# DESIGN AND CONSTRUCTION STANDARDS MANUAL

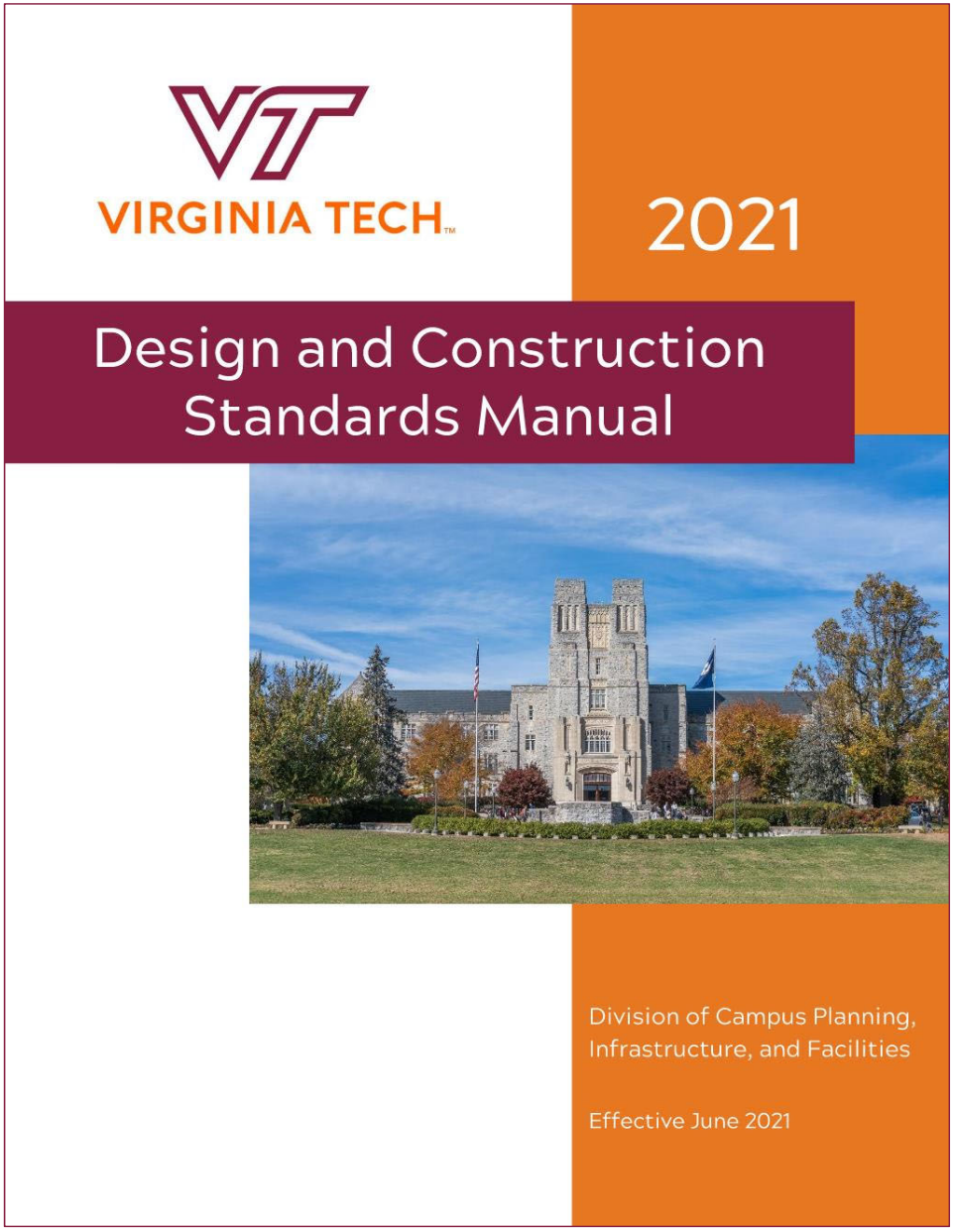
## 2021 UPDATE

DIVISION OF CAMPUS PLANNING, INFRASTRUCTURE, AND FACILITIES
VIRGINIA TECH

Mike Vellines, PE, CBO
Design and Construction Standards Official

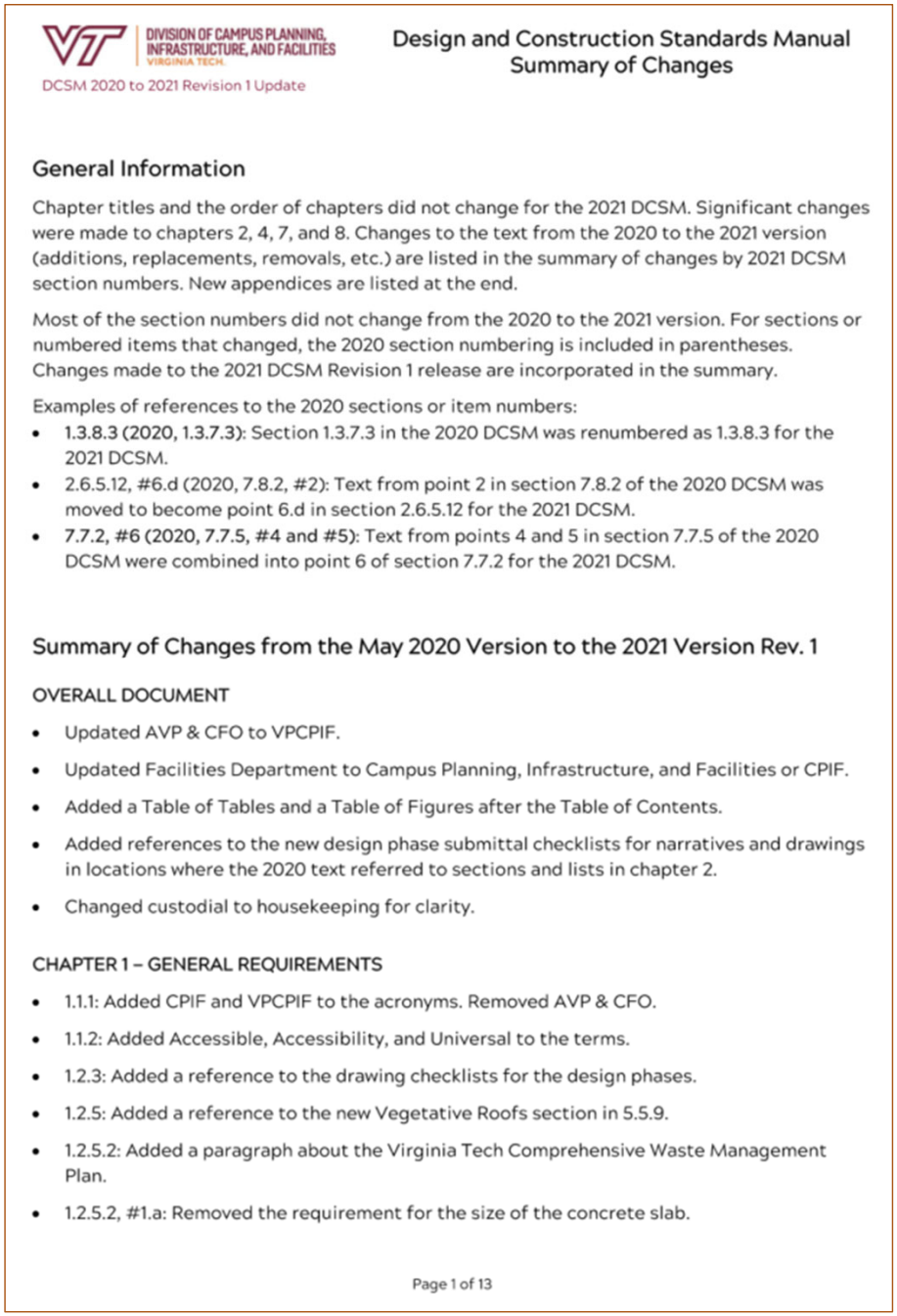
# 2021 Update Released

- Effective June 28, 2021
- Available on the Design and Construction Standards home page
- Updates in chapters 2, 4, 7, and 8
- Released with:
  - Summary of Changes 2020 to 2021
  - Design Waiver Approval Routing Flowchart
  - Submittal Checklists
  - Appendix H – Maintenance of Traffic Plans (revised)
  - Appendix I – Approved Plant and Tree Lists



# Summary of Changes DCSM 2020 to 2021 Revision 1

- Posted on the Design and Construction Standards home page
- Organized by chapters with appendices listed at the end
- Sections with changes are listed in order
- Sections or points relocated in the 2021 DCSM are cross-referenced with the original locations in the 2020 DCSM
- Incorporates changes for 2021 DCSM Revision 1



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VIRGINIA TECH

DCSM 2020 to 2021 Revision 1 Update

Design and Construction Standards Manual
Summary of Changes

## General Information

Chapter titles and the order of chapters did not change for the 2021 DCSM. Significant changes were made to chapters 2, 4, 7, and 8. Changes to the text from the 2020 to the 2021 version (additions, replacements, removals, etc.) are listed in the summary of changes by 2021 DCSM section numbers. New appendices are listed at the end.

Most of the section numbers did not change from the 2020 to the 2021 version. For sections or numbered items that changed, the 2020 section numbering is included in parentheses. Changes made to the 2021 DCSM Revision 1 release are incorporated in the summary.

Examples of references to the 2020 sections or item numbers:

- 1.3.8.3 (2020, 1.3.7.3): Section 1.3.7.3 in the 2020 DCSM was renumbered as 1.3.8.3 for the 2021 DCSM.
- 2.6.5.12, #6.d (2020, 7.8.2, #2): Text from point 2 in section 7.8.2 of the 2020 DCSM was moved to become point 6.d in section 2.6.5.12 for the 2021 DCSM.
- 7.7.2, #6 (2020, 7.7.5, #4 and #5): Text from points 4 and 5 in section 7.7.5 of the 2020 DCSM were combined into point 6 of section 7.7.2 for the 2021 DCSM.

## Summary of Changes from the May 2020 Version to the 2021 Version Rev. 1

### OVERALL DOCUMENT

- Updated AVP & CFO to VPCPIF.
- Updated Facilities Department to Campus Planning, Infrastructure, and Facilities or CPIF.
- Added a Table of Tables and a Table of Figures after the Table of Contents.
- Added references to the new design phase submittal checklists for narratives and drawings in locations where the 2020 text referred to sections and lists in chapter 2.
- Changed custodial to housekeeping for clarity.

### CHAPTER 1 – GENERAL REQUIREMENTS

- 1.1.1: Added CPIF and VPCPIF to the acronyms. Removed AVP & CFO.
- 1.1.2: Added Accessible, Accessibility, and Universal to the terms.
- 1.2.3: Added a reference to the drawing checklists for the design phases.
- 1.2.5: Added a reference to the new Vegetative Roofs section in 5.5.9.
- 1.2.5.2: Added a paragraph about the Virginia Tech Comprehensive Waste Management Plan.
- 1.2.5.2, #1.a: Removed the requirement for the size of the concrete slab.

