

**Categories Of Design Review Information**

**Design Review Reference Sources**

- Building Use and Construction Classification
- Facility Area Summary
- Structural and Civil Engineering Design Criteria
- Mechanical & Plumbing Systems Design Criteria
- Power, Lighting, and Data Systems Design Criteria
- Outline Specifications (VT Design Guidelines and Addenda)
- Project Cost Estimate
- Specifications
  - Non-proprietary and Performance Specifications
  - Proprietary Specifications
  - Sole Source Specifications
- Codes
  - Virginia Tech Design Guidelines and Construction Standards
  - The Virginia Uniform Statewide Building Code (VUSBC) 2009 Edition and 2013 Supplementary Edition
  - Construction and Professional Services Manual (CPSM)
  - Higher Education Capital Outlay (HECO) Manual
  - Structural and Civil Engineering Design
  - Architectural Design
  - Mechanical & Plumbing Systems Design
  - Power, Lighting, and Data Systems Design
- Lessons Learned
- Previous Project Information
  - Project Specifications
  - Indexed copy of the calculations made by each discipline for the project
  - Shop drawings, submittals, cut sheets, operation and maintenance
  - Instructions, parts lists, and other material related to the project.
  - Original sealed and signed drawings/3D models
  - Analyses made for the project

**Design Review Entity**

- A/E Project Manager
  - EHSS - Environmental
  - VTPD - Security
  - CDCD
    - VCCO (Virginia Construction Contracting Officer)
    - Constructionability
    - CPSM, VT Standards
    - Commissioning
  - UFIS & E - Site, Civil
  - CNS - Telecommunications
  - OUA - Architecture, Master Plan
- Design Reviewer
  - Roofing
  - Custodial
  - Electrical, Elevators
  - ElectroMechanical
  - Keying
  - Recycling
  - Grounds
  - Mechanical
  - Fire Safety
  - Hokie Stone
  - HVAC
- VTU - Mechanical Utilities
- VTES - Electric Utilities
- Transportation - Parking
- Other Groups
  - Programming
  - Fire-Life Safety
  - BAS (Building Automation Systems)
  - Fire Alarm system
- Approval Body
  - Bureau of Capital Outlay Management (BCOM)
  - Board of Visitors (BOV)
  - The Art and Architectural Review Board (AARB)
  - Department of Environmental Quality (DEQ)
  - Division of Engineering and Buildings (DEB)

**Rules for Context-Aware Information Filtering**

- Discipline-centric rules
- Task-centric rules
- Location-centric rules
- Object-centric rules

**3D Model/3D Object**

- Original model
  - Architectural Design
    - Name of the A/E
    - Project Title
    - Project location
    - 8 digit state Project Code
    - 3D Design Number / Design Title
    - Seal and Signature of the responsible licensed professional
    - Date of the completed documents/3D models
    - Cost, Part No, Dimension, Material, etc
  - Structural & Engineering Design
    - Name of the A/E
    - Project Title
    - Project location
    - 8 digit state Project Code
    - 3D Design Number / Design Title
    - Seal and Signature of the responsible licensed professional
    - Date of the completed documents/3D models
    - Cost, Part No, Dimension, Material, etc
  - Mechanical & Plumbing Systems Design
    - Name of the A/E
    - Project Title
    - Project location
    - 8 digit state Project Code
    - 3D Design Number / Design Title
    - Seal and Signature of the responsible licensed professional
    - Date of the completed documents/3D models
    - Cost, Part No, Dimension, Material, etc
  - Power, Lighting & Data Systems Design
    - Name of the A/E
    - Project Title
    - Project location
    - 8 digit state Project Code
    - 3D Design Number / Design Title
    - Seal and Signature of the responsible licensed professional
    - Date of the completed documents/3D models
    - Cost, Part No, Dimension, Material, etc
- Updated model
  - Architectural Design
  - Structural & Engineering Design
  - Mechanical & Plumbing Systems Design
  - Power, Lighting & Data Systems Design

