



# 2022 UPDATE DESIGN AND CONSTRUCTION STANDARDS MANUAL

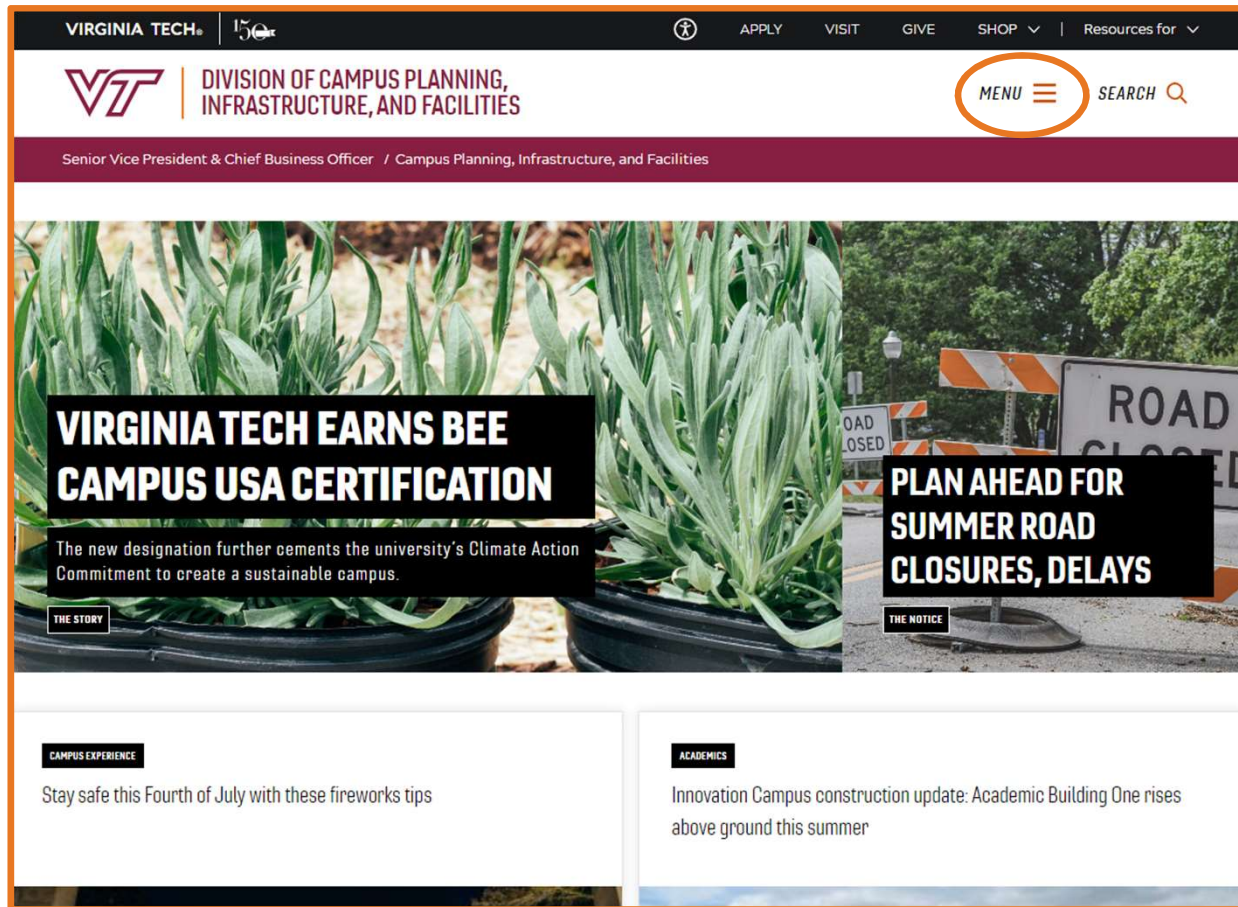
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VIRGINIA TECH CAMPUS PLANNING, INFRASTRUCTURE, AND FACILITIES

