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Means of Egress Illumination

A “means of egress” in a building can be sized appropriately, be protected by fire protection equipment, be marked with sufficient signage, and in some cases, even be mechanically pressurized to limit smoke infiltration. However, none of these things ultimately matter if the walking surface is not properly illuminated so that occupants can see to find their way out of the building. This article provides a basic summary of the code requirements for means of egress illumination as well as some DEB-specific applications that will assist Agencies and designers alike in achieving a successful lighting system design.



The *2015 Virginia Construction Code (VCC)* requirements for means of egress illumination are found in Sections 1008.1 and 1008.2 (normal-powered egress illumination), and Section 1008.3 (emergency-powered egress illumination). The power supply is an important distinction here since there are different requirements for normal-powered vs. emergency-powered egress illumination. In fact, this is where most of the deficiencies are encountered in projects reviewed and inspected by DEB.

Egress illumination must be designed such that a minimum of 1 footcandle (fc) is provided at the walking surface at all times a space is occupied under normal power conditions. Dimming and/or switching functions that cause the egress illumination levels to be reduced below 1 fc (or eliminated altogether) are not in compliance with 1008.1 and 1008.2. In most spaces, the means of egress is considered to be the entire floor area of the space. When permanently defined egress paths are provided, this requirement may only apply to the dedicated walking surface, but this is not nearly as common.

DEB APPLICATION

Criteria for egress lighting controls is enforced by DEB in all spaces over 300 SF as well public-use spaces such as corridors, common restrooms, lobbies, etc., regardless of size. Consult with your DEB reviewer if it is unclear how this applies to your project.



It is typical to see occupancy/vacancy sensors in many spaces today, including corridors and similar egress components. These devices are an acceptable means of allowing light fixtures in a given space to be turned off automatically when unoccupied. It is critical that these spaces are not equipped with wall switches that override the occupancy sensors and allow occupants to manually turn all of the lights off. Similarly, a vacancy-only sensor requiring occupants to manually turn the lights on when entering a space should be avoided.

In order to provide occupants with a greater level of lighting control for their specific purposes, manual wall switches are acceptable when they are arranged to only control a portion of the light fixtures within a space. A sufficient quantity of unswitched fixtures (i.e. night lights) must be provided in these spaces to maintain the 1 fc minimum egress illumination level at all times the space is occupied. These unswitched night lights may be automatically controlled by occupancy sensors as described above so that all lights in the space will turn off when it is no longer occupied.

The emergency-powered egress illumination requirements are generally better understood in the design community than the requirements governing normal-powered egress illumination. VCC 1008.3 specifically identifies the various types of spaces where emergency egress lighting must be provided. Note that the 2015 edition of the VCC has been reorganized to delineate between: General requirements (1008.3.1), Building requirements (1008.3.2), and Room and Space requirements (1008.3.3). Nonetheless, the requirements are essentially the same as in the 2012 edition. An average of 1 fc must be provided at the required locations automatically upon loss of normal power for no less than 90 minutes. The emergency power supply shall consist of storage batteries, unit equipment, or an onsite generator.

Designers often prefer to utilize the emergency egress light fixtures as the "unswitched" light fixtures to also provide the required normal-powered egress illumination as described above. While this is an acceptable strategy, there are times when the quantity of light fixtures will be insufficient with this approach. This is due to the fact that normal-powered egress lighting is required to be a minimum of 1 fc, while emergency-powered egress lighting is required to be an average of 1 fc with any location permitted to be as low as 0.1 fc. This should be carefully evaluated by the electrical engineer to ensure that all requirements are met.

In all cases, photometric point-to-point calculations for emergency-powered egress illumination shall be prepared and submitted with the Working Drawings (preferably full-size drawing sheets for legibility) to demonstrate that the means of egress is properly illuminated. Where lights have dimming or switching capabilities, calculations may also need to be produced to demonstrate that the "worst case" normal power lighting condition will achieve the required minimum illumination level throughout the affected space. Each project is unique, hence the importance of working with your DEB reviewer as early as possible to ensure a fully-compliant lighting design while, at the same time, meeting the performance objectives of the user.