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# Tables

DIVISION OF CAMPUS PLANNING, INFRASTRUCTURE, AND FACILITIES
VIRGINIA TECH

Sterrett Facilities Complex
230 Sterrett Drive
Blacksburg, Virginia 24061

## TABLE OF TABLES




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VIRGINIA TECH

Sterrett Facilities Complex
230 Sterrett Drive
Blacksburg, Virginia 24061


## TABLE OF FIGURES

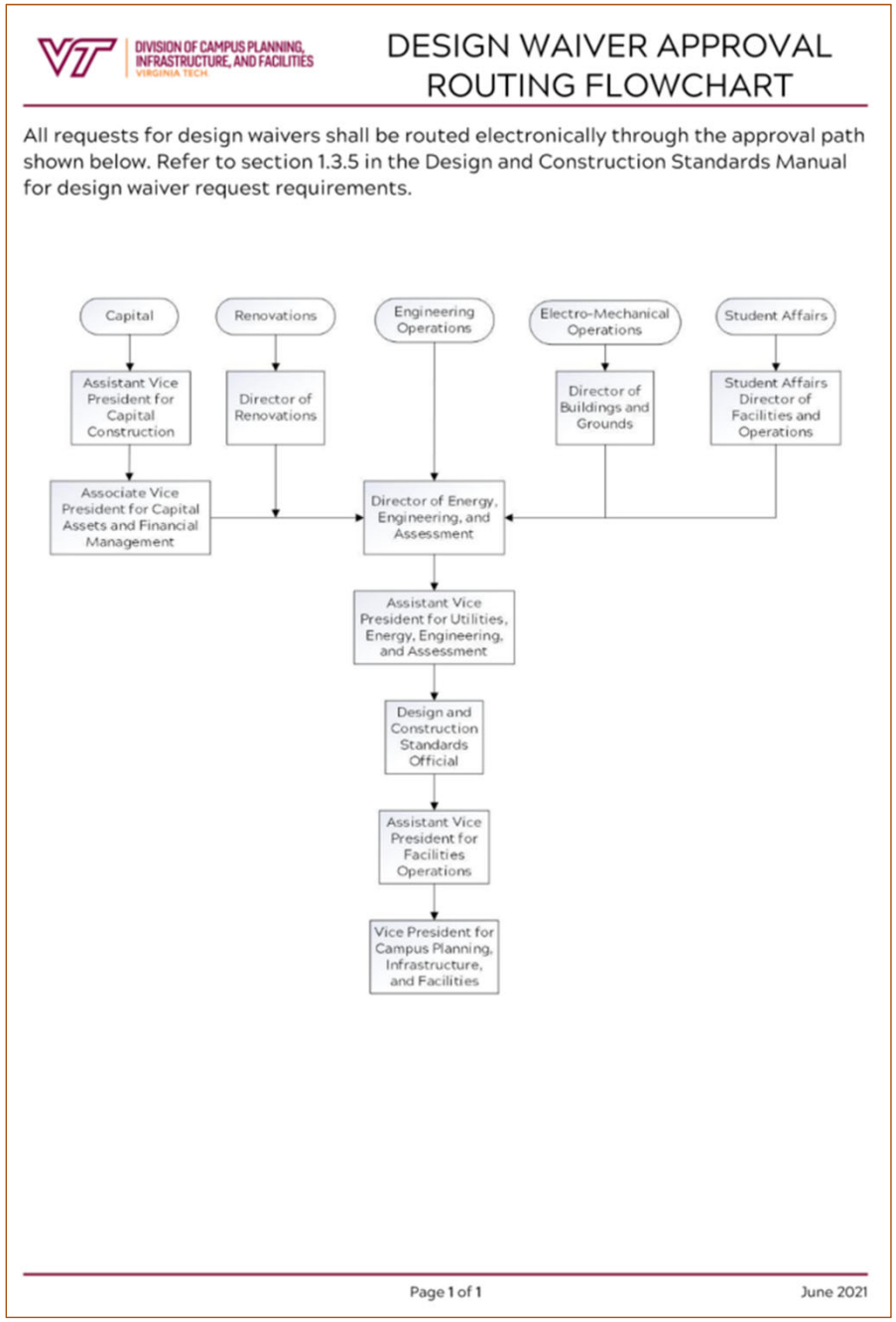


Entries are linked to the tables or figures in the 2021 DCSM.

Select the name of the desired table or figure to go directly to that place in the document.

# Design Waivers

- Added requirements for the A/E:
  - Initiate the design waiver with the VT PM
  - Provide supporting documents to the VT PM
  - Submit the request as soon as possible in the design process
- Added the requirement obtaining pre-approvals from departments affected by the design change
- Added the requirement to submit the design waiver record electronically following the Design Waiver Approval Routing Flowchart
- CHECK FOR THE LATEST FLOWCHART before submitting a design waiver request



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## DESIGN WAIVER APPROVAL ROUTING FLOWCHART

All requests for design waivers shall be routed electronically through the approval path shown below. Refer to section 1.3.5 in the Design and Construction Standards Manual for design waiver request requirements.



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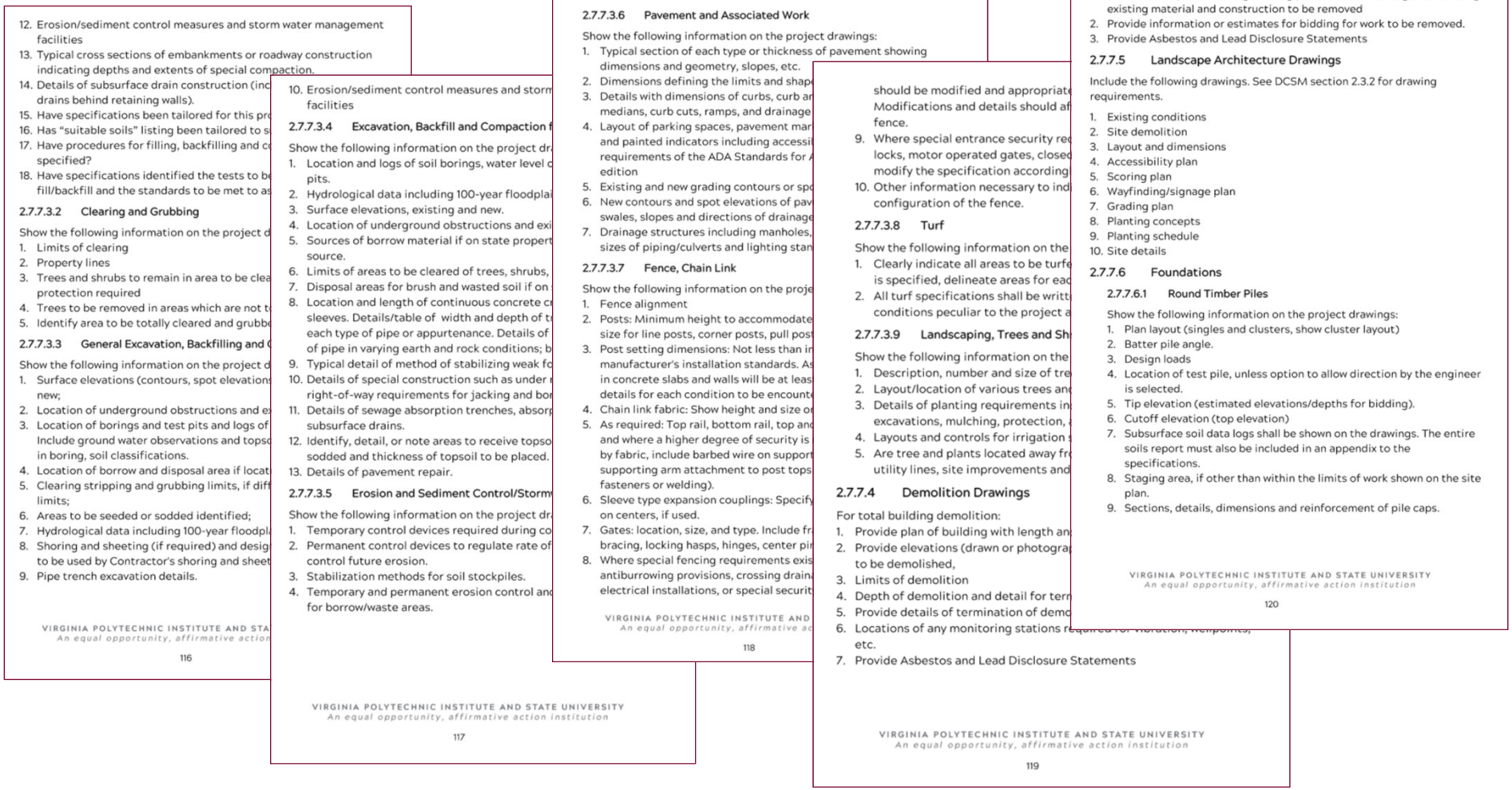
# Additions

- Environmental permits (1.3.6)
- Baby changing facilities (1.7.3.5.3)
- General notes for Contractor parking and traffic (2.6.5.12)
- Planting specifications (4.3.5) and installation maintenance (4.3.6)
- Transportation and traffic = all mobility (4.8)
- Bicycle parking calculations (4.8.3.1)
- Vegetative roofs (5.5.9)
- Authority of the CFR (8.1.4)

# Subtractions

- Chapter 2 design phase submittal lists



12. Erosion/sediment control measures and storm water management facilities
13. Typical cross sections of embankments or roadway construction indicating depths and extents of special compaction.
14. Details of subsurface drain construction (inc drains behind retaining walls).
15. Have specifications been tailored for this pr
16. Has "suitable soils" listing been tailored to s
17. Have procedures for filling, backfilling and c specified?
18. Have specifications identified the tests to b fill/backfill and the standards to be met to as

**2.7.7.3.2 Clearing and Grubbing**

Show the following information on the project d
1. Limits of clearing
2. Property lines
3. Trees and shrubs to remain in area to be clea protection required
4. Trees to be removed in areas which are not t
5. Identify area to be totally cleared and grubb

**2.7.7.3.3 General Excavation, Backfilling and**

Show the following information on the project d
1. Surface elevations (contours, spot elevation new;
2. Location of underground obstructions and e
3. Location of borings and test pits and logs of Include ground water observations and topso in boring, soil classifications.
4. Location of borrow and disposal area if locat
5. Clearing stripping and grubbing limits, if diff limits;
6. Areas to be seeded or sodded identified;
7. Hydrological data including 100-year floodpl
8. Shoring and sheeting (if required) and desig to be used by Contractor's shoring and sheet
9. Pipe trench excavation details.

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10. Erosion/sediment control measures and storm facilities

**2.7.7.3.4 Excavation, Backfill and Compaction f**

Show the following information on the project dr
1. Location and logs of soil borings, water level pits.
2. Hydrological data including 100-year floodpla
3. Surface elevations, existing and new.
4. Location of underground obstructions and exi
5. Sources of borrow material if on state propert source.
6. Limits of areas to be cleared of trees, shrubs,
7. Disposal areas for brush and wasted soil if on
8. Location and length of continuous concrete c sleeves. Details/table of width and depth of t each type of pipe or appurtenance. Details of of pipe in varying earth and rock conditions; b
9. Typical detail of method of stabilizing weak fo
10. Details of special construction such as under right-of-way requirements for jacking and bo
11. Details of sewage absorption trenches, absorp subsurface drains.
12. Identify, detail, or note areas to receive topso sodded and thickness of topsoil to be placed.
13. Details of pavement repair.

**2.7.7.3.5 Erosion and Sediment Control/Storm**

Show the following information on the project dr
1. Temporary control devices required during co
2. Permanent control devices to regulate rate of control future erosion.
3. Stabilization methods for soil stockpiles.
4. Temporary and permanent erosion control an for borrow/waste areas.

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**2.7.7.3.6 Pavement and Associated Work**

Show the following information on the project drawings:
1. Typical section of each type or thickness of pavement showing dimensions and geometry, slopes, etc.
2. Dimensions defining the limits and shap
3. Details with dimensions of curbs, curb ar medians, curb cuts, ramps, and drainage
4. Layout of parking spaces, pavement mar and painted indicators including accessi requirements of the ADA Standards for A edition
5. Existing and new grading contours or spo
6. New contours and spot elevations of pav swales, slopes and directions of drainage
7. Drainage structures including manholes, sizes of piping/culverts and lighting stan

**2.7.7.3.7 Fence, Chain Link**

Show the following information on the proje
1. Fence alignment
2. Posts: Minimum height to accommodate size for line posts, corner posts, pull post
3. Post setting dimensions: Not less than in manufacturer's installation standards. As in concrete slabs and walls will be at leas details for each condition to be encount
4. Chain link fabric: Show height and size o
5. As required: Top rail, bottom rail, top an and where a higher degree of security is by fabric, include barbed wire on support supporting arm attachment to post tops fasteners or welding).
6. Sleeve type expansion couplings: Specify on centers, if used.
7. Gates: location, size, and type. Include fr bracing, locking hasps, hinges, center pi
8. Where special fencing requirements exis antiburrowing provisions, crossing drain electrical installations, or special securit

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should be modified and appropriat
Modifications and details should af
fence.
9. Where special entrance security re locks, motor operated gates, close modify the specification according
10. Other information necessary to ind configuration of the fence.

**2.7.7.3.8 Turf**

Show the following information on the
1. Clearly indicate all areas to be turf is specified, delineate areas for eac
2. All turf specifications shall be writt conditions peculiar to the project a

**2.7.7.3.9 Landscaping, Trees and Sh**

Show the following information on the
1. Description, number and size of tre
2. Layout/location of various trees an
3. Details of planting requirements in excavations, mulching, protection,
4. Layouts and controls for irrigation
5. Are tree and plants located away fr utility lines, site improvements and

**2.7.7.4 Demolition Drawings**

For total building demolition:
1. Provide plan of building with length an
2. Provide elevations (drawn or photogra to be demolished,
3. Limits of demolition
4. Depth of demolition and detail for ter
5. Provide details of termination of demo
6. Locations of any monitoring stations r etc.
7. Provide Asbestos and Lead Disclosure Statements

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For interior/selective demolition:
1. Provide floor plans showing existing partition and showing or describing existing material and construction to be removed
2. Provide information or estimates for bidding for work to be removed.
3. Provide Asbestos and Lead Disclosure Statements

**2.7.7.5 Landscape Architecture Drawings**

Include the following drawings. See DCSM section 2.3.2 for drawing requirements.
1. Existing conditions
2. Site demolition
3. Layout and dimensions
4. Accessibility plan
5. Scoring plan
6. Wayfinding/signage plan
7. Grading plan
8. Planting concepts
9. Planting schedule
10. Site details

**2.7.7.6 Foundations**

**2.7.7.6.1 Round Timber Piles**

Show the following information on the project drawings:
1. Plan layout (singles and clusters, show cluster layout)
2. Batter pile angle.
3. Design loads
4. Location of test pile, unless option to allow direction by the engineer is selected.
5. Tip elevation (estimated elevations/depths for bidding).
6. Cutoff elevation (top elevation)
7. Subsurface soil data logs shall be shown on the drawings. The entire soils report must also be included in an appendix to the specifications.
8. Staging area, if other than within the limits of work shown on the site plan.
9. Sections, details, dimensions and reinforcement of pile caps.