Matt Stolte, PE, Director of Engineering Services

Jennifer Suggs, DCSM Team

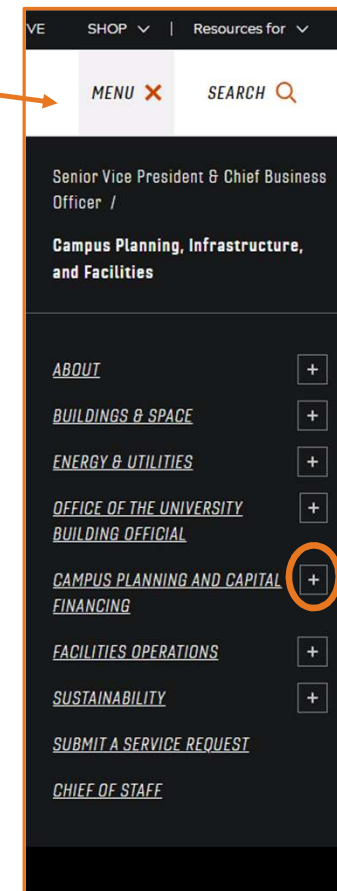
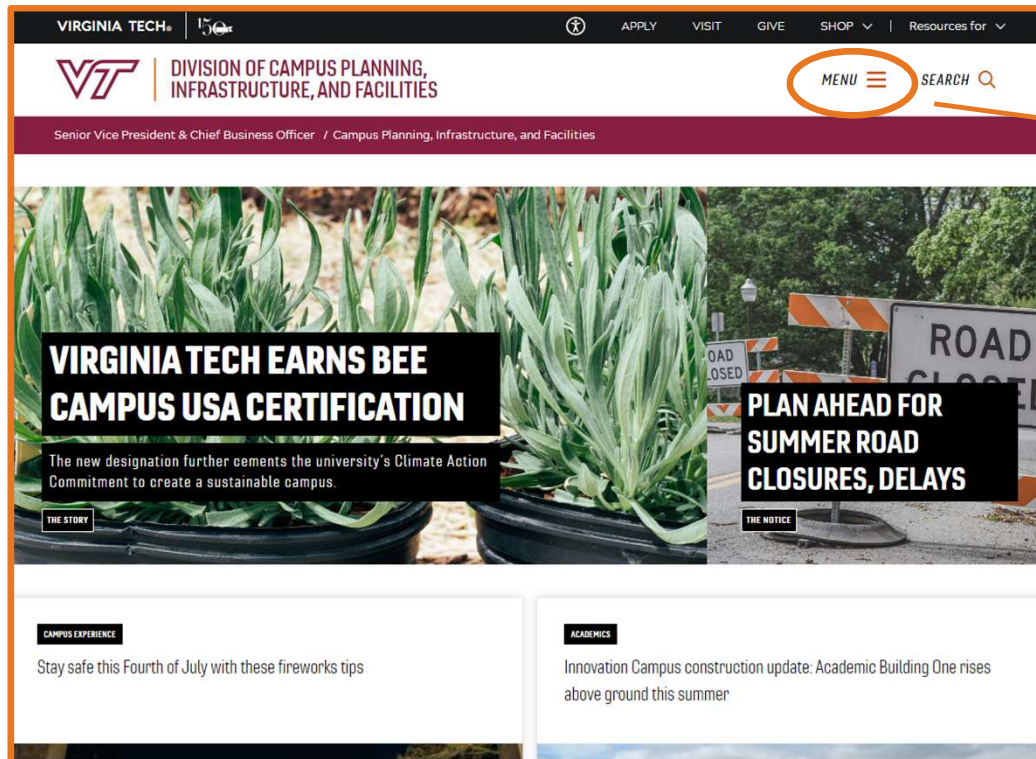
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