

## General Information

Chapter titles and the order of chapters did not change for the 2023 version. Applicable changes and updates from the VA CPSM 2022 Rev-0 have been incorporated and are identified in the summary. Requirements for the new Delegated Design section (2.6.1.3) were adapted from the VA CPSM 2019 Rev-1. The Heating, Ventilation, and Air Conditioning section (6.7) was reworked for 2023.

The Summary of Changes is organized using the section numbers from the 2023 version. Where section numbers or points from lists changed from the 2022 to the 2023 version, references to the locations in the 2022 version are in parentheses.

For example, some requirements were moved from the Heating, Ventilation, and Air Conditioning section (2022, 6.7) into a new HVAC Systems Design section in Chapter 2 for the 2023 DCSM. In the changes, 2.6.6, #9 (2022, 6.7.1, #4 and #4.a) indicates that point #4 and #4.a in section 6.7.1 of the 2022 DCSM were combined to make point #9 in section 2.6.6 of the 2023 DCSM.

## Summary of Changes from the 2022 Version to the 2023 Version

### OVERVIEW

- General updates were made for terms, department names, and responsible groups (e.g., A/E replaced designer and engineer, NI&S replaced CNS, and University Landscape Architect replaced Campus Landscape Architect).

### INTRODUCTION

- Clarified requirement to use the current DCSM at the time of contract approval for the development of construction documents.

### CHAPTER 1 – GENERAL REQUIREMENTS

- 1.7.3.5.2: Updated to include more OUP requirements.
  - 1.7.3.5.2, #2 (2022, 1.7.3.5.2, #2): Emphasized Accessibility for mothers using wheelchairs.
  - 1.7.3.5.2, #3: Organized for physical space requirements. The order of items changed from the 2022 DCSM list.
    - 1.7.3.5.2, #3.a: Added a minimum room size.
    - 1.7.3.5.2, #3.b.i (2022, 1.7.3.5.2, #3): Added an option for key lock access.
    - 1.7.3.5.2, #3.b.ii (2022, 1.7.3.5.2, #8): Added the preference for windowless doors.
    - 1.7.3.5.2, #3.c: Added ventilation and lighting requirements.
    - 1.7.3.5.2, #3.d (2022, 1.7.3.5.2, #7): Moved point.

- 1.7.3.5.2, #3.e (2022, 1.7.3.5.2, #5): Updated the size of the countertop.
- 1.7.3.5.2, #3.f (2022, 1.7.3.5.2, #5): Clarified for design to locate drawers to the side of the open seating space.
- 1.7.3.5.2, #3.g (2022, 1.7.3.5.2, #6): Moved point.
- 1.7.3.5.2, #4: Organized requirements for furnishings and other provisions.
  - 1.7.3.5.2, #4.a: Added a requirement for a chair.
  - 1.7.3.5.2, #4.b: Added requirements for disinfectant products and a diaper disposal bin.
  - 1.7.3.5.2, #4.c (2022, 1.7.3.5.2, #9): Added required and optimal furnishings for the room.
  - 1.7.3.5.2, #4.d (2022, 1.7.3.5.2, #4): Moved point.
- 1.7.3.5.2, #5: Added statement for OUP providing the decorating preferences. Added requirements for the room to have a calm, pastel color with matching room components that are easy to clean and disinfect.
- 1.7.3.5.2, #6 (2022, 1.7.3.5.2, #10): Moved point.
- 1.7.4.2.4 - Replaced 11(d) with 11(e) to correct reference to contract section about insurance.

## CHAPTER 2 – DOCUMENT AND DRAWING REQUIREMENTS

- 2.3.1, #1: Added subpoints to clarify design phase expectations. Included A/E in the room numbering reviews. Added statement for all parties to agree on room numbering approach during the schematic design review meeting.
- 2.3.1, #2 (2022, 2.3.1, #8): Added an example of the use of 3-digit room numbers to indicate location of the room within a building.
- 2.3.1, #3 (2022, 2.3.1, #2): Moved point.
- 2.3.1, #4 (2022, 2.3.1, #3): Added a room numbering approach based on the busiest floor and corner rooms to the point about vertical room number alignment between floors.
- 2.3.1, #5-8 (2022, 2.3.1, #4-7): Moved points.
- 2.4, #2: Added requirement for fonts to have graphic differences between numbers and capital letters (0 vs. O and I vs. 1). This requirement was included in Appendix S of the VA CPSM 2022 Rev-0.
- 2.6.1.3: Added a Delegated Design section. Requirements in this section were adapted from the VA CPSM 2019 Rev-1 and updated by the office of the UBO.
- 2.6.6: Added HVAC Systems Design section using points moved from the Heating, Ventilation, and Air Conditioning section (2022, 6.7). Points were relocated as listed below. Changes to the 2022 text are noted.

