

GEORGE MASON UNIVERSITY

Higher Education Capital Outlay Manual 2016

Vice President of Facilities

References: The Commonwealth of Virginia "Construction and Professional Services Manual" (CPSM) and the "Design & Construction Guidelines" are referenced extensively and should be readily available when using this Manual.

The most current version of these two documents are on the following websites:
facilities.gmu.edu and www.dgs.virginia.gov

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CHAPTER 1: INTRODUCTION

SECTION 1.1 GENERAL

In 2016, the General Assembly authorized (Chapter 780 of the Acts of Assembly of 2016) George Mason University, as part of a five-year pilot program, to exercise additional financial and administrative authority for capital projects. In accordance with this authority and the Restructured Higher Education Financial and Administrative Operations Act, Virginia Code §23.1-1000 *et al.* (hereafter the “Restructuring Act”), the University’s Board of Visitors adopted policies and procedures for the capital outlay process. Pursuant to those policies and procedures, George Mason University hereby adopts this Higher Education Capital Outlay Manual (hereafter referred to as the Manual) for capital and non-capital projects.

The Manual contains guidance, procedures and policy that must be followed in the execution of capital outlay projects. Appropriate portions of this manual apply to projects below the Capital Outlay threshold (also see Appendix O). These portions include, contracting procedures, approval levels, code requirements, building permits and project permits, safety requirements, and the forms as indicated.

Deviations from the policies and procedures outlined within shall be requested in writing and must have prior approval of Vice President for Facilities. The request shall justify and substantiate the need for the deviation.

The Manual is designed to present the capital outlay process from advertisement for A/E services to project completion (occupied building). The Manual is arranged in a sequence that parallels the capital outlay process.

The Facilities Planning; Project Management & Construction; and Contracts Departments, within Facilities, are responsible for maintenance of the Manual. Suggestions for changes, notification of conflicting guidance, questions and requests for copies should be addressed to:

Contracts
George Mason University Facilities
4400 University Drive, MS 1E4
Fairfax, Virginia 22030

The Manual including errata corrections will be posted on the Facilities Website and may be downloaded and printed by the users.

Revisions to the Manual will be issued electronically by posting on the Mason Facilities Website. Changes or revisions will be marked or identified in the Manual where they occur. The revision package will contain a summary sheet generally describing the changes or revisions made and the summary sheet will describe the marking or identification used with that revision. The summary sheet will be numbered and dated. The summary sheet will become a permanent part of the Manual

and is to be placed after the Table of Contents and before this chapter and before any previous summary sheet. Paper copies of the Revisions will not be issued.

SECTION 1.2 CAPITAL OUTLAY VERSES NON-CAPITAL OUTLAY

Capital Outlay Projects, as defined by the Department of Planning and Budget (DPB) Instructions, must be authorized by the General Assembly or by the Governor as provided for in the Acts of Assembly 4-4.00 Capital Projects (also called the Appropriations Act), and as further defined by the Restructuring Act. Capital Outlay Projects use an established authorization and approval sequence for the “Design Phase” of the Project to include:

- Project Initiation (using the HECO-2)
- Schematic Design Approval Phase (HECO-4)
- Preliminary Design Approval Phase (HECO-5) and
- Working Drawings Approval Phase (HECO-6).
- After receiving Bids, Construction Contract Award approval is made using the HECO-8.

These forms are also used to track the cost of the project, the commitment of funds and the infusion or transfer of funds for the project. The approval authority for the forms is described in Chapter 14 of this Manual.

Non-Capital Outlay Projects, are usually defined as small construction, renovation, repair or replacement projects which are funded by Agency resources and do not require authorization by the Legislature or Governor. Non-Capital Outlay Projects in most cases do, however, involve work regulated by the VUSBC and require a Building Permit from the Building Official or his designee. Non-Capital Outlay Projects greater than \$1 Million but less than \$2 Million in cost are procured, reviewed and permitted in accordance with the requirements of this Manual pursuant to the Rules Governing Procurement of Goods, Services, Insurance and Construction by a Public Institution of Higher Education of the Commonwealth of Virginia Governed by Subchapter 3 of the Restructured Higher Education Financial Administrative Operations Act, Chapter 4.10 of Title 23 of the Code of Virginia, and Chapters 824 and 829 of the 2008 Acts of Assembly of Virginia.

SECTION 1.3 DESIGN PHILOSOPHY

The design goal is to create a capital investment that meets the user’s functional requirements and provides the most economical life cycle cost. The University’s design philosophy envisions a long and useful life for projects. These projects 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. Achievement of this goal should incorporate good architectural and engineering practice and design solutions should be consistent with industry standards, Mason Design Manual, and must be designed by the A/E to meet the functional and space requirements within the “Design Not to Exceed” budget for the project.

Project 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.

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, which are not related to the function or the intended use of the facility, shall be avoided. Projects must be designed by the A/E to meet the functional and space requirements within the 'Design not to exceed' budget for the project.

SECTION 1.4 FORMS

Virginia Higher Education Capital Outlay (HECO) Forms, Formats and Samples are referenced in Appendices B, C and J to the Manual. Electronic copies of many of these forms, formats and samples are available on the Mason Facilities Website (facilities.gmu.edu).

SECTION 1.5 INDEX

This Manual is posted on the Mason Facilities Website (facilities.gmu.edu). There is no index provided for the Manual.

CHAPTER 2: TERMS & DEFINITIONS

This chapter is designed to acquaint Mason Personnel, Contractors, and A/Es with terminology, symbols, acronyms and abbreviations customarily used in the procurement of construction and professional services and in the execution of the 's Capital Outlay Program. Definitions are taken from the *Code of Virginia*, the General Conditions of the Construction Contract and general customs and practices associated with the construction industry and professional service contracts.

Whenever used in the 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:

ADDENDUM: Written or graphic instruments issued prior to the receipt of bids that clarify, correct or change the bidding 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 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.

ADVERTISEMENT: The term commonly used to describe the public announcement or "Notice" of the availability of the Invitation For Bids (i.e. bid document or IFB) or Request for Proposal (RFP) made by publishing a notice in the public Internet procurement Web site designated by the Department of General Services [i.e. eVA] and by "Posting the Notice."

A/E CHANGE ORDER: A document (HECO-11A/E) issued on or after the effective date of the Contract (HECO-3) agreed to by the A/E and 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. A Change Order, once signed by all parties, is incorporated into and becomes part of the Contract.

A/E CONTRACT: The Form of Agreement (HECO-3, HECO-3.1, HECO-3.2) and any document expressly incorporated therein. Such incorporated documents customarily, include Chapter 3 of this Manual, the Memorandum of Understanding and all modifications, including subsequent Change Orders.

A/E MANUAL: This reference to portions of the manual is no longer applicable. The A/E Manual, when printed in any document or manual shall refer to the Higher Education Manual HECOM, all Chapters and Appendices A thru Z, and all revisions thereto, and which shall be incorporated into the Contract in their entirety except as amended or superseded in the Contract or an addendum thereto.

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.

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.

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.

BCOM: The acronym used to refer to the Bureau of Capital Outlay Management, part of the Virginia Department of General Services, Division of Engineering and Buildings.

BENEFICIAL OCCUPANCY: The condition after substantial completion but prior to final completion of the project at which time 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.

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

BUILDING: Any roofed or occupiable structure.

BUILDING COMMITTEE: The group constituted by the University in accordance with the requirements of Chapter 11 of the Manual and with the authority and purpose as set forth in Chapter 14 including interviewing and selecting A/Es for the planning and design of construction projects and other professional services required by the University.

BUILDING OFFICIAL: The Building Official for all buildings (i.e. all buildings on state property) is the Director of Engineering and Buildings, Department of General Services. The Building Official’s duties, responsibilities and authority generally conform to those described in the Virginia Uniform Statewide Building Code (*Code of Virginia, Section 36-98.1*).

CAPITAL PROJECT: As used in the Manual, “Capital Project” means the acquisition or proposed acquisition of property, including any improvements thereto, a new construction project or improvements to state-owned property, a renovation, maintenance or repair project, an equipment acquisition or improvements to state-leased property that are financed by public funds. (For the purposes of this manual, a capital project is defined as a project involving any acquisition exceeding \$2,000,000 or exceeding new construction of 5,000 square feet. Projects less than the above are considered non-capital.

CHANGE ORDER: A document (HECO- 11) issued on or after the effective date of the Contract (HECO-9) agreed to by the Contractor and 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. The term “Change Order” shall also include written orders to proceed 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.

COMPETITIVE NEGOTIATIONS: A method of Contractor selection that includes the following two elements (*See Chapter 10 for further procedures*):

1. 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.
2. Public notice of the RFP at least ten (10) days prior to the date set for receipt of the proposal by posting in a public area normally used for posting of public notices and by publication on the public Internet e-procurement Web site designated by the Department of General Services.

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, including any draining, dredging, excavation, grading or similar work upon real property.

CONSTRUCTION MANAGEMENT (CM): Also called the CM at Risk, CM/CG, or the Contractor for the CM Project, or CM-Agent (CMA) when used only for administering the project. As used in this Manual, this term means services provided under contract with the University, which generally include coordinating and administering construction contracts for the benefit of the University, but may also include, if provided in the contract, furnishing construction services to the University. See Chapter 10, Section 10.3, of the Manual for further descriptions. The Construction Manager has direct responsibility and liability to the University for performing the Work as described by the Contract Documents.

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: As used in this Manual, this term means non-professional services provided under a contract with the University which generally includes inspection of the work, coordinating testing services contracts procured by the University, reviewing change orders and schedule submittals from the Contractor, and providing other construction period services for the benefit of the University. The Contract 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.

CONTRACT COMPLETION DATE: The date by which the construction Work must be substantially complete. The Contract Completion Date is customarily set forth in the Contract (HECO-9) based on Notice to Proceed and the Time for Completion. In some instances, however, the Contract contains a mandatory Contract Completion Date, which date shall have been stated in the Invitation for Bid.

CONTRACT DOCUMENTS: As used in this Manual and General Conditions of the Construction Contract (HECO-7), this term shall mean the Contract (HECO-9) and any documents expressly incorporated therein. Such incorporated documents customarily include the bid submitted by the Contractor, the General Conditions of the Construction Contract, any Supplemental General Conditions, any Special Conditions, the plans and specifications, and all modifications, including addenda and subsequent 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.

CONTRACTOR: A generic term used to indicate a person, firm or corporation with whom the University has entered into a contract agreement to perform work or provide a service. As used in the Manuals with respect to a capital outlay project, the contractor for the professional services is referred to as the Architect/Engineer or A/E. The contractor for the construction related work is referred to as the Contractor. As used in the Manuals 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 Construction Management project, the CM, CM at Risk or CM/GC is the 'Contractor'.

CURE NOTICE: A notice, either oral or in writing, that informs the contractor that he or she is in default and states what the contractor has to do to correct the deficiency. If the initial notice is oral, it shall be confirmed in writing.

DAY(S): Calendar day(s), unless otherwise noted.

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, does not meet the requirements of applicable inspections, standards, tests or approvals referred to in the

Contract Documents, or has been damaged prior to the A/E's recommendation of final payment (unless responsibility for the protection thereof has been assumed by University at Substantial Completion or Beneficial Occupancy).

DESIGN-BUILD (DB): A contract between the University and another party in which the other party agrees to both design and build the structure, roadway or other item specified in the Contract. See Chapter 10 of the Manual for further descriptions.

“DESIGN-NOT-TO-EXCEED” COST: The Project construction cost established in the A/E's contract and accepted by the A/E as the ceiling for the estimated construction cost of the Project the A/E is engaged to design.

DISADVANTAGED BUSINESS ENTERPRISE: A small business concern which is at least 51 percent owned by one or more socially and economically disadvantaged individuals, or, in the case of any corporation, partnership or limited liability company or other entity, at least 51 percent of the equity ownership interest in which is owned by one or more socially and economically disadvantaged individuals and whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged who own it.

DRAWING: A page or sheet of the Plans, which presents a graphic representation, usually to scale, showing technical information, design, location, and dimensions of the various elements of the Work in sufficient detail for the Building Code Official to determine code compliance. 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.

EMERGENCY: Any unforeseen situation, combination of circumstances or a sudden occurrence or state resulting therefrom that poses imminent danger to health, life or property and which usually demands immediate action.

ENGINEER: A person who is qualified and licensed to practice engineering in Virginia as a Professional Engineer by the Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects (APELSCIDLA) Board of the Department of Professional and Occupational Regulation, also referred to as the A/E. “Engineer” 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 University.

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

eVA: Electronic procurement in VA. The eVA home page address is www.eva.state.va.us.

EXTRA SERVICE: A service, which the University tasks the A/E to provide after the Contract has been signed and which, was not included in the Basic Services or in the additional services as described in the A/E Contract. Extra services, and the compensation therefor, 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.

FACILITIES: Division of George Mason University responsible for providing cost-effective and efficient planning, design, construction and maintenance services throughout.

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.

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

FIELD CHANGE ORDER: A written order issued by the University directs changes to an establish contract.

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 overall completion of the project. Any difference in time between the Contractors' approved early completion date and the Contract Completion Date shall be considered a part of the project float.

FLOAT, FREE: "Free float" is defined as the time by which an activity may be delayed or lengthened without impacting upon the start day of any activity following in the chain.

FLOAT, TOTAL: "Total float" is defined as the difference (in days) between the maximum time available within which to perform an activity and the duration of an activity. It represents the time by which an activity may be delayed or lengthened without impacting the Time for Completion or the Contract Completion Date and HECO-7CM for use with Construction management contracts.

GENERAL CONDITIONS (GC): The General Conditions of the Construction Contract, HECO-7, latest edition. Also, the General Conditions of the Design Build Contract, HECO-7DB for use with design build contracts.

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

IMPROVEMENTS: Work necessary to accomplish a specific purpose and produce a complete and usable improvement to an existing facility or structure, including the associated architectural and other technical services and fixed equipment installed and made part of the facility or structure, as well as any site development. Improvements include:

1. alteration of interior space arrangement and other physical characteristics, such as utilities, so that it may be more effectively used for its present designated functional purpose;
2. 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 that it may be effectively utilized for a new functional purpose;
3. renovation of most or all of a facility or structure, or an existing mechanical system for the purpose of modernizing the use or capability of such asset in order that it may be effectively utilized for its designated functional purpose or to comply with current code requirements;
4. restoration of a facility or structure to the maximum extent possible to its former or original state (historic property);
5. relocation from one site to another of a facility or structure either intact or by disassembly and subsequent reassembly;
6. major repair to restore a facility, mechanical system or utility system to such a condition that it may continue to be appropriately and effectively utilized for its designated purpose by overhaul, reprocessing or replacement of parts or materials which have deteriorated by action of the elements or wear and tear in use; and
7. demolition to remove a building or facility either for land clearance or to make land available for new capital use.

INFORMALITY: A minor defect or variation of a bid or proposal from the exact requirements of the Invitation to Bid or Request for Proposal that does not affect the price, quality, quantity or delivery schedule for the goods, services or construction being procured.

INVITATION FOR BIDS (IFB): A formal solicitation to the public including the Notice, Instructions To Bidders, Bid Form, General Conditions, 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 to Bid” required by University Procurement Rules.

LANDSCAPE ARCHITECT: An individual certified by the Commonwealth of Virginia as a ‘Certified Landscape Architect’ by the APELSCIDLA Board of the Department of Professional and Occupational Regulation. The Certified Landscape Architect may function as a project manager and may be the prime professional 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.

LIQUIDATED DAMAGES: See *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.

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, normally costing less than \$1,000,000. Examples of such projects include:

1. repair or replacement of damaged or inoperable equipment such as elevators, furnaces, plumbing fixtures, air conditioning and ventilation equipment.
2. repair or replacement of components of a plant such as masonry, ceilings, floor, floor coverings, roofs, sidewalks, parking lots, exterior lighting, boilers, and air conditioners.
3. repair or replacement of existing utility systems, such as electrical, water and sewer, heating and cooling. When replacement of components of utility systems is required (e.g. transformers, distributions panels, cables, etc.), new components should be sized to account for future growth if the existing components are operating at or near capacity.
4. correction of deficiencies in property and plant that are required to conform with building and safety codes or those regulations associated with hazard corrections, including asbestos hazards when incidental to repair/maintenance.
5. correction of problems resulting from erosion and drainage.

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 more project-specific, supplementing and/or clarifying the requirements of the A/E Contract in terms of the particular project. However, the MOU does not supersede nor take precedence over the requirements of the Manual.

MINORITY-OWNED/CONTROLLED BUSINESS: Minority-owned business" means a business that is at least 51% 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% 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.

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 construction applicable to one or more facilities, including all work necessary to accomplish a specific purpose and produce a complete and usable new facility, all associated architectural and other technical services, all installed equipment, site development and any improvements. New construction includes:

1. construction of a new plant including the erection, installation, assembly of a new facility or structure, utility system, or site work;
2. addition, expansion, or extension to a structure which adds to the overall exterior dimension of the plant; and
3. complete replacement of a structure or 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/renovated and can no longer be used for its designated purpose.

NONPROFESSIONAL SERVICES: Any services not specifically identified as professional services in the definition of professional services.

NOTICE: All written notices, including demands, instructions, claims, approvals and disapprovals, required or authorized under the Contract Documents. Written notice by either party to the Contract shall be sufficiently given by any one or combination of the following: (1) delivered in hand at the last known business address of the person to whom the notice is due; (2) delivered in hand to the person's authorized agent, representative or officer wherever they may be found; or (3) enclosed in a postage prepaid envelope addressed to such last known business address and delivered to a U.S. Postal Service official or mailbox. Notice is effective upon such delivery. Notice shall also mean the Notice of Invitation for Bids included in the IFB/RFP.

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/RFP.

NOTICE OF INTENT TO AWARD: The written public posting by Mason Facilities Contract Department 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/Offeror and the receipt and acceptance of all executed documents required in the IFB/RFP.

NOTICE TO PROCEED: A written notice by the University to the Contractor (with a copy to the A/E) fixing the date on which the Contract time will commence for the Contractor to begin the prosecution of the Work in accordance with the requirements of the contract Documents. The Notice to Proceed will customarily identify a Contract Completion Date.

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 the 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 DEPARTMENT: That department in Facilities at George Mason University responsible for managing the design from concept to schematic design.

PLANS: The group or set of project-specific drawings included in the Contract Documents.

PRE-BID/PRE-PROPOSAL CONFERENCE: A meeting of interested, prospective bidders held by the University, usually with the assistance of the A/E, prior to the receipt of bids or proposals in which comments or questions concerning specifications or other provisions in the IFB or RFP can be received and considered. Any response shall be in writing and distributed to all who requested/received the IFB and RFP.

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. See Chapter 10 of the Manual for further descriptions.

PROFESSIONAL SERVICES: For the purposes of the manual, services provided by a licensed professional within the scope of the practice of accounting, architecture, land surveying, landscape architecture, or professional engineering.

PROJECT: The term used to represent the specific or proper assigned title of the entire undertaking, which includes, but is not limited to, the design services by the A/E and the construction “Work” performed by the contractor pursuant to the Contract documents.

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 worksite to the extent required by the University. The University shall notify the Contractor in writing of the appointment of such Project Inspector(s).

PROJECT MANAGEMENT & CONSTRUCTION DEPARTMENT: That department in Facilities at George Mason University responsible for managing the design beyond schematic design and construction.

PROJECT MANAGER: The designated representative of the A/E, the Contractor, or the University through whom written decisions and notices are generally conveyed.

PROPRIETARY: An adjective used to describe a product or piece of equipment which is manufactured under some 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: As used herein and in the Contract Documents, “Provide” shall mean to supply, to furnish and to install complete with all accessories, parts and/or services to be ready for its intended use.

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

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.

RESPONSIVE BIDDER: A person or firm who has submitted a bid, which conforms in all material respects to the Invitation to Bid (University Procurement Rules).

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 FOR ADMINISTRATION & FINANCE: The person responsible for the financial and administrative operations of the University, and must approve initiation of non-general funded capital projects.