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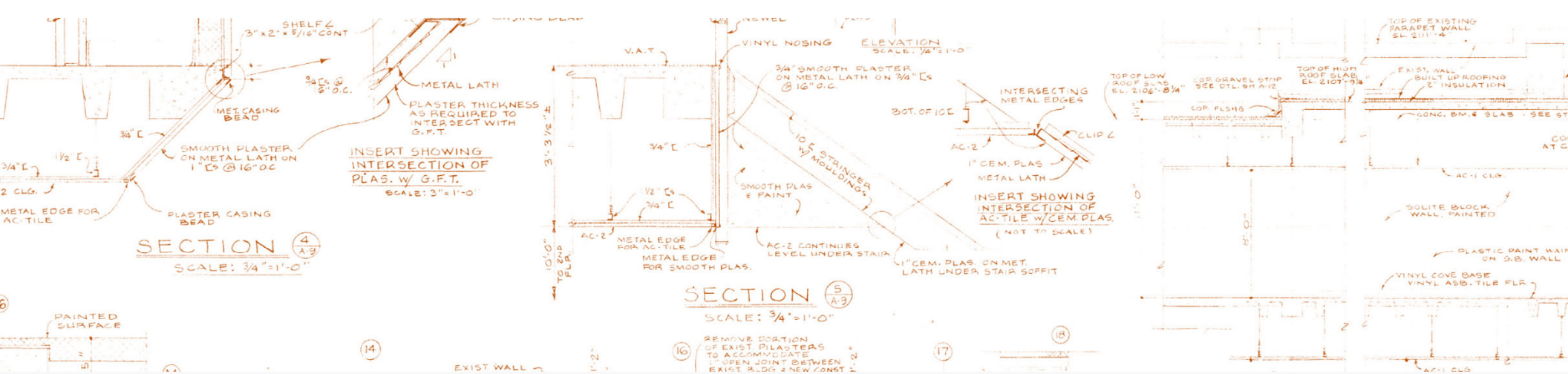
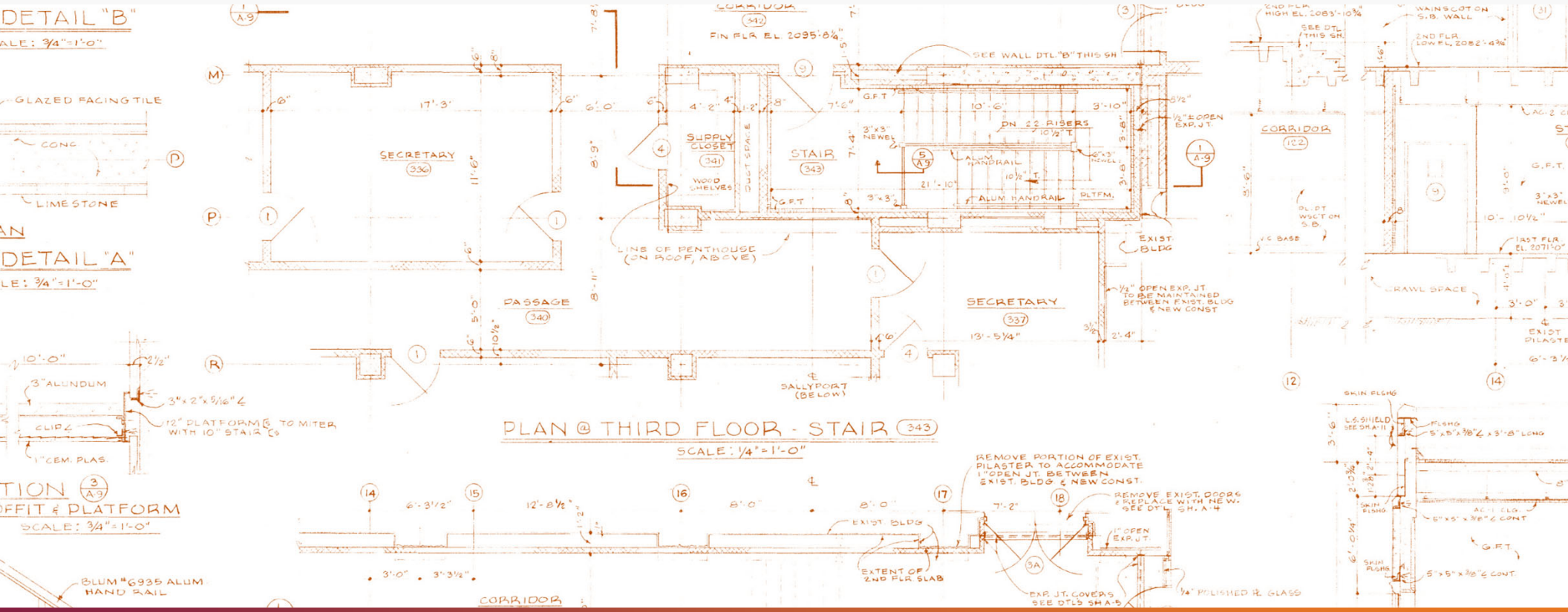
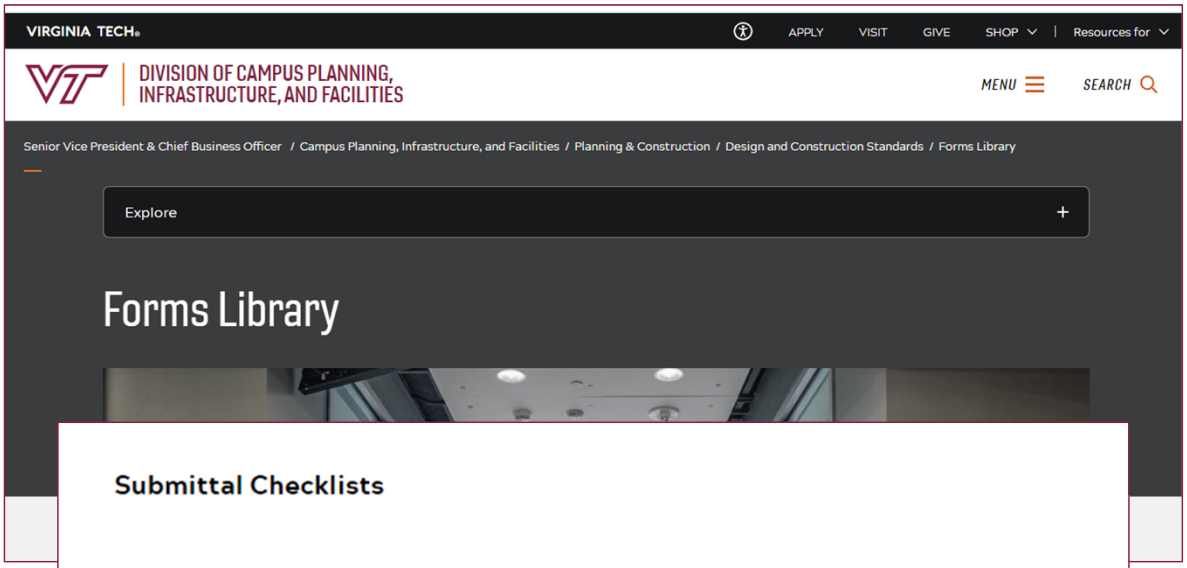



# Submittal Checklists



# Submittal Checklists for Narratives and Drawings



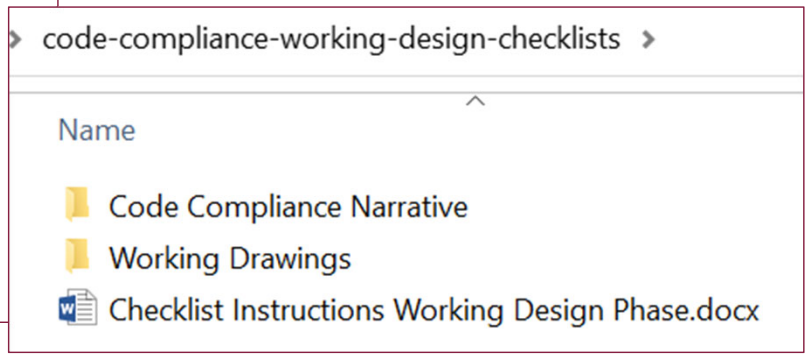

**Submittal Checklists**

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

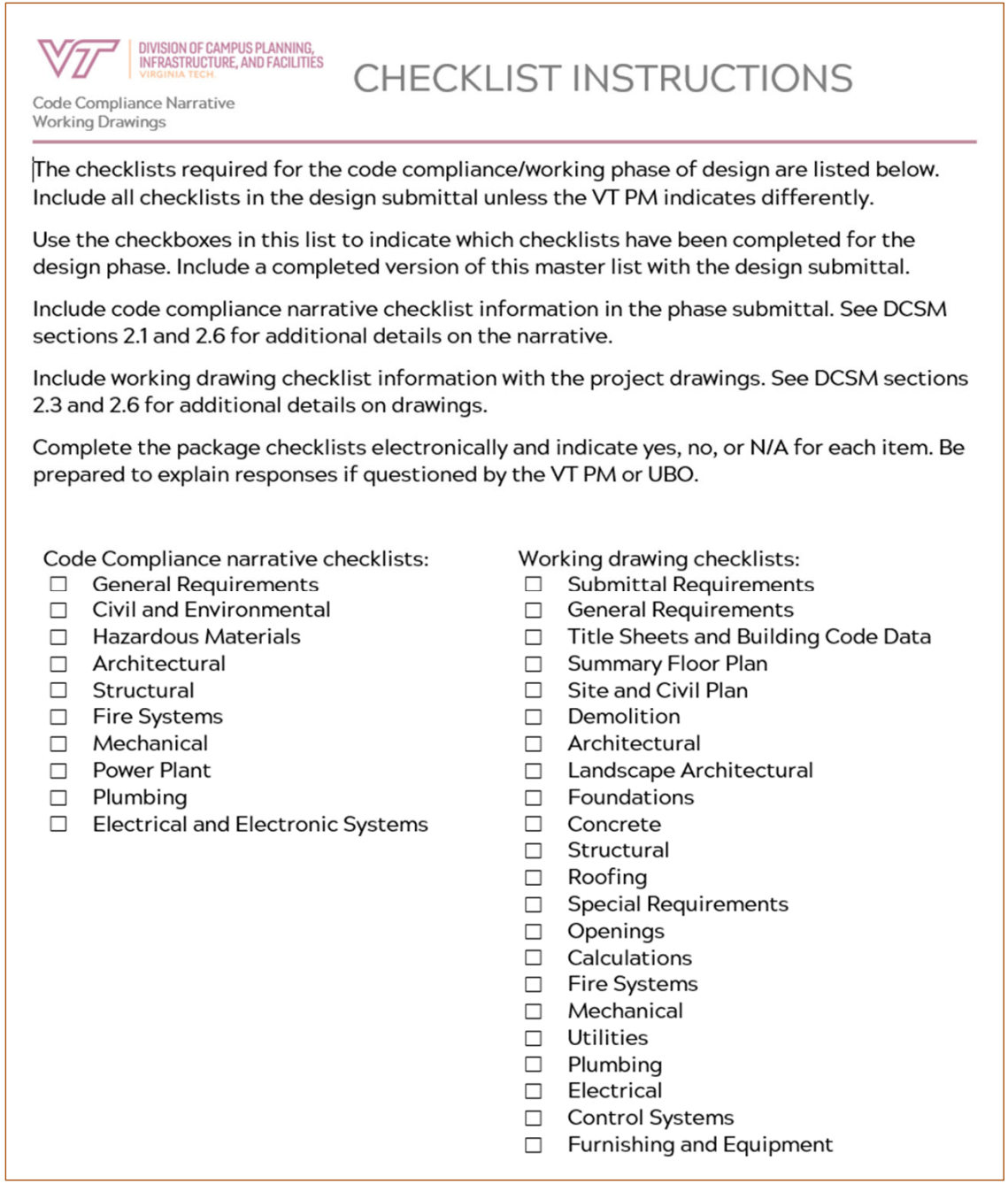
Selecting a checklist package on the Forms Library web page will initiate the download of the ZIP file.

Inside the file are instructions, checklists for the narrative, and checklists for the drawings.



# Checklist Instructions

- Instructions list all the checklists for that design phase (narrative and drawing)
- Checkboxes are provided to keep track of the checklists submitted in the design phase
- Sections in the DCSM are provided for additional details on the narrative or drawings
- Users are to complete checklists electronically and make a choice for each item (yes, no, or N/A)



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Code Compliance Narrative
Working Drawings

## CHECKLIST INSTRUCTIONS

The checklists required for the code compliance/working phase of design are listed below. Include all checklists in the design submittal unless the VT PM indicates differently.

Use the checkboxes in this list to indicate which checklists have been completed for the design phase. Include a completed version of this master list with the design submittal.

Include code compliance narrative checklist information in the phase submittal. See DCSM sections 2.1 and 2.6 for additional details on the narrative.

Include working drawing checklist information with the project drawings. See DCSM sections 2.3 and 2.6 for additional details on drawings.