- 2.6.6: General points for HVAC systems.
  - 2.6.6, #1 (2022, 6.7.1, #20); #2-4 (2022, 6.7.1, #1-3): Moved points.
  - 2.6.6, #5 (2022, 6.7.1, #24.b): Added removable louvers as an acceptable means of access.
  - 2.6.6, #6 (2022, 6.7.1, #11): Added electrical rooms, telecommunication/data rooms, and elevator machine rooms to the list of critical areas.
  - 2.6.6, #7 (2022, 6.7.1, #12): Added prohibition against locating water-containing equipment above electrical rooms, telecommunication/data rooms, elevator machine rooms, operating rooms, and critical areas.
  - 2.6.6, #8 (2022, 6.7.1, #24.i); #9 (2022, 6.7.1, #4 and #4.a); #10 (2022, 6.7.1, #5): Moved points.
  - 2.6.6, #11 (2022, 6.7.27.1): Added requirements to mark fire damper access points and to provide access doors in hard ceilings.
  - 2.6.6, #12 (2022, 6.7.1, #6 and #6.a): Removed statement about the central chilled water utility and building HVAC infrastructure.
  - 2.6.6, #13 (2022, 6.7.1, #24.h): Added requirement for an alarm signal to be sent to the BAS.
  - 2.6.6, #14 (2022, 6.7.18, #6): Removed the basis of design statement.
  - 2.6.6, #15 (2022, 6.7.4): Added requirement to provide guides and anchors to direct expansion.
  - 2.6.6, #16 (2022, 6.7.37, #11): Added requirements to accommodate housekeeping pads and rails and to show elevations on drawings.
  - 2.6.6, #17 (2022, 6.7.1, #23): Removed the examples of heat pipe and heat wheel.
  - 2.6.6, #18: Added requirement to coordinate access space needs and to indicate access space on drawings.
  - 2.6.6, #19: Added requirement for mechanical ventilation using dedicated outside air.
- 2.6.6.1 (2022, 6.7.1, #26.a-c.iii): Updated to NI&S.
- 2.6.6.2 (2022, 6.7.1, #22): Clarified the requirements for process cooling. Added the option for standalone chillers or air-cooled devices.
- 2.6.6.3 (2022, 6.7.33): Moved points.
- 2.6.6.4 (2022, 6.7.1, #24.c-d and #24.f, and 6.7.37, #7): One change to the relocated 2022 text.
  - 2.6.6.4, #1 (2022, 6.7.1, #24.c): Increased requirement for mechanical room door size to two standard doors.

- 2.6.6.4, #2 (2022, 6.7.1, #24.d); #3 (2022, 6.7.1, #24.f): Moved points.
  - 2.6.6.4, #4 (2022, 6.7.37, #7): Moved text about mechanical room space.
- 2.6.6.5 (2022, 6.7.1, #7-9, #18-19, #24.a, #24.e, and #24.g): No changes to the relocated 2022 text.
  - 2.6.6.5, #1 (2022, 6.7.1, #24.a); #2 (2022, 6.7.1, #7); #3 (2022, 6.7.1, #24.e): Moved points.
  - 2.6.6.5, #4 (2022, 6.7.1, #24.g); #5 (2022, 6.7.1, #8); #6 (2022, 6.7.1, #9): Moved points.
  - 2.6.6.5, #7 (2022, 6.7.1, #19); #8 (2022, 6.7.1, #18): Moved points.
- 2.7.5.13: Added an Electrical section with two subsections. Requirements for this section were included in the VA CPSM 2022 Rev-0. Numbers for the sections after this changed [2.7.5.14 (2022, 2.7.5.13) and 2.7.5.15 (2022, 2.7.5.14)].
  - 2.7.5.13.1: Added an Electrical Coordination Analyses Review section.
  - 2.7.5.13.2: Added an In-Building Emergency Communications Systems section.

### CHAPTER 3 – SAFETY AND SECURITY

- 3.1, First paragraph: Added option for active fall protection systems and changed to must be installed.
- 3.1, #2.a: Changed to shall and removed specific text for roofs and penthouses.
- 3.1.1, #4, 4.a-b: Changed to shall in all sentences.
- 3.1.1, #5: Added requirement for guardrails and swing gates for mezzanines.
- 3.2.1: Added a Fan Guarding section.
- 3.3: Updated the model number for the Zoll AED and the product package requirements.
- 3.6, #3: Added requirements for shielded outdoor light fixtures. These requirements were included in the VA CPSM 2022 Rev-0. Numbers for the points after this changed [3.6, #4 (2022, 3.6, #3) and 3.6, #5 (2022, 3.6, #4)].
- 3.9: Updated several points and added one new point inserted into the list.
  - 3.9, #1.a: Changed to include laboratories with corrosive substances and added examples of doors that could inhibit access.
  - 3.9, #1.b: Specified the 2014 version of the ANSI standard. Added installation requirement for counter-mounted eyewashes.
  - 3.9, #1.c (2022, 3.9, #1.b): Added the requirement for EHS to review and approve any portable eyewash stations and moved the text into a new point.
  - 3.9, #1.d-e (2022, 3.9, #1.c-d): Moved points.