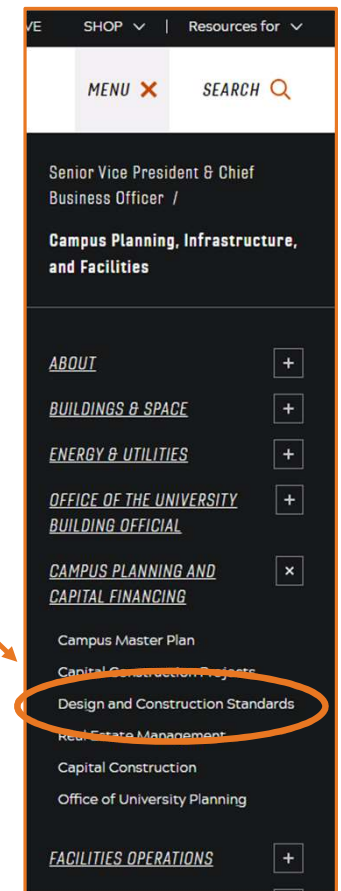
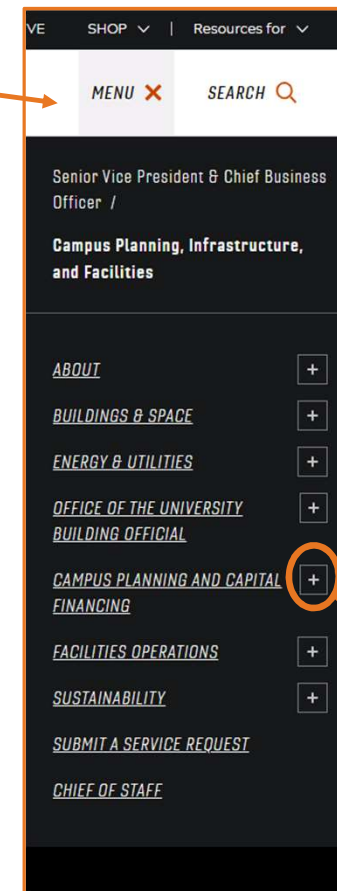
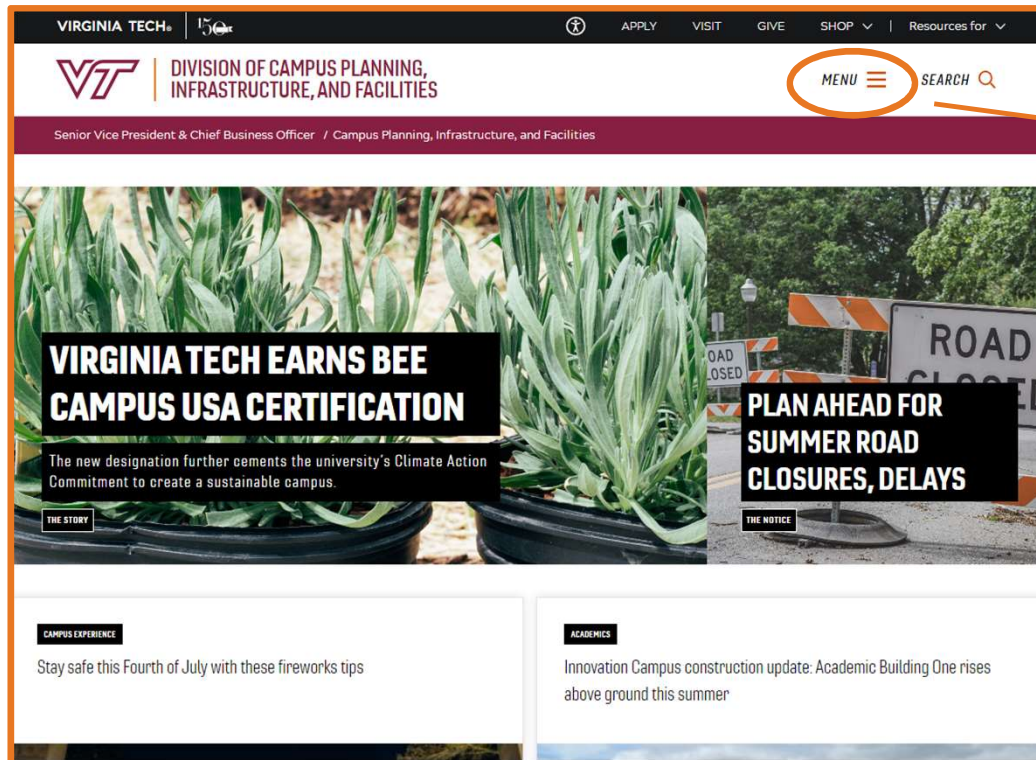
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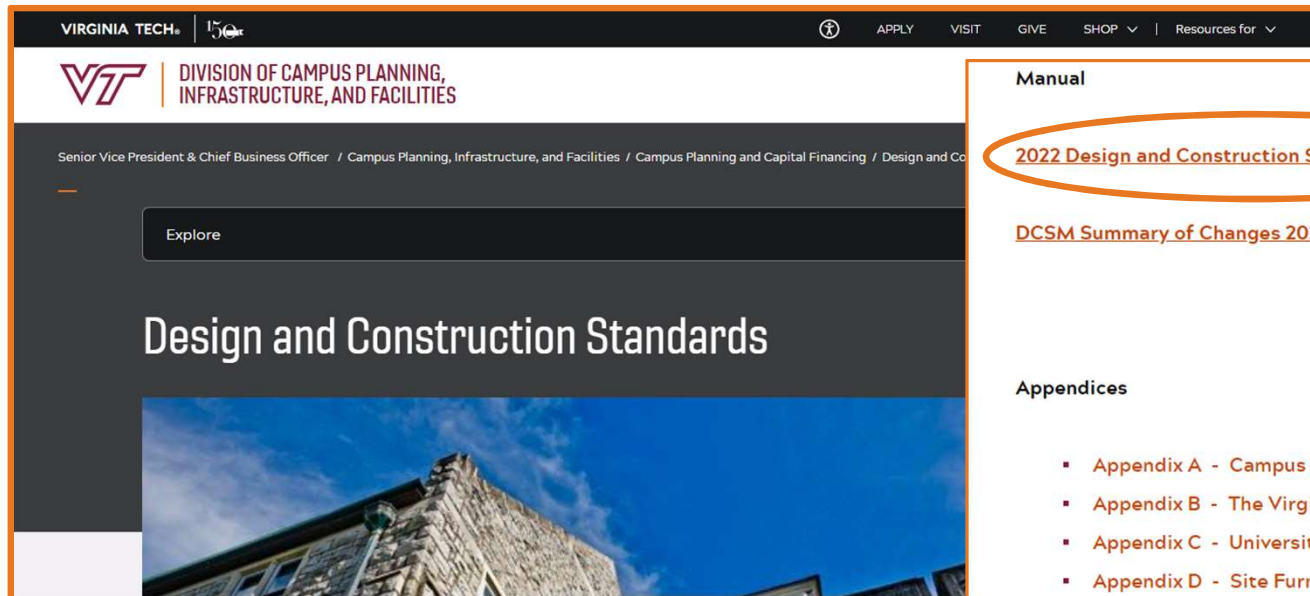


