Office of University Building Official (OUBO)

Building Safety Month Training Series

Session 2: HECO Chapter 7 & Related Appendices

Stakeholders: GMU Facilities, Contractors, & Registered Design Professionals

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OUBO Staff

Administration

David M. Kidd, P.E.
University Building Official
Email: dkidd7@gmu.edu

William (Bill) G. Miller
Deputy Building Official
Phone: 703-993-8339
Email: wmille3@gmu.edu

Donna Martinez-Vallejos
Permit Administrator
Phone: 703-993-6070
Email: dmartinb@gmu.edu

Review Engineers

Justin Biller, P.E.
Fire Protection Plan Review Engineer
Phone: 571-545-0252
Email: jbiller@gmu.edu

Tim Hagedorn, P.E.
Civil/Structural Plan Review Engineer
Phone: 571-545-0255
Email: jhagedo@gmu.edu

Kevin Kline, P.E.
Electrical Plan Review Engineer
Phone: 571-545-0253
Email: kkline7@gmu.edu

Ethan Scholl, P.E.
Mechanical Plan Review Engineer
Phone: 571-545-0254
Email: escholl4@gmu.edu

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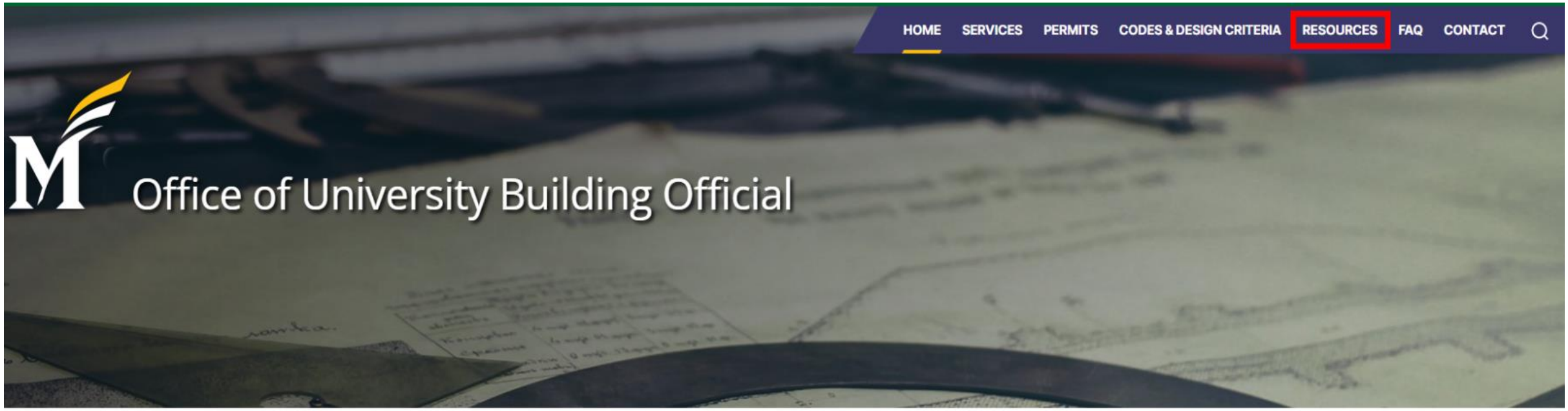
Agenda

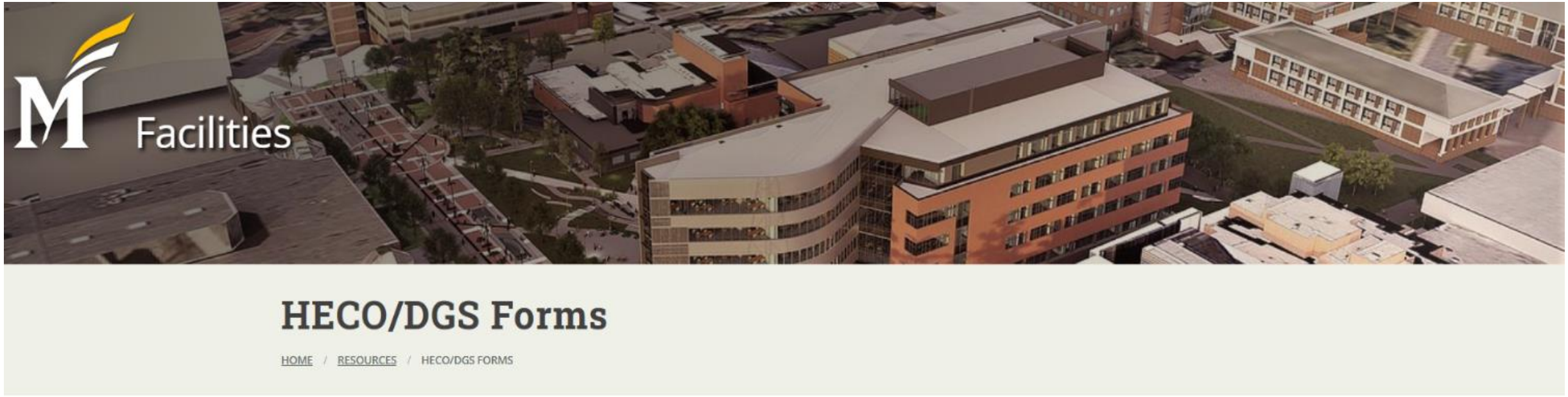
HECO Chapter 7 & Related Appendices:

