Foreword

Virginia Commonwealth University Higher Education Capital Outlay Manual

2022

This Third Edition of the Higher Education Capital Outlay Manual marks a significant milestone in Virginia Commonwealth University’s (VCU) achievements of delegated authority over its capital construction program beginning in 1996 with the General Assembly authorized delegation of post-appropriation management of non-general fund capital projects as a two-year pilot program. Along with the delegated authority to administer real property leases, VCU’s capital outlay delegated authority was continued through extensions of the pilot program. The 2005 General Assembly Session passed the Restructured Higher Education Financial and Administration Operations Act Chapter 933 (the Act) which made permanent those pilot delegations as well as providing further autonomy to VCU for implementation of non-general fund and also general fund capital projects and administration of real property leases. The 2006 General Assembly session passed legislation containing the Management Agreement by and between the Commonwealth of Virginia and VCU as required by the Act further defining and specifying the policy and rules governing the additional autonomy granted by the Act.

The 1996 General Assembly also separately legislated considerable autonomy to the Virginia Commonwealth University Medical Center for implementation of non-general fund capital projects and administration of real property leases which remains in place.

This third edition of the Higher Education Capital Outlay Manual incorporates all of the provisions of the Act, the Management Agreement, and implements the policies and procedures of VCU (the Governing Rules).

This manual’s policies and procedures have been written to permit editing for application to other institutions of higher education. VCU will continue to work with other institutions to improve and further the effort for the benefit of higher education.

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Chapter 1: Introduction

1.1 General

The Virginia Commonwealth University (“VCU” or the “University”) Higher Education Capital Outlay Manual (hereinafter referred to as the “HECO Manual” or “this Manual”) consists of 12 Chapters. This Manual contains Appendices A through P and contains guidance, procedures and policies that must be followed in the execution of both capital outlay and non-capital outlay projects.

Construction and renovation of buildings on state-owned property in the Commonwealth of Virginia must comply with the provisions of the Code of Virginia. Below are applicable Code of Virginia sections referenced in this HECO Manual:

2. Administration of Capital Outlay Construction projects: § 2.2-1132
3. Virginia Public Procurement Act: §§ 2.2-4300 through 2.2-4377
4. Construction Management and Design-Build Contracting: §§ 2.2-4378 through 2.2-4383
5. Code and Technical Requirements for Buildings on State Property
   a. Uniform Statewide Building Code: §§ 36-97 through 36-107.1
   b. Accessibility Standards: §§ 2.2-1159 through 2.2-1161
   c. Asbestos Management Plan/Asbestos Project Design: § 2.2-1164
   e. High Performance Buildings Act: § 2.2-1183
7. Art and Architectural Review Board review of all new buildings, exterior modification to an existing building, or demolition thereof: § 2.2-2402, B
8. Notification of availability of Preliminary Drawings: § 15.2-2202, C & D
9. Value Engineering: § 2.2-1133
11. Conflict of Interest: § 2.2-3100

This Manual corresponds to the Virginia Department of General Services (DGS) Division of Engineering and Buildings (DEB) Construction and Professional Services Manual – 2020 (CPSM), with some exceptions. Emphasis has been placed on University’s authority, needs and requirements. The University’s Design and Construction Standards are located in a separate document under Resources on the University’s Facilities Management Division web page, and focus on the specific requirements of the University.

In compliance with the Restructured Higher Education Financial and Administrative Operations Act (the Act) and the Management Agreement, defined below, this Manual, and the Design and Construction Standards noted above serve to notify the Virginia DGS and DEB, the Architect/Engineer (A/E), the Contractor, and other entities involved in regulating, bidding, or contracting with the University for design, construction, and capital outlay projects of the procedures the University will follow in the management of its capital outlay projects and where applicable, non-capital outlay projects.

1.1.1 Enabling Legislation

The University’s Associate Vice President (AVP) of Facilities Management Division (FMD) has authority over the content and execution of this Manual and any modifications, additions, or deletions.

The [HECO Manual](#) and all revisions thereto shall be incorporated into the contracts between the University and Architects and Engineers, and the University and Contractors, in its entirety, except as amended or superseded in the contract or an addendum thereto. Architects and Engineers and Contractors shall follow the policies, procedures and guidance in this Manual in providing services to the University in the planning, design, and execution of both capital outlay and non-capital outlay projects unless otherwise exempt in writing by the contract or related Memorandum of Understanding (MOU).

1.2 Manual Description

All Construction Work, for both Capital and Non-Capital Projects, shall be procured and managed in accordance with this Manual regardless of the source of funds by which the contract is to be funded. The contents of this Manual are directive in nature. Deviations from the policy and procedures outlined within shall be requested by Planning and Design and/or Construction Management and approved by the AVP of FMD or designee.

1.2.1 Capital Outlay Process

This Manual is intended to present the project acquisition process from advertisement for A/E services to project completion (occupied building). This Manual is arranged in a sequence that parallels the project acquisition process. The current version of the [HECO Manual](#), including errata corrections, will be posted on the FMD website and may be downloaded and printed by users. FMD Notices concerning construction and professional services and FMD Notices concerning the application of the Uniform Statewide Building Code (USBC) to buildings on University property will be posted on the FMD website when issued.

1.2.2 Revisions to this Manual

Revisions to this Manual are periodically issued electronically by posting on the FMD website. FMD Notices pertaining to revisions will periodically be incorporated into this Manual.

1.2.3 Maintenance of this Manual

Planning and Design and Construction Management are responsible for maintenance of the [HECO Manual](#). Suggestions for changes or clarifications and questions should be emailed to askfmd@vcu.edu.

1.3 Capital Outlay vs. Non-Capital Outlay Projects

1.3.1 Capital Outlay Projects

Major Capital Projects that are to be funded entirely or in part by a general fund appropriation of the General Assembly or proceeds from State Tax Supported Debt, shall require both Board of Visitors approval and those pre-appropriation approvals of the State's governmental agencies then applicable, and shall follow the State's process for capital budget requests. Non-General Fund Capital Outlay projects shall be authorized by the University’s Board of Visitors (BOV). Capital Outlay Projects use an established authorization and approval sequence for the “Design Phase” of the Project to include:

- Project Initiation (CO-2 or HECO-2)
- Schematic Design Approval Phase
- Preliminary Design Approval Phase
- Working Drawing or Construction Documents Approval Phase
- Construction Contract Award approval after receiving and evaluating Bids

In accordance with the Restructuring Act, Section 23.1-1016(D)(3) et seq., any renovation of property being funded by non-general funds that was originally funded in whole or in part with general funds must be consistent with the University’s master plan, and if the renovations cost more than $2 million dollars it must be...
reported to the Governor and the Chairs of the Senate Committee on Finance and the House Committee on Appropriations 60 days prior to the start of construction or issuance of bonds.

**For pool projects:**
- Do not proceed to Preliminary Design until the Schematic Cost Report is issued by DEB; and
- Do not proceed to Working Drawings until the Funding Report is issued by DEB.

1.3.2 Non-Capital Outlay Projects
Non-Capital Outlay Projects, as defined by the Virginia DPB Instructions, are generally small construction, renovation, repair or replacement projects which are funded by University resources and do not require authorization by the Legislature and the Governor or the BOV. However, Non-Capital Outlay Projects typically involve work that is regulated by the USBC and require a Building Permit from DEB. The design phases and approval process for Non-Capital Outlay Projects are left to the University’s discretion depending on the project scope. However, the “construction documents” must be approved by DEB or the University’s delegated authority. The intended completion date and the Contractor’s name or “work to be performed by agency forces” must be submitted along with the application for Building Permit (CO-17) or Project Permit (HECO-17).

Non-capital outlay projects for repair or replacement in kind, or for minor remodeling or renovation:
- where project value is estimated at less than $1 million; and
- which does not require plans; and
- does not modify the building Use Group Classification; and
- does not change existing fire safety elements; and
- for which no building permit or demolition permit is required

may be procured as non-professional services in accordance with the Governing Rules and is not subject to the requirements of this Manual. For projects meeting these criteria, procurement of goods and services will be managed under the Commonwealth of Virginia Procurement Manual for Institutions of Higher Education and their Vendors.

1.3.3 Construction
The Construction Phase is similar for both Capital Outlay and Non-Capital Outlay Projects in the following areas: Building Permits, Change Orders, Project Substantial Completion, and Certificate of Occupancy. The exception is that Capital Outlay Projects often require submission of revised capital outlay authorization forms during construction for approval to adjust certain budget line items and to revise project funding. See Chapter 9 for more specific guidance on form submission requirements.

1.3.4 Master Plans
Most capital projects will conform to the University’s Master Plan and a Site, Precinct or Neighborhood plan if one has been developed by the University Architect and approved by the Board of Visitors.

1.3.5 Other Master Plans and Requirements
Each capital project must conform to architecture guidelines if any have been developed for the site. The master plan includes architectural guidelines and a separate document has been developed for the Monroe Park Campus addition.
Chapter 2: Design Philosophy

Most capital projects will conform to the University’s Master Plan and a Site, Precinct or Neighborhood plan if one has been developed by the University Architect and approved by the Board of Visitors. Each capital project must conform to architecture guidelines if any have been developed for the site. The master plan includes architectural guidelines and a separate document has been developed for the Monroe Park Campus addition.

The design goal is to create a capital investment that meets the user’s functional requirements, provides the most economical life cycle cost, and promotes energy efficiency and environmental conservation. The Commonwealth’s design philosophy envisions a long and useful life for state buildings. These buildings will often be used for periods exceeding 50 years and consequently, should be designed for durability, economy of operation and ease of maintenance. Projects shall be developed to meet University functional and space requirements within a cost range comparable to similar public and private sector projects. Note: this does not mean the “best” or “most expensive,” nor the “cheapest.”

Building system components should be selected on the basis of life cycle costs. If an increased first or initial cost can be documented to show a reduced life cycle cost for the University, particularly for operating and personnel costs, then the design should incorporate the more expensive first cost feature or system, provided that it does not cause the project cost to exceed its “design-not-to exceed” budget. Architects and engineers must exercise discipline in their designs to avoid inefficient use of space in terms of floor area and building volume. Exterior design features and materials should be consistent with the architectural character of the surrounding buildings and site. Excessive or grandiose features not related to the function or the intended use of the facility shall be avoided.

2.1 Forms

The following charts list the Forms that are referenced throughout this Manual. BITS provides a list of Capital Outlay and Building Official Forms within the BITS application. HECO forms are located on the VCU FMD website.

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Chapter 3: Definitions

3.1 General

This chapter defines terminology, acronyms, and abbreviations customarily used in the procurement of construction and professional services and in the execution of the University’s Capital Outlay Program. Definitions are taken from the Governing Rules, the General Conditions of the Construction Contract (HECO-7), and general customs and practices associated with state construction industry and professional service contracts.

3.2 Definitions and Abbreviations

When used in the HECO Manual, including the appendices and the standard forms, the following terms have the meanings indicated, which apply to both the singular and plural and the male and female gender thereof.

ACSM: Advisory Committee on Space Management


ADAAG: Americans with Disabilities Act Architectural Guidelines

Addendum: Written or graphic instruments issued prior to the opening of bids or proposals that clarify, correct or change the bidding/proposal documents.

Additional Services: A service that the University includes in the A/E’s Scope of Work as part of the Work under the A/E Contract but which service is not included in the A/E Basic Services as described in this Manual. Compensation for the additional services is included in the fee negotiations prior to signing the contract and is therefore, included in the A/E Contract.

Advertisement: The term commonly used to describe the public announcement or “Notice” of the availability of the Invitation For Bids (i.e., bid documents or IFB) or Request For Proposal (RFP) made by publishing a notice in the public procurement Web site designated by the Department of General Services, https://eva.virginia.gov/, and by “Posting the Notice” as prescribed pursuant to the Governing Rules.

A/E Change Order: A document (HECO-11ae) issued on or after the effective date of the Contract (HECO-3) approved by the University that authorizes an addition, deletion or revision in the Work, including any adjustment in the Contract price and/or the Contract time for performance. A Change Order, once signed by all parties, is incorporated into and becomes part of the Contract.

A/E Contract: The HECO-3 and any documents expressly incorporated therein. Such incorporated documents customarily include the Terms and Conditions of the A/E Contract, various sections of this Manual, the Memorandum of Understanding and all modifications, including subsequent Change Orders.

A/E Manual: The A/E Manual, when referenced in any document or manual shall refer to this Manual, all Chapters and Appendices, and all revisions thereto, and which shall be incorporated into the Contract in its entirety except as amended or superseded in the Contract or an addendum thereto.

Agency: The University. For purposes of the Contract, the term Owner shall include such Agency, whether or not the Agency owns the Site or the building.

Agency Contracting Officer: The person designated in writing by the Agency as having delegated authority to award and sign contracts, change orders, and other documents related to capital outlay projects for the Agency.

Architect: An individual licensed to practice in the Commonwealth of Virginia as an architect by the Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects (APELSCIDLA) Board of the Department of Professional and Occupational Regulation. “Architect” may also be used to refer to a
firm of such individuals which is properly licensed in Virginia. Also referred to as the A/E.

**Architect/Engineer (A/E):** The term used to refer to the architect and/or engineer who contracts with the University to provide the architectural and/or engineering services for a Project. The A/E is a separate contractor and is not an agent of the University. This term also includes any associates or consultants employed by the A/E to assist the A/E in providing services.

**Art and Architectural Review Board (AARB):** The Review Board appointed by the Governor to advise and provide counsel to the Governor as to the artistic merit of fixtures, structures, construction on state property and works of art.

**ASHRAE:** American Society of Heating, Refrigerating and Air-Conditioning Engineers

**Associate Vice President of Facilities Management (AVP of FMD):** The person designated in writing by the University as having delegated authority to award and sign contracts, change orders under 25% or $50,000 and approving other documents related to capital and non-capital outlay projects for the University such as preliminary drawings and specifications, schematic designs. May also be called the Agency Contracting Officer.

**Association:** As applied to architects or engineers, this term shall mean a legal entity formed by several architects and/or engineers who have associated together for the purposes of working as a unit on a specific Project. The Association may take the form of a partnership, joint venture, corporation, etc.

**Beneficial Occupancy:** The time, following Substantial Completion, at which the Project or portion thereof, is sufficiently complete and systems operational such that the University could, after obtaining necessary approvals and certificates, occupy and utilize the space for its intended use. Guarantees and warranties applicable to that portion of the Work begin on the date the University accepts and occupies the Project, or a portion thereof, unless otherwise specified in the Supplemental General Conditions or by separate agreement.

**Bid:** The offer provided by a bidder submitted on the prescribed form and setting forth the bidder’s price(s) for the Work to be performed.

**Board of Visitors (BOV):** The governing authority for Virginia Commonwealth University.

**Building:** Any roofed or occupiable structure.

**Building Committee:** The group constituted by the Agency in accordance with the requirements of Chapter 11 of this Manual and with the authority and purpose as set forth in Chapter 11 including interviewing and selecting A/E's for the planning and design of construction projects and other professional services required by the Agency.

**Building Official:** The Building Official for all buildings on Commonwealth of Virginia property excluding non-occupiable buildings, bridges and structures in the VDOT right-of-way and who is the Director of the Division of Engineering and Buildings, Department of General Services. The Building Official’s duties, responsibilities and authority generally conform to those described in the Uniform Statewide Building Code (Code of Virginia § 36-98.1).

**Building Information Tracking System (BITS):** A web-based source for Capital Outlay and Building Official forms provided by the Division of Engineering & Buildings (DEB).

**Capital Project:** For purposes of this Manual, "Capital Project" means (1) Acquisition of real property; (2) New construction projects with a total project cost exceeding $3,000,000; (3) Improvements, renovations, repairs, replacement, maintenance, or combination projects for a single building with a total project cost exceeding $3,000,000, and (4) Umbrella projects.

**CM:** Construction Management, or Construction Management at Risk

**Certificate of Occupancy:** A document certifying that an occupiable structure is in compliance with applicable
building codes and requirements and is in a suitable condition for occupancy. DEB issues the Certificate of Occupancy for occupiable University structures. Also referred to as a Certificate of Use and Occupancy.

**Code Official**: Refer to definition of Building Official. The term Code Official is utilized in Part II and Part III of the VUSBC.


**Commissioning**: A quality assurance process to verify and document that building systems and components operate in accordance to the University’s project requirements and the project design documents.

**Commissioning Authority (CxA)**: The party responsible for the commissioning process.

**Competitive Negotiations**: A method of Contractor selection that includes the following two elements (Governing Rules § 4):

a. Issuance of a written Request for Proposal (RFP) indicating in general terms that which is sought to be procured, specifying the factors which will be used in evaluating the proposal and containing or incorporating by reference the other applicable contractual terms and conditions, including any unique capabilities or qualifications which will be required of the Contractor.

b. Public notice of the RFP at least ten (10) days prior to the date set for receipt of the proposal by publication on the eVA Web site, listed under Virginia Business Opportunities (VBO). Public notice of the RFP may also be posted in a newspaper of general circulation in the area in which the contract is to be performed.

**Competitive Sealed Bidding**: A method of Contractor selection that includes the following elements (Code of Virginia § 2.2-4302.1):

a. Issuance of a written Invitation to Bid (IFB) containing or incorporating by reference the specifications and contractual terms and conditions applicable to the procurement.

b. Public notice of the IFB at least ten (10) days prior to the date set for receipt of bids by posting in a designated public area and by publication of the public announcement or “Notice” of the availability of the IFB (i.e. Bid Documents) on the eVA web site: www.eva.virginia.gov. Bids may be solicited solely from Contractors who have been prequalified. (Code of Virginia § 2.2-4317.) In addition, bids may be solicited directly from potential contractors. Any additional solicitations shall include businesses selected from a list made available by the Department of Small Business and Supplier Diversity.

c. Public opening and announcement of all bids received.

d. Evaluation of bids based upon the requirements set forth in the invitation.

e. Award to the lowest responsive and responsible bidder.

f. Competitive sealed bidding shall not be used for procurement of Professional Services as defined in this Manual.

**Construction**: As used in this Manual, includes new construction, reconstruction, renovation, restoration, major repair, demolition and all similar work upon buildings and ancillary facilities owned or to be acquired by the Commonwealth of Virginia, including any draining, dredging, excavation, grading or similar work upon real property.

**Construction Administration (CA)**: As used in this Manual, non-professional services provided under a contract with the University that generally includes inspection of the Work, coordinating testing services contracts, reviewing change orders and schedule submittals from the Contractor, and providing other construction period services for the benefit of the University. The Construction Administrator is the entity responsible to the University for providing these services to assure compliance with the Contract Documents but is not responsible under the CA Contract for providing the Work. The University may use an employee to perform construction administration services. This differs from the Construction Administration services required under the A/E Contract.

**Construction Change Order**: A document (HECO-11) issued on or after the effective date of the Contract (HECO-
9) which is agreed to by the Contractor and approved by the University, and which authorizes an addition, deletion or revision in the Work, including any adjustment in the Contract price and/or the Contract Completion Date. The term “Change Order” shall also include initiating and confirming change orders issued pursuant to Section 38(a)(3) of the General Conditions of the Construction Contract, HECO-7. A Change Order, once signed by all parties, is incorporated into and becomes part of the Contract. All approved Change Orders shall be posted on eVA.

**Construction Management (CM):** Also Construction Management at Risk, CM @ Risk. A construction delivery method in which a Contractor provides an advisory Nonprofessional Service evaluating estimated cost, value management options, and constructability during the design/preconstruction period of the project. This preconstruction period is typically followed by a construction period contract where construction services are furnished to the University. The Construction Manager has direct responsibility and liability to the University for performing the Work as described by the Contract Documents.

**Construction Management Department:** The department in Facilities Management at the University responsible for construction.

**Construction Project Manager:** The University employee or agent designated as the University’s on-site representative during the construction phase of a project.

**Consultant:** An individual or firm with professional expertise engaged to render a specific service in connection with a Project.

**Contract Administration:** The duties and responsibilities normally performed by the A/E during the construction phase of a project.

**Contract Completion Date:** The date by which the Work must be substantially complete. The Contract Completion Date is customarily established in the Notice To Proceed, based on the Time for Completion. In some instances, however, the Contract contains a mandatory Contract Completion Date, which shall be stated in the Invitation for Bids.

**Contract Documents:** The applicable form of the Contract between the University and Contractor (HECO-9 series) signed by the University and the Contractor and any documents expressly incorporated therein. Such incorporated documents customarily include the bid submitted by the Contractor, the General Conditions of the Construction Contract (HECO-7), any Supplemental General Conditions, any Special Conditions, the plans and the specifications, and all modifications, including addenda and subsequent Construction Change Orders.

**Contract Price:** The total compensation stated in the Contract, as modified by Change Orders, payable to Contractor for performing the work set forth in the Contract Documents.

**Contract Term:** As applicable to A/E Term Contracts and Job Order Contracting, one year or when the cumulative total project fees reach the statutory dollar limits, whichever occurs first.

**Contractor:** As used in this Manual and the Standard Forms, “Contractor” means the specific person or firm with whom the University has contracted to do the Work described in the Contract Documents for that undertaking. On a Design-Build project, the Design Builder is the ‘Contractor’. On a Construction Management project, the CM or CM/GC is the ‘Contractor’. Contractor may also be used as a generic term used to indicate a person, firm or corporation with who has entered into a contract agreement to perform work or provide a professional or nonprofessional service.

**CPSM:** The most current edition of DEB’s Construction and Professional Services Manual (“CPSM”), as amended and revised.


**Contractor Contingency:** A dollar amount included in an estimate of construction cost for the purpose of
addressing unforeseen costs during construction. For CM @ Risk projects, this contingency is the CM Contingency as defined in the General Conditions of the CM Contract.

**Cure Notice**: A notice, either oral or in writing, that informs the Contractor or the A/E of a default and states what the Contractor or A/E must do to correct the deficiency. If the notice is oral, it shall be confirmed in writing.

**Day(s)**: Calendar day(s), unless otherwise noted.

**DB**: Design-Build

**DCJS**: Commonwealth of Virginia Department of Criminal Justice Services

**DEB**: Division of Engineering & Buildings, division of the Commonwealth of Virginia Department of General Services.

**Defective**: An adjective which, when modifying the word Work, refers to Work that is unsatisfactory, faulty, deficient, does not otherwise conform to the Contract Documents, or does not meet the requirements of inspections, standards, tests or approvals required by the Contract Documents, or Work that has been damaged prior to the A/E’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion or Beneficial Occupancy).

**Demolition**: Removal of a building or facility either for land clearance or to make land available.

**DEQ**: Commonwealth of Virginia Department of Environmental Quality

**Design-Build (DB)**: A contract between a public body and a design-build Contractor in which the Contractor agrees to both design and build the structure, roadway or other item specified in the Contract between University and Contractor.

**DCSM**: Design and Construction Standards Manual

**Design Contingency**: A dollar amount included in an estimate of construction cost for the purpose of addressing unforeseen costs from the further development of the project design.

**“Design-not-to-exceed” Budget**: The Project construction budget established in the A/E Contract as the maximum cost for the construction of the Project for which the A/E is engaged to provide A/E Services.

**Determinations & Findings (D&F)**: A document, usually prepared by the University Project Manager (PM), which justifies and substantiates the need for special procedures or actions. Typically, this is for a deviation or waiver from standard policies or procedures which results in saving time and/or money and/or improving quality.

**DGS**: Commonwealth of Virginia Department of General Services

**DHCD**: Commonwealth of Virginia Department of Housing and Community Development

**Disadvantaged Business Enterprise**: A small business where socially and economically disadvantaged individuals own at least a 51% interest and also control management and daily business operations. African Americans, Hispanics, Native Americans, Asian-Pacific and Subcontinent Asian Americans, and women are presumed to be socially and economically disadvantaged. Other individuals can also qualify as socially and economically disadvantaged on a case-by-case basis.

**DPB**: Commonwealth of Virginia Department of Planning and Budget

**DPOR**: Department of Professional and Occupational Regulation

**Drawing**: A page or sheet of the Plans which presents a graphic representation, usually drawn to scale, showing the
technical information, design, location, and dimensions of various elements of the Work. The graphic representations include, but are not limited to, plan views, elevations, transverse and longitudinal sections, large and small scale sections and details, isometrics, diagrams, schedules, tables and/or pictures.

**DRB:** Design Review Board

**DSBSD:** Commonwealth of Virginia Department of Small Business and Supplier Diversity

**E&G:** Education and General fund

**EIR:** Environmental Impact Report

**Emergency:** Any unforeseen situation, combination of circumstances or a resulting state that poses imminent danger to health, life or property.

**Employment Services Organization (ESO):** an organization that provides community-based employment services to individuals with disabilities that is an approved Commission on Accreditation of Rehabilitation Facilities (CARF) accredited vendor of the Department for Aging and Rehabilitative Services.

**Engineer:** A person who is qualified and licensed to practice engineering in Virginia as a Professional Engineer by Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects (APELSCIDLA) Board of the Department of Professional and Occupational Regulation “Engineer” and may also be used to refer to a firm of such individuals which is properly licensed in the Commonwealth of Virginia.

**Equal:** Any other brand, make or manufacturer of a product, assembly or equipment that, in the opinion of the A/E, is equivalent to that specified, considering quality, capabilities, workmanship, configuration, economy of operation, useful life, compatibility with design of the Work and suitability for the intended purpose, and which is accepted as such by the Owner.

**Equipment:** A tangible resource, such as machinery, articles or apparatus, of a permanent or long-term nature, used in an operation or activity.

**ESCO:** Energy Service Company, or Energy Service Contract

**eVA:** DGS’ central electronic procurement system used in the Commonwealth of Virginia. The eVA home page address is [https://eva.virginia.gov](https://eva.virginia.gov).

**Extra Service:** A service which the University tasks the A/E to provide after the A/E Contract has been signed and was not included in the Basic Services or in the Additional Services as described in the A/E Contract. Extra Services, and the compensation therefore, are authorized by a modification to the A/E Contract using the A/E Change Order, HECO-11 A/E.

**FAACS:** The Fixed Asset Accounting and Control System of the Virginia Department of Accounts. As used herein, the real estate subsystem of FAACS.

**Facility:** A structure or group of structures, including all buildings and other improvements thereto, which is built, installed or established to serve a particular purpose.

**Facilities Management:** A division of VCU Finance and Administration responsible for providing cost-effective and efficient planning, design, construction and maintenance services throughout the University.

**Field Order:** A written order issued by the A/E which clarifies or explains the Plans, the Specifications, or any portion or detail thereof, without changing the design, the Contract Price, the Time for Completion or the Contract Completion Date.

**Final Completion Date:** The date of the University’s acceptance of the Project from the Contractor upon
confirmation from the A/E by a HECO-13.1 and the Contractor by a HECO-13.2 that the Project is totally completed in accordance with the Contract Documents. Procedures for determining Final Completion are set forth in Section 44 of the General Conditions of the Construction Contract (HECO-7).

**Float:** The excess time included in a construction schedule to accommodate such items as inclement weather and associated delays, equipment failures, and other such unscheduled events. It is the contingency time associated with a path or chain of activities and represents the amount of time by which the early finish date of an activity may be delayed without impacting the Critical Path and delaying the Contract Completion Date. Any difference in time between the Contractor’s approved early completion date and the Contract Completion Date shall be considered a part of the project float.

**Float, Free:** The time (in Days) by which an activity may be delayed or lengthened without impacting the start day of any successor activity.

**Float, Total:** The difference (in Days) between the maximum time available within which to perform an activity and the duration of that activity. It represents the time by which an activity may be delayed or lengthened without impacting the Contract Completion Date.

**GC:** General Contractor

**General Conditions:** The General Conditions of the Construction Contract, Form HECO-7, latest edition. Also the General Conditions of the Design-Build Contract, Form HECO-7DB for use with Design-Build contracts; and the General Conditions of the Construction Manager “At Risk” Construction Contract, Form HECO-7CM for Construction Manager at Risk contracts. All documents can be found on the FMD Forms Center.

**Goods:** Material, equipment, supplies, printing and automated data processing hardware and software.


**HECO:** Higher Education Capital Outlay


**Historically Black Colleges and Universities (HBCU):** Historically black colleges and university includes any college or university that was established prior to 1964: whose principal mission was, and is, the education of black Americans; and that is accredited by a nationally recognized accrediting agency or association determined by the Secretary of Education. In addition, “Minority-owned business” means also any historically black college or university, regardless of the percentage ownership by minority individuals.

**HPBA Building Value:** The value for the building as it stands in its current condition.

**HVAC:** Heating, Ventilating and Air Conditioning

**Improvements:** All work necessary to produce a complete and usable change to an existing facility or structure, including the associated architectural and other technical services, the fixed equipment installed and made part of the facility or structure, and site development. Improvements include:

a. Alteration of interior space arrangement and other physical characteristics, such as utilities, so that the structure may be more effectively used for its present designated functional purpose;

b. Conversion of interior arrangement and other physical characteristics, such as utilities and fixed equipment installed on and made a part of the facility or structure, so than an existing structure may be utilized for a new functional purpose;

c. Renovation of most or all of a facility or structure or an existing mechanical system to comply with current
building code requirements or to modernize it so that it may be more effectively used for its designated functional purpose;

d. Restoration of a facility or structure, to the maximum extent possible, to its former or original state (historic property);

e. Relocation from one site to another of a facility or structure either by moving it intact or by disassembling it and subsequently reassembling it; and

f. Major repair to restore a facility, mechanical system, or utility system to a condition that allows it to continue to be appropriately used, including the reprocessing or replacement of parts or materials that have deteriorated by action of the elements or “wear and tear” in use.

Informality: A minor defect or variation of a bid or proposal from the exact requirements of the Invitation to Bid or Request for Proposals that does not affect the price, quality, quantity or delivery schedule for the goods, services or construction being procured. (Code of Virginia § 2.2-4301)

Interior Designer: An individual trained to create functional, safe, and beautiful interior spaces using knowledge and skills about space planning, decorative items, and human environmental behavior.

Invitation for Bids (IFB): A formal solicitation to the public including the Notice, Instructions To Bidders, Bid Form, General Conditions of the Construction Contract (CO-7), Supplemental General Conditions, Special Conditions, Forms to be used, the Plans and Specifications, and any other documents listed in the Specifications, all of which request qualified bidders to submit competitive prices or bids for providing the described Work on a Project. The IFB is the “Invitation for Bid” required by Code of Virginia, § 2.2-4302.1.

Landscape Architect: An individual licensed by the Commonwealth of Virginia as a Landscape Architect by the APELSCIDLA Board of the Department of Professional and Occupational Regulation. The Landscape Architect may function as an A/E Project Manager and may be the A/E of Record on those Projects where the preponderance of the work is represented by the application of the principles and methodology of landscape architecture in consultation, evaluation, planning (including the preparation and filing of sketches, drawings, plans and specifications) and responsible supervision or administration of contracts relative to Projects principally directed at the functional and aesthetic use of land.

LEED: Leadership in Energy and Environmental Design

Liquidated Damages: See Section 43 of the General Conditions of the Construction Contract (HECO-7). As used in this Manual, the term “Liquidated Damages” generally means a predetermined and fixed amount of money per period of time as stated in the Contract Documents and which will be charged to the Contractor as a measure of damages for delay suffered by the University due to failure of the Contractor to substantially complete, or finally complete, the Project/Work by the date or time established in the Contract Documents.

License/Registration: Entities (e.g. individual, partnership, or corporation) offering to provide architectural and/or engineering services shall be properly registered and licensed in Virginia as required by the Department of Professional and Occupational Regulation (DPOR), Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects (APELSCIDLA) board, and if incorporated, the State Corporation Commission. Professional Corporations must obtain a Certificate of Authority as required by the Code of Virginia §54.1-411, as amended.

The A/E (i.e. the person) “in responsible charge” for each discipline shall be currently licensed in the Commonwealth of Virginia and shall affix his or her seal to those documents for which he or she is responsible.

Maintenance Prevention: A technique embracing reliability engineering and maintenance experience and directed at preventing potential design defects that would ultimately inhibit proper operation and maintenance of new equipment, buildings, and property components. Design deficiencies are identified, mitigated or eliminated through careful maintenance oriented review of the design document prior to purchase, construction, or installation. “Maintenance Prevention” is influenced heavily by life cycle cost considerations.

Maintenance Reserve Project: A single effort undertaking which involves major repair or replacement to plant,
property, or equipment that is intended to extend its useful life. Any project, other than a roof replacement should cost between $25,000 and $2 million. A roof replacement project may cost up to $4.0 million. However, a project costing under $25,000 or over the $2 million or $4 million limits that meets the criteria may also qualify as a maintenance reserve project if authorized by the Department of Planning and Budget. Coordinate with the Department of Planning and Budget regarding project cost limitations for Maintenance Reserve Projects. A project that meets one of more of the following criteria qualifies for maintenance reserve funding:

a. Repair or replacement of functionally obsolete, damaged or inoperable built-in equipment such as elevators, furnaces, plumbing fixtures, air conditioning and ventilation;
b. Repair or replacement of components of a plant such as exterior wood, masonry, ceilings, floors, floor coverings, doors, windows, roofs, sidewalks, parking lots, fencing, and exterior lighting;
c. Repair or replacement of existing utility systems, such as steam lines, natural gas, air, electrical, water and sewer. When replacement of components of utility systems is required (e.g. transformers, distribution panels, cables, etc.), new components should be sized to account for future growth if the existing components are operating at or near capacity;
d. Correction of problems resulting from erosion and drainage;
e. Work related to handicapped access, energy conservation, building and safety codes compliance, safety and security, lead paint abatement, or asbestos correction; and/or,
f. Other projects approved by the Department of Planning and Budget.

**Manual**: The short term used for Virginia Commonwealth University’s Higher Education Capital Outlay (HECO) Manual – current edition, as amended (called the Manual), Chapters 1 through 12 including Appendices A through N, and all revisions thereto.

**Memorandum of Understanding (MOU)**: A document signed by both the A/E and the University that formalizes the details of the fee negotiations, the scope of work, the A/E schedule, and other items agreed to during negotiations. The terms of the MOU are project specific, supplementing and/or clarifying the requirements of the A/E Contract in terms of the particular project.

**Micro Business**: A small business certified as a micro business by the Virginia Department of Small Business and Supplier Diversity (DSBSD). For purposes of DSBSD micro certification, the business must have no more than 25 employees and no more than $3 million in average annual revenue over the three-year period prior to certification.

**Minority-owned Business**: A business certified as minority-owned by the Virginia Department of Small Business and Supplier Diversity (DSBSD). For purposes of DSBSD certification, “minority” is defined as an individual who is a citizen of the United States or a legal resident alien and who is African American, Hispanic American, Asian American or Native American.

**New Construction**: The building of a new structure, facility or improvement (including utilities) on a site. A new construction project is a single undertaking involving the building of one or more facilities. Included in the project are the following: all work necessary to accomplish a specific purpose and produce a complete and usable new structure; the associated architectural and other technical services; the equipment installed and made part of the facility; and site development and improvements. New construction includes:

a. Construction of, or site preparation for, a new plant, including the erection, installation, or assembly of a new building, structure, or utility system;
b. Any addition, expansion, or extension to a structure that adds to its overall exterior dimensions; and

c. Complete replacement of a facility that, because of age, hazardous conditions, obsolescence, structural and building safety conditions or other causes, is beyond the point where it may be economically repaired or renovated and can no longer be used for its designated purpose.

**NFPA**: National Fire Protection Agency

**Non-professional Services**: Any services not specifically identified as “professional services” in the definition of “professional services” provided by the Code of Virginia § 2.2-4301.
Notice: All written notices required or permitted under the A/E Contract or Contract Documents. Notice shall be given in writing to the email address or physical delivery location identified in the A/E Contract or Contract Documents for receipt of Notice by the receiving party. A Notice is deemed to have been properly given and effective at the time such Notice is (i) deposited with a nationally recognized overnight delivery service using no more than two (2) business day delivery service for delivery to the Notice address; (ii) hand delivered to the Notice address; (iii) enclosed in a postage prepaid envelope addressed to the Notice address and delivered to a United States Postal Service for delivery by prepaid certified or registered mail; or (iv) sent via email to the email address identified for Notice in the A/E Contract or Contract Documents.

Notice of Award: The written notification by the University to the apparent successful bidder notifying the bidder that it has been awarded the contract, pending the submittal and execution of all documents required in the IFB.

Notice of Intent to Award: The written public posting by University announcing the apparent successful bidder and notifying the bidder and all other bidders that the University intends to award the contract to the apparent successful bidder pending completion of the verification that it is a Responsible Bidder and the receipt and acceptance of all executed documents required in the IFB.

Notice to Proceed: A written Notice given by the University to the Contractor fixing (with a copy to A/E) the date on which the Time for Completion will commence for the Contractor to begin the execution of the Work. The Notice to Proceed will identify the Contract Completion Date if not otherwise established by the Contract.

O&M: Operations & Maintenance Manuals

Owner: The University, may also be referred to as “Agency.”

Owner’s Construction Contingency: A dollar amount included in an Owner’s budget for the purpose of addressing unforeseen costs during the further execution of the project. When the term “Construction Contingency” appears in the CPSM or in related forms, it means “Owner’s Construction Contingency.”

Performance Specification: A specification which generally describes the characteristics of the article required, e.g., the style, type, quality, character, economy of operation and purpose to be served by the article and the results required of the article provided. It does not restrict bidders to a specific brand, make, or manufacturer, nor does it tell the Contractor how to achieve the required result.

Person: Any individual, corporation, partnership, association, company business, trust, joint venture or other legal entity.

Planning and Design (P&D): The Office of Planning and Design is responsible for the long-term and capital and noncapital development of architectural, site, landscape, transportation, interior design, and space management to meet the campus standards and planning outcomes of the University.

Plans: The group or set of Project-specific drawings which are included in the Contract Documents.

Pre-Bid/Pre-Proposal Conference: A meeting of interested, prospective bidders held at the University’s discretion, usually with the assistance of the A/E, prior to the receipt of bids in which comments or questions concerning specifications or other provisions in the IFB or RFP can be received and considered (See Code of Virginia § 2.2-4316). Any response shall be in writing and distributed to all who requested and received the IFB and RFP.

Preplanning: A process meant to obtain a more detailed definition and cost estimate of a project.

Prequalification of Bidders: The process by which the qualifications and credentials of potential bidders may be evaluated for particular types of services or construction in accordance with criteria established in writing and sufficiently in advance of their implementation to allow interested persons or firms a fair opportunity to complete the process (https://vascupp.org/rules.pdf).
**Prime Design Professional**: The University will normally contract with a single entity as “Prime Design Professional” to provide the project architectural and/or engineering services. Such Prime Design Professional may have all necessary disciplines in-house or it may subcontract with consultants to provide services in some disciplines. The Prime Design Professional may be an Architect, an Engineer, or an A/E entity. The University shall determine which entity best satisfies the University’s requirements for providing the services, meeting the time schedule and budget limitations, and managing the services to be provided on the particular project.

**Professional Services**: As defined in the *Code of Virginia* § 2.2-4301, work performed by an independent contractor within the scope of the practice of accounting, actuarial services, architecture, land surveying, landscape architecture, law, dentistry, medicine, optometry, pharmacy or professional engineering. “Professional Services” shall also include the services of an economist procured by the State Corporation Commission.

**Project**: The term used instead of the specific or proper assigned title of the entire undertaking which includes, but is not limited to, the Work and the A/E Services.

**Project Inspector**: One or more persons employed by the University to inspect the Work for the University and/or to document and maintain records of activities at the Site to the extent required by the University. The scope of the Project Inspector’s authority with respect to the Contractor is limited to that indicated in the General Conditions and as supplemented by the University in writing to the Project Inspector and to the Contractor.

**Project Manager**: The Project Manager shall be the University’s designated representative on the Project. The Project Manager shall be the person through whom the University generally conveys written decisions and instructions. All Notices to the University and all information required to be conveyed to the University shall be conveyed to the Project Manager unless otherwise stated in the Contract. The scope of the Project Manager’s authority is limited to that authorized by the University. The University may change the Project Manager from time to time and may, in the event that the Project Manager is absent, disabled or otherwise temporarily unable to fulfill their duties, appoint an interim Project Manager.

Also used as a generic designation of the representative of University, an A/E or a Contractor or others through whom written decisions and notices are generally conveyed.

**Project Manual**: The assemblage of documents including the front end documents that establish the contract requirements for construction, the specifications which establish the technical requirements for the materials and installation of construction, and appendices if applicable.

**Proprietary**: An adjective used to describe a product or piece of equipment which is manufactured under an exclusive right but which is available to Subcontractors from multiple vendors or Suppliers; (e.g. a product or piece of equipment which is specified by a single brand name and model number and which is available to bidders from more than one source, but for which no “Equal” is permitted.)

**Provide**: Shall mean furnish and install ready for its intended use.

**RDP**: Registered Design Professional

**Real Estate**: Any land and improvements, including all rights and interest (i.e., leasehold, easements, permission, licenses, allotments, minerals, remainder or any other interest).

**RealSource**: VCU’s vendor, procurement, invoice and contracts portal. Vendors are required to register in RealSource

**Request for Proposal (RFP)**: A written public notification by the University soliciting proposals for professional, nonprofessional, or contractor services. The RFP generally describes the services sought, the unique capabilities or qualifications needed to perform the work, factors to be used to evaluate proposals and the conditions for negotiating prices and terms with the Offerors.

**Responsible Bidder**: A bidder who has the capability, in all respects, to perform fully the Contract requirements and
the moral and business integrity and reliability that will assure good faith performance, and who has been prequalified, if required (Governing Rules § 4).

**Responsive Bidder:** A person or firm who has submitted a bid which conforms in all material respects to the Invitation for Bid (Governing Rules § 4).

**RFQ:** Request for Qualifications

**SCHEV:** State Council on Higher Education in Virginia

**Sealed Bid:** A bid which has been submitted in a sealed envelope to prevent its contents from being revealed or known before the deadline for the submission and opening of all bids.

**Senior Vice President and Chief Financial Officer (SVP & CFO):** This person is responsible for the financial and administrative operations of the University and must approve initiation of non-general fund capital projects.

**Service:** A service that the University includes in the A/E’s Scope of Work as part of the Work under the A/E Contract but which service is not included in the A/E Basic Services as described in the Manual. Compensation for the additional services is included in the fee negotiations prior to signing the contract and is, therefore, included in the A/E Contract.

**Service Disabled Veteran Owned Business:** Service Disabled Veterans who are small business owners can obtain Service Disabled Veteran-owned “status” in the SWaM vendor database. This is not a separate certification; it is a designation of those businesses that are owned by Service Disabled Veterans who are certified as such by the Virginia Department of Veteran Services.

**Services:** Any work performed by an independent contractor wherein the service rendered does not consist primarily of acquisition of equipment or materials, or the rental of equipment materials, or supplies (See Code of Virginia § 2.2-4301).

**Shop Drawings:** The drawings, diagrams, illustrations, schedules, installation descriptions and other data prepared by or for the Contractor to provide detailed information for the fabrication, location, erection, installation, connection and methodology associated with the Work. Shop drawings are intended to aid in the preparation and installation of materials and to ascertain that the materials proposed by the Contractor conform to the requirements of the Contract Documents.

**Small Business:** A small business that is owned and operated by socially or economically disadvantaged individuals. The status is designated by the Small Business Administration (SBA), the United States agency charged with supporting the growth and development of small businesses. Certification 8a is a SBA federal certification. If a firm provides documentation that they are certified as such they can participate in the SWaM program without any additional paperwork.

**Sole Source:** A product, item of equipment, service or combination of these which is available from only one manufacturer, vendor or provider in an area to the exclusion of others (e.g. within the constraints of the particular Project, whether geographic, time, material or other). If products, equipment or services are franchised to only one vendor in an area, the vendor would be considered a Sole Source for such products, equipment or services specified for this Project.

**Special Conditions:** That part of the Contract Documents which describes special or additional requirements or procedures applicable to the Project. The Special Conditions do not amend or supersede the General Conditions of the Construction Contract (HECO-7).

**Specifications:** That part of the Contract Documents containing the written administrative requirements and the technical descriptions of materials, equipment, construction systems, standards, and workmanship for the Work.
Steering Committee: The Committee comprised of senior administrative staff responsible for guiding project direction consistent with the overall goals and objectives of the University. They make decisions that cannot be made by the Building Committee either for reasons of disagreement among building committee members or because the decision is more properly handled at a higher level. This Committee should be briefed regularly during the planning process so they are informed of its evolution.

Subcontractor: A person or firm having a direct contract with the Contractor or with any other Subcontractor for the performance of the Work, or who has a direct contract with the A/E for professional services for the Project. Subcontractor includes any person or firm who provides on-Site labor but does not include a Supplier.

Submittals: All Shop, fabrication, setting and installation drawings, diagrams, illustrations, schedules, samples, and other data required by the Contract Documents which are specifically prepared by or for the Contractor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by the Contractor to illustrate material or equipment conformance of some portion of the Work with the requirements of the Contract Documents.

Substantial Completion: The condition when the University agrees that the Work, or a specific portion thereof, is sufficiently complete, in accordance with the Contract Documents, so that it can be utilized by the University for the purposes for which it was intended. The University at its sole discretion may, after obtaining the necessary approvals and certificates, take Beneficial Occupancy at this time or choose to wait to occupy until after Final Completion is achieved.

SVP & CFO: Senior Vice President and Chief Financial Officer

Substitute: A material, product, equipment, or assembly that deviates from the requirements of the Contract Documents but which the Contractor deems will perform the same function and have equal capabilities, service life, economy of operation, and suitability for the intended purpose. The proposal must include any cost differentials proposed. Any such proposed substitute must be submitted to the A/E for review and, if acceptable to the A/E and the University, incorporated into the Construction Contract by Change Order.

Supplemental General Conditions: An amendment or modification which amends or supplements the General Conditions of the Construction Contract (CO-7) or the Terms and Conditions of the A/E Contract (CO-3a).

Supplier: A manufacturer, fabricator, distributor, material provider or vendor who provides material for the Project but does not provide on-site labor.

SWaM/SDV Business: All subcategories of Small Businesses including Micro Business, Minority-Owned Business, Service Disabled Veteran-Owned Business, Small Business, and/or Women-Owned Business together as a group.

Tax Exempt: Construction is not tax exempt per Title 23 VAC 10-210-410 A. The sales tax exemption does not extend to tangible personal property sold to a construction Contractor for its use or consumption in the performance of a real property construction contract. However, when materials are purchased directly by the Commonwealth and provided to the Contractor for use on a project, the Commonwealth is Tax Exempt on that purchase. When an estimate is provided for a Guaranteed Maximum Price, Change Order, or other similar item requiring a detailed itemization of the costs of a project, the itemized sales tax is considered a part of the cost of the work. The itemized sales tax is valid for inclusion in these estimates and demonstrates that the Contractor has complied with Title 23 of the Virginia Administrative Code 10-210-410 by taking the amount of the tax into consideration when submitting its price.

Time for Completion: The number of consecutive Days following the Date of Commencement within which the Contractor must achieve Substantial Completion of the Work in accordance with the Contract Documents.

UFAS: Uniform Federal Accessibility Standards

Unit Price Work: Work to be paid for on the basis of established unit prices for the quantity of material provided or

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work done.

**University:** Virginia Commonwealth University. May be referred to herein as “Agency” or “Owner”.

**Unsealed Bid:** An unsealed written offer conveyed by the U.S. Postal Service, commercial courier service, facsimile, email, or other means. The bids are normally opened and recorded when received.

**USBC:** The Uniform Statewide Building Code adopted by the Virginia Department of Housing and Community Development (DHCD) in conformance with the Code of Virginia § 36-98.1. (Also referred to as the VUSBC.)

**USGBC:** U.S. Green Building Council

**VAC:** Virginia Administrative Code

**VBO:** Virginia Business Opportunities

**VCC:** The Virginia Construction Code

**VCCO:** The acronym used to refer to a state employee who has completed the necessary training and testing and recertification by the Division of Engineering & Buildings in state procurement law, policy and procedures and who has been awarded the designation of Virginia Construction Contracting Officer (VCCO). Where used in this Manual, the VCCO functions are related to the following: procurement of professional services contracts; receipt, opening and review of bids; and facilitate the signing of the HECO-8, recommending award of the contract to the successful bidder.

**VCO:** A state employee who has been certified by the Division of Purchases and Supply as a Virginia Contracting Officer (VCO).

**VEBC:** The Virginia Existing Building Code

**VEES:** The Virginia Energy Conservation and Environmental Standards

**VPPA:** The Virginia Public Procurement Act, *Code of Virginia §§ 2.2-4300 thru 2.2-4383*, as amended

**VSFPC:** Virginia Statewide Fire Protection Code

**VUSBC:** Virginia Uniform Statewide Building Code (also referred to as the USBC). Refer to Chapter 6 for detailed descriptions of the various VUSBC parts.

**WD:** Working Drawings

**Women-owned Business:** A business that is at least 51% owned by one or more women who are U.S. citizens or legal resident aliens, or in the case of a corporation, partnership, or limited liability company or other entity, at least 51% of the equity ownership interest is owned by one or more women who are citizens of the United States or legal resident aliens, and both the management and daily business operations are controlled by one or more women.

**Work:** The construction and services required by the Contract Documents, whether completed or partially completed, including but not limited to, furnishing labor, furnishing and incorporating materials and equipment into the Construction. The Work includes the entire completed Construction, or the various separately identifiable parts thereof, required to be provided under the Contract Documents or which may reasonably be expected to be provided as part of a complete, code compliant and functioning system for those systems depicted in the Plans and Specifications.
4.1 General

VCU works to promote equity in business and to support a diverse local economy by fostering community and business relationships. To this end, VCU is committed to increasing participation of the Virginia Department of Small Business and Supplier Diversity (SBSD) certified minority-owned businesses, woman-owned businesses, micro-businesses, service-disabled veteran owned businesses, small businesses, and disadvantaged businesses (DBE). In support of Executive Order 35 (2019), the University needs assistance from its Contractors to provide for significant participation of SBSD-certified SWaM businesses through partnerships, joint ventures, subcontracts, or other contractual opportunities.

4.2 SWaM Participation Goals

VCU seeks at least 45% of its purchases be made from SBSD-certified SWaM businesses on all discretionary spend. In addition, VCU has an internal goal with at least 15% of discretionary spend going toward Women and Minority owned businesses (WaM) specifically, to contribute to the establishment, preservation, and strengthening of such businesses, and to encourage their participation in VCU procurement activities. Further, for all capital construction contracts, VCU has a target goal of at least 50% subcontracting to SWaM businesses.

VCU will prioritize SWaM awards for small purchases ($200,000 for non-professional services and $80,000 for professional services) which requires that purchases for goods, professional and nonprofessional services, and construction be set aside for award to SBSD-certified SWaM businesses, when applicable, when the price quoted is fair and reasonable and does not exceed 5% of the lowest responsive and responsible noncertified bidder.

4.3 SWaM Participation Plan

All capital construction project bids/proposals, for both professional and non-professional services, shall include a SWaM business participation plan and include a SWaM business sub-contracting plan. Such plans shall identify all planned utilization of:

a. minority-owned businesses
b. women-owned businesses
c. micro businesses
d. service disabled veteran-owned businesses
e. small businesses
f. disadvantaged businesses (DBE)

Firms shall indicate in their proposal whether they will be using specific consultants or subcontractors to comply with the SWaM business participation plan. If awarded a contract, any changes in the identity of the consultants or subcontractors shall be submitted to VCU along with an explanation as to why the change is being made and how the plan will be met. The form for submission of this data will be included with the bid documents.

Firms and all of their subcontractors and consultants must be SBSD-certified at the time the bid or proposal is submitted to receive evaluation points for SWaM Participation Plans. Intentions to become SBSD-certified in the future will not count toward meeting the SBSD requirements to be awarded SWaM points when bids/proposals are evaluated. If a Contractor or any subcontractor is a SBSD-certified SWaM business at the time of award, the contractor agrees to maintain such certification for the life of the contract (provided Contractor remains eligible).

4.3.1 Failure to Submit SWaM Information

If a proposer fails to submit all information requested, VCU may require prompt submission of missing information after the receipt of proposals. Failure to provide information required may ultimately result in rejection of the proposal as nonresponsive. Bids may be considered non-responsive if the minimum SWaM levels established for each project are not met.
4.3.2 Certification of Information
By submitting such information with their proposal, Contractors certify that all information provided is true and accurate.

4.3.3 Scoring of the SWaM Business Participation Plan
VCU shall take into consideration the Contractors’ SWaM business participation plan when evaluating proposals with at least 15% of the evaluation based on SWaM usage/plans. During evaluations, the maximum number of available SWaM points shall be awarded based on total SWaM usage as provided in a SWaM participation/sub-contracting plan. In addition to the SWaM business participation plan, all procurements by competitive negotiation shall also include consideration of the proposer’s past use of SBSD certified businesses and previous compliance with a Contractor’s SWaM business subcontracting plan(s).

4.4 Contractual Requirements
The SWaM business participation plan shall become a requirement of the contract, and compliance with the plan shall be demonstrated prior to final payment. The Prime Contractor shall deliver to VCU, on or before request for final payment, evidence and certification of compliance with the SWaM business participation plan, subject only to insubstantial shortfalls and to shortfalls arising from subcontractor default. Final payment under the contract in question may be withheld until such certification is delivered and if necessary, confirmed by VCU, or other appropriate penalties may be assessed in lieu of withholding such payment.

4.4.1 SWaM Reporting
For contracts that include a SWaM business participation plan, the Contractor shall plan and report on the involvement of SWaM Businesses in the Contractor’s performance during the term of the contract as follows:

1. **Periodic Progress Reports:** The Contractor shall report on involvement of SWaM Business with each periodic invoice submitted by the Contractor. The report shall identify each subcontract or agreement with a SWaM Business, including the total contract value, and state the total amounts paid to each SWaM Business in connection with the contract as of the report date. The report shall provide this information separately for each type of SWaM Business and shall clearly indicate those SWaM Businesses which were identified in the Contractor’s Small Business Participation Plan submitted by the Contractor in the procurement phase of the contract. Failure to submit the report with each invoice will result in the invoice being rejected by VCU without payment.

2. **Final Compliance Report:** Prior to or with its final invoice for payment, the Contractor shall certify and report on its compliance with the Small Business Participation Plan. A format for the Final Compliance Report may be provided by VCU. In the Final Compliance Report, the Contractor shall:
   - Provide a written explanation to the Owner of any variances between the Contractor’s Small Business Participation Plan and the actual participation of SWaM Businesses in the Contractor’s performance of the contract; and
   - Report on the involvement of other SWaM Businesses in the Contractor’s performance of the contract, including the contract value, the type of SWaM Business, a comparison of the actual amount paid with the planned amounts, the total amount paid to each type of SWaM Business, and a calculation of the percentage of the total contract amount paid to SWaM Business.

4.4.2 Audits
In order to assure compliance with certification requirements of SWaM subcontracting plans, VCU may provide for appropriate auditing of vendors and contracts. Such audits shall include the right to make on-site audits at any time during the term of the applicable contract or certification.

4.4.3 Failure to Meet Plan
After substantial completion/final payment, if a firm fails to meet the SWaM Business Participation Plan as part of the contract, that firm may shall receive a 50% reduction on future bids with VCU for their SWaM evaluation points until the firm demonstrates compliance on another SWaM Business Procurement Plan with VCU.

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4.5 Becoming SWaM Certified

If the awarded Contractor or any subcontractor is not SBSD certified but can qualify for certification under SBSD guidelines, the awarded firm is strongly encouraged to apply for certification within 60 days after award of the contract. Eligibility will be determined by the SBSD.

VCU will actively recruit small businesses to seek certification from SBSD and to compete for state procurement opportunities.