# NAVIGATING TO THE DCS HOME PAGE





# DCS HOME PAGE & 2022 DCSM



<https://www.facilities.vt.edu/planning-financing/design-and-construction-standards.html>

## Manual

[2022 Design and Construction Standards Manual](#)

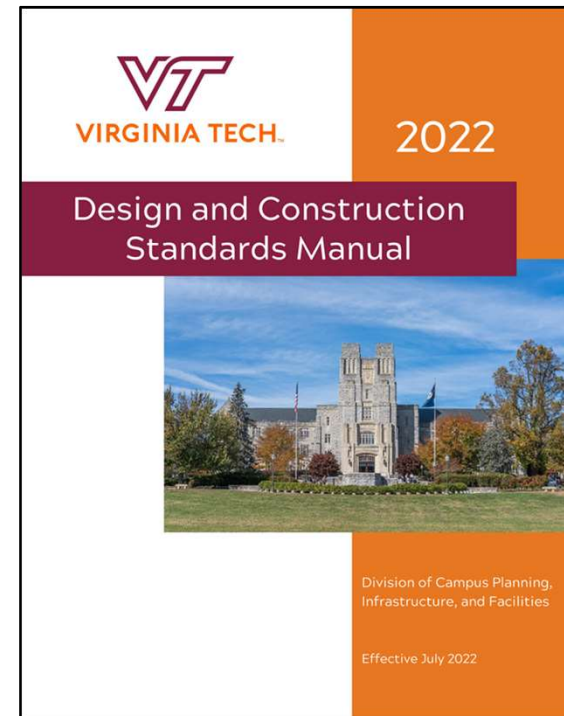
[DCSM Summary of Changes 2021 R1 to 2022](#)

## Appendices

- [Appendix A - Campus Design Principles](#)
- [Appendix B - The Virginia Tech Student Experience: VT's Next 20 Years](#)
- [Appendix C - University Space Management](#)
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- [Appendix J - BAS Standards: Sequence of Operations](#)

# 2022 DCSM & ASSOCIATED DOCUMENTS


- Effective July 01, 2022
- Updated documents:
  - 2022 Design and Construction Standards Manual
  - Forms and checklists:
    - Records Documents Submitted form
    - CADD Quality Assurance Checklist
    - Design Phase Submittal Checklists
- New document:
  - Appendix J – BAS Standards: Sequence of Operations
- DCSM Summary of Changes 2021 R1 to 2022



# EXAMPLE UPDATES IN THE 2022 DCSM



- Section additions in chapters 2, 4, and 7
  - Space Data (2.3)
  - GIS and Surveying (4.1)
  - Electric Vehicle Charging Stations (4.9.9)
  - Contractor Responsibilities for Commissioning (7.4)
- Permits for Temporary Structures (1.3.8.3)
- Elevators (6.5)

 **DIVISION OF CAMPUS PLANNING,  
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VIRGINIA TECH

Design and Construction Standards Manual  
Summary of Changes

DCSM 2021 Revision 1 to 2022 Update

### General Information

Chapter titles and the order of chapters did not change for the 2022 version. New second-level subsections were added to chapters 2, 4, and 7. The Building Automation System section (6.3) was revised by an outside source. A new appendix for BAS was created during the section revision. Applicable changes and updates from the VA CPSM 2021 Rev-1 have been incorporated and are identified in the summary.

The summary of changes is organized using the section numbers from the 2022 version. Where section numbers or points from lists changed from the 2021 R1 version to the 2022 version, references to the locations in the 2021 R1 version are in parentheses. Changes to specific points on lists are identified with the number for that point.

For example, requirements for identifying design aspects mandatory for environmental initiatives were moved from two sections in the 2021 R1 version to a point in another section of the 2022 version. In the summary of changes, 1.8, #3 (2021 R1, 6.2.4, #1 and 6.8.1, #12) indicates that point #1 in section 6.2.4 and point #12 in section 6.8.1 of the 2021 R1 version are combined now into point #3 in section 1.8 of the 2022 version.

