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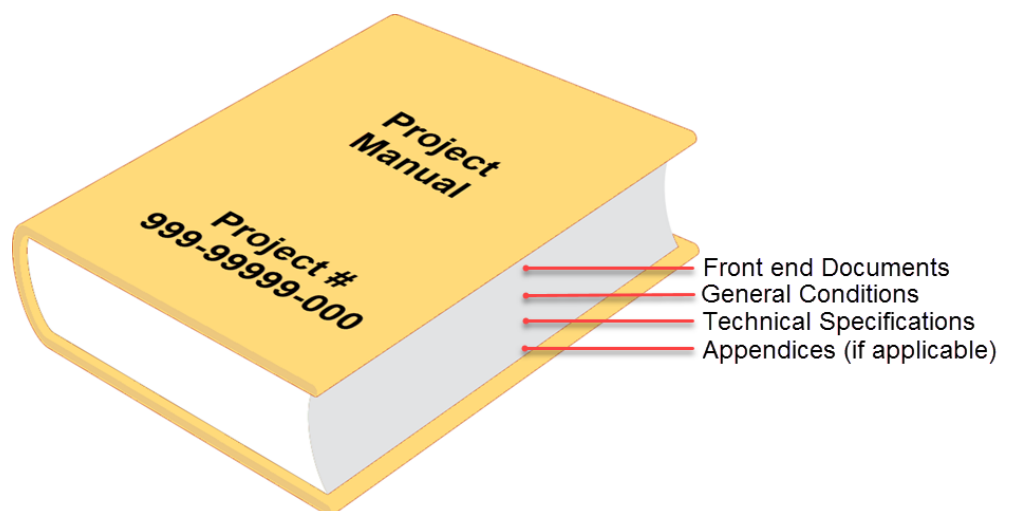
## ✓ **Preparing Project Manuals and Specifications**

In the fast-paced schedules of architects and engineers to prepare graphic documents, the time needed to prepare clear and correct Project Manuals and Specifications for state-owned facilities can often get overlooked. Attention given to the following few details, while editing for a specific project, may reduce the amount of DEB review comments and may avoid potential RFIs during construction.

A **Project Manual** is defined in CPSM, Chapter 2 as *"The assemblage of documents including the front end documents that establish the contract requirements for construction, the specifications which establish the technical requirements for the materials and installation of construction, and appendices if applicable."*

**Specifications** are defined in CPSM, Chapter 2 as *"Those portions of the Contract Documents containing the General Conditions as well as written technical descriptions of materials, equipment, construction systems, standards and workmanship describing the proposed Work in sufficient detail for the Contractor to perform the Work and providing sufficient information for the Building Official to determine Code Compliance."*

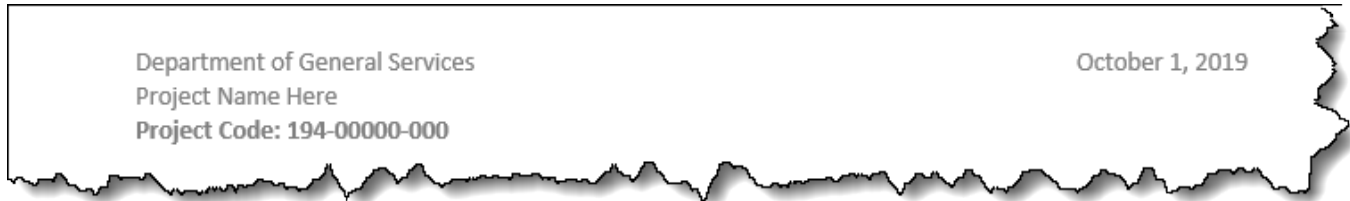
Often, these two terms, Project Manual and Specifications, are used or referenced synonymously. However, it is important to note, they are distinct components of a project that are defined differently and require specific preparation. These are further defined in CPSM, Section 5.3.



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## PROJECT CODE

The 11-digit Project Code must be provided within the header or footer of every page of the technical Specifications. Quite often the project code is isolated to the cover page of the Project Manual and is omitted from the technical content entirely. This requirement is identified in Chapter 5 of the current CPSM.