Businesses based outside of Virginia may still be eligible for participating in Virginia's supplier diversity program. Access SBSD's policy on out of state requirements. Please note that no vendor is considered a SWaM vendor unless it has obtained certification from the SBSD. For SWaM registration guidelines and additional registration information, refer to SBSD at Virginia Department of Small Business and Supplier Diversity.

All certified SWaM vendors will be assigned a SWaM identification number which must be used in all reports. Any vendor, or their subcontractors, that believe they may qualify as a SWaM business but are not certified by SBSD, please contact VCU Office of Procurement Services | Our Services | Supplier Diversity.

4.6 Definitions

4.6.1 SBSD includes the following definitions for SWaM classification.

Minority-owned business is a business that is at least 51 percent owned by one or more minority individuals who are U.S. citizens or legal resident aliens, or in the case of a corporation, partnership, or limited liability company or other entity, at least 51 percent of the equity ownership interest in the corporation, partnership, or limited liability company or other entity is owned by one or more minority individuals who are U.S. citizens or legal resident aliens, and both the management and daily business operations are controlled by one or more minority individuals, or any historically black college or university, regardless of the percentage ownership by minority individuals or, in the case of a corporation, partnership, or limited liability company or other entity, the equity ownership interest in the corporation, partnership, or limited liability company or other entity.

Minority Individual: “Minority” means a person who is a citizen of the United States or a legal resident alien and who satisfies one or more of the following definitions:

“Asian Americans” means all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands, including but not limited to Japan, China, Vietnam, Samoa, Laos, Cambodia, Taiwan, Northern Marinas, the Philippines, U. S. territory of the Pacific, India, Pakistan, Bangladesh and Sri Lanka and who are regarded as such by the community of which these persons claim to be a part.

“African Americans” means all persons having origins in any of the original peoples of Africa and who are regarded as such by the community of which these persons claim to be a part.

“Hispanic Americans” means all persons having origins in any of the Spanish speaking peoples of Mexico, South or Central America, or the Caribbean Islands or other Spanish or Portuguese cultures and who are regarded as such by the community of which these persons claim to be a part.

“Native Americans” means all persons having origins in any of the original peoples of North America and who are regarded as such by the community of which these persons claim to be a part or who are recognized by a tribal organization.

“Eskimos and Aleuts” means all persons having origins in any of the peoples of Northern Canada, Greenland, Alaska, and Eastern Siberia and who are regarded as such in the community of which these persons claim to be a part.

**Service Disabled Veterans:** Veterans who are small business owners can obtain Service Disabled Veteran-owned “status” in the SWaM vendor database. This is not a separate certification; it is a designation of those
businesses that are owned by Service Disabled Veterans who are certified as such by the Virginia Department of Veteran Services. Veterans wishing to apply for service disabled veteran status must first seek eligibility certification from the Department of Veteran Services by calling (804) 786-0286 or visiting the DVS website at www.virginiaforveterans.com. Veterans can apply for small, women-owned or minority-owned certification with the SBSD before or after obtaining an eligibility certificate from DVS. Both services are available at no charge.

**Disadvantaged Business Enterprise**: The Disadvantaged Business Enterprise (DBE) certification program is a Federal program. The purpose is to increase the participation of certified DBEs in projects funded by the US Department of Transportation and other federal sectors. Projects typically include heavy construction, such as building and designing roads, bridges, railroads, ports, and airports. The Program is governed by the U.S. Federal Regulations in 49 CFR Parts 26 and 23.

**Employment services organization (ESO)** is an organization that provides community-based employment services to individuals with disabilities that is an approved Commission on Accreditation of Rehabilitation Facilities (CARF) accredited vendor of the Department for Aging and Rehabilitative Services.

**8a** is a small, disadvantaged business as defined and certified by the U.S. Small Business Administration. If a firm provides documentation that they are certified as such, they can participate in the SWaM program without any additional paperwork.

**Economically Disadvantaged Woman Owned Small Business (EDWOSB)** is a federal certification that is verified by Women’s Business Enterprise National Council (WBENC). Again, no additional paperwork is required other than the WBENC certification document.

### 4.6.2 Small Business
A small business is an independently owned and operated business which, together with affiliates, has 250 or fewer employees, or average annual gross receipts of $10 million or less averaged over the previous three years. Nothing in this definition prevents a program, agency, institution or subdivision from complying with the qualification criteria of a specific state program or federal guideline to be in compliance with a federal grant or program.

### 4.6.3 Women-Owned Business
A Women-owned business a business concern which is at least 51 percent owned by one or more women who are U.S. citizens or legal resident aliens, or in the case of a corporation, partnership or limited liability company or other entity, at least 51 percent of the equity ownership interest is owned by one or more women, and whose management and daily business operations are controlled by one or more of such individuals.
Chapter 5: Architectural and Engineering Services

5.1 Procurement Procedures for Professional Services

5.1.1 General Policy on Procuring A/E Services
The Governing Rules set forth the general parameters for public procurement, including procurement of professional services. The sections in this Chapter provide further clarification of the requirements for procurement of professional services. Requirements for the procurement of construction services (a nonprofessional service) is addressed in Chapter 9 of this Manual.

5.1.1.1 Professional Disciplines
The University contracts with a single entity in acquiring the full range of disciplines necessary to provide the services identified for the project. The entity may be an Architectural & Engineering firm with in-house capabilities in all disciplines, or it may be an Architectural, Engineering or Land Surveying firm which subcontracts for disciplines not in-house. All of the above entities have an equal opportunity to compete for projects. Consideration will be given to the proposer which demonstrates it has the ability to meet the criteria in the RFP and is best suited to provide the services for the project. In any case, the proposer will be referred to as the A/E and will be required to provide the services indicated in the contract.

5.1.1.2 Professional Responsibility
The person having overall responsibility for the project management and coordination of disciplines may be either a licensed Architect or Professional Engineer. A licensed Architect shall be in charge of planning and design of the Architectural aspects of the project. A licensed Engineer competent in that particular discipline shall be in charge of each discipline of the Engineering aspects of the project. The A/E shall be registered and licensed by the Virginia Department of Professional and Occupational Regulation (DPOR) in accordance with requirements of the Code of Virginia.

5.1.1.3 University Responsibility
The University President will designate, in writing, a person, called in this Manual the AVP of FMD, who shall be responsible for the administration and supervision of the University’s capital outlay and construction program.

5.1.1.4 Professional Services
Land surveyors, geotechnical engineers, soils engineers, landscape design, or any service requiring the use of a licensed architect, engineer, landscape architect, or surveyor are by state law, considered to be Professional Services and shall be procured as outlined in this chapter.

5.1.1.5 Non-Professional Services (Other than Construction)
Cost consultants, interior design, soils testing, concrete testing, project management, project administration, inspection/clerk of the works, and other services which may be performed by either licensed or non-licensed architects, engineers or others are considered to be Nonprofessional Services and may be procured using procedures contained in the Governing Rules.

5.1.2 Project Scope of Work
Once the University determines the need for professional services, a Scope of Work will be prepared to identify or outline the services required, to identify the criteria, limitations and parameters for the services, and to describe the product(s) expected. The Scope may range from very general to very specific and will usually reference the Manual, the Virginia Uniform Statewide Building Code and/or other standards for the specific related requirements.

5.1.3 Requests for Proposals (RFP)
The RFP will state any unique capabilities or qualifications which will be required of the A/E. Each respondent to the RFP agrees to provide all the architectural and/or engineering services with respect to the project that are set out in this Manual and the RFP.

The RFP may specify the method to be utilized during negotiations in arriving at the fee amount for services;
however, it shall not call for Proposers to furnish estimates of hours, labor rates, or cost for services with their qualification proposals. If no method is specified, the respondents may propose methods for negotiating the fee amount.

Each respondent shall submit ARCHITECTURAL/ENGINEERING FIRM DATA (Forms AE-1 through AE-6) in response to the RFP and include the data and qualifications of any A/E firms to be associated with it on the Project. Responses which do not include the Forms AE-1 through AE-6 and/or do not include the requested information and data may be considered as Not Responsive to the RFP. Sample RFP Formats for A/E services are available in the DGS Forms Center.

Proprietary information from respondents shall not be disclosed to the public or to the competitors provided such proprietary information is appropriately identified in the RFP response, as required by the Governing Rules.

5.1.4 Advertisements for Professional Services

5.1.4.1 Public Notice of Requests for Proposals
Public notice of the RFPs for A/E services for Capital Projects and for Term A/E Contracts shall normally be posted for at least 21 days, but not less than 10 days.

5.1.4.2 Methods of Notice
Public notice of any RFP shall be given by the following method:
1. Publication of notice on eVA, Virginia’s central electronic procurement website.
2. Publication of the notice will be included in a newspaper of general circulation in the area in which the contract is to be performed.

In addition to the above, proposals may be solicited directly from potential A/E firms.

5.1.4.3 Contact Information
The public notice shall show the name, address, e-mail address and phone number used to obtain a copy of the RFP.

5.1.5 Small Business and Small Businesses Owned by Women, Minorities, and Service Disabled Veterans
See Chapter 4.

5.1.6 Standard Formats for A/E Firm Data
Standard formats for responding to RFPs provide a uniform layout for the A/E to present both the historical data on the A/E firm and the project specific qualifications, and help to streamline the University’s review and evaluation process. Using standard formats also reduces the effort and expense of responding to RFPs and provides uniformity in the types of information requested.

DGS forms AE-1 through AE-6, ARCHITECTURAL/ENGINEERING FIRM DATA, are structured to gather information on the responding A/E that is relevant to the RFP. A/Es responding to Professional Service RFPs shall use these forms for their responses. Required additional or supplemental information shall be provided as requested in the individual RFP.

Blank copies of the AE-1 through AE-6 forms are downloadable from the DGS Forms Center.

Social Security numbers for Sole Proprietors are not required until an Agency awards a contract to that firm.

- Forms AE-1 and AE-1A provide historical data on the firm to include firm name, location, type of ownership, size, previous name(s), principals, type of personnel, consultants proposed, Professional Liability Insurance coverage, proposed participation of small businesses and variety of past project experience data.

- Form AE-2 provides information on the proposed consultants for the particular project.

- Form AE-3 provides information on the personnel proposed to be assigned to the project and a narrative of
the methodology to be used for providing the services and for quality assurance.

- Form AE-4 provides information on the individual qualifications, experience and expertise of the key personnel proposed to be assigned to the project.

- Form AE-5 provides specific data on similar projects or projects with similar features on which the A/E and/or its consultants have provided services.

- Form AE-6 offers the A/E a forum for a narrative to describe particular capabilities, expertise, project approach, current workload and other information supporting the firm's qualifications for the project.

5.1.7 Procedures for Selection of the A/E

5.1.7.1 Emergency Procurement
Pursuant to the Governing Rules, in the event of a bona fide emergency, the selection may be made without using the usual professional services procurement procedures.

Written Determination
A written determination shall be made in advance and signed by the AVP of FMD documenting the nature and basis of the emergency and authorizing procurement of A/E services (and related corrective work, if applicable) on an emergency basis. The written determination shall be made part of the project file.

Contact A/E Firms
The University shall contact one or more A/E firms who have demonstrated a capability to do the necessary work in a timely manner (either through previous contracts or on their Forms AE-1 through AE-6). The University should describe to the A/E the nature of the work and the necessary timeframe for accomplishing the work. A commitment should be requested from the firm(s) that if it is selected for the work, it will provide the services within the required timeframe.

Negotiation
The University shall negotiate with the selected firm to establish a fee for the work on a LUMP SUM basis or on a UNIT COST (hourly rate) basis with a NOT TO EXCEED AMOUNT.

Award
The Agency shall award a contract using Form HECO-3 or HECO-3.2 for the work, and shall issue and post a written notice stating that the contract is being awarded on an emergency basis, identify the work being procured, identify the firm selected, and the date of award of the contract. Typically, use of the HECO-3 is recommended unless the scope of the A/E services will be extremely limited and the fees are not expected to exceed $10,000. An example of extremely limited scope of A/E services would be preparation of construction documents for repairs to an exterior wall after an automobile runs into it. Notice of the Award shall be posted on eVA.

Purchase Order
The University will issue a Purchase Order after the Notice of Award.

5.1.8 Standard Professional Services Procurement
The University’s Tier III status enables the University to develop its own policy for procurement of A/Es with a fee less than $50,000 and may not be subject to the competitive process. Except in instances in which a term A/E contract is used, the University shall procure A/E services using the competitive negotiation process where the fee is expected to be greater than $50,000. The Building Committee shall base the A/E selection on qualifications, suitability, and capability followed by competitive fee versus scope of work negotiations with the selected A/E. These procedures may be used for smaller fee contracts, too. Note, VCU will prioritize SWaM awards for professional services expected to be $80,000 or less. See Chapter 4 above.
**Request for Proposal**
Prepare an RFP describing the desired services and/or goods in sufficient detail to evaluate responders' proposals and ability to complete the Work.

**Notice of the RFP**
The University shall post a notice of the RFP on eVA. The University may also publish the notice in a newspaper in the general locale of the project. If appropriate, publication of the notice may also be included in a statewide newspaper of general circulation.

**Evaluation**
Receive, evaluate, and rank the respondents based on the data contained in the Forms AE-1 through AE-6 submittals of each respondent with respect to the criteria listed in the RFP. The evaluation criteria shall include consideration of respondents' past use of SWaM businesses and proposed use of SWaM businesses.

**Verification**
Verify that the top ranked A/E proposed for interview is properly registered with the APELSCIDLA Board and licensed to provide A/E services in Virginia. Respondents shall be properly registered and licensed. Verify the DSBSD certification status, if applicable. Additionally, verify that the A/E is not debarred or enjoined.

**Associations**
Contracting with an association of firms, such as joint ventures or an associated A/E, involves additional business and legal considerations. Factors to be considered include the following:

1. Whether the association is a registered or licensed entity authorized to offer the necessary services in Virginia;
2. The nature of each party's responsibilities to the other and to the University;
3. The professional liability insurance coverage of the association;
4. The association's organization and management structure;
5. Each firm's financial condition and stability with respect to fulfilling its obligations under the contract; and
6. Whether the parties to the association are jointly and severally liable for the work.

Prior to selecting an association for fee negotiation for possible contract award, the University shall request a review of the association's legal documents. The review shall be accomplished by the University’s legal counsel.

Associations not legally constituted and authorized to offer the requested services in Virginia at the time of the closing date of the RFP will be deemed “Not Responsive.”

**Interviews**
Interview a minimum of the top two ranked respondents who are deemed to be fully qualified, responsible, and suitable on the basis of their initial responses. Discussions of fees, rates, design costs, etc., shall not be included in these evaluations or the interviews. A/Es shall be permitted to present more detailed information on the RFP criteria; on specific qualifications and expertise of the personnel proposed to be assigned to the project; on the concepts, methods and approaches proposed for the design; and other pertinent information. Responses of each interviewed firm along with other material and data submitted, the A/E’s past performance, and responses from references, and rank order the firms as best suited for the project shall be evaluated by the University. Proprietary information from respondents shall not be disclosed to the public or to the competitors provided such proprietary information in the RFP response is appropriately noted as proprietary information exempted from public disclosure as required by the Governing Rules.

**Negotiation**
Negotiate with the A/E ranked first as to overall suitability and qualifications. If the University cannot reach agreement on a fee amount based on compliance with all of the Manual requirements, the negotiations shall be formally terminated in writing. The University shall then proceed to negotiate with the A/E ranked second. If not successful, the negotiations with the second ranked A/E are terminated in writing and the University shall proceed to the third ranked. It is understood that at any time, negotiations may be terminated and the project re-advertised.
It is anticipated that the fee amount negotiated will cover all the services required. It is recognized that unforeseen circumstances may arise, requiring resolution. Accordingly, at the time of negotiation, the hourly rates for the various technical personnel classifications must be set forth in the MOU for use in determining a reasonable fee for additional services.

5.1.9 A/E Term Contracts
A/E Term Contracts are a useful and effective tool for the University in managing their planning, maintenance, and renovation programs, and quickly handling emergency procurement of professional services. Term contracts shall include the terms and conditions and pricing for work which may be issued during the term of the contract. The following procedures govern the use of these contracts.

Applicability
Term Contracts for A/E services may be used for engaging one or more A/E firms to provide investigations, cost estimates, designs, and related services for multiple small projects for a period of time. The projects must require similar expertise.

Some advantages to the University include a reduction in the cost and time of advertising for services, a shorter response time from the A/E, and an improved efficiency and clarity in the production of the contract documents for the University. For the A/E, it is usually more cost effective to provide the services on multiple small projects for the same University. Examples of Term A/E Contracts include: feasibility studies, cost studies, designs of small capital and construction projects and maintenance reserve project designs.

Requests for Proposals
The RFP shall include a description of the nature and types of the potential projects, the disciplines or expertise required by the Term A/E Contract, and the nature of services expected to be required. The RFP shall also describe factors pertinent to the evaluation and selection process.

Advertisement for the Term Contract
The notice of the RFP shall be made on eVA. The notice may also be published in a newspaper of general circulation statewide or in the general area of the anticipated projects, or both.

Term Contracts Not Exclusive
The Term Contract is not exclusive. The University may issue separate RFPs for similar work and other projects as the need may occur.

Multiple Contract Awards from a Solicitation
The University may issue multiple awards for Term A/E Contracts from any single RFP solicitation.

Contract Limit
No A/E, including any subdivisions or branches thereof, may at any time have in effect more than one (1) A/E Term Contract with the University, including any subdivisions or branches thereof.

Fees
The fee for the services on each Project Order that is issued under the Term A/E Contract shall be negotiated individually on a lump sum basis considering the Scope of Services required, the estimated hours required for each skill level/discipline and the labor rates agreed upon and listed in the MOU attached to the term contract. If the time required to perform the Work cannot be reasonably estimated, the A/E may be directed to proceed with the work on an hourly basis with a maximum or not-to-exceed amount. The compensation shall be determined by the A/E’s certified record of hours expended by classification, skill level and discipline, and the hourly rates for each as listed in the MOU.

Any individual Term A/E Contract or the aggregate total of fees for all Project Orders issued during any term of a Term A/E Contract shall not exceed $2 million.

The MOU attached to the Term Contract will document the negotiated acceptable labor rates for the various A/E classifications, skill levels and disciplines. These rates will be used by the University for arriving at lump sum
fees and for any hourly rate work authorized by the University for Project Orders issued under the Term A/E Contract.

If a Project Order is to be performed on a lump sum basis, the A/E shall determine a lump sum based on the Scope of Work required, the estimated hours required for each classification, skill level and discipline and the labor rates agreed upon during the contract negotiations.

**Contract Term**

Term contracts shall be limited to one year, or when the cumulative total project fees reach the maximum cost authorized, whichever occurs first. Such contracts may be renewable for four additional one-year terms at the option of the University.

When the aggregate total of all Project Orders, including Change Orders to those Project Orders, reaches the term dollar limit, no further Project Orders may be issued during that term. A new term may be exercised immediately if the University elects to do so; however, no more than four term renewals may be exercised.

It is understood that the A/E’s work under the Project Orders issued may not be completed during the contract’s term; however, all terms and conditions of the contract, including all rights and obligations, shall survive until the Work is completed, except the University’s right to issue, and the A/E’s right to accept, additional Project Orders. The University and the A/E are obligated to fulfill the requirements of all Project Orders issued, including Change Orders, even though the term for issuing new Project Orders has concluded.

The University may, at its sole discretion, renew the Contract for up to four additional one-year Contract Terms, provided the option to renew was indicated in the RFP. A new aggregate limit of $1 million shall apply to the second Contract Term, without regard to the dollar amounts of Project Orders issued during the first year of the Contract. Any unused amounts from the first Contract Term shall carry forward to the next Contract Term. Subsequent renewals shall follow the same procedures.

**Project Orders**

Project Orders authorize the A/E to perform Work for a lump sum amount or at the hourly rates set forth in the A/E Term Contract.

Although the potential exists for multiple project orders during the Contract Term with aggregate fees up to $1 million, the University does not represent or guarantee that the A/E will receive any Project Orders.

The Scope of Work offered to the Term Contract A/E shall include a definition of the product required and a request for a fee proposal based on the rates in the Term Contract. If the A/E and the University cannot agree on the Scope of Work, the number of hours, or lump sum fee, the University shall offer the Scope of Work to another Term Contractor.

**Procedures for Selection of an A/E for a Term A/E Contract**

1. Draft RFP.
3. Receive, evaluate, and rank the respondents.
4. License: Verify all A/E respondents are properly licensed to offer services in Virginia.
5. Interview: The Building Committee shall conduct interviews with two or more Offerors deemed fully qualified, responsible and suitable. Repetitive informal interviews are permissible.
6. Selection: Rank the interviewees.
7. Negotiation: Negotiate with the highest ranked Offeror(s) to agree upon the special terms and conditions, if any, and the hourly rates which pertain to the Contract. If negotiations, including hourly rates and other terms and conditions are not successful, the negotiations shall be formally terminated in writing. Note that the fee negotiations are fixed; the rates negotiated for the original term will remain fixed for all subsequent term contract renewals. CPI-W adjustments may be made annually.
8. Award: If the negotiations are successful, the University will award a Term Contract to selected firms, unless approved with a Determinations and Findings (D&F) by the SVP & CFO.
9. Documentation: Execute the Contract using a Contract Form HECO-3.1. The Notice of Award is also posted on eVA.

10. Subsequent Project Orders: When the University has work to be performed, the University may offer Project Orders to the A/E in accordance with the Term Contract.

5.1.10 Business-to-Government Vendor Registration
When procuring construction, professional services and non-professional services, all potential vendors shall be registered with eVA. Vendors doing business with the University are also required to register in RealSource, VCU’s vendor, procurement, invoice and contracts portal.

5.1.11 Audits
The A/E, by signing the Contract, agrees to retain all books, records, and other documents relative to the Contract for five (5) years after final payment, or until audited by the University, whichever is sooner. The University, its authorized agents, and/or State auditors shall have full access to and the right to examine any of the materials during said period.

5.2 Fees and Payments for A/E Services

5.2.1 Architectural and Engineering Fees
The University’s policy is to compensate A/Es in a fair and reasonable manner for providing the high quality services required by this Manual pursuant to the Governing Rules, the laws of the Commonwealth of Virginia, and the University’s procurement rules. Compensation or fees shall be negotiated based on the scope of work for the particular project, the estimated effort (hours) necessary to accomplish the work, and hourly rates comparable to those earned by other equally competent architects, engineers, technicians, and support personnel in the Commonwealth. This section provides guidance for determining fair and reasonable fees by using a detailed fee proposal describing the services to be provided and showing the estimated hours by discipline and skill level, and the corresponding hourly rates for each.

5.2.2 A/E Fee Proposal Standards and Guidelines
The A/E is expected to be thoroughly familiar with this Manual and the definitions, scope of services, submittal requirements, technical criteria and standards, standard procedures, and standard forms required. These basic requirements, combined with the specific project requirements, are the basis for the fee proposal.

Competitive negotiations for professional services are based on qualifications. However, most often all of the A/E firms selected for interview are fully qualified technically to provide the services required for the project. The ranking of the A/E firms is based on other factors such as recent experience on a similar project, A/E workload and perceived ability to meet the schedule, and similar factors. Therefore, the top ranked firm is considered "fully qualified technically and best suited" for the work. With this in mind, the intention is to negotiate hourly rates and fees for services which are fair and reasonable to the A/E, the University and the taxpayers of the Commonwealth of Virginia.

5.2.2.1 Plans and Specifications
The A/E should be aware and keep in mind that there are differences between private sector work and University work. Particularly the A/E must conform to the requirements of this Manual and University Procurement for describing and specifying the Work to be performed as part of the construction contract.

5.2.2.2 Personnel Classifications and Hourly Rates
The following shall be used as guidance by the A/E in developing its fee proposal, and by the University in evaluating the proposal and negotiating the fees for services. The A/E shall use the HECO-2.3 form to prepare its fee proposal.

A/E Project Technical Personnel
Technical personnel shall be construed to mean the A/E’s Project Manager, architects (licensed), engineers (licensed) by discipline, designers including nonlicensed architects and engineers, project inspector, surveyor, survey team, interior designer, landscape architect, drafters or CADD operators, estimator, specifications writer, typist/clerical staff and field inspectors.
"Principals," "Partners," "Associates," "CEO" and similar titles are generally considered by the Commonwealth to be administrative and/or management functions whose costs have been included in the overhead markup of the rates for technical categories.

Technical activities which are performed by principals, etc., are categorized for fee negotiations, for change orders, and for hourly rate payment at the rates indicated for the technical activity or function that the Principal, etc., may be performing, not at a higher “Principal” rate. See the descriptions of Personnel Classifications below.

Hourly Rates
The hourly rates proposed for the various classifications, categories, disciplines, and skill levels should be comparable to the average actual salary of qualified and competent persons in that skill level as marked up or adjusted for overheads and profit. Overhead markup consists of direct technical salary overhead (or "fringes") such as payroll taxes and insurances, paid time off, health insurance premiums, and other benefits, and of general office overhead such as administrative salaries, rent, utilities, business and liability insurances, telephone, equipment rental and depreciation, travel, promotion, etc. Hourly rates shall be the "marked-up" rates, including all overheads and profit.

General review, negotiations, supervision and such by the principals or other senior personnel are usually considered part of the general office overhead expense included in the hourly rates, or the activity is part of the "project management" function.

The University shall have the right to require the A/E to submit documentation to support the proposed hourly rates with mark-up factors proposed for use in the fee negotiations and fee determination when the proposed hourly rates exceed what the University considers the market rate for the area. The average hourly rates by classification, including markups which are negotiated and accepted in fee negotiations, shall be recorded and listed in the MOU, which is attached to and incorporated into the A/E contract.

A/E accounting methods and procedures for determining overhead and "marked-up" hourly rates often vary. For instance, policies on vacation, sick leave, holidays and employer contributions to insurance vary from A/E to A/E. Methods of tracking hours and expenses vary depending on whether the A/E is determining its overhead rates or the profitability of each project. The procedures presented herein use the "tax return" approach where general materials, supplies, depreciation of computers and software, insurances, and such, are treated as general office overhead expenses.

The negotiated rates shall be comparable to those of similarly experienced and qualified personnel in those classifications in Virginia firms providing similar services.

Technical Personnel Classifications
The following personnel classifications, categories, disciplines and skill levels descriptions are recognized as those directly involved with the coordination, planning, quality control and delivery of the A/E services required for the project:

A/E Project Manager/Coordinator: An experienced and licensed A/E who has overall responsibility for the planning, design, coordination of all disciplines, quality assurance and delivery of the A/E services to the University.

Note: A Principal of the A/E firm may perform this function, especially in a small firm. In larger firms a Principal, Associate or similarly "titled" person of the A/E firm may be assigned this responsibility. Regardless of title, the function is the same and the marked-up rate should be comparable to Project Managers of other firms in Virginia.

Architect (Professional): A licensed architect who has the knowledge, skills and experience to perform all architectural services required for the project and who is qualified to be in "responsible charge" of the architectural aspects of the project.
Cost Estimator: Skills required include knowledge of building systems and components, the ability to read plans and specifications, the ability to make quantity takeoffs and apply pricing, the ability to obtain pricing information from reliable sources and adjust/apply such information to the specific project conditions, and the ability to present a cost estimate with proper back-up documentation.

Drafters/Interns: The skills required of this level position include drafting plans, sections and details to scale from sketches and data; modifying typical sections and details to be project/situation specific; and other miscellaneous duties supporting the preparation of contract documents.

Note: Depending on the personnel, organization and operation standards of the A/E, Designers (Architects and Engineers), Drafters, or both may be required to use CADD or have CADD skills.

Designer (Architects and Engineers): Architects and/or engineers who by education, practical experience or a combination of education and experience have the knowledge and skills to perform analyses, calculations, and/or detailing for portions of a project in a particular discipline. This level person usually has either a degree and is gaining experience to become certified/licensed/registered or has many years of experience in layouts, detailing and/or calculations, and works under the supervision of a licensed professional.

Engineers - Structural, Mechanical, Electrical, Civil (Professional): A licensed professional engineer who has the knowledge, skills and experience to perform the analyses and design, to prepare the documents for the particular discipline and to be "in responsible charge" of that discipline.

Landscape Architect: A licensed landscape architect who has the knowledge, skills and experience to provide the design and documents for the site landscaping for the project.

Interior Design: A certified interior designer who has the knowledge, skills and experience to provide the interior design services and documents for the project.

Note: The layout of spaces, selection of finishes, and similar functions are Basic Services whether the A/E uses an Architect or an Interior Designer. “Additional Service of an Interior Designer” for Fee calculations/negotiations on state work relate to furnishings and accessories which are not part of the construction contract and are further explained in Section 5.2.2.6 below.

Specification/Report Writer: A professional level A/E skilled in writing technical specifications for building and site related systems, equipment and components. The Writer shall also be skilled in preparing contract documents and understand the basic legal requirements and applications thereof.

Typist/Clerical: Skills required include knowledge of the terms and procedures of the design and construction process and a proficiency in the use of word processing and spreadsheet applications used in the production of specifications, reports and associated typing and clerical functions.

5.2.2.3 Additional Services
The HECO-3a, describes the Basic Services required of the A/E, as well as the responsibilities of the University and typical Additional Services that the University requests the A/E to perform.

The A/E and University will normally determine the additional services (i.e., services in addition to the "Basic Services" identified in this Manual) required of the A/E prior to or during contract negotiation and negotiate the fees for such services at the same time as the Basic Services fee negotiation. The additional services to be provided by the A/E and the compensation for such shall be set out in the Contract or the MOU. Once the contract is signed, any extra services required will be a change in scope and shall be authorized in writing by Change Order using Form HECO-11ae.

5.2.2.4 Special Consultants
The University may require the use of a special consultant with a particular expertise related to some
Consultants engaged by the A/E to provide the required A/E services are considered by the University to be part of the A/E’s staffing for the project. This includes, but is not limited to, architectural, mechanical/electrical/plumbing, structural engineering, civil engineering, interior design, landscape design, sustainability consultants, geotechnical analysis, site survey, building code consulting, schedule analysis, cost estimating and hazardous material surveys.

5.2.2.5 Reimbursable Expenses
The A/E shall submit invoices for reimbursable expenses within 60 days of incurring the expense, including all actual receipts.

1. The costs of long distance phone calls, postage and similar expenses incurred by the A/E in the performance of the Contract are considered by the Commonwealth to be a part of the A/E’s overhead expenses and are not normally reimbursable.

2. The University shall reimburse the A/E for the reproduction of drawings, specifications, and other documents required for initial schematic, preliminary, working drawing and Bid Set submittals in accordance with the policy in Chapter 5 at the actual costs plus 10% markup for handling. If re-submittals are required to correct deficiencies and/or complete the documents for submittal, the cost of reproduction for these submittals shall be borne by the A/E unless waived by the University.

3. The University shall reimburse the A/E for the actual costs of overnight or second day shipping of submittals and/or shop drawings when such method of shipping is directed by the University. The University shall establish a budget amount for such reimbursements, and include same in the Contract amount and as a line item in the MOU breakdown of the fee.

4. Compensation for travel and living expenses associated with the performance of the project scope of work will be included in the fee negotiated and set out in the MOU as a lump sum amount for travel and/or subsistence for each particular facet of the work where travel compensation is proposed by the A/E.

5. The A/E may be reimbursed for travel and living expenses of technical personnel while traveling in the discharge of duties in connection with extra services authorized by the University. The travel rates and the per diem rates for lodging and subsistence shall not exceed the maximum amounts allowable for such expenses in the University’s travel rules and allowable cost policy. Records requests for reimbursement shall be subject to audit by the University and/or the State Auditor.

6. Each item/account planned for reimbursement should have a “budget” amount established and included in the Contract with the condition that payment for these items will be subject to proper authorization and documentation. Further, the Contract Amount will be adjusted upward or downward by Change Order, as appropriate, based on the actual amounts approved for reimbursement.

7. The University will incur the cost of the DEB’s first schematic submittal review, the first preliminary submittal review, the first working drawing review and the review of the one corrected and highlighted bid set of documents. If additional submittals and reviews are required, the University may require the A/E to reimburse the University (by Change Order to the A/E contract or otherwise) for the actual costs of such additional review unless the A/E can submit justification satisfactory to the University demonstrating why the A/E should not be held accountable/responsible for such costs.

5.2.2.6 Interior Design
The A/E’s basic architectural services includes sizing of spaces for the intended function, providing diagrammatic furniture layouts to the client to confirm functional layouts, and the selection and specification of building fixtures and finishes which are necessary to provide a complete and useable facility and/or which are included in the construction contract.

The University’s statement of needs and expectations for interior design services is included in Appendix N.

5.2.3 A/E Fee Proposal Worksheet (HECO-2.3)
The A/E shall prepare a detailed fee proposal using the Form HECO-2.3. The hourly rates and the hours proposed should relate to the rates and times required for a qualified and competent person in that skill level to
perform the work. Supplemental information shall be attached as necessary to support the proposed drawings, hourly rates and hour estimates. Guides for the use of the form are as follows:

- Disciplines/Classifications commonly used are indicated on the form. Additional classifications may be listed.
- Hourly rates shall be the average for those persons in that skill level/discipline/classification. NOTE: It is generally perceived that a person being compensated at a rate higher than market value would be more efficient/productive/take fewer hours than a person being compensated at a rate below the market.
- Indicate the drawing size and proposed/estimated number of sheets for each discipline. Attach a proposed or estimated list of drawings.
- Bid Assistance service includes the effort of the Professional to conduct the Pre-Bid Conference, assist in opening Bids, and evaluate the bids/bidders for responsiveness and responsibility. It also includes the clerical level effort to receive document deposits, issue bid documents, receive/review returned bid documents and return deposits/issue refunds.
- Shop Drawing Review includes the professional/technical level effort to review shop drawings and other submittals. To determine, Enter the Estimated (proposed) number of hours for each discipline/skill level and multiply times the Hourly Rate to yield the Estimate Cost.
- CADD line is for drafting/intern hours to produce a drafted basic plan for each level, wing or area to use as a base sheet for the various disciplines. The hours to produce the individual sheets for each discipline, should be shown for the applicable discipline.
- Spec/Report Writer effort includes the mark up and edit of standard and/or master specification sections and writing any required special sections.
- Typist effort includes typing new specification sections and editing masters in a word processing program.
- Cost Estimate effort includes the takeoff of quantities and the application of prices to produce the Cost Estimate in the required format.
- Compliance and conformance with the requirements of the Contract Documents and the markup/approval of same. It also includes the clerical level effort to log submittals in and out, to copy markups from the reviewer's master review set to the copies being returned to the Contractor and others, and the distribution of same.
- Record Drawing Preparation includes the efforts of a Drafting level person to transfer data from the Contractor's "As Built" set of drawings and specs to the "Record Copy" reproducibles. This work also includes the Professional/Technical Level effort to compare the "As-Builts" to the "Record Copy" for correctness.
- Construction Observation and Administration includes the Professional/Technical level effort to perform the onsite inspections/observations, job meetings, payment request evaluations and administrative functions required by the contract and the Clerical level effort to type minutes of meetings and similar functions.
- The Additional Services portion of the Worksheet is generally self-explanatory for the items listed. If those items are proposed to be provided by outside consultants/subcontractors (excludes architectural, structural, mechanical, and electrical disciplines which are considered the A/E), the subcontract negotiated amount may be marked up 10% by the A/E for A/E overhead and profit. In-house additional services should be computed using the estimated hours and marked up hourly rates similar to the Basic Services Fee Proposal.

5.2.4 Proportioning of the A/E Fees and Payments
Payments to the A/E for Design Phase and Construction Phase Services shall be based on the negotiated fee amount as proportioned for each phase of the project. This is not applicable to Design-Build delivery methods. The amount approved for progress payments shall be based on the University’s judgment of the proportion of the work on that phase or facet which has been completed versus the work required/value of that phase or facet. The A/E fee shall be proportioned for each phase or facet of the work and shown in the A/E Contract or in the MOU.

The proportioning of the fee shall account for and show the negotiated amount for the following phases or facets of work:

- Pre-design services (Additional Services such as studies and similar activities)
- Design Phase services include
  - Schematic phase
- Preliminary phase
- Working drawing phase

• Bidding phase services
• Construction phase services include
  - Shop drawing/submittal reviews and administration
  - Site visits, inspections and administration
• Project closeout
  - Maintenance & Operations Manuals
  - Record Drawings
• Budgeted Reimbursable Amounts
• Additional services (itemize)

In addition to the proportional amount due for Design Phase or Construction Phase Services, the A/E shall be entitled to payment for authorized additional services performed and for authorized reimbursable costs incurred during the period.

Where the University contracts with the A/E for less than or more than the basic services indicated for the various phases, the proportioning of the fee may be adjusted accordingly and shown in the MOU.

Where a detailed breakdown of the A/E fee is not provided in the CO-2.3 Fee Proposal Worksheet used for negotiations, the total negotiated A/E fee (excluding additional services and reimbursables) will be proportioned as follows:

Design Phase Services = 75% of Total Fee
Construction Phase Services = 25% of Total Fee

In consideration of the services required by this Manual, the proportioning of the A/E fee for progress payments during the various parts of the Design Phase and the Construction Phase will be as follows:

### Design Phase Services
1. **Schematic Design Phase**: Value of the Schematic Phase is 20% of the Design Phase Fee. This phase is complete when outstanding issues are resolved, the schematics are approved, and the A/E is authorized to prepare Preliminaries.
2. **Preliminary Plans and Specifications (Design Development Phase)**: Value of the Preliminary Phase is 30% of the Design Phase Fee. However, a proportional part may be billed monthly during the development of the documents. This phase is complete when outstanding issues are resolved, the preliminaries are approved as evidenced by completion of the conditions shown, and the A/E is authorized to prepare Working Drawings.
3. **Working Drawings and Specifications (Construction Documents Phase)**: Value of the Working Drawings Phase is 50% of the Design Phase Fee. However, a proportional part may be billed monthly during the development of these documents. This phase is complete when outstanding issues are resolved, all changes have been made to the documents so that they are ready for bidding, and the working drawings and specifications are approved as evidenced by completion of the conditions shown on the HECO-6.
4. **VCU Page Turn**: Full document review with the University shall be considered part of the Basic Services for the preliminary and working drawing phases.

   Note: The University may withhold as retainage an amount not exceeding 5% of the dollar value of progress payments for the Design Phase Fee until the Working Drawings, including all corrections required to resolve review comments, are finally completed and acceptable.

### Construction Phase Services
1. **Bidding Phase**: Value of this 5% (maximum) of the fee amount for Construction Phase Services and is due upon award of the construction contract or rejection of bids (unless the A/E is obligated to redesign at no additional fee). Reimbursement for reproduction expenses for bidding documents shall also be payable.
2. **A/E Construction Period Services**: Value of this phase is 90% of the Construction Phase Services fee amount. This 90% is usually prorated over the total construction period, including the 30 days allowed for
punch list corrections and billed monthly during the construction phase as construction progresses.

3. **Project Closeout Phase:** The remaining 5% of the fee (or sum as stipulated in the Contract or MOU) for Construction Phase Services is allocated to closeout and Record Drawing preparation. It shall be payable when the A/E's services for the project are fully completed and "Record" drawings and specifications are delivered to University, as set forth in Chapter 9.

5.2.4.1 Payments to the A/E
Payments to the A/E shall conform to the requirements in Section 21 of the Terms and Conditions of the A/E Contract, Form HECO-3a. All requests for payment by the A/E shall be submitted on Form HECO-12ae to fmaeinvoices@vcu.edu.

5.2.4.2 Payments by the A/E
Payments by the A/E to its consultants, subcontractors and suppliers shall conform to the requirements in Section 22 of the Terms and Conditions of the A/E Contract, Form HECO-3a.

5.2.5 Determining Charges for Changes in the Scope of Work

5.2.5.1 Changes in the Scope of Services
The University shall notify the A/E in writing when a change in scope or “extra services” is required. The University and A/E shall develop a defined scope for the services and the A/E shall prepare a fee proposal for such work. A lump sum fee will normally be negotiated and agreed on and a written change order (HECO-11ae) issued before the extra work is performed (e.g., changes in the plans or specifications, models, studies, etc.). In such cases, the fee negotiations will be based on the defined scope change or work to be done, the estimated technical personnel time to accomplish the work times the rates listed in the MOU, and any reimbursable expenses authorized.

When the scope cannot be defined to allow a reasonable estimate of time required, the University may authorize the additional work at the hourly rates or unit costs listed in the MOU. In such cases, the University shall establish maximum fee limits, as applicable. Work beyond the maximum fee limit shall require justification and the University's approval prior to proceeding with further additional work.

Note: Many of the revisions or requirements included in a Revision to this Manual are made to reflect changes in the Governing Rules or Code of Virginia or other requirements which must have immediate compliance. Therefore, a revision to this Manual shall be effective on the date stipulated and shall apply to any and all projects for which an approved HECO-6 has not been issued as of the date printed on the revision.

Prior to approval of Preliminaries and issuance of the HECO-5, Revisions to the Manual can generally be incorporated in the A/E's work with little or no additional effort. If the A/E claims that incorporating the Revision into its services requires extra work, the A/E must notify the University of this claim and submit documentation to the University to clearly support such claim within 60 days of the distribution date of the Revision.

If, after the HECO-5 is issued and before the HECO-6 is issued, the A/E determines that including changes resulting from the revision will require additional work on the part of the A/E, then the A/E shall, within 60 days of the distribution date of the revision, provide to the University an itemized list of the additional work required by the revision. The University shall then provide direction to the A/E and, if necessary, issue a Change Order for the work.

The A/E shall assure that the documents submitted for review contain the latest design requirements, the latest editions of forms, and the latest editions of the standard Instructions to Bidders and the General Conditions.

5.2.5.2 Hourly Rates for Changes in Work
The University and the A/E shall at the time of fee negotiations establish and record in the MOU the nominal hourly rates for all technical personnel categories, disciplines and/or skill levels to be used to calculate A/E
fees for extra services or changes in the work. The hourly rates listed shall include all markups and adjustments for taxes, insurances, benefits, overhead, profit, etc. Acceptable categories are indicated in Section 5.2.2.2.

Technical activities by principals, such as Project Manager, Architect, or Engineer, are categorized for payment at the rates indicated for the technical activity or function being performed.

5.2.5.3 Overtime for Changes in Work
No overtime requiring rates higher than regular rates shall be considered for payment for additional services.

5.2.5.4 Invoices for Changes
Invoices or statements of expenses incurred by the A/E for reimbursables and for work authorized to be performed on an hourly rate or unit cost basis shall be submitted to the University monthly. Invoices shall be supported by a certified accounting of the time expended by date, by person, and the skill level of the work being done. (e.g., drafting would be paid for at the “drafting” rate regardless of who does the work – principal, draftsman or trainee.) Statements shall show the cost during that period and indicate the status of the authorized work. The reporting of these costs shall be in such form and detail as required by the University. The A/E’s disbursement and job records shall be subject to audit by the State for work done on a reimbursable and/or hourly or unit cost basis. The University shall notify the A/E of any defect or deficiency in the invoice, including supporting data, within ten (10) days after receipt of same, and payment of approved invoices, or portions thereof, shall be made within 30 days after receipt of the invoice.

5.2.5.5 Audit of A/E’s Records
Any Change Order authorizing work to be performed which does not stipulate a fixed sum amount for the work shall be subject to audit by the University and/or the State Auditor for a period of five (5) years following conclusion of the Contract. Also, any authorization for payment of reimbursable expenses shall be subject to audit by the University and/or the State Auditor for a period of three (3) years following conclusion of the Contract.

5.2.6 Changes to the A/E Contract
Changes in the Scope of Work and/or Cost of the A/E Contract (Form HECO-3 and HECO-3.2) will be documented through the execution of a Form CO-11ae, A/E Contract Change Order. Any A/E contract change order which increases the original contract amount by more than 25% or $50,000, whichever is greater, must have the approval of the AVP of FMD or designee. The first Change Order which causes the cumulative total of Change Orders to exceed $50,000 or 25% of the original Contract Price, whichever is greater, and all subsequent A/E Change Orders which increase the Contract Amount must have the approval of the University President or designee, and the SVP and CFO.

5.2.7 Informal Alternative Dispute Resolution
Pursuant to the Governing Rules and Code of Virginia § 2.2-514, Alternative Dispute Resolution, the University may enter into an agreement with the A/E to submit disputes arising from the performance of this Contract for mediation and other alternative dispute resolution procedures. However, such procedures entered into by the University, the Commonwealth, or any department, institution, division, commission, board or bureau thereof, shall be non-binding and subject to Code of Virginia § 2.2-514 as applicable. In the interest of successful completion of the project, disagreements and disputes should be resolved as soon as possible. To assist in resolving these disputes, the Governing Rules shall apply and the A/E or Contractor may submit a written claim to the AVP of FMD for review.

Upon receiving the written claim, the AVP of FMD will review the written materials relating to the claim and decide to discuss the merits of the claim. If a discussion is to be held, the AVP of FMD will contact the claimant and a mutual agreement for the manner of conducting the discussion will be decided.

The AVP of FMD will mail the decision to the claimant within 15 days after the AVP of FMD's receipt of the claim unless the time is extended. The decision will state the reason for granting or denying the claim.
5.3 Restriction on Promotional Materials by the A/E and Contractor

The design and contract documents for construction on university-owned property are owned by the University. Therefore, use of these work products in advertising or promotional literature, or a statement that the University endorses the work product of an A/E or Contractor is prohibited without the express written permission of the University. Identifying designs or construction as the work product of an A/E or Contractor in client lists, responses to RFPs and in promotional literature through the use of photographs, renderings, drawings (not contract documents) and descriptions of project is permitted after construction is substantially complete.

5.4 Basic Services and Responsibilities

5.4.1 Responsibilities of the University to the A/E

The following information or data shall be provided by the University, if needed, in the planning and design of the project. The information so furnished shall not relieve the AE of its sole responsibility for evaluating the information provided and for notifying the University of any additional information required for the AE to perform its services. In the event the University desires the information to be furnished by the AE, the requirement to provide such information shall be included in the Request for Proposal for Architectural/Engineering Services.

- Written scope of work that will clearly inform the Architect/Engineer of the scope of the project to be designed. The project scope shall not be modified or substantially altered without prior written approval of the Virginia Commonwealth University Board of Visitors.

- The “Design to” cost shall not exceed the construction budget on the approved HECO-2.

- Schedule for pursuing the planning for the project, at the time of employment of the Architect/Engineer. Such a schedule shall allow reasonable times for review of the various phases by review Agencies such as the Code Official (DEB), the State Fire Marshal, the State Art and Architectural Review Board (AARB), The Department of Historic Resources, the University Board of Visitors (BOV), the University Architect, the VCU Architectural Review Committee, the Department of Health, the Division of Soil and Water Conservation, etc. The schedule shall be developed in conjunction with the Architect/Engineer but based on the date determined by the University as to when the project needs to be placed under contract for construction. The schedule, therefore, becomes an integral part of the project planning scope and shall be monitored by all parties concerned for adherence. The University agrees to make every reasonable effort to assist in complying with the schedule.

- Record drawings, if available.

- On a case by case basis, the University may choose to obtain services of a professional cost estimator when the University determines an independent detailed quantitative cost estimate is required. This does not relieve the Architect or Engineer of responsibility for providing the cost estimate required by the Architectural or Engineering contract.

- The University shall provide guidance on any specific requirements of political subdivisions appropriate and consistent with State policy, opinions of the Attorney General, and existing statutes.

- Unless negotiated otherwise, pay the invoice cost of all sets of plans and specifications for schematic, preliminary and contract document submittals. The A/E will bear the cost of any required re-submittals resulting from reviews.

- Unless negotiated otherwise, pay the cost of services in the preparation or presentation of any submittals to secure approvals for environmental or other applicable special requirements including water, air and noise pollution provisions or local, State or Federal Agencies, to include environmental impact reports. These extra services are apart from those normally required by the Project Committee, the University Architect, State Fire Marshal, the Code Official (DEB), State Art and Architectural Review Board (AARB),
5.4.2 Quality of Work
The A/E shall be responsible for the professional services, including the technical accuracy and coordination of all designs, drawings, specifications, cost estimates, and other work or materials provided. The project documents submitted by the A/E shall represent a reasonable, code compliant, and acceptable architectural and/or engineering solution based on the scope of work, “design-not-to exceed” budget limitations and other constraints of the A/E’s contract. All work must be in accordance with current criteria, guides, and specifications set forth in this Manual, and shall conform to good architectural and engineering practices. Workmanship shall be neat with all lines and lettering of uniform weight and clarity for complete legibility and satisfactory reproduction. All elements of the A/E’s submittals shall be checked by professional personnel trained in that specific discipline. The University will review the design and specific submittals during the evolution of the project for acceptance. The A/E’s submittal will be reviewed by DEB for compliance with VUSBC. Incorporating VE Recommendations justified on payback and changes in functional layout to achieve greater efficiency or cost savings are within the scope of the Contract. Changes or modifications required to conform to code requirements are within the scope of the A/E Contract.

If the A/E or the University determines that a meeting with DEB is necessary or would be beneficial to discuss or review the A/E’s approach to designing the project, the A/E shall request such a meeting, and the VCU Project Manager shall schedule it.

5.4.3 Basic Services of the A/E

5.4.3.1 General
The Basic Services normally provided by the A/E consist of the phases described below. The A/E firm must restrict itself to the authorized scope of work provided as a basis for negotiation of fee. Deviations from the authorized scope include incorporating embellishments that increase the cost above programmed amounts for the project; increases in area; major changes in construction criteria; the inclusion of unauthorized buildings or areas; selections of specific systems or equipment without economic or technical evaluation; or introduction of special equipment is prohibited.

The A/E shall adhere to the design policies outlined in the VCU Design & Construction Standards for Project Design.

It is the A/E’s contractual responsibility to design a facility which can be constructed within the funds available and which is in conformance with applicable codes and the technical criteria included and/or referenced in this Manual.

During the progress of the work, the A/E may expect minor changes in criteria within the general scope of the project and should make necessary adjustments accordingly. Generally, the preliminary (35%) design submittal is intended to clarify and establish specified requirements of the project. Incorporation of Value Engineering (V/E) comments of minor consequence or changes justified on payback, and changes in functional layout occurring during review are considered within scope of the Contract. Changes or modifications required to conform to Code requirements are also considered to be within the scope of the Contract. Should significant changes in the scope of work be authorized, appropriate modifications to the A/E contract will be negotiated.

5.4.4 Special Consultants
The University may require the use of consultants with a particular expertise related to special features of the project. The A/E shall engage such a consultant, subject to the University’s approval, and incorporate such work into the project.
5.4.5 Meeting Notes
Provide meeting notes in writing for all meetings, direction, guidance, clarification, site visit observations, field orders, etc., documenting significant items of discussion and/or agreement. These meeting notes shall be sent to those parties relevant to the issues, and structured to include all pertinent information. A/E's must also provide a proposed meeting agenda prior to each meeting. Minimum project meetings include pre-design, design, procurement, preconstruction and construction meetings.

5.4.6 Project Initiation Phase: Study/Scope/Schematic

(1) Consult with the University to define, clarify and refine the University’s requirements for the Project; review available data; confirm the scope of the Project and the services required from the A/E; review the “Design-not-to-exceed” Budget; establish the quality of materials, aesthetics desired and other factors pertinent to the Project. Some or all of this information should be contained in the Capital Project Request. As directed by the University, consultations shall include the user of the facility and the staff responsible for the maintenance of the facility in the Project discussions and development of the Project criteria and in the review of the A/E’s schemes for satisfying the Project criteria.

(2) Identify and analyze requirements of University’s authorities having jurisdiction to approve the design of the Project and participate in consultations with such authorities.

(3) The A/E shall not rely totally on information contained in the “as-built” documents. As part of the required services, it is the A/E’s responsibility to verify, by on-site observations of applicable existing buildings, the configurations, locations, dimensions, sizes and conditions accessible for verification. Certain assumptions are made regarding existing conditions in the remodeling and or rehabilitation of an existing building. Some of these assumptions may not be verifiable without additional exploration or investigation of the building or site. To minimize the risk during construction of uncovering conditions that are not as shown on the documents and delaying Project progress, the University should consider and evaluate the advice of the A/E to conduct additional investigation, verifications, or checks to verify assumptions.

(4) Analyze the University’s spatial and functional requirements, its required and preferred space adjacencies, its planning surveys, its site evaluations, and its comparative studies of prospective sites; provide alternative schemes or solutions for review, approval and/or selection by the University.

(5) Prior to preparing the Schematic Submittal, submit floor plan and elevation schemes to the University, and describe how the schemes relate to the space, function, and adjacency requirements in the Project criteria.

(6) Provide a general economic analysis of University’s requirements applicable to various alternatives.

(7) Prepare a budget systems cost estimate for the building systems proposed.

(8) Prepare and submit Schematic material for this phase as described in the Manual.

(9) Prepare presentation for the AARB for new construction and for exterior renovations, alterations and rehabilitations of existing buildings; make presentations as necessary to obtain recommendations for approval.

(10) Prepare materials for presentation to the DHR for supportive recommendation on Projects involving interior renovation, rehabilitation and/or remodeling of existing buildings and for exterior renovations of existing building.

(11) Prepare data and pictures of buildings proposed for demolition and assist the University in obtaining approval recommendations from AARB and DHR.

(12) Prepare and distribute minutes of Project meetings or telephonic discussions, agreements and direction given or received.
5.4.7 Preliminary Design Phase: Design Development, 35% Submission
After written authorization to proceed with the Preliminary Design Phase, A/E shall take the following actions:

(1) In consultation with University and based on the accepted study and/or submittal documents and review comments, determine the scope, extent, and character of the Project. As directed by the University, the consultations shall include review and input from the user of the facility and the staff responsible for the maintenance and operation of the facility in the discussions at this phase.

(2) Advise University if additional data or services are necessary and assist University in obtaining such data or services.

(3) Coordinate with and obtain approval of the utility designs from the local utilities agencies for connection and service. The A/E shall coordinate with local Fire Service entity for locations of onsite hydrants and Fire Department Connections.

(4) Coordinate with and shall obtain approval of the entrance design and any required turn lanes or transitions from the City of Richmond or AHJ Traffic Engineer for entrances to the project site.

(5) Prepare and submit preliminary design documents, calculations, and life cycle cost and energy analyses as described in the Manual for this phase.

(6) Prepare furnishing and equipment information floor plans that depict the proposed layout and demonstrate that the required items will fit functionally and space-wise in the rooms.

(7) Prepare and make presentations to the AARB and DHR as may be required for recommendations for approval.

(8) Prepare and submit a complete systems cost estimate with appropriate backup data.

(9) Prepare and submit to the University written responses to all reviewing University’s comments and, if applicable, provide the technical data the University may need to substantiate any waiver request required.

(10) Resolve all outstanding issues, comments from reviewers, and value engineering recommendations (“VE Recommendations”) before proceeding with the Working Drawings Phase.

(11) Prepare and distribute minutes of Project meetings or telephonic discussions summarizing discussions, agreements and direction given or received. The A/E shall provide the preliminary submittal to the University, for distribution to the user of the facility and staff responsible for its maintenance and operation. This review is to assure that the spatial, functional, and operational requirements have been satisfied. All outstanding issues must be resolved and agreement reached on how to proceed before the A/E is authorized to prepare the Working Drawings. Changes made after authorization to proceed with Working Drawings may subject the University to a claim by the A/E for a change in scope or extra services.