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.

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: Small business means a business that is at least 51% independently owned and controlled by one or more individuals who are U.S. citizens or legal resident aliens, and together with affiliates, has 250 or fewer employees, or average annual gross receipts of \$10 million or less averaged over the previous three years. One or more of the individual owners shall control both the management and daily business operations of the small business

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.) Approval of Sole Source procurements is made by the Vice President of Facilities.

SPECIAL CONDITIONS: That part of the Contract Documents, which describes special or additional requirements or procedures applicable to the particular project. The Special Conditions do not amend or supersede the General Conditions.

SPECIFICATIONS: Those portions of the Contract Documents containing the General Conditions as well as written technical descriptions of materials, equipment, construction systems, standards and workmanship describing the proposed Work in sufficient detail for the Contractor to perform the Work and providing sufficient information for the Building Official to determine Code Compliance.

STEERING COMMITTEE: 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: An individual, partnership or corporation having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work. The Subcontractor may include any person who provides on-site labor but does not include any person who only furnishes or supplies materials for the project.

SUBMITTALS: As used in the construction Contract Documents, shall mean all shop drawings, illustrations, brochures standard schedules, performance charts, 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 which are submitted to the A/E for review to assure conformance with the requirements of the Contract Documents. As used in the Professional Services Contract, shall mean the drawings, specifications, cost estimates, schemes and other documents required by Chapter 8 of the Manual to be submitted by the A/E to the University for review and/or approval.

SUBSTANTIAL COMPLETION: The date on which the project (or a specific part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the project (or the specific part thereof) can be utilized by the University for the purposes for which it is intended. The University, at its sole discretion, may take Beneficial Occupancy at this time or may choose to wait until final completion to occupy. Guarantees and warranties applicable to that portion of the work begin on the date the University accepts the Project, or a portion thereof, for such Substantial Completion, unless otherwise specified in the Supplemental General Conditions or by separate agreement.

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 Contract by Change Order.

SUPPLEMENTAL GENERAL CONDITIONS: The part of the Contract Documents which amends or supplements the General Conditions of the Construction Contract, HECO-7. See DGS-30-377 Form for SWAM Supplemental General Conditions and DGS-30-376 for insurance and liquidated damages.

SWAM: The acronym used to refer to Small Business and Women-Owned and Minority-Owned Businesses. See Supplemental General Conditions DGS-30-377 form for detailed requirements.

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

TIME FOR COMPLETION: That number of consecutive calendar days following receipt of a Notice to Proceed that the Contractor has in which to substantially complete everything required of it by the Contract. The time for completion is usually set out in the IFB. When the Notice to Proceed is issued, it states a Contract Completion Date, which has been set by the University based on the Time for Completion.

UNIT PRICE WORK: Work to be paid for on the basis of established unit prices for the quantity of material provided or work done. No additional percentage markup for overhead or profit shall be added to the unit prices.

UNSEALED BID: An unsealed written offer conveyed by U.S. Mail, commercial courier service, facsimile, email, or other means. The bids are normally opened and recorded when received.

UNIVERSITY: For purposes of the Manual, “University” shall mean the President and Board of Visitors of or other entity represented by with whom the Contractor or the A/E has entered into a contractual agreement and for whom the Work or services will be provided

UNIVERSITY CONTRACTING OFFICER: The person designated in writing by the University who is delegated authority to approve, award and execute contracts, change orders and other documents related to a capital outlay project for the University. The Senior Vice President for Administration and Finance has been delegated this authority and consistent with Board policies may sub-delegate this further.

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 (Also referred to as the VUSBC).

VCCO: The acronym used to refer to a University employee who has completed the necessary training and testing by the Bureau of Capital Outlay Management, Division of Engineering and Buildings in state procurement law, policy and procedures and who has been awarded the designation of Virginia Construction Contracting Offer (VCCO). Where used in this Manual, the VCCO functions are related to the following: receipt of bids, opening of bids, review of the bids, and signing the HECO-8 recommending award of the contract to the successful bidder.

VICE PRESIDENT OF FACILITIES: The person responsible for Facilities Management activities at the University, and for approving preliminary drawings and specifications, schematic designs, and must be kept abreast of the status of all projects.

WOMAN-OWNED/CONTROLLED BUSINESS: Business enterprise at least 51 percent of which is owned by females or in the case of publicly owned business at least 51 percent of the stock of which is owned by females.

WORK: All labor, materials, equipment and other services necessary to perform the complete services, or any separate identifiable part thereof, or to provide the complete product required by the Contract. In construction, Work includes, but is not limited to, performing services, furnishing labor, and furnishing and incorporating materials and equipment into the construction to provide the entire completed construction, or the various separately identifiable parts thereof, as required by the Contract Documents.

CHAPTER 3: GENERAL TERMS AND CONDITIONS FOR PROFESSIONAL SERVICES

SECTION 3.1 GENERAL TERMS AND CONDITIONS FOR PROFESSIONAL SERVICES

This Chapter contains the General Terms and Conditions for Professional Services.

SECTION 3.2 GENERAL POLICIES ON ARCHITECTURAL AND ENGINEERING SERVICES

3.2.1 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 §54.1-411., Code of Virginia, as amended.

The Architect or Engineer (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.

3.2.2 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 Universities’ requirements for providing the services, meeting the time schedule and budget limitations, and managing the services to be provided on the particular project.

3.2.3 Associations: Contracting with an association of firms, such as joint ventures or associated A/E’s, involves additional business and legal considerations. Factors to be considered include whether the Association is a registered or licensed entity authorized to offer the Services in Virginia, the nature of each party’s responsibilities to the other and to the University, the Professional liability insurance coverage of the Association, its organization and management structure, each firm’s financial condition and stability with respect to fulfilling its obligations under the Contract, and whether the parties to the Association are jointly and severally liable for the Work. Prior to selecting an Association fee negotiation for a possible Contract award, the University shall request a review of the Association’s legal documents, 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’.

3.2.4 Disadvantaged Businesses: It is the policy of the University to contribute to the establishment, preservation, and strengthening of small businesses and businesses owned by women and minorities and to encourage their participation in State procurement activities. The

University encourages contractors to provide for the participation of small businesses and businesses owned by women and minorities through partnerships, joint ventures, subcontracts, or other contractual opportunities. All procurements by competitive negotiation for professional or non-professional services that are expected to exceed \$100,000 in value shall include consideration of the proposer's past and proposed use of small business and businesses owned by women and minorities in the evaluation of proposals.

SECTION 3.3 PROFESSIONAL SERVICES

The architectural, civil, structural, mechanical and electrical portions of the project shall be planned and designed by or under the immediate supervision of a licensed Architect or Engineer who has expertise in the particular discipline involved. Where such licensed expertise is not available within the A/E of record or where the A/E chooses to subcontract a part of the Work, the A/E shall employ an associate or consulting Architectural or Engineering firm with the requisite expertise to provide the required services. The consultants, associates, or subcontractors proposed by the A/E during the selection process to be part of the A/E project team shall perform the work as proposed. If circumstances require a change, the A/E shall advise the University of the proposed change, the reasons therefore, and the name and qualifications of the proposed replacements. The replacements must be acceptable to the University.

Associates, consultants or subcontractors proposed to be part of the A/E's project team shall be contracted by the A/E at the beginning of the work and shall be active participants in all phases of the Work related to their discipline from beginning to end. The A/E shall be responsible to the University for the Work of all associates, consultants and subcontractors, whether employees of the A/E or not, performed under the Contract.

SECTION 3.4 TAXPAYER IDENTIFICATION NUMBER

The A/E shall furnish to the University at the time of contract award its Federal Employer Identification Number (FEIN) if a corporation or a partnership or its Social Security Number (SSN) if a sole proprietor.

SECTION 3.5 RELATIONSHIP OF ARCHITECT/ENGINEER TO UNIVERSITY

Once the Contract for A/E services has been fully executed, the A/E shall be the professional advisor and consultant to the University for technical matters related to the project and shall be responsible directly to and only to the University. The University shall communicate all approvals, rejections, change requirements and other similar information to the A/E. The A/E shall advise the University of changes necessary to keep the project within the prescribed area and cost limits. The A/E's status, relationship and authority during the construction phase of the project are further defined in Section 15, paragraphs (a) thru (h) of the General Conditions of the Construction Contract, and are included herein by reference.

Generally, the University will observe the procedure of issuing orders to the Contractor through the A/E or, if the A/E's construction period duties have been so modified, through the University's designated project representative. If the University issues orders directly to the Contractor, the A/E shall be copied on such orders.

SECTION 3.6 UNIVERSITY HIGHER EDUCATION CAPITAL OUTLAY MANUAL

This manual and all revisions thereto, shall be incorporated into the Contract in their entirety except as amended or superseded in the Contract or an addendum thereto.

For the sake of simplicity, the provisions of this Manual dealing with Architects and Engineers are written as though they apply to the design of buildings and to construction administration only. They also shall apply, however, to all architectural and engineering services of every kind including, but not limited to, project studies, other studies, and related professional services.

Many of the changes, additions, or deletions made in revisions to this Manual are necessary to keep abreast with codes, statutes, or regulations related to the project. They require immediate compliance. If the A/E determines that including the requirements of any Manual revision issued subsequent to the revision shown on the Contract Between the University and A/E (HECO-3), will require additional work on its part, the A/E shall notify the University of same within 60 days of the date of distribution of the revision, and shall provide an itemized list of the additional work required by the revision. The University shall provide direction to the A/E regarding incorporating the requirements of the revision and, if appropriate, issue a change order to the A/E for the extra work as described in Chapter 6 of this Manual.

Generally, revisions issued prior to the date of approval of the preliminary submittal can be incorporated with minimal, if any, additional work on the part of the A/E.

If the A/E fails to notify the University within 60 days after the date of distribution of the revision that the revision will require additional work on the A/E's part, the A/E waives the right to make claims for additional services based on the contents of the revision.

SECTION 3.7 "DESIGN-NOT-TO-EXCEED" COST AS RELATED TO A/E CONTRACT

The University shall provide the A/E with a description of the project including information on functions, space requirements, special features and requirements, aesthetic requirements, authorized square footage and "Design-not-to-exceed" construction budget. The A/E's Contract requires that if the low bid or the estimate of any phase submittal exceeds the "Design-not-to-exceed" cost identified in the A/E Contract by more than 10%, any A/E revisions to the plans and specifications required to bring the cost of the project within the "Design-not-to-exceed" cost may be executed by the A/E at no additional cost to the University.

The A/E's cost estimate shall be in the systems format described in Chapter 8 and Appendix E and shall be to a level of detail commensurate with the current level of design. The A/E shall submit a cost estimate with each phase submittal. If the cost estimate indicates a potential problem in securing a bid within the "Design-not-to-exceed" cost, the A/E shall notify the University and shall work with the University to redefine the design concepts of space utilization, building efficiencies, materials of construction, etc., so that the estimated cost of construction does not exceed the "Design-not-to-exceed" cost. Substantial changes in the project scope, such as those, which affect the area or function of the proposed facility, must be justified by the A/E and may require the approval of the Vice President of Facilities.

SECTION 3.8 CODE AND REGULATORY COMPLIANCE

The A/E is responsible for designing the project and administering the construction phase of the project in accordance with the Virginia Uniform Statewide Building Code (Code), this Manual and other regulatory requirements applicable to the project. Nothing contained herein shall be construed as relieving any A/E, professional design consultant, contractor, supplier or any other participant from any professional or legal responsibility for performance. Reviews, comments and approvals by the University, or the staff of any State Department in no way absolve any other person, firm or corporation involved in a project from their full responsibilities under law, codes and professional practice. Lack of comment by a University or State reviewer does not relieve the A/E from designing to meet the Code or this Manual requirements or applicable state regulations or local regulations related to water, sewer, fire department service, and other utilities.

If the correction of a Code, or Manual requirement, or regulatory violation results in a Change Order during construction, any additional costs incurred shall be borne by the party responsible for the violation. The University will bear only the costs attributable to the actual Code or regulation-required enhancement of the project.

If the A/E believes that a Code, or Manual requirement, or a regulation is unclear as to meaning, he shall request a written opinion as to the applicable interpretation from the University or from the applicable regulatory University, as appropriate, and the A/E shall be entitled to rely on the written opinion, if any, which he receives.

SECTION 3.9 LIABILITY INSURANCE, DESIGN ERRORS AND/OR OMISSION AND RECORDS RETENTION

The A/E shall carry professional liability insurance covering acts, errors and omissions violating the contractual standard of care for all state-owned projects designed by the A/E, which are currently under contract or construction. The A/E shall carry either “basic practice policy” or “project policy insurance” coverage. The minimum amount of professional liability insurance required to be carried by the A/E shall be calculated as not less than an amount equal to 5% of the estimated construction cost per claim and twice that amount in the aggregate for each policy year. Insurance in the amount of \$250,000 per claim and twice that amount in the aggregate for each policy year is the minimum amount regardless of the construction cost. The maximum amount of insurance required, regardless of the construction cost, shall be \$5,000,000 per claim and \$10,000,000 in the aggregate for each policy year.

The A/E shall maintain this insurance coverage after completion of the services under the contract for a period of 5 years after completion of construction. The A/E shall maintain coverage in the amount equal to the highest dollar amount of coverage for the highest construction cost project for a period of 5 years after the completion of the project. If the A/E cancels their professional liability insurance policy prior to 5 years past substantial completion, they must purchase an Extended Reporting Period equal to the number of years the coverage is required

Neither the University's review, approval, or acceptance of, nor payment for any of the services required shall be construed to operate as a waiver by the University of any rights or any cause of

action arising out of the Contract. The A/E shall be and remain liable to the University for all costs of any kind, which are incurred by the University as a result of negligent acts, errors, or omissions on the part of the A/E including its subcontractors and consultants, in the performance of any of the services furnished.

The A/E shall be responsible for all costs resulting from its errors, omissions, and other breaches of the applicable standards of care established by this Manual and/or under Virginia law including, but not limited to, its own costs for labor and other in-house costs, any resulting Contractor Change Order costs including the costs for demolition, cutting, patching, repairs, removal, or modification of Work that is already in place, any Contractor or University delay damages, and any judgments, fines or penalties against the University resulting from A/E errors, omissions, and other breaches of the applicable standards of care. However, the A/E shall not be responsible for the cost of the correct equipment or system, which should have been originally specified, except the A/E shall be responsible for any increased costs, whether the result of inflation, reordering, restocking or otherwise, of incorporating the corrected Work into the Contractor's Contract Change Order. For the purposes of determining the A/E's share of such costs for Work, which has not yet been performed, the cost of Work performed by Contractor's Change Order shall generally be presumed to be 15% greater than if the Work had been included in the Contractor's Contract. The A/E shall have the burden of disproving this presumption.

The University shall actively pursue reimbursement of costs resulting from the A/E's errors, omissions, or breaches of the applicable standard of care. Upon determination that there may be A/E financial responsibility involved, the A/E shall be contacted by the University. The A/E shall be advised of the design deficiency, informed that it is the University's opinion that the A/E may be financially responsible, and requested to provide a technical solution to the problem, including cost estimate. Upon notification of potential liability, the A/E should coordinate with the University to determine required technical support and timing to minimize delay costs. Pending final decision by the University, the A/E will be invited to attend all price negotiations with the Contractor for the corrective work. The A/E shall participate as a non-voting technical advisor to the University's negotiator. If the A/E refuses to cooperate in the negotiations or disputes its responsibility, the University shall have the right to proceed with the remedial construction and/or change order negotiations without the A/E.

Alternatively, where there is clearly a design error, the A/E may discharge its financial responsibility through negotiation with, and direct payment to, the Contractor. This action must be participated in and approved by the University.

The A/E shall retain record copies of its design calculations, drawings, bid/contract documents, addenda, field orders, clarifications and responses to Requests For Information, approved shop drawings and submittals, inspection / observation reports, fiscal records, and other documents relative to the contract for five (5) years after completion of the services under the contract or five years after completion of construction, whichever occurs earlier. Should the A/E cease its business prior to that time, the A/E will provide those project related documents to the University for safekeeping.

SECTION 3.10 OTHER INSURANCE REQUIRED OF THE A/E

Prior to the start of any work under the contract, the A/E shall provide to the University Certificates of Insurance forms approved by the University and shall maintain such insurance until the completion of all Work under the contract. The minimum limits of liability shall be as follows:

- Worker's Compensation -- Standard Virginia Workers Compensation Policy with statutory requirements and benefits;
- Employers Liability -- \$100,000;
- Broad Form Comprehensive General Liability --\$1,000,000 Combined Single Limit coverage. The University shall be named as an additional insured with respect to the services being provided. The coverage shall include: Premises / Operations Liability; Products and Completed Operations Coverage; Independent Contractors Liability; University's and Contractor's Protective Liability; and Personal Injury Liability (Libel, Slander, Defamation of Character, etc.);
- Automobile Liability -- \$1,000,000 Combined Limit for bodily injury and property damage per occurrence.

SECTION 3.11 OWNERSHIP OF DOCUMENTS AND MATERIALS

Ownership of all materials and documentation including the original drawings and the Plans and Specifications and copies of any calculations and analyses prepared pursuant to the Contract between the University and the A/E, and files shall belong exclusively to the University. Such materials and documentation, whether completed or not, shall be the property of the 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 University Procurement Rules. Security-related documents and information are excluded from the Act 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 University Procurement Rules, provided the bidder, offeror, or contractor invokes the protections of the University Procurement Rules, prior to or upon submission of the data or other materials, identifies the data or materials to be protected and states the reason why the protection is necessary.

The A/E shall provide the following documents to the University at the completion of the A/E's work:

- Original sealed and signed drawings and 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.

If a computer aided drafting and design program other than AutoCAD or Revit is used to generate project drawings, the A/E shall be responsible for all conversion procedures necessary to generate the AutoCAD files to specifications for delivery to the University.

The University has the right to use the project documents as a prototype to demonstrate scope, size, functional relationships, etc., to an A/E designing a similar project. The A/E for the original project design shall not be responsible or liable to the University for any such use of the documents.

The A/E for the similar project shall be responsible for providing a complete set of project and location-specific "Final Documents" with its seals and signatures, which meet all applicable codes and standards in effect at the time those "Final Documents", are submitted.

SECTION 3.12 STANDARD PLANS

Where the University has engaged the A/E to prepare "Standard Designs" and/or "Standard Plans" for structures such as picnic shelters, sheds, bathhouses, single-family residences, cabins and utility buildings for the University to site adapt for use at various locations, the drawings for the Standard Plans shall show:

- Name of the University, i.e.
- Title of the Standard Structure for which the design was developed,
- Name of the A/E, and
- Seal and signature of the responsible licensed professional.

The Standard Plans shall also show the applicable codes, standards, loadings and design parameters used to develop the design.

Where the A/E has not been engaged to review the site adaptation of the Standard Plans nor review the submittals or construction, the University, and not the A/E, shall be responsible for the proper site adaptation and use of the Standard Plans. The A/E shall, however, be responsible for negligent acts, errors or omissions in the Standard Plans.

When the Work involves the site adaptation of Standard Plans, the cover sheet for the project plans shall list the drawings included in the set of plans and shall differentiate between the Standard Plans and the "site-specific" site development, utility, and foundation drawings prepared by the A/E for that site. These site-specific drawings shall be sealed and signed by the responsible licensed A/E.

SECTION 3.13 REQUIREMENTS FOR A/E SEALS AND SIGNATURES

3.13.1 General: The Seal and Signature of the licensed Professional Engineer, Architect or Certified Landscape Architect on the drawings provides notice to the public the drawings are complete and that the professional has exercised complete direction and control over the work to which the seal or signature is affixed. All plans and specifications for building projects designed for the University must bear the seal and signature of the responsible licensed professional.