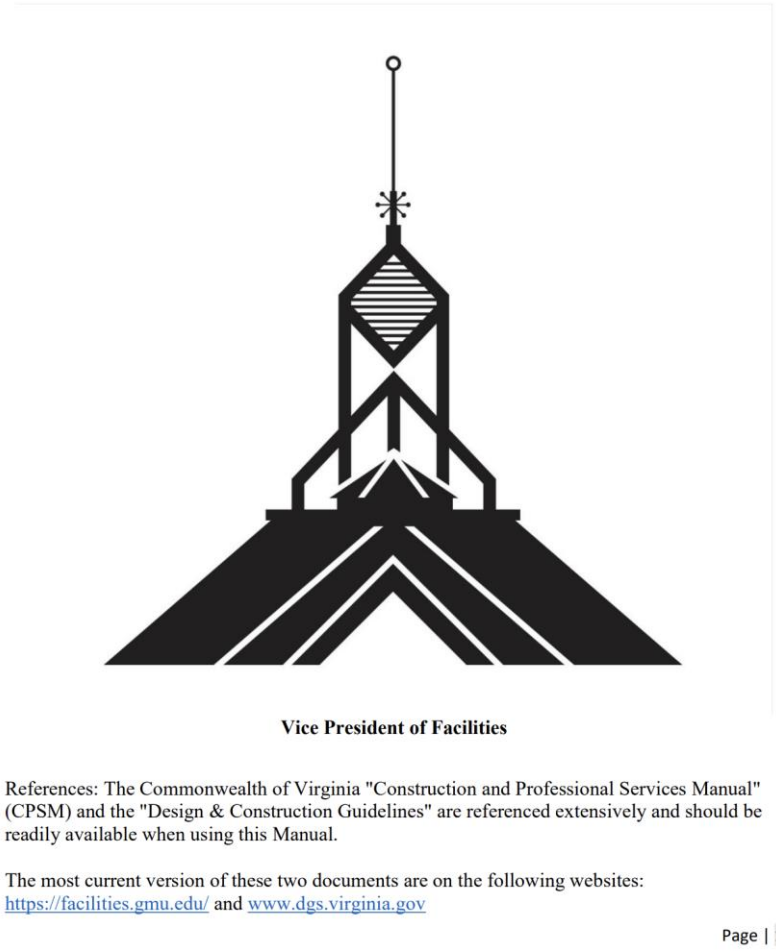
- Chapter 7: Engineering and Technical Criteria
- Appendix W: HECO MANUAL REVISION HISTORY
- Appendix V: VIRGINIA ENERGY CONSERVATION AND ENVIRONMENTAL STANDARDS (VEES)


HOME
SERVICES
PERMITS
CODES & DESIGN CRITERIA
RESOURCES
FAQ
CONTACT
Office of University Building Official
Permits
Plan Review
Inspections
Resources

University Resources

- OUBO e-Builder Processes
- GMU Design Standards Manual
- GMU HECO/DGS Forms
- GMU e-Builder
- GMU Facilities Planning, Design and Construction
- GMU Senior Vice President of Administration & Finance
- GMU University Leadership
- GMU Board of Visitors
- GMU Campus Maps and Directions
- GMU Capital Strategy and Planning
- Tier III Management Agreement


Facilities
HECO/DGS Forms
HOME / RESOURCES / HECO/DGS FORMS
Mason HECO Manual



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Higher Education Capital Outlay Manual

2023

Vice President of Facilities

References: The Commonwealth of Virginia "Construction and Professional Services Manual" (CPSM) and the "Design & Construction Guidelines" are referenced extensively and should be readily available when using this Manual.

The most current version of these two documents are on the following websites: https://facilities.gmu.edu/ and www.dgs.virginia.gov

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Table of Contents

CHAPTER 7: ENGINEERING AND TECHNICAL CRITERIA

Section 7.1 General
Section 7.2 Building Codes
Section 7.3 Accessibility Standards for State-Owned Buildings
Section 7.4 Special Procedures for Asbestos Abatement
Section 7.5 Special Procedures for Lead based Paint Abatement
Section 7.6 Underground Storage Tank Systems (USTS) and Aboveground Storage Tanks (AST)
Section 7.7 Chesapeake Bay Program
Section 7.8 Special Building Planning Requirements
Section 7.9 Earthwork
Section 7.10 Stormwater Management and Erosion and Sediment Control Requirements
Section 7.11 Fire Protection and Life Safety Systems
Section 7.12 Pressure Vessels
Section 7.13 Temporary Electrical Service

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CHAPTER 7: ENGINEERING AND TECHNICAL CRITERIA

Section 7.1 General
Section 7.2 Building Codes
Section 7.3 Accessibility Standards for State-Owned Buildings
Section 7.4 Special Procedures for Asbestos Abatement
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Section 7.6 Underground Storage Tank Systems (UST) and Aboveground Storage Tanks (AST)
Section 7.10 Stormwater Management and Erosion and Sediment Control Requirements
Section 7.11 Fire Protection and Life Safety Systems
Section 7.12 Pressure Vessels
Section 7.13 Temporary Electrical Service

- Sections under OUBO review and/or revisions.