- 3.9, #2.a: Changed to corrosive materials.
- 3.9, #3: Added requirements for testing flow rates of eyewashes and showers during renovation or construction and for reporting flow rate data to EHS before project turnover.
- 3.9, #4-6 (2022, 3.9, #3-5): Moved points.
- 3.10.6: Added requirement for the Contractor to inspect and tag fire extinguishers.
- 3.10.7.3 (2022, 3.10.7.3, #2.p): Deleted outdated requirement.
- 3.10.7.3, #2.a: Updated to touchscreen alarm display.
- 3.10.7.3, #3.f: Added requirements for locations of heat detectors and smoke/heat detectors and the additional programming requirements.
- 3.10.7.4, #2.a: Updated the model number.
- 3.10.7.4, #3.b-c: Changed sounder bases to addressable speakers.

#### CHAPTER 4 – SITE DEVELOPMENT

- 4.1: Removed surveying phases section (2022, 4.1.1) in its entirety.
- 4.1.1 (2022, 4.1.2): Section number changed.
- 4.1.2 (2022, 4.1.3): Section number changed. A new list was used for all text in the section. Text was added and removed in this section.
  - 4.1.2, #1: Added a requirement to notify the university surveyor before underground utility installation or when existing utilities are exposed.
  - 4.1.2, #2: Changed the vertical accuracy for the section.
  - 4.1.2, #3: Removed the requirement for all data and plats to be submitted to Virginia Tech within two weeks of backfilling or completion of construction.
  - 4.1.2, #4.a-f (2022, 4.1.3, #1-6): Numbering for the existing list changed when all text in section 4.1.2 was formatted as a list.
    - 4.1.2, #4.a (2022, 4.1.3, #1): Removed requirement for a list of construction materials for the tunnels. Reduced the list for tunnels and steam and condensate lines.
    - 4.1.2, #4.b (2022, 4.1.3, #2): Added material type to all items in the water line list.
    - 4.1.2, #4.c (2022, 4.1.3, #3): Changed name of point to electric and communication utilities. Added requirements for direct-buried electric and communication conduits and related items and equipment.
    - 4.1.2, #4.d (2022, 4.1.3, #4): Moved the measurement accuracy to 4.1.2, #2. Clarified points and added location of pipe reducers.
- 4.2: Rearranged points in the section and added some new text. Clarified responsibilities during landscape planning and implementation.

- 4.2, #1 (2022, 4.2.1, #3): Moved point.
- 4.2, #2: Added statement about A/E landscape architect developing plans with the University Landscape Architect and statement about collaboration of University Landscape Architect with the University Arborist and the VT Grounds Manager.
- 4.2, #3 (2022, 4.2, #2); #4 (2022, 4.2, #3): Moved points.
- 4.2, #5: Added statements about plant selection based on plant hardiness.
- 4.2.1: Changed section name to reflect separation of the landscape planning process from landscape implementation.
  - 4.2.1, #1 (2022, 4.2.1, #2); #2 (2022, 4.2.1, #4): Moved points.
  - 4.2.1, #2.a: Added requirement for A/E landscape architect to survey existing trees on the site with the University Landscape Architect.
  - 4.2.1, #2.b (2022, 4.2.1, #4.b); #2.c (2022, 4.2.1, #4.a); #2.d (2022, 4.2.1, #4.c): Moved points.
  - 4.2.1, #2.e (2022, 4.2.1, #4.d); #2.f (2022, 4.2.1, #4.e); #2.g (2022, 4.2.1, #4.f): Moved points.
- 4.2.2: Inserted section for landscape implementation after separating the landscape planning process from landscape implementation.
  - 4.2.2, #1 (2022, 4.2, #1): Added statement about CPIF role in landscape installation.
  - 4.2.2, #2: Added a Contractor responsibilities list including soil restoration, topsoil spreading and grading, and sod or seed installation and maintenance.
  - 4.2.2, #3: Added a CPIF responsibilities list including the installation of mulch and edging of plant beds.
  - 4.2.2, #4 (2022, 4.2.1, #4.g); #5 (2022, 4.2.1, #4.h): Moved points.
- 4.2.3 (2022, 4.2.2): Created a list from the text in section 2022, 4.2.2, and relocated points from other sections.
  - 4.2.3, #1 (2022, 4.2.1, #1): Moved point.
  - 4.2.3, #2-5 (2022, 4.2.2): Placed text into the list.
  - 4.2.3, #6 (2022, 4.2, #5 and 2022, 4.2.2): Updated the requirement about the use of ornamental grasses.
  - 4.2.3, #7 (2022, 4.2, #5): Moved point.
  - 4.2.3, #8 (2022, 4.2, #4): Added requirement to anticipate the maintenance of the area when designing a plan for embankments with slopes greater than 3:1.
- 4.2.4.1 (2022, 4.2.3.1): Added requirement to indicate the tree that will remain and the tree protection zones for those trees on the site plans.