5.4.8 Working Drawing Phase: Contract Documents, 100% Submission
After written authorization to proceed with the bidding documents, A/E shall:

(1) On the basis of the accepted Preliminary Design documents, the accepted VE Recommendations, and the review comments as finally resolved, prepare final drawings (hereinafter called “Plans”) to be included in the Contract Documents showing the complete scope, extent, and character of the Work to be furnished and performed by Contractor(s). Also prepare Specifications for inclusion in the Contract Documents that conform to the recognized format of the Construction Specifications Institute. Specify all finishes and provide color selections of all materials and finishes included in the Construction Contract.

(2) Provide technical criteria, written descriptions, and design data for the University’s use in filing applications for permits with or obtaining approvals from such governmental authorities as have jurisdiction to approve the design of the Project, and assist the University in consultations with appropriate
(3) Advise the University of potential cost overruns, the necessity for unit pricing of any Work, and the necessity for additive bid items, and assist in preparing and documenting any requests or submittals required.

(4) Prepare soil and erosion control plans and stormwater management plans for the University to submit to appropriate agencies for approval.

(5) Prepare/update a detailed systems cost estimate with back-up data and submit with working drawing submittal.

(6) Provide recommendation on number of days estimated for substantial completion of the construction of the Project.

(7) Prepare and submit completed Plans and Specifications and other documents in accordance with the requirements.

(8) Make any revisions necessary to the Plans and Specifications so that they incorporate resolution and/or correction of all deficiencies identified during review, and submit a written response to all review comments to DEB/AHJ prior to issuing the Bid Documents.

(9) Assist the University in evaluating Contractor and/or Subcontractor prequalification data if bidders/firms are prequalified for the Project.

(10) Prepare and distribute minutes of Project meetings or telephonic discussions summarizing discussions, agreements and direction given or received.

5.4.9 Bidding Phase
After University’s written authorization to proceed with the Bidding Phase, the A/E shall take the following actions, unless deleted by the Construction Contract, MOU, or A/E Change Order:

(1) Print a sufficient number of Bid Document sets. If the University’s Project Manager approves the issuance of electronic Bid Documents in lieu of paper drawings and specifications, it is the A/E’s responsibility to provide electronic Bid Documents in a read-only format which are readily usable by the University and by all bidders. If Bid Documents are distributed electronically by requiring prospective bidders to download documents via file transfer, no deposit shall be charged for this service by the A/E. If the Bid Documents are distributed via removable electronic media (e.g., DVDs, flash drives, etc.), the deposit shall be minimized to cover direct costs of media, and shipping and handling only.

(2) Assist the University in advertising for and obtaining bid proposals for each separate prime contract, whether for construction, materials, equipment or services. Where applicable, issue Bid Documents, maintain a record of prospective bidders to whom the Bid Documents have been issued, attend pre-bid conferences, and receive and process deposits for Bid Documents.

(3) Issue addenda, as appropriate, to interpret, clarify, or define the requirements of the Bid Documents. Each Addendum must show the 11-digit Project Code and Project Title and shall bear the A/E seal, signature, and date. All addenda shall be approved by the University prior to issuance.

(4) Consult with and advise University as to the acceptability of Subcontractors, Suppliers, other persons or organizations proposed by the low bidder when such acceptability is required by the Bid Documents.

(5) Requirements for pre-approval of materials proposed by bidders/Suppliers are not allowed to be specified. Substitutions are not allowed during the bidding process. The General Conditions give specific procedures for considering substitutions after the contract for construction is awarded. If the A/E determines that other materials are acceptable during the Bid Period, then the A/E shall issue an Addendum to modify the
Specifications and any material that meets the Specifications as modified may be provided (but “alternate bid items” are not permitted).

(6) When the lowest responsive and responsible bid exceeds the budgeted Project cost, A/E shall assist the University in negotiating with the low bidder, if applicable, and/or modify the Bid Documents, as appropriate, and assist the University in reissuing the Bid. If the University is allowed to negotiate with the low bidder to obtain a price acceptable for award of a contract, the A/E shall also prepare the modifications to the drawings, details, and specifications to document the changes made to the Contract Documents.

(7) Consult with University on the acceptability of any substitute materials and equipment proposed by the low bidder when the University is authorized to negotiate with the low bidder. The acceptability of a substitute material, equipment, or Work must be documented on the HECO-9b, Bid Modification.

(8) Receive and inspect Bid Documents returned; issue refunds to bidders, as appropriate.

5.4.10 Construction Phase Services Required to be Performed by the A/E

Submittal Review and Construction Administration Services

The following services are described in the Manual and in General Conditions, Section 15 (a) through (h). They shall be provided by the A/E as part of Basic Services and shall not be delegated to others unless such delegation has been specifically approved in writing by the University Project Manager:

(1) Consultations. A/E shall consult with and advise the University on all technical matters and act as the University’s representative in dealing with the Contractor on all such matters. The University’s instructions to Contractor(s) will be issued through the A/E, who has authority to act on behalf of University to the extent provided in the General Conditions except as otherwise provided in writing.

(2) Interpretations and Clarifications. The A/E shall issue all necessary interpretations and clarifications of the Contract Documents and in connection therewith prepare any necessary Field Orders and Construction Change Orders.

(3) Field and Construction Change Orders. Issue Field Orders and assist the University in preparing and issuing Construction Change Orders. Where the University has obtained approval to modify the A/E Contract to reduce the A/E’s Construction Phase services, the following shall apply:

a. Any matters of a technical nature which affect the integrity of the exterior architectural, structural or fire safety systems or which affect the integrity or operation of the mechanical, plumbing, or electrical systems shall be validated by the A/E before a Field Order or Construction Change Order is issued. Since technical matters constitute a change to the approved building permit documents, submittal to DEB/AHJ for review is required.

b. Field Orders on non-technical matters such as landscaping, finishes, colors, and similar items which do not affect the exterior architectural appearance or the structural, fire safety, mechanical, or electrical system integrity may be handled by a qualified licensed professional from the University staff or by a licensed professional of the separate contractor engaged to provide such services.

c. The A/E shall notify the Owner before issuing a Field Order for Work that may impact code compliance and submit such documents as necessary for review by DEB/AHJ.

(4) Shop Drawings. The A/E shall review and approve (with or without conditions), reject or take other appropriate action on Shop Drawings and other submittals required of the Contractor. The A/E shall review for conformance with the Project design concept and compliance with the information given in the Contract Documents. Such reviews and approvals or other action shall not extend to means, methods, techniques, sequences or construction procedures or safety precautions and programs incident thereto. See HECO -7, General Conditions, Section 24.

(5) Equals. The A/E shall evaluate and determine the acceptability of any equal materials or equipment
(6) Structural and Special Inspections. The A/E shall provide the services described in this Manual relating to proper installation of structural systems on the Project, including the review of applicable inspection and test reports by the University’s testing and inspection entity.

(7) Disputes between University and Contractor. The A/E shall act as initial interpreter of the requirements of the Contract Documents, judge the acceptability of the Work thereunder, and make recommendations to the University on all Contractor claims relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the execution and progress of the Work. The A/E is not authorized to alter or waive the requirements of the Contract Documents. The University shall have the final authority on disputes brought by the Contractor.

5.4.11 Construction Visits, Inspection, and Closeout Services to be Performed by the A/E or by the University Project Management and Inspection Entity

The following construction period services described in the Manual and in the HECO-7 General Conditions shall also be provided by the A/E as part of its Basic Services unless specifically deleted in the A/E Contract or its MOU and delegated by the University to its Project Inspector or separate Construction Administrator entities. Note: When the service(s) has been delegated to other than the A/E, the description below applies to the person or entity to which it has been delegated.

(1) Visits to Site and Observation of Construction. An A/E representative who is knowledgeable of the Project and competent in each discipline which has trade activities and stages of construction being performed shall visit the Site at intervals no less frequently than once per month to observe as an experienced and qualified design professional the progress and quality of the various aspects of the Contractor’s Work. Based on information obtained during such visits and on such observations, the A/E shall endeavor to determine whether such Work is proceeding in accordance with the Contract Documents and shall keep the University informed of the general progress of the Work in relation to the overall schedule. The A/E shall document all Site visits in writing.

(2) Inspections of Work in progress by the A/E. During its periodic visits to the Site to observe the Work in progress, the A/E (accompanied by the Project Inspector) shall, (a) as a minimum, spot check the Work installed and the Work in progress to determine compliance with the requirements of the Contract Documents and the codes and installation/workmanship standards listed therein (e.g. clearances and lap lengths for reinforcing bars per ACI; duct construction and installation conforming to SMACNA; pipe support terminals conforming to Code; wiring installation, anchorage and terminations conforming to NEC; and such); and (b) document its observations in writing (the “A/E’s Inspection Report”). Defective and noncompliant Work shall be noted in the A/E’s Inspection Report and pointed out to the Project Inspector and Contractor. The A/E shall identify for the Project Inspector any specific checks or inspections to be made. The results of these inspections shall be made a part of the Project Inspector’s Daily Report.

(3) DEB Interim Inspections. The A/E’s licensed professional architect, mechanical engineer, and electrical engineer shall be present at all DEB interim inspections unless absent on an express written waiver by the University. The results of these inspections shall be made a part of the Project Inspector’s Daily Report. The A/E shall document the inspection in writing.

(4) Supplemental Inspections and Tests. For Work not in compliance with the Contract Documents, the A/E shall, with the University’s approval, require additional or supplemental inspection or testing. The A/E shall receive and review all certificates of inspections, tests, and approvals required by laws, rules, regulations, ordinances, codes, orders, or the Contract Documents and shall determine whether their content complies with the requirements of each. The A/E shall also determine whether the results certified indicate compliance with the Contract Documents. The A/E shall document the inspection in writing.

(5) Defective Work. During its monthly Site visits and based on its observation during such visits, the A/E may disapprove or reject Work, or any portion thereof, while the Work is in progress if A/E believes that such Work does not conform to the Contract Documents, including the approved shop drawings or other
submittals (the “Defective Work”). The A/E may also recommend that the University reject any Work which it believes will not result in a completed Project that conforms generally to the Contract Documents or that it believes will prejudice the integrity of the design as reflected in the Contract Documents. The A/E shall document the Defective Work in writing.

(6) Contractor Applications for Payment (HECO-12). Based on the A/E’s on-Site observations as an experienced and qualified design professional, information provided by the University’s Project Inspector and review of applications for payment and the accompanying data and schedules, the A/E shall determine the amounts due to Contractor(s) and recommend in writing payments to the Contractor(s). Such recommendations will constitute a representation to University, based on such observations and review, that the Work has progressed to the point indicated and that to the best of the A/E’s present knowledge, information and belief, the quality of such Work is generally in accordance with the Contract Documents (subject to an evaluation of such Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents and any other qualifications stated in the recommendation). In the case of unit price Work, the A/E’s recommendations for payment will include final determinations of quantities and classifications of such Work subject to any subsequent adjustments allowed by the Contract Documents and approved by DEB/AHJ.

(7) Substantial Completion Inspection. Prior to scheduling a Substantial Completion inspection, the A/E shall verify that the Project is, in fact, ready for such an inspection as described in the Manual. The A/E shall document all Defective Work in writing. Then, at a minimum, the A/E’s licensed professional architect, mechanical engineer, and electrical engineer shall be present at the Substantial Completion inspection unless absent on an express written waiver by the University. The A/E shall document the Substantial Completion inspection in writing and provide the written results to the University and Contractor.

(8) Final Completion Inspection. The A/E shall conduct a final inspection to determine if the completed Work is acceptable. The A/E shall notify the University in time to allow University and DEB/AHJ representatives to participate in the inspections. If the final completion inspection is successful, the A/E may recommend, in writing, final payment to Contractor(s) and give written notice to the University and the Contractor(s) that the Work is acceptable. The A/E may, however, accept some portions of the Work and reject others or may accept some or all of the Work subject to certain conditions. The A/E shall document the results of its final completion inspection in writing and provide the written results to the University and Contractor.

(9) Contractor’s Completion Documents. The A/E shall receive and review maintenance and operating instructions, schedules, guarantees, bonds, and certificates of inspection, tests and approvals which are to be assembled by Contractor(s) in accordance with the Contract Documents and shall transmit them to the University with written comments. The A/E shall receive the as-built drawing mark-ups required from the Contractor, prepare the Record Drawings of the Work, and submit the data to the Owner. The A/E shall submit Record Drawings to the Owner electronically in PDF format and in any other format(s) required by the Owner (e.g., BIM, electrostatic paper copies, microfilm, etc.).

(10) Project Closeout. A/E shall provide Project closeout services as outlined in CPSM Chapter 7.

(11) Other: The A/E shall perform all duties described in or reasonably implied by CPSM Chapter 7; the Construction Contract (including the Plans and Specifications); and the General Conditions.

5.4.12 Extra Services

The following services are not considered to be included in the A/E’s Basic Services. If any of these services are included in the A/E’s Contract as Additional Services, they shall be set out separately with the associated negotiated fees and included in the Total Contract Amount. If requested in writing after negotiation of the A/E Contract, they shall constitute Extra Services as described in this Manual and shall be negotiated and authorized by A/E Change Order to the A/E Contract.

- When, after approval of any stage of the design, it is determined that a substantial change in the overall scheme is advisable, and such change is ordered by the University, the fixed-fee amount for the Extra Services shall be agreed upon and added to the A/E Contract by A/E Change Order.
• When the A/E is directed to prepare applications and supporting documents for Federal government grants, loans, or advances, the fixed-fee amount for those services shall be agreed upon and included in the A/E Contract as Additional Services or added to the A/E Contract by A/E Change Order.

• When the University authorizes or directs the A/E to provide information or data which is normally the University’s responsibility, as described in this Manual, the fixed-fee amount for those services shall be agreed upon and included in the initial contract as Additional Services or added to the A/E Contract by A/E Change Order.

• When the University requests changes to drawings and specifications after the Work is under construction, the fixed-fee amount for those A/E services shall be agreed upon and added to the A/E Contract by A/E Change Order.

• When delinquency, insolvency, or failure of the Contractor to perform the Work requires extraordinary demands on the time of the A/E and the A/E has not contributed to such delays, the University may consider compensating the A/E for some portion of the time where documented and justified.

• When extra A/E services are required as a result of damage by fire, unforeseen structural conditions, or other causes beyond the control of the A/E, the fixed-fee amount for those services shall be agreed upon and added to the A/E Contract by A/E Change Order.

• When the Substantial Completion of construction is delayed beyond the Contract Completion Date for more than 30 days by the Contractor or the University and through no fault of the A/E, the A/E may be entitled to additional compensation for authorized additional periodic Site visits/inspections necessitated by the delay. Requests for such compensation shall include documentation naming the person(s) making the additional visit, date(s), time(s), etc. as may be required by the University.

• When unforeseen conditions require special or continuous on-Site services for an approved period of time, such special or continuous on-Site services must be requested and approved in writing by the University in advance.

• When the A/E is directed to prepare, document, and submit an environmental impact study or report, the fixed-fee amount for those services shall be agreed upon and included in the A/E Contract as Additional Services or added to the A/E Contract by A/E Change Order.

• When the A/E is directed to perform interior design services to include assisting in the selection, specification, and procurement of furniture and furnishings that are not a part of the A/E’s Basic Services as described above, the fixed-fee amount for those services shall be agreed upon and included in the initial contract as Additional Services or added to the A/E Contract by A/E Change Order.

• If the University decides after execution of the A/E Contract that prequalification of contractors and/or subcontractors is required, the services required of the A/E to assist in evaluating the prequalification data will be considered Extra Services and a fee for same shall be negotiated prior to the A/E performing the A/E Services and added to the A/E Contract by A/E Change Order.

• If the A/E is required to participate in the Value Engineering Study, the A/E’s participation fee shall be included in the initial A/E Contract as an Additional Service or added to the A/E Contract by A/E Change Order.

5.4.13 Interior Design Services for Furniture, Furnishings, and Decorations for Building Projects
The Basic Services of the A/E for a project require the A/E to provide informational floor plans which use basic furniture outlines to show that the required furniture will fit in the rooms or spaces. The A/E is also required to specify all building materials and finishes and to select the colors for all building components which the building contractor is required to provide and/or install.
Additional services or separate contract for Interior Design services for the selection, specification, and procurement of furniture and furnishings that are not a part of the A/E’s Basic Services as defined by this Manual shall be determined and a fee negotiated for the interior design services.

5.4.14 Identification of Documents and Materials
The University and the A/E shall note the Project Number provided by the University on all project documents, correspondence, memoranda, invoices, submittals and other related material. The A/E shall require that the project number is shown on all submittals, correspondence, and other documents generated by contractors, subcontractors, suppliers, consultants, testing entities or others associated with the project.

5.4.15 A/E Performance Evaluation
Upon completion of the construction contract, an evaluation may be completed by the University with emphasis on quality and constructability of the design; timeliness and response with respect to shop drawing review and clarification of drawings/specifications intent; and resolution of construction problems and cooperation.

The completed evaluations shall be retained in the A/E’s performance file for review and consideration by future A/E selection panels. The completed A/E evaluation forms may be shared by the custodian with other state agencies for the purpose of “references” to assist in state University selection panels in evaluating the A/E during the selection process.

Upon completion of the construction contract, the A/E may be required to complete an evaluation of the Contractor’s performance during construction, CO-14b, Opinion of Contractor’s Performance, using the current edition posted on the DGS Forms Center. An evaluation may be completed by the Project Manager and Construction Administration Manager. The evaluation will emphasize the evaluator’s opinion of the quality and construction, timeliness of the work and conformance with the project schedule, and timeliness of shop drawing submittals, number and validity of contractor requests for clarification of drawings/specification intent, resolution of construction problems, and cooperation. The A/E and University may also complete CO-14b evaluations on any individual Subcontractor performing work on the project to note above average or below average or poor performance by a particular subcontractor or supplier. The University shall provide a copy of this evaluation to the Contractor. If the Contractor wishes to comment on either evaluation, dispute any part of the evaluation or offer its side of the issue, the Contractor may submit a response to the University. The Contractor’s response shall be attached to and made a part of the University evaluation form for future reference.
Chapter 6: Code & Technical Requirements for All Buildings on University Property

The University’s Design and Construction Standards contain standards and requirements that clarify the application of the Virginia Uniform Statewide Building Code (VUSBC), and mandatory University standards and technical requirements, as they pertain to University Buildings on State property. It also prescribes standards and requirements for buildings that may be higher than the minimum requirements for the private sector owner but are necessary to meet the energy, performance, maintenance, safety, and accessibility standards for public buildings. The A/E shall design facilities to the standards and requirements stated in this chapter, regardless of project funding source or project delivery method.

6.1 Administration

DEB is the designated building official for University owned buildings (See Management Agreement). DEB reviews documents for compliance with the VUSBC, and VCU reviews documents for compliance with the VCU Design and Construction Standards. Such review does not relieve design consultants from responsibility for designing in accordance with these standards and Federal Law.

DEB shall perform fire safety reviews for all projects involving new construction, additions, or renovation that involve a change of a facility. All other renovation projects will be submitted to the Director of Planning and Design for review and approval.

6.2 Building Code

The Building Code for all University-owned buildings is the current edition of the VUSBC with supplemental requirements, clarifications and modifications as indicated in this Manual. Refer to Section 6.3 for accessibility standards for state-owned facilities and associated clarifications. The provisions of the VUSBC are based on nationally-recognized model building codes and fire codes published by the International Code Council, Inc. The model codes are adopted by reference into the VUSBC with Virginia amendments. The VUSBC is published in three parts:

Part I – The Virginia Construction Code (VCC)
The VCC contains regulations applicable to the construction of new buildings and additions. Change of occupancy in existing buildings to occupancies of Group I-2 or I-3 shall comply with the VCC.

Part II – The Existing Building Code (VEBC)
Reconstruction, alteration and repair in occupancies other than Group R-5 shall comply with the VEBC. For additions, the VEBC is an alternative to compliance with the VCC. The VEBC is applicable to changes of occupancy in existing buildings to occupancies other than Group I-2 or I3.

Part III – The Virginia Maintenance Code
This part contains the regulations for the maintenance of existing structures which is enforced at the option of the State Building Official or designee(s).

6.2.1 Applicable Code
A/Es should project when working drawings will be completed and determine what code(s) will be in effect at that time. In cases where working drawing completion is projected to take place after the effective date of a new edition of VUSBC, A/Es should obtain copies of the proposed ICC codes and design the project to conform to the latest requirements to the extent possible. Mixing of code requirements between two editions of the code is not permitted.

Typically, the VUSBC is adopted every three years. Such adoption incorporates specified editions of model codes (such as 2000, 2003 International Building Code, etc.) along with Virginia modifications to these codes. The Virginia Department of Housing and Community Development (DHCD) posts notice/announces the effective dates of the VUSBC editions, as well as the dates of referenced standards and amendments.

1. The applicable code for Capital Outlay projects will be the VUSBC edition in effect at the time outstanding issues have been resolved, preliminary drawings are approved (usually on the CO-5), and authorization is
given to proceed with development of the working drawings.

2. If preliminary drawings for Capital Outlay projects are approved during the 12 months before the effective date of a new edition of VUSBC, the applicable code will be designated by DEB at the time of the preliminary approval.

3. If construction of the project does not begin within one year of the approval of the CO-6, the agency shall request confirmation from DEB as to the applicable code. Prior to reactivating a project that has been inactive for a period during which the effective code has changed, the University shall contact DEB for a determination of what code applies. DEB will confirm any change of code in writing. The plans and specifications shall be revised as necessary to comply.

4. The application of code for non-Capital Outlay projects as prescribed in the VCC.

Modification of Variances and Code Requirements

If a modification to the code is thought to be necessary, the A/E shall request such modification in writing at the time preliminaries are submitted. The request shall clearly state the nature of the problem and the supporting rationale and justification for the modification. All requests to modify to the requirements of the VUSBC will be addressed to VCU Project Manager, who will in turn, present the modification to DEB.

6.2.2 Code Clarifications

Code clarification requests should be made in writing to the DEB Director. The following are code clarifications that shall be applied to University-owned buildings and structures.

6.2.2.1 Use Group Classifications

1. Buildings for business and vocational training shall be classified and designed for the (Use) Group corresponding to the training taught.

2. Academic/educational buildings having classroom-type education functions (including associated professor/teacher office spaces), shall include the following additional requirements:
   a. Provide a fire alarm system in the building.
   b. Provide 72” minimum corridor widths in the classroom corridors.
   c. Calculate the occupant load for each space based on VUSBC Chapter 10 and the type of occupancy (not Group) of the space.

3. Buildings housing research, testing and science laboratories shall include a fire alarm system.

4. Dormitories, Fraternity and Sorority Houses and similar dwelling units with sleeping accommodations – provide one of the following:
   a. Written University Policy which prohibits the use of these residences as housing for persons/groups/occupants for periods of less than 30 days, or
   b. Design that complies with the most stringent requirements of both Group R-1 (Hotels) and Group R-2 (Dormitory)

5. Dormitory Occupant Load Calculations and Plumbing Fixture Calculations:
   a. The number of occupants shall be computed per VUSBC Chapter 10 with the following changes to the maximum floor area allowances per occupant:
      (1) Dormitory sleeping areas – 1 occupant / 50 net SF
      (2) Other occupied areas – 1 occupant / unit of area based on function/occupancy of space
      (3) Remaining areas – 1 occupant / 200 gross SF
   b. The minimum number of required plumbing fixtures shall be based on the occupant load and plumbing classification/occupancy, but will not include occupants identified in the “remaining areas.”

6.2.2.2 Residences for Rent

Cabins, Beach Houses, Lodges, and similar dwelling units with sleeping accommodations rented to family groups:

1. Residences for Rent for less than 30 days with a Maximum Occupant Load of 16 or less shall comply with the requirements for Group R-3 or Group R-5.

2. Residences for Rent for less than 30 days with a Maximum Occupant Load of more than 16 shall comply with the requirements for Group R-1.
6.2.2.3 Temporary Change of Use and Occupancy
Temporary change of use and occupancy requires a Temporary Certificate of Occupancy or issuance of a Special Use Permit. (Examples include dormitories rented for less than 30 days, armories used as sleeping quarters, storage spaces used for business or assembly, etc.) The application for Temporary Certificate of Occupancy must be complete, and include an Operational Policy that provides safety measures to address the life safety, health, and welfare of the occupants.

6.2.2.4 Safety Equipment Not Required by Code
Safety equipment not required by code, including fire detection, fire alarm, and fire suppression systems, which are not required by code, but are provided at the University’s option in state-owned buildings and structures shall be installed in accordance with the code and shall operate as designed. Work that is planned as a complete system, but requires phased construction to provide a complete system is acceptable. It is also acceptable to provide non-required, fully functional “partial systems” to certain areas (storage spaces, for example) which will improve safety. However, incomplete systems which are not designed in accordance with the code, non-functional systems and abandoned life safety systems are not acceptable because such systems may be perceived as code-compliant systems and may result in life safety or fire hazards to adjacent areas.

6.2.2.5 Stairways
The leading edge (intersection of the tread and riser) of stairways shall be perpendicular to the direction of travel. Stairways with the direction of travel at an angle to the leading edge of the stairway are not acceptable.

6.2.2.6 Reroofing – Secondary (Emergency) Roof Drains in Reroofing Projects
If secondary (emergency) roof drains are not a part of the existing construction, then secondary roof drains shall be provided as part of reroofing work. Structural calculations shall be submitted that demonstrate that the structure is adequate to sustain the accumulated water up to the elevation of the secondary roof drains in accordance with ASCE 7, Section 8.5.

6.2.2.7 Addition of Loads to Existing Structures
Prior to mounting any antennae, microwave dishes, HVAC equipment or other items on the roof of an existing building, the adequacy of the structural framing to support the additional live, dead, wind and lateral loads shall be verified by a licensed structural engineer. Consideration must be given to deflection from the added load(s), to potential for vibration, to potential for ponding water and to the consequences of overturning moments on stressed attachments and construction.

6.2.2.8 Fire Walls: Abutting New Construction to Existing Structures
When an addition is needed adjacent to an existing state-owned building, and the existing building cannot accommodate the additional height and area limitations due to its construction type and use group, as an alternative to a traditional fire wall, Chapter 7 of the VUSBC now recognizes that two exterior building walls may be designed to function as a “double fire wall,” as defined in NFPA 221. Consideration shall be given to the structural stability and fire resistance of the exterior walls and door openings. Where door openings are provided, portals or vestibules designed to comply with NFPA 221 are acceptable.

6.2.2.9 NFPA 285 Acceptance Criteria in Exterior Walls
Use of Exception No. 3 to Section 2603.5.5 in the 2015 edition of the VUSBC: Contact the DEB lead reviewer assigned to the University for guidance.

6.2.2.10 Intersection of Fire Resistance Rated Wall Assemblies with Lesser-Rated and Non-Rated Wall Assemblies
The VUSBC 2015 edition provides limited guidance for addressing how Fire Barriers (VCC 707), Fire Partitions (VCC 708), and Smoke Barriers (VCC 709) intersect with lesser-rated and non-rated exterior walls. At these conditions, DEB applies and enforces the following requirements:

a. The gypsum board manufacturer(s) included in the listed fire resistance rated wall assemblies typically provide partition priority legends and installation details to address these conditions as well as
instructions on how corners and tees are to be constructed. DEB considers the manufacturer’s installation instructions to be a critical component for achieving a compliant fire resistance rated fire barrier, fire partition, or smoke barrier assembly. To the extent possible, the manufacturer's instructions shall be incorporated into the Working Drawings.

b. The VUSBC sections for fire barriers, fire partitions, and smoke barriers do not require the exterior walls of the separated fire compartments to be fire resistance rated. The rationale for this is based on fire exposure from outside of the building, not within. As a result, these sections do not adequately address the potential for in-building horizontal fire spread from one fire compartment to another where the interior wall Assembly intersects with the exterior wall. DEB applies the following requirement to address this concern: where the fire barrier, fire partition, or smoke barrier assembly intersects and terminates at a lesser-rated or non-rated exterior stud wall, the assembly shall extend in its entirety to the inside face of the exterior wall sheathing.

c. As an alternative to Item 'b' above, VCC Section 707.9 Voids at Intersections or 715.4.2 Exterior Curtain Wall / Vertical Fire Barrier Intersections may be applied, whereby the fire resistance rated wall assembly terminates at the interior wall sheathing of the exterior wall. In this arrangement, the intersecting stud cavities within the exterior wall shall be completely filled with an approved material, such as mineral wool. Conditions may vary from project to project, so consult with DEB to determine the correct application of this alternate approach.

The following documentation for the design of fire resistance rated wall assemblies shall be provided at a minimum: 1) define the listed fire resistance rated wall assembly, 2) define the respective listed head-of-wall and bottom-of-wall joint systems, 3) provide the ‘basis of design’ gypsum board manufacturer’s partition priority legend and related standard details for the proposed construction, and 4) include copies of the listings for the proposed fire resistance rated wall assemblies and joint systems in their entirety on the Working Drawings (ref. CPSM).

6.2.2.11 Virginia Existing Building Code – Use of Performance Code
Chapter 14 "Performance Compliance Methods" of the 2015 International Existing Building Code is an approved performance code in accordance with Section 103.1.1 of the VEBC.

6.2.2.12 Virginia Existing Building Code – Level 2 Alterations Compliance
Use of Exception 4 of Section 603.3, Compliance, referencing “newly created” is defined as spaces that have never been used as habitable or occupiable space. “Newly created” does not mean an existing interior space that is being altered or renovated.

6.2.2.13 Means of Egress Illumination
Restrooms serving more than one occupant and all occupied restrooms and spaces 300 square feet and larger shall be provided with normal power means of egress illumination in accordance with the VCC. The means of egress shall be either a fixed means of egress path or the entire floor area of the room or space. The room or space shall meet minimum normal power illumination levels at all times the space is occupied even with all light controls turned “OFF”. This shall not preclude the use of occupancy sensors to determine if the room or space is occupied.

6.2.2.14 Single-User Toilet Facility and Bathing Room Fixtures
The plumbing fixtures located in single-user toilet facilities and bathing rooms, including family or assisted-use toilet and bathing rooms that are required by Section 1109.2.1 of the 2015 VCC, shall contribute, at an even ratio, toward the total number of required plumbing fixtures for a building or tenant space. Single-user toilet facilities and bathing rooms and family or assisted-use toilet rooms and bathing rooms shall be identified for use by either sex.

6.2.2.15 Lavatory Distribution
Where two or more toilet rooms are provided for each sex, the required number of lavatories shall be distributed proportionally to the number of water closets.

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6.3 Accessibility Standards for University-Owned Facilities
The following standards and regulations shall be used in planning and designing University facilities:

1. Any standard that is stricter than a standard promulgated in and by the Americans with Disabilities Act (ADA), 1990.
2. Title II, Subtitle A (and not Title III) of the ADA applies to all University-owned buildings and structures.
3. The prescribed accessibility standards are the Department of Justice’s (DOJ) 2010 ADA Standards for Accessible Design, dated September 15, 2010.
4. The Virginia Office for Protection and Advocacy (VOPA) promulgates regulations that address nondiscrimination on the basis of disabilities under state grants and programs. (Code of Virginia § 51.5-40)

Note: The Federal Fair Housing Act applies to all housing facilities.

6.3.1 Conflicting Standards/Modifications
The 2010 ADA Standards for Accessible Design incorporates by reference editions of the International Building Code. The applicable code for the project shall be that which is adopted by the Commonwealth at the time of building design and permit, as described in Section 1.1.

As ADA is a federal law, modification or waiver of the ADA law requirements cannot be granted by DEB. DEB reviews documents for compliance with these standards during its normal review of all projects. Such review does not relieve design consultants from responsibility for designing in accordance with the standards and federal law.

6.3.2 Clarifications for University-Owned Buildings
Accessible facilities must be provided at the completion of construction. Adaptable facilities do not meet the requirements for accessibility unless demonstrated to the Building Code Official to be readily implemented on demand.

6.3.2.1 Elevator Access

6.3.2.2 Elevator Access Exception 4
2010 ADA Standards for Accessible Design, Section 206.2.3, Accessible Routes: Where Required: Multi-Story Buildings and Facilities: Exception 4 does not apply. Residential facilities shall include at least one accessible route to connect each story and each mezzanine in multi-story buildings and facilities.

6.3.2.3 Stairways
2010 ADA Standards for Accessible Design, Section 210.1, Stairways: General: Clarification: All stairways shall be accessible to the disabled.

6.3.2.4 Stairways Exception 3
2010 ADA Standards for Accessible Design, Section 210.1, Stairways: General: Exception 3 does not apply. Aisle stairways for assembly in areas shall comply with 2010 ADA Standards for Accessible Design, Section 504.

6.3.2.5 Handrails
2010 ADA Standards for Accessible Design, Section 505.10, Handrail Extensions: General: Exception 3 does not apply. Aisle stairways for assembly in areas shall comply with 2010 ADA Standards for Accessible Design, Section 504.

6.3.2.6 Dormitories
2010 ADA Standards for Accessible Design, Section 233.3.1.1 Residential Dwelling Units with Mobility Features: Scope of fully-accessible dormitory rooms shall comply with this section; however, all dormitory rooms shall be located on an accessible route and doors to all rooms shall be accessible.
6.3.2.7 Accessible versus Adaptable
Accessible facilities shall be provided at the completion of construction. Adaptable facilities do not meet the requirements of this section.

6.3.2.8 Employee Work Areas
2010 ADA Standards for Accessible Design, Section 203.9, Employee Work Areas: Clarification: All areas and spaces normally occupied by employees or the public in state-owned buildings, individually or shared, shall be fully accessible.

6.3.2.9 Site Elements
2010 ADA Standards for Accessible Design, Section 201.1, Scope: Addition: Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) dated July 26, 2011 shall apply to the design of site elements provided on state-owned property that are not regulated by the 2010 ADA Standards and are not in the Virginia Department of Transportation Right-of-Way. These site elements are defined in PROWAG and are generally provided as part of an agency outdoor program.

6.3.2.10 Walk-in Coolers and Freezers
2010 ADA Standards for Accessible Design, Section 203.9, Employee Work Areas: Clarification: Walk-in coolers and freezers are considered employee work areas and shall comply with the requirements of 6.3.2.8 above.

6.3.2.11 Unisex Toilets and Bathing Rooms
2010 ADA Standards for Accessible Design, Section 213.2.1: Comply with VCC Chapter 11 Section for Family or assisted-use toilet and bathing rooms.

6.3.2.12 Signs
2010 ADA Standards for Accessible Design, Section 216, Signs: Clarification: Use the language from VCC Chapter 11 Section Signage as guidance for scope compliance.

6.3.2.13 Identification of Accessible Parking Spaces
2010 ADA Standards for Accessible Design, Section 502.6, Identification, and 2015 VCC, Section 1106.8, Identification of accessible parking spaces: Clarification: Signs (including the International Symbol of Accessibility, and identifying van-accessible parking spaces) shall be located 84 inches (2135 mm) maximum, and 60 inches minimum, above the finish floor or ground surface measured to the bottom of the sign. Additionally, provide a sign including the following language: PENALTY, $100-500 Fine, TOW-AWAY-ZONE. The bottom edge of the PENALTY sign shall be no lower than 4 feet above the parking surface.

6.3.2.14 Cabinets
2010 ADA Standards for Accessible Design, Section 225.2, Storage: Clarification: Under counter and over counter cabinets may be defined as the same “type” if the same arrangement of shelves is provided to comply with the reach ranges specified in Section 308.

6.3.2.15 Lavatories
2010 ADA Standards for Accessible Design, Section 606, Lavatories and Sinks: Clarification: Comply with VCC Chapter 11 Sections Lavatories and Sinks.

6.3.2.16 HUD Housing
2010 ADA Standards for Accessible Design, Section 233.2, Residential Dwelling Units Provided by Entities Subject to HUD Section 504 Regulations: Clarification: Use the VCC Chapter 11 Section Dwelling Units and Sleeping Units as guidance for scope compliance.

6.3.2.17 Assistive Listening Systems
2010 ADA Standards for Accessible Design, Section 706, Assistive Listening Systems: Clarification: Use the language from VCC Chapter 11 Section Special Occupancies: Assistive listening systems as guidance for
scope compliance. The technical criteria in the 2010 ADA Standards for Accessible Design shall be incorporated into the design. The Hearing Loop (the Audio Frequency Induction Loop System or AFILS) is the preferred technology in most facilities.

6.3.2.18 Benches
2010 ADA Standards for Accessible Design, Section 903 Benches: Clarification: Where interior or exterior benches are provided, 5% minimum or at least one in each area shall comply with ASAD Section 903. Grab bars and armrests are not required.

6.3.2.19 Maneuvering Clearance
2010 ADA Standards for Accessible Design, Section 305.7 Maneuvering Clearance: Clarification: Where either side of an alcove exceeds the dimension stated, the minimum maneuvering clearance stated shall be provided.

6.3.2.20 Vertical Grab Bars
Provide vertical grab bars in accordance with ICC A117.1 Accessible and Usable Buildings and Facilities.

Vertical Grab Bars in Accessible Toilet Compartments
2010 ADA Standards for Accessible Design, Section 604, Water Closets and Toilet Compartments: Clarification: Provide vertical grab bars on the sidewall of wheelchair accessible toilet compartments above the horizontal grab bar and on both sidewalls of ambulatory accessible toilet compartments.

Vertical Grab Bars in Accessible Bathtubs
2010 ADA Standards for Accessible Design, Section 607, Bathtubs: Clarification: Provide vertical grab bars on the control wall of accessible bathtubs.

Vertical Grab Bars in Accessible Transfer Shower Compartments
2010 ADA Standards for Accessible Design, Section 608, Shower Compartments: Clarification: Provide vertical grab bars on the control wall of accessible transfer shower compartments.

Anti-Ligature Requirements
Clarification: Vertical grab bars may be omitted from buildings with anti-ligature requirements.

Conflicts with Toilet Room Accessories
Clarification: Vertical grab bars may not conflict with accessible locations for toilet tissue dispensers. Assure that these toilet room accessories are located in accordance with 2010 ASAD accessibility requirements.

6.4 Life Safety Code
Life Safety Code (NFPA 101) applies to state hospital and health care facilities accredited by The Joint Commission on Accreditation of Health Organizations (JCAHO). In case of conflict with VUSBC provisions, the most stringent requirements apply. Should there be a conflict between VUSBC that critically affects accreditation by JCAHO, this will be resolved with the VCU Health System Capital Programs. DEB generally does not review for NFPA 101 compliance, except instances where it is referenced in the VUSBC (such as smoke-protected seating).

6.5 Other Federal or State Regulations
Certain projects may be required to comply with other codes or regulations, such as federal or state regulations. Those requirements may take precedence, equal, or exceed construction, health, safety, and welfare standards regulated by the aforementioned standards, and are approved after DEB review. All such codes shall be clearly stated in the preplanning or Schematic Documents and displayed on title sheets of Preliminary and Working Drawings. The following codes and regulations may apply to University projects:

Title II, Americans with Disabilities Act of 1990

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6.5.1 Art and Architectural Review Board
The Art and Architectural Review Board (AARB) consists of the Director of the Department of Historic Resources, or his designee, serving as an ex officio member and six citizen members appointed by the Governor. It was established to “encourage the design of buildings and works of art which are both aesthetically and functionally appropriate to the agency for which they are intended.” All new buildings, additions to existing buildings and any other new elements on state property, regardless of the funding source, must be reviewed and approved by the AARB. Presentation(s) of the design shall be made to the AARB for comment and recommendation for approval after the project design has been submitted to DEB for review and comment at the schematic and/or preliminary submittals. The initial AARB presentation should be scheduled as soon as the exterior appearance of the building is no longer likely to change. The location of the building onsite, overall massing, materials selection, colors and landscaping should be defined prior to making a presentation. See AARB on the DEB website for more information.

6.5.2 Baby Changing Facilities in University-Owned or Leased Buildings
All state-owned and state-leased buildings shall provide baby changing facilities in both the men’s and women’s restrooms for each twenty (20) total toilet fixtures required by the VCC. In addition, baby changing facilities shall be provided in required family or assisted use bathrooms. If only one pair of baby changing facilities is required, they shall be located on the main entrance level.

Baby changing facilities may be furnishings or equipment. The installation of the baby changing facilities shall not interfere with required ADA clearances and access in the restroom. The baby changing facilities shall comply with ADA requirements for accessibility.

6.5.2.1 Existing Buildings
The University shall develop a comprehensive plan (floor plans are not required) to implement this requirement by July 1, 2021, and shall execute the plan to install baby changing facilities in existing buildings by July 1, 2023. Submission of the comprehensive plan to DEB is not required unless the plan does not propose full compliance with these requirements.

If in the development of a comprehensive plan the agency identifies programmatic or structural impracticability that would prevent providing or installing baby changing facilities, then the University shall submit justification to DEB for review.

6.5.2.2 New Buildings
New buildings’ designs without approved Working Drawings shall meet this requirement.

6.6 Fire Protection Information Plan and Fire Safety Systems
This section references requirements for a project-specific fire protection information plan and calculations to be prepared by the A/E and included in the schematic, preliminary design and working drawing submittals. This section also references specific mandatory requirements for various fire safety systems, for which the submittal requirements are detailed in Chapter 7.
6.6.1 Fire Protection Information Plan
Provide the information outlined in Section 7.8.2.4 for schematic design submittals, Section 7.9.2.10 for preliminary design submittals and Section 7.10.7.9 for working drawing submittals. The requirements are included in this Chapter by reference, as the requirements pertain to ALL projects which are constructed on state property, regardless of funding source.

6.6.2 Fire Safety Systems
The design of fire suppression systems (sprinkler systems/standpipes, alternate automatic suppression systems, fire pumps), fire detection and fire alarm systems, smoke control systems, access control systems and applied fire resistant materials shall comply with the submittal requirements outlined in Chapter 7. The requirements are included in this Chapter by reference, as the requirements pertain to ALL projects which are constructed on state property, regardless of funding source.

6.7 Fire Safety Review of Shop Drawings
Fire suppression, fire detection, and fire alarm shop drawings shall be reviewed and approved by DEB prior to the work being installed. Where a complete fire protection system is designed and shown on the construction documents, the drawings and/or specifications shall state that deviations in materials, locations, configurations, or sizes proposed by the Contractor are subject to being reviewed under the provisions of the General Conditions (HECO-7) as a “substitution”.

When the fire suppression, fire detection, and fire alarm systems are not complete on the construction documents, then shop drawings or submittal data shall first be reviewed and approved by the A/E of record. The reviewed documents, with any added notations by the A/E, shall be submitted to the appropriate Fire Safety reviewer DEB and/or responsible State Fire Marshal Office for final review and approval.

Safety equipment not required by code, including Fire Detection, Fire Alarm, and Fire Suppression Systems, but are provided at the University’s option in state-owned buildings and structures shall be complete in accordance with the code. Work that is planned as a complete system, but requires phased construction to provide a complete system is acceptable. Providing partial systems to certain spaces such as storage spaces that will improve safety without giving a false sense of security to building occupants will be considered on a case-by-case basis.

Shop drawings for the following building systems shall be reviewed and approved prior to the work being installed:

- Fire suppression systems (sprinklers/standpipes, alternate automatic suppression systems, fire pumps): shop drawings prepared by a certified engineering technician, National Institute for Certification in Engineering Technologies (NICET) Level III or IV, reviewed and approved as indicated below
- Fire detection and fire alarm systems: shop drawings prepared by a certified engineering technician, NICET Level III or IV, reviewed and approved as indicated below
- Smoke control systems designed by the P.E., shop drawings reviewed and approved by the A/E of Record, then reviewed and approved by DEB
- Access control (security): shop drawings prepared by a Virginia Department of Criminal Justice Services-licensed contractor
- Applied fire resistant materials: product data and details prepared by the contractor, as may be required by specific projects

The licensed professional engineer is responsible for the overall design of the fire protection systems, evaluating the building-specific conditions and preparing the analysis, calculations, design and documents. When complete, the final documents display the signed, dated seal of the responsible professional engineer. Refer to Section 7.4.1.

The certified engineering technician, certified to NICET Level III or IV, prepares the working plans as defined by NFPA 13, supplemental calculations, and material submittals based upon the engineer’s design, for the engineer’s review and approval. The professional engineer does not affix his/her professional seal to the shop drawings.
For limited conditions, the use of NFPA 13-2010 Section 3.3.15, Pipe Schedule System, is an option that may be used.

6.7.1 DEB Shop Drawing Final Approval
The data shall be reviewed and approved by the A/E of record prior to submittal to DEB. If the submittal, with any added notations, is satisfactory to the A/E, the A/E shall provide its stamp. Shop Drawings shall then be submitted to DEB for review as electronic documents through the EDR process. After a Shop Drawing submittal is approved by DEB, three (3) full-sized paper copies of the submittal shall be submitted to DEB for State Building Official signature.

6.7.2 A/E Shop Drawing Final Approval
When the design of fire suppression, fire detection and fire alarm, smoke control, access control systems or applied fire resistant materials provided in the initial working drawings submittal is determined to be complete and code compliant by the DEB reviewer, then the Building Permit shall stipulate that the shop drawings and submittal data shall be reviewed and approved by the A/E of record.

The A/E shall include a stipulation on the working drawings and in the technical specification that the Contractor shall bid and install the fire protection system as shown in the documents. Designs modified from the DEB-approved Working Drawings shall be submitted to DEB for review and approval as described in Section 6.7 above.

6.8 University Building Construction in Floodplain
Executive Order 45 (2019) prohibits the construction, reconstruction, purchase or acquisition of state-owned buildings within the 100-year floodplain and/or the 500-year floodplain unless a variance is granted by the AVP of FMD.

6.9 Energy Conservation and Environmental Performance
State agencies and A/Es shall assure that new construction, renovation, and maintenance of buildings are performed in accordance with the VECC and the following minimum standards for energy conservation and environmental performance. See, too, the Virginia High Performance Buildings Act.

Individuals who perform the compliance modeling must have obtained a Building Energy Modeling Professional Certification, such as ASHRAE Certification. Similar qualifications will be considered individually. The proposed VECC compliance path shall be clearly identified. Refer to Appendix G.

6.10 DEB Roofing Policy and Technical Standards for State Buildings
The Appropriations Act requires that all agencies requesting general funds shall assign first priority to the roofs of its facilities. The DEB Roofing Policy and Technical Standards for State Buildings are located in Appendix A of the Manual and are incorporated into Chapter 4 of the Manual by reference. The policy and technical standards are applicable to all state owned buildings, regardless of funding source or project delivery method used.

6.11 Waterproofing and Drainage for Subsurface Structures
No University building for human or equipment occupancy shall be designed with basement floor levels below the water table.

6.12 Premises Identification – Address Numbers
New and existing University buildings shall have approved address numbers, building numbers or approved building identification placed on a position that is plainly legible and visible from the street or road fronting the property. These numbers shall contrast with their background. Address numbers shall be Arabic numerals or alphabet letters. Numbers shall be a minimum of 4 inches high with a minimum stroke width of 0.5 inch.

6.13 Construction Inspection
In addition to the required Special Inspections, A/E Inspections and Substantial Completion Inspection by the Building Official, the University shall cause construction inspections to be made to assure that the work performed...
is in accordance with the approved building permit documents. See Chapter 5 for information on the scope of Special Inspections and the A/E inspections.

6.13.1 Required Inspections
Inspections shall be performed in accordance with the code, including the following:

1. Footing excavations and reinforcement material for concrete footings prior to placement of concrete.
2. Foundation systems during phases of construction necessary to assure code compliance.
3. Preparatory work prior to the placement of concrete.
4. Structural members and fasteners prior to concealment.
5. Electrical, mechanical, and plumbing materials, equipment and systems prior to concealment. This also includes fire suppression sprinkler systems, clean agent systems and fire detection and alarm systems.
6. Energy conservation material prior to concealment.
7. Final inspection.

Note: Part of required inspections may be included in the special inspections and the A/E inspections. Despite this, construction inspections shall be made of the work as it is being performed to assure that conditions inspected by the special inspections and the A/E inspections are preserved.

6.13.2 Inspector Qualifications
Inspectors shall be approved by the Director of Construction Management. Inspections shall be made by an individual familiar with the project, with the knowledge, skill, and experience necessary to read and understand the documents, and meeting the following minimum criteria:

1. An individual certified by the Department of Housing and Community Development (DHCD) or by the International Code Council (ICC) in the specialty being inspected, or
2. A Virginia-licensed A/E, or
3. An individual approved by the Building Official upon recommendation of the University facilities officer based on the knowledge, skill and experience of the proposed inspector. This approval shall be requested, in writing, for non-agency personnel. The request shall include documentation of the proposed inspector’s qualifications and experience.

6.13.3 Non-Compliance
If the University is unable or unwilling to perform the required inspection and reporting, then the Building Official will cause the inspections to be performed at the University’s expense.

6.13.4 Building Official Inspections
The following inspection types will be conducted by the Building Official staff if the inspections are noted as applicable on the Building Permit’s official action wording:

1. Under-slab inspection prior to the installation of concrete that will conceal mechanical, electrical, and plumbing systems.
2. Open-wall inspection prior to the installation of exterior and interior wall surfaces that will conceal mechanical, electrical, plumbing, fire protection systems, and exterior weather resistive systems.
3. Above-ceiling inspection prior to the installation of ceiling surfaces that will conceal mechanical, electrical, plumbing, and fire protection systems.
4. Any other Inspections the Building Official deems necessary to ensure compliance with Code.
5. If smoke control is required by the VCC (e.g., stairwell pressurization, atrium smoke control, etc.) refer to Chapter 7 for building official acceptance testing of smoke control systems.
6. Inspection to verify or determine substantial completion at the end of construction.

The University shall notify the Building Official to schedule inspections by sending a request to capout@dgs.virginia.gov a minimum of seven (7) days in advance of the requested inspection date. The request shall contain the following:
- Project Number
- Project Name
- Type of inspection required
- Agency contact information to schedule the inspections
- Agency e-mail address for follow up to the Building Official Inspection Reports

The Building Official will contact the University to verify that the project is ready, prior to confirming the scheduled inspection. The A/E is responsible for documenting the inspection deficiencies/comments, and the University is responsible for providing the report for review and concurrence by the Building Official. The University shall provide e-mail verification that comments generated by the Building Official Inspection have been resolved.

6.14 Underground and Above Ground Storage Tank Systems

6.14.1 Technical Standards
Technical standards related to USTS and AST are contained in the Department of Environmental Quality, Water Division Regulations: 9VAC25-580, Underground Storage Tanks: Technical Standards and Corrective Action Requirements; 9VAC25-91-100, Facility and Aboveground Storage Tank Registration Requirements; and 9VAC25-91-130, Aboveground Storage Tank Pollution Prevention Requirements.

6.14.2 Delegated Authority
Pursuant to Code of Virginia § 36-98.1, the Director of DGS has delegated to local building departments inspection and enforcement authority for state-owned USTS and AST for the purpose of issuing permits, Certificates of Use and performing inspections required by 9VAC25-580; 9VAC25-91-100; and 9VAC25-91-130.

6.14.3 Local Building Official Authority
The University shall request the services above from the nearest local building department on all USTS and AST projects/actions. For capital outlay projects, the University will provide the local building department copies of the appropriate sections/sheets of the specifications/drawings. The University shall pay to the local building department the same fees as would be paid by a private citizen for the services rendered.

6.15 Chesapeake Bay Program

The University will ensure that its projects are located, designed and constructed to protect the water quality and living resources of the Chesapeake Bay. Adherence to the Chesapeake Bay Watershed Development Policies and Guidelines will be required in the development of all project sitings and designs. This publication is available from the Chesapeake Bay Local Assistance group within the Department of Environmental Quality (DEQ).

6.16 Erosion and Sediment Control Plans and Specifications

Refer to the DEQ for current requirements. DEQ requires submittals for Erosion and Sediment Control, Stormwater Management and a Virginia General Discharge Permit.

Compliance with the erosion, sediment control and stormwater management requirements is mandatory for all state projects. Requirements shall be included in the specifications to assign to the contractor (as part of the contract) the responsibility of erosion and sediment control and stormwater management at all sites (on or off the owner’s property) of borrowing, wasting or stockpiling of soil products. A statement similar to the following shall be used: The Contractor shall be responsible for satisfying any and all erosion control (EC) and stormwater management (SWM) requirements for any land disturbing activities, including but not limited to, onsite or offsite borrow, on-site or offsite stockpiling or disposal of waste materials. Before undertaking any land disturbing activity for which the plans do not specifically address erosion control and stormwater management, the Contractor shall contact the Regional Office of the Division of Soil and Water Conservation to determine what EC and SWM measures are necessary. The Contractor shall completely satisfy all requirements of the Division of Soil and Water Conservation.
including providing a designated, certified “Responsible Land Disturber” as defined in 9VAC25-850-10 before continuing with the concerned activity.

Note: This instruction may be added to one appropriate specification section, such as Erosion and Sediment Control or Earthwork, with a reference made to that section each time borrow, waste or stockpiling is mentioned in other sections.

6.17 Environmental Impact Report (EIR)

6.17.1 When EIR is Required

University shall procure and submit an Environmental Impact Report (EIR) for each major state project. (Code of Virginia § 10.1-1188). Regulatory authority is assigned to the Virginia Department of Environmental Quality (DEQ) in Code of Virginia § 10.1-1191. A ‘major state project’ is defined as any project or real property acquisition which cost $500,000 or more. Submission requirements can be found at the Virginia DEQ website. An EIR may not be required by DEQ for some interior renovations and work covered by a previous EIR. However, the University must submit its request to DEQ citing the nature of the work and justification for excluding the project from the requirements for an EIR. DEQ will make a determination on the validity of the request and provide a written response on its findings.

6.17.2 Virginia Law

Specific sections of the Code of Virginia applicable to environmental considerations are as follows:

§ 10.1-1188. State agencies to submit environmental impact reports on major projects. A. All state agencies, boards, authorities and commissions or any branch of the state government shall prepare and submit an environmental impact report to the Department on each major state project.

"Major state project" means the acquisition of an interest in land for any state facility construction, or the construction of any facility or expansion of an existing facility which is hereafter undertaken by any state agency, board, commission, authority or any branch of state government, including state-supported institutions of higher learning, which costs $500,000 or more. For the purposes of this chapter, authority shall not include any industrial development authority created pursuant to the provisions of Code of Virginia § 15.2-4900 et seq., nor shall authority include any housing development or redevelopment authority established pursuant to state law. For the purposes of this chapter, branch of state government shall not include any county, city or town of the Commonwealth. Such environmental impact report shall include, but not be limited to, the following:

1. The environmental impact of the major state project, including the impact on wildlife habitat;
2. Any adverse environmental effects which cannot be avoided if the major state project is undertaken;
3. Measures proposed to minimize the impact of the major state project;
4. Any alternatives to the proposed construction; and
5. Any irreversible environmental changes which would be involved in the major state project. For the purposes of subdivision 4 of this subsection, the report shall contain all alternatives considered and the reasons why the alternatives were rejected. If a report does not set forth alternatives, it shall state why alternatives were not considered.

§ 10.1-1190. Approval of Governor required for construction of facility. The State Comptroller shall not authorize payments of funds from the state treasury for a major state project unless the request is accompanied by the written approval of the Governor after his consideration of the comments of the Department on the environmental impact of the facility. This section shall not apply to funds appropriated by the General Assembly prior to June 1, 1973, or any re-appropriation of such funds.

§ 10.1-1191. Development of procedures, etc. for administration of chapter. The Department shall, in conjunction with other state agencies, coordinate the development of objectives, criteria and procedures to ensure the orderly preparation and evaluation of environmental impact reports required by this article. These procedures shall provide for submission of impact statements in sufficient time to permit any modification of the major state project which may be necessitated because of environmental impact.
6.18 Building Official Reviews, Permits and Approvals

6.18.1 State Building Official

The Code of Virginia § 36-98.1 delegates authority for building code enforcement of buildings on State property to DGS acting through DEB. This includes buildings on state property (existing and under construction) not otherwise exempt.