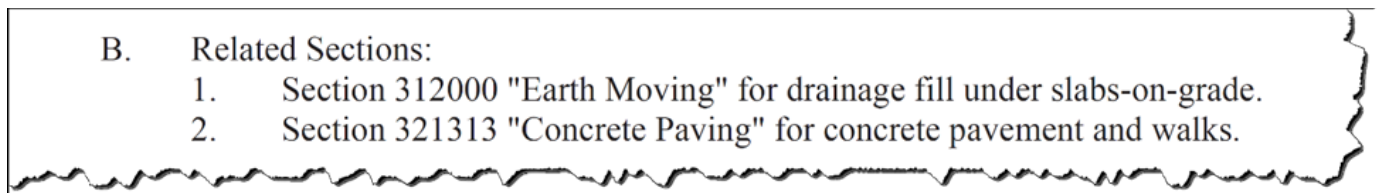


## PROFESSIONAL SEALS

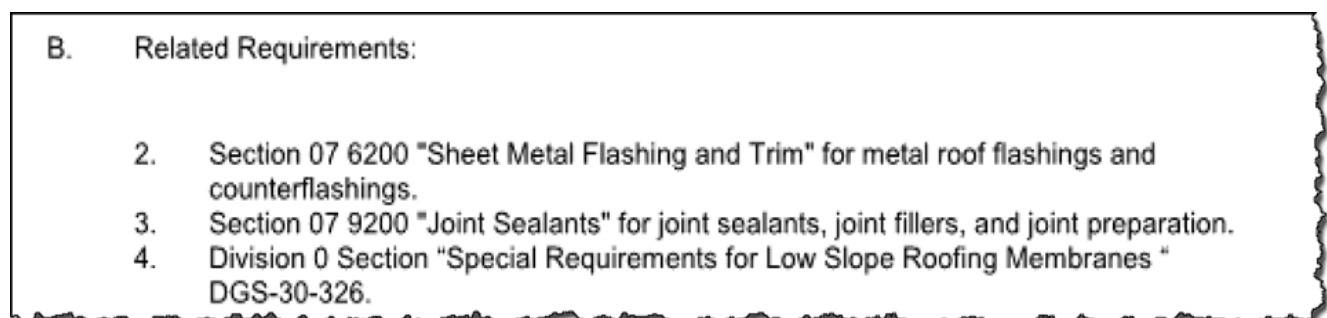
Established in Section 18 of form CO-3a (DGS-30-018), Terms and Conditions of the A/E Contract, the Specifications must be sealed, signed and dated by the A/E Principal-In-Charge of the project with a uniform date that matches the Drawings. This Professional seal may be applied on the Cover, Title Page, or Table of Contents. The A/E Principal-in-Charge may also require the consultants' principals to provide their seals on an associated seals page designated for this purpose.

## REFERENCES

Each technical Specification section often contains various references to "Related Requirements" or "Related Work" found elsewhere in the contract documents. For example, within 033000 Cast-in-Place Concrete Specification Section, one may find the following related sections referenced:



Often times these referenced sections, containing important information, are left out of the technical specifications. Conversely, within Sections 31200 "Earth Moving" and 321313 "Concrete Paving" there will be information that references 033000 Cast-in-Place Concrete. Referenced sections must always be coordinated with each other in order to provide the complete scope of work. Additionally, CPSM Appendix A - DEB ROOFING POLICY AND TECHNICAL STANDARDS FOR STATE-OWNED BUILDINGS requires that DGS Form (DGS-30-326) "*Special Requirements for Low Slope Roofing Membranes*" be referenced within the low-sloped roof Specification section, if applicable, as well as included within the front-end of the Project Manual.



## APPENDICES TO THE PROJECT MANUAL

It is not uncommon for a particular project to have valuable resource materials that are not considered part of the work but are pertinent to the project such as the Soils Report, Asbestos Report, and Lead Inspection Survey Report. These materials shall be included in the Project Manual as appendices and should be labeled "INFORMATION ONLY" for use by the contractor.

