conservation and Environmental Standards (VEES) design reviews of Commonwealth construction projects. This is a new position within the Division and will supplement the reviews of architectural, mechanical, electrical, plumbing, and civil disciplines for compliance with VECC and VEES. Contact your Lead Reviewer for additional details.

New EDR Video Tutorials Available in BITS

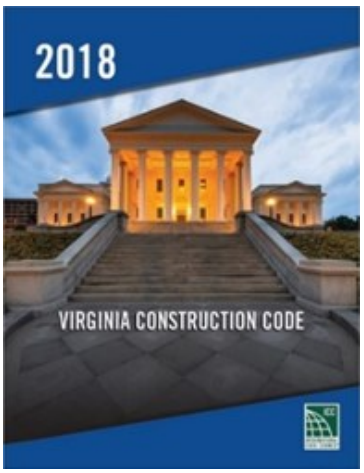


With the continuing advancement of electronic document review (EDR) capabilities at DEB, it is important to understand the procedures for uploading and downloading electronic documents in the Building Information Tracking System (BITS). To facilitate this, the BITS home screen now includes two new video tutorials which walk the user step-by-step through the entire process. Refer to CPSM Appendix S for more information.

Also in this issue:

Fire Protection System Piping and Stair Enclosures

An interior exit stairway in a multi-story building is arguably one of the most critical elements of the means of egress system. Being able to quickly - and safely - exit an upper floor and discharge directly to the exterior of the building during a fire emergency is of utmost importance. For this reason, the building code requires a robust level of passive fire protection for the stairway enclosure itself and imposes a strict limit on its use/purpose as well as the components that may be located within it. This article will focus specifically on an item commonly found within most stairways in one form or another: fire protection system piping.



The 2018 Virginia Construction (VCC) section 1023.1 states that "an interior exit stairway shall not be used for any purpose other than as a means of egress and a circulation path." This means that building components and systems are generally prohibited from penetrating into a stairway unless such items directly serve the purpose of the stair. VCC section 1023.5 lists a few of these special exceptions, which includes fire protection systems. For the purpose of this discussion, standpipe systems governed by the 2016 edition of NFPA 14 will be considered.

The question may be asked, why are standpipes permitted to be located in stairways when they don't appear to directly serve the actual stairway itself? Well, in the case of a fire, consider how first responders approach the building. Stairways are, by design, resistant to fire for up to two hours and provide safe access to each floor. This is the ideal place for firefighters to stage their approach and prepare their equipment and hoses on any given floor to manually extinguish the fire.

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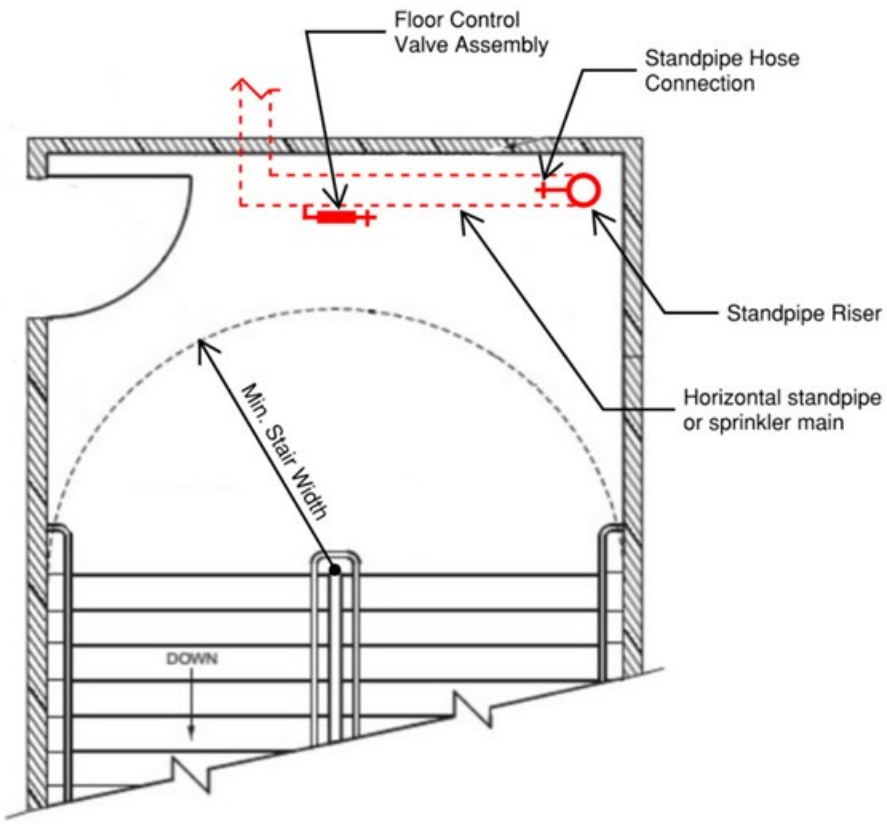
Hose connections, which typically extend from the standpipe riser (although they may also be inside wall cabinets), provide the means of access to the required water flow and pressure for fire department use which is pumped through the standpipe riser via the fire department connection (FDC).