### Summary of Changes from the 2021 Revision 1 Version to the 2022 Version

#### INTRODUCTION

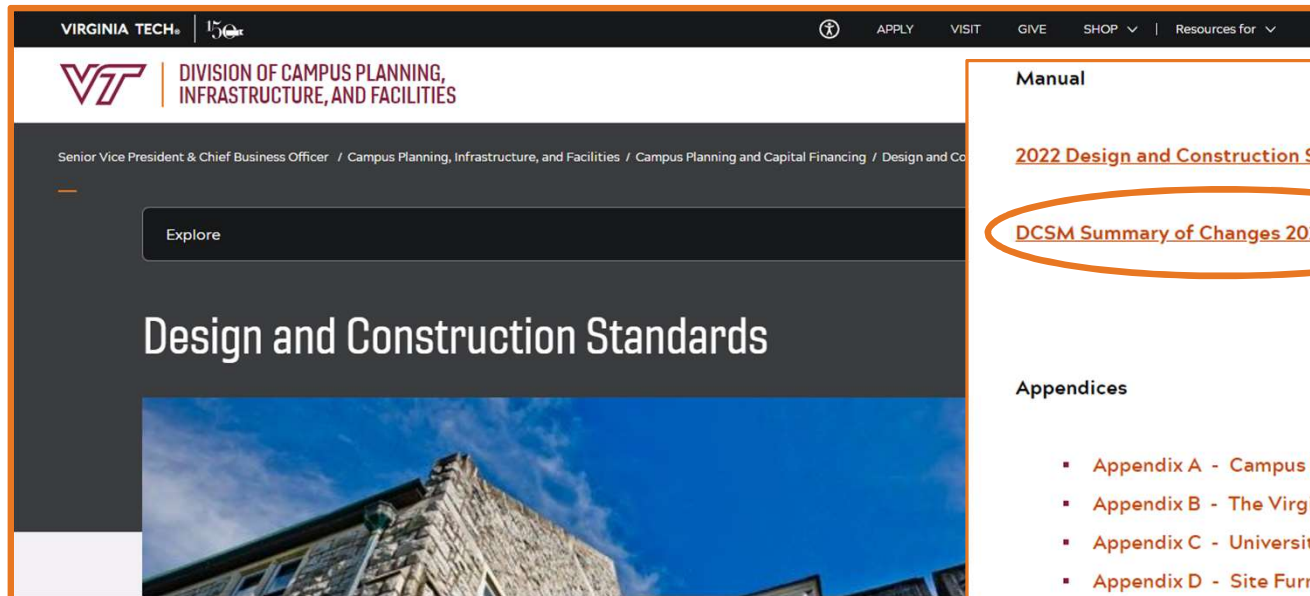
- Expanded the applicability of the DCSM to more users.
- Updated the contact information.

#### CHAPTER 1 – GENERAL REQUIREMENTS

- 1.2.1: Added subsections to General to accommodate new topics. All text in this section was placed under 1.2.1.1.
  - 1.2.1.1 (2021 R1, 1.2.2): Created a Program Goals subsection for all the text that was in the General section. Moved the sentence about color selection approval by OUP to section 1.5.4.4.
  - 1.2.1.2: Created an Alternate Location Design Requirements subsection to address design requirements for projects locations with already established design standards.
  - 1.2.1.3 (2021 R1, 4.4): Created a Signage subsection. Moved general signage requirements (applicable to both interior and exterior signage) from the Exterior



# DCS HOME PAGE & SUMMARY OF CHANGES



<https://www.facilities.vt.edu/planning-financing/design-and-construction-standards.html>

## Manual

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# APPENDIX J & CHECKLISTS

- Appendix J – BAS Standards: Sequence of Operations
  - Chapter 1: Sequence of Operations
  - Chapter 2: Alarms and Reporting Actions
- Design Phase Submittal Checklists
  - New forms are dated 5/2022
  - Updated DCSM section numbers
  - Requested changes
  - Virginia CPSM 2021 Rev. 1



BUILDING AUTOMATION SYSTEM  
STANDARDS

SEQUENCE OF OPERATIONS

**STRUCTURAL**

Working Drawings

Include the following information on the project drawings. See DCSM sections 2.4 and 2.7 for additional details on drawings.

**Instructions:**  
Indicate your response to each item in the checklist. Select 'Yes' if the checklist item has been completed in full. Select 'No' or 'N/A' if that item is not included or not required for the specific project. Explain why that item has not been included in the submittal.

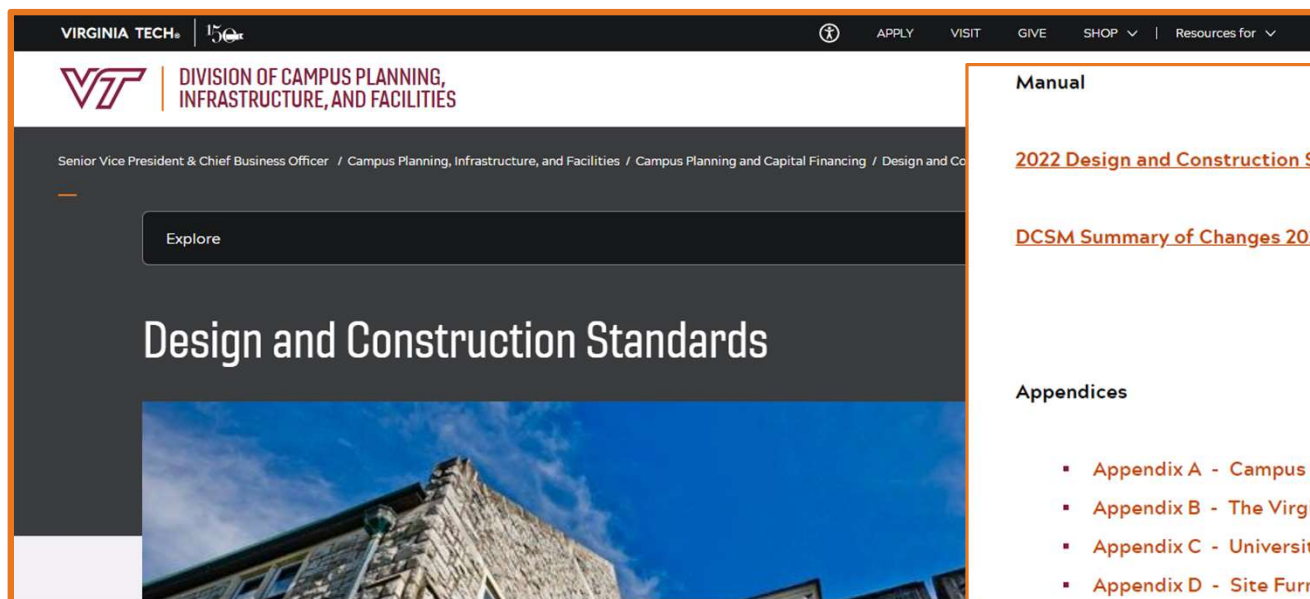
RESPONSE	REQUIREMENTS
Choose an item.	Unless indicated otherwise, confirm that the structural components will be required for the preparation of shop drawings and fabrication calculations.
Choose an item.	Show occupancy category, live loads, snow load used for structural design per the VCC. In the building height, H <sub>n</sub> , and the fundamental period (T <sub>n</sub> ) for foundation system.
Choose an item.	Show design bearing/support capacity (e.g., soil capacity) for foundation system.
Choose an item.	Indicate if engineered design and details of end plate post-tensioned concrete, precast concrete girders, pre-engineered metal structures, and steel are to be provided by the Contractor. In that case, include plans at the same scale as the architectural sections at scale: 1/2" = 1'-0" minimum. Provide no
Choose an item.	Provide foundation plans indicating type and size.
Choose an item.	Provide foundation details of improved bearing