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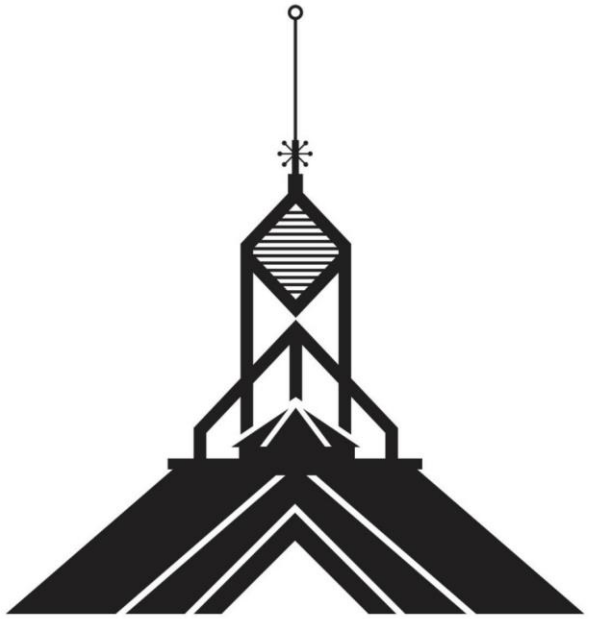
Higher Education Capital Outlay Manual

2023



Vice President of Facilities

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APPENDIX W
HECO MANUAL REVISION HISTORY

2016 – Original Publication
2023-Version 2.0

Revision Package – Dated February 02.03.2023
Summary of Revisions for HECO Manual Version 2.0
*** Major Revisions are notated in Red below.**
Minor formatting, editing, grammar changes or updates to Personnel Titles or Agency names are not individually notated in this Revision Package.

CHAPTER 7: ENGINEERING AND TECHNICAL CRITERIA

Note: Entire Section has been revised to reflect the policies/procedures of the George Mason University Office of University Building Officials (OUBO) and most references to DEB have been replaced with OUBO where they are acting as the Building Official under Mason's University Management Agreement with the Commonwealth.

Section 7.1 General

Section 7.2 Building Codes

7.2.1 Code Administration

- Revised to reflect that "The OUBO is the Building Official for all Projects" and references to DEB removed.

7.2.2 Review Procedures

7.2.3 Virginia Uniform Statewide Building Code (USBC)

- New Section and content added breaking out the requirements of the Virginia Uniform Statewide Building Code (USBC).

7.2.4 Additional Codes

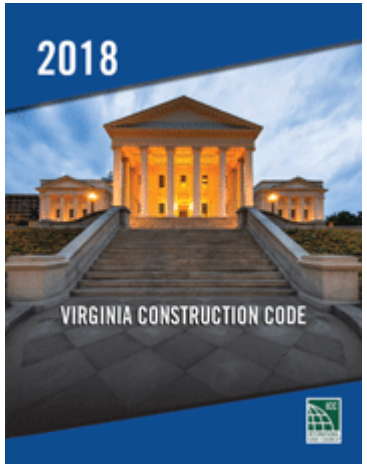
- New Section and content added concerning "Additional Codes" in addition to the USBC that apply to projects on Mason property.

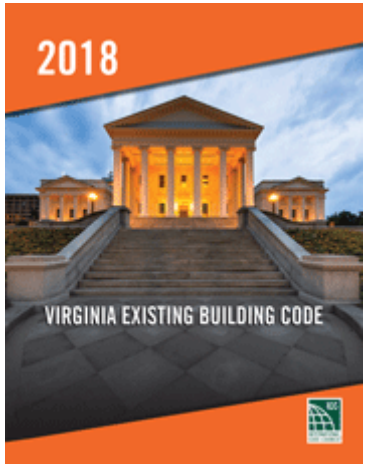
CHAPTER 7: ENGINEERING AND TECHNICAL CRITERIA

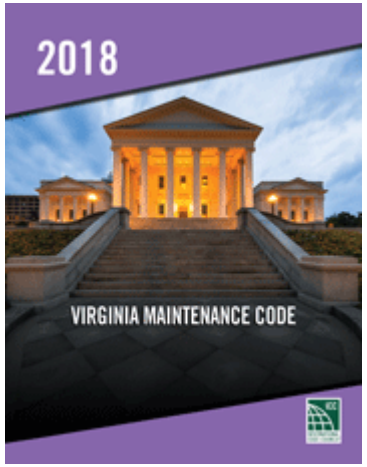
7.2.1 Code Administration: The Office of University Building Official (OUBO) is the Building Official for all projects.

The OUBO shall perform fire safety reviews for all projects involving new construction, additions, or renovations that involves a change in use of a facility. The responsible State Fire Marshal's Office (SFMO) shall perform fire safety reviews and conduct fire safety inspections of construction when coordinated by the OUBO pursuant to the University Management Agreement.

7.2.3 Virginia Uniform Statewide Building Code (USBC) – 3 Parts







7.2.5 Energy Conservation and Environmental Performance

- New Section and content added concerning “Energy Conservation and Environmental Performance.”

7.2.6 High Performance Buildings Act – Design

- New Sections (7.2.6, 7.2.6.1 and 7.2.6.2) and content added concerning “the “High Performance Buildings Act for Design requirements, submittal procedures and compliance statement.

7.2.6.1 High Performance Buildings Act – Submittal Procedure

7.2.6.2 High Performance Buildings Act – Compliance Statement

7.2.7 Virginia Energy Conservation Code Compliance Statement

- New Section and content added concerning “Virginia Energy Conservation Code Compliance Statement” which includes a new figure “6.1.5.1, 2018 Virginia Energy Conservation Code Compliance Flow Chart.”