Each drawing to be reproduced shall show:

- the name of the A/E,
- the Project Title,
- the Project location,
- the state Project Code,
- the Drawing / Sheet Title,
- the Drawing / Sheet number,
- the seal and signature of the responsible licensed professional,
- and the uniform date of the completed documents
- All plans shall have a North Arrow for orientation. All discipline building plans shall be consistent in orientation insofar as practical.

The Title sheet drawing(s) shall also have:

- the Index of Drawings,
- the Project VUSBC data,
- the Seal and Signature of the A/E Principal-In-Charge of the project,
- and the uniform date of the completed documents.
- (A/E may also require the seal and signature of a principal of its consultants.)

The Specifications Table of Contents shall have:

- the Seal and Signature of the A/E Principal-In-Charge of the project,
- the uniform date of the completed documents, and
- the listing of specification sections included for the project.
- (A/E may also require the seal and signature of a principal of its consultants.)

3.13.2 **“Contract Documents”** submitted to the University for review is expected to be complete documents ready for bidding. All drawings except the cover sheet shall bear the seal of the responsible licensed professional. The Cover Sheet shall show a complete list of the drawings in the set, but a seal and signature are not required at this submission.

3.13.3 **"Final Documents"** are completed documents ready for bidding and include all corrections required by the University review. Each sheet of the drawings reproduced in the bid documents, including the cover sheet, shall bear the seal and signature of the responsible licensed professional and a uniform document date. The original cover sheet without seal and signature shall be reproduced and attached to copies of the other drawings in the set. Each cover sheet print shall

then be sealed, signed and dated with original seals and signatures. These official "Final Documents" shall be distributed to the following:

- University Building Official: Number of sets requested
- Regional State Fire Marshal's Office: 1 Set
- Additional sets: 2 full sized and 3 half sized sets to the University

3.13.4 "**Addendum**" to the Final Documents: The first sheet of each and every addendum issued to bidders shall show the number of pages in the addendum and shall list any attached sketches, drawings or other material included in the addendum. In addition, the first sheet of each and every Addendum shall bear the name of the project, the Project Code number, the date and the seal and signature of the responsible licensed professional. Copies of each addendum with seal and signature shall be distributed to the above recipients in the same fashion as the official "Final Documents".

SECTION 3.14 SUBCONTRACTS

No portion of the A/E professional services shall be subcontracted without prior written consent of the University. Consultants proposed by the A/E during the selection and fee negotiation phases are assumed to be acceptable to the University unless the University notes otherwise during those phases. In the event that the A/E desires to subcontract some part of the Work required by the Contract to a consultant or subcontractor not previously approved, the A/E shall furnish the University names, qualifications and experience of the proposed consultants. The A/E shall, however, remain fully liable and responsible for all Work performed by his consult however, remain fully liable and responsible for all Work performed by his consultants and subcontractors and shall assure that their Work complies with all requirements of the A/E's Contract.

SECTION 3.15 MODIFICATION OF THE A/E CONTRACT (A/E CHANGE ORDERS)

The University may, upon mutual agreement with the A/E, issue written modifications to the scope of services of the Contract using HECO- 11 A/E. Any single change order, or accumulation of change orders, which increases the original A/E Contract Amount by 25% or \$50,000, whichever is greater, must have the approval of the University Contracting Officer.

Once the cumulative total of modifications exceeds 25% of the original contract amount, or \$50,000, whichever is greater, all succeeding additive Change Orders must receive said prior approval. In making any modification, the resulting increase or decrease in cost shall be determined by one of the methods selected by the University in accordance with requirements of the University Procurement Rules and Chapter 6 of this Manual.

SECTION 3.16 PAYMENTS TO THE ARCHITECT/ENGINEER

The A/E shall submit its invoice to the University using the FACILITIES MANAGEMENT PROFESSIONAL SERVICES STANDARD INVOICE form, HECO-12 A/E. The invoice shall itemize a breakdown of the various phases or parts of the Total Contract Amount, the value of the

various parts, the previously invoiced and approved amounts for payment, and the amount of the current invoice.

Failure to use the required form will result in return of the invoice and payment will not be made until the proper completed format is used. Although basic service fees are delineated by fee per task, payments will be made with overall fee percentage completed as a major factor. By submission of a current request for payment of the fee for services rendered, the A/E warrants to the University that (1) the date shown is accurate; (2) the work covered by the invoice has been completed in conformance with the A/E contract, (3) all previous payments received from the University on account of the A/E contract have been applied to discharge (except for allowable retainage) all obligations of the A/E to its sub-consultants incurred in connection with work covered by prior invoices.

The HECO-12A/E format requires the use of Microsoft Excel software. Should the A/E accounting procedures use another spreadsheet, the addition of Excel must be added to its accounting operation. The A/E may request payment for this software package as an additional service to a University A/E contract if it is not a part of the available computerized systems.

Use of the web-based service, GCPay, for all pool-funded projects that include funds provided by the Six-Year Capital Outlay Plan Advisory Committee (i.e., Chapter 1 and other Pooled Projects) is mandatory. At this time, the use of GCPay is optional for other state projects. The monthly fee for using this system is paid by the project General Contractor. Payment requests for General Contractors and A/Es, and all project costs (equipment, testing, moving, move coordination, etc.), shall be accounted for in this system. Training on the use of the system is available from GCPay at www.gcpay.com. Access to and instructions for the use of the GCPay statewide contract are available at the Department of General Services website

Invoices for Work being performed on an hourly rate, not-to-exceed, basis shall show the extended cost amount. The A/E should be aware of the following payment policies:

1. Unless there is a dispute about the compensation due the A/E including, but not limited to, claims by the University against the A/E, then within thirty (30) days after receipt by the University of the A/E's invoice, which shall be considered the invoice receipt date, the University shall pay to the A/E the amount approval less any retainage and less than any prior payments or advances made to A/E. The date on which payment is due shall be referred to as the Payment Date.
2. The University may agree to make progress or partial payments to the A/E during any phases of the Work based on the estimated value of the Work completed by the A/E on that phase. Any such progress payment shall be based on the University's opinion of the value of the Work completed as the date of the invoice. The A/E may invoice the University and, if the University agrees that the submittal for the particular design phase is complete, the University may approve payment of a cumulative amount of not more than 95% of the value of that phase at the time the phase submittal is made to the University. The A/E may invoice the University for the remaining 5% (balance of the value of that phase) when the submittal has been reviewed and approved.

3. Disputes about the compensation due the A/E may include, but are not limited to, the amount due, the value or percentage of the Work completed, defects or deficiencies in the Work, quality of the Work, compliance with the Contract Documents, completion itself, or negligent acts, errors, or omissions on the part of the A/E. In the event of disputes, payment shall be mailed on or before the Payment Date for amounts and Work not in dispute, subject to any setoffs claimed by the University.
4. All prior payments, whether based on estimates or otherwise, may be corrected and adjusted in any payment and shall be corrected and adjusted in the final payment. In the event that any invoice by the A/E contains a defect or impropriety, which would prevent payment by the Payment Date, the University shall notify the A/E in writing of such defect or impropriety within ten (10) days after the invoice receipt date. Any disputed amounts determined by the University to be payable to the A/E shall be due thirty (30) days from the date the dispute is resolved.
5. Interest shall accrue on all amounts owed by the University to the A/E, which remain unpaid seven (7) days following the Payment Date. Said interest shall accrue at the discounted ninety day U.S. Treasury bill rate as established by the Weekly Auction and as reported in the publication entitled *The Wall Street Journal* on the weekday following each such Weekly Auction.

During the period of time when the amounts due to the A/E remain unpaid following the fifteenth day after the Payment Date, the interest accruing shall fluctuate on a weekly basis and shall be that established by the immediately prior Weekly Auction. It shall be the responsibility of the A/E to gather and substantiate the applicable weekly interest rates to the satisfaction of the University and to calculate to the satisfaction of the University the interest due. In no event shall the rate of interest charge exceed the rate of interest established pursuant to §58.1-1812, *Code of Virginia*.

No interest shall accrue when payment is delayed because of a dispute between the University and the A/E as described in subparagraph (4) above, or dispute as to the accuracy of any Request of Payment received. This exception to the accrual of interest shall apply only to that portion of a delayed payment, which is actually the subject of the dispute and shall apply only for the duration of such disagreement. Nor shall interest accrue on retainage, which is withheld to assure faithful performance of the Contract.

No interest penalty shall be paid to any debtor on any payment, or portion thereof, withheld pursuant to the Comptroller's Debt Setoff Program commencing with the date the payment is withheld. If, as a result of an error, a payment or portion thereof is withheld, and it is determined that at the time of setoff no debt was owed to the University, interest shall accrue at the rate determined above on amounts withheld which remain unpaid after seven days following the payment date.

In those cases where payment is made by mailing, the date of mailing of any payment by the U.S. Postal Services is deemed to be the date of payment to the addressee. Where payment is made by electronic transfer of funds, the date of the transfer of funds is deemed to be the date of payment.

The University is entitled to interest on all amounts from the A/E that remain unpaid thirty (30) days after the amount is deemed due, whether as a result of a resolution of a dispute or otherwise. Any such interest shall be calculated by the same method as set forth in this subsection.

SECTION 3.17 PAYMENTS BY ARCHITECT/ENGINEER

The following procedures are established in conformance to the University Procurement Rules. The A/E shall at the time of contract award require every consultant, subcontractor and supplier to provide its Social Security Number (SSN), if a sole proprietor, or its Federal Employer Identification Number (FEIN), if a corporation or partnership.

Except in cases of bona fide disputes, or where the A/E has some other justifiable reason for delaying payment, the A/E shall pay:

1. To each of its Consultants, Subcontractors and Suppliers, not later than seven (7) calendar days after receipt of amounts paid to the A/E by the University, the proportionate share of the total payment, including any interest, received from the University attributable to the Work performed by Consultants and Subcontractors and materials furnished by Suppliers less a retainage of not more than five percent (5%), said retainage being the same money, not additional money, retained by the University from the payment to the A/E.
2. In the case of bona fide disputes or where the A/E has some other justifiable reason to delay payment, not later than seven (7) calendar days after receipt of amounts paid to the A/E by the University, the A/E shall notify the University and the Consultant, Subcontractor or Supplier, in writing, of his intention to withhold all or a part of the Consultant, Subcontractor or Supplier's payment with the reason for nonpayment. The A/E shall make timely payments of those portions of the payment not in dispute.
3. The A/E shall pay interest to the Consultants, Subcontractors or Suppliers on all amounts owed by the A/E that remain unpaid after seven (7) days following receipt by the A/E of payment from the University for work performed by the Consultants, Subcontractors or materials furnished by Suppliers under the contract, except for amounts withheld as allowed in subsection (2) of this Section. Unless otherwise provided under the terms of this contract, interest shall accrue at the rate of one percent per month
4. The A/E's obligation to pay interest to its Consultants, Subcontractors or Suppliers pursuant to subsection (3) of this Section shall not be construed to be an obligation of the University.
5. A contract modification shall not be made for the purpose of providing reimbursement to the A/E for such interest charge. The A/E's invoice shall not include any amount for reimbursement for such interest charge.

SECTION 3.18 AUDIT

The A/E shall provide documentation subject to audit for all invoices requesting payment for services provided on a cost reimbursement or hourly rate basis. Compensation paid to the A/E on these bases is subject to adjustment based on the results of the audit.

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.

SECTION 3.19 CONFLICTS OF INTEREST

The A/E, including any subsidiaries or affiliates or other entities in which the A/E has a pecuniary interest, which design, prepare plans and specifications, or cost estimates for a construction contract is prohibited from providing all or a portion of said construction, or the supplies or equipment used in such construction. (§2.2 - 4374; *Code of Virginia*).

In addition, an entity which provides to the A/E any design services specifying a sole source for materials, supplies or equipment to be used in the construction shall be prohibited from bidding on, or otherwise furnishing such materials, supplies or equipment for the construction. This prohibition does not apply to a vendor who provides catalog information, technical data and such on products, material or equipment to the A/E for the A/E's consideration.

SECTION 3.20 RELEASE OF INFORMATION PERTAINING TO PROJECT DESIGN

Release in any form by the A/E of information pertaining to the estimated construction cost of a project under design to anyone other than authorized University personnel, and other A/E's or Consultants performing design of related University facilities is prohibited.

The A/E shall not give out information concerning a project to anyone other than authorized University personnel, other A/E's performing design of related University facilities without specific approval of the University to release such information.

When the project is ready to be advertised, the A/E may provide the following information to "construction information / plan room" services who serve the construction industry:

- type of project or facility,
- size (area) and number of stories,
- types of materials,
- bidding requirements,
- invitation for bid (IFB document) source, and
- a project cost range (e.g. \$2,000,000 to \$5,000,000).

As documents are issued to prospective bidders, a current list of plan holders should be made available to those who request such information, including the plan room services.

During the bidding period, the A/E shall not respond to requests by prospective bidders to clarify or state the intent of Plans or Specifications unless such requests are in writing. The response must be in the form of an addendum issued to all plan holders. Sources of supply for special equipment may be made available in writing to all bidders/contractors. The A/E should promptly prepare and issue addenda for any necessary corrections or clarifications of the Plans and Specifications.

SECTION 3.21 DEFAULT

In case of the A/E's failure to deliver the reports, documents or services in accordance with the Contract terms and conditions, the University, after due written notice, may procure same from other sources, and the A/E shall be responsible for any resulting additional procurement and administrative costs. This remedy shall be in addition to any other remedies, which the University may have.

SECTION 3.22 TERMINATION OF CONTRACT

The University may terminate the Contract for cause or for convenience after giving thirty (30) days written notice to the A/E. The written notice shall include a statement of reasons for the termination.

3.22.1 Termination for Cause: If the A/E should substantially breach the Contract or fail to perform the services, or any portion thereof, required by the Contract, the University may terminate the Contract for cause by giving written notice as set forth above or may give the A/E a stated period of time within which to remedy its breach of contract. If the A/E shall fail to remedy the breach within the time allotted by the University, the Contract may be terminated by the University at any time thereafter upon written notice, effective immediately upon receipt. The University's forbearance in not terminating the contract shall not constitute a waiver of the University's right to terminate in the future for similar breaches or failures to perform. If the Contract is terminated for cause, the A/E shall be responsible for all damages incurred by the University as a result of the A/E's breach of contract or failure to perform, including but not limited to, all costs and expenses incurred in securing a replacement A/E to fulfill the obligations of the Contract. Any termination by the University for default, if determined by a court of competent jurisdiction not to have been justified as a termination for default, shall be deemed a termination for the convenience of the University.

3.22.2 Termination for Convenience: The University may terminate the Contract in whole or in part for convenience by delivering to A/E a written notice of termination as set forth above, specifying the extent to which performance under the contract is terminated and the effective date of the termination. Upon receipt of such notice, the A/E must stop Work, including but not limited to Work performed by subcontractors and consultants, at such time and to the extent specified in the notice.

If the contract is terminated for convenience, the A/E shall be entitled to those fees earned for Work performed in accordance with the Contract prior to the notice of termination. Thereafter, the A/E shall be entitled to any fees earned for work not terminated, but shall not be entitled to lost profits for the portions of the Contract, which were terminated. The A/E will be compensated for reasonable costs or expenses for delivery to the University of the products of the services for which the A/E has or will receive compensation.

3.22.3 Delivery of Materials: Any termination shall not relieve the A/E of the obligation to deliver to the University all products of the services for which the A/E has been or will be compensated, including, but not limited to, the original drawings and specifications, copies of CADD diskettes or tapes, calculations, and analyses. Unless otherwise agreed to in writing, the A/E shall deliver the materials to the University within thirty (30) days of receipt of the notice of termination. Failure to do so shall result in the withholding of final payment and shall constitute a material or substantial breach of contract.

3.22.4 Compensation Due the A/E: When the A/E is terminated for convenience, the following method shall be utilized in computing amounts due the A/E for services prior to termination:

- If terminated at the completion of a design phase or the bidding phase, the amount due shall be the cumulative total of the fees for the phases completed according to the Contract.
- If terminated prior to completion of a design phase or the bidding phase, the amount due shall be the sum of the previously completed phase fees plus a negotiated amount based on the portion of services provided for the phase not completed.
- If terminated during the construction phase, the total amount earned shall be the sum of the previously completed design and bidding phase fees plus a negotiated amount based on the portion of the construction period services provided through the notice of termination.
- Payment for the Additional Services portion of the fee shall be any portion of those services provided up through the notice of termination.
- Payment for the Reimbursable Expenses shall be based on approved reimbursable expenses incurred up through the notice of termination.

The A/E shall submit invoices for all such amounts in accordance with the normal billing process, but in no event later than 60 days after the last Work is performed. All amounts invoiced are subject to deductions for amounts previously paid or for amounts due the University.

SECTION 3.23 ASSIGNMENT OF CONTRACT

The A/E shall not assign the Contract between the University and the A/E, in whole or in part, without the written consent of the University.

SECTION 3.24 ANTITRUST

By entering into a contract, the A/E conveys, sells, assigns, and transfers to the University all rights, title and interest in and to all causes of the action it may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular goods or services purchased or acquired by the University under said Contract.

SECTION 3.25 ETHICS IN PUBLIC CONTRACTING (§2.2-4367 ET SEQ., CODE OF VIRGINIA)

The A/E shall not offer or receive any kickbacks or inducements from any other offeror, supplier, manufacturer or subcontractor in connection with this project. The A/E shall not confer on any public employee having official responsibility for this project any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

SECTION 3.26 ANTI-DISCRIMINATION

By signing the Contract, the A/E certifies to the University that it, as contractor for the services described in the RFP and the Contract, will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Act of 1975, as amended, where applicable, and the University Procurement Rules which provide that:

In every contract, the provisions in 1 and 2 below apply:

1. During the performance of this contract, the contractor (A/E) agrees as follows:
 - a. The A/E will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the contracting firm. The A/E agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
 - b. The A/E in all solicitation or advertisements for employees placed by or on behalf of the A/E, will state that such contracting firm is an equal opportunity employer.
 - c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this Section.
2. The A/E will include the provisions of the foregoing paragraphs a, b, and c in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

Where applicable, the Virginians with Disabilities Act and the federal Americans with Disabilities Act shall apply to the A/E and all subcontractors.

SECTION 3.27 APPLICABLE LAW AND COURTS

The A/E contract shall be governed in all respects by the laws of the Commonwealth of Virginia and any litigation with respect thereto shall be brought in the courts of the Commonwealth, as provided under Virginia law.

In performing services under the Contract, the A/E shall comply with applicable federal, state, local, and University laws, policies and regulations.

SECTION 3.28 PROHIBITION OF ALCOHOL AND OTHER DRUGS IN THE WORKPLACE

The University seeks to establish and maintain a work environment free from the adverse effects of alcohol and other drugs. The adverse effects of alcohol and other drugs create a serious threat to the safety and welfare of all personnel at the jobsite, to jobsite safety in general, to worker productivity and quality of workmanship, and to the project schedule.

In conformance with the University Procurement Rules, the A/E shall prohibit the following acts by the A/E, its employees, subcontractors, consultants and suppliers while performing services under the terms of the Contract.

1. The unlawful or unauthorized manufacture, distribution, dispensation, possession, or use of marijuana or other drugs (except the possession and use of medically prescribed drugs for legitimate medical purposes) in the workplace or at the construction site;
2. The unlawful or unauthorized manufacture, distribution, dispensation, or use of alcoholic beverages in the workplace or at the construction site during hours of work;
3. The impairment of a person in the workplace, or at the construction site, related to the use of alcohol, marijuana, or other drugs including impairment from prescription drugs.

The A/E shall post a copy of this policy in a conspicuous place at the workplace and assure that all personnel are advised of the policy. A violation of this policy will be recognized as a breach of contract and may result in termination of the Contract.

SECTION 3.29 DESIGN OF SECURITY SYSTEMS

Any bidder/offeror for the installation, service, maintenance, or design of security equipment or any central station alarm condition monitoring service shall be licensed by the Department of Criminal Justice Services pursuant to §9-183, Code of Virginia. An A/E proposing to provide any of these services with its own staff shall be exempt from the DCJS licensing requirement if properly licensed by the APELSLA Board. (§9-1 83.2; Code of Virginia) If the A/E proposes to have the security system designed by a subcontractor/consultant, such entity shall be properly licensed as required by §9-1 83, Code of Virginia.