The Director of DEB is the Building Official for buildings and structures on State owned property and is called the State Building Official in this Manual. DEB is charged with reviewing plans and specifications, granting modifications, issuing Building Permits, inspecting construction, issuing Certificates of Occupancy, and establishing rules and regulations as may be necessary to carry out its function as building official. (Code of Virginia § 36-98.1)

The Virginia Department of Transportation has authority over structures (bridges, toll booths, etc.) in the Right of Way that are not regulated by the VUSBC. Occupiable buildings located within the Right of Way (rest area buildings, welcome centers, etc.) are regulated by the VUSBC and are under the jurisdiction of the State Building Official.

State agencies that are designated as authorities (i.e.: Virginia Port Authority, VCU Health System, University of Virginia Health System, and Fort Monroe Authority) or have special authority granted by the Code of Virginia may either exercise Building Official authority, or contract for Building Official services with a locality or the State Building Official.

6.18.2 Building Maintenance Official

As provided in the Virginia Maintenance Code (Part III of the VUSBC), the DGS acts through DEB as the Building Official for buildings and structures on state-owned property.

The Building Official hereby requires and directs that each and every state agency that has real property (land and buildings) shall comply with maintenance provisions of the Virginia Maintenance Code.

The VUSBC prescribes that building maintenance regulations are to be complied with in the repair and maintenance of existing structures and equipment. The purpose is to ensure public safety, health, and welfare through proper building maintenance, repair, and use and continued compliance such as accessibility and energy conservation.

The chief administrative official of each state agency that has real property shall be responsible and accountable to the State Building Official for compliance with the maintenance provisions of Part III, Chapter 1, (13VAC5-63) of the VUSBC. To facilitate the administration and operations of the Agency’s compliance with the Virginia Maintenance Code, each Agency Head shall assign an Agency Building Maintenance Representative to respond to complaints of non-compliance and to assure that the Agency complies with the Virginia Maintenance Code. The Agency Building Maintenance Representative shall be the on-site representative of the State Building Official for compliance at that Agency. The Agency Building Maintenance Representative shall receive complaints, resolve the issues and otherwise assure compliance with the Virginia Maintenance Code for that Agency.

For inspection reports and annual reporting criteria, see below.

6.18.2.1 Building Permit Policy for Construction - State Owned Buildings & Structures

The policy supplements the VCC by further defining scope of work and submittal requirements to the Building Official for state-owned buildings and structures. Reference the CPSM.

6.18.2.2 Closure of DEB-issued Building Permits

All permits issued by DEB shall be closed upon completion of the work permitted. The work is not to be deemed complete until all work included within the University has been completed and accepted, all deficiencies identified during inspections of the work by the agency, the A/E, the State Fire Marshal and
DEB have been corrected and accepted, and all work which was determined to be incomplete by inspection has been completed and accepted. Depending on the scope and type of project, the permit shall be closed by one, or a combination, of the following methods:

6.18.2.3 New Buildings, Additions & Change of Occupancy Renovations
For new buildings, additions to existing buildings and renovations or alterations to existing buildings which result in a change of use and occupancy classification for the building or a portion thereof, the University shall prepare and submit Form HECO-13.3 (Certificate of Use and Occupancy) within the BITS application software. In addition to authorizing occupancy or re-occupancy, issuance by DEB of an approved HECO-13.3 closes the permit for the new building, the additions (only) and/or the renovated areas which underwent a change in use or occupancy. If the work has been determined to be substantially complete, but still has work remaining that must be completed, corrected or otherwise resolved under the open permit, a temporary Certificate of Use and Occupancy may be requested and issued with stipulations and an expiration date by which all work shall be complete. The permanent HECO-13.3 shall be issued when all work is completed after submittal of the form by the University within BITS.

6.18.2.4 Renovations in Existing Building with No Change of Occupancy
For renovations or alterations to existing buildings or portions of buildings which do not constitute a change of use and occupancy classification for the whole building or any part of the building, the University shall prepare and submit Form HECO-13.4 (Building Permit Closeout) within the BITS application software. Issuance by DEB of an approved Form HECO-13.4 closes the permit and authorizes re-occupancy of renovated spaces for projects that required the renovation areas to be vacated during construction. If the work has been determined to be substantially complete, but still has work remaining which must be completed under the open permit, the University shall request re-occupancy of the building or specific spaces by submitting Form HECO-13.5 (Beneficial Occupancy). Form HECO-13.5 permits temporary re-occupancy while the remaining work is completed under the open permit between substantial completion and final completion, at which point the University shall submit Form HECO-13.4 to close the permit.

6.18.2.5 Annual Permit
Annual Permits are issued by the Building Official at the Building Official’s sole discretion to the University in accordance with the VUSBC. The University Representatives are not the Building Official, and their authority is limited, as defined by the Building Permit Policy for Construction – State Owned Buildings & Structures (See Appendix P). Work performed under the Annual Permit is subject to inspection by the Building Official at the Building Official’s sole discretion. Deficiencies noted during the Building Official’s inspection shall be corrected to the Building Official’s satisfaction.

University Representatives are limited to one principal University Representative (Alternate University Representatives report to the principal) per agency at the central agency location. Application may be made by completing the Annual Permits - University Representative Application which can be found on the DGS Forms Center. In order for a the University Representative to be granted full Annual Permit authority the representative must be a registered architect or professional engineer in Virginia with experience in building design and a current knowledge of the USBC. Agency Representative applicants that are not registered architects or professional engineers in Virginia may apply, but must demonstrate knowledge of building construction, building design, experience in building design and a current knowledge of the USBC. If given Annual Permit authority, they may have their authority limited.

6.18.2.6 Temporary Structures (Tent, Stage, Platform, Bleachers, Amusement Devices & Other Structures)
Application for Permit to erect and use temporary structures must be submitted to the Building Official at least 10 days prior to the proposed use. See the Virginia Uniform Statewide Building Code and the Building Permit Policy for Construction – State Owned Buildings & Structures (Appendix P) for the scope of work that requires a permit. See also Chapter 2.

Tent Permits allow both the erection and the Use and Occupancy of the tent subject to the stipulations shown on the permit. Tent permits are normally issued to allow the tent to be erected the day before the
event and to be taken down the day after the event. Exceptions to this Policy may be requested in writing where very large tents with structural frames are required to be erected for the tent. In such cases, the tent supplier and agency shall acknowledge responsibility for safety and security of the tent and area. Tent Permits require that the tent be struck in the event that winds exceeding 40 mph are predicted in the vicinity of the tent location.

**Seasonal/Multiple Function Permits**

If a temporary structure is to be repeatedly erected at the same location and for the same type of function AND if the tent is located the proper distances away from existing buildings, the agency may submit an application for a Seasonal Permit to erect the structure for several specified dates. The conditions of the Seasonal Permit require that identical structure be erected, furnished, equipped, used for the identical purpose in the identical location AND that the tent to be erected the day before the event and to be taken down the day after the event. Any variation from a seasonal permit requires a separate permit.

**AARB**

“Temporary Structures” are not temporary if proposed for more than 180 days. Any ‘nonpermanent structure’ placed on state property for more than 180 days requires approval of the AARB.

**Tent**

- **Site Plan**
  Indicate property lines, roads, sidewalks, grades greater than 5%, distance to adjacent buildings or structures and handicapped accessible route to the public way.

- **Location**
  Show the location of the tent on the Site Plan and indicate the distances to the nearest buildings on the Permit Application. Tents proposed to be located closer to existing buildings than allowed by the USBC will require special evaluation and may require special conditions if allowed to be erected. Erection of a tent in proximity to a building shall be done in a manner which will not decrease the safety of the building occupants while providing required safety for the occupants of the Tent.

- **Floor Plan**
  Indicate means of egress, aisles, exits, furnishings, and equipment. Provide a description of the function or activity to take place. Indicate the proposed Maximum Occupant Load.

- **Other Construction**
  Indicate the method of tie-down/anchorage for tents including the proposed wind and live loads. (See Special Conditions below.) Indicate means of egress lighting and power for tents that are proposed to be used at night. Indicate the method of ventilation and when tents are proposed to be conditioned.

- **Certificate of Flame Resistance**
  Provide Certificate of Flame Resistance to include tent serial numbers and descriptions (size, color, etc.) so that the tent certificates and tents can be clearly matched up on a one to one correspondence. Open flames, space heaters, or food cooking / heating devices (except with approved electrical appliances and approved power supply) are NOT permitted under and within 20 feet of a tent.

- **Inspection**
  Responsible User or the Agency Representative shall inspect the installation for compliance with the approved documents. The State Fire Marshal may inspect the installation for means of egress and code compliance.

- **Special Conditions**
  Tents that are proposed to be occupied during wind speeds that exceed 40 MPH require a tie-down or other anchorage design that is signed and sealed by a Virginia-licensed A/E.

**Stage/Platform/Bleachers**

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- **Site Plan**
  Outside installations: indicate property lines, roads, sidewalks, grades greater than 5%, distances to adjacent buildings or structures, and handicapped accessible route to the public way. Inside installations: indicate the buildings and room location and name.

- **Floor Plan**
  Indicate means of egress, aisles, exits, guards, handrails, furnishings, and equipment. Provide a description of the function or activity to take place. Indicate the proposed Maximum Occupant Load.

- **Other Construction**
  Indicate the means of egress lighting and power for structures that are proposed to be used at night. Indicate the method of tie-down or other anchorage for structures including the proposed wind loads and live loads. Provide details of anchorage and calculations to show proper anchorage against overturning. For bleachers or grandstands, provide a Certificate of Flame Propagation Criteria for any skirts, drapes or other fabric that will be provided to close off the area under the bleachers.

- **Closed v. Open Engineered Systems**
  Provide manufacturer data for stage, platform, and bleachers along with a certificate of insurance from the equipment rental / erection company. If the structures are fabricated on site and/or erected by other than the equipment rental company, provide construction / erection documents signed by a Virginia licensed A/E.

- **Inspection**
  The Responsible User or the Agency Representative shall inspect the installation for compliance with the approved construction / erection documents. For bleachers or grandstands, an A/E or an approved third party inspector shall inspect the bleachers for proper installation and safety prior to use.

- **Exceptions:**
  1. **Platform (Dance Floors)**
     Dance floors that are no more than 4 inches above the grade plane at any point do not require a permit (a 2 x 4 on edge with a plywood floor is nominally 4 inches; therefore, does not require a permit).
  2. **Stage (Performance Sets)**
     Performance sets that are owned and erected (not rented locally) by contract performance groups (e.g. Private Bands and Theater Groups), that are exclusively for the use of the contract performance group and from which the public are excluded, are considered equipment of the performing group; therefore, such stages / equipment do not require a permit from DEB.

- **Seasonal/Multiple Function Stage Permit**
  If a temporary stage is to be repeatedly erected at the same location and for the same type of function AND if the stage is to be installed by an experienced, trained and supervised crew, then the agency may submit an application for a Seasonal Permit to erect the stage / structure at a given location for several specified dates. The conditions of the Seasonal Permit require that identical structure be erected, furnished, equipped, used for the identical purpose in the identical location AND that the stage to be erected and inspected by the Agency Safety Officer. Any variation from a seasonal permit requires a separate permit.

**Amusement Devices**
“Amusement devices” are regulated by the Virginia Amusement Device Regulations (VADR). Amusement device permit application submittals are reviewed for compliance with the requirements for the various devices that are detailed in the VADR.

a. Agency is to complete all of the required fields on Form CO-17 TMP in BITS. A separate CO-17 TMP is to be completed for each different amusement device.
b. Agency is to download the “CO-17TMP Attachment One” (DGS-30-190) from the DGS Forms Center. All information on Attachment One is to be completed. A separate Attachment One is to be completed for each different amusement device.

c. In addition to Attachment One, additional information must be submitted to support the permit application. That additional information is itemized on the Attachment One form and includes: (1) proof of liability insurance; (2) a simple site plan indicating the location(s) of the amusement device(s) and indicating an accessible route to the device(s) from an accessible building or parking area; (3) certificate(s) of inspection by an inspector who is certified as an amusement device inspector by the Virginia Board of Housing and Community Development; (4) the manufacturer’s installation and operating instructions, and (5) any other information necessary in order to permit the device, such as details to assure a safe adaptation to the site.

d. Agency shall advance the CO-17 TMP to the DEB BO Admin and shall email the completed CO-17TMP Attachment One to boforms@dgs.virginia.gove along with the other required information listed above.

Other Temporary Structures
Contact the Division of Engineering & Buildings.

6.18.2.7 Industrialized Buildings
An Application for Permit is required to install, make utility connections, and/or occupy an Industrialized Building. See the VCC and the Building Permit Policy for Construction – State Owned Buildings & Structures (Appendix P) for the scope of work that requires a permit. Industrialized Buildings used as construction trailers on a project construction site are exempt.

- **AARB**
  Industrialized Building shall obtain AARB approval. Industrialized Building used as construction trailers on a project construction do not require AARB approval.

- **Site Plans**
  Indicate property lines, easements, roads, sidewalks, grading, parking (including handicapped spaces), site utilities (size and location: water, sewer, electric, and gas), distances to adjacent buildings or structures, and handicapped accessible route to the public way.

- **Foundation**
  Indicate soils bearing capacity, number and location of piers, and number and location of tie down anchors.

- **Other Construction**
  Indicate stairways, ramps, porches, hallways, sidewalks, paving, roofs, lighting, and other items that are not a part of the industrialized building delivered to the site.

- **Inspection**
  Inspection by the A/E of Record and the Regional Fire Marshal Office are required. Submit inspection reports indicating compliance with approved documents.

- **Additions, Renovations, and Alterations**
  Changes to Industrialized Building are regulated in the same manner as changes to all existing structures. Do not make changes to any component of the building, or occupy any portion of a building without approval of the Building Official.

6.18.2.8 Industrialized Buildings without a Virginia Registration Seal
If the proposed building does not have a Virginia Registration Seal, the University must demonstrate that the building complies with applicable building code. The following are required:
a. Signed and sealed documents shall be provided by a Virginia licensed A/E showing the construction including structural, mechanical, electrical, and plumbing systems
b. Fire Protection Information Plan shall be provided in accordance with this Manual. Building shall be inspected by a Virginia licensed A/E for compliance with the VUSBC, CPSM and applicable accessibility standards, and a statement with seal, signature, and date, stating that the building conforms to these requirements.

Define the use and occupancy of the building prior to procurement. Procure the building in accordance with the requirements of the Governing Rules, the Higher Ed Purchasing Manual, or by a standard lease. Require Virginia seals and registration numbers on the industrialized building in accordance with the Virginia Industrialized Building Safety Regulations, 13VAC5-91 et seq.

6.18.2.9 Towers
An Application for Permit is required to install a Tower and must be submitted to the Building Official. See the VCC and the Building Permit Policy for Construction – State Owned Buildings & Structures (Appendix P) for the scope of work that requires a permit. For towers located on leased property, applicant shall coordinate with the Division of Real Estate and Facilities Management (DREFM) to determine if a new or modified lease is required and indicate the date when the lease was approved. If a new or modified lease is required, a Building Permit will not be issued until the lease has been executed.

- **AARB**
  Towers require AARB approval. Adding antennae to existing buildings requires AARB approval. The addition of antennae or equipment to an existing tower is exempt from AARB approval.

- **Site Plans**
  Indicate property lines, easements, roads, sidewalks, grading, site utilities, and distances to adjacent buildings or structures.

- **Foundation**
  Indicate soils bearing capacity and foundation design (size and reinforcement of footings, number and location of piers, and number and location of tie down anchors).

- **Other Construction**
  Indicate fences, storage structures, electrical service, lighting, sidewalks and paving.

- **Closed v. Open Engineered Systems**
  Provide manufacturer data for manufactured tower construction that are constructed in the factory. If the structures are fabricated on site, provide construction documents signed and sealed by a Virginia licensed A/E.

- **Inspection/Certificate of Use**
  Inspection by the A/E of Record and submission of the Statement of Special Inspections is required. For an antenna addition to an existing tower, provide a statement from the A/E with a signed, dated professional seal assuring that the tower will accommodate added loads. Submit inspection reports indicating compliance with approved documents.

- **Additions, Renovations, and Alterations**
  Changes to a tower and the addition of antennae or equipment are regulated in the same manner as tower installations. Do not make changes to any component of the tower without approval of the Building Official.

- **Permit Fees**
  Contact DEB. A fee is required with the application. Checks shall be made payable to the Treasurer of Virginia.
6.18.2.10 Other Structures (Flagpoles, Antennae, Fences, Miscellaneous)

- Flagpole/Antennae
  An Application for Permit to install a flagpole / antenna more than 30 feet in height, and flagpoles / antennae to be attached to existing buildings shall be submitted to the Building Official. See the VCC and the Building Permit Policy for Construction – State Owned Buildings & Structures (Appendix P) for the scope of work that requires a permit. Flagpoles with a height of 30 feet or less may be permitted under the Annual Permit authority.

- AARB
  Flagpoles shall be approved by the AARB prior to permitting / erection.

- Site Plans
  Indicate property lines, roads, sidewalks, and distances to adjacent buildings or structures, or the location of the building to which the flagpole/antennae is to be attached.

- Foundation
  Indicate soil bearing capacity and foundation design including: connection details, foundation details, based on manufacturer’s standard data and details, or calculations signed by a Virginia licensed A/E.

- Other Construction
  Indicate paving, sidewalks, electrical service and lighting.

- Closed v. Open Engineered Systems
  Provide manufacturer data. If the structures are fabricated on site, provide construction documents.

- Inspection
  Inspection by the Applicant or a Virginia-licensed A/E is required. For an antenna addition to an existing structure, provide a statement from the A/E with a signed, dated professional seal assuring that the structure will accommodate added loads. Submit inspection reports indicating compliance with approved documents.

6.18.2.11 Fences
An Application for Permit to install a fence that is required for (i) pedestrian safety or (ii) a barrier for a swimming pool shall be submitted to the Building Official. See the VCC and the Building Permit Policy for Construction – State Owned Buildings & Structures (Appendix P) for the scope of work that requires a permit.

- AARB
  Fences shall be approved by the AARB prior to permitting / erection.

- Site Plans
  Indicate property lines, roads, sidewalks, and distances to adjacent buildings or structures, fire department access, exit discharge, public way.

- Foundation
  Indicate VDOT standard details for the erection and stability of fences, manufacturer’s details, or calculations signed by a Virginia licensed A/E.

- Other Construction
  Indicate paving, sidewalks, electrical service, lighting, storage structures.

6.18.2.12 Miscellaneous Structures
Contact DEB.
6.18.3 Codes & Standards Compliance Disputes
The Director of DEB functions as the Building Official for providing the Building Official duties in accordance with the VUSBC. Appeal of the application of the building code or refusal to grant a modification to the provisions of the building code by the Building Official or his staff may be made by the affected state agency to the Director of DGS. Appeals shall be made in writing within twenty-one (21) calendar days of the application of this code or refusal to grant a modification to the provisions of this code. The appeal shall contain the following information:

Agency Name:

Project Name:

Project Code Number:

Applicable Code/Edition/Section(s):

Disputed Application:
(Document and narrative that describe in detail, with code references, the disputed application and the alternative proposed application.)

Proposed Modification:
(Document and narrative that describe in detail, with code references, the proposed modification and systems that provides equivalent features to ensure that the spirit and intent of the law is observed and that the public health, safety and welfare are assured.)

Justification:

Signature of the Chief Facilities Officer:

The DGS Director shall issue a written decision on the appeal within fourteen (14) calendar days of receipt by the Department of General Services of the appeal application. State agencies shall exhaust this appeal process prior to application for appeal to the State Review Board.

6.18.4 State-Owned One- and Two-Family Dwelling Inspection
State-owned one- and two-family residential property that is rented to private parties or provided to state employees shall be maintained in accordance with the current applicable Virginia Maintenance Code. Inspection and reporting of the condition of the property shall be provided by the agency that owns the property in accordance with the following requirements.

Inspection Procedure and Report
Inspection and reporting shall be as defined by 18VAC15-40-130, Certified home inspection report. The inspection report shall be retained by the agency that owns the property, and copies shall be sent to the State Building Official and Division of Real Estate and Facilities Management (DREFM).

Inspector Qualifications
Inspectors shall be certified by the Virginia Department of Professional and Occupational Regulation as a “Certified home inspector.”

Inspection Frequency
Inspections shall be performed: 1) prior to property acquisition, 2) every five (5) years, and 3) at the request of the lessee having a valid complaint. Validity of lessee complaints shall be evaluated by the agency that owns the property. Lessees may appeal the decision of the agency that owns the property to the State Building Official.
Correct Deficiency
Life and fire safety deficiencies as determined by the Building Maintenance Official (see Section 5.19.2) shall be corrected prior to occupancy, or in occupied structures in a timeframe directed by the Building Maintenance Official. All other deficiencies shall be corrected within 120 days of the date of the completed report. Verification that the corrective work complies with the USBC shall be made by the agency that owns the property prior to occupancy or within the time frame designated. Uncorrected deficiencies in occupied structures shall be reported to the State Building Official and may result in the structure being placarded as unfit for habitation and prohibited from being occupied.

Interim Inspections
The agency may elect to perform interim inspections when the lessees change. The reporting criteria, inspection criteria and time for correction shall be determined by the agency.

Annual Reporting
The agency shall provide an annual report to the State Building Official listing the dwelling inspected, type of inspection (acquisition, five years, complaint) inspection date, inspector’s name, deficiencies corrected, and deficiencies outstanding.

Report Format
The following is a copy of 18VAC15-40-130.

18VAC15-40-130, Certified Home Inspection Report
A. Certified home inspection reports shall contain:
   1. The name, business address and telephone number of the certificate holder as well as his certificate number and expiration date;
   2. The name, address, and telephone number of the client or the client’s authorized representative, if available at the time of the inspection;
   3. The physical address of the residential properties inspected; and
   4. The date, time (to include both start and finish times of the inspection), and weather conditions at the time of the certified home inspection.
B. In conducting a certified home inspection and reporting its findings, the certified home inspector, at a minimum, shall inspect the condition of and shall describe in writing the composition/characteristics of the following readily accessible components and readily observable defects, except as may be limited in the certified home inspection contract agreement:
   1. Structural system.
      a. Foundation.
      b. Framing.
      c. Stairs.
      d. Crawl space, the method of inspecting the crawl space shall be noted and explained in the inspection report. If the crawl space cannot be inspected, the certificate holder shall explain in the inspection report why this component was not inspected.
      e. Crawl space ventilation and vapor barriers.
      f. Slab floor, when present.
      g. Floors, ceilings, and walls
   2. Roof structure, attic, and insulation
      a. Roof covering. The method of inspecting the roof covering shall be noted and explained in the inspection report. If the roof covering cannot be inspected, the certificate holder shall explain in the inspection report why this component was not inspected.
      b. Roof ventilation.
      c. Roof drainage system, to include gutters and downspouts.
      d. Roof flashings, if readily visible.
e. Skylights, chimneys, and roof penetrations, but not antennae or other roof attachments.
f. Roof framing and sheathing.
g. Attic, unless area is not readily accessible.
h. Attic insulation.

3. Exterior of dwelling
   a. Wall covering, flashing, and trim.
   b. Readily accessible doors and windows, but not the operation of associated security locks, devices, or systems.
   c. Attached, or adjacent and on the same property, decks, balconies, stoops, steps, porches, carports, and any associated railings, but not associated screening, shutters, awnings, storm windows, garages, or storm doors.
   d. Eaves, soffits, and fascias where readily accessible from ground level.
   e. Walkways, grade steps, patios, and driveways, but not fences or privacy walls.
   f. Vegetation, trees, grading, drainage, and any retaining walls in contact with or adjacent to the dwelling that may affect the dwelling.
   g. Visible exterior portions of chimneys.

4. Interior Dwelling
   a. Readily accessible interior walls, ceilings, and floors of dwelling and any attached or adjacent garage.
   b. Steps, stairways, railings, and balconies and associated railings.
   c. Countertops and installed cabinets, including hardware.
   d. Readily accessible doors and windows, but not the operation of associated security locks, devices, or systems.
   e. Garage doors and permanently mounted and installed garage door operators. The automatic safety reverse function of garage door openers shall be tested, either by physical obstruction as specified by the manufacturer, or by breaking the beam of the electronic photo eye but only when the test can be safely performed and will not risk damage to the door, the opener, any nearby structure, or any stored items.
   f. Fireplaces, including flues, venting systems, hearths, dampers, and fireboxes, but not mantles, fire screens and doors, seals and gaskets.
   g. Solid fuel burning appliances if applicable.

5. Plumbing system
   a. Interior water supply and distribution systems, including water supply lines and all fixtures and faucets, but not water conditioning systems or fire sprinkler systems.
   b. Water drainage, waste, and vent systems, including all fixtures.
   c. Drainage sumps, sump pumps, and related piping.
   d. Water heating equipment, including energy source and related vent systems, flues, and chimneys, but not solar water heating systems.
   e. Fuel storage and distribution systems for visible leaks.

6. Electrical system
   a. Service drop.
   b. Service entrance conductors, cables, and raceways.
   c. Service equipment and main disconnects.
   d. Service grounding.
   e. Interior components of service panels and sub panels, including feeders.
   f. Conductors.
g. Overcurrent protection devices.  
h. Readily accessible installed lighting fixtures, switches, and receptacles.  
i. Ground fault circuit interrupters.  
j. Presence or absence of smoke detectors.  
k. Presence of solid conductor aluminum branch circuit wiring.  
l. Arc fault interrupters shall be noted if installed but not tested if equipment is attached to them.

7. Heating system  
a. Heating equipment, including operating controls, but not heat exchangers, gas logs, builtin gas  
burning appliances, grills, stoves, space heaters, solar heating devices, or heating system  
accessories such as humidifiers, air purifiers, motorized dampers, and heat reclaimers.  
b. Energy source.  
c. Heating distribution system.  
d. Vent systems, flues, and chimneys, including dampers.

8. Air conditioning system  
a. Central and installed wall air conditioning equipment.  
b. Operating controls, access panels, and covers.  
c. Energy source.  
d. Cooling distribution system.

C. Systems in the home that are turned off, winterized, or otherwise secured so that they do not respond to  
normal activation using standard operating controls need not be put into operating condition. The certified  
home inspector shall state, in writing, the reason these systems or components were not tested.

Statutory Authority: Code of Virginia §§ 54.1-201 and 54.1-501

6.18.5 Structures owned by the University that are abandoned, unfit for human occupancy, unsafe, or  
vacant

This section defines the procedures and responsibilities of the State Building Official (Code Official), the State  
Fire Marshal, and the University as they apply to structures that are abandoned, unfit for human occupancy,  
unsafe or vacant.

The Virginia Construction Code (VCC) applies to structures that have yet to receive a final Certificate of  
Occupancy. The Virginia Maintenance Code (VMC) applies to existing structures. The Virginia Statewide Fire  
Prevention Code (VSFPC) applies to the inspection and maintenance of existing structures. These codes also  
regulate structures that are abandoned, vacant, unsafe and unfit for human occupancy and require the State Fire  
Marshal to inspect and report and the State Building Official to inspect, report, make a noncompliance  
determination, and take action to remedy the hazard of these structures.

VCC Section 118 Unsafe Buildings or Structures applies to buildings that become unsafe while under  
construction. VMC Section 105 Unsafe Structures or Structures Unfit for Human Occupancy applies to existing  
structures that are classified unsafe or unfit for human occupancy. VMC Section 105 also defines the  
responsibilities of the State Building Official as they pertain to Inspection, Report of Unsafe Conditions, Notice  
of Unsafe Structure or Structure Unfit for Human Occupancy, the Posting of Notice, and the Posting of Placard.  
VSFPC Section 311.1.1 Abandoned Premises, defines a premises ‘abandoned’ if the owner of the building or  
structure cannot be found. Buildings on Commonwealth of Virginia property are owned by the Commonwealth;  
therefore, the owner is known and can be found.

A specific definition for Vacant Premises (buildings or structures) is not provided within the VCC or the VSFPC.  
Based on the requirements defined within the VSFPC, a Vacant Premise (building or structure) for the  
Commonwealth of Virginia is an occupiable building that at the discretion of the owning Agency is vacant.
Vacant buildings are to comply with the requirements of the VSFPC Section 311 Vacant Premises. VSFPC Section 311.2 Safeguarding Vacant Premises define requirements, which are the responsibility of the University, for the maintenance of this property.

**Responsibilities of the State Building Official – VCC**
VCC Section 118 Unsafe Buildings or Structures defines the responsibilities of the State Building Official as it pertains to Inspection, Report of Unsafe Conditions, Notice of Unsafe Building or Structure, the Posting of Notice, and the Posting of Placard. The requirements of VCC Section 118 provide sufficient clarity to provide specific direction without additional guidance.

**Responsibilities of the State Building Official (Code Official) – Virginia Maintenance Code**
VMC Section 105 Unsafe Structures or Structures Unfit for Human Occupancy defines the responsibilities of the code official as it pertains to Inspection, Report of Unsafe Conditions, Notice of Unsafe Structure or Structure Unfit for Human Occupancy, the Posting of Notice, and the Posting of Placard. The requirements of VMC Section 105 provide sufficient clarity to provide specific direction without additional guidance.

**Responsibilities of the State Fire Marshal – Virginia Statewide Fire Prevention Code**
VSFPC Section 109.1, Inspection authorizes the State Fire Marshal to inspect all structures to assure compliance with the VSFPC. VSFPC Section 110.4, Unsafe Structures requires the SFMO to report the existence of unsafe structures to the State Building Official.

**Responsibilities of the University’s AVP of Facilities**
For each state agency that has real property, CPSM Section 5.19.2 Building Maintenance Official delegates authority and makes the Chief Administration Official of the state agency (acting through the Agency Building Maintenance Representative) responsible to the State Building Official, to report structures that are abandoned, vacant, unsafe, or unfit for human occupancy as defined above.

Upon receipt of a complaint of a potentially unsafe structure, the University’s AVP of Facilities shall cause the cited condition to be evaluated, and take actions defined within VMC Section 105 to 1) render a determination of findings to the University’s Senior VP and CFO, and 2) cause the condition to be remedied.
7.1 General

There are differences between work prepared for clients in the private sector and work prepared for VCU. The University cannot limit bidding to a selected list of contractors known to do good work. Unless contractors are prequalified for the project in accordance with the Governing Rules, any licensed contractor may bid on a Design-Bid-Build project. Since the knowledge and experience of the contractors bidding on the project is unknown, drawings and specification requirements must be clear, concise and provide thorough detailing of existing and proposed construction.

Sections, details, and dimensions must be in sufficient quantity, clarity and detail to allow the bidder to understand what is expected, to make takeoffs of material types and quantities, and once hired, to prepare shop drawings and execute the construction. This particularly applies to stairs, special connections for framing, typical details of system interfaces, flashings for roofs and walls, and similar building features. Details should clearly distinguish between existing, and proposed or new construction. Drawings must also clearly show and/or describe demolition requirements.

Project design is the sole responsibility of the A/E. Specifications which require the contractor to provide engineering design are not acceptable unless the products specified for contractor design are closed engineered systems. Closed engineered systems include: pre-engineered buildings, manufactured mechanical equipment, prefabricated trusses, and precast and common steel structural connections. Elements of the design intended to be designed by the contractor shall be approved in writing by the VCU Project Manager.

In order to encourage competition required in the expenditure of University and public funds, performance specifications that define a desired result or assembly, or reference recognized standards to define a desired result or assembly, are strongly preferred. If performance specifications are not practical, and a manufactured product must be used to define a desired result of assembly, then three manufacturers and three products shall be referenced. Do not reference both manufactured products and performance criteria because conflicts in the performance criteria and the product performance create unnecessary conflicts (Governing Rules). Sole source and proprietary specifications are not allowed without prior written authorization. Failure to meet these requirements will result in the A/E redesigning at their own expense.

7.1.1 Project Aesthetics

Good architecture can be achieved simply by good design, which implies sensitivity to scale, massing, proportion, materials, detail and color. Good design does not necessarily cost more. The University and the A/E must work together to achieve an aesthetically acceptable design which meets the functional requirements of the project within the stipulated design-not-to-exceed cost.

7.1.2 Project Identification on Documents

The University will assign a project number for each project. The University and the A/E shall include the Project Identification Code (PC#) on all plans, specifications, contracts, correspondence, sketches, invoices, memoranda, addenda and other documents related to the project. Where the overall project is not subdivided, show the three-digit subproject identification code number. Project Documents without the required identification are not complete.

Each page/sheet/sketch/drawing of any addenda shall include the A/E seal, the project title, the project code, the addendum number, the addendum date, and the page or sequence number to indicate that the material is a part of the contract documents. The A/E shall require the Contractor to provide the PC# on all submittals including invoices, schedules, shop drawings, change order proposals, correspondence and other project documentation.

7.2 Capital Project Initiation

The University will be authorized to initiate the design of a Capital Construction Project upon completion of an approved CO/HECO-2 Form. Depending on the project documentation previously submitted and the action wording on the HECO-2, one or more of the following design progress stages may be required by the Building Code Official:
• Schematic Design
• Preliminary Design
• Working Drawings

Minimum requirements for data, drawings, specifications, and cost estimates to be included in the submittal for the indicated phases are described in this chapter and the referenced Appendices.

7.3 Non-Capital Outlay Construction Projects

7.3.1 General
Construction or improvement projects undertaken on University property not classified as Capital Outlay projects are not required to follow the capital outlay submittal and approval process. This applies to all General funded, non-general funded, and Maintenance Reserve Projects at the University. However, Non-Capital Construction Projects are subject to review and permitting by the State Building Official for conformance to the VUSBC including its referenced standards and for the technical standards and policy requirements of the Manual and VCU’s FMD Design and Construction Standards. “Changes in Group Classification” of existing University buildings requires the submittal of information for the review and approval of DEB along with issuance of a new Certificate of Use and Occupancy.

7.3.2 Issuance of Building Permit
Projects/Work on University property shall be designed by and the documents sealed, signed and dated by Virginia-licensed A/Es. Working drawings ready for bidding and the appropriate information for the Building Permit (CO-17) shall be submitted to DEB for review and issuance of a Building Permit.

Some interior renovation or modification projects which do not involve a Change in Use Group Classification, or subdivision of rooms, or alteration of exit access requirements, or additional/redistribution of electrical loads, and project to alter or relocate portions systems may be permitted through the University’s delegated authority. The Director of Planning & Design is the code official for the University. Submit digital plans and specifications of sketches with a description of the Work to the University for approval. The University shall follow the procedures and keep records of such work as set forth in the University Project Permit procedures.

7.3.3 Issuance of Certificate of Use and Occupancy
The Work shall be inspected by a licensed A/E, or by other qualified and approved inspector, for conformance with the VUSBC as shown on the approved plans and specifications. The University shall submit the HECO-13.1a, HECO-13.1b, HECO-13.2a, HECO-13.3B, the Fire Marshal's report and recommendation, and other applicable certificates or reports along with the Form HECO13.3a, Application for a Certificate of Use and Occupancy, to the Code Official when requesting that a Certificate of Use and Occupancy be issued.

If the University proposes to change the Use Group Classification of a building or a portion thereof, the VUSBC requires that a new Certificate of Use and Occupancy be obtained. The project shall be in compliance with the current VUSBC requirements for the new use or alternatively, shall have the building evaluated by a licensed A/E for conformance with the requirements of the VUSBC, signed by a licensed A/E and shall be submitted along with copies of small-scale floor plans, a Fire Marshal's report, and a Form HECO-13.3a, Application for a Certificate of Use and Occupancy, to the University Building Official requesting issuance of a Certificate.

Renovation-only projects (not involving an addition to an existing building) or which do not involve a change in use or occupancy for the existing building will not be issued a Certificate of Use and Occupancy upon completion. The agency shall submit Form HECO-13.4 (Building Permit Closeout) to DEB via BITS along with Forms HECO -13.1, HECO -13.2, HECO -13.3b, HECO -13.1b and a final inspection report from the State Fire Marshal in order to close the permit when the construction is completed. The project is not complete as long as any deficiencies identified by DEB, the State Fire Marshal, or the A/E have not been completed, corrected or otherwise resolved.
7.4 General Requirements for Drawings

The following clarifies the requirements, standards, and expectations applicable to drawings prepared for bidding and construction for all University projects.

The Title sheet(s) shall clearly indicate the following:

- University Project Title and PC#
- Activity of function(s) to be performed in the facility
- Version (date) of VUSBC on which the design is based
- Other major code used as basis for design
- Use Group classification(s)
- Maximum VUSBC occupancy for each level and total for building
- VUSBC classification of construction type
- Area for each floor and entire building; volume of building
- Location and Vicinity Maps
- Seals of the responsible Architect and Engineers, signed and dated

Indicate the number of beds (dormitory or hospital), fixed seats (auditorium) or parking spaces (parking deck), and other information relating to capacity of the facility, as applicable.

Provide a master listing of all applicable abbreviations and symbols used in the set of drawings or provide a listing of the discipline-specific abbreviations and symbols at the beginning of each discipline.

Building floor plans and drawings for all disciplines shall be oriented the same to avoid confusion and to facilitate overlaying of drawings.

7.4.1 Professional Seals

All drawings and specifications submitted in support of an application for a building permit shall bear the Virginia professional seal(s) of the individual(s) responsible for its design. Schematic and Preliminary phase documents are not required to display professional seals. Working Drawings are required to display professional seals of the individual design disciplines. Final Documents (Bid Sets and Permit Sets) are required to display signed and dated professional seals. Work that is not regulated by the Virginia Department of Professional and Occupational Regulation (DPOR) does not require professional seals.

7.4.1.1 Use of electronic seal, signature and date

The Code of Virginia §59.1-42.1, Uniform Electronic Transactions Act, regulates the use of electronic records, signatures and contracts. In accordance with §18VAC10-20-760 - Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects Regulations, Use of seal: an electronic seal, signature and date may be used in place of an original seal, signature and date when it is a unique identification of the professional, is verifiable and its use is under the professional’s direct control. The electronic seal shall be 2 inches in diameter, meeting all criteria of the regulations referenced above. The printed name shall appear above the license number and both shall be legible. An electronic signature, which may contain digital signature verification, is acceptable as long as all relevant text is legible.

7.4.2 Arrangement of Drawings

Drawings shall be arranged in the following order with the discipline identifying character shown:

T – Title Sheet
C – Plot and/or Site Plans
C – Sanitary and Civil
B – Boring Logs
L – Landscape
D – Demolition
A – Architectural
S – Structural

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7.4.3 Units of Measurement for Dimensions
All dimensions on drawings shall be expressed in feet, inches and fractions of inches. Metric dimensions are not acceptable.

7.4.4 Size of Drawings
Drawing sheet size, except in special cases approved by the Director of DEB, shall be 24" by 36" (preferred) or, alternatively, 30" by 42". Drawings shall be prepared so as to be suitable for scanning and for making clear, legible half-size reproductions.

7.4.4.1 Weight of Drawings
Large sets of drawings shall be organized in volumes such that the weight of any volume does not exceed approximately 30 lbs.

7.4.5 Size of Lettering
Mechanical (CADD, BIM) lettering shall be 1/10" minimum and in all caps. The minimum height for hand lettering on all projects shall be 1/8". Spacing between lines shall be equal to one-half the letter height.

7.4.6 Orientation
It is customary for a building plan to be oriented with the main entrance toward the bottom or right edge of the sheet, depending upon the building shape. All plans shall have a North Arrow for orientation. All discipline building plans shall be consistent in orientation insofar as practicable.

7.4.7 Section and Detail Designation
The standard section symbol below is representative of the information required for section and detail “tags”. The symbol used on the drawing sheet(s) shall indicate where the section or detail is taken and the drawing sheet where the section or detail is drawn.

7.4.8 Scales
Foundation and floor plans shall be drawn to a scale not less than 1/8" = 1'-0" with all necessary dimensions shown. Roof plans are preferred at 1/8" = 1'-0" scale; however, roofs without mechanical equipment and metal / shingled pitched roofs may be drawn at a 1/16" = 1'-0" scale. Elevations shall be drawn to scale at not less than 1/8" = 1'-0". Typical wall sections shall be drawn at not less than 3/4" = 1'-0" scale. Typical window, door and special opening details shall be drawn at 1 1/2" = 1'-0" scale or larger. Provide all necessary interior and exterior details, including special doors, windows, woodwork, paneling or other decorative work, toilets and washrooms,
etc., with plans and elevations at a minimum scale of 1/4" = 1'-0" and with construction details at a minimum of 3/4" = 1'-0". Mechanical and electrical equipment room plans shall be drawn at 1/4" = 1'-0" scale minimum. Each drawing shall, as a minimum, have a graphic scale shown for the predominant scale used on that sheet.

7.4.9 Drawing Numbers
Drawings shall be sequenced by discipline letter and number, i.e., A-1, A-2, A-3.1, A-3.2, S-1, S-2, etc.

7.4.10 Relation of Drawings and Specifications
If a discrepancy exists between the drawings and specifications, the specifications take precedence.

7.4.11 Date of Construction Documents
All drawings and the specifications shall be dated with the same date which is established by the A/E as the date the documents are (or will be) complete, sealed, signed, dated, and ready for bid. Documents printed for bidding shall bear the date described above with no revision numbers or dates and no revision bubbles or clouds.

7.4.12 Limits of Work
The drawings shall describe/show the Work to be provided by the Contractor. Existing features, structures, or improvements to remain shall be so noted. Existing features, structures, or improvements to be demolished and/or removed shall be noted or identified. Work, improvements, demolition or construction which the University will perform or have performed by separate contract shall be identified as “Not in Contract” or “NIC” if the abbreviation has been defined.

7.4.13 Determination of Building Area
The building area shall be indicated on the drawings based upon the context of its usage as described below.

7.4.13.1 Building Area for Code Compliance
The square footage provided shall reflect the VCC definition of “Building Area” when determining compliance with VCC Table 506.2 - Allowable Area Factor (At = NS,S1, S13R, or SM, as applicable) in Square Feet.

7.4.13.2 Gross Building Area for CO Forms and Cost Estimates
The square footage provided shall be determined utilizing the guidelines on Form DGS-30-219 – Area Calculation for Gross Building Area for CO Forms and Cost Estimates. This calculation includes items not included in the VCC “Building Area” such as exterior walls, mechanical penthouses, mezzanines, balconies, and other areas that contribute to the overall building size and scope for the purposes of determining CO-2 square footage, estimates, or other forms related to the capital outlay process.

7.4.14 Boring Log Presentation
Boring logs representing soil conditions encountered in the site investigation including pertinent logs from previous explorations in the project location shall be presented on the drawing(s). Logs shall show the ground elevation, the depths of borings, depths and classifications/descriptions of materials encountered, blow counts per ASTM D-1586, ground water elevation, and other pertinent information. Boring locations relative to the project shall be shown on a small scale location plan or on the Site Plan. Boring logs may be photocopied to stick-on transparencies and securely and neatly organized on the boring log sheet if legible and suitable for scanning.

7.4.15 Record Drawings
Record Drawings showing the As-Built conditions shall be provided to the Agency/Owner on reproducible media. The Agency may further require that they be provided with the Record Drawings as CADD files on removable media.

7.4.16 CADD and BIM Record Drawings on Removable media
The University may require the A/E to prepare the drawings electronically and provide the University with one copy of the completed drawings on removable media. The A/E shall provide the University with any special fonts, symbol libraries, special line types or line drawing software, or any other unique software required for the University to maintain the electronic drawings as current “As Built” documents.
7.5 Specification Standards
Specifications shall clearly define the quality, performance, and installation standards for the Work and the conditions under which the Work is to be executed. They shall be in sufficient detail to describe without ambiguity, the materials, equipment and supplies, and the methods of installation and construction. Required tests and guarantees shall be indicated in the specifications.

7.5.1 Federal Specifications
Federal Specifications, MILSPECs, Corps of Engineers (CE) Specifications and the like is not permitted. All specification sections shall be written/edited to apply specifically to the project and shall not include materials, standards, requirements or data not pertaining to the project.

7.5.2 Use of Current Forms
The specifications shall include the latest published edition/revision of the General Conditions HECO-7, Instructions to Bidders HECO-7a, the Standard Bid Form format and wording, the Standard format and wording for the Notice of Invitation to Bid, and all other applicable HECO Forms. The latest editions are published on the FMD website and may be downloaded/printed for use and inclusion in the documents. If the University determines that another delivery method is appropriate for this project, updated Specifications with the appropriate Invitation for Bids and/or other documentation shall be coordinated with the VCCO and submitted to DEB for review and approval.

7.5.3 Project Manual/Specification Arrangement
Specifications shall be on 8 1/2" by 11" sheets with bid sets preferably printed on both sides of the sheet. Font size shall be suitable for scanning and shall not be smaller than 10-point font size. The table of contents pages shall be dated with the same date as the drawings and shall be sealed and signed. The Project Manual shall include:

- Table of Contents
- Notice of Invitation to Bid (Refer to Sample Format in DGS-30-256)
- Instructions to Bidders (HECO-7a)
- Prebid Question Form
- Bid Form
- Standard Bid Bond Form (HECO-10.2)
- Commonwealth of Va. General Conditions of the Construction Contract (HECO-7)
- Supplemental General Conditions, if applicable
- Contract Between Owner and Contractor (HECO-9)
- Workers Compensation Insurance Certificate (HECO-9a)
- Standard Performance Bond (HECO-10)
- Standard Labor and Material Payment Bond (HECO-10.1)
- Change Order blank (HECO-11)
- Change Order Estimate (General Contractor) (GC-1)
- Change Order Estimate (Subcontractor) (SC-1)
- Change Order Estimate (Sub-subcontractor) (SS-1)
- Schedule of Values and Certificate for Payment (HECO-12)
- Affidavit of Payment of Claims (HECO-13)
- Certificate of Completion by Architect/Engineer (HECO-13.1)
- Certificate of Partial or Substantial Completion by A/E (HECO-13.1a)
- Final Report of Structural and Special Inspections (HECO-13.1b)
- Certificate of Completion by Contractor (HECO-13.2)
- Certificate of Partial or Substantial Completion by Contractor (HECO-13.2a)
- List of Drawings
- Submittal Register Format
- Special Inspections List (HECO-6b)
- Division 1 - General Requirements, Special Conditions, etc.
• Technical Specifications
  (a) Technical Specification Sections shall be numbered with appropriate section numbers corresponding to
  an industry-standard specifications format, such as one of the two CSI Masterformat numbering systems.
  The numbering system shall be consistent within the entire submittal.
  (b) Technical Sections should, where possible, be subdivided into the Part I - General, Part II - Products,
  Part III - Execution format.
• Appendices containing Soils Report, Asbestos Inspection Survey Report, Lead Inspection Survey Report
  and/or other information pertinent to the project but not a part of the Work. Such material should be noted as
  “INFORMATION ONLY” for use by the Contractor.

7.5.4 General Conditions of the Construction Contract
Addendum Number One to The General Conditions for the Construction Contract (HECO-7) and The General
Conditions for the Construction Contract (CO-7) are standard documents required to be incorporated in the
documents for all building-related construction, renovation, addition, and/or repair projects for which plans and
specifications are prepared. The General Conditions (CO-7) have significant legal implications and as such,
have been reviewed by the Office of the Attorney General. The term “HECO-7”, as used herein, also means the
Form HECO-7DB (applicable to Design-Build contracts) and the Form HECO-7CM (applicable to Construction
Management contracts).

No item of the General Conditions may be amended or deleted or its intent changed without prior written
approval of the AVP for FMD.

The A/E shall be familiar with the above requirements and provisions of the General Conditions (HECO-7) and
the Instructions to Bidders (HECO-7a) and shall coordinate the requirements in the Specifications with those in
the HECO-7 and HECO-7a.

The latest published edition of the General Conditions (HECO-7) shall be bound in the Project Manual or
referenced on the documents if a Project Manual is not provided. If incorporated in the bid sets by reference, a
complete copy of the General Conditions shall be provided to any requestor at no charge. The Notice of
Invitation to Bid and the Instructions to Bidders (HECO-7a) must state where the General Conditions (HECO-7)
are available for inspection and from whom the prospective bidders may request and receive a copy of the
General Conditions. The entity tasked with issuing the documents for bidding shall be listed as the source for
obtaining a copy of the General Conditions if not included in the bid documents. A complete copy of these
General Conditions shall be included in the Documents attached to/referenced by the Contract Between the
Owner and the Contractor (HECO-9).

7.5.5 Supplemental General Conditions
Supplemental General Conditions modify, amend or delete specific portions of the General Conditions. Where
it is necessary to modify or amend a section of the General Conditions, the changes shall be set forth and
labeled “Supplemental General Conditions”, and shall be submitted for review and approval by the AVP for
FMD. Any proposed modification or amendment shall first be approved.

7.5.6 Special Conditions
The “Special Conditions” establish specific requirements which are relative to the specific project. These
include such items as hours of work restrictions, Contractor office and storage area restrictions, coordination
requirements for utility interruptions, hazardous material data sheet submittals, security procedures for
construction personnel and so forth. The Special Conditions shall be included in Division 1 of the Technical
Specifications.

7.5.7 Liquidated Damages
The use of “Liquidated Damages” can be effective when properly implemented and administered. However,
Liquidated Damages is not a penalty clause and does not guarantee that the project will be finished on time.
Specifying Liquidated Damages, if approved, shall be incorporated by a Supplemental General Condition and has
significant legal implications and risks for the University. If the University wishes to specify Liquidated
Damages, the University shall prepare a justification for doing so and attach documentation on how the proposed
amount per day was determined. The justification shall document costs that can be clearly identified and
defended in court such as project management costs, rental costs, transportation costs associated with the work and the like. It shall not include speculative costs, such as loss of future revenue. Submit this information to the AVP of FMD for review and approval before incorporating Liquidated Damages in the construction documents.

7.5.8 Instruction to Bidders
The Instructions to Bidders, HECO-7a, is a standard document which has been written to conform to the requirements and procedures of the Higher Ed Purchasing Manual. The Instructions to Bidders shall be reproduced and included in the Documents without modification. The requirements and procedures delineated in the Instructions to Bidders have significant legal implications and shall not be changed without the prior written approval of the Director of DEB.

The persons at the University and the A/E who are responsible for advertising, receiving and opening bids for the project shall be familiar with and conform to the requirements of the Instructions to Bidders, HECO-7a.

7.5.9 Types of Specifications
There are three types of specifications used on University projects:

7.5.9.1 Nonproprietary or Performance Specifications
This is the preferred method of specifying materials, equipment and systems. A nonproprietary specification shall be written either as (a) a generic performance specification (preferred); or as (b) a specification naming a minimum of three manufacturers with model or series numbers.

(a) A generic performance specification must be written to describe the required characteristics, performance standards, capacities, quality, size or dimensions, etc. of the item or system. A minimum of three manufacturers must be able to meet all requirements shown in the specification. The specification shall not be contrived to exclude any of the three manufacturers or to benefit any one manufacturer over any of the other manufacturers. The performance specification shall not name manufacturers or brand name products.

(b) A non-proprietary manufacturer/model number type specification must list at least three manufacturers with their respective model numbers. Each of the listed manufacturers/model numbers must have been determined by the A/E to meet the specifications and be acceptable. If a named manufacturer pre-packages or pre-assembles its item or system, the model number shall be specified. If the named manufacturer(s) custom builds the item or system, naming of model numbers is not required.

(c) The manufacturer/model specification must describe the required characteristics, performance standards and capacities which will be used to determine equal products as allowed by Section 26 of the General Conditions. Do not specify extraneous characteristics that do not relate to the product’s performance or suitability for the project. If only two acceptable manufacturers can be found and documented by model number but other equal products are acceptable if found by the bidder, the A/E may request permission from the Director of DEB to list only those two manufacturers but consider equals if proposed by the Contractor.

(d) Where a particular manufacturer’s product is indicated as the basis for design/detail, the following statement shall be placed on the drawing with appropriate notation/references:

“The design/detail/section shown is based on (manufacturer, model) equipment and is intended only to show the general size, configuration, location, connections and/or support for equipment or systems specified with relation to the other building systems. See specification for technical requirements pertaining to the product.”

7.5.9.2 Proprietary Specifications
A specification is proprietary if it specifies a product/requirements which only one manufacturer can meet but the product is available from multiple vendors or sources. Although a proprietary specification should be avoided because it restricts competition, circumstances such as space limitations, mandatory performance standards, compatibility with an existing system, etc., may leave no other reasonable choice (see below).
Two typical situations that may require proprietary specifications are:
(a) when only two manufacturers or suppliers provide an acceptable product or system, when there are no
equals and when no substitutions are allowed; or
(b) when there is only one manufacturer but two or more vendors or suppliers can purchase the material and
compete to provide the product or system to contractors or bidders.

Proprietary specifications may be used when the University Project Manager or A/E requests and receives,
in writing, authority from the AVP of FMD to use a proprietary specification. The Project Manager or A/E
must request authority as soon as the need for the specification is recognized, preferably in the preliminary
design stage but definitely prior to submission of Working Drawings/Contract Documents. The request
shall explain why the proprietary specification is necessary.

If proprietary specification authorization is granted, the specification shall state that “the product shall be
used to the exclusion of all others and no other product will be considered to be equal”.

7.5.9.3 Sole Source Specifications
A specification is sole source when it names only one manufacturer or product to the exclusion of others, or
when it is contrived so that only one manufacturer, product, or supplier can satisfy the specification.
Because it eliminates all competition, it can be used only in the most exceptional circumstances and under
the strictest conditions. A product, piece of equipment or service which is available only thru an area
franchised vendor is also considered to be a Sole Source item.

It is the policy of the Commonwealth of Virginia that contracts be awarded on a competitive basis and that
the use of a sole source procurement be limited to those instances where only one source is practically
available which will meet the specific requirements of the project.

Sole source procurement may be used when the University Project Manager or A/E requests and receives,
in writing, the authority from the AVP of FMD to use a Sole Source specification. The Project Manager or
A/E must request authority as soon as the need for the specification is recognized, preferably in the
preliminary design stage but definitely prior to submission of the Contract Documents.

The justification for a sole source request shall address the following (by number and order) in a direct and
concise manner:
1) explain why this is the only product or service that can meet the needs of the University;
2) explain why this vendor is the only practicable available source from which to obtain this product or
   service;
3) explain why the price is considered reasonable; and
4) describe the efforts that were made to conduct a noncompetitive negotiation to get the best possible
   price.

Prior to advertising the project for bids, the University shall:
(a) procure the sole source item and specify it as “University furnished/Contractor installed”, or
(b) negotiate a fixed price for the item or system with the sole source vendor and require that the vendor
   provide the specified sole source Work as a subcontract to the bidder who is awarded the contract.

In the latter case, the Bid Form shall show the vendor’s name and the subcontract price for the item/system
to be included in the Contractor’s bid. (See Sample Bid Form Format for required wording. The University
shall procure the item or system, including installation where applicable, in accordance with the provisions
of the Higher Ed Purchasing Manual.)

7.5.10 Virginia Manufactured Products
Pursuant to House Joint Resolution No. 3 of the 1984 Session of the General Assembly, when brand and/or
manufacturers names are specified and one or more of those named are known to be Virginia-based vendors,
manufactured products, and/or contractors, those known Virginia-based vendors, products or contractors shall be
listed prior to listing non-Virginia based firms.
7.5.11 Use of Standard or Guide Specifications

Guide specifications prepared with software (AIA MasterSpec, BSD SpecLink, ARCAT, and other sources complying with the CSI Master Format numbering system are acceptable for editing.

The A/E shall edit the guide specifications to include only the materials, requirements, and procedures applicable to the project. Specifications that are submitted without editing will be rejected as an incomplete submittal and appropriate notation made on the A/E's performance evaluation.