- 4.3: Added statement for the University Landscape Architect to be consulted on all planting-related project components. Removed OUP from consulting on planting and tree planting.
- 4.3.2.1 (2022, 4.3.2, Seed Materials and Topsoil list): Created a section header for the seed materials and topsoil list with no changes to the points in the list.
- 4.3.2.2 (2022, 4.3.2, Seeding Process list): Created a section header for the seeding process list.
  - 4.3.2.2, #1-6 (2022, 4.3.2, Seeding Process list, #1-6): Same order of points in the new subsection.
  - 4.3.2.2, #7.a (2022, 4.3.2, Seeding Process list, #8); #7.b-c (2022, 4.3.2, Seeding Process list, #7): Moved points.
  - 4.3.2.2, #7.d (2022, 4.3.6): Moved point. Added a basis of design product for straw fiber netting.
  - 4.3.2.2, #8.a: Added requirement for the Contractor to identify and protect seeded areas.
  - 4.3.2.2, #8.b (2022, 4.3.2, Seeding Process list, #9): Moved point.
- 4.3.4: Removed the requirement for mechanical loosening of the subsoil prior to topsoil spreading (2022, 4.3.4, #1).
- 4.4.4: Updated the planting stock maximum size.
- 4.4.5: Added requirement to consider site characteristics, overhead utilities, and obstructions, etc. prior to tree design.
- 4.4.5.1: Clarified the planting steps, defined the dormant season, and prohibited the use of stock held or stored outside of the planting season.
- 4.4.5.5: Replaced the specifications for the water (pH, oil-free, and impurity-free) with potable.
- 4.4.6: Removed the section on vandalism (2022, 4.4.6.5).
- 4.4.6.4: Replaced vandalism in both paragraphs with damage from improper actions or negligence by the Contractor or subcontractor.
- 4.4.7.6: Added a Destruction of Trees section with requirements to seek approval from the University Arborist if damage or destruction of trees is anticipated and approval from VT Grounds if damage or destruction of other vegetation is anticipated.
- 4.8.2, #1.e: Changed prohibition on buried copper pipe to underground instead of outside the building footprint.
- 4.8.2, #8: Added a requirement for two parallel backflow preventers. Added a statement that RPZ valves will be selected and purchased by the Facilities Ops Mechanical Services and reimbursed from the project funds.



- 4.8.10, #2.a: Removed bolted bonnet and class 600 requirements. Removed statement about non-rising stem valves.
- 4.8.10, #2.b: Removed trade name and class 300 requirement.
- 4.8.12, #2.k: Changed from “piped” to “pumped” condensate lines.
- 4.8.12, #1.c-f (2022, 4.8.12, #5.a-d): Grouped pipeline strainer requirements together.
- (2022, 4.8.12, #6.a-e): Deleted these repeated points. See 2023, 4.8.12, #2.g-k.

## CHAPTER 5 – BUILDING

- 5.4: Grouped sentences into one paragraph and removed duplicate statement about OUP.
- 5.4.4: Grouped sentences into one paragraph and removed the repeat of the OUP statement that is in 5.4.
- 5.4.4, #5: Added statement about UBO daily inspections of Hokie Stone during installation.
- 5.6.4, #5: Added a reference for safety requirements for roof hatches.
- 5.7.1, #3: Added requirements for doors in laboratory spaces.
- 5.7.1, #4-5 (2022, 5.7.1, #3-4): Moved points.
- 5.12.2, #5: Added requirement for providing emergency lighting in more rooms and spaces.
- 5.16.1, #10.m: Added requirements for laboratory furniture.
- 5.18.6.1, #5: Rewritten to clarify requirement for stainless steel ductwork for any hood exhaust and suitable ductwork for general room exhaust.
- 5.18.6.3, #6: Added requirements for chemical fume hoods used for hydrofluoric acid operations.
- 5.18.6.3, #7-10 (2022, 5.18.6.3, #6-9): Moved points.
- 5.18.8, #1.a: Added requirements for chairs used in laboratory work.
- 5.18.9, #2: Changed to each laboratory.
- 5.18.9, #3: Added requirement for eyewash stations in each laboratory.
- 5.18.9, #4-14 (2022, 5.18.9, #3-13): Moved points.

## CHAPTER 6 – BUILDING SERVICES

- 6.4.4.9.8, #14-20 (2022, 6.4.4.9.8, #15-21): Removed anchoring restriction (2022, 6.4.4.9.8, #14) and moved points in list.
- 6.6.1, #6: Added requirement for secondary mixing valve to be monitored and alarmed by the BAS.