Any projects designed by the A/E which have such security systems shall include the licensing requirements of §9-1 83, Code of Virginia, in the specifications and the requirement that the

successful bidder shall provide documentation within five (5) calendar days of bid opening that the entity (contractor or subcontractor) performing the security system work possesses the proper license.

SECTION 3.30 USE OF STANDARD FORMS AND FORMATS

The A/E shall incorporate in every construction contract the applicable HECO-7 (General Conditions of the Construction Contract) and HECO-7a (Instructions to Bidders), which may be found in Appendix A of this Manual. These forms shall not be retyped or modified in any way. If changes are required to either, the changes shall be made in the form of "Supplemental General Conditions" or "Supplemental Instructions to Bidders". Such "Supplements" shall be approved by the Vice President of Facilities prior to their incorporation in the construction contract.

The A/E shall use the applicable Capital Outlay Forms, which are included in Appendix B of this Manual. The wording on the forms shall not be modified or altered without the specific written approval of the Vice President of Facilities. Where spaces are provided for insertion of information, the size of the space may be adjusted to accommodate the information being inserted.

The A/E shall use the Standard Formats, which are included in Appendix C, and subsequent Appendices of this Manual for the applications indicated. Formats may be edited to delete portions, which are not applicable to the project, and to insert necessary information; however, the format and the basic wording shall be retained.

SECTION 3.31 REPORTS ON THE PARTICIPATION OF SMALL BUSINESSES AND BUSINESSES OWNED BY WOMEN AND MINORITIES

An Actual Involvement Report is required for professional service contracts. The A/E shall submit a report on the actual dollars paid to small businesses and businesses owned by women and minorities as part of the submission of the final invoice for payment. At a minimum, this report shall include for each firm contracted, the Business Class, the Federal Tax ID number, the total dollars of fee, and the percent of the total estimated contract value.

1. **Periodic Progress Reports/Invoices:** The A/E shall include a report on involvement, if any, of small businesses and businesses owned by women and minorities as a part of their periodic invoice. The report will specify the actual amounts of contracts to date with such businesses, and the actual dollars paid to date with such businesses on this contract. This information shall be provided separately for small businesses, women-owned businesses and minority-owned businesses. The A/E shall provide a copy of this information to the University. Failure to submit the required information will result in invoices being returned without payment.
2. **Final Actual Involvement Report:** The A/E shall submit, prior to completion or at completion of the contract and prior to final payment, a report on the actual dollars paid to small businesses and businesses owned by women and minorities during the performance of this contract. At a minimum, this report shall include for each firm contracted, the Business Class, a comparison of the total actual dollars paid on this contract with the

planned involvement of the firm, the totals for each business class as specified in the proposal, and the actual percent of the total estimated contract value.

CHAPTER 4:

PROCUREMENT PROCEDURES FOR PROFESSIONAL SERVICES

SECTION 4.1 GENERAL POLICY ON PROCURING A/E SERVICES

This Manual sets forth the general parameters for the procurement of professional services. The sections in this chapter provide further definition of the requirements for procurement of professional services at the University. The policy of the University is to contract with a single entity in acquiring the full range of disciplines necessary to provide the services identified for a project. The entity may be an Architectural & Engineering (A/E) firm with in-house capabilities in all disciplines or it may be an Architectural firm or it may be an Engineering firm or a Land Surveying firm or a Landscape Architectural 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 who demonstrates it is best suited for and has the ability to meet the required criteria. In any case, the proposer will be referred to as the A/E and will be required to provide the complete services indicated in the University's A/E Contract with all disciplines coordinated.

The person having overall responsibility for the project management and coordination of disciplines may be a licensed Architect, a certified landscape architect, a Professional Engineer or a licensed Surveyor. 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 certified landscape architect shall be in charge of all major landscape projects and issues but a licensed Land Surveyor shall be in charge of all survey requirements. All professional persons shall be registered and licensed by the Virginia Department of Professional and Occupational Regulation (DPOR) in accordance with requirements of the *Code of Virginia*.

Per this Manual, the Senior Vice President for Administration and Finance is delegated by the Board of Visitors as responsible for the administration and supervision of Mason's capital outlay and construction program. The Senior Vice President for Administration and Finance shall be responsible for assuring that Mason conforms to the policies and procedures in the Manual, for the procurement and administration of professional and nonprofessional service contracts, and for the procurement and administration of construction contracts.

SECTION 4.2 PROCUREMENT OF RELATED CONSULTANTS

The following types of services are typically required for capital projects and for planning, construction and renovation projects:

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

4.2.2 Non-Professional: Cost consultants, interior design services, soil 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 professionals are considered to be “Construction Related” Nonprofessional Services and shall be procured by Mason Facilities using procedures contained in the Commonwealth of Virginia Purchasing Manual for Institutions of Higher Education.

SECTION 4.3 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 this Manual, Mason Design Manual, the Budgeting Instructions, the Building Code, and/or other standards for the specific related requirements.

Architectural or Engineering Planning for or construction of, or acquisition of any capital project shall not commence without an approved HECO-2 (Refer Chapter 14).

SECTION 4.4 ADVERTISEMENTS FOR PROFESSIONAL SERVICES

A VCCO shall assure that the requirements of the University Procurement Rules are met for the procurement of professional services.

4.4.1 Request for Qualifications (RFQ)

If the University Chooses to first solicit a Request for Qualifications before using a request for proposals, the following procedure shall be used:

Public notice of the Request for Qualifications shall be given at least 30 days prior to the date set for receipt of qualifications. When requested and justified by the University Project Manager in writing, the Vice President of Facilities may approve a reduction in the number of days notice required to a number not less than 10 days.

Public notice of any Request for Qualifications shall be given by the following methods:

1. By publication in a daily newspaper of statewide circulation; and
2. By publication of a notice on the On-Line Bids page of eVA, Virginia's electronic procurement website. The URL is <http://www.eva.virginia.gov>
3. Where practicable, by publication in a newspaper of general circulation in the general area of the project and;

The public notice will show the name, address, phone and fax number of the issuing office. Provide in the notice/advertisement the following information as a minimum:

- Name and Address of the University
- Title of the Project
- Scope of Services
- Proposed Design-not-to-Exceed Construction Budget
- A Brief Description of the Project
- Criteria for Evaluation and Selection of the A/E
- Submittal of AE-1 to AE-6, AE Firm Data Forms Required; and
- Last Date for Submitting a Response (i.e., a date which is not less than 21 days from date of advertisement)
- *For Term A/E Contracts*, Provision to Extend the Contract for Four One-Year Options at the Sole Discretion of the University.

4.4.2 REQUESTS FOR PROPOSAL (RFP)

The Request for Proposal (RFP) will be provided to the A/E's short-listed from review of the Request for Qualifications responses, if the RFQ process is used. The RFP will indicate in general terms the nature of the project and the architectural and/or engineering services which are sought, show the factors which will be used in evaluating the responses, incorporate by reference the Manual including the contractual terms and conditions contained therein, and set forth specifically any additional contractual terms and conditions. The RFP will state any unique capabilities or qualifications, which will be demanded 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 will not call for Proposers to furnish estimates of man-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 current AE-1 to AE-6, AE Firm Data Forms (as shown in the CPSM), and other requested information in response to the RFP and include the data and qualifications of any A/Es to be associated with it on the Project. Responses, which do not include the Forms and/or do not include the requested information and data, may be considered as Not Responsive to the RFP.

Proprietary information from respondents will not be disclosed to the public or to the competitors provided such proprietary information is properly identified, as required by the University Procurement Rules, in the RFP response.

All A/E's should also have on file with the University, Forms AE-1 to AE-6, AE Firm Data Forms. URL is <http://forms.dgs.state.va.us/EO51/DGS-viewforms.aps?page=1&BO=BCOM>.

SECTION 4.5 SMALL BUSINESSES AND BUSINESSES OWNED BY WOMEN AND MINORITIES

On proposals for Contracts with a fee, or accumulation of fees, expected to exceed \$100,000, the A/E shall be required to submit with the RFP response, a report of past efforts to utilize the goods and services of such businesses and plans for involvement on the proposed contract. By submitting such information with their proposal, Proposers certify that all information provided is true and accurate. If a Proposer fails to submit all information requested, the purchasing University may require prompt submission of missing information after the receipt of A/E proposals. Failure to provide information required by the RFP will ultimately result in rejection of the proposal as non-responsive.

On RFP's for A/E services, with an anticipated fee of \$100,000 or more, the University should set a minimum of 5 points out of 100 total points for scoring SWAM participation.

The following data is required on each small business, women-owned business and minority-owned business: (1) Ownership, (2) utilization in the most recent twelve months, and (3) planned involvement or services to be performed on the proposed project. (The formats for submission of this data are included at Forms Center website. URL is <http://forms.dgs.virginia.gov>).

On contracts for professional services, which exceed \$100,000 in total gross fees, the A/E is required to submit reports on the involvement of small businesses and businesses owned by women and minorities in the work or in support of the work on this contract.

SECTION 4.6 SWAM PROCUREMENT PLAN (SMALL, WOMEN-OWNED, AND MINORITY-OWNED)

4.6.1 University Plan: In accord with Executive Order 20 (2014), an annual SWAM Procurement Plan that specifies the University's plans and goals for SWAM procurement is required. Department of Minority Business Enterprises (DMBE) certification of SWAM businesses is required.

4.6.2 Audits: In order to assure compliance with certification requirements of SWAM subcontracting plans, the contracting or certifying University or institution shall contractually 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.

SECTION 4.7 PROCEDURES FOR A/E SELECTION

In the event of an emergency, selection may be made without regard to use of these procedures, but a formal request signed by the Vice President of Facilities with approval by the Senior Vice President for Administration and Finance, explaining the circumstances shall be filed in the Planning and Design Project File.

4.7.1 Non Capitol Projects

For all alternatively non-capital University projects with expected fees less than \$10,000, the University Project Manager must:

- Select a firm or professional from a list of firms/professionals which have expressed an interest in doing work for the University, have filed Forms AE-1 to AE-6, AE Firm Data Forms, appear to be qualified to render the required services (this requirement can be met by utilizing the category B qualifications pool maintained by the Division of Engineering and Buildings), and are licensed DSBSD certified micro business, or use an established Term Type Contract of a licensed DSBSD certified micro business, (See Section 4.6 below).
- Conduct a telephone or personal interview with the firm to determine current workload and capability to meet the proposed schedule, and to determine personnel qualifications, expertise and past performance on similar projects.
- Negotiate a fee for services.
- Complete a HECO-2.1a and obtain required approvals. A Purchase Order incorporating this Manual and the Mason Design Manual will be issued.

If agreement cannot be reached with the originally selected licensed DSBSD certified micro business, the University Project Manager shall then contact another licensed DSBSD certified micro business. The process shall be repeated until a fair and reasonable price is reached. If, upon due diligence, it is determined that no micro businesses in this category exist, are willing to participate, or are appropriately qualified, then a DSBSD certified SWAM business (as opposed to a micro business) may be contacted. Due diligence is determined by the Associate Director of Contracts within Facilitates.

For all non-capital University projects with expected fees exceeding \$10,000 but less than \$50,000, the University Project Manager will:

- Select 3 firms or professional from a list of firms/professionals which have expressed an interest in doing work for the University, have filed Forms AE-1 to AE-6, AE Firm Data Forms, appear to be qualified to render the required services (this requirement can be met by utilizing the category B qualifications pool maintained by the Division of Engineering and Buildings), and are licensed DSBSD certified SWAM business (including one micro business), or use an established Term Type Contract of a licensed DSBSD certified SWAM business, (See Section 4.6 below).
- Conduct a telephone or personal interview with the firm to determine current workload and capability to meet the proposed schedule, and to determine personnel qualifications, expertise and past performance on similar projects.
- Make a selection based upon the informal solicitation on a firm with whom to negotiate. If the micro business is capable than preference shall be given to this firm.
- Negotiate a fee for services.
- Complete a HECO-3.1a and obtain required approvals. A Purchase Order incorporating this Manual and the Mason Design Manual will be issued.

If agreement cannot be reached with the originally selected firm, the University Project Manager shall then contact another licensed DSBSD certified SWAM business. The process shall be repeated until a fair and reasonable price is reached. If, upon due diligence, it is determined that no micro businesses in this category exist, are willing to participate, or are appropriately qualified,

then only DSBSD certified small business (as opposed to a micro business) may be contacted. Due diligence is determined by the Associate Director of Contracts within Facilities.

For all non-capital University projects with expected fees exceeding \$50,000 the University Project Manager will use an established Term Type Contract (See Section 4.8 below) or utilize the RFP procedure set forth in in section 4.4 above.

4.7.2 Capital Projects: For all capital projects three committees shall be formed: an A/E Selection Committee, a Steering Committee and a Building Committee. The Roles of these Committees are outlined in Chapter 12. The Selection Committee shall notify Vice President for Facilities of their recommendation for selection of the Architect/Engineer.

The Selection Committee shall:

- Prepare an advertisement requesting qualifications of interested firms submit their statement of qualifications utilizing the AE-1 to AE-6, AE Firm Data Forms.
- Publish the advertisement of the project, at the least, in a daily newspaper, which has statewide circulation, in a newspaper of general circulation in the area of the project and in eVA when the expected procurement exceeds Fifty Thousand Dollars (\$50,000).
- Draft a Request for Proposal (RFP), [for issuance to only short-listed firms] which indicates in general terms the nature of the project and the architectural and/or engineering services which are sought, specifying the factors which will be used in evaluating the response, incorporating by reference the appropriate chapters of the this Manual, including any supplements thereto, and the contractual terms and conditions contained herein, and setting forth specifically any additional contractual terms and conditions not contained herein. The Request for Proposal shall also state any unique capabilities or qualifications, which will be required of the Architect or Engineer. It shall require each respondent to submit an updated Statement of Qualifications, including qualifications of any Architectural or Engineering firm to be associated with it on the Project. It shall also require each respondent to state that it will provide all the architectural and/or engineering services with respect to the project that are set out in this Manual and the RFP. The submission of AE-1 to AE-6, AE Firm Data Forms, is also required at this stage. The RFP may specify the method to be utilized during negotiations in arriving at the fee amount for services; however, it will not call for Offerors to furnish estimates of man-hours, labor rates, or the cost for services with their qualification proposals. If no method is specified, the respondents may propose methods for negotiating the fee amount.
- Recommend the top 3 to 5 firms for interviews. The Vice President of Facilities will approve the panel final short-list.
- The Selection Committee shall interview the top-ranked, short-listed firms (preferably 3-5 firms) who are deemed to be fully qualified, responsible, and suitable on the basis of their initial responses and their response to the detailed RFP. Solicit more detailed information, where applicable, on the above criteria as well as specific information as to the personnel proposed to be assigned to the project and their individual qualifications; the concepts, methods and approaches proposed for the design; and other pertinent information. Evaluate responses of each interviewed firm and rank order as best suited for the project. Proprietary information from respondents shall not be disclosed to the public or to the competitors provided such proprietary information is

appropriately noted in the RFP response. The selection committee will determine, in writing, the top three firms, and rank them in order of preference. The Vice President of Facilities will approve the selection ranking and authorize fee negotiations to begin.

Upon approval of the selection, the selected firm and the non-selected firms shall be notified concurrently.

The University Project Manager shall negotiate with the Architectural/Engineering firm ranked first as to overall suitability and qualifications. Those negotiations should proceed to establish a fee amount for the Scope of the Project. All of this Manual's requirements apply. It is anticipated that the fee amount will not be later increased. At the time of negotiation, a method of increasing the fee amount for additional services must be set forth in the original agreement.

The fee amount shall include all work necessary to provide the required basic services and any other services requested by the University. If the parties cannot reach agreement on a fee amount, the negotiations shall be formally terminated in writing. The University may then proceed to negotiate with the Architectural/Engineering firm ranked second. If not successful, then third, etc. It is understood that at any time during the negotiations, they may be terminated and the project re-advertised. When agreement is reached, the terms of agreement shall be recorded in a written MOU and incorporated in the HECO-3 contract form, which shall be signed by the University Contracting Officer and the A/E.

Once the fee negotiations are complete, the University shall "Post" a Notice of Intent to Award in eVA.

SECTION 4.8 TERM A/E CONTRACTS

The following policy governs the use of Term Contracts.

4.8.1 Applicability: Term Contract Procurement of A/E services may be used for engaging an A/E to provide investigations, cost estimates, designs and related services for specific projects consisting of multiple related work orders over a specified period of time.

In the case of a Term Contract, the University will procure the services of an A/E for a project defined by the University to include several work orders of a particular type, although not all work services can be identified at the outset of the project. At least one work order will be identified for the A/E's services at the time of award. Use of the A/E's services on future service orders is at the discretion of the University.

As used herein, the term "project" shall refer to a related group of like kind architectural, design or engineering services needed by the University. The group of services can be related by geographical area within the University, by architectural or engineering specialty, or by unique architectural or engineering needs, as determined by the University.

The ordinary Term Contract will be for A/E Services for a term of one year or services totaling \$1,000,000, whichever comes first with the option to renew four additional one-year terms. The limit for each project order is \$200,000.

It is the intention of the University to spread the amount of A/E Services out to as many firms as possible while still maintaining the most economically advantageous strategy possible. Accordingly, the Vice President of Facilities may determine that it is advantageous to procure Term contracts at service levels ranging from \$100,000 to \$1,000,000, none to exceed the one-year term total contract amount. Contracts are renewable at the University's discretion, up to four additional one year terms. No a/e firm may at any one time have in effect more than one (1) Term Contract with the University without approval from the Vice President of Facilities.

4.8.2 Advertisement/RFP: The advertisement/RFP public posting and announcement on the On-Line Bids page of eVA (<http://www.eva.virginia.gov>) and post/publish the notice in a newspaper of general circulation statewide and/or in the general area of the project when the expected procurement exceeds Fifty Thousand Dollars (\$50,000) shall include a description of the nature of the projects, potential service orders to be offered and the services to be required for the project. Any other factors pertinent to the evaluation and selection process shall also be described. Multiple A/E Term contracts may be awarded to separate A/E firms from a single A/E Term contract RFP advertisement/selection process with the approval by the Vice President of Facilities that additional services are needed and a plan for distributing multiple service orders exists.

The RFP and contract documents should include wording similar to the following provisions: "The University reserves the right, at its sole discretion to issue RFPs for similar work and other projects as the need may occur. The University also reserves the right to issue service orders to other Term Contract Firms, based on its sole discretion, in consideration of its evaluation of each Firm's qualifications, expertise, capabilities performance records, current workload, location or distance to the project, and other factors as may be pertinent to the particular project." The University must identify at least one work order for which the A/E's services will be used. The RFP should also indicate that although the potential exists for multiple future service orders, the University does not represent or guarantee that the Term Contractor will receive any future additional service orders.

4.8.3 Selection, Negotiation and Award: The selection process described in section 4.8.1 above shall be followed except if more than one firm is to be selected from one advertisement/selection process then two additional firms shall be interviewed for each additional selection.

The University and the selected firm(s) shall first negotiate and agree upon the labor rates and the terms and conditions, which shall apply to work to be performed, based on the First Service Order. The fee and rate agreement must be reflected in the Memorandum of Understanding. If the negotiations are successful, the University will award a Contract to the selected firm. If negotiations are not successful, the negotiations shall be formally terminated and the project offered to the next firm for negotiation and possible Award of the Contract.

The University shall have 120 days from the RFP closing date to complete selection, award the Term Contract and issue the first service order. The Term Contract shall not be awarded unless accompanied by the first service order.

The University may offer additional “service orders” of a similar nature to the firm in accordance with the Contract and, upon successful negotiation of a fee for the services, order the services pursuant to the terms provided in the firm’s Contract.