If Navy or CE guide specifications are used on a project, they shall be edited to delete references to Military and Federal Specifications. References to the Contracting Officer should be changed to the University. Also, requirements for tests, inspections, visits to the manufacturer’s plant, etc. which are not normally required for state projects shall be deleted.

7.5.12 Restrictive Specifications and Performance Requirements

7.5.12.1 Sole Source Specifications

The A/E shall not require samples, shop drawings, or similar materials to be submitted for approval prior to receipt of bids. The specifications must contain sufficient information to describe to the contractor and bidders the performance and quality standards that will be used to evaluate the submittals.

7.5.12.2 Bidder Experience

Number of years of experience, or time in business, shall not be specified as a basis for award of contract. This applies not only to contractors, but also suppliers of equipment.

7.5.12.3 Prequalification of Special Systems

Complex and/or sensitive systems such as locking systems, detention equipment and security control systems for prisons often require manufacturers with a proven history of reliable, operable equipment in special situations with minimal malfunctions, as well as subcontractors who are experienced installers of that manufacturer’s products. In such instances, the University and A/E should develop the necessary documents to prequalify the manufacturers and/or subcontractors prior to bidding. The names of those prequalified shall be listed in the bid documents for use by all general contract bidders.

7.5.12.4 Unproven Technology

Projects for the University shall not be testing grounds for new types of materials or equipment. However, the fact that a material is newly-developed does not preclude its use if documentation of independent laboratory tests clearly show that the material will meet the applicable requirements for the project. The AVP of FMD may, where justified, authorize use of a new material, equipment or system for a particular project on a trial basis for observation/evaluation. The University will be required to closely monitor the installation for compliance with manufacturer’s instructions, conduct periodic inspections and report inspection results to DEB.

7.5.13 Phraseology

Specifications must clearly indicate the requirements for the project. The following instructions are intended to reduce common errors and conflicts that may result in change orders evolving from interpretations of the specifications.

1. Under “Requirements,” do not say “the Work consists of ….” Drawings should show the entire scope of the Work. If necessary to list certain parts, say “Generally, the Work includes…..”

2. In lieu of reference to the accompanying drawings, use the words “as shown”, “as indicated”, “as detailed” or “as approved by …”, “as directed by …”, “as permitted by……”.

3. There are two parties to the Construction Contract: (1) the Agency or Owner for whom the Work will be performed and (2) the Contractor who has the responsibility to the Owner for all Work in the Contract. Do not name which subcontractor will do the work (i.e., the plumbing contractor, the earthwork contractor, etc.). The Contractor is responsible for determining the packages of Work for each subcontract.

4. Do not use “etc.” This term is too indefinite for bidding and inspection purposes.
5. Minimize the use of cross references and in no case use paragraph numbers for this purpose. If necessary to refer to a particular paragraph, do so by its section number and title (e.g. Section 03300, Cast-in-Place Concrete).

6. Do not set up a paragraph in the various sections entitled “Work not Included.” Describe the work that is included under the respective sections.

7. Specifications should clearly delineate air conditioning ducts, heating ducts and piping systems which are required to be insulated. The phrase “insulating all ducts except in conditioned spaces” has resulted in differences of opinion and claim situations. All duct systems should be appropriately designated as supply, exhaust, outside air intake, transfer, relief, or return and further clarified by stating insulating requirements.

8. Do not confuse any and all; “Correct any defects” should read “correct all defects”.

9. Do not confuse either or both; e.g., “Paint sheet metal on either side” should read “Paint sheet metal on both sides”. “Either” implies a choice.

10. Do not confuse “or” and “and”; e.g., “The equipment shall not have defects in workmanship and material.” The use of “and” in this sentence indicates both requirements must be met. e.g. “Additives that decrease strength or durability are not permitted.” The use of “or” implies either condition would disqualify the additive.

11. Do not use “and/or”. The courts have considered this phrase to be intentionally ambiguous and, therefore, claims are often rendered in favor of the Contractor.

12. Use statements that are definite and contain no ambiguous words and phrases.

13. “Remove” implies to take away from its current location. If “remove” is used, the A/E must also indicate whether to dispose of, salvage or re-install the material “removed”.

14. “Reinstall” implies put existing back in indicated place. If “reinstall” is used, the A/E must also indicate that the Contractor must carefully remove the item, properly store it, and then “reinstall” the item at the appropriate time.

15. “Replace” implies removal of old material and furnish and install new material. The preferred wording would be to “remove”..... and “provide”......

16. “Provide” is defined as “furnish and install”. When material or equipment is “furnished” by the Agency directly or under other contracts for installation by the Contractor, the term, “install” should be used; however, the Contractor may be required to “provide” foundations, fastenings, etc. for the installation. If the word “install” is used alone, the Bidder or Contractor has a right to assume, on the basis of the definition cited, that the Agency will “furnish” the materials in question.

7.5.14 Specification on Removable Digital Media
The University may require the A/E to provide the University with one copy of the final completed technical specifications including addenda on removable digital media.

7.5.15 Hardware Specifications and Schedules
Hardware specifications and schedules may be written to specify the applicable Builders Hardware Manufacturer's Association (BHMA)/American National Standards Institute (ANSI) standards and designations or the specifications and schedules may be written by specifying three manufacturers and model numbers for each item. In either case, the specifications must give sufficient information of the type, size, function, finish, etc., for the vendor to know what is required and for the A/E to evaluate the submittals.

7.5.16 Product Warranties
Specifications shall identify product warranties that differ from the standard manufacturer’s warranty for the product.

7.6 Cost Estimates
Detailed descriptions and requirements for cost estimates are provided in Appendix C. A detailed cost estimate consistent with the level of design is required from the A/E with each submittal. A Building Cost Summary form shall be completed indicating the estimated cost of each system included in the project. In addition to a printed copy of the Building Cost summary form and estimate backup/details, provide an electronic copy of the completed Building Cost Summary with each estimate. The system quantity, system unit cost and unit cost per building square foot shall be shown on the form. Backup estimating information, including quotes of estimated cost for major items

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of equipment or built-in systems, shall accompany the Building Cost Summary form. An independent cost estimate is required with the preliminary submittal. If the preliminary submittal is waived or not required, the independent cost estimate shall be included in the working drawings submittal. On large projects, where construction cost versus budget is in doubt, the Owner may elect to obtain an independent cost estimate based on the final plans and specifications prior to bidding. All cost estimates shall be submitted using ASTM Uniformat II cost breakdown structure in form DGS-30-224 (Building Cost Summary Form). ASTM Uniformat II Classification Standard has been extracted, with permission, from ASTM E1557-09 Standard Classification for Building Elements and Related Sitework-UNIFORMAT II, copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International.

7.6.1 Estimator Qualifications
Capital project estimate submissions must be prepared by professional cost estimators. Certification as a cost engineer by the Association for the Advancement of Cost Engineering (AACE), or as a certified professional estimator by the American Society of Professional Estimators (ASPE), is supporting evidence of an estimator’s qualifications, although it is not required.

7.6.2 Ethics
The standards of practice described in the Canons of Ethics published by the AACE and the ASPE, and available on both their Web sites, apply to all estimating services.

7.7 Design Initiations/Pre-Design Conference
The University shall arrange for a pre-design conference with DEB for all Capital Projects. Participants should include the University’s Capital Outlay/Construction Representative, the University’s Project Manager, the DEB Review Team and the A/E’s Project Manager and responsible designer in each discipline (architect, civil, structural, mechanical, electrical and others if needed). Where the A/E and the University Project Manager are both experienced in the CPSM process and the University determines that a pre-design conference is not needed for the project, the University shall notify the DEB Director in writing of the decision. The purpose of the pre-design conference is to clarify to all parties involved the procedures, needs and requirements for the particular project. Therefore, it may be beneficial for an A/E providing services for the first time on state work to have the pre-design conference before the fees and terms of the A/E Contract are finalized.

The following is a sample of topics that may be included in the pre-design conference agenda:

- Introduction of Attendees
- Role of DEB
- Authorized Communications
- Design not to exceed Budget (Project construction budget)
- Proposed Design Schedule
- Requirements of the Manual related to the Public Procurement Act, Chapters 4-7 of the Manual and Fire Safety Reviews
- Clarification / Resolution of Budget Development Comments
- Applicable building code and accessibility reference
- Compliance with the Virginia Energy Conservation Code
- Applicability of the High Performance Buildings Act
- Submittal Contents
- Review Requirements
- Intent of Review Comments
- Waivers and Code Modifications
- Sole Source/Proprietary Specifications
- Use of Standard CO Forms and Formats
- Value Engineering
- Prequalification of Contractors
- Other Regulatory Reviews
- Design Approach
- Project Scope to include:
- Functional layout requirements
- Type of occupancy and activities to be housed
- Capacity requirements of spaces and/or building
- Exterior finish or appearance requirements
- Interior finish requirements
- Types of construction or materials required
- Style and character of building desired
- Special considerations such as expansion
- Floor and Roof Live Load, Wind Load, and Seismic Design Criteria
- Special HVAC or environmental requirements and existing systems and requirements.
- Fuel Analyses & Selection
- Special electrical power or lighting requirements and existing systems and requirements.
- Schedule requirements for design and for occupancy
- Geotechnical data requirements
- Site particulars and requirements
- A/E's questions and clarifications

7.8 Schematic Design/Project Criteria

7.8.1 General Requirements
The following requirements shall apply to all Capital Projects, unless waived by one or the two of the following: (1) CO/HECO-2 Action Wording or (2) MOU, a schematic design/project criteria submittal shall be made to DEB. The purpose of the schematic submittal is to further develop data, detail and scope including schematic plans, as well as verify the data and program contained in the Capital Project Request. The project scope established by the schematic design, as agreed to by the University and the A/E, shall become a part of the A/E Contract as further definition of the scope described in the Capital Project Request Data.

The Schematic submittal shall include an updated/current copy of the Capital Budget Request, or a listing if the assignable Room and Space Listing, which was the basis for development of the Schematic Design.

A schematic review meeting with the Code Official (DEB) may be requested by the University, A/E, or University Project Manager to assist in verifying the design and program approach, the systems proposed for the project and/or to resolve issues raised by the review of the Schematic submittal.

A Schematic Design presentation to the State Art and Architectural Review Board and the University Architectural Review Committee is required. Reviews by the University Building Committee, the Director of Planning and Design) and DEB are also required. Also, see the VCU Design & Construction Standards.

All review issues must be resolved before the A/E is authorized to proceed with the preliminary design.

7.8.2 Schematic Submittal Requirements
1. Basis of Design Narrative
2. CR-2 Form
3. A/E Project Cost Estimate
4. Schematic Drawings

7.8.2.1 Basis of Design Narrative
The Schematic Design shall include a Basis of Design Narrative which provides the following information: See Appendix B for Narrative requirements.

7.8.2.2 CR-2 Form
For pool projects, a completed CR-2 form shall be submitted as part of the Schematic submittal indicating, in sufficient detail, construction costs (detail provided in A/E estimate), soft costs, delivery method, anticipated bid date, anticipated construction duration, project square footage, and all anticipated funding sources.
7.8.2.3 Schematic Cost Estimate
The A/E shall prepare a schematic design estimate. See Appendix C.

7.8.2.4 Schematic Drawings

Title Sheets
1. Project Identification: Agency, Project Code Number, Appropriation Act Title
2. Activity or function(s) to be performed in the facility
3. Edition (year) of the VUSBC on which the design is based.
4. Applicable accessibility standards.
5. VCC Construction Type.
6. (Use) Group(s) per VCC. For mixed-use occupancies, indicate which Groups are separated and non-separated.
7. Other major code(s) used as a basis for design.
8. Indicate if High Performance Buildings Act is applicable.
9. Identify the applicable Virginia Energy Conservation Code Compliance Statement (Refer to Section 6.1.5).
10. Location and vicinity maps noted to show project location.
11. Tabulation of GSF per floor (new and renovated), total GSF (all floors - new and renovated), total building volume.
12. Tabulation of “Building Area” per VCC definition (per story).
13. Tabulation of units: Number of parking spaces, auditorium seats, bedrooms etc.
14. Design occupant load for each level and total for the building.
15. Index of drawings.
16. The uniform date of the completed schematic design documents.

Architectural Drawings
The following shall be included as a minimum:
1. Architectural Floor plans of each floor showing space names, nominal room sizes, and circulation paths
2. Architectural Roof plan showing roof slopes and drainage
3. Longitudinal building section with floor to floor and floor to ceiling dimensions
4. Transverse building section
5. Exterior elevations
6. Structural plan of a typical supported floor framing scheme and a typical section showing the proposed components of the floor system
7. Orientation and approximate location of proposed roads, walks and parking on a site plan
8. The rooms and spaces to be protected by any proposed fire suppression system (including clean agent) and the proposed locations of the major fire suppression system components.
9. Any other information that is of value to the University and the A/E reviewing the project.

Fire Protection Information Plan
Provide the following as a minimum:
1. Indicate whether or not the building will be equipped with fire protection sprinkler system and/or fire detection/fire alarm systems.
2. Design occupant load(s), including the number of occupants to be accommodated in each space. The determination for the occupants is based on the use and function of the spaces.
3. Indicate paths for means of egress, paths of exit access, travel distances to exits and common paths of travel. Indicate specific locations where access controls or security locking systems will be provided within means of egress paths.
4. Identify projects that will have partial or phased occupancy.
5. Indicate fire-resistance rating(s) of all proposed assemblies. Completely show the continuity of the rated assemblies using reference symbols.

Verification of Existing Conditions
The A/E shall visit the site and ascertain pertinent local conditions which must be addressed in the design.
As part of the required services, it is the A/E’s responsibility to verify, by on-site observations of applicable existing buildings, the configurations, locations, dimensions, sizes and conditions accessible for verification. Certain assumptions are made regarding existing conditions in the remodeling and or rehabilitation of an existing building. Some of these assumptions may not be verifiable without additional exploration or investigation of the building or site. To minimize the risk during construction of uncovering conditions that are not as shown on the documents and delaying project progress, the University should consider and evaluate the advice of the A/E to conduct additional investigation, verifications or checks to verify.

7.9 Preliminary Design (Design Development Phase)

7.9.1 General Requirements
Based on the previous approvals and direction, the A/E shall prepare the Preliminary Design consisting of drawings, Narrative and other documents to fix and describe the size and character of the entire Project as to exterior appearance; foundation, structural, mechanical, and electrical system; materials; and such other essentials as may be appropriate. The A/E shall have visited the site and ascertained pertinent local conditions required to be addressed in the submittal. If any change from the information submitted at the schematic stage relating to the mix or amount of space occurs, submit new information in the format of an updated/current copy of the Capital Budget Request, or an Assignable Room and Space Listing, which was the basis for development of the Preliminary Design.

Preliminary submittals shall include ventilation design criteria and sufficient data to show compliance with code requirements and standards of good practice.

7.9.2 Preliminary Submittal Requirements
Submit the following:

1. Basis of Design Narrative
2. CR-2 Form (pool projects)
4. Independent Cost Estimate
5. HVAC Systems Life Cycle Cost and Energy Analysis
6. Fuel Source Life Cycle Cost and Energy Analysis
7. VE Study and recommendations, if applicable
8. Geotechnical Report
9. Calculations
10. Preliminary Drawings

7.9.2.1 Basis of Design Narrative
The narrative shall describe the project scope, the functional and operational criteria to be met, the justification for the decisions or choices made and any proposed deviations from the standards required by the Manual. See Appendix B.

7.9.2.2 CR-2 Form
For pool projects, a completed CR-2 form shall be submitted as part of the preliminary submittal indicating, in sufficient detail, construction costs (detail provided in A/E and independent cost estimates), soft costs, delivery method, anticipated bid date, construction duration, project area and all project funding sources.

7.9.2.3 A/E Preliminary Cost Estimate
The A/E shall submit to the University an estimate of the construction cost of the proposed design without regard to available funds. The estimate shall relate only to the estimated bid amount for the construction shown and shall not include fees or unknown contingencies. The cost estimate summary shall include any built-in equipment, even if such equipment is bid separately. Any proposed additive bid items must be justified and indicated by a separately stated estimate amount. The cost estimate must indicate the derivation of the pricing for the estimate and shall, as a minimum for an Architectural project, include the data required by Appendix C.
Utilities, sitework, civil and other special projects such as boiler installation, a utility system, a road system, a water plant, a wastewater plant, a refrigeration or chiller installation, etc., must be estimated on a quantitative basis for the major components and a lump sum estimate for the remainder.

Preliminary submissions shall be deemed to be incomplete if the above are not included.

7.9.2.4 Independent Preliminary Cost Estimate
The University shall submit an independent preliminary design estimate in accordance with this Manual.

7.9.2.5 Value Engineering
Submit a value engineering study and University recommendations in accordance with this Manual.

7.9.2.6 Geotechnical Report
Submit a geotechnical report that includes boring logs, geotechnical analysis and foundation design recommendations.

7.9.2.7 Calculations
Submit one copy of calculations for each discipline. Indicate design criteria, loadings, assumptions, evaluations and comparisons of alternative systems, cost factors and other considerations which support the systems selected and shown on the drawings.

7.9.2.8 HVAC Systems Life Cycle Cost and Energy Analysis
See Appendix G.

7.9.2.9 Fuel Source Life Cycle Cost and Energy Analysis
See Appendix G.

7.9.2.10 General Requirements for Preliminary Drawings
Preliminary drawings shall show the following information unless such information is not applicable to the project:

Title Sheets
1. Project Identification: Agency, Project Code Number, Appropriation Act Title
2. Activity or function(s) to be performed in the facility
3. Edition (year) of the VUSBC on which the design is based.
4. Applicable accessibility standards.
5. VCC Construction Type.
6. (Use) Group(s) per VCC. For mixed-use occupancies, indicate which Groups are separated and non-separated.
7. Other major code(s) used as a basis for design.
8. Asbestos Disclosure Statement and Lead Disclosure Statement
9. The applicable High Performance Buildings Act Compliance Statement
10. The applicable Virginia Energy Conservation Code Compliance Statement
11. Maximum VCC occupancy for each level and total for the building.
12. Location and vicinity maps noted to show project location.
13. Tabulation of GSF per floor (new and renovated), total GSF (all floors - new and renovated), total building volume.
14. Tabulation of “Building Area” per VCC definition (per story).
15. Tabulation of units: Number of parking spaces, auditorium seats, bedrooms etc.
17. Design occupant load for each level and total for the building.
18. Index of drawings.
19. The uniform date of the completed preliminary design documents.

Drawings
Submit a site/improvement plan & composite utility plan for new construction and additions. The site plan shall be based upon an approved comprehensive Master Plan.

1. Plan scale and north arrow.
2. New and existing elevation contours affected by the work.
3. Floor and contour elevations.
4. Applicable boundaries with survey computations.
5. Dimensioned relationship of new work to boundaries and existing structures.
6. Location of test borings.
7. Location and quantities of general and accessible parking spaces.
8. Accessible routes.
9. Pedestrian traffic routes.
10. Items to be demolished: structures, walks, utilities, trees, etc.
11. Proposed landscaping (planting materials).
12. Existing and new utilities: storm drainage, sanitary sewers, water distribution, fuel gas distribution, building utility distribution pipes and tunnels, electric and telephone poles and lines, hydrant locations, and data on fire flow test, etc.
13. Site improvements such as fencing, lighting, etc.
14. Typical paving section for proposed types/thicknesses.
15. Identify/show special earthwork recommended and construction considerations noted in geotechnical report.

**Demolition Drawings**

For interior demolition:
1. Identify items to be removed;
2. Asbestos Disclosure Statement;

For total building demolition:
1. Floor plans showing building size;
2. Description of existing material/construction to be removed;
3. Elevation (drawn or photographic) of building;
4. Asbestos Disclosure Statement;

**Architectural Drawings**

1. Floor Plans (for each floor)
   a. Plans of each floor at $1/8" = 1'-0"$ scale, minimum
   b. Overall dimensions
   c. Space names and numbers
   d. If the work is an addition, show the relationship of new to existing spaces
   e. Distinguish new from existing construction
   f. Identification of openings, entrances, delivery areas (including door numbers)
   g. Identification of accessible routes accessible building entrances, and Areas of Refuge
   h. Calculations to support the indicated design occupant load on a use and function and floor by floor basis. Include the design occupant load for the function of each room and space in accordance with VCC Section 1004.
   i. Plan scale and north arrow
2. Roof Plan
   a. Existing and proposed roof drains.
   b. Means of secondary (emergency) roof drainage
   c. Indicate direction of roof slope with arrows, high to low: $1/4"$ per $1'-0"$ min.to drains (unless waived for reroofing).
   d. Existing and new equipment.
   e. Roof penetrations and structures.
   f. Expansion joints
g. Access to roof
h. Identify materials of existing roofs and new roofs.

3. Exterior Elevations (Scale 1/8" = 1'0" minimum)
   a. Openings: windows (including operable notation), doors, louvers, vents
   b. Percentage of glass vs. gross wall area (per elevation and/or exposure)
   c. Floor elevations
   d. Identification of all major finishes
   e. Stairs, ramps, and railings
   f. Rooftop equipment and structures
   g. Expansion and control joints
   h. Grade at the face of the building wall
   i. Subsurface construction (dotted in)
   j. Distinguish new work from existing construction

4. Building Cross Sections (Scale: 1/16"=1'-0"minimum)
   a. One longitudinal and one transverse section, minimum
   b. Indication of floor elevations
   c. Indication of ceilings in relation to floors
   d. Method and extent of insulation of exterior envelope

5. Wall Sections (Scale: 3/4" = 1'-0" minimum)
   a. One section for each type of wall construction
   b. Identification of materials and components
   c. Identification of insulation type including “R” value
   d. Identification of air barrier and moisture barrier

6. Finish Schedule
   a. May be included in the Basis of Design narrative or on drawing. Indicate proposed finishes for all spaces. Note those existing finishes to remain.
   b. Give ceiling heights of interior spaces.

Furnishing/Equipment Drawings
1. Show equipment to approximate scale.
2. Show furniture and built-in furnishings to scale.

Structural Drawings
1. Provide Live Loads, Snow Loads, Wind Loads, and Seismic Criteria used for structural design. Refer to VCC Chapter 16
2. Show design bearing / support capacity (soil bearing, pile capacity, caisson capacity) for foundation system.
3. Provide the design lateral active and at-rest earth pressures, where applicable.
4. Provide Foundation Plan indicating type & tentative sizes.
5. Provide Foundation details of improved bearing strata and other special requirements.
6. Provide Floor Framing Plans of each level indicating type of system and tentative member sizes/depths and column spacing.
7. Provide Roof Framing Plan.
8. Provide Typical Section(s) of framing identifying materials, thicknesses, and depths.
9. Provide Typical Section of floor system
10. Provide Details of connections to existing buildings, if applicable.
11. Identify elements of proposed lateral force resisting system.

Fire Protection Information Plan and Calculations
Provide the following as a minimum to demonstrate compliance with the code:
1. Indicate type and extent of fire protection sprinkler system and fire detection/fire alarm systems on the floor plans.
2. Tabulation of square footage per floor and total building area (per VCC definitions) including new SF, existing SF to be renovated, other existing SF and total building volume (cubic feet).
3. Indicate paths of means of egress, paths of exit access, travel distances and common paths of travel. Indicate specific locations where access controls or security locking systems will be provided within means of egress paths.
4. For projects that will have partial or phased occupancy, indicate locations and construction of temporary barriers, fire resistance ratings of temporary barriers, locations of temporary exit signage, locations of temporary means of egress emergency lighting and the temporary exit access patterns at each floor for each substantially completed phase.
5. Indicate rating of all fire resistance-rated assemblies, smoke barriers and smoke partitions.
6. Completely show the continuity of vertical fire resistance rated assemblies, with reference symbols. Distinguish new walls from existing walls and new construction from existing construction.
7. Identify the extent of horizontal fire-rated floor/ceiling and roof/ceiling assemblies, with reference symbols.
8. Provide drawings that clearly define the locations and extent of the application of applied fire resistant materials.
9. Define the UL design assemblies specific to the respective locations and application of applied fire resistant materials.
10. Indicate whether the building is designated as an “essential facility” for purposes of compliance with seismic and snow provisions in VUSBC.
11. Indicate the seismic design category.
12. Calculations in support of the indicated Construction Type, based on Group, allowable height and allowable area, and permitted or required height and area modifications.
13. Calculations to demonstrate and support the indicated capacity of the egress components throughout the building.

Smoke Control Systems

With the submission of preliminary design documents, the Agency and the A/E shall develop and submit a preliminary “Rational Analysis” (a detailed design report) to DEB for review and approval. Refer to Section 7.10. for detailed requirements.

Plumbing Drawings
1. Indicate type and extent of fire protection sprinkler system and fire detection/fire alarm systems on the floor plans.
2. Provide plans of each floor noting fixture locations and types. Indicate routing of main distribution lines with tentative sizes.
3. Provide riser diagrams for all piping systems.
4. Provide location of water supply and distribution, sanitary drainage, storm drainage, and sprinkler services to the building.
5. Provide plumbing fixture schedule.
6. Provide location, sizes and types of water heaters/ heat exchangers, Storage Tanks, flues, etc.
7. Provide fuel gas piping layout and connected load, if applicable.

Mechanical (HVAC) Drawings
1. Provide plans of each floor showing single line duct layouts, tentative air (supply, return, exhaust) quantities, equipment locations, and layouts and general routing of heating/cooling piping.
2. Provide equipment schedules with tentative sizes, capacities, ID #, features, etc.
3. Indicate locations and sizes of fans, pumps, compressors, air handling equipment, dampers, etc.
4. Provide preliminary layout and elevation of equipment room and/or central system showing configuration, tie-ins, etc. as necessary to describe system.
5. Provide central heating or cooling plants, distribution piping, equipment.

Electrical Drawings
(Power and lighting plans may be combined if submittal clearly conveys required information.)
1. Provide central heating or cooling plants, distribution piping, equipment.
2. Lighting plans for each floor showing approximate fixture location, type, and lighting level required (in foot-candles).
3. Power distribution plans showing location of incoming service, generators, and panelboards.
4. Show interface points for communications, fire alarm, EMCS and other pertinent systems.
5. Floor proposed locations for receptacles, telephone outlets and switches.
6. It is the A/E’s responsibility to contact the utility company during development of the project design in order to determine the available fault current at the project site.
7. Provide the following for fire alarm systems:
   a. Indicate locations of the fire alarm system alarm-initiating and notification appliances
   b. Indicate locations of the fire alarm control and trouble signaling equipment

7.9.2.11 Review Process
The A/E shall submit to the Project Manager, digital copies of cost estimates, Narrative, reports and other data as set forth below. After the Project Manager reviews the submittal, one set of review comments will be returned by email to the A/E for response and/or resolution.

Unless otherwise relieved at the Schematic Design presentations, a Preliminary Design presentation to the State Art and Architectural Review Board and the University Architectural Review Board is required. (See Chapter 5) Reviews by the University Building Committee, the Director of Planning and Design, and the Code Official (DEB) are also required. The project manager shall evaluate the need for the following reviews and assign responsibility accordingly:

1. Fire Safety Review
2. Erosion and Sediment Control Storm Water Management
3. Department of Historic Resources (As required)
4. Department of Health
5. State Water Control Board
6. Department of Air Pollution Control
7. Department of Waste Management
8. Community Advisory Board

The submittal documents along with the review comments and the agreed upon resolutions of the comments shall be the basis of the approval for the A/E to prepare the working drawings. The A/E shall not proceed with the development of the Contract Documents until all issues in the reviews are agreed upon.

7.10 Working Drawings Phase (Construction Documents Phase)

7.10.1 General Requirements
The A/E shall visit the site as necessary to ascertain pertinent local and site conditions. Based on the Preliminary plans (Design Development Documents) submission documents including the review and the value engineering comments and resolution thereof, the A/E shall prepare the working drawings and specifications. The working drawings Contract Documents shall set forth in detail the requirements for the construction of the entire project and include the applicable bidding information. The A/E shall assist in the preparation of the bidding forms, the Special Conditions of the Contract, and the Contract between University and Contractor, HECO-9. All drawings shall bear the seal, signature and date of the A/E responsible for that discipline. The Specification Cover Sheet shall bear the seal, signature and date of the Architect and all Engineers.

Specifications and drawings for any type of built-in equipment must be submitted with the working drawings Contract Documents for the building, whether or not such equipment is to be procured under another contract, in order that such work can be coordinated and bid on at the same time.

The A/E shall include on the working drawings and in the specifications all necessary information to describe the components for the fire-resistive rated construction assemblies and fire protection systems needed to provide the necessary fire integrity of the structure for compliance with all applicable governing Codes.

Reviews by the Building Committee University (Architect), and responsible State Fire Marshal Office are required.
7.10.2 Plans, Sections and Details of Equipment or Systems
The drawings shall have sufficient plans, sections and details to generally indicate the intended equipment or system configuration in the space. Recognizing that it is often necessary to use some piece of equipment as a basis for designing, dimensioning and detailing, the drawings (but not the specifications) may be noted to indicate that the A/E has designed or detailed around a particular brand of equipment. In doing so, the A/E shall ensure that there is adequate space, capacity, etc., available to accommodate the other brands indicated in the specifications. See Section 7.5.9 for requirements concerning the use of brand names and models.

7.10.3 Cost Estimate
The A/E shall submit a detailed Cost Estimate in conformance with the requirements of Appendix C, and advise the University of any adjustments to previous statements of estimated construction cost. The A/E shall submit a signed Building Cost Summary Sheet with the estimated cost of work covered by the working drawings and specifications and square footage of the proposed building data completed. If this data varies significantly from that shown on the Preliminary Cost Estimate, the A/E will attach an explanation to the working drawing Cost Estimate. For large projects, the University may choose to have an independent cost estimate made using copies of the working drawings and specifications. This may be beneficial in determining if the project is likely to be within budget and in determining sufficient clarity and detail of the documents for bidding.

7.10.4 Permits and Utilities
The A/E shall assist the University in filing the required documents for approval of governmental authorities having jurisdiction over the project. If the Contractor will be required to interface with, coordinate with, or obtain inspection or approvals from any local authority or utility, the requirements and the name and address of such entity shall be shown in the documents.

7.10.5 Calculations
Calculations must be organized, indexed, numbered and submitted for each discipline involved. Design calculations should indicate assumptions, considerations and factors involved in the design and support the design shown on the plans and specifications. Provide one copy of the completed design calculations of each discipline to the University with the Contract Document submission.

7.10.5.1 Structural Calculations
Calculations for every structural member are not required. Structural calculations for members representative of the various types of structural elements should be submitted. If submitted, computer printouts shall clearly indicate the individual member being analyzed or shall be accompanied by diagrams labeled with member numbers corresponding with the printout. The A/E shall be responsible for storing the complete set of calculations.

7.10.5.2 Plumbing Calculations
Include calculations for the following:
- Plumbing fixture count
- Domestic cold water demand
- Domestic water heater and hot water storage sizing
- Primary and secondary roof drainage system sizing
- Sanitary demand

7.10.5.3 Fuel Gas Calculations
Include calculations for the following:
- Gas piping
- Flue vent sizing

7.10.5.4 HVAC Calculations
Include calculations for the following:
- HVAC building heat gain/loss
- Ventilation (outside) air per space
- Air distribution duct sizing and static pressure
- Equipment selections including but not limited to: fans, coils, chillers, boilers, pumps, cooling towers
- Hydronic and steam piping expansion and anchoring
- Refrigerant system capacity and volume
- Fuel oil supply and storage sizing

7.10.5.5 Energy Conservation Calculations
Include calculations for the following:
- ASHRAE 90.1 compliance check (applicable where using ASHRAE 90.1 as the proposed Virginia Energy Conservation Code compliance path)
- Building envelope thermal resistance and U-values

7.10.5.6 Electrical Calculations
Include calculations for the following:
- COMCheck verification
- Demand load for all switchboard, panelboards and feeders to multiple loads in a tabular form
- Voltage drop calculations
- Photometrics of emergency lighting along the entire path of egress, at the same scale as the floor plan provided in the working drawings. NOTE: If egress paths are not indicated on the plan, it will be assumed that the lighting levels for the entire room or area will need to meet the required illumination levels required by the VUSBC.

7.10.6 Submittal Documents
Working drawings shall be complete, coordinated, and ready for approval to bid. The working drawings including the specifications shall bear a uniform date as described in this Manual. The drawings shall consist of Architectural and Engineering drawings in such detail as to show clearly the work to be performed. These drawings shall be planned to produce a set of plans with all disciplines coordinated to describe the work required. Architectural and engineering details shall be included on the drawings with cross references on both the plan and the detail sheets designating specifically the location to which the particular detail applies. Do not include details which do not apply to the particular project.

Submit the following:
1. Working Drawings
2. Project Manual (including front end documents, specifications, and appendices if applicable)
3. Updated A/E Project Cost Estimate
4. Calculations

7.10.7 Requirements for Working Drawings
Working Drawings shall show or provide the following information (in addition to items required for preliminary submission):

7.10.7.1 General Requirements
Each drawing to be reproduced shall include:
1. Project Title,
2. Project location
3. The 11 digit state Project Code,
4. Drawing / Sheet Title,
5. Drawing / Sheet number (unique sheet number),
6. Name of the A/E,
7. Professional seal(s) of the responsible licensed professional(s) without signatures & dates,
8. The uniform date of the completed documents

7.10.7.2 Title Sheet(s)
1. Project Identification: Agency, Project Code, Appropriation Act Title
2. Activity or function(s) to be performed in the facility
3. Edition (year) of the VUSBC on which the design is based
4. Applicable accessibility standards
5. VCC Construction Type
6. (Use) Group(s) per VCC. For mixed-use occupancies, indicate which Groups are separated and non-separated.
7. Other major code(s) used as a basis for design
8. Asbestos Disclosure Statement and Lead Disclosure Statement
9. Dig Notice- add “Contact Miss Utility at 811, 1-800-552-7001, or http://www.missutilityofvirginia.com no less than 72 hours prior to excavation and do not disturb the soil until dig ticket has been processed.”
10. Points of Contact- Include owner representatives, construction managers, utilities, and communications contractors as appropriate
11. The applicable High Performance Buildings Act Compliance Statement
12. The applicable Virginia Energy Conservation Code Compliance Statement
13. Maximum VCC occupancy for each level and total for the building
14. Location and vicinity maps noted to show project location
15. Tabulation of GSF per floor (new and renovated), total GSF (all floors - new and renovated), total building volume.
16. Tabulation of “Building Area” per VCC definition (per story)
17. Tabulation of units: Number of parking spaces, auditorium seats, bedrooms etc.
18. Building Purpose/Occupancy.
19. Design occupant load for each level and total for the building
20. Index of drawings
21. The uniform date of the completed construction documents
22. Design Live Loads for all floors
23. Professional seal(s) of the architect(s) and engineer(s) responsible for the design.

7.10.7.3 Site Drawings
Site/improvement plan & composite utility plan minimum for new construction and additions; shall be based on an approved comprehensive Master Plan.
1. Provide scale and north arrow.
2. Provide new and existing contours affected by work.
3. Provide floor and contour elevations.
4. Provide applicable boundaries with survey computations.
5. Provide dimensioned relationship of new work to boundaries and existing structures.
6. Indicate location of test borings.
7. Indicate general parking and handicap parking.
8. Indicate handicap accessible routes
9. Indicate pedestrian traffic routes.
10. Indicate demolitions: structures, walks, utilities, trees, etc.
11. Indicate proposed landscaping (planting materials)
12. Indicate existing and new utilities: storm sewers, sanitary sewers, water supply, gas, steam distribution pipes and tunnels, electric and telephone poles and lines, and hydrant locations with data on fire flow test.
13. Indicate site improvements such as fencing, lighting, etc.
14. Provide typical paving section of each type and thickness required.
15. Indicate special earthwork recommended and construction considerations noted in soils report.

7.10.7.4 Demolition Drawings
For total building demolition:
1. Provide plan of building with length & width dimensions,
2. Provide elevations (drawn or photographic) and cross section of building to be demolished,
3. Provide details of termination of demolition, underpinning, etc.
4. Provide Asbestos and Lead Disclosure Statements

For interior / selective demolition:
1. Provide floor plans showing existing partition, etc., 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

7.10.7.5 Architectural Drawings
1. Floor Plans (for each floor)
   a. Plans of each floor at 1/8" = 1'-0" scale, minimum
   b. Overall dimensions
   c. Space names and numbers
   d. Relationship of new work to existing spaces
   e. Distinguish new work from existing construction
   f. Identification of openings, entrances, delivery areas (including door numbers)
   g. Identification of accessible routes accessible building entrances, and Areas of Refuge
   h. Calculations to support the indicated design occupant load on a use and function and floor by floor basis. Include the design occupant load for the function of each room and space in accordance with VCC Section 1004.
   i. Plan scale and north arrow
   j. Indicate demolition on the architectural plans or separate plans.
   k. Fully dimension all spaces and components of the design
   l. Expansion joints
2. Reflected Ceiling Plans
   a. Ceiling tile / grid layout and ceiling height(s)
   b. Lighting fixture locations
   c. Sprinkler head locations
   d. HVAC diffuser and grille locations
   e. Coffers, drop soffits, changes in height or materials
   f. Expansion joints
3. Roof Plan and Details
   a. Existing and proposed roof drain.
   b. Means of secondary (emergency) roof drainage
   c. Indicate direction of roof slope with arrows, high to low: 1/4" per 1'-0" min. to drains (unless waived for reroofing)
   d. Crickets in low slope roofs
   e. Existing and new equipment.
   f. Walk pads to and around equipment
   g. Roof penetrations and structures
   h. Expansion joints
   i. Access to roof and guards
   j. Identify materials of existing roofs and new roofs
   k. Thermal insulation R value
   l. Fully dimension
   m. Typical roofing section identifying materials
   n. Edge and transition details
   o. Flashing details at all penetrations
4. Exterior Elevations (Scale 1/8"=1'-0" minimum)
   a. Openings: windows (including operable notation), doors, louvers, vents
   b. Percentage of glass vs. gross wall area (per elevation and/or exposure)
   c. Floor elevations
   d. Identification of all major finishes
   e. Stairs, ramps, and railings
   f. Rooftop equipment and structures
   g. Expansion and control joints
   h. Grade at the face of the building wall
   i. Subsurface construction (dotted in)
j. Distinguish new work from existing construction

5. Building Cross Sections (Scale: 1/16”=1'-0" minimum)
   a. One longitudinal and one transverse section, minimum
   b. Indication of floor elevations
   c. Indication of ceilings in relation to floors
   d. Method and extent of insulation of exterior envelope

6. Wall Sections and Enlarged Plans / Details
   (Scale: 3/4" = 1'-0" minimum at Wall Sections, ¼"=1'-0” minimum at Enlarged Plans)
   a. One section for each type of wall construction, fully noted and dimensioned
   b. Identification of materials and components
   c. Identification of insulation type including “R” value
   d. Identification of air barrier and moisture barrier with details at transitions
   e. Enlarged details as required including at window heads, window sills, door heads, transitions
      between materials, cornices, and parapet walls.
   f. Enlarged partial floor plans for each stair and elevator at each floor and one section with
      dimensions and details for each stair and elevator configuration, minimum.
   g. Enlarged partial floor plans for each toilet room configuration, dimensioned and noted to identify
      accessible fixtures

7. Finish Schedule
   a. Finishes for all spaces. Note those existing finishes to remain.
   b. Ceiling heights of interior spaces.
   c. Clarify finishes, textures, colors, etc., required to be provided by the Contractor

8. Door Schedule
   a. Indicate size and material for each door and door frame
   b. Indicate glazing size and material for each door and frame
   c. Indicate fire resistance rating for each door and frame
   d. Cross reference a specified hardware set for each door assembly
   e. Provide door type elevations, frame details, head details, threshold details, and access control
      details

7.10.7.6 Furnishing/Equipment Plans
1. Provide outline of equipment to scale.
2. Provide outline of built-in furnishings to scale.
3. Provide elevations, sections and details as necessary to describe built-in equipment, casework and
   furnishings included in the Work of the contractor.
4. Identify accessible built-in furnishings and equipment.

7.10.7.7 Structural Drawings
1. Unless indicated otherwise below, the structural drawings shall provide complete details of all
   structural components so that no additional structural design will be required for the preparation of
   shop drawings except for standard connection details and fabrication calculations.
2. Indicate design live loads, snow loads, wind loads, and seismic criteria used for design of structural
   systems per VCC Chapter 16.
3. Indicate design bearing / support capacity (soil bearing, pile capacity, caisson capacity) for foundation
   system.
4. Engineered design and details of engineered systems such as cast-in-place post-tensioned concrete,
   precast concrete components, steel joists and joist girders, pre-engineered metal structures, and shop /
   prefabricated wood components may be required to be provided by the contractor. In this case, the
   structural drawings shall include complete loading information as well as all other performance or size
   constraints for the components.
5. Structural drawings shall include plans at the same scale as the architectural plans. Details and sections shall be at a scale of not less than $3/4" = 1'-0"$.
6. The plans, details and specifications shall completely define the structural system and special conditions for the project.
7. Provide foundation plans indicating type & sizes.
8. Provide foundation details of improved bearing strata and other special requirements.
9. Provide floor framing plans of each level indicating type of system and member sizes/depths and column spacing.
10. Provide roof framing plans.
11. Provide typical section(s) of floor and roof systems identifying materials, thicknesses, and depths

7.10.7.8 Special Structural Requirements
See CPSM for Quality Assurance Checklist, for special drawing and specification requirements for: Cast-In-Place Reinforced Concrete, Cast-In-Place Post-Tensioned Concrete, Precast Concrete Components, Structural Steel, Steel Joists, Pre-Engineered Metal Structures, Prefabricated Wood Components systems.
• With reference symbols, identify each new and existing, if known or available, fire resistance rated Structure Element and change in element design (including wall, floor, ceiling, and other vertical or horizontal elements).
• Identify each type of automatic fire suppression system and where it is or is not used.
• Identify occupancy hazard classifications and densities as explained in NFPA 13.
• Show and identify all new and existing standpipes.
• Show locations of all portable fire extinguisher cabinets.
• Provide a small-scale drawing showing locations of water hydrants, test and flow hydrants (for water flow tests), and routing of underground pipe; or, alternatively, state the drawing number where the information may be found on other drawings.

7.10.7.9 Fire Protection and Fire Safety Systems
Fire Protection Plan and Calculations
Provide the following as a minimum to demonstrate compliance with the code:
1. Applicable edition of VUSBC and other applicable codes, including accessibility standards.
2. (Use) Group(s) per VCC. For mixed-use occupancies, indicate which Groups are separated and non-separated.
3. Construction Type per VCC.
4. Indicate type and extent of fire protection sprinkler system and fire detection/fire alarm systems.
5. Tabulation of square footage per floor and total building area including new SF, existing SF to be renovated, other existing SF and total building volume (cubic feet).
6. Tabulation of units: Number of auditorium seats, bedrooms, etc.
7. Calculations to support the indicated design occupant load on a use and function, and floor by floor basis. Include the design occupant load for the functions of the rooms and spaces in accordance with VCC Table 1004.1.2.
8. Indicate paths of means of egress, paths of exit access, travel distances and common paths of travel. Indicate specific locations where access controls or security locking systems will be provided within means of egress paths.
9. For projects that will have partial, phased occupancy, indicate locations and construction of temporary barriers, fire resistance ratings of temporary barriers, locations of temporary exit signage, locations of temporary means of egress emergency lighting and the temporary exit access patterns at each floor for each substantially completed phase.
10. Indicate rating of all fire resistance-rated assemblies, smoke barriers, and smoke partitions.
11. Completely show the continuity of vertical fire resistance rated assemblies, with reference symbols. Distinguish new walls from existing walls and new construction from existing construction.
12. Identify the extent of horizontal fire-rated floor/ceiling and roof/ceiling assemblies, with reference symbols.
13. Provide drawings that clearly define the locations and extent of the application of applied fire resistant materials.
14. Define the UL design assemblies specific to the respective locations and application of applied fire resistant materials.
15. Define the validation tests required for Special Inspections of applied fire resistant materials in the project. See Section 7.10.7.8.
16. Indicate locations of all portable fire extinguisher cabinets
17. Indicate whether the building is designated as an “essential facility” for purposes of compliance with seismic and snow provisions in VCC Chapters 2 and 16.
18. Indicate the seismic design category
19. Calculations in support of the indicated Construction Type, based on Group, allowable height and allowable area, and permitted or required height and area modifications.
20. Calculations to support the indicated design occupant load on a use and function and floor by floor basis.
21. Calculations to demonstrate and support the indicated capacity of the egress components throughout the building.
22. Provide a matrix that defines the “fire-resistance rating requirements” for building elements (VCC Table 601) including exterior walls, fire walls, fire barriers, shaft enclosures, fire partitions, smoke barriers and horizontal assemblies. Matrix shall indicate the listed design assemblies proposed to achieve the required fire resistance ratings. Include copies of each listed assembly.
23. Define the UL through penetration firestop assemblies for all utilities penetrating fire rated construction.

**Fire Protection and Fire Safety Symptoms**

Provide the following information, calculations, and data on separate sheets or on the fire protection FP drawings to support the information shown on the FP plans:

1. Provide height and area calculations in accordance with VUSBC.
2. Show the total building perimeter (linear feet).
3. State whether the building has a 30' wide open perimeter served from a street by a minimum 18' wide posted fire lane and on what drawing the perimeter and lane may be found.
4. Tabulate area of each building level, story, or floor and indicate the number of occupants accommodated by each. If the project is an addition, list new and existing areas and occupancies.
5. Tabulate the fire separation structure elements (and element changes) identified on FP plans, the fire resistance rating of each, the design reference numbers of approved testing laboratories, and the sheets where the designs are detailed.
7. Required or intended fire protection systems, fire detection and alarm systems, fire pump systems, smoke control systems pursuant to this Manual, Chapter 7.

**Fire Suppression Systems – Sprinklers/Standpipes**

Changes to the design during the construction phase of the project shall be submitted to DEB for review and approval. It is the responsibility of the A/E to provide a project specific design. Performance criteria do not meet the intent of this section.

**Working Drawing Submission**

Provide the following as a minimum to demonstrate code compliance:

1. Identify the occupancy hazard classification and show the location of sprinklers for each of the spaces on each floor within the buildings. The location of sprinklers are to be based on the VCC, NFPA 13 and the user’s programmatic requirements with the understanding that the quantity, coverage, location and type of sprinkler are not to be altered by the Contractor, without prior written approval by the A/E and the Building Official.
2. Show the location of fire department valves and risers within the building. Indicate that the fire department valves are attached to either a standpipe riser, combined standpipe and sprinkler riser, or wet pipe sprinkler system risers. The locations of fire department valves are to be based on the VCC, NFPA 13, NFPA 14 and the user’s programmatic requirements.
3. Show proposed sprinkler piping and standpipe layout including the sprinkler mains (including cross mains) within the building and layout of branch lines for the most hydraulically demanding zone(s) on each floor of each sprinkler system. Indicate the size of pipes that are shown.
4. Provide a table summarizing the characteristics of each of the sprinkler systems. Define the type of sprinkler system(s), areas of coverage, hazard, minimum rate of water coverage (density) per area, water required for each area of coverage, hose stream allowances for each area, total water requirements for each area of coverage, hydraulically calculated pressure requirements at a common reference point at design flow for each area of coverage, and water supply (flow & pressure) available at the common reference point.

5. Provide a small scale drawing showing locations of water hydrants, test and flow hydrants (for waterflow tests), and routing of underground pipe. Indicate the waterflow Test results, the date and time taken and who conducted the test. Indicate the water supply (flow & pressure) at a reference point common with the sprinkler/standpipe system design.

6. Show and identify all existing sprinkler systems and standpipe systems.

7. Show and indicate all new connections to existing systems.

8. Provide sprinkler riser diagram with appropriate fittings, accessories, sizes, alarms, valves, etc., noted.

9. Show all system drains.

10. Show all inspector’s test station locations and associated discharge/ drainage piping.

11. Show the location of the fire department connection(s) with all interconnecting piping to the sprinkler and standpipe systems.

12. Show the location and details of the fire pump, driver, fire pump controller, piping, components and piping specialties.

13. Show the location of the fire pump test header and all interconnecting piping.


Specifications
Provide the following as a minimum to demonstrate code compliance:

1. Provide complete specifications to reflect the systems that are defined on the drawings.

2. Provide wording in the specifications that indicate that the type of systems, the location of major components, the quantity, type, coverage, location of sprinklers, and modifications to the distribution system are not to be altered by the Contractor, without prior written approval by the A/E and the Building Official. Changes to the design depicted within the construction documents shall be submitted to the Building Official for review and approval.

3. Provide a description of the acceptance testing requirements. Indicate which of the acceptance tests are to be witnessed by the regional office of the State Fire Marshal.

Calculations
Provide the following as a minimum to demonstrate code compliance:

1. Provide final hydraulic calculations for each sprinkler system and standpipe system.

2. The calculations shall demonstrate the performance of the system with an automatic water supply for the most hydraulically demanding zone on each floor of the building for each of the fire sprinkler systems compliant with NFPA 13 and NFPA 14.

3. The calculations shall also demonstrate the performance of the sprinkler and standpipe systems as connected to the manual water supply (fire department pumper truck – validate pumper truck performance with local fire department) by the fire department connection and interconnecting piping compliant with VCC, NFPA 13 & NFPA 14.

Shop Drawings Review
Shop drawings (working plans, product data and calculations) are to be reviewed by the A/E of record for compliance to the project contract documents and the code. At the conclusion of the shop drawing review, the A/E of record shall:

1. Verify the Underwriters Laboratories (UL) listings and classifications for the materials, components and equipment provided for this project result in a code compliant fire suppression system.

2. Provide a “sealed” statement, attached to the reviewed shop drawings indicating that the fire suppression shop drawings (working plans, product data and calculations) satisfy the requirements of the project contract documents and the code (cite the applicable NFPA Sections).

3. Provide the regional office of the State Fire Marshal a copy(s) of the approved complete fire suppression shop drawings.
4. Provide DEB a copy of the “sealed” statement and a copy of the transmittal to the regional office of the State Fire Marshal.

Validation of the Fire Suppression Systems

Fire suppression systems are to be acceptance-tested in accordance with the requirements of the code. The regional State Fire Marshal’s office shall observe the installed fire suppression system and witness the fire suppression system performance tests. The A/E and Contractor shall certify that the fire suppression system is complete.

Fire Suppression Systems – Alternate Automatic Systems

Changes to the design during the construction phase of the project shall be submitted to the Building Official for review and approval. It is the responsibility of the A/E to provide a project specific design. Performance criteria do not meet the intent of this section.

Alternate automatic systems include wet-chemical systems (NFPA 17A), dry-chemical systems (NFPA 17), foam systems (NFPA 11 and NFPA 16), carbon dioxide systems (NFPA 12A) and clean agent systems (NFPA 2001). Halon systems shall not be used in the design of new fire extinguishing systems in state owned buildings.

Commercial cooking suppression systems shall either be a pre-engineered automatic dry and wet chemical extinguishing systems tested in accordance with UL 300, and labeled and listed for the intended applications, or developed in accordance with one of the above-referenced NFPA standards.

Working Drawing Submission

Provide the following as a minimum to demonstrate code compliance:
1. Show and identify rooms / spaces / components to be protected by the proposed fire suppression system.
2. Show the enclosure partitions (full and partial height) of the protected area.
3. Identify the locations of the major fire suppression system components.
4. Show the routing of the fire suppression system lines between the stored agent and the dispersion nozzles within each of the protected spaces. Indicate sizes of pipes that are shown.
5. Provide a table defining the type of fire suppression system(s), areas of coverage, hazard, minimum required concentration of fire suppression agent, volume of agent required for each area of coverage, total volume of agent for the areas protected by this system.
6. Show and identify all existing fire suppression systems.
7. Show the location of all dispersion nozzles for all spaces/areas protected.
8. Show the locations and components of the automatic detection system and agent releasing system. Define the specific locations for actuation devices.
9. Show the location of and define the interface requirements to connect to the building’s fire alarm system.
10. Show the location of components for means of manually releasing of agent.
11. Location of controlled devices such as dampers and shutters
12. Provide fire suppression system riser diagram with appropriate fittings, fire suppression agent storage tanks, accessories, sizes, alarms, valves, etc.
13. Show and indicate all new connections to existing systems.
14. Show the location of instructional signage.

Specifications

Provide the following as a minimum to demonstrate code compliance:
1. Provide complete specifications to reflect the systems that are defined on the drawings.
2. Provide wording in the Specifications that indicate that the type of system, concentration requirements, quantity of agent required, location and type of dispersion nozzles, location of major components and modifications to the distribution system are not to be altered by the Contractor, without prior written approval by the A/E and the Building Official. Changes to the design during the construction phase of the project shall be submitted to the Building Official for review and approval.
3. Provide complete step-by-step description of the system sequence of operations including functioning of abort and maintenance switches, delay timers, and emergency power shutdown.
4. Provide a description of the acceptance testing requirements. Indicate which of the acceptance tests are to be witnessed by the regional office of the State Fire Marshal.

**Calculations**

Provide the following as a minimum to demonstrate code compliance:
1. Complete calculations to determine enclosure volume and quantity of agent required.
2. Calculations to define the size of backup batteries
3. The method used to determine number and location of audible and visual indicating devices.
4. The method used to determine number and location of detectors.

**Shop Drawings Review**

Shop Drawings (working plans, product data and calculations) are to be reviewed by the A/E of record for compliance to the project contract documents and the code. At the conclusion of the shop drawing review, the A/E of record shall:
1. Verify the Underwriters Laboratories (UL) listings and classifications for the materials, components, and equipment provided for this project result in a code compliant fire suppression system.
2. Provide a “sealed” statement, attached to the reviewed shop drawings indicating that the fire suppression shop drawings (working plans, product data and calculations) satisfy the requirements of the project contract documents and the code (cite the applicable NFPA Sections).
3. Provide the regional office of the State Fire Marshal a copy(s) of the approved complete fire suppression shop drawings.
4. Provide DEB a copy of the “sealed” statement and a copy of the transmittal to the regional office of the State Fire Marshal.

**Pumps**

Changes to the design during the construction phase of the project shall be submitted to the Building Official for review and approval. It is the responsibility of the A/E to provide a project specific design. Performance criteria do not meet the intent of this section.

**Application of Fire Pumps in Fire Suppression Systems**

A fire sprinkler/standpipe suppression System is to provide a reasonable degree of protection for life and property from fire based on sound engineering principles, test data, and field experience. One key component of the system is a reliable water supply of acceptable volume and pressure. The connection of the fire suppression system to a public water supply that is of acceptable volume and pressure is considered to be the most “reliable water supply.” Where the building characteristics are such that the water supply requirements of the designed fire suppression system cannot be provided by the available water supply then the incorporation of an automatically controlled fire pump into the fire suppression system, compliant with NFPA 20 Standard for the Installation of Stationary Pumps for Fire Protection, shall result in an “acceptable water supply.” Sound engineering principles are to be incorporated into the design of the fire suppression system to result in the most reliable and acceptable water supply for the project.

**Electrical Requirements**

Fire pump electrical components and systems shall comply with the *National Electric Code* (NFPA 70) section(s) on fire pumps. The power for fire pumps shall be from a service which is both electrically and mechanically separate from the remainder of a building’s power supply.