Complete the package checklists electronically and indicate yes, no, or N/A for each item. Be prepared to explain responses if questioned by the VT PM or UBO.

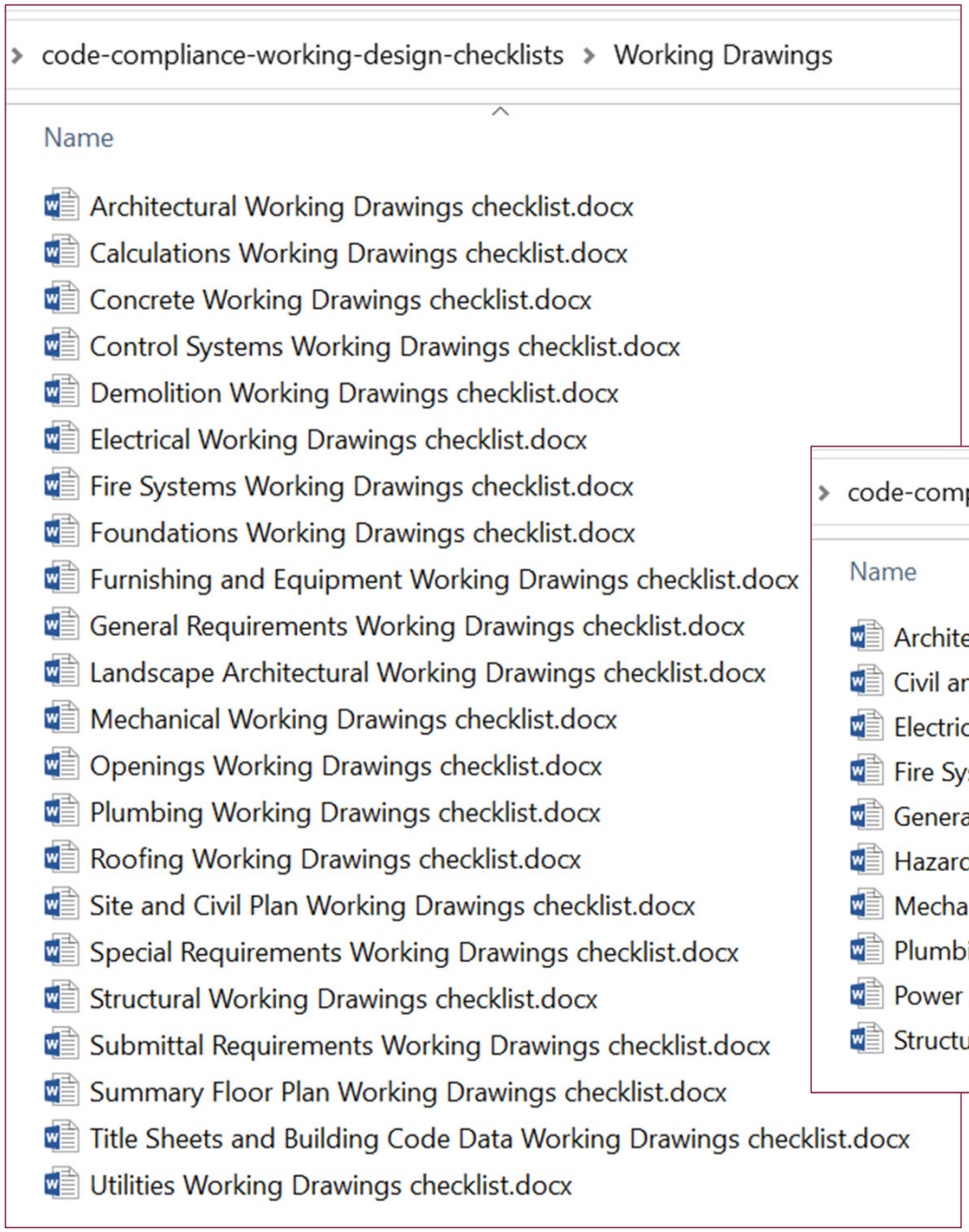
Code Compliance narrative checklists:

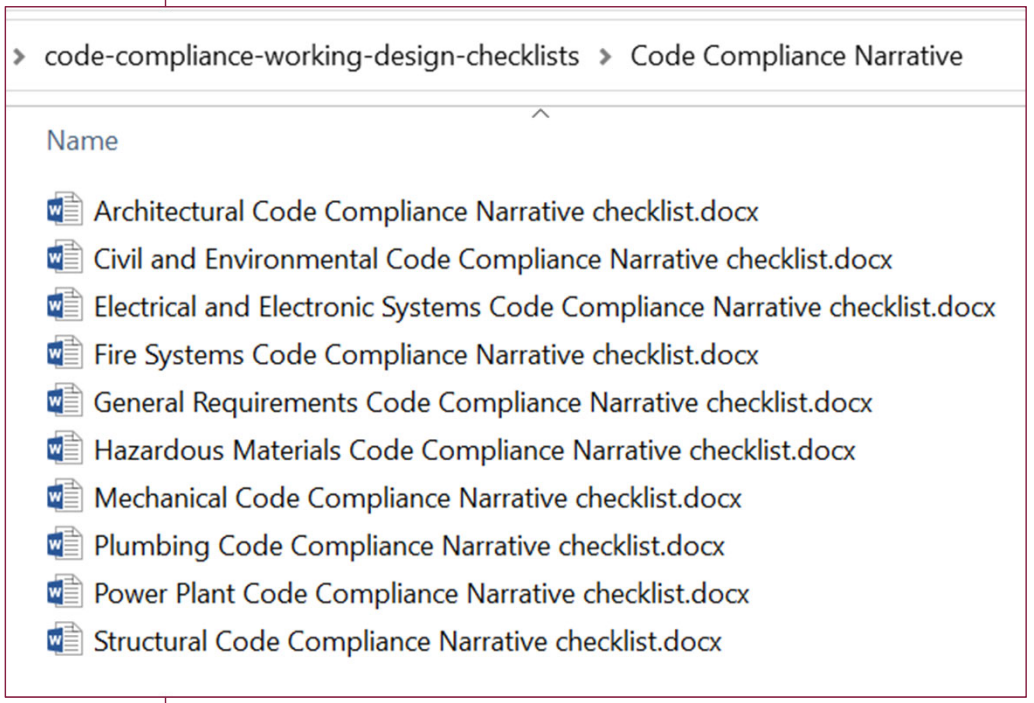
- ☐ General Requirements
- ☐ Civil and Environmental
- ☐ Hazardous Materials
- ☐ Architectural
- ☐ Structural
- ☐ Fire Systems
- ☐ Mechanical
- ☐ Power Plant
- ☐ Plumbing
- ☐ Electrical and Electronic Systems

Working drawing checklists:

- ☐ Submittal Requirements
- ☐ General Requirements
- ☐ Title Sheets and Building Code Data
- ☐ Summary Floor Plan
- ☐ Site and Civil Plan
- ☐ Demolition
- ☐ Architectural
- ☐ Landscape Architectural
- ☐ Foundations
- ☐ Concrete
- ☐ Structural
- ☐ Roofing
- ☐ Special Requirements
- ☐ Openings
- ☐ Calculations
- ☐ Fire Systems
- ☐ Mechanical
- ☐ Utilities
- ☐ Plumbing
- ☐ Electrical
- ☐ Control Systems
- ☐ Furnishing and Equipment

# Submittal Checklists for Narratives and Drawings



# Submittal Checklists for Narratives and Drawings

DIVISION OF CAMPUS PLANNING, INFRASTRUCTURE, AND FACILITIES
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## MECHANICAL

Code Compliance
Narrative Requirements

Include the following information in the Code Compliance narrative. See DCSM sections 2.1 and 2.6 for additional details.

**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 |
|---|---|
| | **Special Mechanical Systems** |
| Choose an item. | Provide a description of any special mechanical systems such as compressed air, hydraulic, nitrogen, etc. Include an explanation of the medium source. |
| | **Refrigeration (Cold Storage)** |
| Choose an item. | Identify areas to be refrigerated. Indicate their usage and temperatures to be maintained. |
| Choose an item. | Describe type of refrigeration equipment and systems. |
| Choose an item. | Include preliminary cooling profile, equipment, and tank sizes. |
| | **Thermal Storage** |
| Choose an item. | Describe the type of storage being considered (static or dynamic). |
| Choose an item. | Provide preliminary cooling profile. |
| Choose an item. | Provide preliminary equipment and tank sizes. |
| | **Heating, Ventilating, and Air Conditioning (HVAC) General** |
| Choose an item. | Describe the indoor and outdoor design conditions to be used in the design of the systems for this project. Confirm that energy sources for heating and cooling systems comply with the VT CAC and DCSM. |
| Choose an item. | Briefly describe the controls for each system and indicate intended sequence of operation. |
| Choose an item. | Briefly describe testing and balancing requirements to be required. |
| | **Heating, Ventilating, and Air Conditioning (HVAC) Heating** |
| Choose an item. | Describe the source of heat energy to be used, and explain why this source was selected instead of other available sources. Describe the type and routing of the proposed system to convey the heat source. |



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## FOUNDATIONS

Working Drawings

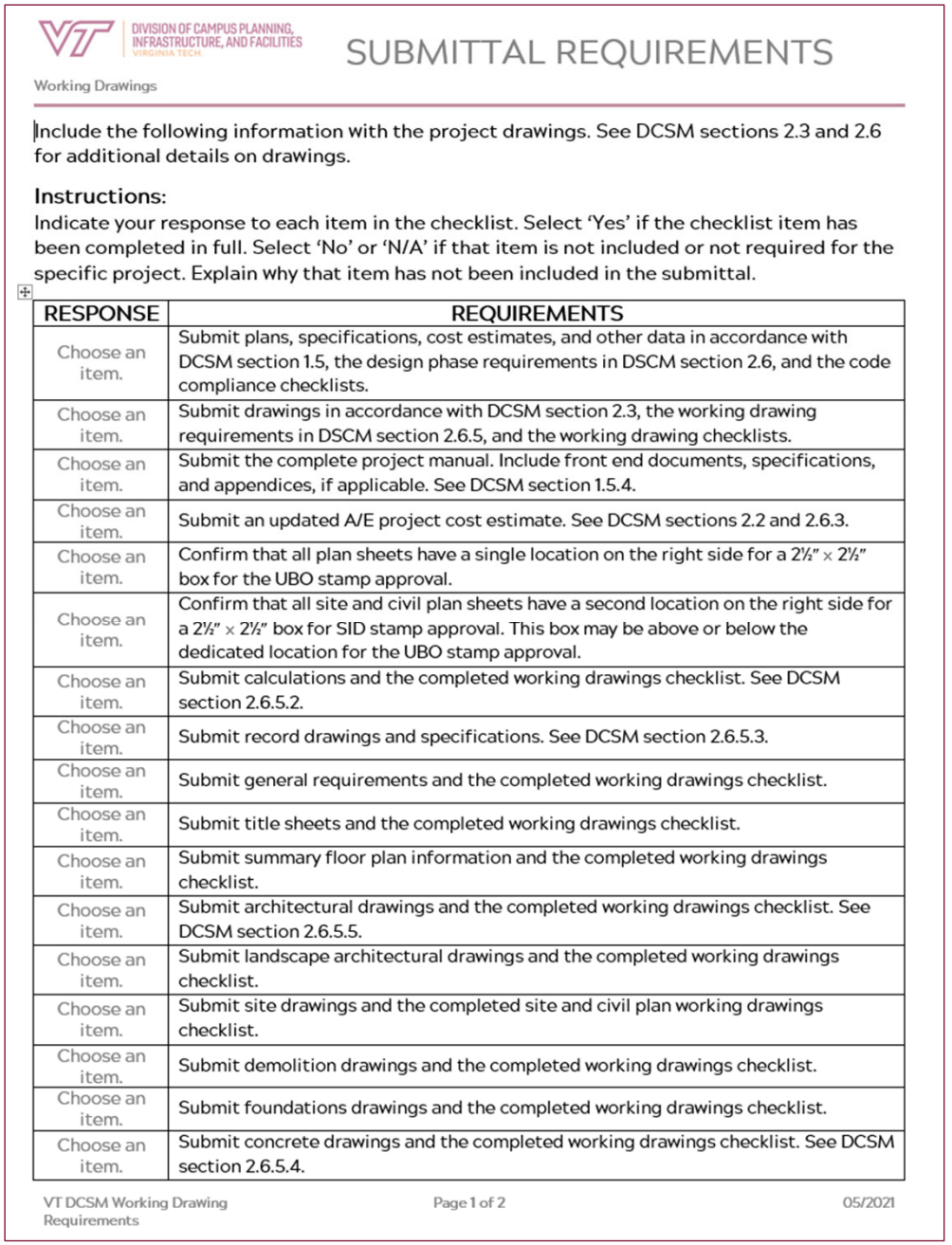
Show the following information on the project drawings. See DCSM sections 2.3 and 2.6 for additional details on drawings.