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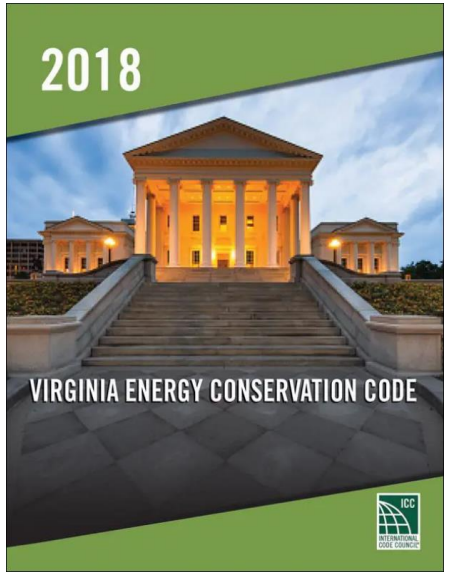
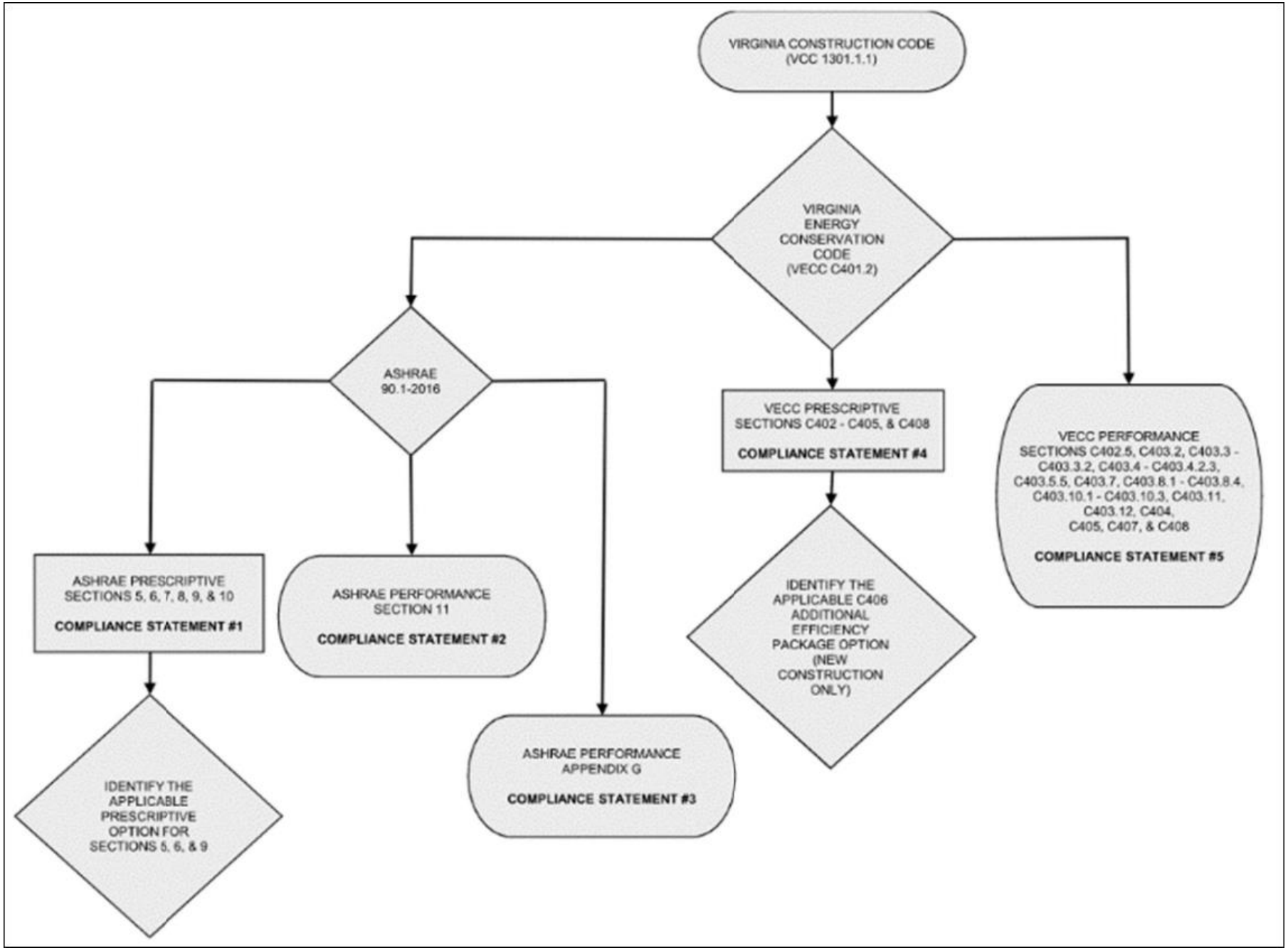
7.2.7 Virginia Energy Conservation Code Compliance Statement

The 2018 Virginia Energy Conservation Code offers multiple different paths to compliance as indicated on Figure 6.1.5.1 “2018 Virginia Energy Conservation Code Compliance Flow Chart.” The chosen compliance path applies to the complete project in its entirety and shall be identified on the construction documents.

The Title sheet of the drawings and the executive summary of the Basis of Design Narrative shall identify one of these compliance statements as they are applicable to the scope of work.