**Emergency Electrical Systems**

Fire pumps are considered to be an emergency system and shall comply with the additional electrical requirements of the *National Electric Code* (NFPA 70) section on emergency power, where any of the following condition(s) occurs:
1. The building is more than 75 feet in height.
2. The building has a total assembly design occupant load that exceeds 1,000 people.
3. The building is designated as an Emergency Shelter (VCC Section 1604.5).
4. Electric motor driven fire pumps are used and the height of the structure is beyond the capacity of the fire department apparatus.
Working Drawing Submission
Provide the following as a minimum to demonstrate code compliance:
1. Show the location of the fire pump, pressure maintenance pump, pump controllers, piping, components and piping specialties.
2. Provide details of the fire pump, pressure maintenance pumps, pump controllers, suction piping, discharge piping, components and piping specialties.
3. Provide a table summarizing the water supply characteristics for the most demanding area of each of the sprinkler systems supplied by the fire pump. Define the type of sprinkler system(s), water flow and pressure requirements for each area of coverage, hose stream allowances for each area, resulting total water flow and pressure Requirements for each area of coverage, water supply (flow & pressure) available, fire pump, resulting available water supply, resulting safety factor in psig for each sprinkler system.
4. Provide a small scale drawing showing locations of water hydrants, test and flow hydrants (for waterflow tests), and routing of underground pipe. Indicate the waterflow test results, the date and time taken and who conducted the test. Indicate the water supply (flow & pressure) at a reference point common with the sprinkler/standpipe system design.
5. Show and identify all existing sprinkler systems and standpipe systems in the vicinity of the fire pump(s).
6. Show and indicate all new connections to existing systems.
7. Show the location of the fire department connection(s) with all interconnecting piping back to the fire pump.
8. Show the location of the fire pump test header and all interconnecting piping.
9. Show the location of the electrical components of the fire pump, driver, fire pump controller and ancillary electrical components.
10. Show the location, size and routing of the conduits and conductors serving the fire pump, driver, fire pump controller, and ancillary electrical components.
11. Provide details of the electrical components serving the fire pump, driver, fire pump controller, piping, components and piping specialties.
12. Where multiple fire pumps or multiple sources of power are required, provide a diagram on the drawings that defines all of the applicable components and defines the sequence of operation.

Specifications
Provide the following as a minimum to demonstrate code compliance:
1. Provide complete specifications to reflect the systems that are defined on the drawings.
2. Provide wording in the specifications that indicate that the modifications to the fire pump and ancillary components are not to be altered by the Contractor, without prior written approval by the A/E and the Building Official. Changes to the design during the construction phase of the project shall be submitted to the Building Official for review and approval.
3. Provide a description of the acceptance testing requirements. Indicate which of the acceptance tests are to be witnessed by the regional office of the State Fire Marshal.

Calculations
Provide the following as a minimum to demonstrate code compliance:
1. Provide hydraulic calculations that demonstrate that the most hydraulically demanding zone(s) of the fire sprinkler system(s) is satisfied by the automatic water supply (water supply plus fire pump) compliant with the requirements of NFPA 13, NFPA 14 and NFPA 20.
2. Where the height of the structure is beyond the capacity of the fire department apparatus, provide hydraulic calculations that demonstrate the performance of the standpipe system(s) as connected to the automatic water supply (water supply plus fire pump) compliant with the VCC, NFPA 13 & NFPA 14.

Existing Fire Pumps
Where an existing fire pump is to be used in the project, its performance and condition is to be established and validated. This is to be accomplished by submitting a copy of the recent report of the fire pump inspection, testing, and maintenance, compliant with the Virginia Statewide Fire Prevention Code: Fire Pumps - Testing and Maintenance. This section requires that fire pumps be inspected, tested, and
maintained in accordance with NFPA 25. The current edition of NFPA 25 defines the parameters for the report. The performance and condition of the fire pump is to be validated on an annual basis.

**Shop Drawings Review**
Shop drawings (product data, sketches and certified shop test pump curves) are to be reviewed by the A/E of record for compliance to the project contract documents and the code. At the conclusion of the shop drawing review, the A/E of record shall:

1. Verify the Underwriters Laboratories (UL) listings and classifications for the materials, components, and equipment provided for this project result in a code compliant fire pump system.
2. Provide a “sealed” statement, attached to the reviewed shop drawings indicating that the fire pump shop drawings (product data, sketches and certified shop test pump curves) satisfy the requirements of the project contract documents, the VCC and NFPA 20.
3. Provide the regional office of the State Fire Marshal a copy(s) of the approved fire pump shop drawings.
4. Provide DEB a copy of the “sealed” statement and a copy of the transmittal to the regional office of the State Fire Marshal.

**Validation of Fire Pump**
The fire pump(s) is to be acceptance tested in accordance with the requirements of the code. The regional State Fire Marshal’s Office shall observe the installed fire pump and ancillary components. The regional State Fire Marshal’s office shall witness the fire pump performance tests. The A/E and Contractor shall certify that the fire pump installation is complete.

**Smoke Control Systems**
Changes to the design during the construction phase of the project shall be submitted to the Building Official for review and approval. The A/E shall assure that a code compliant smoke control system is provided through the review of shop drawings and the observation of the progress and quality of the work. The A/E shall confirm that the smoke control system is complete and code compliant.

The VCC defines 3 methods of smoke control: (1) Pressurization Method; (2) Airflow Design Method; and (3) Exhaust Method. Large enclosed volumes, such as atriums, shall be permitted to utilize the Exhaust Methods. Smoke control systems using the Exhaust Method shall be designed in accordance with one of the five design approaches defined in NFPA 92B. The Building Official’s approval is required for the use of any of these methods within a project.

When the preliminary “Rational Analysis” is accepted by DEB, complete and submit the final Rational Analysis documents with the Working Drawing design documents to DEB for review and approval.

**Rational Analysis**
Provide conceptual floor plans which identify the locations of the major components, pertinent calculations, sequence of operation and any other information that may assist in the evaluation of the methods are to be included in the documents submitted to the Building Official. It is the responsibility of the A/E to provide a project specific design. Performance criteria do not meet the intent of this section.

Provide the following as a minimum to demonstrate code compliance:

1. Locate and identify all of the walls, floors and ceilings that define the perimeter of the space(s) to be protected by the smoke control system.
2. Locate and identify the HVAC system components respective to the smoke control system.
3. Locate and identify all smoke dampers respective to the smoke control system.
4. Locate and identify all motorized dampers respective to the smoke control system.
5. Locate and identify the interface requirements with the fire alarm system.
6. Locate and identify the interface requirements for all devices whose operation is required by the smoke control system such as door hold open devices, smoke dampers, fire shutters, motorized ventilation dampers, fans, air handlers and smoke detectors.
7. Identify the primary and secondary power supplies and connections.
8. Provide wording in the specifications that indicate that the components of and their locations which
make up the smoke control system are not to be altered by the Contractor, without prior written approval by the A/E and the Building Official. Changes to the design depicted within the construction documents shall be considered substitutions in accordance with the General Conditions and are to be documented by change order.

9. Provide a description of the acceptance testing requirements. Indicate which of the acceptance tests are to be witnessed by the regional office of the State Fire Marshal.

10. Provide calculations as defined by the VCC and NFPA 92B that establish the performance requirements for the method of smoke control for this project.

Validation of the Smoke Control System(s)
The smoke control system(s) are to be acceptance-tested in accordance with the requirements of the code. The regional State Fire Marshal’s office shall observe the installed components of the smoke control system(s) and witness the smoke control system performance tests. The A/E and Contractor shall certify that the smoke control system is complete prior to acceptance testing by the Building Official.

Access Control Systems (Security)
Shop drawings shall be submitted to DEB for work elements, including electric strikes, electric latches, electric locks, magnetic locks and other electronic controls (card keys, access buttons, proximity sensors etc.), even if used as an overlay on mechanical door hardware.

Provide the following as a minimum to demonstrate code compliance:
1. Building floor plans defining the locations and components of the access control hardware proposed.
2. Door hardware details and elevations defining the locations of all associated access control hardware.
3. A copy of the door hardware (mechanical hardware) shop drawings for the doors where the access controls are to be provided;
4. A sequence of operations demonstrating compliance with the requirements of the VCC Section 1010 Doors, Gates and Turnstiles;
5. Documentation demonstrating that each of the access control components are listed for the intended use and that per the manufacturer’s documentation the specific components are compatible with each other;
6. A description of how the elements interface with the building’s fire alarm system.
7. Other security measures including cameras, contact switches or other security items which do not affect means of egress are not required to be included.

Applied Fire Resistant Materials
The A/E shall provide complete project specific drawings and specifications that result in code compliant fire resistive construction through the use of applied fire resistant materials. Applied fire resistant materials include spray-applied fire resistant materials, fire resistant mastics and intumescent coatings. The A/E shall determine which members are required to be fireproofed and indicate the minimum thickness of the applied fire resistant materials to be applied. Changes to the design during the construction phase of the project shall be submitted to the Building Official for review and approval. The A/E shall assure that code compliant, fire-resistive construction is provided through the review of the applied fire resistant material shop drawings and the observation of the progress and quality of the work. The A/E shall confirm that the fire-resistive construction is complete and code compliant.

Provide the following as a minimum to demonstrate code compliance:
1. Provide drawings (small scale structural framing plans) including typical and special details that clearly define the locations and extent of applied fire resistant materials. Drawings should be structural steel plans without irrelevant walls, doors and other features that would obscure a clear representation of the extent of fireproofing.
2. Define the UL design assemblies specific to the respective locations and application of the applied fire resistant materials.
3. Provide complete Specifications to reflect the applied fire resistant materials assemblies that are defined on the drawings.
4. The specifications shall clearly state that no asbestos-containing material will be permitted. Contractor shall be required to certify that the material being used contains no asbestos.
5. Where structural steel members having different thicknesses (or none) of applied fire resistant materials intersect or connect, provide sprayed-on fireproofing equal to the greater thickness on all members for a distance of two (2) feet minimum from the junction of the members.

6. Metal attachments such as miscellaneous angles, light gage framing, and hangers shall be covered in the areas of the attachment with the same thickness of applied fire resistant materials as the structural member.

7. All applied fire resistant materials shall be tested after installation according to ASTM E-605, ASTM E-736, ANSI/UL 263 and ANSI/UL 1709, latest editions. Include the specific validation testing requirements as defined below. These tests shall be made by an independent testing laboratory. University shall arrange and pay for laboratory services for field and laboratory tests and reports. The Contractor shall schedule the tests while the material is accessible. If additional tests are required as a result of non-compliance with the specifications; the additional tests and reports shall be paid for by the Contractor.

8. The independent testing laboratory reports shall clearly show the location of the tests and test results. Copies of the reports shall be sent through the A/E to the Owner, State Fire Marshal and DEB.

Removal and Replacement of Sprayed-on Material
The University and/or their A/E shall contact the Building Official early in the design phase to verify the original purpose of the fireproofing material to be removed or replaced and what, if anything, must be done to restore the fire resistance characteristics. Submit plans and specifications to the Building Official which will include any bidding documents, addenda or change orders which may relate to the fire resistance characteristics of the existing structure. Include the date(s) of construction, original and present uses, height in floors and feet, whether sprinkled and any other information that may assist the Building Official in his determination.

Shop Drawings Review
Shop drawings (working plans, product data and calculations) are to be reviewed by the A/E of record for compliance to the project contract documents and the code. At the conclusion of the shop drawing review, the A/E of record shall:
1. Verify the Underwriters Laboratories (UL) design assemblies and for the materials, and components provided for this project result in code compliant fire resistive construction.
2. Provide a “sealed” statement, attached to the reviewed shop drawings indicating that the sprayed-on fireproofing shop drawings (working plans, product data and calculations) satisfy the requirements of the project contract documents and the code.
3. Provide the regional office of the State Fire Marshal a copy(s) of the approved complete shop drawings.
4. Provide DEB a copy of the “sealed” statement and a copy of the transmittal to the regional office of the State Fire Marshal.

Validation of Sprayed-on Fireproofing Assemblies
Applied fire resistant material assemblies are to be acceptance tested in accordance with the requirements of the code and the requirements defined herein. The regional State Fire Marshal’s office shall observe the installed fireproofing assemblies. The independent testing laboratory reports shall clearly show the location of the tests and test results. The A/E and Contractor shall certify that the sprayed-on fireproofing assemblies are complete. Copies of the reports shall be sent through the A/E to the Owner, State Fire Marshal and Division of Engineering & Buildings.

Validation Testing Requirements
All applied fireproofing shall be tested after installation according to ASTM E-605, ASTM E-736, ANSI/UL 263 and ANSI/UL 1709, latest editions. The minimum location and number of tests of the applied fireproofing shall conform to the requirements below:
1. For thickness on floor sections: One out of every four bays or similar units shall be inspected, but in no case shall a bay or unit exceed 2,500 sq. ft. Each bay or unit selected shall be divided into quarters. In each quarter, a 12- inch square shall be selected for taking thickness measurements. The thickness shall be determined by taking the average of at least ten individual symmetrical thickness measurements within the 12 inch square. Where more than one thickness is required by design, a similar procedure
shall be followed for each of the required thicknesses.

2. For thickness on beams and columns: Beam and column thickness measurements shall be taken within each bay or similar unit in which floor insulation thickness measurements are made. Four sets of random measurements shall be taken for each bay or unit.

3. For density: Samples for density determination shall be taken for each 10,000 sq. ft. of pre-selected floor area, but in no case shall there be less than two per floor.

4. For bond strength: Samples for cohesion / adhesion shall be taken on thoroughly dried material adjoining test sections used for thickness and density determinations. There shall be one test for beams and one test for decks for each 10,000 sq. ft. of pre-selected floor area, but in no case shall there be less than two tests per floor.

**Plumbing Drawings**
1. Indicate items to be demolished as part of renovation projects.
2. Provide plans for each floor noting locations and types of fixtures, water supply and distribution, sanitary drainage and special piping.
3. Provide plumbing fixture schedules showing designations, connection sizes, and mounting heights of accessible fixtures. Flush valve handles shall be located on the wide side of the accessible stall.
4. Provide plans indicating roof drains and areas served by each in square feet, piping and sizes.
5. Provide riser diagrams indicating fixtures, water supply and distribution, sanitary drainage and special piping.
6. Provide details of connections at water heaters, air compressors and roof drain installation.
7. Provide equipment schedules for water heaters, air compressors, air dryers and drains.

**Mechanical (HVAC) Drawings**
1. Indicate items to be demolished as part of renovation projects.
2. Provide plans of each floor and roof indicating double line-duct layouts and mechanical equipment. Plans shall indicate ceiling-mounted lighting fixtures.
3. Provide plans for each floor indicating chilled water, heating hot water, steam and condensate piping and piping sizes. Show provisions for expansion. (This may be shown on ductwork plans when legible.)
4. Provide layouts of mechanical equipment and fan rooms to a scale not less than twice that of the floor plans. Show equipment, ducts and piping to coordinate the installation in tight areas. Show access and service space requirements such as that required for tube, coil, and fan removal.
5. Provide schedules for all mechanical equipment, steam traps, and air devices, showing sizes, capacities, HP, CFM, electrical characteristics, locations and features.
6. Provide drawings showing control schematics and automation points.
7. Provide diagrams of chilled and heating water, steam, and condensate piping.
8. Indicate central heating and cooling plants, distribution piping, equipment, anchors and expansion joints.
9. Provide sections as required to clearly show the work in 3 dimensions.
10. Indicate the building heating loads (in BTU or pounds of steam per hour) to include transmission plus infiltration, outside air, domestic hot water, and kitchen, laundry, hospital hot water and outside air loads.
11. Indicate the sensible and total air conditioning cooling load of the building in tons. Also show the outside air portion of the cooling load in tons.
12. Indicate fitting types for ducts.

**Electrical Drawings**
Power and lighting plans may be combined if the combined drawing clearly conveys required information.
1. Provide lighting plans for each floor indicating fixture location, type and lighting level required (in foot-candles).
2. Provide power distribution plans indicating incoming service, generators and panelboards, etc. and outlines of mechanical equipment (for coordination.)
3. Indicate interface points for communications, fire alarm, and EMCS.
4. Provide floor plans indicating receptacles, telephone outlets, switches, audio visual and data.
5. Indicate, in kilowatts or KVA, electrical load total, three-phase load, motor load and size of largest...
motor in horsepower.

6. Provide control diagrams, panel board schedules and riser diagrams.
7. Provide lighting fixture schedule on the drawings.
8. Provide layouts of electrical rooms at a scale not less than twice that of the floor plans. Show all required clearances. Show required door swings.
9. Doors to electrical rooms shall be provided with permanent signage reading “NO STORAGE” in letters not less than the room identification OR the working space as defined by NEC shall be marked by a 2” wide yellow line and stenciled “NO STORAGE – ELECTRICAL WORKING SPACE” in 2” high yellow letters in mechanical rooms, electrical rooms, and service areas.
10. Provide layouts of elevator machine rooms at a scale not less than twice that of the floor plans. Show all equipment and required clearances for coordination.
11. Provide details to include duct bank, under/through footing penetration, housekeeping/equipment pads, lighting switching, grounding details for service entrance and individual transformers.
12. Provide grounding riser diagram for generators, transfer switches, main-tie-main switchboards and separately derived systems.

Control Systems
1. Provide a written sequence of operation on the plans for each mechanical and electrical control system stating explicitly how systems are intended to function.
2. Provide data regarding safety, alarms, indicators and control parameters.
3. Provide control system input/output summaries.
4. Indicate point(s) of connection of new to existing system.
5. Indicate location of operator interface.

7.10.8 Project-Specific Specifications
Specification sections shall be written / edited to apply specifically to the project and shall not include materials, standards, requirements or data not pertaining to the project. Specifications shall conform to the requirements and standards listed in Section 7.5.

7.10.9 Rock Excavation
Provide estimated quantities of rock excavation on the Bid Form.

7.10.9.1 Submission
The A/E shall prepare and submit working drawings and specifications for the University to submit to the various review agencies for approval as pertinent to the project. (See Section 7.4.)

7.10.10 Time for Completion
With this submission, the A/E shall furnish the University with an estimate of the time for constructing the project and include such in the appropriate paragraph of the bid form.

7.11 Bid Forms and Procedures

7.11.1 Instructions to Bidders
Use the standard Instructions to Bidders, HECO-7a. Do not retype or modify the Instructions to Bidders, HECO-7a, without permission from the AVP for FMD. Information on where bid documents can be viewed and shipping charges, if any, be should be placed in the advertisement and Notice of Invitation for Bids.

7.11.2 Unit Price Bids
Unit price bids without estimated quantities shall not be requested on the bid form. Unit prices may be used only where the required quantity cannot be reasonably determined by the bidders from the documents. (e.g., total length of piles required, total length of caissons, amount of rock excavation, etc.)

In such case, an estimated quantity of the unit of construction is provided by the Agency (and its A/E) on the bid form; the quantity as provided on the bid form and the unit price inserted by the bidder are multiplied together to give a lump sum amount; and the lump sum amount is added with the other base bid amounts to determine the total base bid amount. Use the wording and format shown on the Sample Bid Form Format,
available on the FMD Forms Center, to allow an adjustment to the Contract Price based on the actual quantities provided and approved in the Work. It is not appropriate to list small or insignificant estimated quantities for unit prices on the bid form.

7.11.3 Bid Form Preparation
Bid Forms shall be prepared using the format and wording shown on the Sample Bid Form Format, in the FMD Forms Center. The Bid Form shall state the basis for determining the low bidder for award of the contract as shown on the Sample Bid Form. The contractor’s Disqualification Statement and the Immigration Reform and Control Act of 1986 statement shall be included on each bid form. See Section 7.12 of this for requirements and procedures concerning Additive Bid Items.

Inclusion or use of “Allowances” in the Bidding is not permitted. The options are to specify the work in the documents and bid competitively with the rest of the project OR procure the work separately and include the subcontractor’s name and price on the Bid Form.

7.11.4 Prequalification of Contractors or Subcontractors
Pursuant to Code of Virginia § 2.2-4317, prospective bidders may be prequalified for bidding on projects. (Prequalification criteria, procedures, and appeal process requirements are provided in Chapter 10 of this Manual.)

7.11.5 Advertising
The University shall notify the A/E in writing when final working drawings and specifications have been approved. The University shall establish a time and place for receiving bids. Bid receipt dates shall be coordinated through Construction Management. The A/E shall use this information in completing the Advertisement, the ‘Posting’ and the Notice of Invitation for Bids.

For all work in excess of $100,000, a minimum period of 30 days shall be allowed from date of the original advertisement / Posting of Notice to the date of bid receipt unless otherwise approved by the DEB Director. Projects estimated to cost less than $100,000 may be advertised for shorter periods of time such as 21 or 14 days (depending on whether more than one trade is involved) but no less than the 10 days as required by the Code of Virginia.

Code of Virginia § 2.2-4302.2 requires that Requests for Proposals (RFP) be posted and advertised on eVA. The RFP may also be posted in a newspaper of general circulation in the area in which the contract is to be performed.

Code of Virginia § 2.2-4303 requires that Invitations for Bid (IFB) be posted on eVA. Invitations for Bid (IFB) may also be posted in a newspaper of general circulation in the area in which the contract is to be performed. In addition to posting electronically, the IFB may also be advertised in a statewide newspaper. When advertising in the newspaper, the University may post the full Notice of Invitation for Bid or it may use the ‘short form’ Notice.

Newspapers which are considered to have daily statewide circulation in Virginia are the Richmond Times-Dispatch, the Norfolk Virginian-Pilot, the Roanoke Times & World News and the Washington Post. A Notice of the Invitation for Bids may also be posted in a designated public area used for posting of such notices. For optimum exposure, the advertisement should also be filed with all organizations that regularly advertise and report construction bid data. Advertisements in other newspapers may be advantageous for large projects.

The University may authorize the A/E to advertise in the newspaper in the name of, and at the expense of the University, for construction bids in accordance with Code of Virginia § 2.2-4303.

7.11.6 eVA Vendor Registration
When procuring construction, professional services and non-professional services, attach the applicable vendor registration statement (either DGS-30-384 or DGS-30-385) to the following documents: Request for Proposals, Invitation for Bids, Notice of Intent to Award, Notice of Award, A/E Contracts and Construction contracts.

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Use **DGS-30-384** when the quantity of orders that will be issued is known, and insert that number on the blank provided (e.g., one, twelve, monthly, etc.)

Use **DGS-30-385** when the quantity of orders that will be issued is unknown. These statements may be downloaded from the DGS Forms Center.

### 7.12 Additive Bid Items for Design-Bid-Build

The A/E is responsible for the development and design of the project to meet the scope and to be within the Design-Not-to-Exceed Construction Budget identified in the A/E contract. The Work included in the Total Base Bid shall provide a complete and functional facility meeting all Code, accessibility, and safety requirements. When the project cost estimate indicates that the Total Base Bid for the project scope may not be within the available funds, the Agency and A/E should consider what features would be negotiated out if bids are over budget and include that Work as Additive Bid Items for cost or budget control. After the Agency and A/E have incorporated reasonable cost containment measures in the design, Additive Bid Items may, with the approval of the DEB Director, be used for budget control subject to the following limitations:

- **When additive bid items are approved for use, a maximum of four (4) Additive Bid Items may be included. Such Additive Bid Items are not intended to be a pricing exercise for the bidders.**

- **The total cost estimate of the Total Base Bid plus all Additive Bid Items shall not exceed 110% of the ‘Construction Cost’ on the CO-6 for Capital Outlay Projects or 110% of the Budget for Non-Capital Projects.**

- **Additive Bid Items shall be structured to minimize additional effort necessary to prepare the bid.**

- **Additive bids shall not be used to provide essential elements of the project, such as connection to water supply, required lighting levels, or adequate HVAC capacity, or Work without which the building would not be habitable, functional or safe.**

- **The Work/Design as described in the Base Bid shall be of the level of quality required for the project. Additive bids shall not be used as a shopping list to upgrade, substitute for, or delete for credit any part of the Work included in the Base Bid.**

- **Only the term Additive Bid Item shall be used. Use of the term ‘Alternate’ is not permitted.**

- **The Work included in each Additive Bid Item shall produce a complete component which may be incorporated into the work in the Base Bid.**

- **Each Additive Bid Item shall be independent of other Additive Bid Items.**

- **None of the Additive Bid Items shall compromise the work in the Base Bid and other Additive Bid Items for compliance with Code, accessibility or safety requirements.**

- **Additive Bid Items shall be sequenced so the most essential Additive is listed first.**

- **When the project bids are received and opened, the low bidder shall be determined based on the lowest bid which combines the Total Base Bid Amount plus the total amount of the Additive Bid Items, taken in sequence, which the Owner in its sole discretion decides to accept/award.**

- **Out-of-sequence selection of Additive Bid Items is prohibited, even if such manipulation would fit within the available funding.**

- **Negotiation of Additive Bid Item amounts is prohibited. Negotiations are allowed only for the Base Bid Work. If negotiations are required to allow the award of the Base Bid, the inclusion of any of the Additive Bid Items in the contract may not be considered in discussions during the negotiations, even if the negotiations of the Base Bid amount would yield sufficient savings to include an Additive Bid Item. Permission to negotiate with the low bidder must be obtained from the AVP of FMD or designee.**

### 7.13 Reviews and Approvals

#### 7.13.1 General

Reviews are performed as a service to the University and do not relieve the University, its A/E, or its Consultant from compliance with all codes, laws, rules, regulations, directives and standards applicable to the project whether or not cited in the review.
7.13.2 Building Official Review
The DEB Director, as Building Official for all buildings on state property is responsible for the review of the working drawings / bid documents to assure conformance with the requirements of the VUSBC, the ADA, and other DEB Standards established for construction and/or modification of state-owned buildings. The DEB Director’s staff is tasked with performing these reviews. When the Building Official is satisfied that the documents are in conformance with all applicable VUSBC and HECO Manual requirements, the University shall submit an application for Building Permit, CO-17.

7.13.3 Annual Permit Work
See Appendix P, “Building Permit Policy for Construction – State Owned Buildings & Structures” for guidance on the types of Work which may be performed by the University under the Annual Permit. The University Representative designated on the permit shall be responsible to the Building Official for review and approval of documents, issue of a Project Permit, and inspection of the Work for conformance with VUSBC requirements. See Chapter 6 for information on the Annual Permit Representative.

7.13.4 DEB Review Comments
DEB will transmit written review comments to the University electronically via email. The comments may be transmitted directly to the A/E at that time as well, upon request by the University.

7.13.4.1 Responses to DEB Review Comments
Within 2 weeks after receipt of written comments from all applicable disciplines, the University, with input from the A/E, shall provide a written response to each DEB comment, preferably on the comment sheet in the space provided or on a separate page if additional space is needed. All issues in dispute shall be resolved before the authorization is given to proceed to the next phase.

7.13.5 Re-submittals
Submittals which are incomplete, which require extensive revisions, and/or which do not conform to the requirements of this Manual shall be properly completed and resubmitted for a new review. The University may require that the A/E make such re-submittals without compensation or reimbursement.

7.13.6 Revised Submittals
All changes, revisions, and additions shall be highlighted in yellow on at least two revised submittal sets of preliminaries or working drawings. If University asks for a review to be expedited, all changes shall be highlighted in yellow on all sets of the revised submittal unless otherwise agreed to by DEB.

7.13.7 Final Approval
Final approval of the working drawings / bid documents is based on the understanding that the A/E has complied, or certifies that it will comply, with the foregoing and with all review comments concerning these requirements prior to printing the documents for release to bidders.

7.13.8 Approvals
Approval of the submittal at any stage is dependent on the University and the A/E satisfactorily resolving the issues raised during the reviews by DEB and other pertinent review agencies. Approval of Preliminaries on any project for which a Value Engineering Study is required will be dependent on the successful resolution of the Value Engineering recommendations and the DEB review comments.

7.14 Quality Control/Quality Assurance
The A/E shall be responsible for the professional and technical accuracy and coordination of all designs, drawings, specifications, cost estimates, and other work or materials furnished. The A/E shall perform a Quality Assurance review of the working drawings prior to submitting the

7.14.1 Scope of Value Engineering (VE) Study.
The VE Study shall be made by a multi-discipline team of VE qualified professionals meeting. The study group will follow the five step job plan as recognized by the Society of American Value Engineers (SAVE). The VE report (15 copies unless indicated otherwise by Agency) shall encompass the recommendations of the VE study group and include detailed cost estimates, life cycle analysis and sketches, as necessary.
The VE Team shall be assembled and isolated away from their normal work station in order to avoid the normal daily interruption. The University will provide a suitable room with tables and chairs. VE services shall be performed in a timely manner concurrently with the normal preliminary design review to minimize any delay in the schedule.

7.14.2 Procurement of the VE Study
The University shall procure the services of a Value Engineering consultant using non-professional services procurement procedures. The procurement process should begin at least 90 days prior to the anticipated date the preliminary drawings will be submitted. RFP evaluation factors shall include the experience, qualifications and expertise of each proposed team member. See Chapter 10.

The VE response to the RFP shall include the proposers list of proposed and alternate team members and their respective resumes representing their various disciplines/areas of expertise, together with the certified (CVS) team leader’s qualifications and discipline shall be submitted with the proposal and approved at the time of negotiations. Changes to or substitutions to the approved VE team configuration shall be submitted in writing to the University for approval.

The typical VE Team will be composed of:
1. VE Team Leader (CVS) **
2. Architect
3. Structural Engineer
4. Mechanical Engineer
5. Electrical (or Civil) Engineer
6. Typing, Clerical and Estimating support staff as necessary
** The principal person responsible for pre-study work, assembling, editing and reproducing the recommendations generated by the Value Engineering Team Study. C.V.S. must edit and sign the final report.

7.14.3 Qualifications of VE Team
The VE proposer/consultant shall provide one team consisting of a Certified Value Specialist Team Leader and at least one licensed architect and one licensed professional engineer from each discipline which have significant work on the project, usually one each for structural, mechanical and electrical engineers. VE Team members shall be experienced designers who are separate and completely independent from the Project A/E & its consultant firms.

The VE Study shall be coordinated, supervised and led by a person having Certified Value Specialist (CVS) credentials that qualify him/her to perform such services. The CVS shall be certified by the Society of American Value Engineers and shall have had a minimum of eight years combined college education and practical on-the-job VE experience. Practical experience is considered to have been gained by being actively engaged as a consultant in VE activities.

Members of the team shall be registered architects and professional engineers licensed in the Commonwealth of Virginia. All shall have a good understanding of VE principles and methodology as evidenced by attending a certified forty hour workshop. Team members shall be knowledgeable of the design and operational requirements and characteristics of the systems applicable to their discipline and the type of facility being studied.

7.14.4 Information Supplied to the VE Team
Prior to commencing the VE study, the A/E will forward the following information to the VE Team:
1. Two sets of 35% drawings (full size)
2. Four sets half size drawings
3. Outline Specifications & Systems Checklists
4. Detailed Cost Estimate (6 copies)
5. Basis of design (6 copies)
6. Design Calculations (Structural, Mechanical, Electrical)
7. Boring logs and soil reports
8. Scope of Project/Program requirements

**7.14.5 Certified Value Specialist (CVS) Responsibilities**
The CVS shall have the following responsibilities for the VE Study:

**Pre-Study**
1. Review complete design package & identify high cost areas.
2. Prepare cost model (actual vs. historical)
3. Prepare bar graphs of all subsystems.

**Study**
1. Team Leader and coordinator.
2. Team recorder.
3. Presentation of recommendations.

**Post Study**
1. Write and assemble report.
2. Proof all VE recommendations, especially the cost estimate and life cycle analysis.
3. Calculate redesign effort for each recommendation in hours.
4. Sign and submit final report within 7 days. Express mail 10 copies to the Owner and 5 copies to A&E of record.

**7.14.6 VE Report Requirements**
The results of the VE study performed on the project shall be documented as follows:

Contents page:
1. Brief description of total project and project requirements with a copy of the Owner’s program requirements.
2. Brief summary of VE recommendations.
3. One site plan, floor plan and elevation on 8-1/2"x 11" or fold out.
4. Summary sheet (only) of 35% cost estimate.
5. VE cost model of project.
6. Each VE recommendation shall be described Before and After VE and shall be accompanied with a detailed cost estimate of savings, life cycle cost analysis and sketches as necessary.
7. Complete Six Step Job Plan (workshops) of all work shall be submitted as appendices for reference.

All reports shall be systematically assembled and must be short and concise, yet informative enough for decision making. Pages must be sequentially numbered in the lower right hand corner to facilitate assembly. Tabs should be used for quick reference of important sections of report.

**7.14.7 Oral Presentation**
At the completion of the Value Engineering Study, the VE team leader and members as appropriate shall make an oral presentation of the items recommended to be implemented on the project. Audience for the presentation shall include representatives of the following: the A/E, the Agency, and the DGS.

**7.14.8 A/E Participation**

**Study**
1. Team Leader and coordinator.
2. Team recorder.
3. Presentation of recommendations.

**Post Study**
1. Write and assemble report.
2. Proof all VE recommendations, especially the cost estimate and life cycle analysis.
3. Calculate redesign effort for each recommendation in hours.
4. Sign and submit final report within 7 days. Express mail 10 copies to the Owner and 5 copies to A&E of record.
7.14.9 VE Report Requirements
The results of the VE study performed on the project shall be documented as follows:
1. Contents page.
2. Brief description of total project and project requirements with a copy of the Owner’s program requirements.
4. One site plan, floor plan and elevation on 8-1/2"x 11" or fold out.
5. Summary sheet (only) of 35% cost estimate.
6. VE cost model of project.
7. Each VE recommendation shall be described Before and After VE and shall be accompanied with a detailed cost estimate of savings, life cycle cost analysis and sketches as necessary.
8. Complete Six Step Job Plan (workshops) of all work shall be submitted as appendices for reference.

All reports shall be systematically assembled and must be short and concise, yet informative enough for decision making. VE Reports shall be prepared and submitted on 8-1/2" x 11" bond paper and bound under hardback cover appropriately identified. Sketches may be 8-1/2" x 11" or fold-out. Pages must be sequentially numbered in the lower right hand corner to facilitate assembly. Tabs should be used for quick reference of important sections of report.

7.14.10 Oral Presentation
At the completion of the Value Engineering Study, the VE team leader and members as appropriate shall make an oral presentation of the items recommended to be implemented on the project. Audience for the presentation shall include representatives of the following: the A/E, the Agency, and the DGS.

7.14.11 A/E Participation
The Division of Engineering & Buildings will review the responses to the DEB review comments and the proposed action on the VE recommendations. A meeting of DEB and Agency representatives will be required where the agency has rejected a VE recommendation for a design change that was also identified in the DEB review or is judged by DEB to meet the criteria of the project and save money. Upon resolution of the issue and agreement on a specific design direction, the CO-5 will be approved and authorization given to prepare working drawings.

7.15 STRUCTURAL AND SPECIAL INSPECTIONS
Chapter 1 of the VCC prescribes the minimum inspections to be performed on a project. VCC Chapter 17, Structural Inspections and Tests prescribes certain tests and inspections which are required to be performed on the structural systems for the building. These inspections have been, heretofore, provided on state projects by a combination of the Owner's Project Inspection, the A/E and the Owner's independent testing lab.

7.15.1 Application to State-Owned Buildings
The Director, Division of Engineering & Buildings, in his capacity as Building Official for all state-owned buildings, establishes the following procedure for the application of the structural and special inspections for capital outlay projects:

7.15.2 A/E Responsibilities
The A/E, as part of its Basic Service of preparing bid documents, shall include in the project specification the requirements for the materials, for the submittals, and for the tests and inspections to be performed. Identify those tests and inspections to be performed by the Owner’s independent testing service and require all other tests to be performed and paid for by the Contractor. The A/E shall include a summary of required Special Inspections in Division 1 of the Specifications. The A/E, as part of its construction period Basic Services, shall review and approve the shop drawings, material submittals and other data required to assure compliance with the requirements of the bid documents. The A/E in accordance with their contract shall visit the site with representatives of each discipline having work in progress to assure conformance with the design shown in the documents. Where an Agency has received permission to exclude this service from the A/E contract, qualified Architects and Engineers of the Agency shall perform this function.
7.15.2.1 Project Inspector Responsibilities
Each project shall have an on-site Project Inspector/Clerk of the Works who shall, as part of his/her responsibilities, check all materials delivered to the site for conformance with the approved submittals. The Inspector shall also check the installation for proper materials, methods, clearances, etc., as described in the plans and specifications and in the approved submittals. The Owner’s Project Inspector shall furnish copies of all reports to the A/E.

7.15.2.2 Owner’s Independent Test Lab
The Owner’s independent test lab shall inspect foundations, log and inspect pile and caisson installations, inspect and test concrete, and inspect and test bolted and welded connections as required by the specifications. The Owner’s test service shall furnish copies of all reports to the A/E.

7.15.2.3 Statement
The Agency shall submit with the CO-6 (or prior to submitting for the CO-17) one (1) copy of the completed and signed Form DGS-30-048 (CO-6a) Statement of Special Inspections, with an attached copy of the edited schedule for Special Inspections from the Form DGS-30-048 (CO-6b).

7.15.2.4 Final Report
The Agency shall submit a copy of the completed and signed Form DGS-30-120 (Final Report of Structural and Special Inspections, CO-13.1b) with its request for a Certificate of Occupancy or other documentation supporting its request to occupy a facility and close the building permit.

7.15.3 Listing of Structural and Special Inspections
Appendix I, Special Inspections, contains the list of structural and special inspections required for state-owned buildings. The A/E shall edit the applicable list as necessary to indicate those materials and inspections which are and are not required for the project.

7.15.4 Additional Information
See Chapter 5 and Appendix J for additional information on other Project Inspector functions.

Commissioning of HVAC Systems
“Commissioning” for HVAC systems, as described in ASHRAE Guidelines for Commissioning of HVAC Systems, begins with the development of the project criteria, continues through the design of the HVAC systems including preparation of the plans and specifications describing the HVAC system components and requirements, continues through the review of shop drawings and submittals, continues through the inspection of the installations of the systems and observation of applicable tests and concludes with the final testing, balancing, start-up, initial operation, and acceptance of the HVAC system including controls. The A/E must begin at the project inception to develop an orderly process to document and set forth the various elements of the process so that the commissioning criteria and requirements are integrated with the design and the specification of the HVAC system and so that procedures are defined for the required testing, balancing and operational checks.

The A/E shall specify Contractor requirements related to pre-functional performance testing including, but not limited to, pressure tests, flushing, cleaning, testing, balancing, adjusting and start-up of equipment and the calibration and testing of automatic controls. The specifications shall require that every mode of every part or zone of the HVAC system is operated under full and part load and through all normal operational modes. The specifications set forth the procedures and requirements for the performance testing, system acceptance and training of agency personnel if required.
8.1 Design Coordination

The Contract Documents submitted shall represent a reasonable and cost effective architectural and engineering solution for the scope of work and construction budget constraints in the A/E contract.

All elements of submittals shall be checked by the A/E and such check should be made by persons other than those preparing the materials and by professional personnel trained in that specific discipline. Errors and deficiencies shall be corrected by the A/E at no additional cost to the University.

The A/E shall perform a quality assurance review for both the technical accuracy and discipline coordination. Such items as section, detail, and note references to other sheets, major dimensions, and equipment locations shall be checked. Verify that all equipment is correctly identified the same way on all sheets and in the specifications.

8.2 Quality Assurance Checklist

The checklists in Appendix B provide guidance to assist the A/E in reviewing the documents and represent the information the University expects to be shown on the drawings to clearly identify the Work to be performed. The specification section numbers reflect those often used and are intended to show the types of information that should be included in the Quality Assurance check regardless of actual specification section numbering used by the A/E or where the information occurs on the drawings.
Chapter 9: Construction Procurement and Administration

9.1 General

The Code of Virginia, Section 2.2-4301, defines “Construction” as building, altering, repairing, improving or demolishing any structure, building or highway, and any draining, dredging, excavation, grading or similar work upon real property.

The Code of Virginia, Section 2.2-1132, provides that DEB “shall provide assistance in the administration of capital outlay construction projects set forth in the [A]ppropriation [A]ct, other than highway construction undertaken by the Department of Transportation and the acquisition or improvement of specialized cargo-handling equipment and related infrastructure” by the Virginia Port Authority. …

Further, DEB may establish standards, as needed, for construction by the University and may, with the advice of the Attorney General, establish standard contract provisions and procedures for the procurement and administration of construction and the procurement and administration of architectural and engineering services relating to construction, which shall be used by all departments, agencies and institutions of the Commonwealth. Virginia Commonwealth University, as a Tier III institution, has elected to use the DEB standards and procedures as modified by this Manual.

“Construction” as used in this Manual, includes new construction, reconstruction, renovation, restoration, major repair, demolition and all similar work upon buildings and ancillary facilities owned or to be acquired by Virginia Commonwealth University, including any draining, dredging, excavation, grading or similar work on real property.

Construction will generally be procured by competitive sealed bidding in accordance with the procedures of this chapter. However, competitive negotiations may be used on (1) projects using a fixed price design-build or construction management contract or (2) projects for the alteration, repair, renovation or demolition of buildings upon a determination in writing made in advance and approved by the AVP of FMD that competitive sealed bidding is either not practicable or not fiscally advantageous to the public. See Chapter 10 for Special Construction Procedures.

Non-capital construction shall be procured in accordance with Appendix K.

Non-capital outlay minor construction, or repair or replacement in kind, or minor remodeling or renovation which does not meet the criteria above, require plans, or modify the Use Group Classification, existing Exits or other Fire Safety Elements, may be procured in the same manner as non-professional services in accordance with the Higher Education Purchasing Manual, Section 2.

9.2 Construction Bids

All construction shall be procured by competitive sealed bidding in accordance with the Governing Rules and the procedures described in this chapter or by special procedures as set forth in Chapter 9.

The IFB for construction projects shall include the General Conditions of the Construction Contract (HECO-7), the Instructions to Bidders (CO-7a), the Notice of Invitation to Bid, a Bid Form; and other documents.

9.2.1 Instructions to Bidders
See Chapter 7.

9.2.2 Virginia Construction Contracting Officer (VCCO)
A VCCO shall supervise the bidding and awarding of HECO construction contracts. Procedures stipulated in this Manual shall be used in all cases.
9.2.2.1 Authorization to Advertise for Bids and Building Permit

Authorization to advertise for bids is given on completion of technical review(s) of the project documents by DEB and approval of the Director of Financial Services.

9.2.3 Preparation

Bid Forms shall be prepared using the format and wording shown on the Standard Bid Form Format, the Notice of Invitation for Bids Format, the IFB Cover Format and the Invitation for Bids Contents Format. The contractor’s Disqualification Statement and the Immigration Reform and Control Act of 1986 statement shall be included on each bid form. In preparing these bid forms, A/Es are reminded to keep the number of additives to a minimum and when including more than one, they shall be listed and accepted in order of importance. See Chapter 7.12 for further requirements and procedures concerning Additive Bid Items. Including or use of undefined “Allowances” in the Bidding is not permitted.

9.2.4 Advertising

The University’s Construction Management Department shall establish a time and place for receiving bids. Bid receipt dates shall be coordinated through the VCCO. The A/E shall use this information in completing the advertisement on the Notice of Invitation for Bids. For general preparation of bid document see Chapter 7.

The advertisement may be placed for a period of one or more days, as deemed appropriate, in one newspaper which has daily statewide circulation such as the Richmond Times-Dispatch, the Norfolk Virginian-Pilot, the Roanoke Times & World News or the Washington Post. The project may also be advertised in a newspaper which serves the area where the project is located if different from the above. Also, the advertisement for bids should be posted in a designated public area used for posting of such notices. The advertisement will be circulated and posted for appropriate maximum exposure by the University’s Construction Management Department and be posted on the eVA web site when the expected procurement exceeds $50,000.

9.2.5 Pre-Bid Conference

If a pre-bid Conference or project showing is held (whether optional or mandatory), representatives of the University and the A/E shall attend. The University shall make the Project location or building available to the attendees / prospective bidders for their observation or inspection.

The Construction Management Department shall conduct the pre-bid conference. The agenda shall include the following:

1. Introductions of the A/E and University representatives
2. Synopsis of the Work by citing or reading portions of the following:
   - Notice of IFB
   - Instructions to Bidders
   - Pre-bid Question Form
   - Bid Form
   - Supplemental General Conditions
   - Special Conditions
3. General Conditions: Other conditions or requirements included in the Bid Documents that should be called to the attention of the bidder:
   - Questions from the floor: A/E should only answer those questions where the response is to direct the questioners to a particular portion of the bid documents. All other questions shall be received in writing or documented by the A/E and answered in writing in an Addendum.
   - The A/E shall issue an Addendum to include a copy of the attendee’s sign-in sheet and the questions posed with the response to each.

The University and the A/E must be careful not to provide any information, instruction, or clarification to pre-bid attendees which are not made available to all potential bidders.
9.2.6 Addenda to the Bid Documents
Addenda shall be issued as necessary to clarify or correct information in the Bid Documents, to respond to questions raised by the Bidders, and/or to modify the Bid Receipt Date.

No oral explanation in regard to the meaning of the drawings and specifications shall be made and no oral instructions shall be given to the Bidders.

Addenda to clarify or correct information in the Bid Documents should be issued at least 10 days prior to the Bid Receipt Date. Addenda which add work to the project, which provide significant information, which must be considered by subcontractors and suppliers, or which contain many pages of corrections must be issued at least 10 days prior to the date set for receipt of bids or the bid date must be delayed to allow the 10 days. Addenda which serve primarily to provide clarifications or corrections which can be covered in a one page Addendum may be issued up to 6 days prior to bid receipt date. Addenda which only delay or cancel the date for receipt of bids must be issued at least 24 hours prior to the date and time set for bid receipt.

One copy of all Addenda shall be submitted to DEB and Construction Management Senior Agency Management Analyst at the same time and by the same means as the Addenda are issued to the Bidders. A copy of all addenda shall also be sent to the responsible State Fire Marshal Office which will have jurisdiction over the project.

9.2.7 Receipt of Bids
A VCCO, or a person acting under the supervision of the VCCO, will receive the bids when submitted. That person must record the time and the date and initial on the bid envelope. That record shall be retained. All envelopes, papers and data submitted with the bid shall be retained, except for bid securities or work papers which shall be retained only until a signed contract is obtained. At that time, bid securities must be returned to the bidders. Until that time, bid securities must be retained in a secure place. Work papers will be returned to the bidder unopened, unless needed to resolve a withdrawal of bid due to error claim.

9.3 Bid Opening
Bids shall be publicly opened by a VCCO or their representatives(s) and shall be reviewed for completeness. Tabulation shall be made showing bid price, presence of bid bond or certified check, completion time, work papers, acknowledgement of addenda, and any other pertinent information. See Appendix D for Procedures on Opening Bids.

9.3.1 Tie Bids
University shall evaluate bid offeror’s bid package to evaluate additional value to the University. If all other considerations are equal, then the University will determine how the tie will be resolved.

9.4 Provisions for Negotiation with Low Bidder
When the low bid exceeds the anticipated budget by more than 10% and upon approval of the AVP of FMD, negotiations with the lowest responsive and responsible bidder may occur. In all cases, a record of the negotiations will become a part of the project file.

9.5 Authority to Award a Construction Contract
The AVP of FMD or designee approves all requests to award a contract (HECO- 8) to the low responsive and responsible bidder for capital outlay projects. VCCO should recommend HECO-8 prior to approval. Note the construction line of the budget shall reflect the award amount. Once the award is approved, the University may "Post" a Notice of Intent to Award on the eVA website prior to contract award.

9.6 Execution of the Contract
The Senior Vice President and CFO has been delegated authority to execute Construction Contracts (HECO-9). Construction Contract documents customarily include the bid submitted by the Contractor, the General Conditions

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of the Construction Contract (HECO-7), any Supplemental General Conditions, any Special Conditions, the plans and the specifications, and all modifications, including addenda and subsequent Construction Change Orders.

9.6.1 Protest of Award or Decision to Award
Any bidder who desires to protest the award or decision to award a Contract shall submit such protest in writing to the Director of Procurement Services, no later than ten days after the award or the announcement of the decision to award, whichever occurs first. No bid protest shall lie for a claim that the selected bidder or offeror is not a responsible bidder. The written protest shall include the basis for the protest and the relief sought. The University shall issue a decision in writing within ten days of receipt of the written protest stating the reasons for the action taken. This decision shall be final unless the bidder or offeror appeals within ten days of the written decision by instituting legal action.

9.6.2 Stay of Award During Protest
An award need not be delayed for the period allowed a bidder or offeror to protest, but in the event of a timely protest, no further action to award the Contract will be taken unless there is a written determination that proceeding without delay is necessary to protect the public interest or unless the bid or offer would expire.

9.6.3 Notices to Proceed
The Notice to Proceed will be issued by the VCCO after bonds and insurance certificates have been reviewed by Legal Counsel with the executed contract. A Conditional Notice to Proceed may be issued where circumstances warrant.

9.7 Construction Contract Administration
The General Conditions of the Construction Contract, HECO-7, describe the contract administration procedures.

9.7.1 A/E Construction Period Services
Generally, the A/E’s Basic Services require the A/E to assist in the solicitation of bids, review and approve submittals, visit the site periodically and inspect the Work, complete Structural and Special inspections, review and certify Contractor payment requests, participate in on-site preconstruction, progress and pre-installation meetings, issue clarifications of the Documents, issue Field Orders, process change orders, provide substantial and final completion inspections and certifications and other functions associated with contract administration. See Chapter 5 and Chapter 9 of this Manual for typical A/E services during construction. These services should also be referenced or described in the A/E Contract or its MOU. These services and/or other services may also be provided by special consultants.

9.7.2 Construction Program Management
The University may assign a Construction Program Manager to assist the Project Manager as the University's on-site representative for the construction phase; to manage any other construction phase consultants; to coordinate other consultant, A/E and Contractor communications; to expedite resolution of all conflicts; to perform additional quality assurance oversight (such as inspection, verification, acceptance, rejection) and to perform other administrative oversight. The Construction Program Manager shall be included in all written decisions and notices to the Contractor and information and notices from the Contractor. All activities not specifically required to be performed by the A/E may be performed by the University Construction Program Manager or by the University’s selected consultant.

The University may also delegate from the A/E to any selected consultants certain inspection, verification, acceptance, rejection, and administrative duties and authority. The University shall provide the Contractor and the A/E information in writing defining the limits of the selected consultant’s authority.

9.8 Pre-Construction Meeting
Prior to the start of construction, a Preconstruction meeting shall be held. Attendees include the Planning & Design Project Manager, Construction Project Manager and Project Inspector, the building user, the A/E’s Representative including selected representatives of each design discipline involved in the project, special consultants, the Contractor’s Project Manager and Superintendent (and Scheduler, if Contractor desires), and representatives of the Contractor’s major Subcontractors. See the General Conditions of the Construction Contract (HECO-7) section 50.
9.9 Monthly Meetings
The goal is that the Contractor, the Construction Project Manager, the A/E and other consultants have timely exchange of information and cooperate to accomplish the Work as required by the Contract Documents. See the General Conditions of the Construction Contract (HECO-7) section 50. In conjunction with recurring progress meetings, a monthly pay meeting is normally the best opportunity to exchange information and should include the following topics:

- Observations of status, quality and workmanship of work in progress
- Validation of the Schedule of Values and Certificate for Payment
- Conformance with proposed construction schedule
- Outstanding Requests for Information (RFI), Requests for Clarification and RFP
- Submittals with action pending
- Status of pending Change Orders
- Status of running Punch List items
- Work proposed for coming pay period
- Discussions of any problems or potential problems which need attention

9.10 Other Meetings
Other meetings, such as progress meetings, coordination meetings, pre-installation meetings and/or partnering meetings may also be appropriate. See the General Conditions of the Construction Contract (HECO-7) section 50. Pre-installation meetings are required for all HVAC systems and components. Such meetings should include the A/E, the project engineer for the mechanical discipline, the Construction Project Manager, the Project Inspector, any commissioning consultant, the Contractor's project manager and superintendent, the mechanical subcontractor's project manager and superintendent, and a representative of the major supplier/manufacturer.

9.11 Schedule of Values and Certification for Payment
The General Conditions of the Construction Contract, HECO-7, describe in Sections 20 and 36 the requirements for completing the Schedule of Values and Certificate for Payment, HECO-12, and for providing documentation of Work performed and for properly stored materials. The A/E, as part of Basic Services, is required to review and approve the format and breakdown of the initial Schedule of Values and to review, evaluate, verify, and approve the Contractor’s monthly submittal of the HECO-12 documentation requesting payment.

9.12 Inspection of Work
The General Conditions of the Construction Contract, HECO-7, describes in Section 16 the requirements, responsibilities and authorities for inspection of the construction Work and for correction of deficiencies and/or defects found. Also Section 21 describes access to the work site.

The A/E’s inspection services generally require at least twice a month on-site inspections and availability to answer questions from the Project Inspector. The University will designate a specific individual to serve as Project Inspector. The Project Inspector will report to the Construction Administration Manager. The duties and functions of the Project Inspector include those listed in the HECO-7, Section 16 of the General Conditions of the Construction Contract.

It is essential that the A/E, the Construction Administration Manager, the Project Inspector and any Project consultants work together, to observe and inspect the Work, and to regularly communicate to assure that work being performed conforms to the Contract Documents.

9.12.1 Commissioning Inspection of HVAC Systems
See Chapter 7 for design phase commissioning requirements. Prior to any submittals and/or installation, a pre-installation meeting will be held. The A/E will observe the Contractor’s functional performance testing, including but not limited to, pressure tests, flushing, cleaning, testing, balancing, adjusting and start-up of equipment, as well as the testing of automatic controls, and report their observations to the A/E. The A/E shall schedule periodic inspections of the HVAC systems and be present for such testing as specified in the VCU Design & Construction Standards. Some sophisticated HVAC systems for facilities such as laboratories, medical science facilities, and archival storage facilities have minimal tolerances for deviations in temperature,
humidity and/or air changes and therefore, may require special commissioning or test/inspection services to assure the precise conditions required. The University may secure these services from the A/E as additional services, or the services may be procured from an independent testing / commissioning agent depending on the services required and the capabilities of the possible vendors/consultants.

Notwithstanding any Commissioning inspections, it shall remain the A/E’s responsibility to verify that the Contractor has all systems functioning properly per the sequence of operations, and the design intent has been achieved; that equipment has been received and is in accordance with the Submittal previously approved by the A/E; that all system components have been adjusted and a record made of final settings; and that manual and automatic operating modes have been established for full load ranges prior to notifying the University that the system is ready for final start-up and acceptance testing. It is the intent that when the startup inspection team is called together to conduct final inspections and to perform acceptance tests that the work be started as scheduled and completed without exceptional delay. Major or time-consuming adjustments or modifications during final inspection shall be avoided. Final inspections requested when the systems are obviously not ready for such testing and inspections may result in a back-charge to the A/E or Contractor for the costs of inspection team visits and related costs. Applicable portions of the above requirements shall be included in the project specifications.

9.12.2 Structural Inspections
See Section 7.15 of this Manual and Appendix I for this requirement.

9.12.3 Other Inspections
The University may procure the services of independent laboratories or firms to provide other inspection and testing services for such areas as systems commissioning, foundations, steel frame connections, concrete testing, fire proofing and standard compaction control.

9.12.4 Fire Marshal Inspections
The Regional Office of the State Fire Marshal Office will normally be responsible for the Fire Marshal inspection.

9.13 Construction Change Orders
Change orders will be administered in accordance with Section 38 of the General Conditions of the Construction Contract (HECO-7). The University may at any time, by written order utilizing the change order forms (HECO-11a and HECO-11) and without notice to the sureties, make changes in the drawings and specifications of the Contract which are within the general scope of the Contract, except that no change will be made which will increase the total contract price to an amount more than twenty percent (20%) in excess of the original Contract price without notice to sureties. For fixed price contracts, when a single change order or when the cumulative total of change orders exceeds the original contract amount by more than 25% or $50,000, whichever is greater, that change order and any subsequent change order that increases the contract amount shall have the prior approval of the University's Senior Vice President and CFO. See Appendix H for standard change order procedures. No change order shall be issued, regardless of cost, that increases the approved scope of the capital project as shown on the approved HECO-2 or as set forth in the Capital Project Request or Pre-planning Study without prior approval of the University’s Vice President for Finance and Administration.