**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 |
|---|---|
| | **Round Timber Piles** |
| Choose an item. | Provide plan layout including singles and clusters. Show cluster layout. |
| Choose an item. | Show batter pile angle. |
| Choose an item. | Provide design loads. |
| Choose an item. | Show location of test pile, unless option to allow direction by the engineer is selected. |
| Choose an item. | Provide tip elevation (estimated elevations/depths for bidding). |
| Choose an item. | Provide cutoff elevation (top elevation). |
| Choose an item. | Show subsurface soil data logs on the drawings. Confirm that the entire soils report is included in an appendix to the specifications. |
| Choose an item. | Show staging area, if other than within the limits of work shown on the site plan. |
| Choose an item. | Show sections, details, dimensions, and reinforcement of pile caps. |
| | **Concrete-Filled Steel Casing Piles** |
| Choose an item. | Provide plan layout including singles and clusters. Show cluster layout. |
| Choose an item. | Show batter pile angle. |
| Choose an item. | Provide design load capacity. |
| Choose an item. | Show location of test pile, unless option to allow direction by the engineer is selected. |
| Choose an item. | Provide tip elevation (estimated elevations/depths for bidding). |
| Choose an item. | Provide cutoff elevation (top elevation). |
| Choose an item. | Show subsurface soil data logs on the drawings. Confirm that the entire soils report is included in an appendix to the specifications. |
| Choose an item. | Show staging area, if other than within the limits of work shown on the site plan. |

# Submittal Requirements Checklist

- Located in the drawings folder for each design package
- Required drawings and the corresponding completed drawing checklists are paired



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## SUBMITTAL REQUIREMENTS

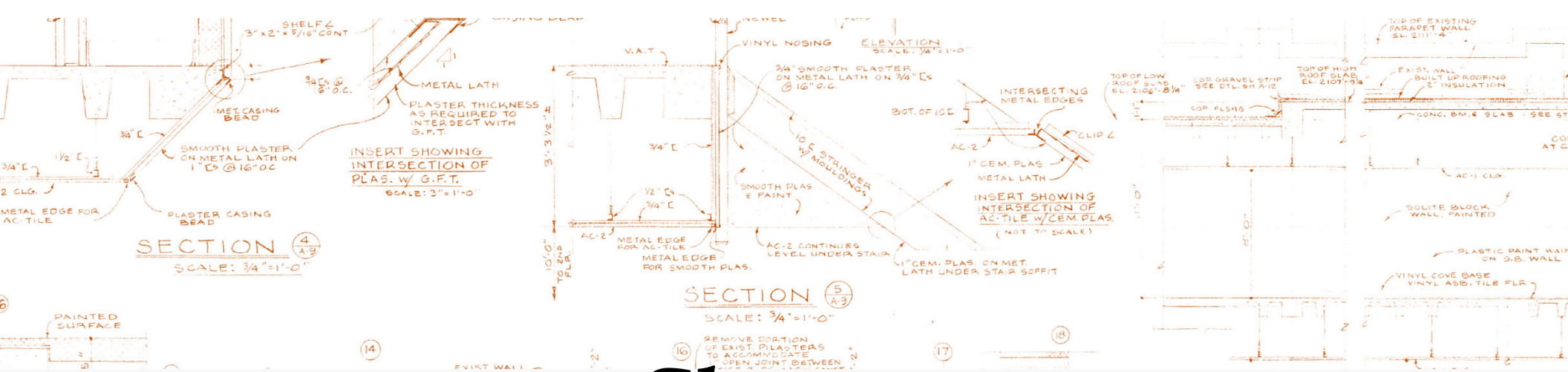
Working Drawings

Include the following information with the project drawings. See DCSM sections 2.3 and 2.6 for additional details on drawings.

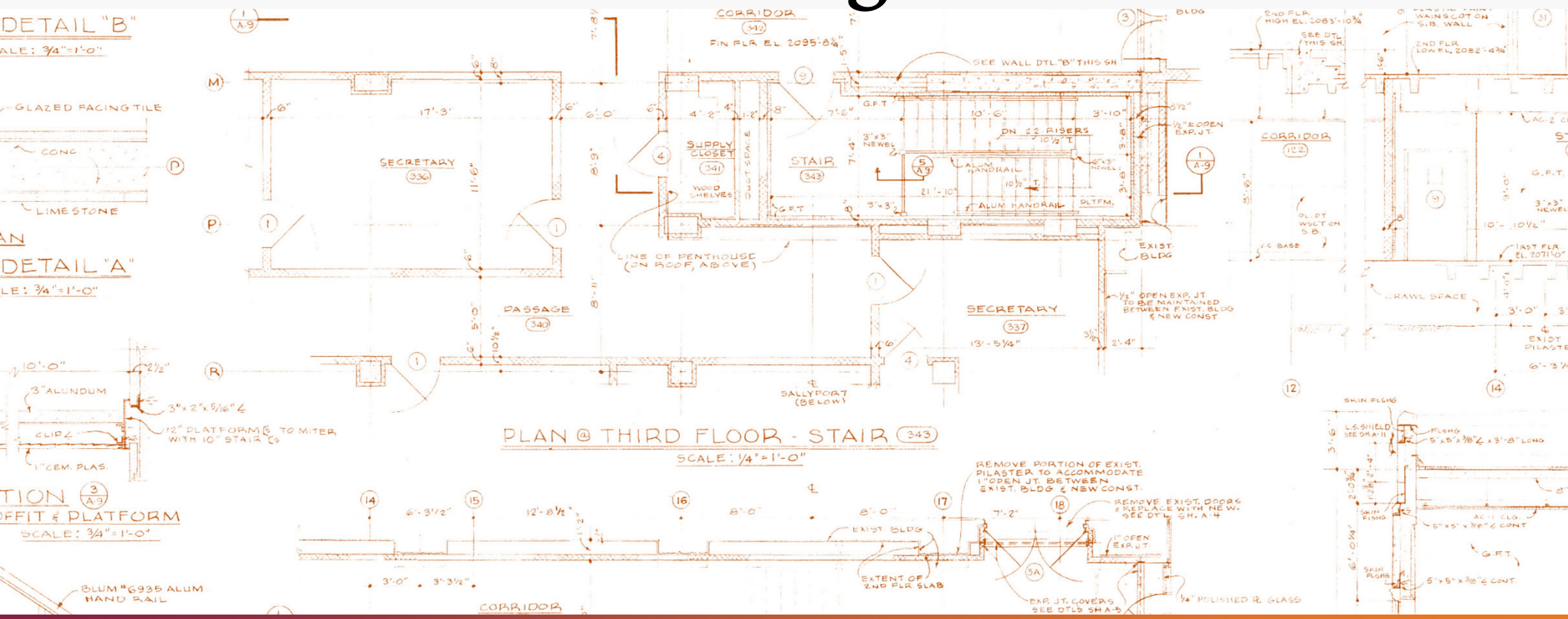
**Instructions:**
Indicate your response to each item in the checklist. Select 'Yes' if the checklist item has been completed in full. Select 'No' or 'N/A' if that item is not included or not required for the specific project. Explain why that item has not been included in the submittal.

| RESPONSE | REQUIREMENTS |
|---|---|
| Choose an item. | Submit plans, specifications, cost estimates, and other data in accordance with DCSM section 1.5, the design phase requirements in DSCM section 2.6, and the code compliance checklists. |
| Choose an item. | Submit drawings in accordance with DCSM section 2.3, the working drawing requirements in DSCM section 2.6.5, and the working drawing checklists. |
| Choose an item. | Submit the complete project manual. Include front end documents, specifications, and appendices, if applicable. See DCSM section 1.5.4. |
| Choose an item. | Submit an updated A/E project cost estimate. See DCSM sections 2.2 and 2.6.3. |
| Choose an item. | Confirm that all plan sheets have a single location on the right side for a 2½" × 2½" box for the UBO stamp approval. |
| Choose an item. | Confirm that all site and civil plan sheets have a second location on the right side for a 2½" × 2½" box for SID stamp approval. This box may be above or below the dedicated location for the UBO stamp approval. |
| Choose an item. | Submit calculations and the completed working drawings checklist. See DCSM section 2.6.5.2. |
| Choose an item. | Submit record drawings and specifications. See DCSM section 2.6.5.3. |
| Choose an item. | Submit general requirements and the completed working drawings checklist. |
| Choose an item. | Submit title sheets and the completed working drawings checklist. |
| Choose an item. | Submit summary floor plan information and the completed working drawings checklist. |
| Choose an item. | Submit architectural drawings and the completed working drawings checklist. See DCSM section 2.6.5.5. |
| Choose an item. | Submit landscape architectural drawings and the completed working drawings checklist. |
| Choose an item. | Submit site drawings and the completed site and civil plan working drawings checklist. |
| Choose an item. | Submit demolition drawings and the completed working drawings checklist. |
| Choose an item. | Submit foundations drawings and the completed working drawings checklist. |
| Choose an item. | Submit concrete drawings and the completed working drawings checklist. See DCSM section 2.6.5.4. |

VT DCSM Working Drawing Requirements — Page 1 of 2 — 05/2021


SECTION 4 A-9
SCALE: 3/4"=1'-0"
SECTION 5 A-9
SCALE: 3/4"=1'-0"
INSERT SHOWING INTERSECTION OF PLAS. W/ G.F.T.
SCALE: 3"=1'-0"
INSERT SHOWING INTERSECTION OF AC-TILE W/ CEM. PLAS.
(NOT TO SCALE)
ELEVATION
SCALE: 1/4"=1'-0"

# Changes

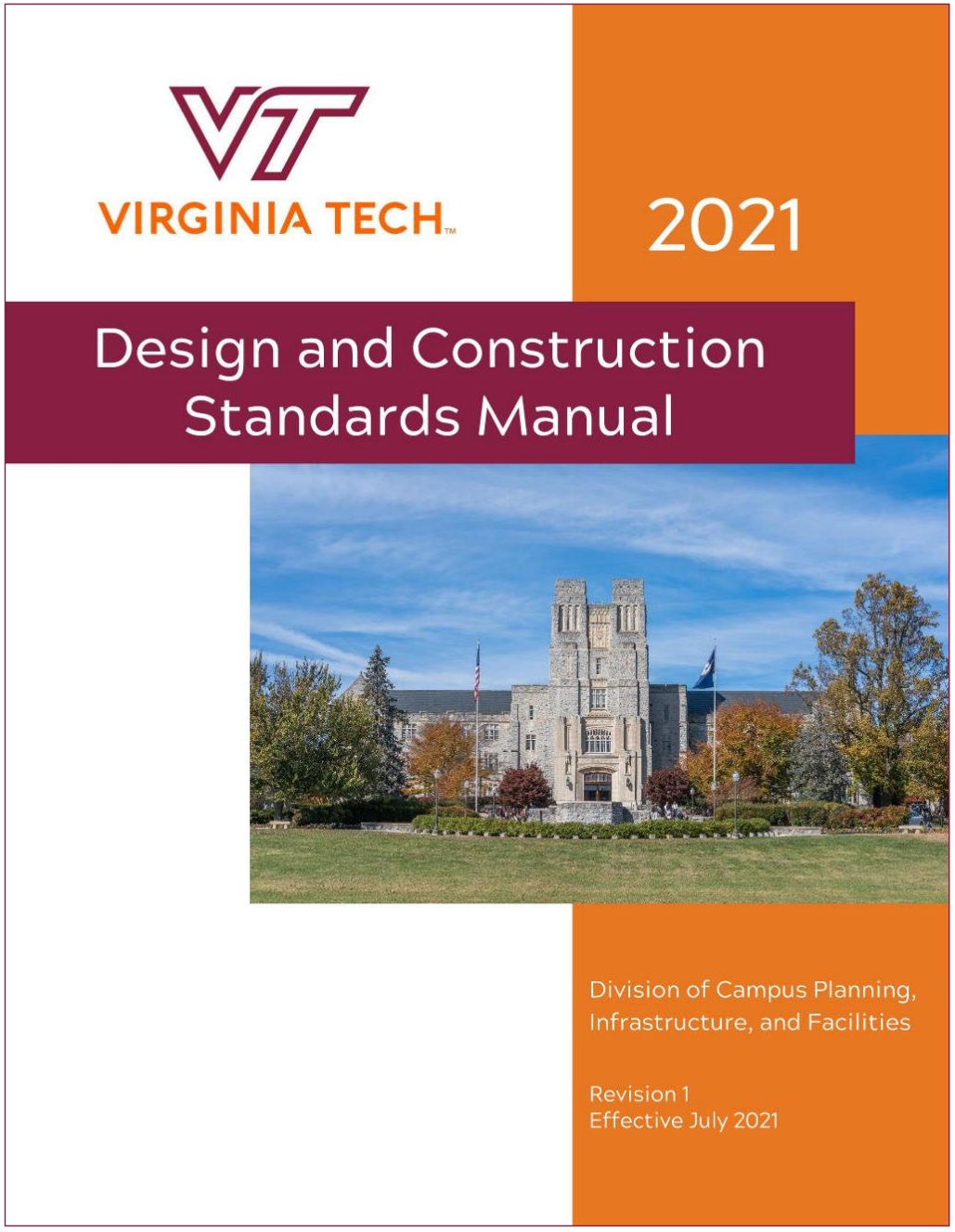

PLAN @ THIRD FLOOR - STAIR 343
SCALE: 1/4"=1'-0"
DETAIL "B"
SCALE: 3/4"=1'-0"
DETAIL "A"
SCALE: 3/4"=1'-0"
SECRETARY 336
PASSAGE 340
SUPPLY CLOSET 341
STAIR 343
CORRIDOR 342
SECRETARY 337
CORRIDOR 122
SALLYPORT (BELOW)
EXIST. BLDG
CRAWL SPACE