Electronic Document Review Tips: Creating Recognizable Text

1. Why is “recognizable text” needed for electronic (PDF) plans and specifications?

Recognizable text allows electronic plans to be “pre-processed”. Pre-processing, or “batch processing”, allows bookmarks and hyperlinks to details to be created. This is an important aspect of electronic submittals as it is difficult to navigate within a PDF drawing set that is lacking these attributes. Bookmarks and other hyperlinks allow DEB reviewers to navigate more effectively within a set of electronic plans and complete their reviews and comments in a timely manner. In the future, DEB’s goal (pending vendor program enhancements) is to return marked-up electronic plans, with embedded review comments, to the agencies. These hyperlinks will assist the agencies and their consultants in quickly navigating through the marked-up plans.

2. How is “recognizable text” created?

When creating electronic documents, TrueType fonts help to ensure the text is recognizable. If the user so chooses, TrueType fonts can be used in CAD programs; however, the default characters in popular CAD programs such as AutoCAD and Revit are vector characters. When creating a PDF, vector characters are normally converted to raster images (i.e., letters which are created from a series of pixels but are not recognizable as text); however, vector characters can be converted into recognizable text by utilizing a PDF driver. Below are links to several useful resources that further explain the process of creating recognizable (searchable) text and using PDF drivers with popular CAD programs. *(If the links below don't open properly from within this pdf file, cut and paste them directly into your web browser.)*

AutoCAD:

<https://knowledge.autodesk.com/support/autocad/learn-explore/caas/sfdcarticles/sfdcarticles/How-to-create-selectable-and-searchable-text-in-a-PDF-from-AutoCAD.html>

Bluebeam:

<https://support.bluebeam.com/articles/autocad-creating-PDFs-with-searchable-text/>

<https://support.bluebeam.com/ocr/>

Revit:

<https://knowledge.autodesk.com/support/revit-products/learn-explore/caas/CloudHelp/cloudhelp/2019/ENU/Revit-Documents/files/GUID-8B7424DD-C07A-4FD7-B4DB-5F7F6F14D8E8-htm.html>

Choose a PDF print driver that will convert vector characters to recognizable text. See additional information on PDF print drivers at the resources listed below:

<https://knowledge.autodesk.com/support/revit-products/troubleshooting/caas/sfdcarticles/sfdcarticles/Revit-PDF-export-print-options.html>

<https://knowledge.autodesk.com/support/revit-products/learn-explore/caas/CloudHelp/cloudhelp/2018/ENU/Revit-Documents/files/GUID-33DAC17F-8E51-4E46-B4C7-1F9DDC54068C-htm.html>

Electronic Document Review Tips: **Agency Document Upload Process**

State agencies, while still responsible to review all submittals for completeness, will often have their A/E's handle the logistics of paper submittals; however, as the Electronic Document Review (EDR) process utilizes BITS as the vehicle for the electronic submittals, Agency users (rather than the Agencies' design consultants) must submit the electronic documents to DEB for review. Some Agency users may be unfamiliar or unsure of the process for submitting electronic documents via BITS, but the upload process is really quite simple. The abbreviated steps for Agency Document Submittal Upload are listed below.

In addition to the abbreviated steps described below, DEB placed a brief instructional video on the DEB's new EDR webpage. This video tutorial walks the Agency user step-by step through the document upload process. A link to the new EDR webpage, where the Agency Document Submittal Upload instructional video can be accessed, is provided on the next page of this Newsletter. DEB highly encourages those Agency users new to the EDR document upload process to view this 6 minute video.

Abbreviated EDR Upload Process Description:

1. The A/E submits the documents to the agency for review.
2. If the submittal is acceptable and complete, the agency uploads those documents using the BITS Agency Document Submittal page to send the electronic documents to DEB:
 - a. An Agency user who has been granted access to submit documents will have an "Agency Document Submittal" button on their BITS Home Page.
 - b. After selecting this button, the Agency Document Submission page will appear.
 - c. All documents associated with the submittal including Drawings (PDF), Project Manuals (PDF), Calculations, Comment Responses (Word), Estimates, Cost Summaries (Excel), Transmittal (Excel), CR-2 Forms (Excel), etc. can be uploaded through this BITS page.
 - d. Each document must be selected and uploaded individually and will be listed in a table on this BITS webpage.
 - e. Once all of the documents in the submittal have been selected and uploaded, select "Submit Documents". The submitting Agency user and DEB administrative staff will receive notification that the documents have been submitted.