A request to infuse additional funds or to transfer funds to the Total Project Budget shall be submitted to the Director of Financial Services or designee on a revised HECO-2 with appropriate written justification.

9.14 Documentation of “As-Built” Conditions
The Contractor shall be required at all times to maintain one record set of drawings and specifications in the Superintendent’s office at the project site. This set of documents shall be designated the “As Built” documents and shall be used to record any changes or deviations from the original documents. The A/E shall review this set when visiting the site, and prior to approving the monthly pay request to assure that the Contractor is making the notations as required. The “As Built” set of documents shall be furnished to the A/E at the completion of the project as a reference for preparing the final “Record” documents.
9.15 Inspection for Substantial Completion

When the project is sufficiently complete in accordance with the Contract Documents and it can be used for the intended purpose, the Construction Project Manager will ensure the requirements, procedures, inspections and approvals below and in section 44 of the General Conditions of the Construction Contract (HECO-7) are completed.

When the Contractor determines that the work, or a designated phase or portion thereof, will be substantially complete and ready for testing and inspection, Contractor shall complete and send Form HECO-13.2a with a list of the Work known to be unfinished or defective to the A/E at least ten (10) days prior to the date set for substantial completion. The A/E will forward the HECO-13.2a to the University and attach a written endorsement, based on the periodic inspections, as to whether or not A/E concurs that the project, or phase, should be substantially complete on the date set by the Contractor. The A/E coordinates and arranges a date on or shortly after the date set by the Contractor for the Substantial Completion inspection to be conducted. See definition of Substantial Completion.

Participants in the substantial completion inspection shall include the Construction PM, the Project Inspector, University user representatives, representatives of the General Contractor, including those of the mechanical, electrical, and major equipment subcontractors, the A/E, and the responsible State Fire Marshal Office. The A/E shall conduct and document the inspection and compile a written list of the Work or deficiencies noted (punch list) which need to be completed or corrected.

If the A/E, the Fire Marshal’s representative and DEB agree that this project, or this portion of the project being inspected, is substantially complete in accordance with the contract documents and safe to occupy, the A/E shall execute the appropriate Certificate of Partial or Substantial Completion (HECO-13.1a), and submit to the University. Attach copies of the punch list, the Contractor’s HECO-13.2a, the Application for Certificate of Use and Occupancy HECO-13.3 and other documents as appropriate.

The University may submit this material to the University Building Official and request that a Certificate of Occupancy be issued, or the University may wait to request the Certificate of Use and Occupancy when final completion is achieved. If one or more re-inspections of the Work that the Contractor declared to be Substantially Complete are required because the Work was not substantially complete as stated, the Contractor shall reimburse the University for the costs of the re-inspections. Do not accept as Substantially Complete unless it (the part or whole) is ready for occupancy.

9.16 Beneficial Occupancy

Once the University, the A/E, the Contractor, DEB, and the State Fire Marshal’s representative agree in writing that the facility is substantially complete and ready for occupancy, the University may submit a CO-13.3, Application for Certificate of Occupancy or a 13.5 Application for Beneficial Occupancy, and a HECO-13.3b, Checklist for Beneficial Occupancy, along with copies of the CO-13.1a, HECO-13.1b (if applicable), HECO-13.2a, Fire Marshal’s acceptance report and other required operations permits to the DEB.

The University Building Official (DEB), when satisfied that the project and/or portion of the project is in fact substantially complete in accordance with the contract documents, may issue written authorization (HECO-13.3), (Directive 544 applies) to occupy the project, or applicable portion thereof, subject to any conditions or stipulations.

The University shall not occupy the facility until the certification from the State Fire Marshal that the project complies with the fire safety requirements and applicable codes and the Certificate of Use and Occupancy (HECO-13.3) are received. Occupancy of the facility without approval is unlawful and is a misdemeanor under Code of Virginia § 36-106, as amended.

The following material is required for consideration of a request for a Temporary or Partial Certificate of Use and Occupancy (Directive 564 applies):

1. Floor plans (small scale) that show areas requested for occupancy and the exits/egress routes;
2. Type of Occupancy requested: e.g., move in furniture for staff, set up/prepare for students, etc.;
3. HECO-13.1a with punch-list from A/E;

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4. HECO-13.2a with any attachment from Contractor;
5. HECO-13.3b Checklist for Beneficial Occupancy;
6. Fire Marshal’s report and recommendation;
7. Document stating that the Asbestos Abatement, if any, is complete;
8. HECO-13.3 Application For Certificate of Occupancy with data on entire project and separate sheet showing data on area requested to be occupied;

The University may take Beneficial Occupancy of a portion or unit of the project before completion of the entire project only with the prior written approval of DEB.

**9.17 Final Completion Inspection**
When the items listed in the “punch list” have been completed and all Work is complete and ready for final testing and inspection, the Construction Project Manager will ensure the requirements of section 44 of the General Conditions of the Construction Contract (HECO-7) are complete. Upon completion of all Certificates of Completion, HECO-13.1 and 13.2, the Certificate of Use and Occupancy shall be issued.

**9.18 Project Close Out**
The A/E shall file with the University the Certificate of Completion HECO-13.1. By filing the HECO-13.1, the A/E is certifying that in his professional opinion all construction requirements have been met. After receipt of a Certificate of Use and Occupancy (HECO-13.3) the Project Manager shall sign the HECO-17 and file a HECO-14.

**9.19 Record Drawings and Specifications**
The A/E shall prepare “Record Drawings” showing the “As Built” conditions, locations and dimensions based on the Contractor’s As Built set of drawings and specifications, and other data furnished by the Contractor to the Architect/Engineer. The Record Drawings shall include actual location of piping and utilities as well as all other changes specifically known to the Architect/Engineer. These Record Drawings shall also include the depths of pilings or caissons if pilings or caissons were in the construction. Record drawings and specifications shall be prepared and provided to the University.

**9.20 Maintenance and Operating Manuals**
Operating and maintenance (O&M) instructions written for the specific project shall be provided to the University at the final inspection. (The General Conditions of the Construction Contract (HECO-7) section 49 apply.

This shall consist of a compiled document prepared by the A/E team for the project and generally include the operation and control sequencing narrative, the control diagrams, an equipment chart indicating periodic maintenance requirements, and the operation and maintenance manuals for the equipment. All systems needing regular maintenance and/or requiring adjustments must be covered. The schedule for required minor and major maintenance must be included. Relevant design criteria and assumptions needed to understand the operation of the systems will be furnished in narrative form including the control systems settings and concept of operation manuals which provide the data by reference to drawings and specifications and manufacturers are not acceptable. The document, along with the Record drawings and specifications, shall be provided to the University at the time of final acceptance of the project.

**9.21 Ownership of Documents**
Ownership of all materials and documentation including the drawings and specifications and copies of the calculations and analyses originated and prepared pursuant to the Contract between the University and the A/E, shall belong exclusively to the University. The drawings, specifications, analyses and calculations as prepared by the Architect/Engineer for the project, whether completed or not, shall be the property of the Virginia Commonwealth University, whether the work for which they are made is executed or not. The A/E shall not use these materials on any other work or release any information about these materials without the express written consent of the University.

Such material may be subject to public inspection in accordance with the [Virginia Freedom of Information Act](https://www.vfoia.com) (VFOIA). Security related documents and information are excluded from VFOIA unless a specific need to know can be shown. Trade secrets or proprietary information submitted by a bidder, offeror, or contractor in connection with a procurement transaction shall not be subject to disclosure under the VFOIA provided the bidder, offeror, or
The contractor invokes the protections of the VFOIA prior to or upon submission of the data or other materials. The A/E must identify the data or materials to be protected and state the reason why protection is necessary at the time the data is first submitted.

The A/E shall provide the following documents to the University at the completion of the A/E’s work:

- Sealed and signed drawing tracings
- Copy of the specifications
- Copy of analyses made for the project
- Indexed copy of the calculations made by each discipline for the project
- University copy of all shop drawings, submittals, cut sheets, operation and maintenance instructions, parts lists and other material related to the project.
- As built set of drawings and specifications

### 9.22 Contractual Disputes

The University’s Procedure for Resolution of Contractual Claims is to be followed for construction claims submitted in accordance with the General Conditions of the Construction Contract, section 47.
10.1 General
In accordance with the Restructuring Act and the Management Agreement for VCU, the following procedures may be utilized for construction projects of a highly specialized or unique nature, as deemed appropriate by the University and as approved by the AVP for FMD. These Design-Build and Construction Management Competitive Negotiation Procedures may be used for capital projects for the University.

10.2 Design-Build Procedures

Criteria for Use of Design-Build Contracts (D/B Contracts)
Design-build contracts are generally utilized on new construction projects with limited complexity. D/B contracts may be approved for but are not limited to use on building projects in the following general categories: warehouse/storage buildings, garage/maintenance shops, general mercantile buildings, single-story administrative buildings, recreational and concession buildings, exhibition and agricultural buildings, parking decks and housing.

Procedures for Approval to Use Design-Build
The University shall obtain written authority to use a D/B contract from the AVP for FMD. The request shall justify and substantiate that Design-Build is more advantageous than a competitive sealed bid construction contract with a general contractor and shall indicate how the Commonwealth will benefit from using D/B. The request shall also include a written justification that sealed bidding is not practical and/or fiscally advantageous.

Design-Build Selection Procedures
On projects approved for Design-Build, procurement of the contract shall be a two-step competitive negotiation process. The following procedures shall be used in selecting a firm and awarding a contract:

The following must occur prior to beginning:
1. The University shall appoint an Evaluation Committee which shall have a minimum of three members, including at least one licensed professional engineer or architect.
2. The University’s A/E consultant (sometimes under a term contract), or a licensed professional on the University’s staff prepares Pre-Design scope and criteria. Standard professional services procurement procedures are used to select the University’s A/E.
3. The University’s A/E prepares schematics, including outline technical specifications, for the University’s approval, with an opportunity for the University to make changes. The completed schematic drawings and outline specifications are sometimes referred to as “Bridging Documents.” The documents establish the minimum level of quality required for the project.
4. Minimum Requirements for Bridging Documents:
   a. Survey of site
   b. Soil borings/geotechnical reports
   c. Program describing building use and functional requirements
   d. Various user groups/spaces
   e. Specific operational requirements
   f. Specific equipment demands
   g. Square footage
   h. Architectural restrictions
   i. Schematic floor plans showing building dimensions
   j. Site restrictions (access, staging area, traffic control, work hours, etc.)
   k. Schedule constraints
   l. Master planning documents (if available)
   m. Any additional data that is pertinent to the project.
5. Reference use of HECO-7DB as the General Conditions of the Design-Build contract and the HECO-9DB as the Contract between the University and Design-Builder

Step One involves the following:
VCU will prepare a RFQ containing the University’s Facility Requirements, building and site criteria, and site and survey data (if available). All offerors shall have a licensed Class “A” Contractor and an
Architect or Engineer licensed to perform such duties in the Commonwealth of Virginia as part of the Project team.

a. The University shall advertise the requirement in eVA for a minimum of thirty (30) days with one advertisement in a newspaper of general circulation in the area in which the contract is to be performed a minimum of ten (10) days prior to the receipt of bids/proposals.

b. The University will issue an RFQ process resulting in a short list of between three (3) to five (5) offerors, including at least one (1) DSBSD – Certified Business if such offeror meets the requirements for prequalification.

c. RFQ responses must be submitted by interested parties by the due date and time to the location stipulated in the solicitation.

d. The RFQ responses will be evaluated based upon the information submitted and any other relevant information. The Evaluation Committee will conduct this evaluation.

e. The University may request additional information from the Offerors, if needed.

f. The Evaluation Committee will rank the firms based upon the overall merit of the information submitted and any other relevant information and recommend those deemed most qualified with respect to the criteria established for the project in the RFQ.

Step Two involves the following:

Selection of Design-Build Contractor

a. The University will prepare a Request for Proposals (RFP) containing the University's facility requirements, building and site criteria, site and survey data, the criteria to be used to evaluate submittals and other relevant information.

b. The University will solicit the firms selected as specified above to submit proposals that include both technical and cost information by the date and time to the location established in the RFP for receipt of the offers.

c. The Evaluation Committee will evaluate the proposals based on the criteria contained in the RFP and individually score each proposal prior to the first Evaluation Committee meeting. At the conclusion of the first Evaluation Committee meeting or after oral presentations (if conducted), the scores based on the evaluation criteria shall determine the number of firms selected for negotiations. Clarifications and additional information may be requested by the committee from these offerors. The Evaluation Committee will inform the procurement officer of any adjustments necessary to make the proposal from a selected D/B offeror fully comply with the mandatory requirements of the RFP. The bid officer shall obtain the clarifications from the offerors in writing.

d. Offerors who submit a proposal in response to the RFP may be required to give an oral presentation of their proposal to the Evaluation Committee. This provides an opportunity for the offeror to clarify or elaborate on the proposal. This is a fact-finding and explanation session only and does not include negotiation. The Evaluation Committee Chair will coordinate the schedule and the time and location of these presentations with the committee and the bid officer. The bid officer shall schedule the Oral Presentations with the offerors. Oral presentations are an option of the Evaluation Committee and may or may not be conducted. The Evaluation Committee shall score the proposals based on the evaluation criteria after the Oral Presentation.

e. As specified in the solicitation, negotiations will be held with two or more of the selected D/B teams. The University may require that offerors make design adjustments necessary to incorporate project improvements and/or additional detail identified by the Committee for design development. The University may make multiple requests for adjustments to the plans and approach and proposed personnel to provide the D/B services, and the requests may be customized for each proposal. Negotiations must also include discussion(s) about obtaining a reasonable price with all offerors and increasing the commitment for the utilization of small, women and minority-owned firms as subcontractors with all majority companies.

f. At the conclusion of negotiations, the Evaluation Committee will score the proposals and select the D/B Team with the highest score based on the RFP evaluation criteria to recommend for the contract award.

g. The Committee shall make the recommendation on the selection of the Design-Build contractor to the AVP for FMD. The AVP for FMD shall approve the selection of the Design Build contractor. This approval shall be submitted to the bid officer in writing.

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h. The Buyer will post the Notice of Intent to Award to the selected Design Build contractor. The University shall complete the HECO/CO-8 and supporting documents, and the VCCO shall facilitate executing the contract (HECO-9DB).

10.3 Construction Management Procedures

Criteria for Use of Construction Management Contracts
CM contracts may be approved for use on projects where (1) fast tracking of construction is needed to meet University program requirements, or (2) value engineering and/or constructability analyses concurrent with design are required. Qualified construction management (CM) contracts may be approved for use on projects with an estimated construction cost in excess of $10M. Projects $10M and under may be authorized for the use of construction management contracting if the University can demonstrate justification for a complex project.

Procedures for Approval to Use Construction Management
VCU’s AVP for FMD is the approving authority for requests to use CM. The University shall obtain written authority from the AVP for FMD to use a CM contract. The request shall justify and substantiate that a CM contract meets the criteria found above and the use of CM is more fiscally advantageous than a competitive sealed bid construction contract with a general contractor.

Construction Management Selection Procedures
On projects approved for CM, the University shall proceed as follows to qualify Offerors who may submit proposals utilizing a two-step competitive negotiation process.

1. The University shall appoint an Evaluation Committee from the professional staff of Facilities Management which shall have a minimum of three members, including at least one licensed professional engineer or architect. A representative from the Division of Engineering and Buildings may be invited to participate on the Evaluation Committee. Representatives of the university customer organization may be invited to participate as ad hoc members of the committee but will not be voting members.

2. Selection of Qualified Offerors (Step One)
   a. The University shall advertise the requirement in eVA for a minimum of thirty (30) days with one advertisement in a newspaper of general circulation in the area in which the contract is to be performed a minimum of ten (10) days prior to the receipt of proposals.
   b. The University will issue an RFQ package.
   c. RFQ responses must be submitted by interested parties by the due date and time to the location stipulated in the solicitation.
   d. The RFQ responses will be evaluated based upon the information submitted and any other relevant information. The Evaluation Committee will conduct this evaluation and recommend those best qualified with respect to criteria established for Project in RFQ.
   e. The University may request additional information from the Offerors, if needed.
   f. The Evaluation Committee will rank the firms based upon the overall merit of the information submitted and any other relevant information.
   g. The committee will select no fewer than two (2) and no more than five (5) Offerors deemed suitable for the project to proceed to Step Two. If available, the short-list shall include a minimum of one DSBSD - Certified Business that meets the minimum requirements.

3. Selected Offerors Will Be Given the Opportunity to Submit Proposals (Step Two)
   a. The University will prepare an RFP containing the University's facility requirements, building and site criteria, site and survey data, the criteria to be used to evaluate submittals and other relevant information.
   b. The University will solicit the firms selected as specified above to submit proposals that include both technical and cost information by the date and time to the location established in the RFP for receipt of the offers.
   c. The Evaluation Committee will evaluate the proposals based on the criteria contained in the RFP and individually score each proposal prior to the first Evaluation Committee meeting. At the conclusion of the first Evaluation Committee meeting or after oral presentations (if conducted), the scores based on the evaluation criteria shall determine the number of firms selected for negotiations. Clarifications and additional information may be requested by the committee from these offerors. The Evaluation Committee will inform the Buyer of any negotiation issues necessary to make the proposal from a selected CM@Risk.
offeror fully comply with the mandatory requirements of the RFP. The Buyer shall obtain the negotiation clarifications from the offerors in writing.

d. Offerors who submit a proposal in response to the RFP may be required to give an oral presentation of their proposal to the Evaluation Committee. This provides an opportunity for the offeror to clarify or elaborate on the proposal. This is a fact-finding and explanation session only and does not include negotiation. The Evaluation Committee Chair will coordinate the schedule and the time and location of these presentations with the committee and the Buyer. The Buyer shall schedule the Oral Presentations with the offerors. Oral presentations are an option of the Evaluation Committee and may or may not be conducted. The Evaluation Committee shall score the proposals based on the evaluation criteria after the Oral Presentations.

e. As specified in the solicitation, negotiations will be held with two or more of the selected CM@Risk. Negotiations must include discussion(s) about obtaining a reasonable price with all offerors and increasing the commitment for the utilization of small, women and minority-owned firms as subcontractors with all majority companies.

f. At the conclusion of negotiations, the Evaluation Committee will score the proposals and select the CM@Risk with the highest score based on the RFP evaluation criteria to recommend for the contract award.

g. The Committee shall make the recommendation on the selection of the CM@Risk to the Associate Vice President for Facilities Management. The Associate Vice President for Facilities Management shall approve the selection of the CM@Risk contractor. This approval shall be submitted to the Buyer in writing.

h. The Buyer will post the Notice of Intent to Award to the selected CM@Risk contractor. The University shall complete the HECO/CO-8 and supporting documents, and the VCCO shall facilitate executing the contract (HECO-9CM).

4. Required Construction Management Contract Terms:

Any Guarantee Maximum Price construction management contract entered into by any department, University or institution of the Commonwealth will contain provisions requiring that (1) not more than 10% of the construction work (measured by cost of the work) will be performed by the CM with its own forces and (2) that the remaining 90% of the construction work will be performed by subcontractors of the CM which the CM must procure by publicly advertised, competitive sealed bidding. In extraordinary circumstances the AVP of FMD may grant a waiver of these contractual requirements in whole or in part.
Chapter 11: Project Committees

Every capital project is assigned a group of committees to guide decision making through the planning & design and construction process. Committee membership is jointly decided by the Director of Planning & Design, the Associate Vice President for Facilities Management and the Primary User responsible for the facility. The committees are formed as soon as a project is authorized by the state since Procurement needs to know the names of the committee members before RFP for the project can be advertised.

11.1 Architect Selection

The Architect Selection committee is responsible for choosing the A/E firm selected to design the project. Its duties include:

- Reading and ranking A/E proposals
- Participating in short-listing meeting and numerically scoring the firms
- Participating in A/E Interviews and scoring the firms

Architect Selection committee members include the Director of Planning and Design, the Project Manager(s) and the Director of Construction Management. University Purchasing assigns a Buyer to monitor the selection process and acts as the direct interface with A/E firms once a solicitation is underway. The Planning and Design project manager and the Director of Planning & Design conduct fee negotiations with input from Construction Management on Construction Administration and site visits.

11.2 Building Committee

The building committee is responsible for making the day to day decisions to move the project forward during the design process. This constitutes a significant time commitment since planning for capital projects takes more than a year and the meetings, especially during early design phases, are frequent. Building Committee members should be knowledgeable and empowered to make decisions. The following persons may be members of the Building Committee:

- Director of Planning and Design
- Director of Construction Management
- FMD Campus Coordinators
- Project Managers

In addition, the following are recommended:

- Director of Space Management
- Dean, Director, or Department Head having primary responsibility for the facility
- Student (especially if it a housing, dining or recreational sports facility)

The committee is typically between 7 and 10 people. Larger committees should be avoided in order to keep the decision-making and meeting scheduling efficient.

11.3 Steering Committee

The steering committee maintains oversight of the project and meets quarterly, or as the need arises. This is generally a smaller core group which conveys updates to the senior administration of the University. They also broker disputes and/or solve problems that cannot be handled at the building committee level.

- Associate Vice President for Facilities Management
- Dean, Director, or Department Head having primary responsibility for the facility
- Vice President/Provost having primary responsibility for the facility

This committee is generally between 3 and 6 people.
For projects on the MCV campus, the Associate Vice President for Health Sciences will typically serve on the Steering Committee and the Director of Academic and Facilities Services will serve on the building committee. On rare occasions, the Vice President for Health Sciences and CEO of the VCU Health System will participate on the Steering Committee for projects to be decided on a case-by-case basis.
Chapter 12: Planning & Project Approval

12.1 General

This chapter describes the capital outlay process from budget submittal to facility occupancy. It provides detailed guidance on documentation required for approvals at each milestone of the process.

Unless specifically waived by the AVP of FMD, execution of all capital outlay projects shall follow approval procedures.

12.2 Planning

The budget planning process is managed by the Director of Financial Services and the University Architect. The actual development of the capital budget submission packages will require the participation of the Planning & Design and Construction Management units. The resulting budget packages require approvals of the Board of Visitors, General Assembly and the Governor, as appropriate.

An Environmental Impact Report (EIR) shall be prepared for each qualifying project with an expected construction cost of $500,000 or more.

12.3 Project Authorization

Architectural or engineering planning for or construction of, or acquisition of any capital project shall not commence or a revision be initiated without an approved HECO-2. Follow the Guidelines at the end of this chapter for approvals. Normal cycle is for authority to be given to implement projects on or about July 1 of each year.

12.4 Project Execution

12.4.1 Acquisitions, Demolitions, Leased and Temporary Facilities
Reference the University’s Capital Asset and Real Estate (CARE) program.

12.4.2 Construction Projects
The project code will be the basic project identifier. For projects with (1) DGS-provided project numbers under blanket or umbrella appropriations, or (2) projects with work or acquisitions at multiple locations that will be accomplished by separate actions/contracts or (3) a single project to be accomplished through two or more contracts must have a sub-project code for each undertaking. The sub-code must be used on all capital outlay forms and correspondence.

An Overview of the entire process follows:
1. The Project Manager must possess an approved “Request for Authority to Initiate Capital Project, Form HECO-2” on all capital projects. Before initiating work on the project, an EIR must be completed.
2. The University normally hires an A/E firm to prepare drawings and specifications (See Chapter 5) upon receipt of the approved HECO-2.
3. A pre-design conference is held from which the A/E develops and submits schematic designs for review by the Code Official and University stakeholders (Form HECO-4). At this point, a procurement strategy planning session occurs to determine the preferred construction delivery method:
   - Bid
   - Pre-qualification
   - Design build
   - Or construction management

The University Architect will present the project schematic design to the AARB, and AVP will present to the Board of Visitors for all construction and planning projects and any major repair or improvements.
project that affects the exterior appearance of a facility. Additional reviews may be required by the AARB. See Chapter 5 of this Manual for review requirements.

4. The A/E develops preliminary designs for review and approval. The Code Official, as outlined in Chapter 7 of this Manual, shall perform schematic, preliminary and contract document reviews and coordinate with the responsible State Fire Marshal Office for completion of fire safety reviews. The City of Richmond will be notified by the Project Manager of the availability of the documents for review. If the project construction costs exceed $5 million, a formal Value Engineering review is required. See Chapter 7 of this Manual.

5. Completed working drawings and specifications shall be submitted by the Project Manager to the Division of Soil and Water Conservation and other reviewing agencies as required by state law and noted in this Manual. The University shall ensure comments of other reviewing Agencies are received and incorporated in the bid package no later than 10 days prior to bid opening. Some projects (e.g., work on historic landmarks, demolitions, water and wastewater treatment plants, central heating plants, etc.) may require the review of the Department of Health, Department of Historic Resources and Department of Environmental Quality at both preliminary and working drawing stages. The Project Manager shall be responsible for determining when these reviews are necessary and ensuring that the appropriate review agencies receive the plans and specifications and that their comments are incorporated.

6. Advertise the project via IFB or RFP at a time consistent with the procurement method. CM with design phase services and design build are typically advertised at the schematic phase. An approved HECO-8 is required before contract award and a CO/HECO-17 is also required before the construction start.

7. A building or facility may be occupied when the project is substantially complete and a Certificate of Use and Occupancy has been issued by the Building Official for the building or facility. A new or renovated building may not be occupied until the University has applied for and a Certificate of Occupancy/Building Permit Closeout has been issued. Final inspection of all projects will be conducted by the Code Official and the responsible State Fire Marshal Office representative.
<table>
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<tr>
<th>Form</th>
<th>Purpose</th>
<th>Required Approval (Final Approval in Bold)</th>
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<tr>
<td>HECO-2</td>
<td>Authority to initiate non-general fund Capital Outlay project</td>
<td>Planning and Design PM</td>
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<td>This form shall be prepared by the Planning &amp; Design Project Manager (PM) upon receiving BOV approval for the project.</td>
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<td>Statement of Structural &amp; Inspection Testing</td>
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<td>HECO-8</td>
<td>Authorization to Award Contract</td>
<td>Construction Management PM</td>
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<td>This form shall be prepared by the Construction Management PM upon completion of the procurement process. Final approval allows award of the construction contract.</td>
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<td>Note: A Building Permit is required prior to contract award. Revisions to the authorized Project Budget total are accommodated on a revised HECO-2.</td>
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<td><strong>Contract Change Order</strong></td>
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| HECO-13.1  | **Certificate of Completion by A/E or PM**  |
| HECO-13.1a | **A/E’s Certificate of Substantial Completion**  |
| HECO-13.1b | **Final Report of Structural & Special Inspections (See VIII, Section 1.8)**  |
| HECO-13.2  | **Certificate of Completion by Contractor**  |
| HECO-13.2a | **Certificate of Partial or Substantial Completion by Contractor**  |
|             | These forms shall be prepared and/or approved by the project manager at the appropriate time. When completed and signed they shall be submitted in a package along with a form CO-13.3 Certificate of Use and Occupancy. |
|             | In accordance with instructions accompanying the forms |
|             | **Construction Management PM**  |
|             | eBuilder                   |

<p>| CO-13.3    | <strong>Certificate of Use and Occupancy</strong>  |
|            | This form authorizes use of the facilities. |
|            | <strong>Construction Management PM</strong>  |
|            | Director, Financial Services |
|            | SFMO                        |
|            | DEB                         |
|            | e-Builder                   |</p>
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<tr>
<th>CO-17</th>
<th>Building Permit</th>
<th>Planning and Design PM</th>
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|       | This form is prepared by the Code Review Team upon review of the construction documents and normally accompanies the CO-6 for review and approval by Building Official. It is required prior to award of any construction contract. | Construction Management PM  
Director, Financial Services  
DEB | |
1. Introduction

The basis of design is a narrative description of the project and should be a bound presentation of facts sufficiently complete in accordance with the following format to expedite review of the Schematic and the Preliminary submittals. The Schematic Basis of Design narrative presents the basic information, criteria, logic, evaluations and considerations developed in each category to prepare the Schematic submittal. The Preliminary Basis of Design narrative expands upon the Schematic submittal to reflect the further analyses, evaluations and selections/decisions made to arrive at the Preliminary level of design.

Design computations, sizing of members or conductors, details of connections, etc., are not required to be submitted with the Schematic Basis of Design, but general computations supporting system selection, member depths, floor to floor heights, mechanical and electrical loads should have been made.

2. Schematic Basis of Design Information

The Schematic submittal shall include a Basis of Design Narrative which as a minimum provides the following information in narrative or tabular format:

- Type of occupancy/VUSBC Use Group
- Estimated occupancy capacity and method or factor used for estimate
- Functions to be housed in the building
- Proposed building location on the site
- Exterior Circulation (i.e. how this project may interface with other area facilities)
- Areas and/or capacity required for various activities proposed for building
- Type of Construction proposed: i.e. fire resistive, protected or unprotected noncombustible, etc. and VUSBC Type #
- Outline description of basic materials
- Future construction or expansion to be accommodated, if any
- Style and character of building desired
- Structural Design Live Loads, Wind and Seismic Design Criteria
- Types of structural framing evaluated and recommendation
- Description of the types of HVAC systems being evaluated, estimated heating and cooling loads, fuels evaluated and fuel selected to be used
- Description of all energy conservation and peak energy reduction methods being evaluated
- Description of types of electrical systems evaluated, voltages, possible transformer locations and need for generator
- Total square foot area per floor and per building
- Number of beds, seats or parking spaces, where applicable
- Total estimated construction cost based on the schematic documents
- Total proposed project budget
- Geotechnical report criteria
- Describe Site Work issues such as site survey, utilities, parking, roads, sidewalks and grading

3. Preliminary Basis of Design Information

The following format is for a new building type construction project but is applicable to renovation and addition projects by addressing those portions relevant to that particular project. When a project consists primarily of mechanical, electrical, structural, or another discipline, the basis of design shall provide more detailed information for the major discipline. The narrative shall address or list the factors indicated for each section. Data may be presented in tabular form where appropriate.
Architectural
1. Describe functions to be housed in the building and the applicable VUSBC Use Group Classification(s). Include copy of the minimum space/area requirements and adjacency criteria used to develop the design.
2. Provide analysis of Virginia Uniform Statewide Building Code (VUSBC) and referenced standards (and NFiPA 101, Life Safety Code, if applicable) requirements of all occupancies involved. Determine occupancy classifications and compute occupant load, number of units of exit and other requirements. Describe unusual or critical code requirements and indicate how such requirements will be met.
3. State the VUSBC Type of Construction selected with reference to the degree of fire resistance. Describe construction systems/materials proposed to achieve the construction type/fire resistance rating.
4. Computation of gross floor area in accordance with Section 7.9.2.10 guidance and of Building Efficiency factor/ratio. Gross floor areas should be indicated on the drawings.
5. Provide preliminary floor plans, elevations, building cross section and other drawings as required by Chapter 7 of the Manual. Floor plans should indicate the location of all built-in equipment and fire walls.
6. Statement as to the types of thermal insulation to be provided, where required, and the value of the "U" factors for the various portions of the structure, i.e., roof, walls, floors, etc. Also describe all architectural energy conserving features to be incorporated.
7. Provide a narrative description of the preliminary color design concept addressing architectural finishes and colors. Describe materials for all major items of construction and all interior and exterior finishes. The description of finishes (colors, textures, and patterns) shall be accomplished by the use of a finish schedule. The finish schedule (on the included drawings) shall identify spaces and interior building material finishes.
8. Provide furniture and equipment footprint drawings in preliminaries reflecting the University’s updated equipment list which show the end result of the architect's space planning effort. The furniture footprint demonstrates the designer's plan for the various functions that are housed in the facility. The designer shall use standard furniture sizes to demonstrate adequacy of space and to communicate utility and service requirements to engineering disciplines. (Although required for space, utility and service requirement development, these drawings are not included in the final construction bid package.)
9. A description of items not considered to be a permanent part of the structure, such as work benches, shelving, bins and removable partitions. (Show also on furniture footprint drawings.)
10. Analyze the design for compliance with acoustical requirements. List areas of high noise and vibration and acoustic design principles applied. Is an acoustical consultant or specialist required for the project?
11. Design features to make facilities accessible to and usable by the physically handicapped and conform to the requirements of Section Design features to make facilities accessible to and usable by the physically handicapped and conform to the requirements of Chapter 7 of this Manual. If not incorporated, appropriate reasons/justification shall be given.
12. Equipment rooms of ample size shall be provided with consideration being given to adequate allowances for access, maintenance, repair and easy removal of units. Room dimensions shall not restrict equipment items to the products of any single manufacturer.
13. The A/E should assure that equipment of more than one manufacturer can be accommodated in the space allocated. This policy will not be interpreted as sanctioning an increase in equipment space to accommodate some particular manufacturer's product when such would result in structural costs being greater than the probable resultant saving in equipment costs.
14. Describe special construction features incorporated into the facility such as barred windows, special wall/roof construction, etc.
15. The Art and Architectural Review Board (AARB) has been established to ensure architectural compatibility is maintained at each location. Presentation(s) of the design shall be presented to the AARB for comment and recommendation for approval after submittal to the University Review Unit for review and comment at the Schematic and Preliminary submittals.

Structural
1. Description of foundation conditions, type of foundation to be used, method by which the allowable bearing values are to be determined, and maximum allowable bearing capacity for the foundations. Geotechnical information including field boring notes and foundation design recommendations shall be submitted within the preliminaries.
2. Statement of the type of construction adopted and reason therefore, with capacity, dimensions, or other size criteria. List of materials selected with design strengths and ASTM, AISC, ACI, etc. standards to be specified.

3. Special features to be included in the structure, which are not evident from the drawings.

4. Description of the structural floor and roof systems proposed, with length, spacing and size of principal members (for beam and girder, etc.).

5. Description of the Lateral Force Resisting System proposed with appropriate materials and dimensions.

6. Statement of live loading to be used, to include floor loads, wind, snow, earthquake, etc., with data to justify.

7. Statement of any special considerations that affect the design, (e.g., special corrosion resistance requirements, detention facilities, cranes, etc.).

8. The usual accepted means of structural system selection is economy. Demonstrate this with cost comparisons of various appropriate framing systems such as:
   a. "Typical bay" member sizing and cost comparisons of alternate structural systems;
   b. Horizontal force resisting system for wind and earthquake;
   c. Consideration of unusual geometry (long span, high bay, deep cuts, etc.);
   d. Consideration of heavy equipment supports.

Plumbing
1. Describe system to be utilized on each part of the project.
2. Determination/calculation of number of each type of fixture based on VUSBC occupancy load. Indicate types and quality standards in narrative and on preliminary drawings.
3. Estimated number of fixture units and water demand in gpm for all plumbing fixtures.
4. Estimated maximum and minimum water pressure at each building and indicate if booster pumping will be required.
5. Type, size and design temperature of domestic water heater and distribution system. Also, a statement as to whether heat recovery is contemplated for domestic water heating.
6. Design temperature of domestic hot water distribution system and extent of recirculation system within building.
7. Indicate materials to be used for each piping system.
8. Address any special needs such as sumps, interceptors, pumps, pipe guides, lift pumps for sewerage, etc., and indicate tentative sizes, capacities and quality standards to be specified.

Heating, Ventilation and Air-Conditioning
1. Design Condition
   a. Describe and/or list the indoor and outdoor design conditions to be used in the design of systems for this project. Refer to criteria in Chapter 7.
   b. Energy sources for heating and cooling systems shall be determined from an analysis of the efficiency of use and economy of those available for each project. Parameters for analysis should be obtained from the Division of Engineering and Buildings. The analysis shall be presented for review with preliminary submittal and shall be summarized on an Energy Analysis Summary sheet.

2. Heating
   a. Describe the source of heat energy which will be used, such as extension of central high pressure steam with meter, hot water with meter, or independent heating equipment with type of fuel to be utilized. Also explain why this source was selected in lieu of other available sources. Where there is a possibility of more than one type being economical a computerized analysis should be included to justify the selection.
   b. Briefly describe and/or show on the drawings the type and routing of the system proposed to convey the heat source, if applicable; (for example, 100 psig low level, above ground steam and condensate lines on concrete support, inter connecting to the existing system at manhole no. 150 and traveling due north into the mechanical equipment room.) State if condensate return system is to be utilized. If condensate is to be wasted, heat reclaim shall be studied. If wasted, it should be cooled to 140°F maximum, then returned to the sanitary sewer system (unless specifically instructed otherwise). Indicate the maximum hourly production of condensate.
   c. Describe and/or provide schematics of the type of heating medium and system to be used within the buildings. Also include reasons for selection of this system over others available.
   d. Describe the HVAC Control System. A specific type of control system will be specified, i.e., pneumatic, electric or electronic.
3. Ventilation
   a. Indicate the quantity of outside air per person in all areas, the type of filtration, and whether OSHA
      requirements are applicable.
   b. Define areas to be air conditioned.
   c. Identify special humidification or de-humidification requirements, as well as special filtration requirements.
   d. Describe any special architectural features being incorporated to reduce cooling loads. Also, any features
      being incorporated in the mechanical system which would reduce energy consumption should be separately
      discussed.

4. Combination Systems
   a. For systems in which the heating, ventilating and/or air conditioning are combined, repetition may be
      eliminated by consolidating the aforementioned requested information.
   b. Describe changeover procedures and requirements.

5. Energy Conservation
   a. Computer energy analysis (block load type) for buildings larger than 8,000 square feet requiring heating and
      cooling and larger than 20,000 square feet requiring heating only shall be used to study energy conservation
      features. Concurrence of systems to be studied should be obtained prior to conducting study. If a valid
      computer analysis was prepared during the Budget Study Preparation for the project, this may suffice.
      When computer analyses are performed, the total annual energy consumption estimate should be clearly
      stated.
   b. Describe any methods to reduce energy usage and peakloads.
   c. Briefly describe the controls for each system and indicate intended sequence of operation.
   d. Briefly describe testing and balancing requirements to be required.
   e. Since the University has an Energy Management System, the preliminary submittal shall be prepared to
      conform to the requirements and procedures in Chapter 7.

Environmental Pollution Control
Identify expected environmental pollution and the proposed method of control. A detailed description will be
necessary for those facilities directly related to controlling air and water pollution such as sewage treatment plants,
industrial treatment facilities, incinerators, smoke elimination facilities, and other similar projects. When subsurface
filtration is being considered for sewage disposal, a soil percolation test will be required for each such disposal
system. List all environmental control permits and notifications required.

Asbestos, Lead-Based Paint and Hazardous Materials
The A/E shall include a statement in the Basis of Design addressing asbestos, lead based paint, and other hazardous
material (including leakage from underground storage tanks) presence or potential presence on the project. Indicate
if University has secured an asbestos, lead based paint, or hazardous material investigation of the project area for
renovation projects. Indicate how the presence of these materials will affect this project, (i.e., removed by separate
project, removal included in this project, left in place and encapsulated, etc.) If work is by separate contract, indicate
if phasing of work or a delay of this project is anticipated.

Special Mechanical Systems
Provide a description of any special mechanical systems such as compressed air, hydraulic, nitrogen, etc., including
an explanation of the medium source.

Central Heating Plants and Heating Plant Additions
1. Prepare an energy analysis as required by Chapter 7 and submit Energy Analysis Summary. Describe
   criteria and assumptions in narrative. Describe purpose and Justification of systems proposed.
2. Describe environmental constraints such as applicable regulations, liquid wastes, gaseous emissions, treatments
   required, etc.
3. Describe new boilers including rating, flow, temperature, pressure and type.
4. Describe control systems.
5. Describe any new auxiliaries to be added and what source of power will be used for their operation.
Refrigeration (Cold Storage)
1. Identify areas to be refrigerated, indicating their usage and temperatures to be maintained.
2. Describe type of refrigeration equipment and systems.

Thermal Storage
1. Describe the type (static or dynamic) of storage being considered.
2. Provide preliminary cooling profile.
3. Provide preliminary equipment and tank sizes.
4. State how the A/E proposes to conform to University Procurement requirements when specifying thermal storage system and components.

Fire Protection Systems
1. Describe type(s) of automatic sprinkler and gaseous extinguishing systems to be utilized and note locations to be protected.
2. Describe fire detection and alarm systems including location of detectors, manual stations, audible devices, control panels, etc.
3. On the drawings indicate location of water supply pipe location and main entrance to buildings. Also indicate location of gaseous extinguishing system equipment and supplies and location of fire department connection and post indicator valve.
4. Provide the following information about sprinkler systems:
   b. Water supply available at point of connection (static pressure and residual pressure at design flow). This data must be based upon flow tests at or near the point of connection and must appear in the Basis of Design. Indicate on drawings the location of flow test.
   c. Describe fire pump operating parameters.
   d. Approximate water demand for sprinkler system.
   e. Statement of adequacy/inadequacy of water supply and planned upgrades by local jurisdiction, if any.

Electrical
1. Provide the following about interior distribution systems:
   a. Electrical characteristics (phase, voltage, and number of conductors in main distribution circuits).
   b. Breakdown in tabular form of the estimated connected load to show:
   c. Lighting load and convenience outlet load separately.
   d. Power load for building equipment such as heating, air conditioning, etc.
   e. Loads for special operating equipment such as compressors, generators, pumps, and for power receptacles being provided to energize special equipment. Apply an appropriate demand factor to each to compute total demand load.
   f. Type of wiring system, such as rigid conduit, electrical metallic tubing, non-metallic sheathed cable, etc., and where proposed to use. (Present criteria prohibits embedding aluminum conduit in concrete. Present products should be reviewed to make sure that conduit, pipe, bars, anchors or other aluminum parts are not embedded in concrete.)
   g. Type of conductors, such as rubber insulated, thermoplastic insulated, polyvinyl chloride jacket, etc., and where proposed to use.
   h. A statement describing proposed pertinent standards of design, such as voltage drop (include calculations), lighting intensities (include calculations), and type of lighting fixtures, and a statement regarding the use of selective switching or other energy conserving features.
   i. A determination of short-circuit duty required for all service entrance protective devices and switchgear.
   j. Type and arrangement of Cable Television Systems (CATV), Closed Circuit Television Systems (CCTV), Nurse Call, intercom, sound, signal, and fire alarm systems. Identify number and location of telecommunication outlets (telephone, computer, word processing, etc.). Obtain information from the University.
   k. Space required for telecommunication equipment, point of connection to telephone utility, size of incoming duct/conduit and size of equipment mounting backboard to be provided.
   l. Statement relative to interface provision for multi-use systems (i.e., intercom, telephone, etc.). A/E must provide all facility support for proposed telephone equipment installations, i.e., conduit, duct, and backboard. Design and procurement of telephone system to be accomplished by the University. Indicate interior lighting
on lighting plans.

2. Provide the following about outside distribution systems:
   a. Contact the appropriate utilities or City of Richmond for location and characteristics of nearest service capable of meeting project supply requirement.
   b. Statement relative to the adequacy of the primary supply at the point of take-off. If primary source is inadequate, state measures proposed to correct the deficiency.
   c. Electrical characteristics of power supply to site including circuit interrupting requirements and voltage regulation.
   d. Estimate of total connected load and resulting kilowatt demand load by applying proper demand and diversity factors and power factor, if a group of loads is involved.
   e. Basis for selection of primary and/or secondary distribution voltage.
   f. Type of conductors and where proposed to use.
   g. A statement describing pertinent standards for design, such as voltage drop, physical characteristic of overhead or underground circuits, type of lighting units and lighting intensities.
   h. Type and adequacy of signal and fire alarm systems, including a statement as to spare capacity on fire alarm circuit. The importance of early resolution of the fire protection requirements cannot be overemphasized.
   i. Type, adequacy and routing of supporting structure(s) for telecommunication cable.

Electronic Systems:
1. System engineering concepts. Describe the proposed type of system, its functions and the interrelationships if the system is a multi-use system (i.e. security, etc.; See items (m) and (n) below).
2. Indicate circuit requirements.
3. Indicate equipment selection in such categories as University furnished equipment, standards manufacturers or commercially available items, and special equipment.
4. Describe site or location considerations.
5. Describe bonding and grounding requirements.
6. Describe communication and control cables and radio links.
7. Identify test equipment, repair shop, and spare parts storage requirements.
8. Describe equipment, instrumentation, arrangement, and space requirements indicating requirements for racks, consoles, and individual mountings. Provide the most economical design in first cost, operation and maintenance costs, and operating conditions conforming to best engineering concepts.
9. Identify wiring and cabling requirements plus terminations.
10. Identify power and lighting requirements, including emergency or standby requirements.
11. Describe air conditioning, including humidity and dust-control requirements.
12. Identify interference and clearance requirements.
14. Identify separately from the other project elements the requirements for Intrusion Detection Systems (IDS). Any of the following items and their interconnecting circuits may be considered part of an ID:
   - Annunciation Panels and Cabinets
   - Visual and Audible Enunciators
   - Magnetic Switches Proximity
   - Sensors Volumetric Sensors Wire
   - Grids Vibration Detectors
   - Power Supplies Integral to Items on this List
   - Closed Circuit Television Cameras and Monitors, and Video Recorders used for Intrusion Detection Purposes
   - Access Control Systems

IDS installation can be divided into three general functional categories:
- Sensitive compartmented information facilities.
- Conventional arms, ammunition, and explosives storage sites (AA&E).
- All other, including but not limited to communication facilities, special training facilities, special operational facilitates, intelligence facilities, etc.
Describe access control equipment (versus IDS) when required and outline locations, function, and area of control.

**Energy Monitoring and Control Systems**
1. Indicate if any EMCS will be utilized.
2. Indicate if the EMCS will be stand alone or tied into central system.
3. Indicate if a sole source is required for tie in.
4. Describe the EMCS proposed to be used.

**Site and Landscaping**
1. Describe site and facility location and give reasons for selection and orientation.
2. List and/or describe utilities available at the site.
3. Describe existing vegetation, bodies of water, topography, and soil conditions.
4. Describe existing site improvements to remain, to be altered, and to be demolished.
5. Describe existing pedestrian and vehicular access, roads, sidewalks, and parking to include accessibility for the disabled.
6. Describe proposed site improvements.
7. Describe proposed contours, bodies of water, and landscaping improvements.

**Water Supply**
1. Describe the existing system including, but not limited to, the type, capacity, condition, present water use, and unsatisfactory elements.
2. State type of construction proposed, materials for water mains, type of well, etc.
3. State design factors with present and projected design population loads for sewage treatment plants. Coordination with appropriate state/local regulatory agencies is required.
4. State materials to be used for sewer systems and sewage treatment plants.
5. Identify standards (federal, state, local) governing the design.
6. Describe the impact of steam condensate and cooling water discharges on existing sewer lines and sewage treatment plants and the estimated cost of distribution and treatment of this additional loading.

**Sewers and Sewage Disposal Systems**
1. Describe the existing system indicating particularly the type, capacity, condition, present flow and unsatisfactory elements.
2. State degree of treatment necessary by effluent requirements and units needed to treat.
3. State design factors with present and projected design population loads for sewage treatment plants. Coordination with appropriate state/local regulatory agencies is required.
4. State materials to be used for sewer systems and sewage treatment plants.
5. Identify standards (federal, state, local) governing the design.
6. Describe the impact of steam condensate and cooling water discharges on existing sewer lines and sewage treatment plants and the estimated cost of distribution and treatment of this additional loading.

**Dust and Erosion Control**
Dust and erosion control will be considered an integral part of all design and construction projects. Such controls will be generally limited to areas actually scarred or denuded in the process of constructing a project. Dust and erosion control will not be confused with landscaping. Preliminary submittal will contain the necessary design data, and costs for dust and erosion control measures where applicable. The Basis of Design will include a narrative regarding the type of treatment selected, affected areas, and reasons for selection of type and determination of areas.

**Fencing**
State types, heights, and justification for fencing.

**Stormwater Management**
Describe the measures to be taken and/or features/structures required to comply with Stormwater Management Regulations.
Building Systems and Equipment Checklist
Appendix C: Cost Estimates

General

A cost estimate is required with each submittal. All estimates shall be prepared in the systems format and shall be summarized on a Building Cost Summary Form (copy included in this Appendix). Appropriate back-up data to support the costs shown on the Summary shall be provided. The estimate backup material for each submittal shall be consistent with the level of design required for that submittal. Accurate quantity take-off, inclusion of all appropriate standard systems, and accurate unit prices for the project's location are fundamental to the development of a good cost estimate. Appropriate contingencies for design phase and construction phase shall be included as separate line items in the cost estimate. In addition, appropriate escalation shall be included as a separate line item in the cost estimate.

Properly prepared cost estimates provide a check of the plans and specifications for constructability, coordination, conflicts, discrepancies, and omissions. They are used to establish/verify budget costs, to develop historical data for future estimating, and for verification of the Contractor's proposed Schedule of Values on the HECO-12.

The estimate at each submittal is expected to reflect the A/E's or Estimator's best information and experience. Pricing must reflect all requirements of the contract plans and specifications. Estimates may be prepared manually or by utilizing computerized estimating programs. A detailed breakdown of components of the System or Assembly shall be calculated, quantified and costed. A total system cost, a system quantity, a unit cost for the system and a unit cost per square foot of gross building area shall be calculated for each system and listed on the Building Cost Summary Form.

Separate estimates will be prepared for each new non-identical building, structure, or addition costing over $50,000 contract cost. Costs of alteration work to existing buildings will not be included with the building addition costs. When one construction contract contains more than one type of work (i.e., new construction, repair, equipment installation, etc.), the estimate shall be structured such that each type of work is identified separately. In addition to an overall or master summary sheet, each type of work requires a separate summary sheet. Costs from these separate summary sheets must be directly transferable to the master summary sheet.

Schematic Design/Project Criteria Phase Estimate

The Schematic Design Construction Cost Estimate shall be developed in the "Systems" format. Each system shall include a description or listing of the components or items included in that unit cost. To the extent possible, major systems or commodities should be quantified. Where quantification is not reasonable, the assumptions and logic for the cost shall be shown.

Preliminary Phase Estimate

The Preliminary Estimate shall be based on a materials take-off from the preliminary documents. The estimate for this submittal shall reflect cost based on reasonably accurate take-off of material/systems consistent with the level of design. For those elements of the project where the status of design does not permit a reasonably accurate take-off of quantities or firm pricing of individual items of work, system unit prices may be used. Lump sum costs are not acceptable. Use of empirical costs shall be minimized. The Preliminary Building Cost Summary backup shall use the systems format. If the difference in the A/E cost estimate and the Independent cost estimate is 10% or more, the University shall provide a reconciliation of the estimates.

The A/E shall provide a final estimate based on the working drawings and specifications. Full and accurate description of each system shall be provided in the estimate. Quotations must be obtained for all items of substantial quantity or cost. Documentation must be provided for all major items of equipment included in the project.

"Estimated Prices" are considered to be quotations that are reasonable expectations of the price a Contractor will be expected to pay. Estimates that do not conform to these formats and information requirements will be returned for revision. Separate estimates must be prepared for each additive bid item included in the documents and shall be in the proper format.
Cost Estimating Standard Systems Descriptions

**BUILDING SYSTEM DESCRIPTION**
Includes cost of construction of all work inside the line 5 feet from the building. Cost each system separately. Same systems were indicated for entry on Summary Sheet.

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation</td>
<td>Includes excavation and backfill for foundation and basement construction, pile caps, footings, grade beams, piers, foundation walls, basement walls, fill under floor slabs and all required construction to the first floor elevation, excluding all structural floor slabs, ground slabs, basement structural framing, piling, structural fill, and soil treatment. Special foundations such as compacted structural fill, piling, caissons, and other work required to prepare the site for the building construction should be included in the “Sitework &amp; Utilities” portion of the estimate under &quot;Special Building Foundations&quot; category.</td>
</tr>
<tr>
<td>Slab-on-Grade</td>
<td>Includes all ground slabs and vapor barrier, waterproofing, wire mesh, capillary fill and soil treatment. Includes ground slab, reinforcing steel, waterproofing and soil treatment for structural slab placed on fill where fill is used as form. Borrow fill under slab is included in Earthwork system.</td>
</tr>
<tr>
<td>Structural Frame</td>
<td>Includes structural frame consisting of skeleton frame of building, i.e., columns, girders, cantilevered members extending beyond exterior walls, and fireproofing. Excludes framing in direct support of floor or roof construction.</td>
</tr>
<tr>
<td>Supported Floor</td>
<td>Includes construction of structurally integrated or independently supported floors, i.e., steel decking, joists, beams, slabs, precast concrete decking with topping steel reinforcing and other related items to provide a complete structural floor. Excludes applied finishes, which are part of &quot;Interior Finishes.&quot;</td>
</tr>
<tr>
<td>Roof Structure</td>
<td>Includes construction of structurally integrated or independently supported roofs, i.e. precast roof slabs, concrete topping, steel decking, joists, beams. Roofing system excluded.</td>
</tr>
<tr>
<td>Roofing</td>
<td>Includes roof curbing, roof insulation, roofing, gravel stops, gutters, and downspouts, flashing, skylights, roof-access hatches, and other related roofing items.</td>
</tr>
<tr>
<td>Stairs</td>
<td>Includes interior and exterior building stairs, landings, platforms, and railings.</td>
</tr>
<tr>
<td>Elevators</td>
<td>Passenger or freight elevators including conveyor cab, doors, controls and rails.</td>
</tr>
<tr>
<td>Exterior Walls</td>
<td>Includes bearing or non-bearing walls from inside rough wall to outside finish walls, parapet walls, damp proofing, flashing, insulation, waterproofing, balcony walls and handrails. Includes exterior finishes, caulking and painting.</td>
</tr>
<tr>
<td>Interior Walls</td>
<td>Includes partitions, bearing or non-bearing walls, extending from floor-to-floor or floor-to-ceiling excluding finishes. Includes masonry walls, steel or wood stud framing, blocking, acoustic material (insulation), bracing, and anchorage, but excludes painting, gypsum board or other applied finish.</td>
</tr>
<tr>
<td>Interior Finishes</td>
<td></td>
</tr>
</tbody>
</table>
Includes finishes applied to floors, walls, ceilings, stairs and ramps such as wall covering, resilient flooring tile, terrazzo, wood, carpeting, acoustical tile, plaster, paint, gypsum board, suspended ceiling systems, caulking, and all related trim work.

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doors &amp; Hardware</td>
<td>Surface Area One Side Sq. Ft.</td>
</tr>
<tr>
<td>Includes all exterior and interior doors, frames, hardware, caulking, and painting.</td>
<td></td>
</tr>
<tr>
<td>Window Glazed Walls</td>
<td>Surface Area One Side Sq. Ft.</td>
</tr>
<tr>
<td>Includes windows, glazed wall systems, glazing, caulking, and painting.</td>
<td></td>
</tr>
<tr>
<td>Specialties</td>
<td>Gross Building Area Sq. Ft.</td>
</tr>
<tr>
<td>Includes chalk and tack boards, signs and plaques, flag poles, access flooring, telephone enclosures, ladders, storage shelving, toilet and bathroom accessories, fireplaces, compartments and cubicles, movable partitions, identifying devices, protective covers, postal specialties, scales, exterior sun control devices and wardrobe specialties, excluding special mechanical or electrical equipment.</td>
<td></td>
</tr>
</tbody>
</table>

Plumbing-Domestic Number of Fixtures Each
Includes water supply and treatment, wastewater disposal and treatment, plumbing equipment, fixtures and trim, and insulation, i.e., hot and cold water pipes, waste, soil and vent pipes, water heaters, water coolers, floor drains, and roof drains. Fixture count shall include 1 fixture for each bathtub, shower, drinking fountain, water heater, water cooler, lavatory sink, slop sink, wash fountain urinal, water closet and roof drain. Also, 1/2 fixture shall be included for each rough-in without a fixture (i.e., ice maker rough-in), floor drain and wall hydrant.