The fee for the services on each “service order” shall be negotiated individually considering the Scope of Services required, the man-hours required for each level/discipline and the maximum labor rates agreed upon in the Memorandum of Understanding (MOU). Should the University and the firm not agree on a fee for an additional “service order,” negotiations shall be formally terminated. The “service order” may then be offered to and negotiated with another firm with a Term A/E Contract for similar services or the A/E services for the service may be procured separately in accordance with the procedures prescribed in this Manual.

4.8.4 Project Orders: Individual service orders or requests for services will be issued in the form of “project orders.” Fee proposals by the firm will be negotiated and awarded on a “fixed fee” amount for each service order. However, service orders may be used to secure services for investigations or similar work where an estimate of time required cannot reasonably be determined. In such cases, an exception is allowable to use the scheduled man-hour rates with a Not to Exceed amount as the basis for the “service order” fee. A form HECO-3.1a shall be completed for each service order. The HECO-3.1a shall show the “cumulative total to date” of service orders awarded to the A/E under the Contract. Contractual limit on each project order shall be \$200,000.

SECTION 4.9 TERM PROJECT MANAGEMENT CONTRACTS

The University may also award contracts to Term Firms for Construction Administration/Project Administration related services. Such services shall be procured using non-professional services procedures as provided in this Manual. These services may include (but shall not be limited to) claim analysis, constructability reviews, peer reviews, cost estimates and construction management/administration services.

SECTION 4.10 CONTRACT FORMS TO BE USED

The Standard Forms of Contract for Architect and Engineer Services, HECO-3, 3.1, 3.1a, and 3.2, shall be used for A/E Term Contracts. These forms are listed in Appendix B and can be found on the websites mentioned in that Appendix. Other than filling in the appropriate data and information, these Contract forms shall not be modified without the recommendation of the VCCO and the approval of the Vice President of Facilities.

Any details of the fee negotiations, the scope of work, the A/E schedule, and other items agreed to in the negotiations shall be detailed in the Memorandum of Understanding (MOU).

SECTION 4.11 GENERAL TERMS AND CONDITIONS FOR PROFESSIONAL SERVICES

General Terms and Conditions for Professional Services Contracts are contained in Chapter 3 of this Manual. They shall be made a part of all contracts for professional services and shall not be modified without approval of the VCCO and the Vice President of Facilities.

CHAPTER 5:

BASIC SERVICES AND RESPONSIBILITIES

SECTION 5.1 RESPONSIBILITIES OF THE UNIVERSITY TO THE A/E

The following information or data shall be provided by the University, if needed, in the planning of the project. The information so furnished shall not relieve the Architect/Engineer of responsibility for making the studies and checks necessary for the proper planning of the project, which the University undertakes. In the event the University is unable to furnish this information, the University shall procure the information in accordance with published procurement procedures. In the event the University desires the information to be furnished by the Architect/Engineer, the requirement to provide such information shall be included in the Request for Proposal for Architectural/Engineering Services.

1. Provide the Architect/Engineer a 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 Board of Visitors.
2. Provide a budget cost, not to exceed the construction cost on the approved HECO-2, for the project to the A/E, which will be the “Design to” cost.
3. Set a 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 (BCOM), the State Fire Marshal, the State Art and Architectural Review Board (AARB), The Department of Historic Resources, the University Board of Visitors (BOV), the Mason Architectural & Engineering 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.
4. Provide available “record” drawings.
5. 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.
6. Determine any specific requirements of political subdivisions appropriate and consistent with State policy, opinions of the Attorney General, and existing statutes. (Total request and/or requirements of a political subdivision, preferably over the signature of the chief

administrative officer, are to be obtained at the inception of the project and submitted no later than the project criteria and schematics in order that any questions might be reconciled very early in the planning process.)

7. 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 more than 2 reviews by the appropriate authority having jurisdiction.
8. 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, State Fire Marshal, the Code Official (BCOM), State Art and Architectural Review Board (AARB), Department of Historic Resources, Department of Health, State Water Control Board, Division of Soil and Water Conservation, and State Air Pollution Control Board as of the date of this Manual.

SECTION 5.2 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 A/E's submittal will be reviewed by the Code Official for compliance with VUSBC. The University Project Manager will review per compliance with this Manual's project requirements and criteria. Errors and deficiencies shall be corrected by the A/E at no additional cost to the University.

If the A/E or the University determines that a meeting with the Code Official 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 University Project Manager shall schedule it.

SECTION 5.3 BASIC SERVICES OF THE A/E

5.3.1 General: The Basic Services normally provided by the A/E consist of the phases described below and are more fully described in Chapter 8 (Project Design Standards and Requirements), and Chapter 9 (Construction Procurement and Administration). The A/E shall adhere to the design policies outlined in the Mason Design Manual for Project Design. If the project is subject to BCOM review, it is the responsibility of the A/E to ensure compliance with the CPSM as well as this manual and the Mason Design Manual. The University Project Manager shall be made aware of any conflicting requirements. He or she will make the determination on how to proceed.

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 increasing 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.

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 minor changes in the scope of work be authorized, appropriate modifications to the A/E contract will be negotiated.

5.3.2 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 in the project.

5.3.3 Reimbursable Expenses: (unless negotiated otherwise) The costs of electronic transmissions, all mailings, fax transmissions, and long distance phone calls are considered part of the A/E's overhead expenses and are not normally reimbursable.

The University shall reimburse the A/E for the actual costs (e.g. no mark-ups) of blueprinting or other reproductions of drawings, specifications, and other documents required for submittals. Compensation for travel and living expenses associated with the performance of the project scope of work will be included in the negotiated fee.

Reimbursement for travel and living expenses of technical personnel while traveling in the discharge of duties in connection with extra services may be authorized by the University at the travel rates and per diem rates for lodging and subsistence shown in the University Lodging, Meals and Incidentals Rate Table. The A/E must provide receipts and will be reimbursed for actual costs.

5.3.4 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. Also, provide a proposed meeting agenda prior to each meeting. Project meetings include pre-design, design, procurement, preconstruction and construction meetings discussed in Chapters 5, 8 and 9 of this Manual.

5.3.5 **Project Initiation Phase:** (study/scope/schematic)

Consult with the University to clarify and define the University's requirements for the Project; review available data; establish the scope of the project and the services required from the A/E; review the "design to" cost; establish the quality of materials, aesthetics desired and other factors pertinent to the project. Some or all of this information may be contained in the Capital Project Request.

Identify and analyze requirements of governmental authorities having jurisdiction to approve the design of the Project and participate in consultations with such authorities.

Provide analyses of the University's needs, planning surveys, site evaluations and comparative studies of prospective sites and solutions. Unless provided by the University, provide boundary and topographic surveys of the site in the form of topographic maps or maps of areas necessary for the proper location of buildings as to scale and, where necessary, showing bench marks, grades, lines of streets, pavements, utilities, property lines, rights-of-way, restrictions, easements, archaeological features, other improvements and trees.

Provide a general economic analysis of the University's requirements applicable to various alternatives.

Provide location of existing buildings and where the interior arrangement construction or floor level of existing building affects the studies, or plans for the project, the necessary information as to interior arrangement.

The necessary roof scans, structural, chemical, and mechanical investigations, tests and reports, shall be included in the A/E contract. The cost of the testing, analysis and design recommendations can also be included in the A/E contract. The geotechnical services contract shall include testing, borings or load tests for soil bearing capacity, analysis of test results and design recommendations based on preliminary design parameters, and is normally procured directly by the University. The results of the geotechnical report will be provided to the A/E. It should be considered as information; it is the responsibility of the A/E to provide a complete design based upon the report. The University reserves the right to negotiate this scope of services into the A/E contract if not directly procuring. The geotechnical services (if applicable) and preliminary design parameters provided by the Architect/Engineer for the University shall be considered part of the Architectural/Engineering service contract.

5.3.6 Schematic Design Phase: (20% submission) After written authorization to proceed with the Schematic Design Phase, the A/E shall:

- Prepare and submit schematic design documents.
- Prepare a detailed cost estimate.
- Prepare submittal and make presentation to Mason's Architectural & Engineer Review Committee; the Board of Visitors; and AARB.

- Prepare and submit to the University written responses to all reviewing Agencies' comments and provide the technical data for the University necessary to substantiate any waiver request required.

5.3.7 Preliminary Design Phase: (35% submission) After written authorization to proceed with the Preliminary Design Phase, A/E shall:

- Prepare and submit preliminary design documents.
- Prepare a detailed cost estimate.
- Prepare submittal and make presentation to Mason's Architectural & Engineering Review Committee and AARB (if necessary).
- Prepare and submit to the University written responses to all reviewing Agencies' comments and provide the technical data for the University necessary to substantiate any waiver request required.

5.3.8 Contract Documents Phase: (100% submission) After written authorization to proceed with the bidding documents, A/E shall:

- On the basis of the accepted Preliminary Design documents and the review comments, prepare final drawings for incorporation in the Contract Documents to show the complete scope, extent and character of the work to be furnished and performed by Contractor(s) and Specifications (which will be prepared in conformance with the format of the Construction Specifications Institute).
- Prepare and submit completed working drawings/contract documents for approval.
- Prepare a detailed cost estimate and submit to the University with Contract Document submittal. Provide recommendation on number of days estimated for completion of the construction of the project.
- Make revisions to plans and specifications necessary to incorporate review comments and submit a written response to all reviewing Agencies' comments prior to bidding the project.

5.3.9 Bidding Phase: After written authorization to proceed with the Bidding Phase, A/E shall:

- Where applicable, maintain a record of prospective bidders to whom Bidding Documents have been issued, attend pre-bid conferences, and receive and process deposits for Bidding Documents.
- Issue addenda as appropriate.

5.3.10 Construction Phase: After award of the construction contract the A/E shall provide the following services. The following services are also described in Chapter 9 of this Manual and in Section 15 (a) - (h) of the General Conditions of the Construction Contract, Form HECO-7. They shall be provided by the A/E of record as part of Basic Services and shall not be delegated to others unless such delegation has been specifically approved in writing by the University:

5.3.10.1 Submittal Review and Construction Administration Services required to be performed by the A/E:

- **Consultations:** A/E shall consult with, 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) can be issued through the A/E, who has authority to act on behalf of the University to the extent provided in the General Conditions except as otherwise provided in writing.
- **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 Change Orders.
- **Field and Change Orders:** Issue Field Orders and assist the University in preparing and issuing Change Orders. Where the University has modified the A/E Contract to reduce the A/E's Construction Phase services, the following shall apply:
 - 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 reviewed and certified by the A/E before a Field Order or Change Order is issued.
 - 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, plumbing, or electrical system integrity, may be handled by the University.
 - **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 on a timely basis. 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.
 - **Equals:** The A/E shall evaluate and determine the acceptability of any substitutes equal materials or equipment proposed by Contractor.
 - **Structural and Special Inspections:** The A/E shall provide the services described in section 8.15 of 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 Project Inspector. This is not meant to take the place of the 3rd party testing required by the HECO6 A&B.
 - **Contractor Claims:** The A/E shall act as initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the work hereunder and shall 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.

5.3.10.2 Construction Visits, Inspection and Closeout Services

- **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 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.

- **Inspections of Work in progress by the A/E:** During his or her periodic visits to the Site to observe the work in progress, the A/E (accompanied by the Project Inspector) shall, 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). 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 Mason Project Inspector's Daily Report. The A/E shall document field observations in writing.

- **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, testing 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. This information shall be documented in writing.

- **Defective Work.:** During its site visits and based on its observation during such visits, the A/E may disapprove or reject Contractor(s) 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 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 will document this information in writing.

- **Contractor Applications for Payment (HECO-12 Schedule of Values):** 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.

- **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 sections 9.17 through 9.19 and advise the University in writing of same. 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. This inspection will be performed by Code Official and will be documented in writing.
- **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 Code Official and the University 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. Written notice shall be provided to the University and Contractor of the results of such inspections as described in Chapter 9.
- **Contractors 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 and transfer data to the Record drawings. The A/E shall prepare and submit Record Drawings to the University Project Manager for archiving. (See Appendix Q- Record Document Standards & Formatting)
- **Project Closeout:** A/E shall provide project closeout services as outlined in section 9.21
- **Other:** The A/E shall perform all duties described in or reasonably implied by this Manual, the Construction Contract, including the Plans and Specifications and the General Conditions of the Construction Contract.

SECTION 5.4 EXTRA SERVICES

The following, among others, are considered to be Extra Services to the Basic Services provided by the A/E. 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 at the time of contract negotiation and negotiate the fees for such services at the same time as the basic services fee negotiation. Once the contract is signed, any additional or extra services required shall be agreed upon and added to the A/E Contract by Change Order.

Where, after approval of any stage of the design, it is found that substantial change in the overall scheme is advisable, and such change is ordered by the University, the fixed fee amount for the additional work shall be agreed upon and added to the A/E contract.

Where, delinquency, insolvency or necessary change of the Contractor requires extraordinary demands on the time of the Architect or Engineer.

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.

The University's requested changes to drawings and specifications after work is under construction, which might result in a change order.

Providing special or continuous on-site services for an approved period when required by unforeseen site conditions.

Preparation of the environmental impact report.

Provide special commissioning services for HVAC equipment design, submittal approval, point by point testing requirements, component testing, and systems testing.

If the A/E is required to participate in the Value Engineering Study as described in Chapter 8, the A/E's participation fee should be included as an additional service in the project fee negotiation.

SECTION 5.5 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, if necessary, a fee negotiated for the interior design services.

SECTION 5.6 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.

SECTION 5.7 A/E PERFORMANCE EVALUATION

Upon completion of the construction contract, an evaluation (HECO-14a) may be completed by the University with emphasis on quality and constructability of the design, timeliness and response with respect to shop drawing review, clarification of drawings/specifications intent and resolution of construction problems and cooperation.

The completed HECO-8a and HECO-14a evaluations (along with attachments and A/E responses, if any) are considered Confidential information equivalent to the A/E's 'personnel records' for the A/E performance of work for the University and shall be subject to the same protections. 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, HECO-14b, *Opinion of Contractor's Performance*, using the current edition posted on the Forms Center. An Evaluation may be completed by the University 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 HECO-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:

FEES AND PAYMENTS FOR A/E SERVICES

SECTION 6.1 ARCHITECTURAL AND ENGINEERING FEES

The University's policy is to compensate Architects and Engineers in a fair and reasonable manner for providing the high quality services required by this Manual. Compensation or fees should be negotiated based on the Scope of Work for the particular project, the estimated effort (man-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 calculating fee as a percentage of construction cost should only be done as a secondary check.. This chapter provides guidance for determining fair and reasonable fees by using a detailed fee proposal describing the services to be provided and showing the estimated man-hours by discipline and skill level and the corresponding hourly rates for each.

SECTION 6.2 A/E FEE PROPOSAL STANDARDS AND GUIDES

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 and the ranking of the A/E's is based on other factors such as recent experience on a similar project, A/E workload and perceived ability to meet the schedule, or 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.

6.2.1 Plans and Specifications: The A/E should be aware that there are differences between private work and work for work as described in Chapter 5. Particularly, the A/E must conform to Manual requirements for describing and specifying the Work to be performed as part of the construction contract. The A/E must also conform to the requirements of the University Purchasing as clarified and expanded upon in the Manual.

6.2.2 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:

6.2.2.1 A/E Project Technical Personnel

Technical personnel shall be construed to mean the A/E's project manager /Coordinator, architects (licensed), engineers (licensed) by discipline, designers including non-licensed architects and engineers, project inspector, surveyor, survey team, interior designer, landscape architect,

draftsman, estimator, specifications writer, typist / clerical staff, field inspectors, and CADD computer operators.

“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. See the descriptions of Personnel Classifications below:

6.2.2.2 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 overhead and profit. Overhead markup consists of direct technical salary overhead (or “fringes”) such as payroll taxes and insurances, vacation, holidays, 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 agreed to shall be the “marked – up” rates including all overhead and profit.

Generally review, negotiations, supervision, etc. 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 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 “norm” 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 Memorandum of Understanding (MOU), which is appended to 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 man-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 should be comparable to those of similarly experienced and qualified personnel in those classifications in Virginia firms providing similar services.

6.2.2.3 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 architect or engineer who has overall responsibility for the planning, design, coordination of all disciplines, quality assurance, and deliver 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 registered and 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 a 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.

- **CADD / BIM/ Draftsperson**

The skills required of this level position include tracing work already drawn to scale; 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), Draftsman, or both may be required to use CADD/BIM or have CADD/BIM 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, calculation, 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 certified 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 Services 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 5.5 of this Manual.

- **Specifications/Report Writer**

A professional level architect or engineer 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.

6.2.3 Additional Services: Chapter 5 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 the 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 additional or extra services required will be a change in scope and shall be authorized in writing by Change Order using Form HECO-11a/e. 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 for a period of three (3) years following conclusion of the Contract.

6.2.4 Computer Services: Computer use is commonplace in the A/E profession for analyses, designs, drafting (plans), word processing (specifications) and estimating. As such, the computer is a “tool” used by the technical person to produce his/her product. These “tools” are purchased and depreciated or leased and are, therefore, considered a part of the A/E’s office overhead expense included in its overhead. Only specialized computer services required by the University, which must be acquired from an outside vendor, are considered for payment in fee negotiations.

Computerized analyses and designs for building systems, word processing, and data processing utilized by the A/E to provide Basic Services are normally considered by the University to be a part of the project design effort and are not an additional service required by the University. Specialized outside computer analysis services required by the University for the project may be treated as an additional service. The compensation for such specialized computer analyses may be negotiated lump sum or a reimbursable expense. The allowable reimbursable expense method will normally be the actual charge made by an outside computer service organization plus 10% mark-up for A/E overhead and profit.

6.2.5 Special Consultants: Consultants engaged by the A/E to augment the A/E’s staff to provide the required A/E services are considered by the University to be part of the A/E’s staffing for the project.

The University may require the use of a special consultant with a particular expertise related to some feature of the project. The Architect / Engineer shall engage such a required consultant, subject to the University's approval, and incorporate such work in the services for the project. The compensation for such consultant shall be negotiated and set out in the MOU and included in the total A/E fee. The A/E will normally be allowed to mark up the University approved direct cost to the A/E of such special consultant by 10% for the A/E's overhead and profit.

6.2.6 Reimbursable Expenses: The costs of telegrams, FAX transmissions, long distance phone calls, postage and similar expense incurred by the A/E in the performance of the Contract are considered by the University to be a part of the A/E's overhead expenses and are not normally reimbursable.

The University shall reimburse the Architect/Engineer 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 8 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.

Where the A/E is engaged by the University to secure the reproduction of the Bid Documents, the A/E may be reimbursed for the actual direct cost of reproduction plus a markup of 10% to account for the A/E's overhead and handling cost in securing this service for the University. The cost of reproduction and sending addenda to address University review comments, clarify or supplement the Bid Document and/or correct errors or omissions are considered to be an expense of the A/E and shall not be included in the allowable reimbursement costs.

The University shall reimburse the Architect / Engineer 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 should 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.

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. The University shall reimburse the A/E for actual expenses based on the **per diem allowance for state travel**.

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 Regulations. Records supporting such requests for reimbursement shall be subject to audit by the University.

Each item / account planned for reimbursement should have a "budget" amount established and included in the A/E 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

and downward by Change Order, as appropriate, based on the actual amounts approved for reimbursement.

6.2.7 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.

SECTION 6.3 A/E FEE PROPOSAL WORKSHEET

The Architect/Engineer shall prepare a detailed fee proposal using the Form HECO-2.3. The hourly rates and the man-hours proposed should relate to the rates and times required for a qualified and competent person in that skill level to perform the work. Supplement information shall be attached as necessary to support the proposed drawings, hourly rates and man-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 should be the average for those persons in that skill level/discipline/classification.
- Indicate the drawing size and proposed / estimated number of sheets for each discipline. Attach a proposed or estimated list of drawings.
- 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 hours to produce a CADD basic plan for each level, wing or area to use as a base sheet for the various disciplines. The man-hours to produce the individual sheets for each discipline, whether manually or CADD 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 on the 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.
- 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 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

Note: It is generally perceived that a person being compensated at a rate higher than the norm would be more efficient / productive /take less man-hours than a person being compensated at a rate below the normal data from the Contractor's "As Built" set of drawings and specs to the "Record Copy" reproducible. This work also includes the Professional/Technical Level effort to compare the "As Built" set 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, & 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 man-hours and marked up hourly rates similar to the Basic Services Fee Proposal.