## BINDING

Although no formal requirement has been previously published, the type of binding used for Project Manuals is important. DEB requests that plastic comb binding (see Figure A.) be selected vs. wire binding so that the 11-digit project code can be documented on the spine (see Figure B.) to assist with document archive and retrieval.



Figure A.



Figure B.

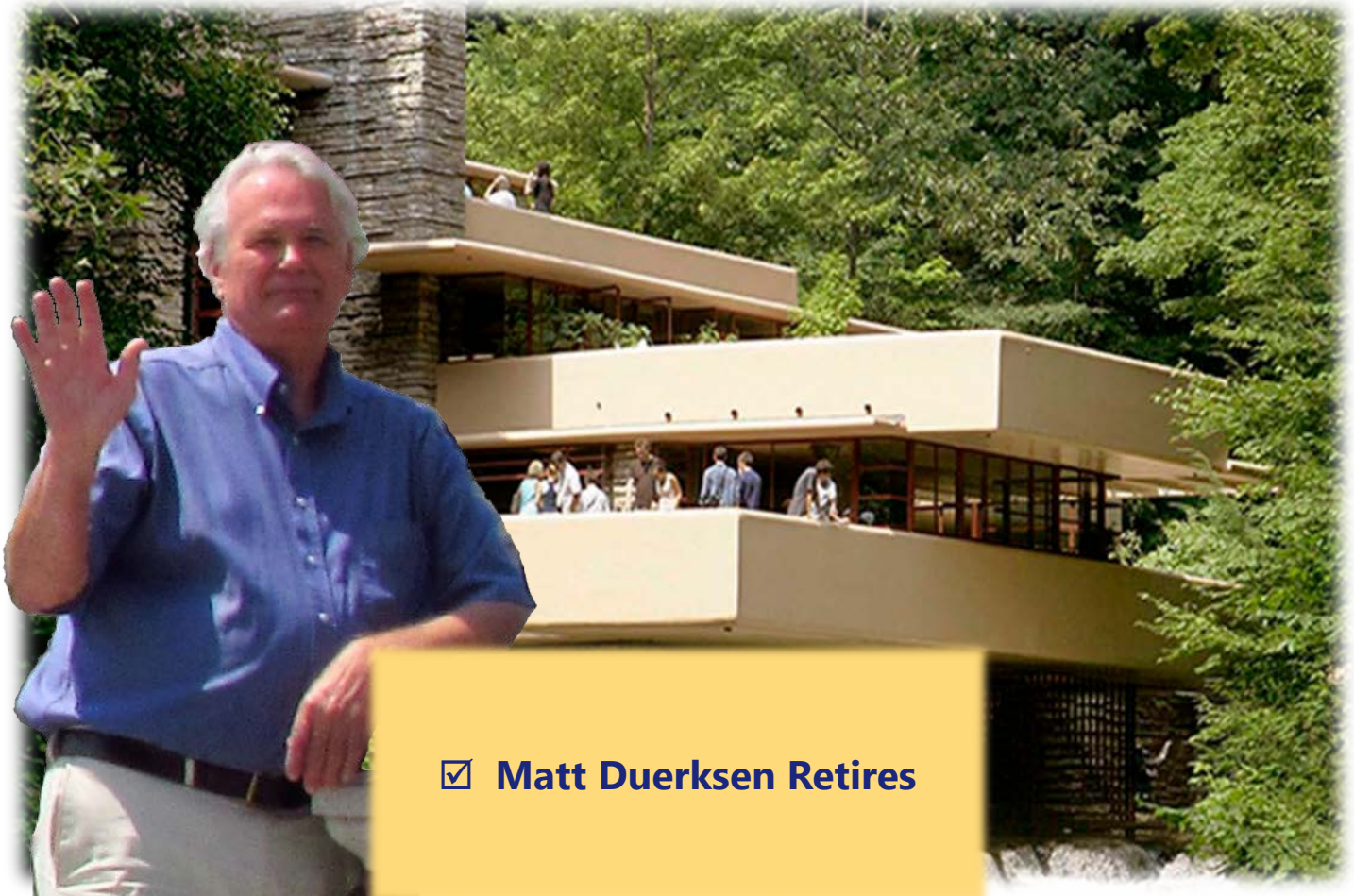
## ORDER OF PRECEDENCE

As defined in Section 2 of the General Conditions of the Construction Contract:

*"In the event of conflicts among the Contract Documents, the Contract Documents shall take precedence in the following order: the Contract between Owner and Contractor; the Supplemental General Conditions; the General Conditions; the Special Conditions; the specifications with attachments; and the plans."*

## FURTHER READING

For further reading on specifying "basis of design" and the three types of Specifications used on state projects, please refer to [DEB Newsletter #25, dated January 2017](#). An [Index](#) to all previous DEB Newsletter Articles is conveniently provided on the DEB website.



### ☑ Matt Duerksen Retires

**Matthew Duerksen**, RA retired from the Division of Engineering and Buildings on September 30, 2019 after working for the Commonwealth of Virginia for over 21 years. Matt worked for DEB as a Lead Reviewer for the past 13 years, supporting COV agencies including VCU, GMU, CNU, Fort Monroe Authority, Department of Military Affairs, and Department of Juvenile Justice. Prior to joining DEB, Matt's architectural career included serving as the Director of Capital Outlay for University of Mary Washington and working as an architect in private practice for firms in Baltimore, Maryland and Eugene, Oregon.

During retirement, Matt looks forward to spending time with his family, touring Frank Lloyd Wright houses, gardening, and cheering on the Los Angeles Angels. DEB thanks Matt for his years of hard work and service to the Commonwealth!

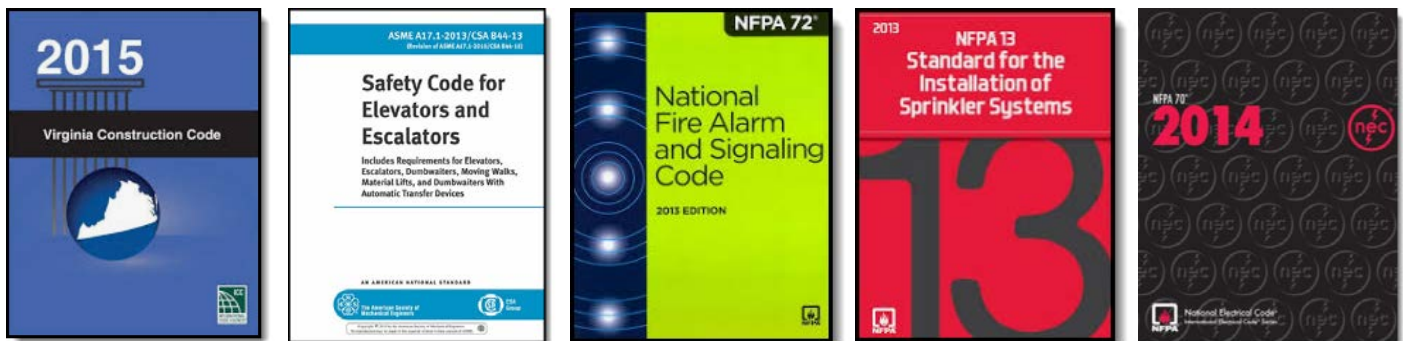
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Matt's recently-supported agencies have been reassigned to the following DEB Lead Reviewers:

123	DMA	Department of Military Affairs	Steve L'Heureux
206	VCUHS	VCU Health System	Sandra Whitehead
218	VSDB	Virginia School for the Deaf & Blind	Rachel Shelton
236	VCU	Virginia Commonwealth University	Mary Hom
247	GMU	George Mason University	Mark Dreyer
360	FMA	Fort Monroe Authority	Mark Dreyer
751	VDDHH	Department for the Deaf and Hard-Of-Hearing	Rachel Shelton