- 6.6.4, #1.d.iv.: Clarified pipe size requirement for brazing and specified brazing for vacuum lines.
- 6.6.4, #4: Added statement to prohibit burying copper pipe underground.
- 6.6.5.5, #4: Added statement to prohibit the use of concentric vent kits.
- 6.6.5.5, #5-8 (2022, 6.6.5.5, #4-7): Moved points.
- 6.6.5.5, #7 (2022, 6.6.5.5, #6): Added requirement to follow manufacturer's instructions for gas pressure regulators.
- 6.6.6.1, #3: Clarified the size of piping used below slabs.
- 6.7: The Heating, Ventilation, and Air Conditioning section was completely reworked for the 2023 DCSM. Many changes are listed below, but this is not an exhaustive list of the additions, removals, and updates for the HVAC section.
- 6.7.1: Changed to General Design Requirements. Most of the 2022, 6.7.1, Common Results for HVAC, text moved to 2023 section 2.6.6, HVAC Systems Design.
  - 6.7.1, #1: Added a reference to the Project Design section for HVAC systems design requirements.
  - 6.7.1, #2: Added a reference to the Common Work Results for Plumbing for energy source preferences for heating systems.
  - 6.7.1, #3 (2022, 6.7.13, #3): Moved point.
  - 6.7.1, #4 (2022, 6.7.35, #1): Added requirement to provide sufficient access to equipment and components that will require maintenance and inspection.
- 6.7.2 (2022, 6.7.3): Changed to Motor Requirements. Additions include points #1, #3, and #11. Added a VFD motor rating requirement, ability to access VFDs without entering an air handling unit, lockout-tagout capability on disconnects, and non-precision motors for direct drive motors. Added a statement that ECMs approved through a design waiver may require standby or replacement motors.
- 6.7.3 (2022, 6.7.5): Moved point.
- 6.7.4 (2022, 6.7.6): Specified liquid-filled gauges in 6.7.4, #2.
- 6.7.5 (2022, 6.7.7): Changed to Valves.
  - 6.7.5.1 (2022, 6.7.7.1): Additions include points #1-4, #7, and 11; added requirements for threaded valves, locking handles, isolation valves, gasket material requirements, mounting of actuated control steam valves, and chain lengths. Moved point: 6.7.5.1, #5 (2022, 6.7.18, #1).
  - 6.7.5.2 (2022, 6.7.7.2 and 6.7.7.3): Changed to Hydronic System Valves. Additions include size-based valve requirements and the requirement for high performance butterfly valves to be used on building service entrance piping. Removed some accessory and installation requirements.

- 6.7.5.3 (2022, 6.7.7.1 and 6.7.7.2): Changed to Steam and Condensate Valves. Additions include #2 and valve rating requirements. Removed some accessory and installation requirements.
- 6.7.6: Added a Hangers and Supports section.
- 6.7.7 (2022, 6.7.8): Changed to Heat Tracing. Added point #4 requiring inspection by VT building commissioning before pipes are insulated.
- 6.7.8 (2022, 6.7.9): Changed to Vibration Controls.
- 6.7.9 (2022, 6.7.10): Additions include #2 and requirements to mark the location for items above the ceiling that need maintenance and inspection, coordinate alarms with the building DDC system, and number and identify the smoke dampers and combination fire/smoke dampers.
- 6.7.10 (2022, 6.7.12): Additions include the TAB contractor responsibility for verifying filter conditions and simulating loaded filter conditions during verification. Removed requirement for building pressurization readings.
- 6.7.11: Added Insulation section header with specific insulation subsections.
  - 6.7.11.1 (2022, 6.7.14): Additions include vapor barriers for concealed locations, factory-applied interstitial insulation, and rigid board insulation strips at duct supports. Removed perforated metal inner wall option for duct insulation.
  - 6.7.11.2 (2022, 6.7.15): Changed to Equipment Insulation.
  - 6.7.11.3 (2022, 6.7.16): Changed to Piping Insulation. Added requirement to install protective pipe shields at the time of application of pipe insulation.
- 6.7.12: Added a Commissioning section to point to DCSM section 1.8.
- 6.7.13 (2022, 6.7.17) : Changed to Controls. Included points from several 2022 DCSM sections. Additions include #6 and #7 with requirements for cooling coil condensate drain pan overflow switches and alarms, and UV light safety switches.
  - 6.7.13, #2 (2022, 6.7.42.13, #3); #3 (2022, 6.7.42.13, #1); #4 (2022, 6.7.1, #31): Moved points.
  - 6.7.13, #5 (2022, 6.7.10, #7); #8 (2022, 6.7.41, #8): Moved points.
- 6.7.14: Added a Hydronic Piping section. Added pressure and temperature requirements for hydronic piping and components. Moved point: 6.7.14, #2 (2022, 6.7.7.1, #8).
- 6.7.15 (2022, 6.7.18): Additions include #3, #6, and #7. Added requirements for modulating control valves and air separation equipment and expansion tanks.
- 6.7.16 (2022, 6.7.19): Additions include #1-5 and #9. Added minimum flow rates, isolation valves, and another pump speed option.