SECTION 6.4 PROPORTIONING OF THE A/E FEE AND PAYMENTS

6.4.1 Phases of Work: Payments to the Architect or Engineer for Design Phase and Construction Phase Services shall be based on the negotiated fee amount as proportioned for each phase of the project. 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 should 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 phases services
- Construction phase services include:
 - Shop drawing / submittal reviews and admin.
 - Site visits, inspections and admin.
 - 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 Memorandum of Understanding.

Where a detailed breakdown of the A/E fee is not provided in the HECO-2.3 Fee Proposal Worksheet used for negotiation, the total negotiated A/E fee (excluding additional services and reimbursable) 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 the 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:

6.4.2 Design Phase Services: When the Design phase services totals 75% of the fee, that design effort is further broken down as follows:

6.4.2.1 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 schematic are approved, and the A/E is authorized to prepare Preliminaries.

6.4.2.2 Preliminary Plans and Specifications: Value of the Preliminary Phase is 15% 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 on the Form HECO-5, and the A/E is authorized to prepare Working Drawings.

6.4.2.3 Working Drawings and Specifications: Value of the Working Drawings Phase is 65% 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 Form HECO-6.

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. See Section 3.16 of this Manual.

6.4.3 Construction Phase Services

6.4.3.1 **Bidding Phase:** Value of this phase is 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 would also be payable.

6.4.3.2 **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.

6.4.3.3 **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.

6.4.4 **Payments to the A/E:** Payments to the A/E shall conform to the requirements in Section 3.16 of the Manual.

6.4.5 **Payments by the A/E:** Payments by the A/E to its consultants, subcontractors and suppliers shall conform to the requirements in Section 3.17 of the Manual.

SECTION 6.5 DETERMINING CHARGES FOR CHANGES IN THE SCOPE OF WORK

6.5.1 **Changes to the Scope of Services:** The University shall notify the A/E in writing when a change in scope or "extra services" are 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-11a/e) issued before the extra work is performed (i.e., 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 Memorandum of Understanding, 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 Memorandum of Understanding. 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.

Many of the revisions or requirements included in a Revision to the Manual are made to reflect changes in the Code of Virginia, University Procurement Rules or other requirements, which must have immediate compliance.

Therefore, a revision to the 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 support clearly 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 his part, the A/E shall, within 60 days of the distribution date of the revision, provide 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.

A/E's 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.

6.5.2 Hourly Rates for Changes in Work: The University and the A/E shall at the time of fee negotiations establish and record in the Memorandum of Understanding 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.

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.

6.5.3 Overtime for Changes in Work: No overtime requiring rates higher than regular rates shall be considered for payment for additional services. Consideration of the time for approved personnel when traveling in connection with the project (when such travel is required by the Contract and authorized in writing by the University) shall be construed to be time engaged on the project up to the completion of an 8-hour workday.

6.5.4 Invoices for Changes in Work: Invoices or statements of expenses incurred by the A/E for reimbursable and for work authorized to be performed on an hourly rate or unit cost basis shall be rendered 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 disbursements and job records shall be subject to audit by the University 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.

6.5.5 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 for a period of three (3) years following conclusion of the Contract. Also, any authorization for payment of reimbursable expenses shall be subject to audit by the University for a period of three (3) years following conclusion of the Contract.

SECTION 6.6 CHANGES TO A/E CONTRACT

Changes in the Scope of Work and/or Cost of the A/E Contract (HECO-3 and HECO-3.2) will be documented through the execution of a HECO- 11 a/e, A/E Contract Change Order. Any A/E contract change order, which increases the original contract amount by more than 25 percent of the project cost or \$50,000, whichever is greater, must have the prior approval of the Vice President of Facilities or his designee. The first Change Order, which causes the cumulative total of Change Orders to exceed \$50,000 or 25 percent of the original project cost, whichever is greater, and all subsequent A/E Change Orders, which increase the Contract Amount, must have the prior approval of the University Contracting Officer.

CHAPTER 7: ENGINEERING AND TECHNICAL CRITERIA

SECTION 7.1 GENERAL

This section contains standards and requirements that clarify the applications of Virginia Uniform Statewide Building Code (VUSBC), and mandatory University standards and technical requirements as they pertain to buildings on State property.

The University has prepared a set of design and construction guidelines (Mason Design Manual) which are available at this website facilities.gmu.edu.

Chapter 7 clarifies and supplements these guidelines to meet energy, performance, maintenance, safety, and accessibility standards for public buildings. The Architect/Engineer must design to meet the standards and requirements stated in this chapter as well as the design and construction guidelines.

SECTION 7.2 BUILDING CODES

7.2.1 Code Administration: Although the University has delegated authority to appoint a Mason Building Official, it has elected to use BCOM as the building code official for all capital projects.

BCOM shall perform fire safety reviews for all projects involving new construction, additions, or renovation that involves a change of use projects involving new construction, additions, or renovation that involves a change in use of a facility. The Associate Director for Code Compliance shall perform fire safety reviews for other renovations.

7.2.2 Review Procedures: BCOM reviews documents for compliance with the Virginia Uniform Statewide Building Code; and Mason reviews documents for compliance with the Mason Design Manual on all capital projects. Mason will perform both code and Mason Design Manual compliance on some non-capitol project. The code official will be noted before executing a contract for design. Such review does not relieve design consultants from responsibility for designing in accord with these standards and Federal Law.

The following codes and regulations apply to projects on State property:

- Virginia Uniform Statewide Building Code, Volume I (except Standards for the Disabled), latest edition, including the referenced model codes and standards adopted.
- Americans with Disabilities Act Accessibility Standards (ADAAG), published September 15, 2010 (excluding the Architectural Barriers Act [ABA] Scoping Requirements) and other standards promulgated by the U. S. Dept. of Justice Under ADA-90 and the Department of General Services under the provisions of the Code of Virginia, Sections 2.1-5 14 thru 2.1-521. Standards of VUSBC Chapter 11 and IPC Section 405 do not apply to University facilities on State property. In addition, Non-Discrimination Under State Grants and Programs promulgated by the Rights of Virginians with Disabilities, effective October 1, 1990, implement §51.5-40, Code of Virginia.

- Virginia Uniform Statewide Building Code, Volume II including the referenced model codes and standards adopted.
- Virginia Public Building Safety Regulations for pre-1972 buildings.
- Industrialized Building and Mobile Home Safety Regulations
- Liquefied Petroleum Gas Regulations
- Virginia Statewide Fire Prevention Code, including the referenced model codes and standards adopted
- Certification of Tradesmen Standards
- Dept. of Conservation and Recreation - Erosion and Sediment Control Regulations (VR 625-02-00)
- Dept. of Conservation and Recreation - Stormwater Management Regulations (VR 2 15-02-00)
- Applicable Department of Health Regulations
- Applicable Dept. of Environmental Quality, Water Division, Regulations
- The Federal Fair Housing Act

The requirements of the Life Safety Code, NFPA 101, apply only to the Facilities accredited by the Joint Commission on Accreditation of Health Organizations (JCAHO) and accepting federal Medicare and Medicaid funds. In case of conflict, the most stringent requirements apply. Should there be a conflict between VUSBC that critically affects accreditation by JACHO this will be resolved with the Mason Facilities.

Certain projects may be required to comply with other codes or regulations, such as federal or special state regulations. Those codes may take precedence over the VUSBC, and the Accessibility and Energy Conservation Standards. All such codes shall be clearly stated in the Preplanning Documents and displayed on title sheets of preliminaries and working drawings. The mixing of code requirements between two editions of the code is not allowed. Code requirements in one section are often dependent upon conformance with requirements in other sections, therefore are not allowed without written authorization from the Code Official.

7.2.3 Code Implementation: 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 Department of Housing and Community Development posts notice/announces the effective dates of the VUSBC editions as well as the dates of referenced standards and amendments.

7.2.4 New Work: The applicable code shall be the VUSBC edition in effect at the time outstanding issues have been resolved, preliminary drawings are approved (HEC0-5), and authorization is given to proceed with development of the working drawings.

Typically, the Code Official shall determine the date at which the new building code applies, if preliminary drawings are approved during the four (4) months prior to the effective date of a new edition of the VUSBC, the applicable code shall be the one in effect at initiation of design.

7.2.5 Reactivated Projects: Prior to reactivating a project that has been inactive for a period during which the effective code has changed, the Code Official shall determine which code applies. The plans and specifications shall be revised as necessary to comply.

7.2.6 Modifications or Variances of 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 the University Project Manager, who will in turn, present the modification to the Code Official.

7.2.7 Use Group Classifications: The following guidance shall be used for buildings and structures at the University:

- Buildings for business training and vocational training shall be classified and designed for the Use Group corresponding to the training taught.
- Academic buildings having classroom-type education functions (including associated professor /teacher office spaces) where large groups of students must change classes on a schedule shall include the following:
 - (a) Provide a Fire Protection Signaling 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
- Buildings housing research, testing and science laboratories shall include a Fire Protective Signaling System.
- Dormitories, Fraternity and Sorority Houses, and similar dwelling units with sleeping accommodations shall provide an automatic fire suppression system whether or not one is required by WSBC.
- Grounds buildings with other specific uses, doubtful uses, and mixed occupancy uses shall be classified in accordance with appropriate sections of Chapter 3 of the VUSBC.

7.2.8 Residences for Rent: Cabins, beach houses, lodges and similar dwelling units with sleeping accommodations rented to family groups:

- Residences for rent less than 30 days with a maximum occupant load of 16 shall comply with the requirements for Use Group R-3
- Residences for rent for less than 30 days with a maximum occupant load of more than 16 shall comply with the requirements for Use Group R- 1

7.2.9 State Building Construction in Flood Plain: Executive Memorandum 2-97 prohibits the construction of new state-owned buildings within the 100-year flood plain unless a variance is granted by the Vice President of Facilities, and after consultation with the State Coordinator for the National Flood Insurance Program (the Department of Conservation and Recreation (DCR)).

7.2.10 Fire Safety Reviews

Fire Safety reviews will be conducted by the BCOM for all new construction projects, projects with both additions and renovations, and projects with a change of use. All other renovation projects will be submitted to the Associate Director for Code Compliance for review and approval.

Fire suppression, fire detection, and fire alarm shop drawings shall be reviewed and approved prior to the work being installed by BCOM. 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 Section 26 of the General Conditions 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 BCOM 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, which are not required by code, but are provided at the University’s option in state owned buildings and structures shall be complete in accord 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.

SECTION 7.3 DESIGN STANDARDS FOR ACCESSIBILITY (STATE OWNED FACILITIES)

7.3.1 Abbreviations:

- **ADA** Americans with Disabilities Act of 1990
- **ADAAG** Americans with Disabilities Act Accessibility Standards (ADAAG), published September 15, 2010 (excluding the Architectural Barriers Act [ABA] Scoping Requirements)
- **ATBCB** Architectural and Transportation Barriers Compliance Board
- **DOJ** U. S. Department of Justice
- **FHA** Federal Fair Housing Act

7.3.2 Design Standards for Providing the Disabled with Accessibility and Usability: The following standards and regulations shall be used in planning and designing state facilities:

- Any standard in Section 7A.2 that is more stringent than a standard promulgated in and by the *Americans with Disabilities Act (ADA)*, 1990.

- The *Americans with Disabilities Act*, 1990: Title II, Subtitle A, (and not Title III) of the Act applies to state facilities.
- Department of Justice Final Rule on Title II of ADA-90, identified in the Federal Register as 28 CFR Part 35.
- Americans with Disabilities Act Accessibility Guidelines, September 15, 2010.
- *Non-Discrimination under State Grants and Programs*: These regulations, promulgated by the Board for Rights of Virginians with Disabilities and effective on October 1, 1990, implement § 51.5-40, *Code of Virginia*. Note: The Federal Fair Housing Act applies to all housing facilities.

7.3.3 Conflicting Standards: Where standards conflict, the most stringent standard shall be used in designing accessible facilities. That is, the standard most favorable or advantageous to the disabled shall be used.

7.3.4 Clarifications for 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.

7.3.5 Elevator Access: As clarification of ADAAG Section 206.2.3, Accessible Routes, Multistory Buildings and Facilities, all passenger elevators shall be accessible to the disabled and residential facilities shall include at least one accessible route to each floor level and each mezzanine in multistory buildings. Exception 4 does not apply for residential facilities.

7.3.6 Stairways: Section 210.1, Stairways – General: All stairways shall be accessible to the disabled. Exception 4 for stairways for assembly areas does not apply. Aisles for assembly areas shall comply with Section 504.

7.3.7 Handrails: Section 505.10 Handrails – Handrail Extensions: As a clarification handrail extensions shall not be turned to the side or back. Handrail extensions shall continue straight and parallel to the stair run.

SECTION 7.4 SPECIAL PROCEDURES FOR ASBESTOS ABATEMENT

7.4.1 General Asbestos Requirements: Buildings on which construction started prior to January 1, 1985 are presumed to have asbestos-containing materials (ACM) in materials including, but not limited to, asphalt and vinyl flooring, resilient floor covering, mastics, fibrous pipe insulations, caulking, roofing, flashings, bonding agents, coatings, and binders until such materials have been tested and found not to contain asbestos.

An estimated cost for asbestos abatement, when suspected or predetermined, shall be included in the cost estimate supporting the construction budget or budget request. For renovation / demolition / addition projects, including roofing materials, the University shall test for asbestos-containing materials (ACM) prior to submittal of the preliminary design. The asbestos survey / inspection report must be made available to the project A/E for information and use in preparing the project documents.

If asbestos-containing materials are found, the University shall have a licensed asbestos designer in concert with the A/E prepare an asbestos abatement plan and prepare or update the University Asbestos Management Plan as required by the University in compliance with § 2.1-1164, Code of Virginia. The asbestos abatement contractor shall be required to mark up the Asbestos Management Plan to show the “As Built” conditions resulting from its work to include areas where asbestos was abated, areas where asbestos was encapsulated, and areas where asbestos containing materials exist but were left in place.

Based on the report of the asbestos survey/inspection report and the Asbestos Management Plan, the construction drawings for renovation or addition projects shall indicate all locations where ACM have been found, where ACM are to be disturbed and where ACM are to remain. The asbestos survey/inspection report and the Asbestos Management Plan must be made available for their respective information to the contractor(s) for demolition and for construction.

The Demolition Plan sheets and the Architectural Floor Plan sheets for each floor shall also have an Asbestos Disclosure Statement indicating one of the following:

- “An asbestos inspection was performed and no asbestos-containing materials were found. The asbestos survey/inspection report is available to the Contractor(s) for demolition and for construction for his information.”
- “An asbestos inspection was performed and asbestos-containing materials were found generally in the areas indicated. However, the work in this project is not intended to disturb the existing asbestos-containing materials. The asbestos survey/inspection report and the Asbestos Management Plan are available to the contractor(s) for demolition and for construction for his information.”
- “An asbestos inspection was performed and asbestos-containing materials were found generally in the areas indicated. The asbestos survey/ inspection report is available to the contractor(s) for his information. The asbestos-containing materials shall be removed prior to any other work being performed in these areas. The Asbestos Management Plan is included in the documents. The asbestos abatement contractor shall mark up the Asbestos Management Plan to show the “As Built” conditions resulting from its work to include areas where asbestos was abated, areas where asbestos was encapsulated, and areas where asbestos containing materials exist but were left in place.”
- “An asbestos inspection was performed and asbestos-containing materials were found generally in the area indicated. The asbestos survey/inspection report and the Asbestos Management Plan are available to the contractor(s) for demolition and for construction for his information. Asbestos-containing materials shall not be disturbed in this work except where specifically indicated and required for connections to utilities. Where such connections are required, the contractor shall have the obstructive and adjacent asbestos-containing materials removed by a licensed asbestos contractor using approved procedures as specified. The asbestos-containing materials that are to remain and the new non asbestos-containing material shall be labeled accordingly. The asbestos abatement contractor shall mark up the Asbestos Management Plan to show the “As Built” conditions resulting from its work to include areas where asbestos was abated, areas where

asbestos was encapsulated, and areas where asbestos containing materials exist but were left in place.”

The A/E shall be responsible to the University for coordinating the design of the renovation / addition work with the asbestos abatement work in order to prevent conflicts, claims, and work stoppages.

7.4.2 Asbestos Removal: All ACM that will be disturbed as a result of a renovation/ demolition/ addition project must be removed. The University shall have asbestos project specifications written by a Virginia licensed designer. The designer’s license number, name and signature shall appear at the beginning of the asbestos specifications.

The asbestos project specifications shall adhere to all current federal and state regulations and policies.

The specifications shall include a copy of the project specific asbestos inspection report and Asbestos Management Plan indicating the sampling of and analyses for all materials that will or may be disturbed or accessed by the project. The specifications shall include a section that covers project notification by the asbestos contractor to the United States EPA, Virginia OSHA, and Division of Air Pollution Control at least 20 calendar days prior to the actual start of the asbestos project.

Asbestos drawings and specifications shall be submitted to the University Department of Environmental Health and Safety with the Contract Documents for review and approval. The University has two contracting options for use in removal of asbestos from a structure although option (2) is the preferred method:

1. A separate contract for removal of the asbestos prior to renovation, demolition or addition.
2. A contract where the abatement is an integral part of the renovation, addition or demolition project in which the general contractor is licensed as an asbestos contractor or hires a licensed asbestos abatement subcontractor to perform the work.

The Asbestos Abatement Contractor shall be required to mark up the Asbestos Management plan to show the As Built conditions resulting from its work to include areas where asbestos was abated, areas where asbestos was encapsulated, and areas where asbestos containing materials exist but were left in place.

7.4.3 Use of Asbestos or Asbestos Containing Materials: The use of materials that contain asbestos shall be prohibited in any new construction or renovations.

7.4.4 Removal and Replacement of Sprayed-on Fireproofing: The A/E in consultation with the University shall verify early in the design phase with the appropriate code official the original purpose of the fireproofing material to be removed or replaced and what, if anything, must be done to restore the fire resistive characteristics. Plans and specifications shall be submitted to the code

official, which will include any bidding documents, addenda, or change orders, which may relate to the fire resistive characteristics of the structure. On a submittal to the code official, indicate the construction date, original and present uses, height in floors and feet, whether sprinkled and any other information that may assist the code official in his determination. If sprayed-on ACM is to be removed and replaced with another material, the University or its A/E shall also submit copies of the specifications for the intended replacement material and the bridging encapsulate specified by the asbestos project designer for review. The bridging encapsulate must be correctly matched with the replacement material to ensure maximum bonding strength and intended fire rating integrity of the assembly and acceptable flame spread ratings.

7.4.5 Asbestos Related Work Insurance Requirements: Asbestos inspectors, project designers and project monitors and their firms are required to provide evidence of professional liability/errors and omissions insurance, with asbestos coverage, in an amount not less than \$1,000,000.00. , its officers, employees, agents or any other person acting in an official capacity, temporarily or permanently, in the service of the Commonwealth, should also be named as additional insured persons.

Section 11 (e) of General Conditions of the Contract for Capital Outlay Projects requires the asbestos Contractor or Subcontractor, as the case may be, to name the A/E as an additional insured on the Contractor's liability insurance with asbestos coverage. Where the A/E for the renovation project is also a Virginia licensed asbestos designer and prepares the asbestos project drawings and specifications, the requirement of Section 11 (d) to name the A/E as an insured party is waived.