## ☑ Understanding Fire Alarm and Fire Sprinkler Requirements for Elevators

With elevator technology continuously changing, coordinating the pertinent codes that govern the installation of elevators is a challenging task. The principal codes currently governing elevator installations in Virginia are the *2015 Virginia Construction Code*, the *2013 ASME A17.1 Safety Code for Elevators and Escalators*, the *2013 NFPA 72 Fire Alarm and Signaling Code*, the *2013 NFPA 13 Automatic Sprinkler Systems* and the *2014 NFPA 70 National Electrical Code Article 620 Elevators*. The intent of this advisory is to provide an itemized code summary for each of the four primary components that are used to achieve elevator recall and main line power disconnect.



The purpose of elevator recall is to take an elevator out of normal service and to return it the designated floor level. At the designated floor level, occupants may egress the elevator and building. The elevator is then available for Fire Fighter Phase II Recall where they have control of the elevator. Elevator recall is generally initiated by specifically located smoke detectors with some exceptions. Smoke detectors are connected to the fire alarm system.

The purpose of main line power disconnect is to disconnect the power to the elevator prior to the application of water from the fire sprinkler heads thus avoiding the potential hazards of wet elevator brakes and electrical short circuits. Main line power disconnect is generally initiated by specifically located heat detectors with some exceptions. Heat detectors are connected to the fire alarm system.

Recall and main line power disconnect functions will be evaluated under the following conditions, which apply to the majority of elevators installations:

- The buildings have an automatic sprinkler system.
- The elevator shafts are noncombustible or limited combustible construction.
- The elevators are hydraulic, conventional traction or machine-room-less.
- The elevator cabs are constructed of noncombustible materials.
- The requirements for accessible, fire service and occupant evacuation elevators are not included in this summary.

## **SMOKE DETECTORS ARE USED TO INITIATE ELEVATOR RECALL**

- Smoke detectors are required in elevator lobbies and shall be located within 21 feet of the centerline of elevator doors. *NFPA 72-21.3.5.*
- Where elevator landings have a ceiling greater than 15 feet high, the smoke detector may be placed on the wall above and within 60 inches of the top of the elevator door(s). *NFPA 72-A17.4.10.*
- Smoke detectors are required in elevator machine/control rooms. *ASME A17.1-2.27.3.2.*
- Smoke detectors are not required in hoistways that do not have sprinkler head(s). *NFPA 72-21.3.6 and ASME A17.1-2.27.3.2.1(c).* Existing elevators that have ventilation are allowed to have a smoke detector at the top of the hoistway.
- A sprinkler head at the elevator pit requires a fire detector near the hazard. *NFPA 72-17.4.10 and 21.3.14.1 (3).* According to *ASME A17.1 Safety Code for Elevators and Escalators*, the elevator pit is part of the hoistway.
- Where the environmental conditions may cause false alarms such as elevators that open into kitchens or parking garages, automatic fire detection such as heat detectors are permitted. *NFPA 72-21.3.9.*
- Smoke detectors may not be used for elevator shunt trip, as they would activate more quickly than a heat detector and thus create the possibility of disconnecting the main line power and potentially trapping occupants before the elevator could be recalled to the designated floor. *ASME A17.1 -2.8.3.3.3.*
- A change to the 2013 *NFPA 72* states that a smoke detector shall not be installed in the elevator pit unless it is listed for the environment. *NFPA 72-21.3.8.*
- Where buildings are not equipped with fire alarm systems, a "dedicated function fire alarm system" shall be provided in order to provide elevator recall. *NFPA 72-21.3.1 and 21.3.2.* This type of system might also include the monitoring of the fire sprinkler system.