- 6.7.17 (2022, 6.7.21.1, 6.7.21.2, and 6.7.21.3): Changed to Steam and Condensate Piping. Additions include requirement to discharge high pressure condensate to a vented flash tank with an outlet piped to a condensate return unit.
- 6.7.18 (2022, 6.7.21): Changed to Steam and Condensate Piping Specialties and added four subsections.
  - 6.7.18.1 (2022, 6.7.21.2 and 6.7.21.3): Added a Steam Traps section. Additions include 6.7.18.1, #4 and #9. Added slopes from steam trap lines to the receiver and allowed lifted condensate lines for short distances.
  - 6.7.18.2 (2022, 6.7.21.2): Added a Flash Tanks section. Added requirements on combining vents.
  - 6.7.18.3 (2022, 6.7.21.2 and 6.7.21.3): Added a Pressure Reducing Stations section. Additions include 6.7.18.3, #2 with instruction to reduce high pressure steam to the required utilization pressure as determined by the A/E.
  - 6.7.18.4 (2022, 6.7.21.2): Added a Relief Valves section. Added requirement to vent to and discharge at a safe location.
- 6.7.19 (2022, 6.7.21.3): Added a requirement for isolation valves on the suction side of steam condensate pumps.
- 6.7.20: Added a Refrigerant Systems section with three subsections.
  - 6.7.20.1 (2022, 6.7.23): Moved point.
  - 6.7.20.2 (2022, 6.7.1, #26.c.iv and 6.7.22, #3): Added Refrigerant Equipment section.
  - 6.7.20.3 (2022, 6.7.22): Moved points.
    - 6.7.20.3, #4 (2022, 6.7.22, #5): Changed to brazing under nitrogen purge for all joints.
- 6.7.21 (2022, 6.7.18 and 6.7.24): Additions include #3 and #5. Added standalone building chilled water systems and condenser water systems for chemical treatment.
- 6.7.22: Added a Metal Ducts section with three subsections.
  - 6.7.22.1 (2022, 6.7.25 and 6.7.26): Added a General section. Additions include #1-3. Added requirements for ductwork material, insulation, and jackets.
  - 6.7.22.2 (2022, 6.7.11): Changed to Antimicrobial Coatings. Added use of UV lights and requirement for factory-applied coatings.
  - 6.7.22.3 (2022, 6.7.29) : Added a Kitchen Exhaust Systems section. Additions include #2. Added fire wrapping around ductwork and grease duct access door requirements.
- 6.7.23 (2022, 6.7.27.3): Changed to Non-Metal Ducts. Added requirement for hard, round duct fittings in certain locations.

- 6.7.24 (2022, 6.7.27.1 and 6.7.27.2): Additions include #1-3. Added duct access door and motorized dampers requirements. Moved points: 6.7.24, #4 (2022, 6.7.13, #1) and #5 (2022, 6.7.42.10).
- 6.7.25 (2022, 6.7.28): Changed to Fans.
  - 6.7.25.1 (2022, 6.7.28.1) and 6.7.25.2 (2022, 6.7.28.2): Moved points.
  - 6.7.25.3: Added a Plenum Fan Arrays section. Additions include #1-4 and #7. Moved points: 6.7.25.3, #5 (2022, 6.7.42.2, #7.c) and #6 (2022, 6.7.42.2, #7.e).
- 6.7.26 (2022, 6.7.30): Changed to Air Terminal Units. Additions include #4. Moved points: 6.7.26, #1 (2022, 6.7.13, #2) and #3 (2022, 6.7.15).
- 6.7.27 (2022, 6.7.31.1): Moved point.
- 6.7.28 (2022, 6.7.31.2): Changed to Fabric Air Distribution.
- 6.7.29 (2022, 6.7.32 and 6.7.42.1): Added a Filtration section. Additions include #1 and #3-6 with airtight, gasketed seals at filter banks, MERV-A filter requirements, and restrictions on the use of synthetic filters near UV systems.
- 6.7.30: Added a Boilers section. All new for 2023.
- 6.7.31: Added a Heat Exchangers section with two subsections.
  - 6.7.31.1: Added a Shell-and-Tube section. All new for 2023.
  - 6.7.31.2: Added a Gasketed Plate-and-Frame Heat Exchangers section. All new for 2023.
- 6.7.32: Added a Packaged Rooftop Units (RTU) section. Nearly all new text for 2023. Moved point 6.7.32, #3 (2022, 6.7.39, #2).
- 6.7.33 (2022, 6.7.34): Changed to Water-Cooled Chillers. Additions include #1 and #2.
- 6.7.34: Added a Cooling Towers section. All new for 2023.
- 6.7.35: Added an Air-Cooled Chillers section. All new for 2023.
- 6.7.36: Added a Process Cooling Systems section. Moved point 6.7.36, #1 (2022, 6.7.1, #26.e) and added point 6.7.36, #2 (new for 2023).
- 6.7.37 (2022, 6.7.36): Changed to Energy Recovery Equipment. Additions include #2 and #4-6.
- 6.7.38 (2022, 6.7.1 and 6.7.31): Changed to Ventilation Systems. Additions include #3.a and #4.
- 6.7.39: Added an Air Handling Units (AHU) section with two subsections. Much of the text in both subsections is from several 2022, 6.7 sections.
  - 6.7.39.1: Added a General section. Additions include #1, #5, #6, #9, and #11. Added airflow rates for interior and exterior applications, duct penetration requirements, heat tracing for chilled water, monorail beams, and air filter locations.