As with any new process, the EDR process will seem different and users may initially be apprehensive; however, EDR has several significant benefits over paper submittals:

- Agency project budgets will not have to bear the considerable printing and shipping costs associated with producing large format document sets;
- Submittals will be received at DEB immediately, contrasted with the time to print, bind, package, and ship paper submittals;
- The use of electronic documents can facilitate clearer and faster communication between DEB Reviewers, the Agencies, and their A/E's allowing quicker resolution of issues. For example, electronic submittals allow DEB reviewers to easily include snippets of problem areas in their review comments.

Electronic Document Review Tips: **New EDR Webpage**

Below is a screenshot of the new DEB [EDR webpage](#).

Visit the [EDR webpage](#) to:

- View a listing of **Agencies currently authorized to make EDR submittals**
- Access the latest draft version of **CPSM Appendix S - EDR Submittal Requirements**
- Access the **“Agency Document Submittal Upload” instructional video**
- **Access BITS** (Agency users must have an active BITS user account to log into BITS. If an Agency user needs the added BITS permissions required to make EDR submittals, the user should contact their Agency’s designated BITS Agency Access Coordinator. A listing of the current BITS Agency Access Coordinators is available on the [BITS AAC webpage](#).)

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Division of **Engineering & Buildings** Search DEB

ELECTRONIC DOCUMENT REVIEW (EDR)

The Division of Engineering & Buildings is continuing the rollout of the Electronic Document Review (EDR) option for state agencies on a phased basis. The Division plans to make this option available to all agencies by the end of 2019. The electronic process facilitates document review and processing by DEB staff and reduces expenses by significantly reducing the number of paper sets submitted for review and processing.

Agencies are encouraged to utilize the EDR option versus the current paper-intensive process. The electronic process facilitates document review and processing by DEB staff and reduces expenses by significantly reducing the number of paper sets submitted for review and processing.

CPSM Appendix S provides the specific requirements for EDR submittals.

Documents are submitted by agencies to DEB through a simple BITS “Agency Document Submittal Upload” process.

Several useful EDR links are provided below:

- [Listing of agencies currently authorized to make EDR submittals](#)
- [CPSM Appendix S - EDR Submittal Requirements](#) *
- [Agency Document Submittal Upload \(instructional video\)](#)
- [BITS User Login](#)

* **Note:** This link provides the latest draft version of CPSM Appendix S. The final draft of the upcoming 2019 CPSM. Until then, please refer to this draft Appendix S rather than the previous version included in the 2018 CPSM.

VCCO Update

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

Laura Dearhart with the Department of Forensic Science

Kathryn Dicken with Virginia Tech

John Kostyniuk with Virginia Commonwealth University

Steve Pellei with the Department of Health

Richard Pinskey with Arlington County

Kristina Williams with the Department of Environmental Quality



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.

A/E Contracts and MOUs Reminder

Agencies are to submit copies of A/E Contracts (i.e., forms CO-3, CO-3.1, or CO-3.2) to DEB 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). When submitting in electronic format, please submit these documents to the following email address: coforms@dgs.virginia.gov

AARB July Meeting Date Revised

The Art and Architectural Review Board (AARB) meeting date for July has been revised from July 5 to **July 12** due to the July 4, 2019 holiday.

For more information on the AARB, including the full 2019 meeting calendar, meeting minutes, submittal documents, Board members, and reports, please visit DGS's [AARB webpage](#).

CPSM Training Update

The spring 2019 CPSM sessions have been scheduled for May 15-16 and May 29-30, 2019. These 2-day sessions will be held in the Patrick Henry Building in Richmond. The formal seminar announcement and registration instructions will be emailed out on or about April 1 to all individuals who have completed the online [CPSM Seminar Expression of Interest Form](#).

A CPSM Seminar Info Sheet is available on the [DEB Training Seminars webpage](#). For any CPSM Seminar questions not answered by the Info Sheet, please contact seminars@dgs.virginia.gov.