**Checklist**

**Schematic Phase Checklist**

- Architectural Design
- Structural & Engineering Design
- Mechanical & Plumbing Systems Design
- Power, Lighting & Data Systems Design

**Preliminary Phase Checklist**

- Architectural Design
- Structural & Engineering Design
- Mechanical & Plumbing Systems Design
- Power, Lighting & Data Systems Design

**Working Drawings Phase**

- Architectural Design
- Mechanical & Plumbing Systems Design

- Are the following items designed per VUSBC Chapter 16?
    - a. live loads
    - b. wind loads
    - c. seismic criteria
  - Contractor provides details that include complete loading information, performance or size constraints for the components?
    - a. Cast-In-Place Post-Tensioned Concrete
    - b. Pre-cast Concrete Components
    - c. Steel Joists and Joist Girders
    - d. Pre-Engineered Metal Structures, and Shop / Prefabricated Wood Components
  - Foundation Plan indicating
    - a. Type
    - b. Sizes
  - Foundation details of improved bearing strata and other special requirements.
  - Floor Framing Plans of each level indicating:
    - a. type of system and member
    - b. Thickness
    - c. column spacing
  - Roof Framing Plan
  - Typical Section(s) of floor and roof systems identifying:
    - a. Materials
    - b. sizes/depths
    - c. Depths
  - Details of connections to existing buildings
- Mechanical**
- Each floor noting fixture (including laboratory and compressed air outlet) locations and types of each.
  - Plumbing fixture schedules showing designations, connection sizes, and mounting heights of handicapped fixtures. (Note that flush valve handles shall be located on the wide side of the handicapped enclosure.)
  - Layouts and sizes of sanitary DWV piping, cold condensate drainage systems, floor drains, acid waste systems, neutralizing tanks, etc.
  - Roof drains and areas served by each in square feet, piping and sizes.
  - Show downspout boots and connections to foundation drains.
  - Domestic hot and cold water systems, including piping sizes, domestic water heaters with expansion and storage tanks, backflow preventers, water hammer arrestors, water meters, relief devices, and valves including pressure reducing, isolation and balancing.
  - Layouts and sizes of compressed air piping, air compressors, air dryers, drains, etc. Deionized water systems.
  - Riser diagrams for sanitary drain, waste and vent; domestic hot and cold water; deionized water; and compressed air where the system is extensive. Risers shall be designated and keyed to the plans. Show room numbers where the outlets/inlets occur, and show drain fixture units at the base of each riser. Show sizes of water hammer arrestors.
  - Details of hookups at water heaters, air compressors, etc., and roof drain installation.
  - Schedules of water heaters, air compressors, air dryers, and drains.
- Plumbing**
- Lighting plans for each floor show:
    - a. fixture location
    - b. type
    - c. required lighting level (in footcandles)
  - Power distribution plans showing location of:
    - a. incoming service
    - b. generators
    - c. panelboards
  - Interface points shown for:
    - a. communications
    - b. fire alarm
    - c. EMCS
    - d. other pertinent systems
  - Floor proposed locations for:
    - a. receptacles
    - b. telephone outlets
    - c. switches
  - Electrical plans are listed in:
    - a. kilowatts
    - b. electrical load total
    - c. three-phase load
    - d. motor load
    - e. size of largest motor in horsepower
  - Required lighting levels are shown in footcandles for various areas
    - a. control diagrams
    - b. panel board schedules
    - c. riser diagrams
  - Provisions of:
    - a. control diagrams
    - b. panel board schedules
    - c. riser diagrams
  - Lighting Fixture Schedule provided?

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**Design Review Comments**

- Error (Some to be discarded)
  - Code Compliance
  - 3D Design Conflict
  - Details
  - Labeling
  - Location
  - Missing/Add/Remove Item/Material
  - Specification
- Recommendation
  - Potential Conflict
  - Instructions/Advice