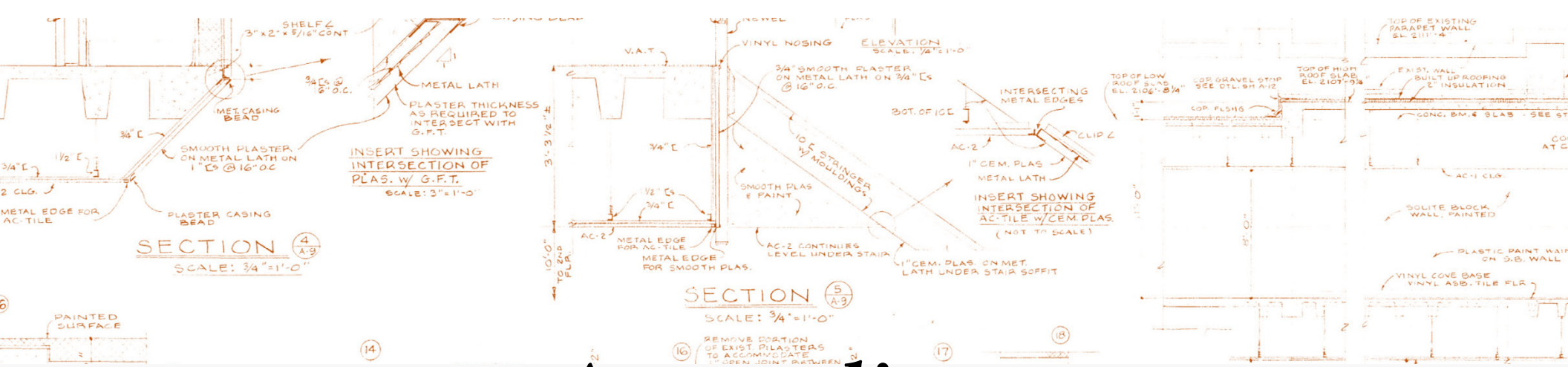
# Changes

- Changed the Virginia Construction Code edition to 2018
- Comprehensive Waste Management Plan (1.2.5.2)
- Minimum hard copy requirements for project submissions (1.5.1)
- Cost estimate standards (2.2)
- Tree protection and preservation procedures (4.1.3)
- Tree planting and care (4.3)
- Transportation (4.8)
- Floor boxes (6.8.1)
- Traffic impacts and road construction (7.7)
- CFR (8.1)
- New Building Information form (8.9)

# 2021 Revision 1

- Updated to better match the demolition approval requirements in the *Code of Virginia*
- Clarified roles in planned demolitions:
  - Virginia Art and Architecture Board (AARB) (1.3.1, 1.3.8.2)
  - Virginia Department of Historic Resources (DHR) (1.3.3, 1.7.5)
  - Governor (1.3.3, 1.3.8.2, 1.7.5)
  - Board of Visitors (1.7.5)
- Added time requirements based on the AARB hearing date (1.3.8.2, 1.7.5)

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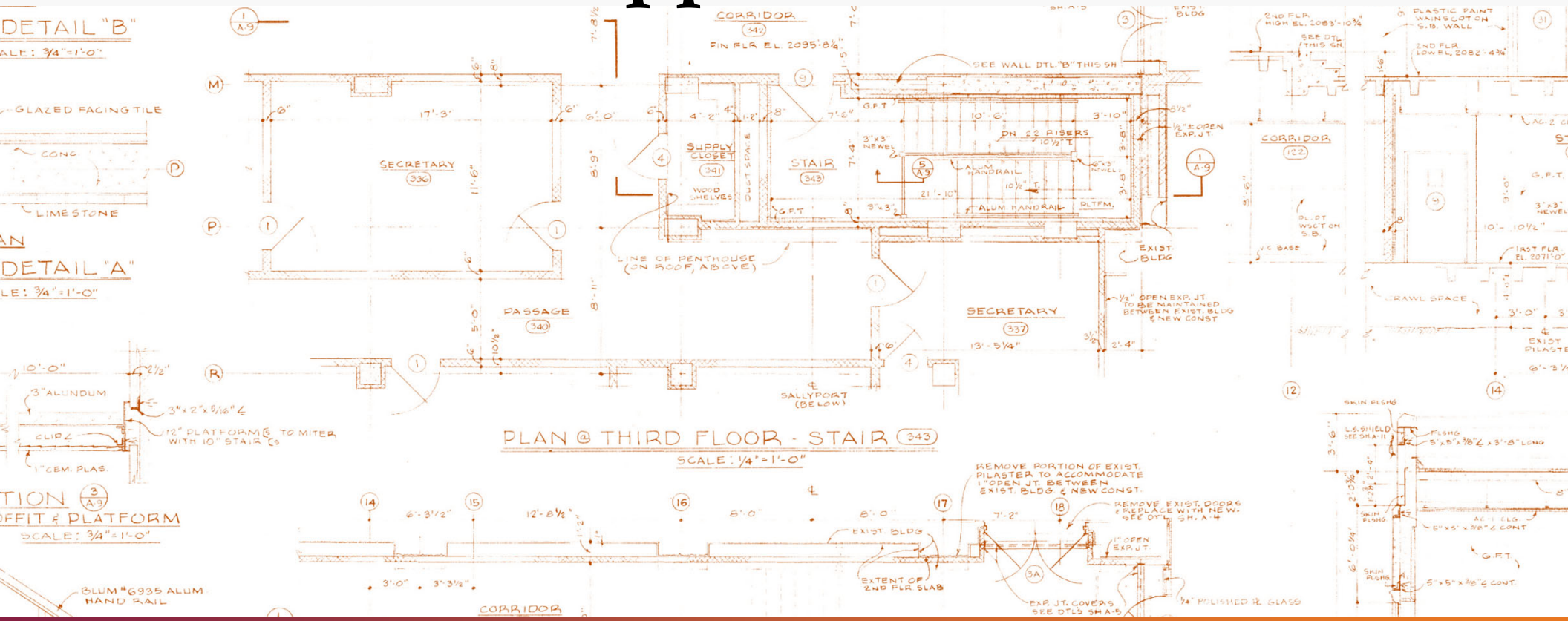
# Appendices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CORRIDOR
EXIST. BLDG
SALLYPORT (BELOW)

# Appendix H
# Maintenance of Traffic Plans

DIVISION OF CAMPUS PLANNING, INFRASTRUCTURE, AND FACILITIES
VIRGINIA TECH

## MAINTENANCE OF TRAFFIC PLANS

Maintenance of traffic (MOT) plans, also known as traffic control plans or temporary traffic control (TTC) plans, should provide an overview of the traff
construction phases for an impacted area. Provide at least
phase of construction and provide general notes to clarify
view illustrations. Include all field deviations in the final ins

The following guidance and plan-view illustration example
plan submittals for all types of transportation and traffic di
traffic refer to vehicles, bikes, transit, pedestrians, and any
design to minimize impact and detours for everyone travel
Designs for pedestrian pathways shall be in compliance wit
Accessible Design.

See DCSM sections 2.6.5.12, 4.8, 7.7, and 7.8 for additional i
parking requirements. Provide all required site plan checkli

When preparing MOT plans and plan-view illustrations, A/E
the Federal Highway Administration (FHWA) Manual on Uni
(MUTCD), the Virginia Supplement to the MUTCD, the Virg
(WAPM), and Virginia Department of Transportation (VDO

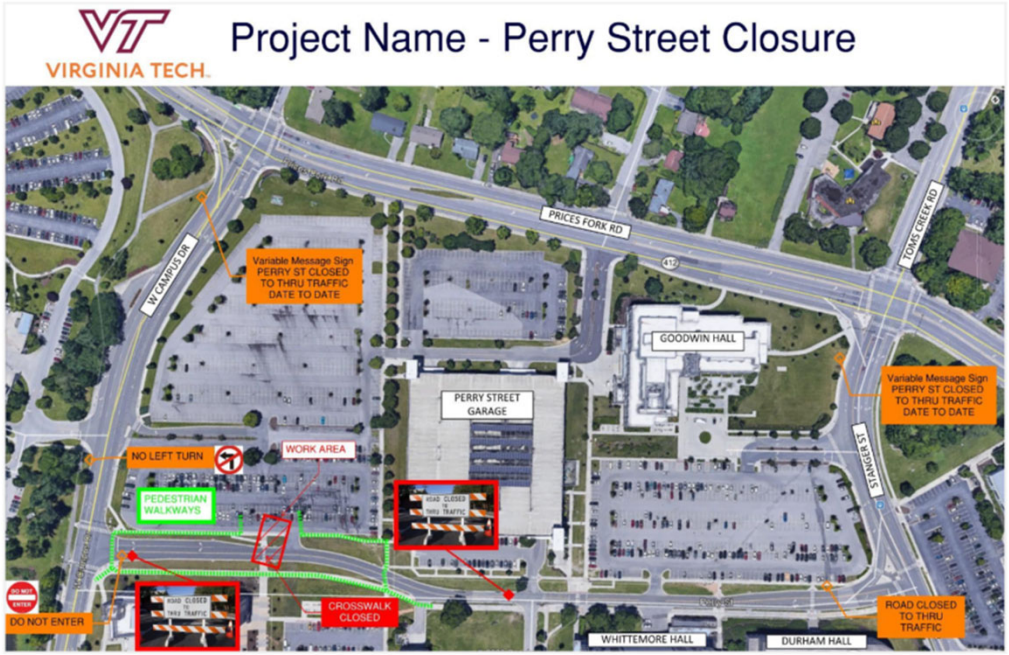
The following items should be considered and may be inclu

- Provide a description of the sequence of construction.
- Indicate if any property lines are crossed within the wor
  property owners have been contacted about the MOT p
- Provide the location of work zone (on the roadway, on th
  etc.).

DIVISION OF CAMPUS PLANNING, INFRASTRUCTURE, AND FACILITIES
VIRGINIA TECH

## MAINTENANCE OF TRAFFIC PLANS

Plan-View Illustration Example



# Appendix I
# Approved Plant and Tree Lists

## App. I1 – Approved Woody & Herbaceous Plant List

DIVISION OF CAMPUS PLANNING, INFRASTRUCTURE, AND FACILITIES
VIRGINIA TECH

### APPROVED WOODY & HERBACEOUS PLANT LIST

The plants on this list are approved for landscaping on the Virginia Tech campus. See DCSM sections 4.1 and 4.2 for landscaping and planting requirements. Provide all required landscape architectural checklists during phase submittals.

Plants on this list are alphabetical by genus (with shaded separations between). Common names, approved varieties, and notes about pollinators are provided in the list. Additional approval by OUP and Buildings and Grounds is required prior to installing evergreen perennials, herbaceous perennials, bulbs, vines, ferns, and ornamental grasses. Additional approval from the Campus Landscape Architect or University Arborist is required prior to installing flowering dogwood.

| Common Name | Botanical Name | Varieties |
|---|---|---|
| **EVERGREEN SHRUBS** | | |
| Glossy Abelia | *Abelia × grandiflora* | *'Kaleidoscope'; 'Edward Goucher'; 'Radiance'; 'Rose Creek'* |
| Japanese Acuba | *Aucuba japonica* | *'Rosannie'* |
| Boxwood (disease-resistant varieties) | *Buxus hybrids* | *'Green Gem'; 'Franklin's Gem'; 'North Star'* |
| Boxwood | *Buxus sempervirens* | *'North Star'; 'Dee Runk'* |
| Dwarf Korean Boxwood | *Buxus sinica* | *var. insularis 'Nana'* |
| Japanese Boxwood (blight-resistant varieties only) | *Buxus microphylla* | *var. japonica 'Green Beauty'; 'Golden Dream'; 'John Baldwin'; 'Winter Gem'; 'Little Missy'; 'Grace Hendrick Phillips'; 'Green Pillow'* |
| Japanese Plum Yew | *Cephalotaxus harringtonia* | *var. drupacea; 'Duke Gardens'; 'Fastigiata'; 'Prostrata'* |
| Graciosa Hinoki Cypress | *Chamaecyparis obtusa* | *'Graciosa'* |
| Fales Cypress | *Chamaecyparis pisifera* | *'Soft Serve'; 'Pinpoint Blue'* |
| Divinely Blue Deodar Cedar | *Cedrus deodara 'Divinely Blue'* | |
| Compact Cotoneaster | *Cotoneaster adpressus* | |
| Bearberry Cotoneaster | *Cotoneaster dammeri* | |
| Daphne | *Daphne tangutica* | *'Summer Ice'* |
| Great Orme Hebe | *Hebe 'Great Orme'* | |
| Southerland Hebe | *Hebe pinguifolia 'Sutherlandii'* | |
| Japanese Holly | *Ilex crenata* | *'Helleri'; 'Soft Touch'; include a pollinator* |
| Chinese Holly | *Ilex cornuta* | *'Burford', 'Dwarf Burford', 'Carissa'; include a pollinator* |
| Inkberry | *Ilex glabra* | *'Gem Box'; include a pollinator* |
| Blue Holly | *Ilex x meserveae* | *'Monnieves'; 'Blue Princess'; 'Blue Prince'; include a pollinator* |
| Yaupon Holly | *Ilex vomitoria* | *include a pollinator* |
| Chinese Juniper | *Juniperus chinensis* | *'Montana Moss'; 'RIKAG'* |