**SPECIAL REQUIREMENTS**

Working Drawings

RESPONSE	REQUIREMENTS
	<b>Exterior Insulation and Finish System</b>
Choose an item.	Indicate locations of exterior insulation and finish systems (EIFS).
Choose an item.	Indicate thermal resistance value (R-value) for each location if various R-values are used.
Choose an item.	If several levels of impact resistance are specified, indicate locations where each level is required.
Choose an item.	Show joint layout on elevations.
Choose an item.	Provide details at edges and at joints and of special profiles.
	<b>Elevators</b>
Choose an item.	Show fire-rated hoistway with vent at top where required by code.
Choose an item.	Show waterproofed pit with ladder, indirect drain or sump, light, and ground fault circuit interrupter (GFCI) receptacle.
Choose an item.	Show machine rooms at a minimum 1/4" scale. Show all equipment to be provided by others. Show all required clearances with text or faded lines.
Choose an item.	Show machine room with ventilation to maintain temperature, light and outlet, and fire extinguisher. Confirm that pipes, ducts, conduits, etc., will not be run through or over the machine room. Confirm that no other equipment will be located in the machine room. For new machine rooms in existing buildings, show how pipes, ducts, conduits, etc., are relocated.
Choose an item.	Show hoist beam at top of shaft, removable if necessary for overhead clearance.

# DCS HOME PAGE & APPENDICES



<https://www.facilities.vt.edu/planning-financing/design-and-construction-standards.html>