VIRGINIA CONSTRUCTION CODE
(VCC 1301.1.1)
VIRGINIA ENERGY CONSERVATION CODE
(VECC C401.2)
ASHRAE 90.1-2016
VECC PRESCRIPTIVE SECTIONS C402 - C405, & C408
COMPLIANCE STATEMENT #4
VECC PERFORMANCE SECTIONS C402.5, C403.2, C403.3 - C403.3.2, C403.4 - C403.4.2.3, C403.5.5, C403.7, C403.8.1 - C403.8.4, C403.10.1 - C403.10.3, C403.11, C403.12, C404, C405, C407, & C408
COMPLIANCE STATEMENT #5
ASHRAE PRESCRIPTIVE SECTIONS 5, 6, 7, 8, 9, & 10
COMPLIANCE STATEMENT #1
ASHRAE PERFORMANCE SECTION 11
COMPLIANCE STATEMENT #2
IDENTIFY THE APPLICABLE C406 ADDITIONAL EFFICIENCY PACKAGE OPTION (NEW CONSTRUCTION ONLY)
IDENTIFY THE APPLICABLE PRESCRIPTIVE OPTION FOR SECTIONS 5, 6, & 9
ASHRAE PERFORMANCE APPENDIX G
COMPLIANCE STATEMENT #3

VECC Compliance Statements (refer to Section 7.2.7)

1. In accord with the Virginia Energy Conservation Code (VECC), the building shall comply with ASHRAE 90.1-2016 sections 5, 6, 7, 8, 9, & 10.
2. In accord with the Virginia Energy Conservation Code (VECC), the building shall comply with ASHRAE 90.1-2016 section 11.
3. In accord with the Virginia Energy Conservation Code (VECC), the building shall comply with ASHRAE 90.1-2016 Appendix G.
4. In accord with the Virginia Energy Conservation Code (VECC), the building shall comply with VECC sections C402 through C405 and C408.
5. In accord with the Virginia Energy Conservation Code (VECC), the building shall comply with VECC sections C402.5, C403.2, C403.3 through C403.3.2, C403.4 through C403.4.2.3, C403.5.5, C403.7, C403.8.1 through C403.8.4, C403.10.1 through C403.10.3, C403.11, C403.12, C404, C405, C407, and C408. The building energy cost shall be equal to or less than 85 percent of the standard reference design building.

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7.2.6 High Performance Buildings Act - Design

State agencies and architects / engineers shall ensure that new construction and renovation of buildings is performed in accord with the following minimum standards for energy conservation and environmental performance. Individuals who perform the compliance modeling must have obtained a Building Energy Modeling Professional Certification such as ASHRAE Certification. Similar qualifications will be considered individually.

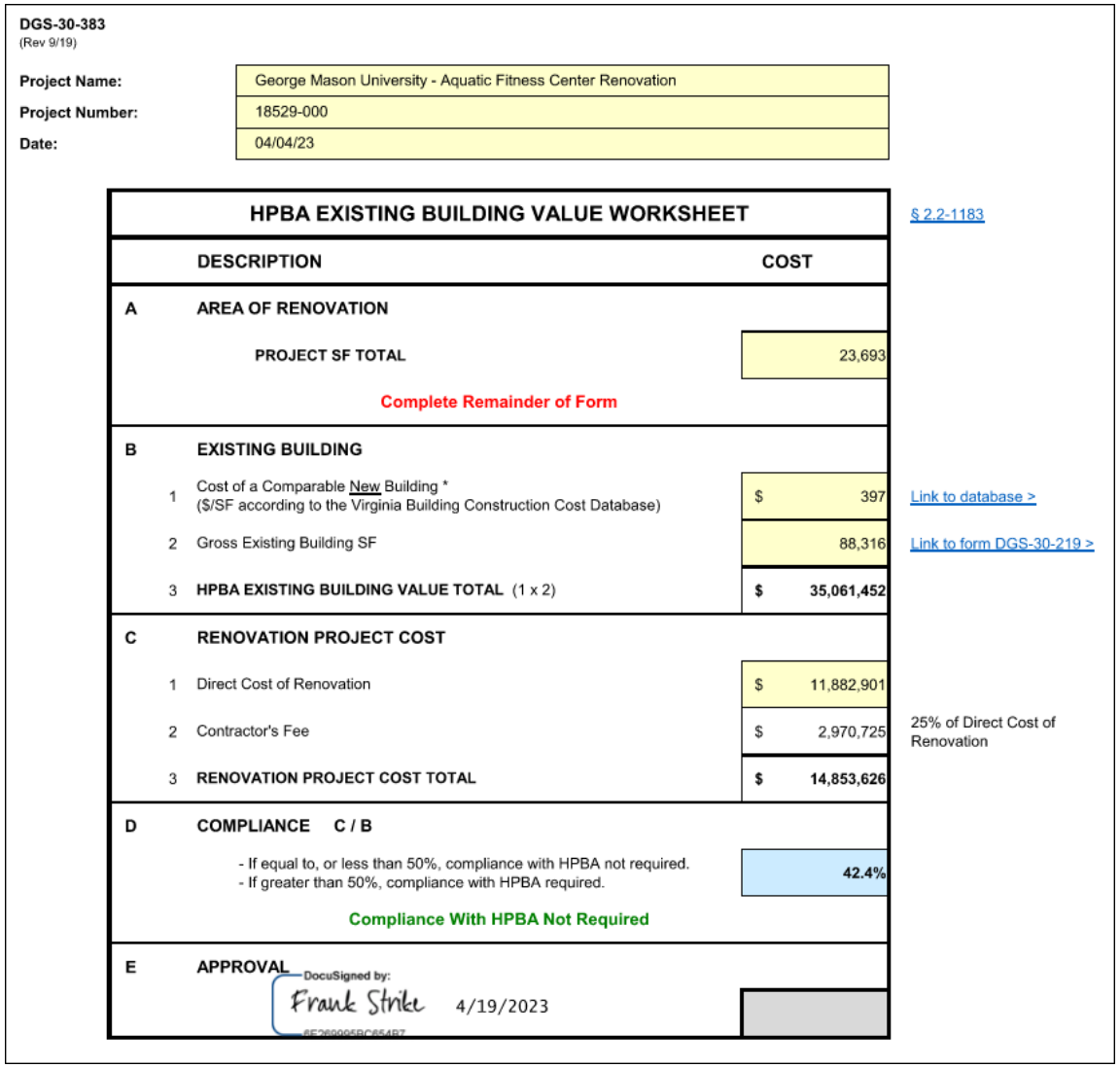
Executive branch agencies and institutions entering the design phase for:

1) construction of a new building greater than 5,000 gross square feet in size (as calculated in accord with the VCC), or
2) 2) renovation of a building greater than 5,000 gross square feet (as calculated in accord with the VCC) where the cost of renovation exceeds 50 percent of the value of the building (see Chapter 2, definition of HPBA Building Value) shall comply with the HPBA.

To determine the existing building value, use worksheet DGS-30-383, available on the Forms Center.

7.2.6 High Performance Buildings Act - Design

To determine the existing building value, use worksheet DGS-30-383, available on the Forms Center.



DGS-30-383
(Rev 9/19)

Project Name:	George Mason University - Aquatic Fitness Center Renovation
Project Number:	18529-000
Date:	04/04/23

HPBA EXISTING BUILDING VALUE WORKSHEET — § 2.2-1183

	DESCRIPTION	COST	
A	**AREA OF RENOVATION**		
	PROJECT SF TOTAL	23,693	
	Complete Remainder of Form		
B	**EXISTING BUILDING**		
1	Cost of a Comparable New Building * ($/SF according to the Virginia Building Construction Cost Database)	$ 397	Link to database >
2	Gross Existing Building SF	88,316	Link to form DGS-30-219 >
3	**HPBA EXISTING BUILDING VALUE TOTAL** (1 x 2)	**$ 35,061,452**	
C	**RENOVATION PROJECT COST**		
1	Direct Cost of Renovation	$ 11,882,901	
2	Contractor's Fee	$ 2,970,725	25% of Direct Cost of Renovation
3	**RENOVATION PROJECT COST TOTAL**	**$ 14,853,626**	
D	**COMPLIANCE C / B**		
	- If equal to, or less than 50%, compliance with HPBA not required. - If greater than 50%, compliance with HPBA required.	**42.4%**	
	Compliance With HPBA Not Required		
E	**APPROVAL** DocuSigned by: Frank Strike 4/19/2023		

High Performance Building Act Compliance Statements (refer to Section 7.2.6.2)

1. In accord with the High Performance Buildings Act, the building shall comply with the Virginia Energy Conservation and Environmental Standards (VEES) as detailed in Appendix V of the Construction & Professional Services Manual.
2. In accord with the High Performance Buildings Act, the building is exempt from compliance because the new building construction is not greater than 5,000 gross square feet.
3. In accord with the High Performance Buildings Act, the building is exempt from compliance because the renovated building area is not greater than 5,000 gross square feet.
4. In accord with the High Performance Buildings Act, the building is exempt from compliance because the cost of the renovations does not exceed 50% of the value of the building.

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7.2.6 High Performance Buildings Act - Design

When the new construction and/or renovation is required to meet the requirements of the HPBA, it shall be designed and constructed in accord with the Virginia Energy Conservation and Environmental Standards (VEES) and shall comply with Appendix V - Virginia Energy Conservation and Environmental Standards (VEES).

APPENDIX V
VIRGINIA ENERGY CONSERVATION AND ENVIRONMENTAL STANDARDS (VEES)

Appendix V - Virginia Energy Conservation and Environmental Standards (VEES)

APPENDIX V
VIRGINIA ENERGY CONSERVATION AND ENVIRONMENTAL STANDARDS (VEES)

CHAPTER 1
ADMINISTRATION

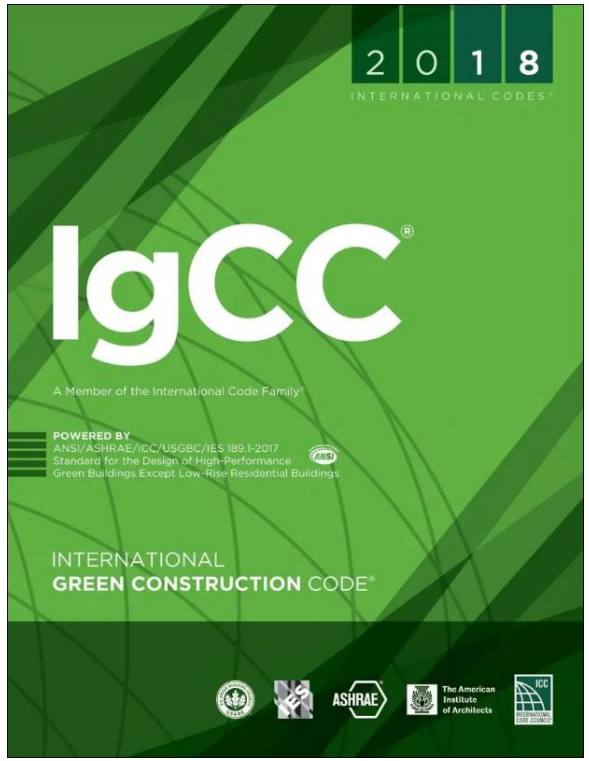
SECTION 101
GENERAL

101.1 Short Title

The *Virginia Energy Conservation and Environmental Standards* may be cited as the VEES.