- 6.7.39.2: Added a Custom Air Handling Units section. Additions include #1-5, #7, #9.a-b, #9.e-g, #13.a, #14, #19.d, and #20.a.i. Added requirements for insulation, roof pitch, interior unit structure, casing floors, casing performance, and casing materials. Added quarter-turn handles, view panels, double-sloped floor drains at coil sections, test ports, and LED light fixtures.
- 6.7.40: Added a Computer Room Air Conditioning section. All new for 2023.
- 6.7.41: Added a Ductless Mini-Split System section. All new for 2023.
- 6.7.42: Added a Coils section with several subsections.
  - 6.7.42.1: Added a General section. Moved points from several 2022, 6.7 sections into this general section. Additions include #2, and #5.b-c. Added an access section between adjacent coils for maintenance and use of pumped hydronic preheat coils.
  - 6.7.42.2 (2022, 6.7.42.8 and 6.7.42.9): Added a Hydronic Coils section.
  - 6.7.42.3 (2022, 6.7.1, #27): Added a Cooling Coil Condensate section. Additions include #2-4, #7, and #9. Added an overflow safety switch for condensate drain pans, a design height for condensate trap operation and gravity drainage, and auxiliary drain pans for above-ceiling units.
  - 6.7.42.4 (2022, 6.7.42.7): Changed to Steam Coils. Moved point: 6.7.42.4, #1 (2022, 6.7.1, #14). Additions include the design height for steam trap operation and gravity drainage and a minimum working pressure and temperature.
  - 6.7.42.5: Added a Refrigerant Coils section. All new for 2023.
- 6.7.43: Added a Fan Coil Units section. Moved points: 6.7.43, #1 (2022, 6.7.1, #15) and #2 (2022, 6.7.35, #2).
- 6.7.44: Added a Finned-Tube Heaters section. All new for 2023.
- 6.7.45 (2022, 6.7.41 and 6.7.42.4): Additions include a 2-position steam jacketing control valve to isolate steam from the humidifier during the cooling season.

## **CHAPTER 7 – CONSTRUCTION ACTIVITY**

- 7.10.2.3, #1: Merged sentences to clarify tasks of University Arborist and require planning of critical root zone impacts during the preliminary design phase.

## **CHAPTER 8 – INSPECTIONS AND OCCUPANCY**

- 8.1.3.2, #7: Corrected CO-6B to HECO-6B.
- 8.4 (2022, 8.4 and 2022, 6.7.2): Converted all text into a list and incorporated the selective demolition for HVAC section (2022, 6.7.2). Moved points: 8.4, #1.b.i (2022, 6.7.2, #1 and #2) and #1.b.ii (2022, 6.7.2, #3).

## APPENDICES

- No new or updated appendices at this time.

## CHECKLISTS

### SCHEMATIC PHASE

- Schematic Drawings:
  - Title Sheets and Building Code Data:
    - Added requirement to provide the applicable version of the DCSM.
    - Added requirement to provide a statement documenting the use of public safety wireless communications by local emergency public safety personnel.
    - Removed requirement for A/E to provide the University-approved delegated design list.
  - Site and Civil Plan: Added requirements.
    - Confirm a site walk with the A/E, Campus Landscape Architect, University Arborist, and VT Grounds and for confirmation that site conditions have been addressed in the plans.
    - Identify all trees that will remain, show the tree protection fencing for the trees, and confirm that no construction work will be performed within the tree protection fencing.
  - Landscape Architectural: Added the requirement to show the tree protection fencing on the site demolition plan.
- Schematic Basis of Design Narratives:
  - All narrative checklists were combined into one checklist. Categories from the checklists are divided into sections on the combined checklist.
  - Electrical and Electronic Systems: NEW checklist section.
    - Provide description of electrical coordination analyses process, installation, and testing requirements.
    - Document requirement of in-building emergency communications system.