Heating, Ventilation, and Air Conditioning Capacity MBTU or Tons
Includes heating, ventilating and air conditioning systems, i.e., heat generating equipment, refrigeration, air distribution, piping, controls and instrumentation, and insulation.

Fire Protection Capacity Sq. Ft.
Includes sprinkler pipe, fittings, valves, pumping equipment, tanks, sprinkler heads and controls. Also include carbon dioxide and other fire protection systems.

Power Connected Load KW
Includes all interior distribution for power and special electrical systems, i.e., switchboards, transformers, motor controls, distribution switches, motor starters, feeders, branch-circuit wiring and devices, panels and lightning protection. Exclude all interior distribution for lighting fixtures and emergency lighting, i.e., light fixtures, branch circuit wiring and devices for lighting.

Lighting Gross Bldg. Area Sq. Ft.
Includes all interior lighting fixtures, exit and emergency lighting, branch circuit wiring, conduit, and devices for light fixtures only.

Special Electrical Gross Bldg. Area Sq. Ft.
Includes all special electrical systems such as Telephone, CATV, Direct Current, Uninterruptible Power Supply (UPS), Emergency Generators, Data Communications, Fire Alarm, Security Detection and EMCS.

Built-In-Equipment Bldg. Gross Area Sq. Ft.
Includes contractor furnished and installed specialty equipment such as casework, shelving, exhaust hoods, coolers, freezers, kitchen equipment, and stage apparatus for hospitals, clinics, food services, chapels, theaters, rifle ranges, laboratories, libraries, etc.
Other Special Systems
Includes systems such as Vacuum, Oxygen, Compressed Air, Vehicle Exhaust, Dust Collection, Bridge Cranes, Vehicle Lifts, Hoists, Monorails, Conveyors, etc. Cost each system individually in estimate and enter sum total on Summary Sheet.

Interior Demolition
Includes all interior building demolition connected with new construction or alternatives. Also includes any work on, or in, the exterior wall. Does not include complete building demolition.

HAZMAT Abatement
Includes costs for abatement of asbestos, lead based paint, and other hazardous materials in existing areas of buildings, as well as costs for sealing off areas, lead based paint removal, asbestos removal or encapsulation, monitoring, testing, disposal, change areas, protective clothing, respirators, and other related costs.

SITWORK, UTILITIES & IMPROVEMENT DESCRIPTIONS
Includes cost of construction of all work inside the line 5 feet from the building. Cost each system separately. Same systems were indicated for entry on Summary Sheet.

Exterior Electrical Distribution
Includes overhead power distribution, i.e., poles, crossarms, insulators, guyings, terminations, lightning protection, wire and cable, and underground distribution, i.e., excavation and backfill, concrete encased duct bank, direct burial duct, manholes, handholes, cable, terminations, stress cones, and grounding. Also includes costs of transformers and substations for University-owned systems. Add in this total the costs of exterior Fire Alarm, EMCS, security and similar distribution lines.

Area Lighting
Each Includes poles, fixtures, excavation and backfill, concrete work, wire, duct and conduit.

Exterior Mechanical Distribution
Includes overhead and underground mechanical distribution system such as steam, hot water, condensate, chilled water, natural gas, compressed air systems and piping, insulation, valves, trenches, excavation, backfill, manholes, supports, anchors, etc., as required to provide the systems outside the building 5' line.

Water Distribution
Includes complete potable water distribution system, i.e., utility service connections, fire hydrants, excavation and backfill, pipe, valves and fittings outside building 5' line. Also includes pump station and booster pump if required.

Sanitary Sewers
Includes complete sanitary sewer system, i.e., utility service connections, excavation and backfill, sheeting and shoring, dewatering, pipe and fitting, manholes, cleanouts, septic disposal and process and acid waste system outside the five-foot line. Also includes pump lift station if required.

Stormwater System
Includes utility service connections, excavation and backfill, sheeting and shoring, dewatering, pipe and fittings, manholes, catch basins, curb inlets, dry wells, ditches and culverts, retention ponds, detention ponds, underground detention structures, and headwalls. Also includes culverts, drainage facing materials, erosion control material and devices and slope protection from storm water runoff.

Paved Roads
Includes paving, tack and seal coats, curbs, curbs and gutters, sub-grade preparation, fine grading, compaction, sub-base course, base course, wearing course, finish course, rails and barriers, reinforcing, expansion control joints, wheel stops and pavement markings.

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<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paved Parking</td>
<td>Includes paving, tack and seal coats, curbs, curbs and gutters, sub-grade</td>
</tr>
<tr>
<td></td>
<td>preparation, fine grading, compaction, sub-base course, base course,</td>
</tr>
<tr>
<td></td>
<td>wearing course, finish course, rails and barriers, reinforcing, expansion</td>
</tr>
<tr>
<td></td>
<td>control joints, wheel stops, and pavement markings.</td>
</tr>
<tr>
<td>Landscaping Area Planted</td>
<td>Includes site grading, site excavation, soil stabilization, soil treatment,</td>
</tr>
<tr>
<td></td>
<td>and site clearing. Also includes removal and disposal of unsuitable material;</td>
</tr>
<tr>
<td></td>
<td>obtaining, placing, rolling, compaction, and proof rolling new/borrow material.</td>
</tr>
<tr>
<td>Site Improvements Area</td>
<td>Includes trees, shrubs, ground covers, and planters. Also includes fine</td>
</tr>
<tr>
<td></td>
<td>grading and leveling, fertilizer and limestone application, spreading and</td>
</tr>
<tr>
<td></td>
<td>leveling topsoil, seeding, mulching and sodding.</td>
</tr>
<tr>
<td>Supporting Structures</td>
<td>Includes retaining walls, terrace and perimeter walls, signs, site furnishings,</td>
</tr>
<tr>
<td></td>
<td>fountains, pools and water course, flagpoles and other miscellaneous related</td>
</tr>
<tr>
<td></td>
<td>items. Also includes recreational areas/playing fields, recreational</td>
</tr>
<tr>
<td></td>
<td>equipment, walks, ramps, steps, restrooms and similar improvements.</td>
</tr>
<tr>
<td>Fencing</td>
<td>Includes footings, posts, fencing materials, alarms, gates and turnstiles</td>
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<tr>
<td></td>
<td>for perimeter fencing. Includes station perimeter and individual facility.</td>
</tr>
<tr>
<td>Special Building</td>
<td>Includes driven piling of wood, steel or concrete; caissons; pressure injected</td>
</tr>
<tr>
<td>Foundations</td>
<td>footings; cast-in-place piling; special or dynamic compaction; and other</td>
</tr>
<tr>
<td></td>
<td>special building foundation systems required.</td>
</tr>
<tr>
<td>Demolition-Site</td>
<td>Includes removal, hauling and disposal of utilities, buildings, roads, paving,</td>
</tr>
<tr>
<td></td>
<td>slabs, foundations, structures and related existing site features.</td>
</tr>
</tbody>
</table>

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Appendix D: Checklist for Receiving and Opening Bids

The University shall assure that the person receiving bids, called the Bid Officer, is a VCCO, thoroughly trained / knowledgeable in the proper procedure for receiving and documenting bids.

Procedures for Receiving Bids
1. On the morning bids are due, check the time on the clock, the date/time stamp, and the FAX machine in the bid receipt area to assure the times are coordinated and correct. Assure that the clock visible to bidders in the bid receipt area shows the correct time.
2. When bids or modifications are delivered to the bid receiving office, the bids shall be date stamped and the time noted or stamped on the envelope showing the time of receipt.
3. The bid receipt deadline must strictly comply with the specific time called for in the Invitation for Bids. It is suggested that the Bid Officer give a warning that the Bid Receipt Deadline is near such as "The time is now 1:55 pm and all bids must be received by 2:00 pm."
4. When multiple bids are delivered just prior to the bid receipt deadline, the Bid Officer shall accept the bids up to the deadline without taking time to note the time on each bid. After announcing that the deadline has arrived, the Bid Officer or assistant should note on those bids which were timely but not stamped that the bids were received prior to the 2:00 pm deadline.
5. If a bidder wishes to change the amount of his bid, such change must be received by facsimile, letter or written on the outside of the bid envelope before the time set for receipt of bids. Methods for modifying the bid are further described in the Instructions to Bidders, HECO-7a.

Procedures for Opening Bids
1. Once the Agency Bid Opening Designee determines that the bid opening hour has arrived, which shall be at least 24 hours after the receipt of bids and as indicated in the Invitation for Bids, a statement should be made as to the number of bids received. It is prudent to inquire whether any bidder has any question about the pending opening. After receiving either a negative reply or after answering questions, proceed to open the bids in alphabetical order. Do not open work papers!
2. Paragraph 4 of the Instructions to Bidders requires the Contractor to place its Contractor License Class and License Number on the envelope and on the bid documents. Para. 4(c) of the HECO-7a gives instructions for action if not shown.
3. Prior to revealing any of the information in the bid, the Bid Opening Designee must verify that:
   - the Bid Bond or Certified Check in the amount of five percent (5%) is attached where required and- that the Form of Proposal is signed by the bidder; and
   - Bidder information complies with Item 4(b) and (c) of the Instructions to Bidders.
Only then shall the other bid information be revealed. If the Bid Bond or Certified Check is not included or if the Bid is not signed, the bid shall not be read or considered.
4. If a modification to the bid has been received, check it to assure that it has been signed by one of the persons listed on the Bid Form as authorized to make such modifications. If the modification was not inside the envelope or written on the outside of the bid envelope before the time set for receipt of bids. Methods for modifying the bid are further described in the Instructions to Bidders, HECO-7a.
5. After Opening the Bid envelope and checking for the information above, state the following items and record on the bid tabulation form:
   a. Bidder/Contractor's Name
   b. Virginia Registration No.
   c. Work papers were _____ not ___ submitted.
   d. Receipt of Addenda 1 thru ___ are acknowledged.
   e. Bid Bond or Certified Check is _____ not ____ included.
f. Bid Form is signed.

THEN

g. **Read Bid Information**
   - Any proper Bid Modification received,
   - Part A. Building Base Bid Amount,
   - Part B - Sitework Base Bid Amount,
   - any other Parts of the Base Bid,
   - the TOTAL BASE BID AMOUNT, and
   - then any Additive Bid Item Amounts in order.
   - (days for completion if Bidder was allowed to state such on the Bid Form)

h. Any qualification to the requested information on the Bid Form shall be noted as the bid is read.

**After Bid Opening is Complete**

1. Keep all bids, work papers, etc. until 2 hours after bid opening to allow the Bidders to state he made a mistake.
   **Do not open Work Papers unless a bidder claims an error!**

2. After two (2) hours, return all Bid Bonds, checks, etc., to all but three (3)-lowest bidders. Work papers can be returned to all.

3. Keep bids and bid bonds or checks from three (3)-lowest bidders until Contract is signed.

4. Contact Department of Professional and Occupational Regulation, Contractor's Section, and verify Contractor Class and Registration No. of the three (3)- lowest bidders (and listed subcontractors, if any).

5. Prepare an official tabulation of bids indicating:
   - Name and Project Code of project as on the specifications
   - Time and date of bid receipt and opening
   - Exact Name, address, telephone & FAX numbers of Bidders
   - Bidder's Virginia Registration Number (or non-requirement statement).
   - All amounts bid for Base Bid(s), Parts, the Total Base Bid Amount, any Bid Modification and Additive Bid Items.
   - Completion time stated, if Bidder was given the option.
   - Acknowledgement of receipt of all addenda and number of addenda issued.
   - Whether or not sealed work papers were submitted.
   - Name of Agency Bid Opening Designee.
Appendix E: Roof Inspection Forms & Procedures

The Roof Inspector

The minimum qualifications below serve as criteria for the University if selecting an outside, full-time roofing inspector:

1. The Inspector should have a thorough knowledge of roofing details, flashing, and systems employing single-ply, built-up, metal, shingle, slate, or other membranes as the main weatherproof barrier.

2. The Inspector should have attended at least three formal schools / seminars (for example: AIA, BURSI, RCI, CSI, NRCA or RIEI seminars) providing no less than a total of four (4) continuing education units, have a registered roof observer registration from RCI (or a Quality Assurance Observer Certificate from RIEI for the roof system to be observed) or have equivalent training as approved by the University.

3. S/He should be thoroughly familiar with the latest edition of the NRCA Roofing and Waterproofing Manual.

4. The Inspector should have a minimum of five years of full-time, practical roofing experience or approved equivalent experience.

5. S/He should identify, in writing, at least three projects where s/he has been the full-time roofing inspector. S/He should provide names, addresses, and telephone numbers of roof University’s and Architects / Engineers for the roof projects.

6. S/He should be trained and competent in the services s/he is providing.

7. Roof Inspector’s Scope of Work:
   a. The Inspector shall monitor the work continuously during installation of the roof.
   b. The Inspector shall monitor the work for compliance with the contract documents and the State’s Roofing Policy.
   c. S/He shall immediately report any deviations from the contract documents, the University’s Policy, or good roofing practice to the Architect and University. A written report shall follow an oral report.
   d. The Inspector may recommend suspension of work or rejection of non-complying work to the A/E and University.
   e. S/He shall not:
      • Allow roofing materials to be installed until the manufacturer’s certification that the roofing materials comply with specified ASTM or other approved standards are received. S/He shall notify the University so that appropriate action can be taken.
      • Authorize deviations from the contract documents.
      • Enter the area of responsibility of the Contractor’s superintendent.
      • Issue orders on any aspect of construction means, methods, techniques, sequences, procedures, or safety in connection with the work.

8. The Inspector shall keep a daily log (refer to the form at end of this appendix) for each project and shall give a copy of the log to the roofing contractor. The Inspector shall record all pertinent information such as weather, daily progress, workers on the job, material storage, deck condition, bitumen temperature, installation procedures, quality of workmanship, job-related visitors, and so forth.

The Roof Consultant

The Consultant should have the following qualifications:

1. Roof consulting and testing services should be the Consultant’s full-time occupation.

2. S/He should have a minimum of five years of field experience in providing the service.

3. S/He should have completed at least three service contracts in the recent past. Work for each of the completed contracts should be roughly equivalent in size and complexity to the proposed work.

4. S/He should be required to submit three complete surveys of roofs that were repaired, recovered, or replaced; names, addresses and telephone numbers of roof University’s; and Architects or Engineers responsible for preparing the drawings and specifications.

5. S/He should have attended at least three formal roofing schools / seminars (RIEI, BURSI, RCI, NRCA, AIA, CSI Seminars, for example). The seminars should be the type that gives CEU (Continuing Education Unit) credits. A minimum total of four (4) CEU credits should have been received.
6. S/He should be trained, experienced and competent in performing required services.
7. If testing is required, s/he shall be appropriately trained, certified, licensed in the testing procedures (infrared, nuclear, electrical capacitance surveys; core sampling; ASTM procedures; gravimetric analysis; and so forth) required for the service.
8. S/He should submit resumes of his firm and all employees participating in the service.
9. Her/His resume should describe other related services and contributions, such as writing, lecturing, and serving as an expert witness that s/he has provided. S/He should list any professional qualifications or licenses.
10. The resume form must be submitted with the roof Consultant’s response to the University’s request for proposal. It will be used with other requested items to evaluate the applicant.

**Non-Destructive (NDE) Roofing Surveys**

A non-destructive (NDE) Survey uses infrared or nuclear and electric capacitance moisture detection equipment to locate unacceptable moisture within a roofing system. An infrared or nuclear survey may be used alone; electric capacitance is acceptable only if it issued with infrared or nuclear surveys.

An NDE survey is mandatory before a newly constructed roof may be accepted. Depending on the size and condition of an existing roof, a survey may or may not be required before an University may repair or replace the roof. The following outlines requirements for NDE surveys:

1. **Equipment**
   Subject to the University’s approval, shall be equal to the following:
   a. Infrared: AGA 720 system or Inframetrics 520 system
   b. Nuclear: Seaman Troxler 3216 Roof Reader, Nuclear Model R-50 or later model
   c. Electrical Capacitance: As approved by the University

2. **Surveys**
   a. Infrared: Provide a complete survey of the roof or roofs. Outline all anomalies with spray paint. Provide a thermogram showing the outlines and daylight photographs of all anomalies. If video thermogram imaging is used, provide the University with the video tape of the survey. Roof markings, therogram, and photographs shall be numbered so that features can be readily identified and coordinated.
   
   Walkover surveys shall be performed in a pattern of 20'-0" maximum (20 foot maximum distance between walk paths), however the distance between walk paths shall not exceed the sensitivity of the instrument being used.
   
   Instrument sensitivity shall permit recognition of areas of wet insulation as
   
   b. Nuclear: Provide a grid, comprising 5'-0" on-a-side grid unit, to completely cover the roof or roofs. Mark each grid intersection with spray paint. Take readings at the inter-sections and record them on a roof plan. Provide daylight photographs of anomalies.

3. **Core Samples**
   Since NDE surveys are not able to measure moisture in roofs directly – nuclear equipment responds to hydrogen emissions, infrared to heat changes – core samples to measure actual moisture content must be taken from surveyed roofs and correlated with NDE readings. The samples shall be taken as follows:
   a. One is required on roofs showing no anomalies. Additional cores are not required if the Consultant can show that moisture is not causing detected anomalies. The Consultant shall identify such anomalies and explain their cause in a written report to the University.
   
   b. On all other roofs a minimum of one dry and one wet core shall be taken from each roof surveyed.
   
   c. As many cores as needed should be taken to establish moisture counts and changes, but no more than five cores shall be taken from any roof.

4. **Gravity Analysis**
   As soon as possible after samples are taken, cores should be sealed in air tight containers and taken to the laboratory for analysis.
   a. Analyze samples gravimetrically to determine percent of moisture in any required core sample taken from new roofs and, unless waived for justifiable reasons, from existing roofs.
   
   b. Identify all materials – surfacing, membrane (and number of plies), insulation, vapor barriers, adhesives, etc. – in the cores.
5. **Moisture Conditions**  
The surveyor shall correlate survey reading results with actual moisture conditions determined by core samples gravimetrically analyzed. The correlation shall be shown or tabulated on the drawings.

6. **Report**  
The Consultant shall submit a written report explaining what the problems are, what to do about them, and what the costs are. Specifically, the report shall:
   a. Identify and describe all anomalies.
   b. Identify and describe any visual survey defects that may be harmful to the roof.
   c. Give the causes for each anomaly and defect.
   d. Recommend alternate courses of corrective action for defects and anomalies harmful to the roof.
   e. Provide the cost for correcting the defects and anomalies.

7. **Drawings**  
The consultant hired to survey roofs shall provide plans complying with the following:
   a. **General Requirements are:**
      1. Print size, preferably, should be 24” X 36”; but in no case larger than 36” X 46”.
      2. Minimum drawing scale is 1/8” = 1’0” for roofs or portions of roofs surveyed.
      3. Provide one reproducible print (Mylar, etc.) and two non-reproducible prints, as a minimum, for each sheet of drawings.
      4. A legend defining all symbols and explaining abbreviations.
   b. **Drawings shall show the following as a minimum:**
      1. All roofs surveyed
      2. State identification, title, and date
      3. An orientation north arrow and drawing scale
      4. The area of each roof and approximate overall dimensions.
      5. All existing features, equipment, and roof penetrations of whatever nature (such as vents, stacks, drains, hatches, skylights, screens, railings, mechanical equipment, etc.) shall be accurately indicated, identified, and drawn to scale.
      6. All roof slopes and valleys noted with drainage arrows. If there is no slope, state that the roof is dead level.
      7. Where flashing is carried to a vertical surface, identify the surface (roof vent, masonry parapet, etc.) and give its height from roof level.
      8. For a visual survey, show and explain all roofing defects and anomalies. Show interior damage (to the roof system) by dotted line.
      9. For an infrared survey, accurately delineate moisture anomalies with contour lines; for a nuclear survey, show all grid point readings and define areas having unacceptable moisture by contour lines. Show where core samples were taken. Correlate nuclear grid point readings and infrared contour changes to percent of moisture. Dimension areas recommended for removal and locate them with respect to fixed identifiable features (such as parapets).
      10. Provide at least one detail section (3/4” = 1’0” minimum) showing roof construction where core samples were taken; more if there are differences in construction from core to core. Identify surfacing material,
membrane product, insulation type and thickness, vapor barrier if used, and deck construction.

**ROOFING FORMS**

<table>
<thead>
<tr>
<th>Form Number</th>
<th>Description</th>
<th>File Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGS-30-348</td>
<td>Roofing – Inspection Checklist</td>
<td>PDF</td>
</tr>
<tr>
<td>DGS-30-352</td>
<td>Roofing – Daily Inspection Log</td>
<td>PDF</td>
</tr>
</tbody>
</table>
Appendix F: Preconstruction Conference Agenda

Preconstruction Conference Agenda

Project Name: __________________________

Project Number: __________________________

I. Introduction of Team
   A. University Project Manager
   B. University Construction Administration Manager
   C. A/E project manager
   D. Contractor project manager and Superintendent

II. Inspection
    A. University Inspector
    B. Architectural Representative
    C. Fire/Life Safety
    D. Quality Control Inspection by Contractor
    E. Other Consultants

III. Correspondence and Communication
    A. Copies of all correspondence with be directed to:
    B. Correspondence includes:
       1. General correspondence (to Project Manager only)
       2. Submittals
       3. Request for Information (RFI)
       4. Change Orders

IV. Status of Contract
    A. Contract
    B. Separate University Contracts
    C. Notice to Proceed
    D. Certificate of Insurance
    E. Completion Date – Damages & Hours

V. Submittals
    A. Project Manager and Superintendent’s List
    B. Schedule of Values
    C. Construction Schedule (monthly) Bart Chart, other
    D. Cash Projection Schedule
    E. List of Subcontractors (SWaM List)
    F. Shop Drawings (Electronic version to VCU)
       1. Schedule of Shop Drawings and Submittals
    G. Emergency Contact List
       1. Post on Job
    H. Change Orders (per General Conditions)
    I. As-Built
VI. Special Items

A. Detectors (Smoke/Fire)
B. Dust Control
C. Noise Control
   1. Abusive Language
D. Equipment Materials Removal
E. Asbestos
   1. Dump reports
   2. Encapsulation
F. Project Meetings
G. Quality Inspections
   1. Running punch list
   2. Quality control, testing inspections and notices required
   3. Systems commissioning requirements
   4. Site visits by A/E. consultants, inspectors and others
H. Parking and Staging Area, site limits, Access
I. Safety/Security
   1. Running punch list
   2. Quality control, testing inspections and notices required
J. Special Conditions
K. SWaM Participation
L. Project Sign

VII. Payment Request

A. Deadline importance
B. By schedule of values
C. Dual submittal to Project Manager and A/E
D. Monthly Pay Meeting

VIII. Contractor Evaluation

A. By Construction Project Manager and Inspector
B. By Architect and/or Engineer
C. By Project Manager

IX. Contractor’s Comments/Questions

X. VCU’s Comments/Questions

XI. Architect’s Comments/Questions
Appendix G: Parameters for Calculating Life Cycle Costs & Energy Analyses

1. General Instructions for All Life Cycle Cost Analyses

Costs are to be computed over a 30 year period, except as noted in Paragraph II below. Costs for each alternative must be shown on the Life Cycle Cost Worksheet or an exact facsimile. Specific instructions for completing the worksheet are provided in Paragraph III below. Include appropriate backup to support the summary figures shown on the worksheet (i.e., include how the various costs were calculated and note the basis or source of cost data.)

2. Additional Instructions for Calculating Life Cycle Costs for Energy Analyses

a. Use the following periods for energy-related life cycle cost studies

   - Building Envelope Studies: 30 Years
   - Central Heating System Plants: 30 Years
   - Building HVAC Systems: 20 Years
   - Fuel Selection Studies: 20 Years

b. Average service lives of mechanical equipment shall be based upon the Average Service Life shown in the ASHRAE Applications Handbook.

c. Indoor and outdoor design conditions shall be as stated on the Life Cycle Cost Worksheet.

d. The type of system and the energy source shall be clearly noted on the Life Cycle Cost Worksheet.

e. The supporting backup shall clearly show how the various fuel/energy rates (i.e., $/gallon, $/kwh, etc.) and the data source for each.

3. Building Life Cycle Cost Summary
Appendix H: Construction Change Order Procedures Guidelines

General

The A/E shall use the following procedures in the development of change orders to any construction project. The procedures are based on requirements of Section 38 of the General Conditions.

Construction change orders may be necessary during the course of construction to deal with unforeseen construction conditions, user-directed changes, or for other reasons. All changes involving a modification to contract cost or time for completion must be documented with a Contract Change Order (HECO - 11). Procedures outlined herein will generally begin once a change in the work is identified by the University, A/E, or Contractor.

Procedure

1. In order to ensure compliance with Paragraph 38 of the General Conditions, the following Change Order procedures are recommended:
   a. Where the University desires to modify requirements of the Contract Documents to add, delete from, or to alter the sequence of timing of the Work, the University will have the A/E prepare a Request for Proposal (RFP) to the Contractor describing the requested change and asking that the Contractor submit a price proposal for accomplishing said change in the Work.
   b. Where the A/E determines that a change to the Contract Documents is necessary or desired, the A/E will obtain approval from the University to prepare an RFP to the Contractor describing the requested change and asking that the Contractor submit a price proposal for accomplishing said change in the Work.
   c. Where the Contractor desires to make a substitution and/or where the Contractor desires to delete a requirement for the Work described in the Contract Documents, or where the Contractor determines that the direction provided by the University or the A/E constitutes a change in the Work required by the Contract Documents, the Contractor shall prepare a price proposal for the same and request that the University issue a Change Order.
   d. Where unit prices for Work were requested in the Bid Form and included in the Contract, reference General Conditions Section 38(a)(2), the Contractor and the A/E will agree upon the actual quantity of the Work performed and multiply by the unit price included in the contract to determine the value of such Work accepted. If the value of such Work is more than or less than the value for such Work included in the Contract price, a Change Order will be prepared by the A/E to increase/decrease the Contract Price to reflect the Work performed and accepted.
   e. Where Work or changes in the Work are to be performed under the procedures described in General Conditions Section 38(a)(3), the A/E shall prepare a Change Order describing the Work to be performed and directing the Contractor to keep an accounting of all labor, material and associated costs of performing the Work. The Change Order shall cite General Conditions Section 38(a)(3) as the basis for determining the cost of such Work and shall identify any specific requirements or formats not specified in Section 38(a)(3) which the Contractor will be required to use. One or more subsequent Change Orders will be issued to adjust the Contract Price and/or Time and each shall cite or reference the initial Change Order authorizing such Work to be done using this method for determining price and time compensation.
   f. Where the contractor requests formal acceptance to utilize contract contingencies or make modifications to the previously accepted project schedule.

2. The Contractor will send his pricing proposal for the Change Order to the A/E and University. To facilitate analysis by the University and A/E, this estimate shall be prepared using the following forms:

- HECO GC-1, General Contractor’s Estimate for Change Order
- HECO SC-1, Subcontractor’s Estimate for Change Order
- HECO SS-1, Sub-Subcontractor’s Estimate for Change Order

The general contractor and each affected subcontractor and sub-subcontractor must sign these forms.

3. When a mutually agreed price has been determined, the A/E shall make his written recommendation to the University for acceptance by signing the bottom of Form GC-1. A statement as to how any differences were reconciled shall be provided by to the University by the A/E.
4. If the Change Order proposal is acceptable, the University shall have a Change Order prepared.

5. The A/E shall prepare the Change Order Form HECO-11 and the attached Change Order Justification Form HECO-11a accompanied by a full description of the change, including drawings if applicable, and copies of the estimate sheets used to reach the mutually agreeable price.

6. The Contractor will send Form HECO-11 to the University for routing by the University. All backup material must be provided with the change order.

7. No work on any change order shall be performed without the approval of the Change Order.

8. The University will distribute approved Change Orders to the A/E and Contractor.
Appendix I: Structural and Special Inspections

The 1993 VUSBC Article 1, Section I 10, "Inspections," prescribes minimum Inspections to be performed on a project and cites the 1993 BOCA National Building Code, Article 17, Section 1705, requirements for Special Inspections. (The 1996 BOCA Code revision/rewrite includes similar requirements as Chapter 17, Structural Tests and Inspections.) These inspections have been, heretofore, provided on University projects by a combination of the University’s project inspection, the A/E and the University’s independent testing lab. Chapter 7 describes the procedures assuring that the structural, special and other associated inspections are provided for the project. The concept of the process is that:

- The A/E will determine in the design the materials, strengths, configurations, quality and standards applicable to the work and describe that information to the Contractor in drawings and specifications;
- The A/E will specify the submittals (i.e., shop drawings, manufacturer's data, and certificates of conformance), required from the Contractor and review the submittals;
- The A/E and the University shall review the list of Special Inspections for the applicable code, make appropriate notations on the list and forward the marked-up list with the completed Statement of Structural & Special Inspections, HECO Forms 6a and 6b, to the University for review and approval.
- The Contractor shall review the submittals from its subcontractors, suppliers, fabricators and vendors to assure conformance with the contract documents and assure that materials, sizes, and configurations proposed are compatible with other trades and the space provided;
- The fabricator, supplier, vendor or production plant shall secure and/or have ongoing the required testing and quality control/assurances program to meet the requirements specified and shall submit certificates of conformance to the applicable standards of practice and quality assurance;
- The A/E will perform on-site observations of erections, placements, and installations to ascertain the intent of the contract documents and shop drawings are met;
- The University's Project Inspector/Clerk of the Works will observe day-to-day operations and report deviations/discrepancies in the materials and/or work versus contract documents and approved submittals;
- The University's test lab will for the indicated items make on-site inspections, measurements, tests and sample collections, make applicable laboratory tests and submit copies of the reports to the University, the Contractor, the A/E and the Project Inspector;
- The Contractor will have other tests made as specified and as necessary to assure conformance with the applicable regulations and standards of practice and workmanship.
- The A/E's Structural Engineer shall complete the Final Report of Structural & Special Inspections, Form HECO-13.1b, and submit to the University as soon as completed but prior to the substantial completion inspection report.
Appendix J: Duties of the Project Inspector

The Project Inspector must have the following minimum qualifications to perform the duties listed below:

- Have education, trade related training, and experience in a design or construction related field;
- Have the ability to read and understand the requirements of building Plans & Specifications;
- Have some knowledge of construction means, methods and procedures;
- Be knowledgeable of and have reasonably convenient access to the codes and standards referenced in the Contract Documents which stipulate the requirements for installation and workmanship on the trades involved in the Work. (e.g. ACI, SMACNA, NFfPA, NEC, BOCA, ASHRAE, etc.)
- Have an understanding of the General Conditions of the Construction Contract;
- Have the ability to read and understand a construction bar chart schedule; and
- Have the ability to communicate effectively orally and in writing.

The following is a detailed listing of the duties, services, functions and responsibilities of the Project Inspector. This listing supplements and expands upon the duties, functions and responsibilities generally described in Chapter 7 of this Manual and in Section 16 of the General Conditions of the Construction Contract. The Project Inspector is an employee of the University and is responsible to the University for performing the duties, observations, and services described. The Project Inspector reports to the Construction Administration Manager, if assigned, otherwise to the University Project Manager. The Project Inspector will be assigned in writing. These duties may also be assigned to the Construction Administration manager. This in no way relieves the Architect/Engineer from providing and being responsible for his contractual obligations as described in this Manual, the A/E contract, and the General Conditions of the Construction Contract.

The Project Inspector shall perform the following services unless modified by the contract for services:

- Monitor and inspect all construction materials, equipment, and supplies for compliance with the contract documents, shop drawings, and submittals.
- Inspect installation and workmanship for compliance with the approved plans, specifications, shop drawings and referenced standards. (e.g. ACI, SMACNA, NFfPA, NEC, BOCA, ASHRAE, etc.) Verify compliance prior to cover or close-in of work. Monitor quality and coordination of trade contractors’ Work at all times. Recommend to the University ways to alleviate identified problems. Identify all work not done in accord with the Contract Documents and report it to the University and A/E.
- Immediately report all discrepancies in the Contractor's work to the Architect/Engineer and the University. Also report any discrepancies noted in plans and specifications to the A/E for clarification or resolution. The Project Inspector shall not interpret or change approved plans and specifications. Keep a record or records, including a daily log of construction activity, roofing, tests, inspections, reports, photographs, and annotated drawings, in order to show the progress of and changes in the project during its construction. Keep records of the designer's and designer's representatives' site visits. Maintain these records.
- Provide full-time inspection of the roof during its application. The Inspector shall not permit the Contractor to install roofing materials without first having obtained from the A/E a copy of the manufacturer's certification confirming that roofing materials delivered for use on the project meet specified ASTM standards. During
'Roofing Operations,' the inspector shall maintain a daily written roofing report covering such items as: weather conditions, deck conditions, materials stored, and installation procedures including, bitumen temperature at kettle and point of application, etc. A copy of the daily report shall be given to the Contractor.

- Notify the A/E and University if work begins before required shop drawings, product submittals, or samples have been approved by the A/E. Receive and log samples required to be furnished at the site; notify the A/E when they are ready for examination; record the A/E's approval or other action; and maintain custody of approved samples.

- Report to the A/E and the University when in his judgment the Work being performed does not conform to the requirements of the Contract Documents or safety requirements are not being followed and, if appropriate, recommend suspension of the Work.

- Notify the University of any Safety Violations, OSHA visits, accident reports, and corrective actions observed. Such reports do not relieve the General Contractor of responsibility for safety under terms of the Contract for construction.

- Observe tests required by the Contract Documents. Record and report, to the A/E and University, the Contractor's test procedures and, where applicable, results of the tests.

- Observe and report on all tests performed by the Contractor and note results in daily reports.

- Report presence of and activities performed by University's Testing & Inspection agents.

- Verify invoices for on-site tests/site visits of independent testing entities, which are to be paid by the University.

- Submit to the University and the A/E a weekly report in an approved format summarizing the significant activities and occurrences at the project site. Include copies of the Daily Reports with the report.

- The Inspector shall record, maintain, and submit with the Weekly Report a running record of outstanding, unresolved issues. The record shall include the issue, date of occurrence, and date of resolution. After an item is reported to be corrected, it shall be deleted from the list in the weekly report.

- The Inspector shall report, in writing, to the University and A/E any notifications from the Contractor of dates and times that services will be disrupted.

- The Inspector shall participate in progress and monthly pay meetings with the University's representative, Architect, Contractor, and other designated representatives, to review the current status of Work and any action needed to keep the project within budget and on schedule. The University may assign the Inspector other duties related to these scheduled meetings.

- The Inspector shall record, maintain, and submit with the weekly report a running record of outstanding discrepancies/deficiencies noted by the Inspector. The record shall include the item, the date observed, and the date corrected. After an item is reported to be corrected, it shall be deleted from the list in the weekly report.

- The Inspector shall maintain, on site, a complete set of minutes of meetings as a "Running Record" of evolution of problems and solutions during progress of the work.

- The Inspector shall maintain current copies of the following at the job site:

  a. Current set of Contract Documents (addenda, contracts, drawings, specifications, change orders, proposed change orders, request for clarification, construction change authorizations, A/E's supplemental instructions, etc.

  b. All correspondence and reports of site conferences

  c. Shop drawings
d. Samples and product data  
e. University's purchases, including material and equipment  
f. Supplementary drawings  
g. Color boards, schedules and samples  
h. Names and addresses of Contractors, Sub-contractors, and Principal Material Suppliers  
i. Contractor's Applications For Payment  
j. Running list of discrepancies/deficiencies and dates  
k. Running list of Unresolved Issues  
l. A/E punch lists with date of issue indicated on each  
m. Any other documents and revisions resulting from issues concerning the Contract or Work  
n. Maintenance and operating manuals and instructions when received from Contractor

- The Inspector shall review and provide a recommendation to the University on the acceptability of all proposals submitted by the Contractor for changes initiated by the University or Architect, and the acceptability of all claims for change orders initiated by the Contractor.

- The Inspector shall confirm to the University that changes required by approved change orders are incorporated in the work at a time deemed appropriate by the Contractor, and are reflected in the Contractor's progress schedule.

- The Inspector shall keep a record of all Proposal Requests from the Architect, change order proposals from the Contractor, and executed change orders from the Architect. He shall file copies with the University monthly.

- Throughout construction, the Inspector shall review the Contractor's detailed schedule and advise the University on the Contractor's progress and all other construction scheduling issues. He shall monitor the schedule, notify the University of any slippage in critical path time, make recommendations on accepting the Contractor's proposed schedule recovery plan, and maintain an annotated copy of the schedule that reflects actual progress of the work.

- The Inspector shall maintain, at the site, a copy of the project schedule with notations, highlighting, etc., that show work to date and any changes made in the CPM schedule. Where a schedule shows early/late start and finish dates for various activities, the Project Inspector shall note actual dates of each occurrence on a copy of the CPM listing. The Inspector shall make recommendations to the University as appropriate concerning the Contractor's conformance to the schedule and/or recovery plans.

- When the Contractor is directed to make changes based on unit costs, the Inspector shall verify accuracy of quantities of material and labor (or other units of measure) attributable

- The Inspector shall observe the Contractor's Record Drawings at intervals appropriate to the state of construction and shall notify the Architect of any apparent failure by the Contractor to maintain up-to-date records.

- The Inspector shall review each certificate and application for payment and advise the Architect and University if they accurately represent progress of the work and values of each line item in the Schedule of Values. He shall verify that stated quantities of stored materials are accurate. Based on such review and verification, he shall make recommendations to the University and Architect to approve or to revise the Certificate and application for payment.

- The University may assign the Project Inspector other duties related to the project. The Project Inspector has no authority to and shall not:

1. Authorize deviations from the Contract Documents;

2. Enter into areas of responsibility of the Contractor's superintendent;
3. Issue directions regarding construction means, methods, techniques, sequences or procedures, or safety precautions and programs in connection with the Work;

4. Authorize or suggest that the University occupy the project in whole or in part;

5. Issue a certificate for payment.

Supervisor: The Inspector shall report to the University's Project Manager or Construction Administration Manager, if assigned.
Checklist for Project Inspector

1. **Reports/Records** (See sample formats for reports)
   - Photographs (progress and non-conforming work). Daily reports (prepare and maintain standard form).
   - Weekly reports (prepare and maintain summary of daily report).
   - Monthly reports (prepare and maintain summary of weekly report). Record drawings (review periodically).
   - Notify A/E and University of Contractor's failure to keep up-to-date changes.
   - Notice of defective or non-conforming work with resolution space at bottom of form (to GC, A/E, University).
   - Safety notification (to GC, A/E, University).
   - Understands and maintains clarification requests.

2. **Meetings** (Attend, review minutes and maintain copies)
   - Preconstruction meeting
   - HVAC Pre-installation meeting
   - Monthly pay request
   - Interim A/E Inspection
   - Substantial Completion Inspection
   - Final Inspection
   - Coordination meetings
   - Records University's minutes of meetings when A/E is absent

3. **Submittals** (Receive, use, keep track)
   - Shop drawings/Samples
   - Response to notice of Non-conforming work
   - Responses to Contractor's requests for clarification A/E
   - Field orders
   - Request for proposals Change order
   - Names, addresses, and Telephone Numbers of Contractor(s), subcontractors, materialmen, University, superintendent, Architect/Engineer, consultants, special inspectors
   - Special inspection reports Project inspector reports Minutes of meetings
   - Operation and maintenance manuals and instructions
   - Any other documents and revisions resulting from issues concerning work

4. **Inspections/Quality Control**
   - Inspects all work and materials for conformance to Contract Documents, shop drawings, change orders
   - Coordinates special inspections
   - Judges clean-up effectiveness. If ineffective, notifies A/E and University of problems
   - Verifies approved erosion & sediment control plan is on site and is being followed daily
   - Notifies A/E and University of deficiencies
   - Verifies Contractor's disposal site has been approved
   - Verifies that off site storage for Contractor materials is approved
   - Verifies Contractor records proper disposal of hazardous material

5. **Scheduling/Payments**
   - Assists A/E to verify accuracy of CO-12 quantities
   - Compares work progress to scheduling
   - Notifies A/E and University of Contractor's failure to comply with schedule
   - Verifies Contractor time and materials for change orders and unit prices
   - Advises University and A/E if separate Contracts are being executed

6. **Project Close Out**
   - Verifies readiness for substantial completion inspection
   - Verifies readiness for final inspection
   - Turns over complete and organized submittals, reports, records to University

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- Provides list of unresolved issues
- Reports status of separate contracts at substantial completion inspection Coordinates Contractor's training of University's forces
- Receives and keeps track of punch list
Appendix K: Project Type & Non-Capital Outlay Project Procedures

General

Those projects with total project costs less than $3,000,000 are considered non-capital outlay projects. When the funding source is operating budgets, grants, gifts, a revenue source, or Virginia Commonwealth University (VCU) bonds, the funding is referred to as non-general funding. Additionally, maintenance reserve projects, although a special category of general funds, are considered non-general fund projects. Otherwise, if any portion of the project funds are general funds the project is considered a general fund project. However, all capital projects are managed in accordance with this HECO Manual.

1. Capital Projects (>3,000,000)

   General Fund
   Funding and authority from the General Assembly. Requires project specific capital budget submittal for funding and authority. Manage in accordance with the HECO.

   Non-General Fund
   Authority from the Board of Visitors. Requires project specific capital budget submittal for authority. Uses VCU non-general funds. Manage in accordance with the HECO.

2. Non-Capital Projects (<3,000,000)

   Non-General Fund
   Funding and authority from VCU. Manage as non-capital HECO project.

   Maintenance Reserve Blanket
   Funding and authority from the General Assembly. Requires capital budget submittal for the blanket funding and authority. Manage as non-capital HECO project.

3. Non-Capital HECO Project Procedures

   In general, the HECO procedures for non-general fund non-capital outlay projects are the same as those for non-general fund capital outlay projects. Contracting procedures, code requirements, building permits, and safety requirements are identical for all non-general fund projects. However, non-capital HECO projects do not require the same level of reviews and approvals as a standard capital outlay HECO project.

   The following capital project HECO reviews and approvals are not required:

   - HECO-4 Approval of Schematic Design
   - HECO-5 Approval of Preliminary Drawings & Specifications
   - HECO-8 Approval to Award Construction Contract

   Note that the BOV and AARB reviews are generally not required on non-capital projects unless required by the University Architect.

   The following HECO forms and approvals are required:

   - HECO-2 Project Authorization (Use the Project Code with the appropriate funding citation
   - HECO-3 A/E Contract for Professional Services
   - HECO-3.1 A/E Term Contract
   - HECO-3.1a Project Order for A/E Term Contract
   - HECO-6a & 6b Statement of VUSBC Special Inspections
   - HECO-7 General Conditions of the Construction Contract

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<td>HECO-7DB</td>
<td>General Conditions of the Design Build Contract</td>
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Appendix L: Record Document Standards & Formatting

General

The standards listed below are the minimum deliverables required by the Office of Space Management for any project completed on the Monroe Park or VCUHS Campus. These deliverables must be turned in via electronic file drop to the Office of Space Management (fmdspace@vcu.edu) and the appropriate VCU project manager within 90 calendar days of receiving the temporary Certificate of Occupancy or final payment may be withheld. If necessary, deliverables can be accepted via CD or flash drive to the Office of Space Management, 700 W. Grace St. Suite 1400, Richmond, VA.

1. Record Drawings (Electronic)
   A. Naming Convention for Electronic Drawings
      1. Project Completion Year-Building Number-Sheet Number (example: “2019-0166-E-2”)
      2. Both PDF and DWG files should read with the exact same name (“2019-0166-E-2.pdf” and “2019-0166-E-2.dwg”)
      3. Note: Building Number List can be found at https://fmd.vcu.edu/space-management/
   B. PDF Files
      1. Each drawing sheet in the set should be delivered as a separate PDF File
      2. All files should be produced and delivered as full size sheets that view on both screen and print to the exact scale of the originally issued sheets
   C. DWG Files
      1. Each drawing sheet in the set should be delivered as a separate DWG file
      2. All 3D objects including but not limited to: walls, columns, windows, doors and furniture should be flattened and reduced to basic AutoCAD linework representing the 2D view of the floor plan
      3. Layer naming should follow the U.S. National CAD Standard, current version of AIA CAD/Layer Guidelines for Layer Naming
   D. X-REF used in DWG files:
      1. All X-REF must be attached and included with deliverables
      2. A single drawing using multiple external reference files (“X-REFs”) should be bound into one file prior to submission of the drawing set
      3. Binding should be done in such a way as to exclude the X-REF file name within the layer names. When using AutoCAD, this should be done using the “Bind, Insert” option rather than the “Bind, Bind” option during the binding process
      4. When binding the file, all layers, colors, line types, and other settings should be set as they were when the file was plotted to create the physical drawing set

2. Specifications, Operating & Maintenance Manuals, Warranty Information and Studies
   • The project architect/engineer is responsible for ensuring that all specific deliverables stated in the contractor’s contract are included in the Specifications/O&M Manual upon deliverance to the VCU project manager. See Section 9.20 of the HECO Manual for O&M Manual contents.
   • (1) consolidated file in PDF format (.pdf)
   • (1) Word Document (.doc or .docx) file per section

3. Virtual Models
   *Please contact the Office of Space Management (fmdspace@vcu.edu) for specific, current BIM requirements

4. Property and Site Surveys
   • Must be on State Plan Coordinate Systems

5. Master Plans
   • At least (5) complete sets printed and bound
   • (1) Complete set in PDF format
   • All graphics used must be included separately in JPEG and PDF format, minimum 600dpi resolution

Please direct any questions to the VCU Office of Space Management (fmdspace@vcu.edu) for clarification.

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Appendix M: Determinations & Findings Form

Determinations & Findings for Design Issues
Facilities Management
Planning and Design & Construction Management

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<tr>
<th>Prepared By:</th>
<th>Project Manager</th>
<th>Date:</th>
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<tbody>
<tr>
<td>Reviewed By:</td>
<td>Director, Planning and Design</td>
<td>Date:</td>
</tr>
</tbody>
</table>

**ACTION REQUESTED:**

**GENERAL INFORMATION:**

- Project Title: 
- Project Code: 
- Project Cost: 
- Location: 
- Requestor: 
- Completion Date: 

**BACKGROUND:**

**DETERMINATION:**

**FINDING:** (In this section state the dollars and/or time to be saved and/or reliability, quality or other improvement to be achieved by this action.)

<table>
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<tr>
<th>Approved By:</th>
<th>AVP for FMD</th>
<th>DATE:</th>
</tr>
</thead>
</table>

cc: VCU File
Appendix N: Interior Design

General Requirements – The following is intended to clarify the expectations of the Interior Design (ID) Services provided by the Architect on Capital Outlay projects for VCU.

1. Project Management – The architect should assign a certified senior level interior designer to assist VCU in the selection of interior finishes. This interior designer should:
   a. Reference VCU’s Design & Construction Standards for use on all projects.
   b. Develop and maintain a project work plan which includes schedule, meetings, deliverables, tasks and all project milestones.
   c. Communicate with the VCU Interior Design Project Manager (IDPM) on all project matters.
   d. Schedule, plan, and run all project meetings. Prepare and distribute agendas and meeting minutes following VCU IDPM approval.
   e. Ensure that up to two design revisions, within each phase, are included.
   f. Provide services as needed for post occupancy warranty resolution issues.

2. Programming:
   a. Obtain existing drawings and verify field dimensions, if renovation.
   b. Conduct user interviews to understand and evaluate all programmatic needs including aesthetic requirements, housekeeping, acoustical, service and warranty requirements, and other criteria to determine the best value solutions for VCU.
   c. Consider re-use/refurbishment of existing furnishings and finishes, if applicable.

3. Schematic Design:
   a. Develop finish palettes that align with architectural finishes, budget, and meet VCU use requirements.
   b. VCU prefers that the architect submit palette options so that the user is given a choice to select from. The options should be reviewed with the VCU project manager and IDPM prior to being presented to the user.
   c. Finish palettes, throughout most of the planning phase, are determined initially as concepts. As the planning progresses, the finish palettes should also revise and refine as building design decisions are made. Loose and large format samples (i.e. carpet tile, full size ceramic tile, full size acoustical ceiling tile) are preferred during this process.

4. Design Development:
   a. A final conceptual finish palette for all building materials should be submitted. This palette is to be documented in specification (Finish Schedule and Legend) and two (2) sample boards, fully labeled, and submitted to VCU for their use in (1) given to the user, and (2) for VCU’s use in furniture planning.
   b. As finish submittals are reviewed, the architect shall update the specification and sample boards with the final selections in a timely manner.

5. Contract Documents
   a. A detailed “Interior Finish Schedule” with a room by room listing of all surface finishes is to be prepared. Each finish shall have a designator that will be used in completing the Interior Finish Schedule.
   b. Provide Fire testing data to VCU for interior finishes.
6. **Construction Administration**

   a. Architect/ID shall be available during the construction phase to answer questions regarding finishes and prepare all punchlists, including follow up, for any finish item.

   b. Schedule and develop training sessions with users on cleaning, maintenance, and warranty of all finishes. This information should also be clearly written and documented in the project close out manual. Warranty information must include all components of an item (material and labor).

   c. LEED Data gathering and submittal, if required.

   d. Project Close Out – includes:

      a. Close Out Manual – two (2) binder submittals required, to include all of the following:

         1. All final finish drawings
         2. Final finish samples, or photographic images of same, noted with Finish Key legend and specifications.
         3. LEED, testing (if applicable), cleaning, and warranty information.

7. **Furniture/Furnishings**

   a. VCU is responsible for the selection, specification, and procurement of loose equipment and furnishings.
Appendix P: Building Permit Policy for Construction, State-Owned Buildings and Structures


The 2018 VUSBC is divided into three (3) stand-alone parts:
Part I, the Virginia Construction Code (2018 VCC) for new construction,
Part II, the Virginia Existing Building Code (2018 VEBC) for renovation, and
Part III, the Virginia Maintenance Code (2018 VMC) for maintenance of existing structures.

A Building Permit issued by the State Building Official is required for work in accord with Virginia Construction Code, 2018 edition (VCC) Section 108, Application for Permit. A Project Permit issued by the Agency is required for work in accord with 2018 VCC Section 110.2, Types of permits. No Permit is required for work in accord with 2018 VCC Section 108.2, Exemptions from application for permit.

General Requirements

- The requirement for a Building Permit is determined by the type or character of the work. The type of funding (general, non-general, gift) or program area (capital, maintenance reserve, operating) in which the work is authorized have no bearing on the requirement for a Building Permit.

- Construction documents for work performed under the Annual Permit are a State Building Official requirement, but are not required to be submitted for State Building Official review.

- The Agency shall submit to the State Building Official by January 31 of each year an Annual Permit Activity Report as of December 31 of work initiated under the Annual Permit. A report of audit conducted by the State Building Official or State Auditor during the Annual Permit period may be submitted for the Annual Permit Activity Report.

- HVAC, Electrical, Plumbing, Gas Piping, Fire Sprinkler, Fire Suppression, and Fire Alarm work shall be performed by, or under the supervision of, tradesmen certified by the Department of Professional and Occupational Regulation.

- The Regional State Fire Marshal’s Office shall be notified prior to performing building demolition and alterations to and relocation of Fire Sprinkler, Fire Suppression, or Fire Alarm systems by submitting a copy of the Project Permit to the Regional State Fire Marshal’s Office.

- Construction documents for Annual Permit Work, Fire Prevention Code inspection reports by the Regional State Fire Marshal’s Office, Property Maintenance Code inspection reports by the agency, periodic ASME A17.1 required elevator test reports (performed by an ASME QEI-1 certified elevator inspector), and inspection / substantial completion inspection reports by the Division of Engineering & Buildings shall be kept on file at the Physical Plant office of the agency for review by the State Building Official and/or Regional State Fire Marshal’s Office.


BUILDING PERMIT (Issued by DEB)

Character of work Projects involving the following:
Projects involving the following:

- Construction of structure(s) and site improvements, including new structures that contain occupiable space.
- Special Inspection(s)
- Foundations for Industrialized Buildings, site work, and/or utility work.
- Changing the use of a building either within the same use Group or to a different Group.
- Removal or cutting a structural beam or bearing support.
- Addition, removal, alteration, or relocation of all, or a part of, a Means of Egress, Exit, or Fire Resistance rated assembly.
- Addition, removal, replacement, alteration, or relocation of Elevators and Conveying Systems.
- Addition of or removal of an HVAC, Electrical, Plumbing, Gas Piping, Fire Sprinkler, Fire Suppression, and/or Fire Alarm System.
- Mechanical: alteration or relocation of the quantity or source of ventilation, exhaust, or combustion air; alteration or relocation of boilers, water heaters, pressure vessels, or refrigeration equipment; change in refrigerant classification for replacement in kind of refrigeration equipment.
- Electrical: alteration or relocation of circuits greater than 1 phase, 240 volt, 50 amp - or – 1 phase, 277 volt, 30 amp
- Plumbing: alteration or relocation of plumbing fixtures, water supply, water distribution, sanitary waste, special waste, or storm drainage.
- Gas Piping: alteration or relocation of fuel gas or fuel oil piping systems.
- Fire Sprinkler: alteration or relocation of water supply or equipment other than sprinkler heads; relocation of more than 25% of sprinkler heads per story.
- Fire Suppression: alteration or relocation of suppression agent or equipment other than heads; relocation of more than 25% of heads per story.
- Fire Alarm: alteration of system logic; alteration or relocation of equipment other than alarm devices; relocation of more than 25% of alarm devices per story.
- Utility structures including communication towers, water tanks, and water and wastewater treatment.
- Roof replacement projects where the work is the replacement of more than 25 percent of an existing roof covering.
- Temporary structures.
- Demolition of structures (CO-17.1 Demolition Permit w/attachment required).

Requirements: Construction documents prepared under the supervision of and signed and sealed by a registered Architect or Engineer and submitted for review to the State Building Official.

PROJECT PERMIT (Issued under Annual Permit Authority)

Character of work
- Project limited to the addition, removal, alteration or relocation of any wall or partition that is not a part of the Means of Egress, Exit or Fire Resistance rated assemblies.
- Site improvements limited to parking lots and roads, fences and other sitework regulated by the VUSBC.
- Projects limited to alteration or relocation of Mechanical, Electrical, Plumbing, Gas Piping, Fire Sprinkler, Fire Suppression, Fire Alarm not indicated above as requiring a Building Permit to be issued by DEB.
- Interior demolition projects that do not involve removal or cutting of structural beams or structural bearing supports.

Requirements: Construction documents prepared under the supervision of and signed by a registered Architect or Engineer. Regional Fire Marshal’s Office written acceptance of installed Means of Egress, Exit or Fire Resistance rated assemblies, or Fire Protection Systems.

Character of Work
- Asbestos abatement (abatement documents shall be prepared and signed by a licensed asbestos designer).
- Roof replacement projects where the work is limited to the replacement of less than 25 percent of an existing roof covering.
- Replacement in kind of steep-slope (4:12 or greater) asphalt shingle roofing.

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**Requirements:** Construction documents describing the work.

**Character of Work**
- Hot Work including cutting, welding, Thermit welding, brazing, soldering, grinding, thermal spraying, thawing pipe, installation of torch applied roof system or any other similar work.

**Requirements:** Agency shall implement safety measures in accord with the Virginia Statewide Fire Prevention Code.

**NO PERMIT**

**Character of work**
- Ordinary repairs and maintenance which are not regulated by the VCC.
- Replacement in kind of materials and equipment with that of similar characteristics in the same location.
- Periodic elevator tests and inspections by an ASME QEI-1 certified elevator inspector.

Italicized words are as defined by the VCC.