## App. I2 – Core Campus Approved Tree List

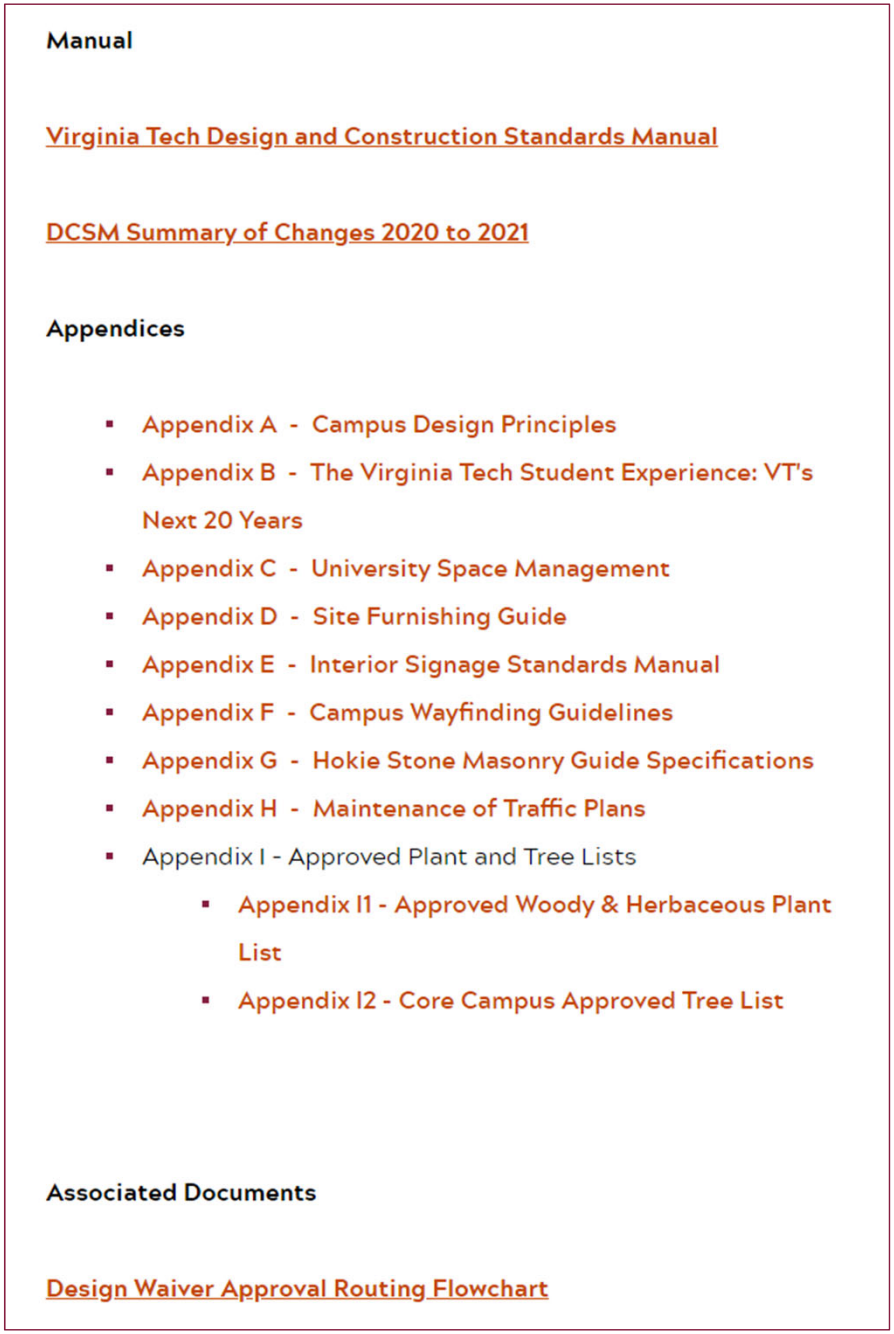
DIVISION OF CAMPUS PLANNING, INFRASTRUCTURE, AND FACILITIES
VIRGINIA TECH

### VIRGINIA TECH CORE CAMPUS APPROVED TREE LIST

The trees on this list are approved for landscaping for the Virginia Tech Blacksburg campus. See DCSM section 4.3 for tree planting and care requirements and DCSM section 7.9.2 for tree and plant protection during construction.

Trees are listed by alphabetically by botanical names (with shaded separations between) and also with common names. Each is labeled with the minimum volume of soil required for planting the tree.

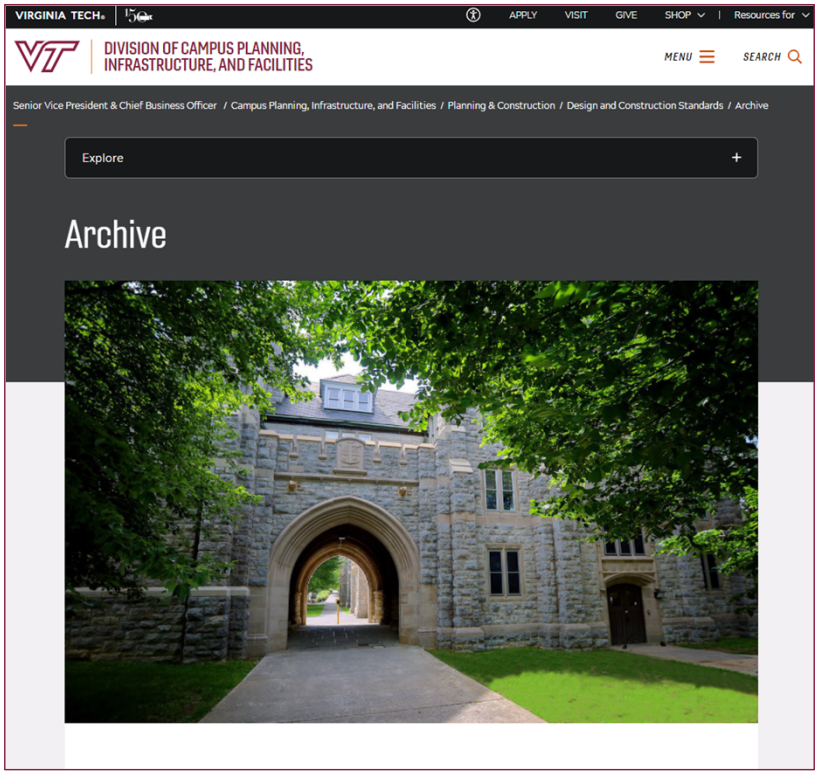
| Tree Species | | Minimum Soil Volume (cu. ft.) |
|---|---|---|
| Common Name | Botanical Name | |
| **EVERGREEN TREES** | | |
| Korean Fir | *Abies koreana* | 600 |
| Blue Atlas Cedar | *Cedrus atlantica* | 1,500 |
| Deodar Cedar | *Cedrus deodara* | 1,500 |
| Lebanese Cedar | *Cedrus libani* | 1,500 |
| Atlantic White Cedar | *Chamaecyparis thyoides* | 1,500 |
| Japanese Cedar | *Cryptomeria japonica* | 600 |
| Chinafir | *Cunninghamia lanceolata* | 600 |
| Leyland Cypress | *x Cupressocyparis leylandii* | 600 |
| American Holly | *Ilex opaca* | 600 |
| Eastern Red Cedar | *Juniperus virginiana* | 600 |
| Southern Magnolia | *Magnolia grandiflora* | 1,500 |
| Lacebark Pine | *Pinus bungeana* | 600 |
| Shortleaf Pine | *Pinus echinata* | 600 |
| Slash Pine | *Pinus elliottii* | 1,500 |
| Austrian Pine | *Pinus nigra* | 600 |
| Longleaf Pine | *Pinus palustris* | 1,500 |
| Pitch Pine | *Pinus rigida* | 1000 |
| Eastern White Pine | *Pinus strobus* | 1,500 |
| Loblolly Pine | *Pinus taeda* | 1000 |
| Japanese Black Pine | *Pinus thunbergii* | 600 |
| Virginia Pine | *Pinus virginiana* | 600 |
| Chinese Hemlock | *Tsuga chinensis* | 1000 |
| Arborvitae | *Thuja occidentalis* | 1000 |
| Chinese Arborvitae | *Thuja orientalis (Platycladus orientalis)* | 1000 |
| Green Giant Western Red Cedar | *Thuja standishii x plicata 'Green Giant'* | 1000 |




# Design and Construction Standards Home Page

- 2021 DCSM
- Summary of Changes
- Appendix H
- Appendix I1
- Appendix I2
- Design Waiver Approval Routing Flowchart

# Website Updates




# Archive

*NEW*

- Prior versions of the DCSM
- Grouped with appendices
- Grouped by effective dates

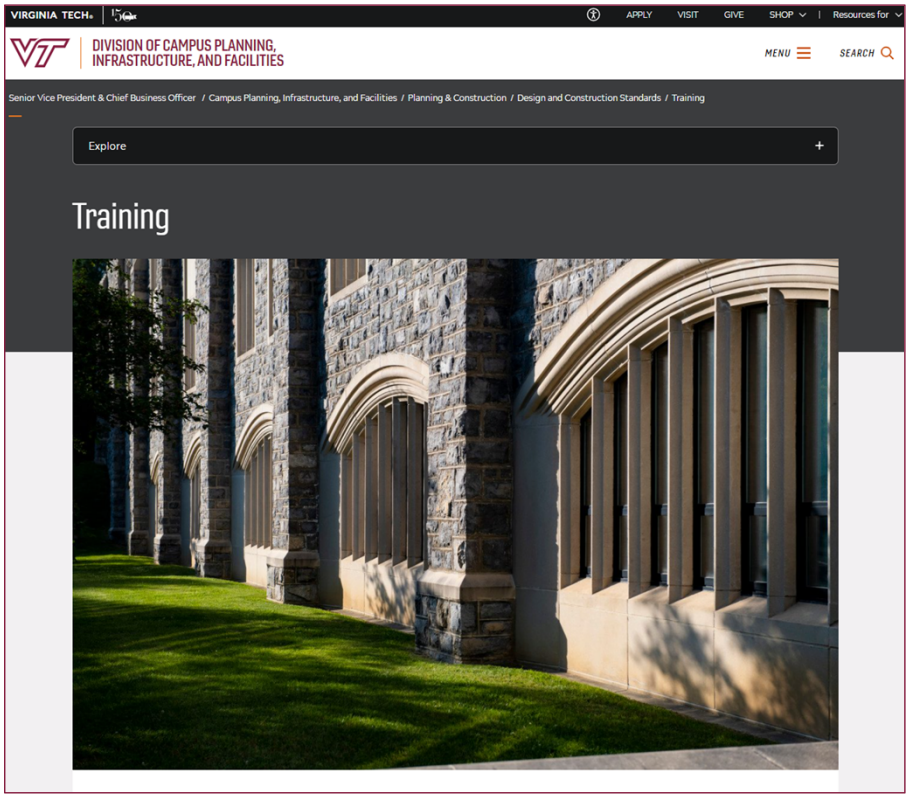
Previous versions of the Design and Construction Standards Manual (DCSM) are kept in this archive. Effective dates, applicable in contract initiation, for each release are provided. The appendices that were in place during the effective dates for each version of the DCSM are grouped with the applicable version.

**2020 Release** (Effective dates: May 5, 2020 - June 27, 2021)

2020 Design and Construction Standards Manual

- Appendix A - Campus Design Principles
- Appendix B - The Virginia Tech Student Experience: VT's Next 20 Years
- Appendix C - University Space Management
- Appendix D - Site Furnishing Guide
- Appendix E - Interior Signage Standards Manual
- Appendix F - Campus Wayfinding Guidelines
- Appendix G - Hokie Stone Masonry Guide Specifications
- Appendix H - Transportation & Parking Project Review Checklist

# Training




*NEW*

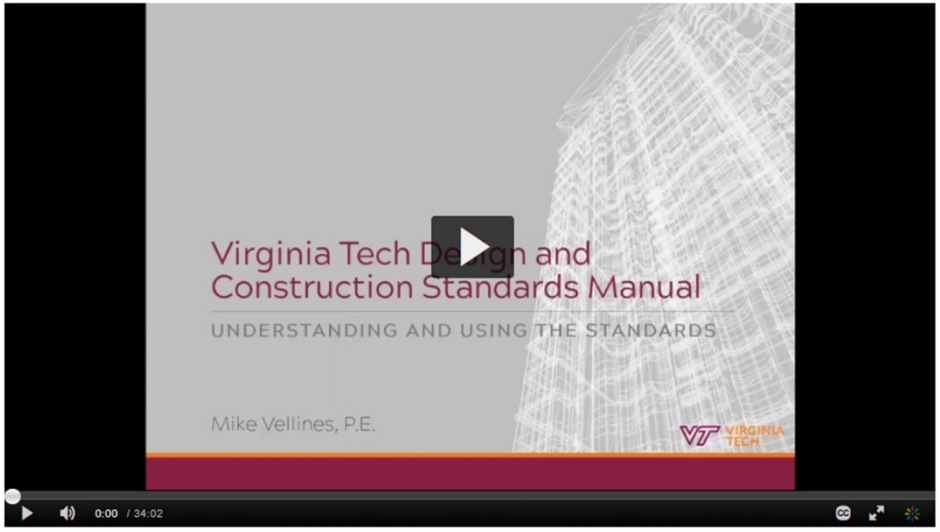
Training on DCSM versions:

- Video recordings
- Presentation slides

Significant changes and additions for new versions of the Design and Construction Standards Manual (DCSM) are reviewed in presentations. New and updated associated documents and web pages are also covered in the presentations. Video recordings and slides for the DCSM presentations are grouped by the DCSM release date.