## **HEAT DETECTORS ARE USED TO INITIATE SHUNTING THE MAIN POWER TO THE ELEVATOR WITH SOME EXCEPTIONS**

- Where sprinkler heads are present, heat detectors that are located in the hoistway and the machine room/control room shall be used for elevator shut down. These heat detectors shall have both a lower temperature rating and a higher sensitivity (response time index-RTI) than the sprinkler head (*NFPA 72-21.4.1*) and shall be located within 24 inches of the sprinkler head. *NFPA 72-21.4.2.* There shall be enough of a time delay to recall the elevator from the top of the hoistway to the designated floor before the elevator power is disconnected. When elevator recall is accomplished prior to main line power being disconnected the occupants will be able to successfully egress the elevator and avoid being trapped inside. *ASME A17.1-2.8.3.3.2.*
- Elevator hoistways and machine rooms containing control equipment that have sprinkler protection shall have an approved means of shunting the power per the requirements of *NFPA 72-21.4.* The main line power shall be disconnected prior to the application of water and shall not be self-resetting.

- Shunting the main line power shall not disconnect branch lines for car lighting, receptacles, ventilation, heating or air conditioning. *NFPA 70-620.22 Branch Circuits for Car Lighting, Receptacles, Ventilation, Heating and Air-Conditioning and 620.51 Disconnecting Means.*
- Where sprinkler heads are provided in the elevator pit of hydraulic elevators heat detectors that shunt the power are not required per ASME A17.1. The application of water below the cab should not adversely affect the elevator braking or electrical system.
- The activation of sprinkler heads outside of the hoistway or machine room shall not disconnect the main power line to the elevator. *VCC 3006.5 Shunt trip and ASME A17.1- 2.8.3.3.2 (C).*
- Typically, the exceptions for using heat detectors in lieu of smoke detectors for elevator recall are where environmental conditions make smoke detectors unreliable. Locations such as elevator lobbies at parking garages are better suited for heat detectors. *NFPA 72-21.3.9.*

### **WATER FLOW SWITCHS ARE USED TO INITIATE SHUNTING THE MAIN POWER TO THE ELEVATOR WITH AN EXCEPTION**

- A flow switch without a time delay or one with the delay that is permanently disabled may be used in lieu of a heat detector to shunt the main power. *NFPA 72-21.4.3.*
- There is no requirement to provide both a flow switch and a heat detector for disconnecting the main power.
- A change to the *2013 NFPA 72* allows a water flow switch to initiate elevator recall. The sprinkler head and the flow switch must be separately valved and dedicated only to the elevator pit head. *NFPA 72-21.3.3.*
- As the codes have changed, *DEB Notice 031909-Elevator Recall* is no longer required.

### **SPRINKLER HEADS ARE NOT REQUIRED AT HOISTWAYS AND MACHINE/CONTROL ROOMS WITH EXCEPTIONS**

- Sprinkler heads are not required at the top of the hoistway of traction elevators where the cab meets the noncombustible requirements of *ASME A17.1 Safety Code for Elevators and Escalators*. *NFPA 13-8.15.5.6.*
- Sprinkler heads are not required at the elevator pit of elevators where the cab meets the noncombustible requirements of *ASME A17.1 Safety Code for Elevators and Escalators* and does not contain combustible hydraulic fluids. *NFPA 13-8.15.5.2.*
- Sprinkler heads are required at the elevator pit for hydraulic elevators as the hydraulic fluid is a combustible liquid. Sidewall heads shall be placed not more than 24 inches above the floor of the pit. *NFPA 13-8.15.5.1.*
- Where machine-room-less elevators use polyurethane-coated steel belts or similar combustible belts, sprinklers shall be installed at the top and bottom of the hoistway. *NFPA 13-8.15.5.7.1.* Where these belts have a FT-1 rating per the UL 62 vertical burn test, sprinkler heads are not required. *NFPA 13-8.15.5.7.2.*