Intuitively, it stands to reason that the standpipe system would be accessible from the stairway and be inherently survivable for at least as long as the stairway enclosure itself. In fact, VCC section 905.4 Item 1 explicitly requires standpipe hose connections to be located in every required interior exit stairway at the main floor landing of each floor. VCC section 905.4.1 further states that any standpipe riser not already located within the stairway "shall be protected by a degree of fire resistance equal to that required for vertical enclosures in the building in which they are located."



For the reasons stated above, the stairway itself is clearly the ideal home for fire protection system piping. And yet, there is more to the story than this. Careful consideration by the design team is necessary to ensure that the fire protection system piping and related components are located within the stairway so as to not adversely affect the primary day-to-day purpose of the stairway: egress and circulation. In short, these components must be present but must not get in the way.

From a means of egress standpoint, the fire protection system piping and components shall not reduce or protrude into the required width of the stairway. VCC section 1011.2 provides guidance on the required width of the stairway, which must be maintained throughout, including at the landings. This is what is commonly referred to as "the arc", as shown in the illustration here. It is commonly understood that all standpipe system components should never breach the arc on the floor landing of a stairway, and this is generally feasible with a bit of design forethought. However, it is not sufficient to merely located fire protection system piping and components outside of the arc. There is another consideration, and it deals with the second stated purpose of interior exit stairways: circulation.

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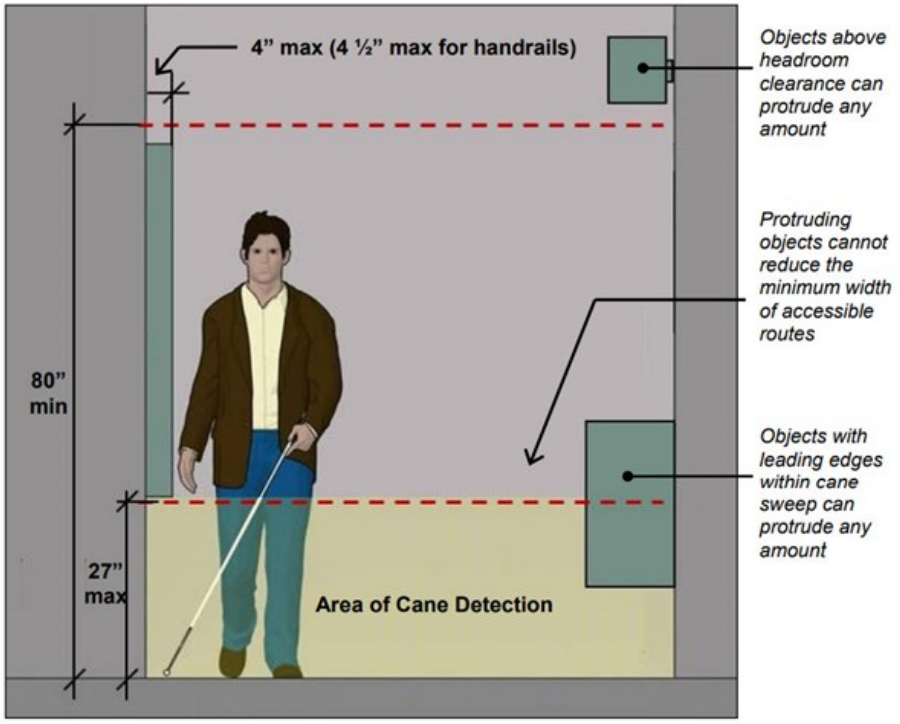
A circulation path is defined in VCC Chapter 2 simply as "an exterior or interior way of passage from one place to another for pedestrians." From the standpoint of circulation, the entire walking surface is considered - not just the theoretically required egress width. In other words, the entire stairway landing is in view, including the floor area outside of the arc. VCC section 1003.3 contains provisions for dealing with protruding objects on circulation paths.

In summary, the designer would do well to remember three numbers to capture the essence of the protruding object provisions: **4 - 27 - 80**. That is, objects shall generally not protrude horizontally more than 4 inches into a circulation path within the range of 27 to 80 inches above the floor.

This graphic is borrowed from the U.S. Access Board Technical Guide for Protruding Objects (Feb. 2014), which visually summarizes these provisions. It is noted that the VCC protruding object provisions are essentially the same as the ADA provisions. As seen in the graphic, the primary concern is cane detection. Objects protruding into the circulation path outside of these limits may not be detected and could cause injury, or worse.



Protruding object limits apply to the full width of circulation paths.