101.2 Incorporation by reference

Chapters 2-11 of the 2018 *International Green Construction Code*, published by the International Code Council, Inc., are adopted and incorporated by reference to be an enforceable part of the VEES. The term "IgCC" means the 2018 *International Green Construction Code*, published by the International Code Council, Inc. Any codes and standards referenced in the IgCC are also considered to be a part of the incorporation by reference, except that such codes and standards are used only to the prescribed extent of each such reference.



Appendix V - Virginia Energy Conservation and Environmental Standards (VEES)

401.2 Compliance

Buildings and their sites shall comply with Section 401.3, "Mandatory Provisions," and one of the following:

a. The requirements of IgCC Chapters 5 through 11 as herein amended and applied in accord with IgCC Section 101.4 Application
b. Achieve certification using the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) green rating standard
c. Achieve certification using the Green Building Initiative's "Green Globes" Building Standards.

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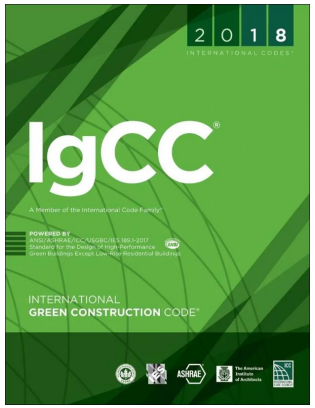
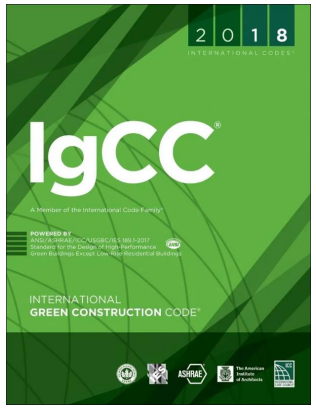
Appendix V - Virginia Energy Conservation and Environmental Standards (VEES)



Mandatory Provisions

+

Option 1



Option 2

U.S. GREEN BUILDING COUNCIL
LEED
USGBC
TM

Option 3

GBI GREEN BUILDING INITIATIVE

GREEN GLOBES
BUILDING CERTIFICATION

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7.2.8 Clarifications to Climate Zone for University and State-Owned Buildings and Buildings on University and State-Owned Property.

- New Section and content added concerning “Clarifications to Climate Zone for University and State-Owned Buildings and Buildings on University and State-Owned Property.”

7.2.11 Code Clarifications (New Section and content)

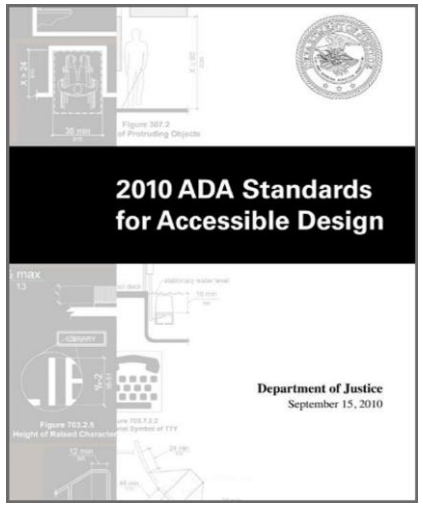
7.2.11.1 Buildings at Colleges and Universities (New Section and content)

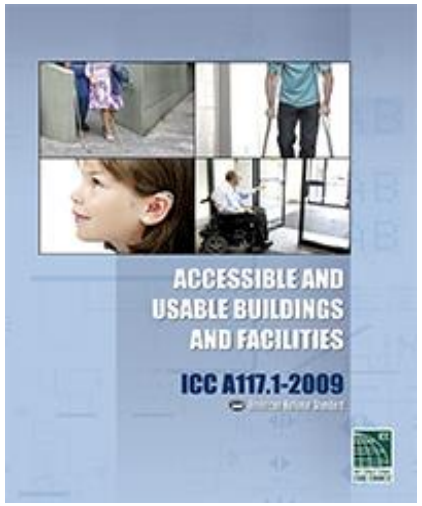
❖ Details specific fire alarm, corridor widths, occupant load, and plumbing fixture requirements for multiple occupancies.

7.2.13 Fire Safety Review (Section updated throughout to replace DEB with OUBO.)

- Fire Safety reviews shall be conducted by the OUBO for all new construction projects, projects with both additions and/or renovations, and projects with a change of use.
- Fire suppression, fire detection, and fire alarm shop drawings shall be reviewed and approved by OUBO prior to the work being installed.

Section 7.3 Accessibility Standards for State-Owned Buildings





7.3.1 Conflicting Standards

Where codes and standards conflict, the most stringent standard shall be used in designing accessible facilities. That is, the code or standard most favorable or advantageous to the disabled shall be used.

As ADA is a federal law, modification or waiver of the ADA law requirements cannot be granted by the OUBO.

Section 7.4 Special Procedures for Asbestos Abatement (Updated throughout to reference OUBO.)