- Where machine/control rooms meet all of the 5 conditions of *NFPA 13-8.15.5.3*, automatic sprinklers are not required. The conditions are: (1) the space is dedicated to the elevator equipment only, (2) the space is protected by smoke or other detectors, (3) the space has a fire rated separation which is the same rating as the hoistway, (4) the space has no stored materials unrelated to the elevator, and (5) the elevator machinery is not the hydraulic type.
- The actuation of sprinkler heads outside of the hoistway or equipment room shall not disconnect the main line power. *ASME A17.1-2.8.3.3.2 and VCC 3005.5 Shunt trip*.
- Sprinkler risers shall not be installed in the elevator hoistway. Branch lines shall not serve more than one level. *ASME A17.1-2.8.3.3.1*.
- Sprinkler heads in hoistways and machine rooms shall have an intermediate temperature rating and shall be a standard response type (lower sensitivity). This allows the *NFPA 72* requirement for heat detectors to have a lower temperature rating and a higher sensitivity to create an adequate time delay for elevator recall prior to disconnecting the main line power. *NFPA 13-8.15.5.4 and NFPA 72-21.4.1*.
- "VCC 3005.5 Shunt trip 3. Where the structure that the elevator will be located in is required to be fully sprinklered by this code, the hoistway that the elevator machine is located in shall be equipped with a fire suppression system as a machine room in accordance with NFPA 13. Some detectors for the automatic initiation of Phase I Emergency Recall Operation, and heat detectors or other approved devices (flow switches) that automatically disconnect the main line power supply to the elevators, shall be installed within the hoistway".
- Side wall sprinkler heads shall be used at the elevator pit while upright, pendant or side wall heads may be used at the elevator hoistway. *NFPA 13-8.15.5.1 and 8.15.5.5*.

## SUMMARY

Smoke detectors are always required at elevator lobbies and machine/control rooms for the purpose of elevator recall. Smoke detectors are not required at the top of elevator hoistways unless sprinkler heads are present or there is a hoistway ventilation system. Where environmental conditions are not suitable for smoke detectors, heat detectors may be substituted for smoke detectors. Heat detectors are used for disconnecting the main line power. If desired, a flow switch may be used for shunt in lieu of a heat detector. Sprinkler heads are not required in elevator hoistways unless there are combustible components present. These combustible components could be hydraulic fluids or belts covered with combustible coatings that do not have a FT-1 rating. Knowing the specifics of the elevator being installed and the code fundamentals will enable the designer to prepare code-compliant documents.



## ☑ DEB Forms Update

The following revised DEB forms are now available on the [DGS Forms Center](#):

Form #	Form Name	Rev. Date (mm/yy)
<a href="#">DGS-30-000</a>	DEB Forms Master List	10/19
<a href="#">DGS-30-256</a>	Notice of Invitation for Bids (IFB)	10/19

The following forms have been removed from the Forms Center. These PDF forms were deemed unnecessary as other tools now exist for capturing this data:

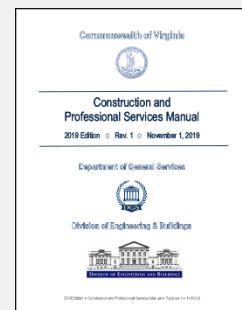


Form #	Form Name
<a href="#">DGS-30-328</a>	History of Roofing Installation
<a href="#">DGS-30-332</a>	Roof Information Worksheet – Built-up Roofing
<a href="#">DGS-30-336</a>	Roof Information Worksheet – Sheet Metal Roofing
<a href="#">DGS-30-340</a>	Roof Information Worksheet – Shingle Roofing
<a href="#">DGS-30-344</a>	Roof Information Worksheet – Single Ply Roofing
<a href="#">DGS-30-356</a>	Roof Consultant Resume Form

## ☑ Coming soon ...

### Coming in November ...

**Revision 1 of the 2019 Edition of the *Construction and Professional Services Manual (CPSM)*** will be issued on or around November 1<sup>st</sup>. Once issued, the new CPSM will be immediately available on DEB's "[Current CPSM Edition](#)" webpage.



### Coming in December ...

The next **Virginia Construction Contracting Officer (VCCO) Seminar** will be held on December 3<sup>rd</sup> & 4<sup>th</sup> at the Patrick Henry Building in Richmond. Application Instructions will be emailed soon to those state and other government personnel who completed the online [VCCO Seminar Expression of Interest Form](#).