In the case of standpipe systems, the risers are generally full-height elements extending from the walking surface up to the next floor. Since risers are therefore continuous below the 27-inch mark, they are detectable by a cane and are not considered to be protruding objects. But, what about the hose connections? NFPA 14 section 4.7.5 requires at least 3 inches of clearance between any adjacent object and the handle of the valve. Furthermore, the height of the hose connection above the floor surface is required to be between 36 and 60 inches and shall not be obstructed by any stairway door or other objects on the landing per NFPA 14 section 7.3.1. By design, hose connections fundamentally break the protruding object rules. However, due to the unique nature of these components and the absolute necessity of their presence in the stairways, hose connections are an exception to the rule. Nevertheless, care should be taken to orient the hose connections …

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… in the most favorable manner with respect to circulation flow while still meeting the installation requirements of NFPA 14. Under no circumstance should the hose connection protrude inside the minimum egress width arc.

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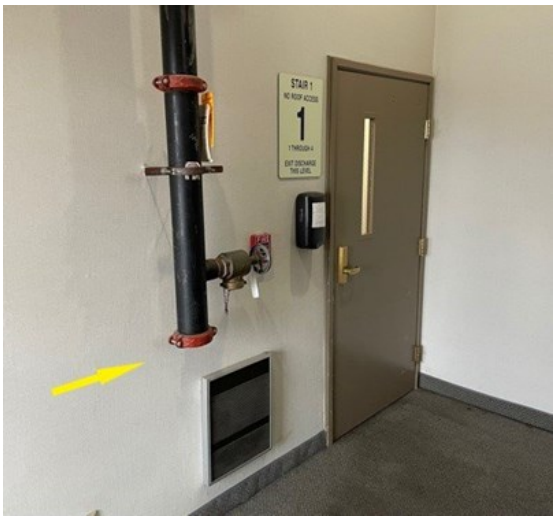


Consideration should also be given to circumstances where the standpipe riser may not extend all the way to the floor of the circulation path. This is a common situation that occurs at the lowest landing of a stairway, as shown in the adjacent photo. While the design of the standpipe system itself may not require the riser to extend much below the hose connection at 36 to 60 inches above the floor, the 27-inch protruding object provision still applies. With some careful design forethought, the riser may simply be designed to extend down to a height below the 27-inch threshold. In a pinch, it may also be possible to install a component below the riser to function as proper cane detection, but this would be more of an after-thought solution when time is of the essence.

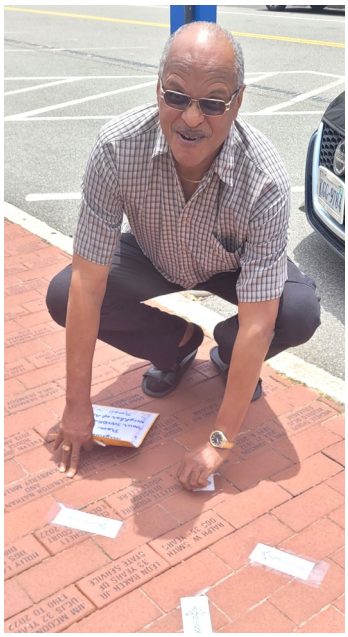
Beyond the riser itself, many standpipe systems include horizontal piping components. Most commonly, a horizontal sprinkler main will extend from the riser to serve the sprinkler system on the associated floor. However, there could be other reasons for horizontal piping to extend from the riser, such as standpipe interconnection, horizontal offsets where the stair enclosure above or below may not align, FDC piping, etc. It is important to remember that the protruding object provisions apply to all components in the fire protection system piping, including horizontal piping and the various trim components that may be present. For example, a sprinkler main will typically be equipped with a floor control valve (FCV) assembly to control the sprinkler water supply for a given floor, such as the one shown in the image here. FCV assemblies often include test and drain attachments and other components that extend even further below the main itself. Since these components almost always occur more than 4 inches away from the wall, it is important that they are located entire above 80 inches.

As demonstrated here, fire protection system piping and components can - and should - be located within interior exit stairways. This is considered to be a “safe haven” for occupants as well as first responders. However, this allowance does not give the designer license to violate the fundamental purpose of the stairway, which is to provide a safe means of egress and circulation path for all building occupants. Careful attention should be given during the design phase of a project to ensure that this primary goal is achieved through intertrade coordination and adherence to all applicable code provisions. ■

Isaac Abraham and John Swecker Join DEB

Isaac Abraham III is a professional cost estimator with over 20 years of private sector experience in the construction industry. For the past 10 years, he has served as Vice President of D & H Construction Services, Inc. Prior to that, he worked for TEAM ACP and also for Prestige Construction Group, Inc. Isaac earned a Bachelor of Science degree in Architectural Engineering from North Carolina Agricultural & Technical State University and a Master of Professional Studies in Real Estate from Georgetown University.