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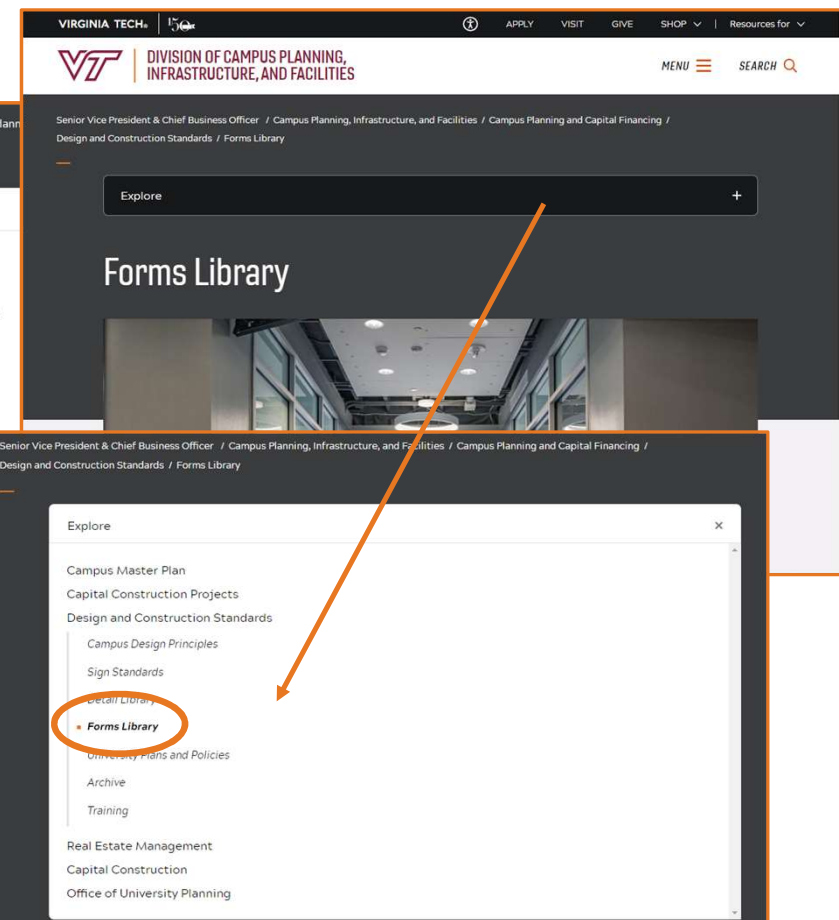
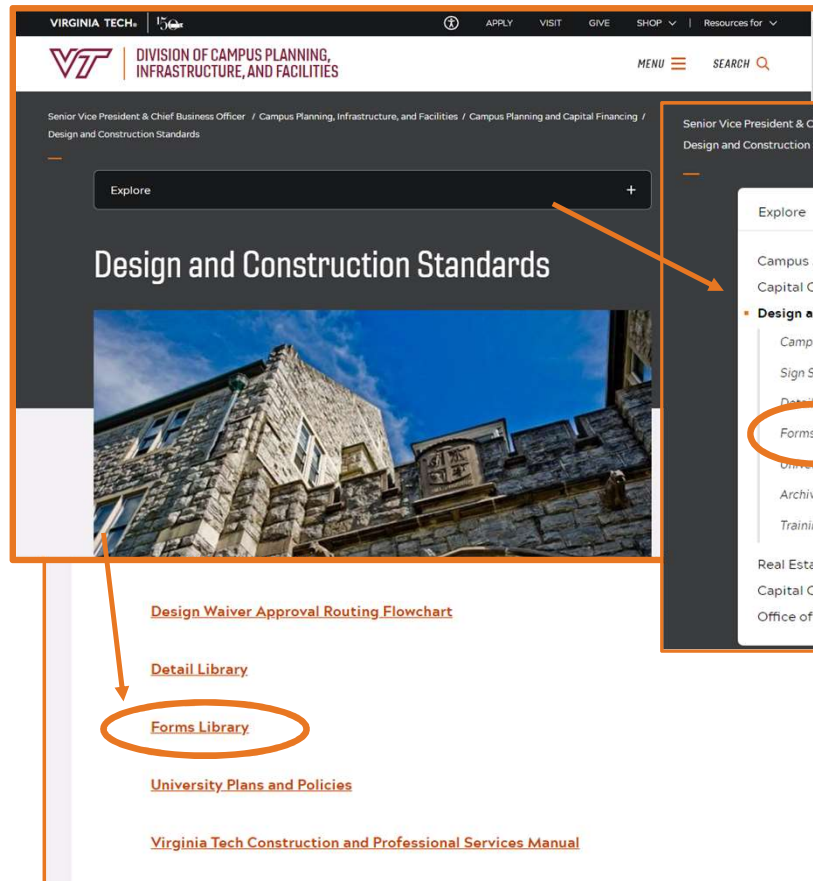
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# NAVIGATING TO THE FORMS LIBRARY



# DESIGN PHASE SUBMITTAL CHECKLISTS




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**VT** DIVISION OF CAMPUS PLANNING,  
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Senior Vice President & Chief Business Officer / Campus Planning, Infrastructure, and Facilities / Campus Planning and Capital Financing / Design and Construction Standards / Forms Library

Explore

## Forms Library



### Forms

- **Design Waiver Request** - Required when there is a need to deviate from the current design plan. Requests are made through the ReADY system. Supporting documents must be submitted electronically. The **instructions** show the information required for the request.
- **CADD Quality Assurance Checklist** - Required with the submission of any CADD drawings.
- **Record Documents Submitted** - Required to provide project information and list all records being submitted to the Plans Library.
- **Universal Design Checklist** - Required for each design drawing packet (schematic, preliminary, and working drawings).
- **Variable Frequency Drive Start-Up Checklist** - Required prior to start-up by factory certified technician.

### Submittal Checklists

Narrative and drawing requirements for submittals are in checklist form. Checklists in these packages are grouped according to the design phase. Instructions for the checklists are included in each design package.

- Schematic Design Checklists
- Preliminary Design Checklists
- Code Compliance/Working Design Checklists

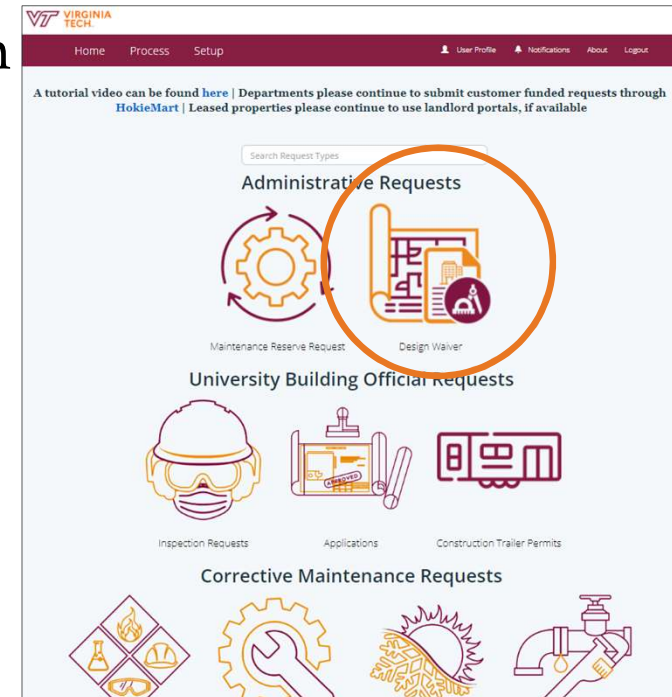
<https://www.facilities.vt.edu/planning-financing/design-and-construction-standards/dcsm-forms.html>