### PRELIMINARY PHASE

- Preliminary Drawings:
  - Title Sheets and Building Code Data: Added requirements.
    - Provide the applicable version of the DCSM.
    - Provide a statement documenting the use of public safety wireless communications by local emergency public safety personnel.

- Updated the delegated design list requirement.
- Site and Civil Plan: Added requirements.
  - Confirm a site walk with the A/E, Campus Landscape Architect, University Arborist, and VT Grounds and confirm that site conditions have been addressed in the plans.
  - Identify all trees that will remain, show the tree protection fencing for the trees, and confirm that no construction work will be performed within the tree protection fencing.
  - Provide FEMA floodplain designation(s), show floodplain boundaries, and show the base flood elevation for sites in the 100-year or 500-year floodplain.
- Electrical: Added requirement to provide floor plans showing proposed locations for in-building emergency communications infrastructure.
- Architectural: Added requirement to confirm that all equipment and connections have a minimum clearance of 2 feet above the surface of the roof.
- Fire Systems: Added requirement to confirm the fire detection and fire alarm system design provides heat and combination smoke/heat detectors as specified in DCSM section 3.10.7.3.
- Landscape Architectural: Added the requirement to show the tree protection fencing on the site demolition plan.
- Preliminary Basis of Design Narratives:
  - Electrical and Electronic Systems: Added requirements in electronic systems section.
    - Describe in-building emergency communications systems, control cables, and radio links.
    - Verify description of electrical coordination analyses process, installation, and testing requirements.

#### CODE COMPLIANCE / WORKING PHASE

- Working Drawings:
  - Site and Civil Plan: Added requirements.
    - Confirm a site walk with the A/E, Campus Landscape Architect, University Arborist, and VT Grounds and confirm that site conditions have been addressed in the plans.
    - Identify all trees that will remain, show the tree protection fencing for the trees, and confirm that no construction work will be performed within the tree protection fencing.
    - Provide FEMA floodplain designation(s), show floodplain boundaries, and show the base flood elevation for sites in the 100-year or 500-year floodplain.



- Include the following subsurface utility location survey statement on each site and civil plan sheet: “Subsurface utility locations shall be performed throughout the construction project and the Contractor shall coordinate with the VT PM. See DCSM section 4.1.”
- Confirm that required tree protection fencing is shown on plans used for clearing and grubbing.
- Electrical:
  - Added a section for electrical coordination analyses for delegated design.
  - Added a requirement for floor plans to indicate locations for in-building emergency communications systems, when applicable.
  - Added a requirement in the service and distribution section to show tree protection fencing along the routing path and near the transformer location.
- Mechanical: Added requirements.
  - Show locations of fire and smoke dampers.
  - Indicate clearance space for maintenance, installation, and service areas using dashed or faded outlines.
  - Provide a list of building design loads and the installed equipment capacities for heating, ventilation, cooling, and domestic hot water on the first mechanical drawing.
  - Provide tables of total loads listed by equipment.
  - Show the elevation of air handling units, cooling coil condensate traps, and steam coil traps. This requirement is located in the air handling equipment section of the checklist.
- Title Sheets and Building Code Data:
  - Added requirement to provide the applicable version of the DCSM.
  - Updated the delegated design list requirement.
  - Added requirement to provide a statement documenting the use of public safety wireless communications by local emergency public safety personnel.
- Architectural: Added requirement to confirm that all equipment and connections have a minimum clearance of 2 feet above the surface of the roof.
- Fire Systems: Added requirement to confirm the fire detection and fire alarm system design provides heat and combination smoke/heat detectors as specified in DCSM section 3.10.7.3.
- Landscape Architectural: Added the requirement to show the tree protection fencing on the site demolition plan.

- Utilities:
  - Consolidated requirements applicable to exterior systems into a general exterior section.
  - Added chilled water to the site steam and hot water distribution system section header.
  - Expanded requirement to identify existing hardscape and landscape components within the limits of disturbance or crossing the path of new pipelines and to include trees to preserve with tree protection fencing, paved areas, and railroads.

### DETAILS

- Exterior Signage: Agriculture - Modified B.1
- Heating, Ventilation, and Air Conditioning:
  - Building Connection for Campus Utility Chilled Water
  - Glycol Feed System
  - Steam Reducing Station
  - Steam Flash Tank - Horizontal
  - Steam Flash Tank - Vertical
  - Steam Condensate Receiver
  - Steam Relief Valve with Drip Pan Elbow
  - AHU Steam Coil with Integral Face and Bypass Damper
    - Single Vertical
    - Double Vertical
    - Double Horizontal
- Transportation: Concrete Walk/Slab - Fiber Reinforced (replaces Sidewalk and Concrete Slab Detail)