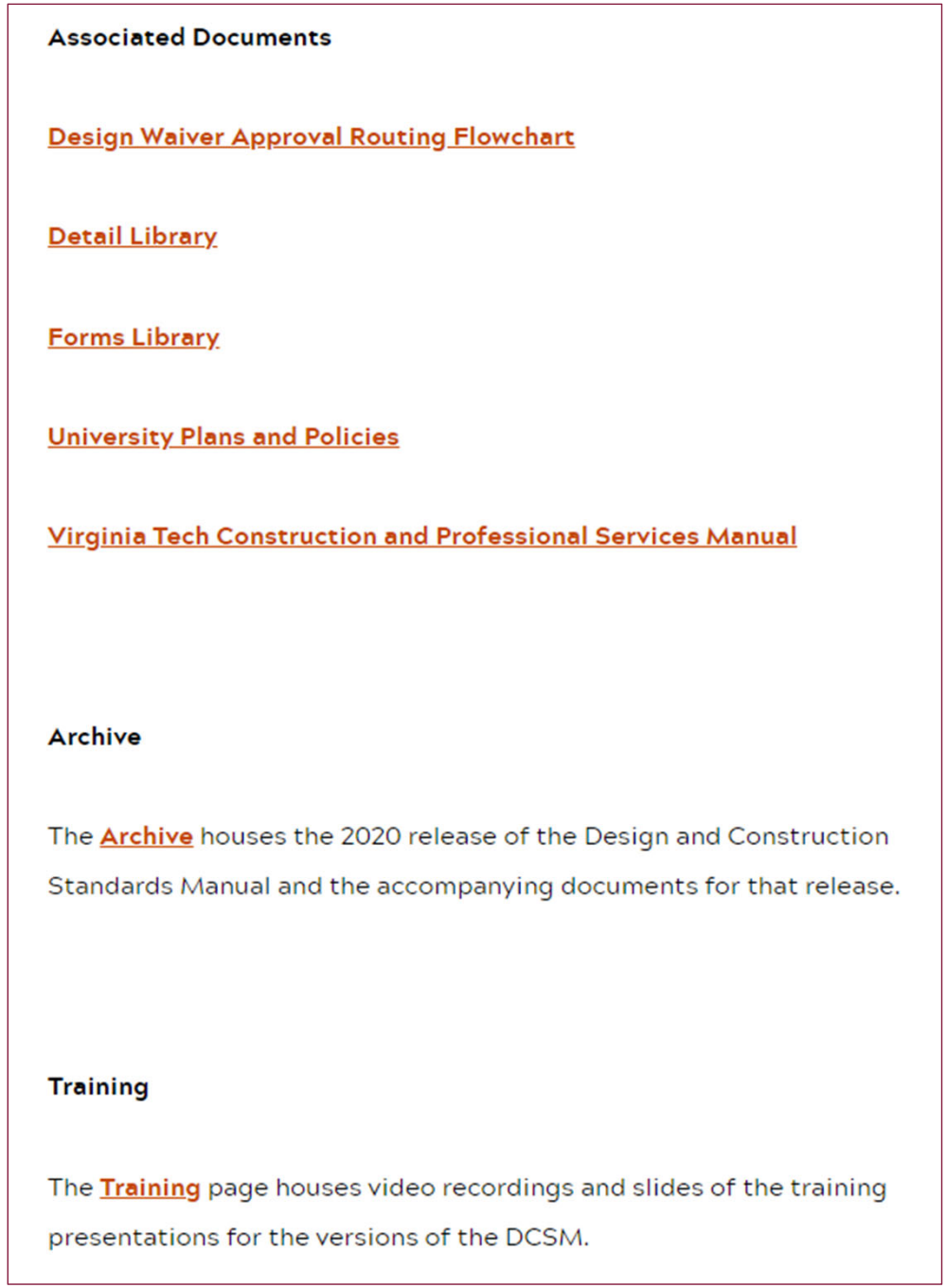
**2020 DCSM Release**

- 2020 DCSM Presentation Slides
- 2020 DCSM Presentation Video Recording



# Design and Construction Standards Home Page

Access the new Archive page and the new Training page from the DCS home page.



**Associated Documents**

Design Waiver Approval Routing Flowchart

Detail Library

Forms Library

University Plans and Policies

Virginia Tech Construction and Professional Services Manual

**Archive**

The Archive houses the 2020 release of the Design and Construction Standards Manual and the accompanying documents for that release.

**Training**

The Training page houses video recordings and slides of the training presentations for the versions of the DCSM.

# Detail Library

- Conduit Pathway Installation Detail
- Door Access Details
- Gauge Valve Detail
- Hokie Stone Seat Wall - One Sided Detail
- Hokie Stone Seat Wall - Two Sided Detail
- **Landscaping**
  - Groundcover Planting Detail (CAD, PDF)
  - Perennials, Grasses, and Bulbs Planting Detail
  - Shrub Planting Detail (CAD, PDF)
  - Tree Planting Detail (CAD, PDF)
  - Tree Staking Detail (CAD, PDF)
  - Tree Protection Detail (CAD, PDF)
  - Tree Protection - Boring Detail (CAD, PDF)
- Sanitary Sewer Precast Drop Manhole Detail
- Standard Handrail Detail
- **Transportation**
  - ADA Parking Sign Detail
  - Bike Parking Detail
  - Crosswalk Light Standard Detail
  - Decorative Metal Guardrail Detail
  - Detectable Warning Surfaces Detail
  - Fire Truck Turning Movements Detail
  - Parking Wheel Stops Detail
  - Pavement Repair Detail
  - Raised Crosswalk Detail
  - Sidewalk and Concrete Slab Detail
  - Standard Crosswalk Detail
  - Striping Pattern for Single Parking Stall Detail
  - Wood Guardrail Detail
- **Virginia Tech Electrical Service**
  - VTES Construction Details
  - VTES Details

# Forms Library

**Websites**

Building Code Compliance Forms - General project forms and special inspection forms are available for download. A few web-based forms are available, also. Forms are maintained by the University Building Official.

Erosion and Sediment Control/Stormwater Management Program - Site plan review and approval forms to comply with the Erosion and Sediment Control and Stormwater Management Program are available. Forms are maintained by the Site and Infrastructure Development department.

Insurance Programs - The New Building Information form can be completed from the forms list located in the right sidebar on this site. Forms are maintained by the Office of Risk Management.

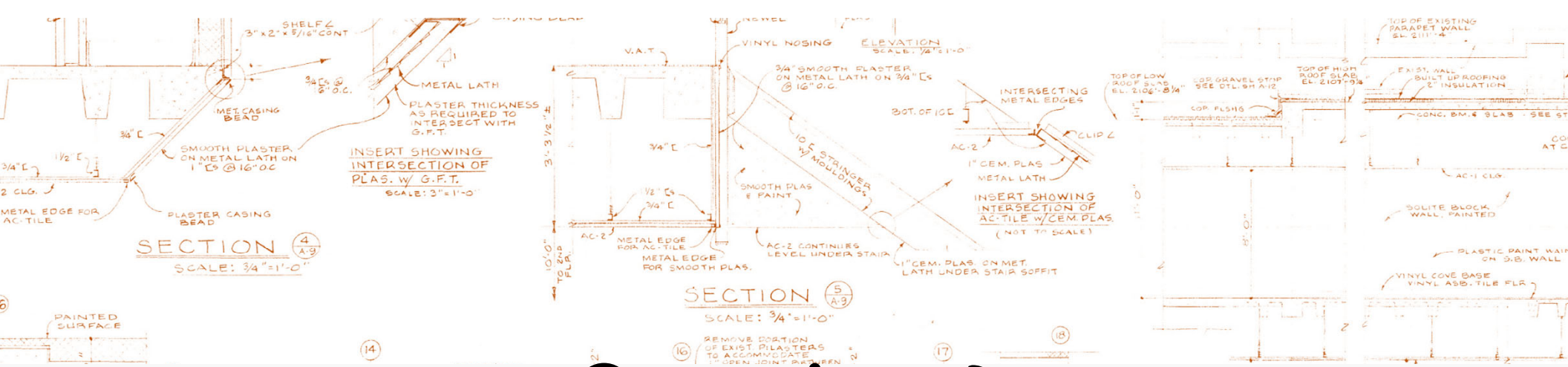
Traffic and Construction Impact - Submit a new traffic disruption request or manage an existing request from this site. Disruption requests and the Campus Closure Map are maintained by the Transportation Planning Engineer of the Office of University Planning.

**Commonwealth of Virginia**

DEB Documents and Forms - Forms and documents are available using this search engine page from the Virginia Department of General Services, Division of Engineering & Buildings.

# Plans for the Future

- Tiered rankings for structures
- AREC standards
- Standards affected by local restrictions
- Detail Library
- Reorganize some sections for clarity and readability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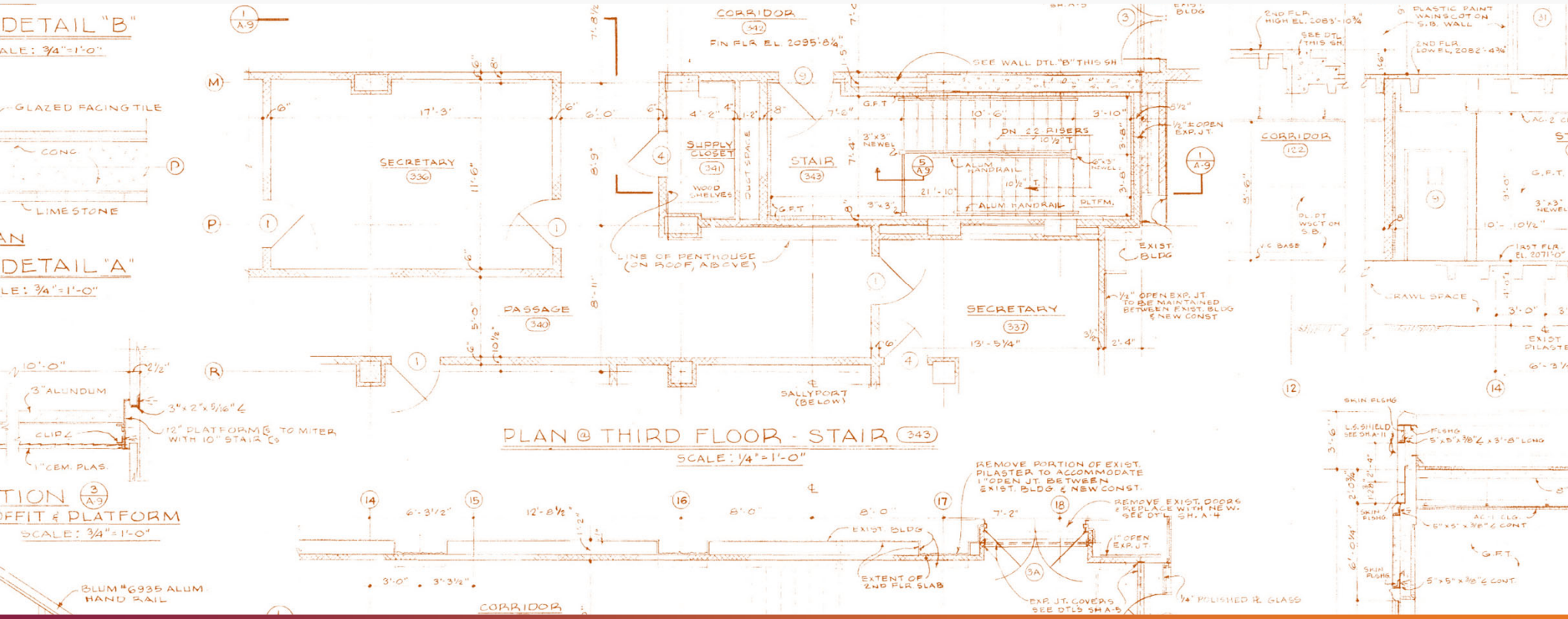
# Questions?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