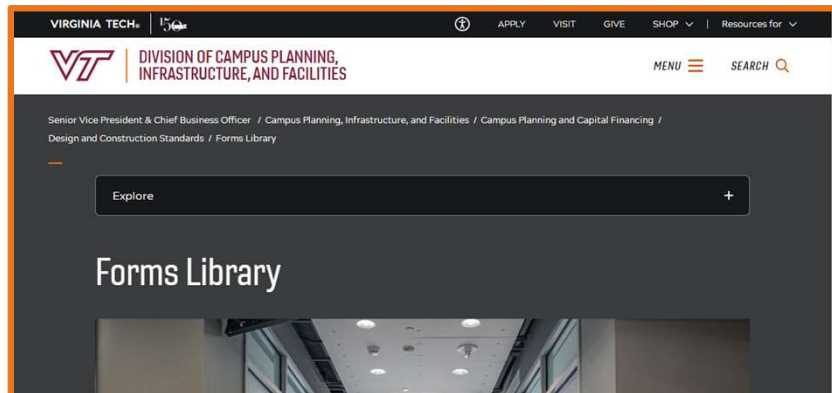
# DESIGN WAIVER REQUESTS IN READY



- Design waiver requests in the ReADY system
  - Paper version converted to an online form
  - Applicant and project information will automatically populate
  - Pull-down menus for project, DCSM, and discipline selection
  - Facilitates attaching documents
- One-page summary of request
- Easy access to submitted requests
- Instructions document provided



# DESIGN WAIVER REQUEST & INSTRUCTIONS

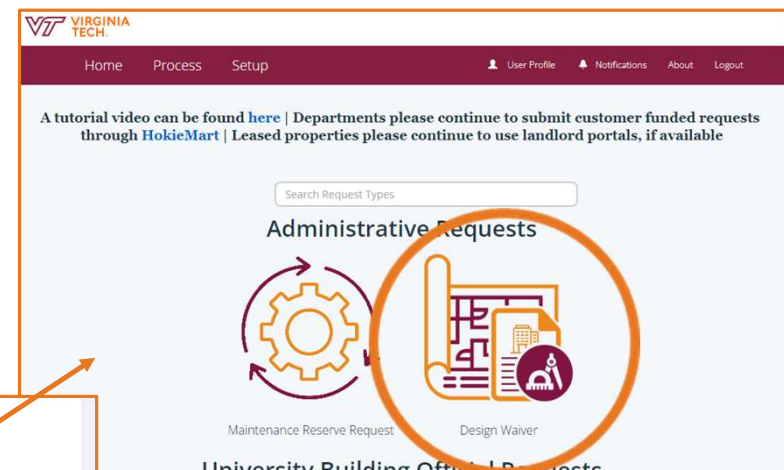


the needs of the university. Other forms are required by the Commonwealth of Virginia. Specific forms and links to websites with forms are posted here.

## Virginia Tech

### Forms

- **Design Waiver Request** - Required when there is a need to deviate from the current design plan. Requests are made through the ReADY system. Supporting documents must be submitted electronically. The **instructions** show the information required for the request.
- **CADD Quality Assurance Checklist** - Required with the





# DCS LINKED PAGES

Senior Vice President & Chief Business Officer / Campus Planning, Infrastructure, and Facilities / Campus Planning and Capital Financing / Design and Construction Standards

## Explore

Campus Master Plan

Capital Construction Projects

### Design and Construction Standards

Campus Design Principles

Sign Standards

Detail Library

Forms Library

University Plans and Policies

Archive

Training

Real Estate Management

Capital Construction

Office of University Planning

## Design and Construction Standards

[Design Waiver Approval Routing Flowchart](#)

[Detail Library](#)

[Forms Library](#)

[University Plans and Policies](#)

[Virginia Tech Construction and Professional Services Manual](#)

### Archive

The [Archive](#) houses prior releases of the Design and Construction Standards Manual and the accompanying documents for each release.

### Training

The [Training](#) page houses video recordings and slides of the training presentations for the versions of the DCSM.



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# PLANNING FOR THE 2023 DCSM

- Mechanical section (6.7) update + new details
- Regularly scheduled meetings:
  - Monthly update presentations: 3rd Thursdays, 1:30 PM
  - Monthly small group and Capital Construction meetings
- Anticipated schedule:
  - Now until February 15, 2023: Receiving changes to include for 2023 DCSM
  - March 2023: First review of 2023 DCSM and associated documents
  - April 17-May 3, 2023: Second review period
  - June 2023: Management review for approval
  - July 1, 2023: Goal signature date for 2023 DCSM
- Feedback is welcome! Contact the team through [designstandards@vt.edu](mailto:designstandards@vt.edu).





QUESTIONS?



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