7.4.6 Conflict of Interest Policies: The asbestos surveyor / inspector, the asbestos abatement designer, the University's asbestos management plan author and any other person or firm hired by the University to provide consulting or inspection services on the project shall not be associated by any business or financial relationship to the asbestos abatement contractor.

Asbestos abatement contractors are not eligible to bid on those particular projects for which the asbestos surveys, inspections, bulk sample analyses, project designs, or asbestos management plans were performed by individuals or firms employed by or financially affiliated with the contractors during the time period in which the inspections were conducted, samples analyzed or the project designs written.

Asbestos surveyors, asbestos abatement designers or asbestos abatement management plan authors shall not contract with the asbestos abatement contractor to provide services on the project. Asbestos project inspector (project monitors) are not eligible to contract for project inspection work on a project if they are financially affiliated with or employed by the asbestos abatement contractor on any project. These services are to be directly contracted for by the University, and the monitoring personnel shall be accountable only to University officials.

All laboratories utilized for asbestos sampling analyses for project purposes shall have no direct business or financial relationship with the contractors conducting asbestos abatement activities.

SECTION 7.5 SPECIAL PROCEDURES FOR LEAD- BASED PAINT ABATEMENT

Effective June 3, 1993 the U. S. Department of Labor's interim final rule amends the Federal OSHA standards for occupational health and environmental controls in subpart D of 29 CFR part 1926, adding a new Section 1926.62 indicating protection requirements for construction workers

exposed to lead. The entire rule is contained in the *Federal Register* Vol. 58, No. 84, May 4, 1993. The Virginia OSHA regulations have subsequently adopted the federal regulations in total. The Virginia Department of Labor and Industry (DLI) established an emergency regulation in the May 27, 1996 *Virginia Register* requiring, among other things, that a permit be issued by DLI to the lead abatement contractor. This requirement is also stated in the General Conditions of the Construction Contract. When planning a renovation, demolition or addition project, the University Department of Environmental Health and Safety shall have the facility to be renovated surveyed for lead based paint (LBP) contamination and document all quantities and locations found.

An estimated cost for lead paint abatement, when suspected or predetermined, shall be included in the cost estimate supporting the construction budget or budget request.

The construction drawings for renovation or addition projects shall indicate all locations where lead-based paint is to be disturbed or to remain and shall also have a lead-based paint disclosure statement indicating one of the following:

- A lead-based paint inspection was performed and no lead-based paint was found.
- A lead-based paint inspection was performed and lead-based paint was found in indicated areas. However, the work in this project is not intended to disturb existing lead-based paint.
- A lead-based paint inspection was performed and lead-based paint was found in the areas indicated. The lead-based paint shall be removed prior to any other work being performed in these areas.
- A lead-based paint inspection was performed and lead based paint was found in the areas indicated. Lead-based paint shall not be disturbed in this work except where specifically indicated and required for connections to utilities. Where such connections are required, Contractor shall have the obstructive and adjacent lead-based paint removed by a licensed lead- based paint abatement contractor using approved procedures as required by VOSHA. The lead-based paint that remains and new non lead-based paint areas shall be labeled accordingly.
- A lead-based paint inspection was performed and lead-based paint was found in the areas indicated. The contractor shall be responsible for compliance with all requirements of the Virginia Occupational and Health Administration regulations regarding lead-based paint protection for workers.

If abatement and encapsulation is to be done by the General Contractor, the A&E shall identify the type and location of all lead-based paint and notify the contractor that this work is part of the contract for construction. Lead-based paint must be identified and the contractors notified that they must be in compliance with VOSHA requirements for worker safety. It shall be the contractor's responsibility to comply with the requirements of VOSHA.

The contractor shall establish a schedule with the University for abatement and containment in buildings that are to remain occupied during construction.

Following removal of lead-based paint containing materials, additional TCLP tests in accordance with EPA guidelines shall be done on these materials to determine disposal requirements. TCLP tests of waste materials shall identify whether the material will be required to be disposed of as

toxic waste or as ordinary construction debris. It shall be unlawful for materials identified as toxic waste to be disposed of with ordinary construction debris.

SECTION 7.6 SEPARATE CONTRACTS FOR MATERIAL AND/OR EQUIPMENT

All procurements must be made in accordance with the University Procurement Rules. All assignment of contracts or materials must be done with the full prior knowledge of all parties to the contract. *The use of 'allowances' is not competitive and has been deemed not to conform to the University Procurement Rules.* Work that is outside of the general contract, that is Not In Contract (NIC) for bidding but is to be included in the construction, must be coordinated with the contract documents in one of the following ways:

- **Contractor purchased/Contractor Installed (subcontractor designated/price set by University):** Drawings and specifications must be included that describe the work including: scope of work, materials, installation, testing, and quality control. The Bid Form must include a statement that informs the General Contractor to accept the subcontract and coordinate the work as if the General Contractor had selected the subcontractor. The Bid Form shall also include the value/quote/negotiated price of the subcontract to be included in the Bid. An example of this is a pre-selected Building Automation Systems subcontractor.
- **Contractor purchased (materials contract assigned by the University)/Contractor Installed:** Drawings and specifications must be included that describe the work including, scope of work, materials, installation, testing and quality control. The Bid Form must include the value/quote/price of the materials contract and a statement that informs the General Contractor of the intent to assign a specific materials contract, and directs the General Contractor to accept and install the materials and coordinate the work as if the General Contractor had purchased the materials. An example of this is laboratory or kitchen equipment.
- **University purchased/Contractor Installed:** Drawings and specifications **must** be included that describe the work including: scope of work, materials, installation, testing, and quality control. The Bid Form must include a statement that informs the General Contractor of the intent to provide specific materials in a specific location, and directs the General Contractor to accept and install the materials and coordinate the work as if the General Contractor had purchased the materials. An example of this exists or is pre-purchased laboratory or kitchen equipment. The University shall pay the supplier directly for the materials.
- **University purchased/University installed (or installed by University's Separate Contractor):** The Bid Form must include a statement that informs the General Contractor of the intent to perform specific work in a specific location, and directs the General Contractor to allow the work to proceed, and coordinate the work of the University and other contractors. An example of this is medical equipment.

SECTION 7.7 PROCUREMENT OF FURNISHINGS AND LOOSE EQUIPMENT

Loose equipment and furnishings are generally items moveable or portable versus permanently affixed to the building. It includes such items as residential refrigerators; unattached residential stoves; unattached furniture; and other similar furnishings or loose equipment. The University shall purchase loose equipment in accordance with the University Procurement Rules through University Purchasing.

SECTION 7.8 BUILT-IN EQUIPMENT

Built-in equipment comprises special purpose equipment or furnishings that are permanently built in or attached to the building. It includes such items as laboratory benches, kitchen cabinets, commercial laundry equipment, auditorium seating, stage rigging, and so forth. Built-in equipment may be procured in the following ways provided the procurement complies with Chapter 43 Title 2.2 of the *Code of Virginia*:

- Bid as part of the General Construction Contract.
- Bid prior to receipt of bids on the General Contract where the successful bidder agrees to be assigned as a subcontractor to the General Contractor. That price and vendor's name are then listed on the Bid Form using wording as shown on the Sample Bid Form in Appendix C for inclusion in the General Contract bids.
- Bid and installed as a separate contract for both procurement and installation in accordance with the University Procurement Rules.

SECTION 7.9 UNDERGROUND STORAGE TANK SYSTEMS (USTS) AND ABOVE GROUND STORAGE TANKS (AST)

Technical standards related to USTS and AST are contained in the Department of Environmental Quality, Water Division, Regulations: VR 680-13-02, *Underground Storage Tanks: Technical Standards and Corrective Action Requirements*; VR 680-14-12, *Facility and Aboveground Storage Tank Registration Requirements*; and VR 680-14-13, *Above ground Storage Tank Pollution Prevention Requirements*.

Pursuant to Section 36-98.1 of the *Code of Virginia*, the Director of the Department of General Services 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 VR 680-13-02; VR 680-14-12; and VR 680-14-13

The University shall request the services above from the nearest local building department on all USTS and AST projects/actions. 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.

SECTION 7.10 CHESAPEAKE BAY PROGRAM

The University will ensure that their 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 sittings/designs. This publication is available from the Chesapeake Bay Local Assistance Department, (804) 225-3440.

SECTION 7.11 SPECIAL BUILDING PLANNING REQUIREMENTS

Generally, a building efficiency of 65 to 75 percent shall be achieved for classroom, dormitory (with shared toilets), office, laboratory, assembly, and dining facilities, or combinations of these uses unless predetermined otherwise in University programming. Higher efficiencies per standard industry criteria would apply to service buildings, warehouses, garages, and other housing or dormitory (suite with internal toilets), apartments or townhouses facilities.

7.11.1 Guidelines For Office Space Planning: See Mason Design Manual for space planning requirements

SECTION 7.12 EARTHWORK

The A/E shall consider the recommendations in the geotechnical/soils report in developing the design.

Drawing details of the following conditions will be required:

- Over-excavation and replacement with suitable materials.
- Subsurface profiles (boring logs) and limits showing the extent of rock, existing fill materials, water and existing unsuitable bearing materials.
- Specific drawing notes stating that earthwork details shall be included in the base bid. Earthwork beyond the extent indicated will be considered for an extra cost, only if necessary and approved by the A/E, and not a result of the contractor's failure to maintain site/excavation stability, drainage or protection from frost penetration.
- Earthwork specifications shall be definite, not general.
- Coordinate Specifications with the Drawings.
- Include a geotechnical/soils report in the Appendix to the Specifications (Project Manual) and a disclaimer stating that the report is not part of the Contract Documents each time this report is referenced.
- Specifications for materials and instructions shall state whether they are included in the base bid or will be an extra cost item.
- Rock excavation shall be included in the base bid to the extent that locations are sufficiently identified in the geotechnical/soils report.

Earthwork specifications shall include soil and aggregate material definitions for all materials used in the project. The soil materials shall be defined by a recognized soil classification system, such as the Unified Soil Classification System or the AASHTO Soil Classification System. The definitions below are by the Unified system. The aggregates shall include gradations required for each material. Note: Unedited master or standardized specifications often are too conservative in defining soil materials - often eliminating the on-site soils as acceptable materials, even for general fill/backfill. Quality control is also often not provided in the form of aggregate gradations. All A/E standard specifications shall be edited to conform to the following requirements:

7.12.1 **Structural fill/backfill** - Generally restricted to GW, GP, GM, SM, SW, and SP unless other materials are specifically approved by the soils engineer or firm that conducted the on-site soils evaluations. SC, CL, and ML might be considered in some situations with the approval of the soils engineer.

7.12.2 **General fill/backfill** - Includes all classifications of materials noted above.

7.12.3 **Unsuitable Materials** - Includes OL, MH, CH, OH and PT, saturated material which in the judgment of the soils engineer cannot be aerated to be made acceptable, uncompacted fill (for structural bearing conditions), fill with unacceptable quantities of non-soil products, or other materials judged unsuitable by the soils engineer.

7.12.4 **Aggregates** - They may include porous backfill, pipe bedding, under slab fill, any special blend or open-graded material required for a special bearing or drainage use.

7.12.5 **Moisture content of soil materials** - Laboratory tests are generally conducted on samples to determine the maximum density of soils, usually achieved at optimum moisture content. Field conditions during construction prevent attaining and maintaining the optimum moisture content. This requires that a tolerance for departure from this optimum must be specified. This tolerance is generally specified in the range of plus or minus 3% to 5% from the optimum moisture content without significantly affecting the ability to achieve the specified density.

7.12.6 **Quality Assurance / Testing:** The specifications shall list the tests required to be performed on the Work (i.e. ASTM, AASHTO, VDOT or other test procedures) and stipulate the values to be achieved.

SECTION 7.13 STORMWATER MANAGEMENT & EROSION AND SEDIMENT CONTROL REQUIREMENTS

George Mason University is subject to project review and compliance for state erosion and sediment control. Disturbance of land exceeding 10,000 square feet (or lesser area if adopted by the Local Soil and Water Conservation District) requires submission of an erosion and sediment control plan and narrative to the Civil & Environmental Engineer Manager in Mason Facilities Project Management & Construction office who is certified to review E & S plans or to the local program authority of the locality within which the land disturbing activity is located for approval. The submission must be made in accordance with Mason's Annual Standards and Specifications for Erosion and Sediment Control and Stormwater Management. This document is available at facilities.gmu.edu.

Disturbance of land exceeding 2,500 square feet requires submission of a stormwater management plan with calculations to the University and the locality within which the land disturbing activity is located. This is not a substitute for the erosion and sediment control plan, but is an additional requirement to manage the runoff and quality of the stormwater collected on the site. The local authority should be contacted for information on the required calculations and submissions for approval of the stormwater management plan or clarification of regulations. Approval of the plan shall be secured prior to the bid advertisement.

7.13.1 Plans and Specifications: 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 University'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, on-site 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 before continuing with the concerned activity.” **Note:** This instruction may be added to one appropriate specs 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.

7.13.2 Computation and Recordation

Computation and recordation of all new impermeable areas must be calculated. These quantities shall be highlighted when submitting plans and specifications for the University's Review.

SECTION 7.14 ROCK EXCAVATION

Where rock excavation is likely to be encountered, the site shall have an adequate number of soundings taken. The designer shall use this data to show on the plans enough assumed rock profiles over the entire area to be excavated to identify clearly the condition assumed for the base bid. The specifications shall state the method of volume calculation and pay lines to be used.

The designer shall calculate and state in the Bid Form (See example below) an estimated quantity of rock to be excavated based on the assumed rock profiles. The bidder shall indicate a unit cost by which his bid for the rock excavation is calculated. This bid item shall be added to the other bid items to establish the Lump Sum Bid. The final net contract payment for rock excavation shall be adjusted (plus or minus) based on the actual quantity of rock excavated. This price shall include disposal of excess. General rock pay width shall be based on 18" outside of a neat wall face; or vertical projection from the extremities of the base, whichever is greater. Trench rock quantity shall be based on the widths stated in the specifications.

Rock excavation shall be defined as hard bedrock, boulders or similar material requiring the use of rock drills and/or explosives for removal. The criteria for classification of general excavation as rock shall be that material that cannot be removed by a track mounted D-8 dozer with a heavy ripper or 3/4 CY track mounted shovel with appropriate scoop. The criteria for trench rock shall be that material that cannot be removed by a 3/4 CY track mounted backhoe with a proper width bucket. The trench unit price shall only apply to material below the general grading level. When the overburden is removed and the rock surface is exposed, the A/E shall verify that the material is of a hardness that qualifies it for classification as rock excavation. Actual profiles shall then be

taken. The net difference between the actual rock excavation and that estimated volume shown in the Proposal shall be applied times the contract unit price for adjustment of the final payment.

Examples of Rock Excavation for Bid Form

Part __ - Excavation of Rock Material: Excavation of rock material, where authorized or directed, and proper disposal off-site of excess material, complete per specifications. (Price per cubic yard) (Final amount shall be adjusted up/down based on actual quantity authorized.)

Estimated quantity of 100 cubic yards @ \$ _____ per cubic yard = _____ (A/E fill in estimated quantity to be included in bid)

Part = Dollars \$

Part __ - Excavation of Rock Material at Trenches: Excavation of rock material, where authorized or directed, proper disposal off-site of excess material and backfill with compacted trench fill material per specifications. (price per cubic yard) (Final amount shall be adjusted upward or downward based on actual quantity authorized.) Estimated quantity of 50 cubic yards

@ \$ _____ per cubic yard = _____ (A/E fill in estimated quantity to be included in bid)

Part = Dollars \$

SECTION 7.15 FIRE DETECTION, SUPPRESSION SYSTEMS, AND DAMPERS

Where a change of occupancy is intended for an existing building, full compliance with is required. For consideration of seeking code modifications for an existing building, the level of fire safety shall be factored into a request to the Code Official (BCOM). A modification for a condition that decreases the level of fire safety shall be offset by modifications that increase the fire safety level.

7.15.1 Fire Detection and Alarm Systems

The A/E shall provide project specific drawings and specifications that define a code compliant fire alarm system. Performance criteria do not meet this intent. Construction documents shall indicate that changes to the design during construction shall be considered substitutions in accord with Section 26 of the General Conditions for the Construction Contract. Changes shall be documented by Change Order and shall be submitted to the University Building Official for review. The A/E shall confirm that the fire detection and alarm systems are complete, functional and code compliant.

Drawings shall provide the following minimum information to demonstrate compliance with the requirements of the code:

1. Location and identification of all fire alarm system initiating and notification appliances, including protective covers where applicable. The same is required for an existing fire alarm system.

2. Location and identification of all fire alarm control and trouble signaling equipment. As related, the same is required for existing fire alarm control and trouble signaling equipment.
3. Location and identification of interface requirements for all devices provided by other trades such as HVAC duct smoke detectors, kitchen hood fire suppression equipment, and fire sprinkler flow and tamper switches.
4. Location and identification of interface requirements for all devices whose operation is initiated by the fire alarm system such as door hold open devices, fire shutters, elevator recall, electronic door hardware, and smoke control systems,
5. Identify the primary and secondary power supplies and connections.
6. Identify clearly the candela output levels for all visual alarm notification appliances.
7. Matrix defining the interface of the fire safety control functions, including the alarm initiating device activated, the action of the control and signaling equipment, the resulting alarm notification appliance actions, and the resulting operation of interfaced equipment.
8. Fire alarm riser diagram showing all system components, including zones to be protected, location of constantly attended location supervising fire alarm system, and the interface between the fire alarm systems and the constantly attended location.

Specifications shall provide:

1. Wording that the Contractor shall not alter the location and type of fire alarm system initiating appliances, control and trouble signaling equipment, location of major components without written approval by the A/E and Code Official (BCOM).
2. Description of the acceptance testing requirements and which of the acceptance tests are to be witnessed by the responsible State Fire Marshal Office.

Provide the following calculations to demonstrate compliance with requirements of code:

1. Quantity and location of the audible alarms as indicated on the drawings to achieve the code defined sound pressure levels in each of the respective spaces.
2. Required capacity of the secondary power supply attained.
3. Candela performance for alarm notification devices, including any provided with protective covers.

Shop drawings are to be reviewed by the A/E of record for compliance with the project contract documents and the code. The A/E shall:

1. Verify the Underwriters Laboratories (UL) listings and classifications for the materials, components, and equipment provided for the specific project resulting in a code compliant fire alarm system.
2. Provide a “sealed” statement, attached to the reviewed shop drawings, indicating that the fire alarm shop drawings (working plans, product data, and calculations) satisfy the requirements of the contract documents and the code (citing applicable NFPA criteria).
3. Provide the responsible State Fire Marshal Office with copy(s) of the approved complete fire alarm shop drawings.
4. Provide the Code Official (BCOM) a copy of the “sealed” statement and transmittal to the responsible State Fire Marshal Office.

Fire alarm systems are to be acceptance tested in accord to code requirements. The responsible State Fire Marshal Office shall observe the installed fire alarm system and witness the fire alarm system performance tests. The A/E and Contractor shall certify that the fire alarm system is complete.

7.15.2 Fire Suppression Systems - Sprinklers

The University’s policy is to sprinkle all of its student residences.

The A/E shall provide project specific drawings and specifications that define a code compliant fire sprinkler system. Performance criteria do not meet this intent. Construction documents shall indicate that changes to the design during construction shall be considered substitutions in accord with Section 26 of the General Conditions for the Construction Contract. Changes shall be documented by Change Order and shall be submitted to the Code Official (BCOM) for review. The A/E shall confirm that the fire sprinkler system(s) is (are) complete functional and code compliant.

Drawings shall provide the following minimum information to demonstrate compliance with the requirements of the code:

1. Identification of the occupancy hazard classification and location of sprinklers for each of the spaces on each floor.
2. Location of fire department valves and risers (standpipe, combined standpipe and sprinkler, wet pipe) within the building.
3. Sprinkler piping and standpipe layout including 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 not shown.
4. Table summarizing the characteristics of the sprinkler system(s).