7.4.1 General Asbestos Requirements

Asbestos Disclosure Statement indicating one of the following:

1. “An asbestos inspection was performed and no asbestos-containing materials were found…

2. “An asbestos inspection was performed and asbestos-containing materials were found generally in the areas indicated…

3. “An asbestos inspection was performed and asbestos-containing materials were found generally in the areas indicated…

4. “An asbestos inspection was performed and asbestos-containing materials were found generally in the area indicated…

❖ Statement utilized depends upon scenarios listed above

7.5 Special Procedures for Lead based Paint Abatement

The construction drawings for renovation or addition projects shall indicate all locations where lead-based paint is to be disturbed or to remain and shall also have a lead-based paint disclosure statement indicating one of the following:

1. A lead-based paint inspection was performed and no lead-based paint was found.
2. A lead-based paint inspection was performed and lead-based paint was found…
3. A lead-based paint inspection was performed and lead-based paint was found…
4. A lead-based paint inspection was performed and lead-based paint was found…
5. A lead-based paint inspection was performed and lead-based paint was found…

❖ Statement utilized depends upon scenarios listed above

Section 7.6 Underground Storage Tanks Systems (UST) and Above Ground Storage Tanks (AST)

The University shall request the services from the authority having jurisdiction on all UST and AST projects/actions. For capital outlay projects the University will provide the local building department copies of the appropriate sections/sheets of the specifications/ drawings. The University shall pay to the local building department the same fees as would be paid by a private citizen for the services rendered.

The Virginia Department of Environmental Quality (DEQ) requires the University to register all ASTs over 660 gallons and regulated USTs (motor fuel and generator fuel) and obtain permits for removal and replacement of tanks.

Drawings and specifications for any tank, either AST or UST, shall be reviewed and approved by SEERM for compliance with the DEQ requirements and the University's Vessel and Equipment Compliance Manual and Integrated Contingency Plan. All required registration information must be supplied by the contractor to the Project Manager. Copies of permits, inspection reports, and approvals shall be provided by the Project Manager to SEERM to document compliance with regulatory requirements.

Section 7.10 Stormwater Management and Erosion and Sediment Control Requirements

Facilities Land Development Website

Land Development – Facilities (gmu.edu)

Note: Sections 7.11 -7.13 have been heavily revised to reflect the policies, requirements and procedures from the OUBO. Some content has been moved to Chapter 8.

Section 7.11 Fire Protection and Life Safety Systems

7.11.1 Fire Detection and Alarm Systems

7.11.2 Mass Notification System (Emergency Communication Systems)

7.11.3 Fire Suppression Systems – Water-based: Fire Sprinkler/Standpipe

7.11.4 Fire Suppression Systems – Alternate Automatic Systems

7.11.5 Fire Pumps (Electrical or Diesel-Driven)

7.11.6 Smoke Control/Management Systems

7.11.7 Spray-Applied Fire-Resistant Materials (SFRM) and Fire-Resistant Coatings

7.11.8 Fire Protection Openings and Fire/Smoke Dampers

- Covers design and validation of cited systems.

SECTION 7.12 PRESSURE VESSELS

All fired or unfired pressure vessels whether a part of an equipment package or an entire piece of equipment shall be specified to comply with the ASME Code. The specifications shall require that the pressure vessel be so stamped in an easily identifiable location and that the manufacturer's data indicating ASME compliance be submitted.

Comply with the Boiler and Pressure Vessel Rules and Regulations issued by the Virginia Department of Labor and Industry https://www.doli.virginia.gov/.

Section 7.13 Temporary Electrical Service

The Architect/Engineer shall coordinate with the University as to the type of electric service available, location and who will pay for the electricity required for construction. The temporary service shall be metered.

GEORGE MASON UNIVERSITY

Office of University Building Official

4400 University Drive, MS 1E4, Fairfax, Virginia 22030
Phone: 703-993-6070

DATE: February 14, 2023

POINT OF CONTACT(S):

Jerry Boulay
Coordinator - Electric Distribution Design
Fairfax Office
Dominion Energy
11133 Fairfax BLVD, Fairfax VA 22030
571-342-0007

POWER COMPANY: Dominion Energy

UTILITY WORK ORDER NUMBER: 10512062

PROJECT NAME: Field House One University Project (off site housing)

PROJECT NUMBER: 211280

PROJECT ADDRESS: 4500 University Drive Fairfax, VA 22030

GMU BUILDING NAME - NUMBER: FIELD HOUSE - 0054

SERVICE CONNECTION TYPE: Temporary (Overhead)

This letter serves to notify you that the electric service installation for the referenced project has been inspected for compliance with the Virginia Uniform Statewide Building Code (USBC) and the National Electric Code (NEC) and is ready for utility connection. Should you have any questions concerning the inspection please contact the Office of University Building Official directly.

APPROVED: David M. Kidd

David M. Kidd, P.E., CBO
University Building Official

Phone: (703) 993-6070
Email: oubo@gmu.edu
https://oubo.gmu.edu

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QUESTIONS?
Learn More at OUBO.GMU.EDU

MAY BUILDING SAFETY MONTH 2023

Office of University Building Official

Building Safety Month is an international campaign celebrated in May to raise awareness about building safety.

For more than 42 years, Building Safety Month has reinforced the need for the adoption of modern, regularly-updated building codes, and helps individuals, families and businesses understand what it takes to create safe and sustainable structures.

Mason's Office of University Building Official is hosting the following online training from 11:30 a.m. to 12:15 p.m. :

May 10, 2023	OUBO Charter, HECO Chapter 11, OUBO Website Introduction & e-Builder
May 16, 2023	HECO Chapter 7 & Related Appendices
May 18, 2023	HECO Chapter 8 & Related Appendices - Part 1
May 23, 2023	HECO Chapter 8 & Related Appendices - Part 2
May 25, 2023	HECO Chapter 8 & Related Appendices - Part 3
May 31, 2023	Additional Q&A, Follow-up Session

RSVP BY EMAILING OUBO@GMU.EDU

OUBO CONTACT INFORMATION

703-993-6070 | oubo@gmu.edu | oubo.gmu.edu

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