John Swecker is a Professional Engineer and LEED Accredited Professional with over 25 years of experience. He recently joined DEB as a State Review Civil/Structural Engineer. John earned his Bachelor of Science degree in Civil Engineering with a concentration in Structural Engineering from Old Dominion University. He also earned a Bachelor of Science degree in Forestry with a Concentration in Environmental Resource Management and a Minor in Environmental Sciences from Virginia Tech. John worked as Lead Structural Engineer at Moseley Architects, P.C. for over 20 years, providing structural design and analysis for construction and renovation of commercial, residential, government, and institutional buildings.



Ralph Smith Retires from DEB

Ralph Smith retired from the Division of Engineering and Buildings at the end of March after working for the Commonwealth of Virginia for over 35 years. Ralph had extensive knowledge of the CO Forms process. We will miss that knowledge, his sense of humor, and his laugh and wish him the best in his retirement.

VCCO Updates

The following individuals recently passed the Virginia Construction Contracting Officer Certification Exam:

- Joanne Bryant - DGS
- Kenneth Daniel - DMA
- John Dyer - VDOT
- David Kidd - GMU
- Annie Korn - JMU
- Steven L'Heureux - VCCS
- Garrett Morris - JMU
- Erich Roscher - VSDB
- Katherine Serotin - GMU
- Erich Thomas - DCR
- Judi Whitt - DGS

Baby Changing Facilities

Code of Virginia § 2.2-1147.3

CPSM Section 4.4.3.1 requires agencies to have developed a comprehensive plan to install baby changing facilities in existing buildings by 07/01/2023. For renovation projects submitted for DEB review, include a note identifying how the plan to install baby changing facilities has been accomplished or indicate compliance as a part of the work.

Form Updates

DGS-30-128 - CO-13.1C, Certificate of Partial or Substantial Completion by Agency Project Manager

This form has been re-titled from identifying the Construction Inspector, Manager, or Administrator to identifying the Agency Project Managers as the signatory and added the responsibility to ensure that the work has been completed in accord with construction documents that have been reviewed and approved by the State Building Official. The following words have been added: "All changes to the Work that affect building code compliance or accessibility have been submitted to DEB for review and approved." Completion and submission of this document is required as part of the Application for Certificate of Occupancy or Building Permit close out.

DEB Notices

021423 - 2022 Edition - Construction & Professional Services Manual - Revision 1

The purpose of this notice is to announce the issuance of Revision 1 of the 2022 Edition of the Construction and Professional Services Manual (CPSM) and to summarize the changes which have been incorporated since Revision 0 of the 2022 Edition was issued on 08-01-22.

031323 - High-Risk Contract Submission and Review Shielded Outdoor Light Fixture Selection

This notice ensures that agencies recognize their responsibility to comply with the Code of Virginia (COV) §2.2-4303.01, High-risk Contracts and COV §2.2-1111, Item B.3, Shielded Outdoor Light Fixtures and informs agencies of the impact of these statutes on project award and design.

052523 - Electronic Building Permit Documents

Notify agencies that the submission for final approval and signature to the State Building Official of building permit documents (building permit documents, building permit revision documents and shop drawings) for which all review comments have been resolved shall be made by electronic submission rather than the previously required three (3) paper copies, as indicated in the 2022 Revision 1 Construction and Professional Services Manual (CPSM), Section 5.11.1, Electronic Documents Submission. This action shall supersede all requirements for paper documents in the CPSM with the exception of Sensitive Documents as outlined in CPSM Appendix S, DEB Electronic Document Review (EDR) Process Document Submittal Requirements.

Employment Opportunities

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Looking for an exceptional career opportunity? Consider joining the DEB team here in Richmond. Our employees enjoy a comprehensive benefits package, flexible work schedules with teleworking potential, and the chance to be involved in a wide variety of projects all across the Commonwealth. Come and make a difference with us! See below for current opportunities:

Capital Outlay Program Manager - EE061

The Department of General Services, Division of Engineering and Buildings is seeking a qualified Capital Outlay Program Manager. As an experienced construction professional, the Capital Outlay Program Manager exercises their knowledge, skills, and abilities to set policies and provide guidance to agencies and institutions of higher education across the Commonwealth on project budgets, procurement, and contracting methodologies for a wide variety of project types and sizes. In addition to providing specific project guidance, the Capital Outlay Program Manager plays a critical role in the overall management of the Commonwealth's capital programs through tracking, forecasting, and reporting regarding the overall status and potential future needs for capital funding.

Building Permit and Systems Management Coordinator - EE013

We are seeking a qualified Business Operations Specialist to support the Capital Outlay Program and State Building functions. This position will perform tasks related to processing of building official forms, temporary permit review and processing, demolition permit review and processing, and coordination of training and certification programs and provide system support for Division functions.