5. Small-scale drawing showing locations of water hydrants, test and flow hydrants (for water flow tests) and routing of underground pipe. Indicate the water flow tests results, the date and time taken, and who conducted the test.
6. Identification of all existing sprinkler systems and standpipe systems, including any new connections to existing systems.
7. Sprinkle riser diagram with appropriate fittings, accessories, sizes, alarms, valves, etc. noted.
8. Location of all system drains, inspector's test station(s) and associated discharge/draining piping.
9. Location of fire department connection(s) with all interconnecting piping to the sprinkler and standpipe systems.
10. Sprinkler head type, K-factor and temperature ratings.

Specifications shall provide the following minimum information to demonstrate compliance with code requirements:

1. Wording that the type of systems, the location of major components, the quantity, type, coverage, location of sprinklers, and distribution systems are not to be altered by the Contractor without approval of the A/E and Code Official (BCOM).
2. Description of the acceptance testing requirements, and which of the acceptance tests are to be witnessed by the responsible State Fire Marshal Office.

Provide the following minimum calculations to demonstrate compliance with code requirements:

1. Final hydraulic calculations for each of the sprinkler systems and the standpipe system.
2. Demonstration of performance of the system with an automatic water supply for the most hydraulically demanding zone(s) on each floor of the building per NFPA 13 and NFPA 14.
3. Performance of the sprinkler and standpipe system as connected to the manual water supply (fire department pumper truck) by the fire department connection and interconnecting piping.

Shop drawings (working plans, product data, and calculations) are to be reviewed by the A/E of record for compliance with project contract documents and the code. At the conclusion of the shop drawing review, the A/E shall:

1. Verify the Underwriters Laboratories (UL) listing and classifications for the materials, components and equipment provided for the project result in a code compliant fire suppression sprinkler system.

2. Provide a “sealed” statement, attached to the reviewed shop drawings, indicating that the fire suppression sprinkler shop drawings (working plans, product data, and calculations) satisfy the requirements of the contract documents and the code (citing applicable NFPA criteria).
3. Provide the responsible State Fire Marshal Office with copy(s) of the approved complete fire suppression sprinkler shop drawings.
4. Provide the Code Official (BCOM) a copy of the “sealed” statement and transmittal to the responsible State Fire Marshal Office.

Fire suppression sprinkler systems are to be acceptance tested in accord to code requirements. The responsible State Fire Marshal Office shall observe the installed fire suppression sprinkler system and witness the fire suppression sprinkler system performance tests. The A/E and Contractor shall certify that the fire suppression sprinkler system is complete.

Similar requirements to the above are required for fire suppression systems utilizing clean agents.

7.15.3 Fire and Smoke Dampers: The A/E shall provide project specific drawings and specifications that locate, identify and define code compliant fire and smoke dampers. Performance criteria do not meet the intent of this section. Construction documents shall indicate that changes to the design during construction shall be considered substitutions in accord with Section 26 of the General Conditions for the Construction Contract. Changes shall be documented by Change Order and shall be submitted to the Code Official (BCOM) for review. The A/E shall confirm that the fire and smoke dampers are complete, functional and code compliant.

Drawings shall provide the following minimum information to demonstrate compliance with the requirements of the code:

1. Locate and identify the fire resistance rating of all fire and smoke dampers
2. Locate and identify all ceiling radiation dampers in rated ceilings
3. Typical fire damper detail(s) indicating damper, sleeve, method of support, fusible link, duct access door and a breakaway joint between the sleeve and the connecting duct.
4. Notation stating that each shall be installed in accordance with the conditions of their listing and the manufacturer’s installation instructions.

Specifications shall provide the following minimum to demonstrate compliance with requirements of the code:

1. Complete specifications respective of the project scope of work

2. Description of the acceptance testing requirements with requirement that tests are to be witnessed by the responsible State Fire Marshal Office.

7.15.4 Validation of Fire and Smoke Dampers: Fire and smoke dampers are to be acceptance tested in accord with requirements of the VUSBC. The responsible State Fire Marshal Office shall observe the installed fire and smoke dampers and witness the fire alarm system performance tests. The A/E and Contractor shall certify that the fire alarm system is complete.

SECTION 7.16 FIRE SEPARATION OF EQUIPMENT

Direct-fired heating equipment and make-up air heating equipment shall be separated from other air handling equipment by a one-hour fire-resistance rated wall. Exceptions:

1. Combination heating and cooling equipment need not comply with the above if the heating and cooling equipment is an approved single package or tandem unit.
2. Buildings of Use Group R-3.

SECTION 7.17 FIRE PUMPS

The A/E shall provide project specific drawings and specifications that define a code compliant fire sprinkler system that includes an automatic fire pump(s) as referenced in NFPA 13 to NFPA 20, and National Electric Code NFPA 70. Performance criteria do not meet this intent. Where the building characteristics are such that the water supply requirements of a fire sprinkler system/standpipe system cannot be reliably provided by a public water system then the incorporation of an automatically controlled fire pump into the fire suppression system.

Construction documents shall:

1. Indicate that changes to the design during construction shall be considered substitutions in accord with Section 26 of the General Conditions for the Construction Contract. Changes shall be documented by Change Order and shall be submitted to the Building Code Official for review.
2. The A/E shall confirm that the fire and smoke dampers are complete, functional and code compliant. The A/E shall perform shop drawing reviews, observe the progress and quality of the installation, and confirm that the fire pump installation is complete resulting in a code compliant fire sprinkler system.
3. Show the location of the fire pump, pressure maintenance pump; pump controllers, piping, components, and piping specialties.
4. Provide details of the fire pump, pressure maintenance pumps, pump controllers, suction piping, discharge piping, components and piping specialties.

5. Provide a table summarizing the water supply characteristics for the most demanding part of each of the sprinkler systems supplied by the fire pump, and factors considered in the resulting safety factor in psig for each sprinkler system.
6. Provide information regarding locations of fire hydrants, test and flow hydrants, including underground pipe routing, water flow test results, the date and time tests taken, and who conducted the test.
7. Show and identify all existing sprinkler systems and standpipe systems in the vicinity of the fire pump(s).
8. Show and indicate all new connections to existing systems.
9. Show location of fire department connection(s) with all interconnecting piping back to the pump(s).
10. Show the location of the fire pump test header and all interconnecting pipe.
11. Show the location of electrical components of the fire pump, driver, fire pump controller, and ancillary electrical components, and provide details.
12. Show the location, size, and routing of the conduits and conductors serving the fire pump, driver, fire pump controller, and ancillary electrical components.
13. Provide details of the electrical components serving the fire pump, driver, fire pump controller, piping, components and piping specialties.
14. Where multiple fire pumps or multiple sources of power are required, provide a diagram that defines all of the applicable components and sequence of operation.

Specifications shall provide the following minimum to demonstrate compliance with the requirements of the code:

1. Complete specifications to reflect the systems that are defined on the drawings.
2. Provide calculations to demonstrate compliance with the most hydraulically demanding zone(s) of the fire sprinkler system(s) is satisfied by the water supply plus fire pump in compliances with NFPA 13, NFPA 14 and NFPA 20.
3. Where an existing fire pump is to be used in the project, the performance and condition is to be established and validated. Submit a copy of the recent Report of the Fire Pump Inspection, Testing and Maintenance compliant with Section F-516.6 of the Virginia Statewide Fire Prevention Code.
4. Shop drawings (product data, sketches and certified shop test pump curves) are to be reviewed by the A/E of record for compliance with the contract documents and code, including verification of the Underwriters Laboratory (UL) listings and classifications for

the materials, components and equipment provided. A copy of the approved shop drawings, with a sealed statement that they satisfy the requirements of the contract documents and code, shall be provided to the responsible State Fire Marshal Office, and a copy of the transmittal to the University.

5. Fire pump(s) is (are) to be acceptance tested in accord with code requirements. The responsible State Fire Marshal Office shall observe the installed fire pump(s) and ancillary components, and shall witness the fire pump(s) performance test. The A/E and Contractor shall certify that the fire pump installation is complete.

SECTION 7.18 SMOKE CONTROL SYSTEMS

The A/E shall provide project specific complete drawings and specifications that define a code compliant smoke control system(s), and assure that code compliant smoke control system(s) are provided through the review of shop drawings and the observation of the progress and quality of the work. Performance criteria do not meet the intent of this section.

Construction documents shall indicate that changes to the design during construction shall be considered substitutions in accord with Section 26 of the General Conditions for the Construction Contract. Changes shall be documented by Change Order and shall be submitted to the Code Official for review. The A/E shall confirm that the smoke control system(s) is (are) complete, functional, and code compliant.

The VUSBC requires smoke control systems to be designed in accordance with the applicable sections of the VUSBC and the generally accepted and well-established principles of engineering relevant to the design. The “generally accepted and well-established principles of engineering” recognized by Mason for this purpose are the current editions of NFPA 92A.

Recommended Practice for Smoke Control, NFPA 92B Guide for Smoke Management Systems in Malls, Atria and Large Areas, and The Principles of Smoke Management (ASHRAE/SFPE).

The University and the A/E shall early in the design phase obtain the approval of the State Fire Marshal Office of the specific method of smoke control to be applicable to the project. The University and the A/E shall submit a narrative that compares and contrasts the three methods defined in the VUSBC (pressurization method, airflow design method, or exhaust method) to the project conditions that result in a recommended method. Provide conceptual floor plans that identify the locations of the major components, pertinent calculations, sequence of operations and any other information that may assist in the evaluation of the methods.

Drawings shall provide the following minimum to demonstrate compliance with code requirements:

1. Location and identification of all walls, floors, and ceilings that define the perimeter of the space(s) to be protected.
2. Location and identification of HVAC system components respective to the smoke control system(s).

3. Location and identification of all smoke dampers and/or motorized dampers respective to the smoke control system(s).
4. Location and identification of the interface requirements with the fire alarm system.
5. Location and identification of the interface requirements for all devices whose operation is required by the smoke control systems (such as door hold open devices, smoke dampers, fire shutters, motorized ventilation dampers, fans, air handlers, and smoke detectors).
6. Identification of primary and secondary power supplies and connections where code required.

Specifications shall be project specific and provide a description of the acceptance testing requirements. Specifications shall state that components of and their locations that make up the smoke control system are not to be altered by the Contractor without prior written approval of the A/E and Code Official.

Provide calculations that:

1. Demonstrate compliance with requirements of the VUSBC.
2. Demonstrate the volume of the spaces respective of the smoke control system.
3. Are defined by the “generally accepted and well-establish principles of engineering” relevant to the design.

The A/E of record shall review the shop drawings for compliance with code and shall:

1. Verify the Underwriters Laboratory (UL) listings and classifications for the materials, components and equipment provided for the project result in a code compliant smoke control system.
2. Provide a sealed statement indicating that the shop drawings submitted for the smoke control systems satisfy the requirements of the contract documents, the VUSBC, and the “generally accepted and well-established principles of engineering” relevant to the design.

The University and the A/E shall provide the responsible State Fire Marshal Office with the approved shop drawings and a copy of the sealed statement. A copy of the sealed statement and transmittal to the responsible State Fire Marshal Office shall be on record with the office of the Code Official.

The smoke control system(s) are to be acceptance tested with the requirements of the VUSBC. The responsible State Fire Marshal Office shall observe the installed components of the smoke control system(s) and witness the smoke control system(s) performance tests. The A/E and Contractor shall certify that the smoke control system(s) is complete.

SECTION 7.17 PRESSURE VESSELS

All fired or unfired pressure vessels whether a part of an equipment package or an entire piece of equipment shall be specified to comply with the ASME Code. The specifications shall require that the pressure vessel be so stamped in an easily identifiable location and that the manufacturer's data indicating ASME compliance be submitted.

Comply with the Boiler and Pressure Vessel Rules and Regulations issued by the Virginia Department of Labor and Industry.

SECTION 7.10 TEMPORARY ELECTRICAL SERVICE

The Architect/Engineer shall coordinate with the University as to the type of electric service available, location and who will pay for the electricity required for construction. The temporary service shall be metered.

CHAPTER 8: PROJECT DESIGN STANDARDS AND REQUIREMENTS

SECTION 8.1 GENERAL

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.

The A/E should be aware that there are differences between private work and work done for the purposes of this manual. These include:

1. The Commonwealth cannot limit bidding to a selected list of contractors known to do good work. Unless contractors are prequalified for the project in accordance with Section 10.7, any licensed contractor may bid. Since the knowledge and experience of the contractors bidding on the project is an unknown, drawings and specification requirements must leave nothing to the imagination. They must be clear, concise, and provide thorough detailing of existing and proposed construction.
2. 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/ new construction. Drawings must also clearly show and/or describe demolition requirements.
3. Project design is the sole responsibility of the A/E. Specifications that 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. Other systems can be defined as closed engineered systems if approved by the Vice President for Facilities.

4. 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. Sole source and proprietary specifications are not allowed without prior written authorization.

Failure to grasp these basic differences in rules and policies has been the source of many costly disputes, claims and document re-submittals by the A/E.

8.1.1 Project Aesthetics: Good architecture can be achieved simply by good design which implies sensitivity to scale, massing, proportion, materials, detail and even color - none of which necessarily cost more should be kept in mind throughout the design. 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.

8.1.2 LEED Certification: It is the University's policy of all new buildings, to be designed to meet LEED silver. The University typically does seek certification from the USGBC but on occasion will design to that standard without seeking certification.

8.1.3 Project Identification on Documents: The University and the A/E shall show the Project Code on all plans, specifications, contracts, correspondence, sketches, invoices, memoranda, addenda and other documents related to the project. Where the project has been subdivided, also show the two-digit subproject identification code number. Documents without the required identification are not complete. The University will assign a project number for each project.

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

8.1.4 Capital Project Initiation: The University will be authorized to initiate authorize the design of a Capital construction project upon completion of an approved 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 phases for review by the Building Code Official may be required:

- Schematic Design/Project Criteria

- Preliminary Design
- Working Drawings/ Contract Documents
- Revised Working Drawings
- Yellow-out Documents

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.

8.1.5 Non-Capital Projects: This applies to all General funded, Non-general funded, and Maintenance Reserve projects. Construction or improvement projects undertaken on University property that are not classified as Capital Outlay projects are not required to follow the capital outlay procedures. However, they are subject to review by the appropriate Code Official for conformance to the VUSBC including its referenced standards, for the technical and procurement requirements of the Manual, and Mason Design Manual. “Changes in Use Group Classification” of existing University owned buildings require the submittal of information for the review and approval, and issuance of a new Certificate of Use and Occupancy by BCOM.

Projects/Work shall be designed by and the documents sealed and signed by Virginia licensed Architect(s) and/or Engineer(s). Working drawings ready for bidding and an Application for Building Permit (HECO-17a) shall be submitted to the appropriate Code Official for review and issuance of a Building Permit.

Many 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 projects to alter or relocate portions of mechanical systems may be permitted through the University’s delegated authority. The Vice President for Facilities is the code official for the University. Submit 2 copies of the plans and specifications or 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.

The Work shall be inspected by a licensed Architect or Engineer, 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, the HECO-13.2a, 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 Architect or Engineer for conformance with the requirements of Chapter 34 of the VUSBC. A copy of the Chapter 34 evaluation signed by a licensed Architect or Engineer 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.

SECTION 8.2 DRAWING STANDARDS

The following clarifies the requirements, standards, and expectations applicable to drawings prepared for bidding and construction on state projects:

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

- Project Title and project code
- Activity or function(s) to be performed in the facility
- Version (date) of VUSBC on which the design is based
- Other major code used as a 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 all common abbreviations and symbols at the beginning of the drawings and 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.

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

T - Title Sheet and Index
C - Plot and/or Site plans
C - Sanitary and Civil
B - Boring logs
L - Landscaping
D - Demolition
A - Architectural
S - Structural
FP- Fire Protection Information

SP- Sprinkler Systems, Standpipes, and Accessories
P - Plumbing
M - Mechanical (heating, cooling, ventilation, etc.)
E - Electrical
R - Asbestos Abatement
T – Telecom/ AV

8.2.3 Sizes of Drawing Sheets: Drawing sheet size, except in special cases approved by the University Project Manager, shall be 24" by 36" (preferred) or, alternatively, 30" by 42". Drawings shall be prepared so as to be suitable for microfilming and for making clear, legible half-size reproductions.

8.2.4 Drafting Media: All drawings will be done in AutoCAD version currently in use by Mason Facilities Management. New buildings and major renovations will be designed in Revit. Completed computer generated working drawings shall be in ink on vellum or on drafting film (as selected by the A/E) suitable for reproduction. For record drawings requirements see Appendix Q.

8.2.5 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 plan sheets shall have a North Arrow for orientation. All discipline building plans shall be consistent in orientation insofar as practicable.

8.2.6 Lettering: Mechanical (typed or CADD) lettering shall be 1/10" minimum and in all caps. Make minimum gap between lines equal to one-half the letter height. Lettering and line weight must be in accordance with the above.

8.2.7 Section and Detail Designation: The standard section symbol (Figure 8.2 - 2) will be shown both where the section or detail is cut and where the section or detail is drawn.

8.2.8 Scales: An indication of the scale of the object drawn shall be located directly under the title of each plan, elevation, section, detail, etc. (Example: Scale 1/8" = 1'-0"). Closely related groups of details having identical scales and tied together with a common title may receive a single indication of scale under their title. Each drawing shall, as a minimum, have a graphic scale shown for the predominant scale used on that sheet.

8.2.9 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.

8.2.10 Relation of Drawings and Specifications: Drawings generally indicate the scope of work, locations, relationships, and dimensions while specifications generally indicate quality, performance and installation requirements. Drawings and specifications shall supplement each other and must not conflict. Terminology used in specifications and drawings should be the same.

8.2.11 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 microfilming.

8.2.12 Seals: Since working drawing submittals are intended to be 100%, complete and ready for bid, all drawings submitted for final (yellow-out) working drawing Contract Document review shall bear the Virginia seal of the individual or individuals responsible for its design. See Chapter 3 for specific requirements regarding the application of seals and dates.

Asbestos drawings and specifications shall have the name, signature and Virginia license number of the asbestos project designer shown on each asbestos drawing sheet and at the beginning of the asbestos specifications section.

8.2.13 Date: 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 and dated, and ready for bid. Documents printed for bidding shall bear the date described above with no revision numbers or dates. See Chapter 3 for specific requirements regarding seals and dates.

8.2.14 Limits of the Work: The drawings shall describe/show the Work to be provided by the Contractor. Existing features, structures, archaeology features, 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 that 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.

SECTION 8.3 SPECIFICATION STANDARDS

8.3.1 General: 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.

Federal Specifications, MILSPECS, Corps of Engineers Specifications and the like often contain requirements or standards, which are not applicable to state work. Those specifications also contain requirements and options ranging from the lowest quality to the highest quality product, which must be carefully reviewed, selected and identified in the specifications. Therefore, the reference to Federal Specifications shall not be 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.

8.3.2 Project Manual/Specifications Arrangement: Specifications shall be on 8 1/2" by 11" sheets with bid sets preferably printed on both sides of the sheet. Type print size shall be suitable for microfilming and shall not be smaller than 12-pitch type 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:

- Notice of Invitation to Bid
- Instructions to Bidders (HECO-7a)
- Pre-bid Question Form
- Bid Form
- The current General Conditions of the Construction Contract (HECO-7) (See Section 8.3.3 below.)
- Supplemental General Conditions DGS-30-377 SWAM, and DGS-30-376, if applicable
- Contract between University 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)
- Schedule of Values and Certificate for Payment (HECO-12)
- Affidavit of Payment of Claims (HECO-13)
- Final Report of Structural Special Inspections (HECO-13.1b)
- Certificate of Completion by Contractor (HECO-13.2) and Certificate of Partial or Substantial Completion by Contractor (HECO-13.2a)
- List of Drawings
- Submittal Register Format
- Structural and Special Inspections List
- Division 1 - General Requirements, Special Conditions, etc.
- Technical Specifications
 - (a) Technical Specification Sections shall be numbered with appropriate five digit section numbers corresponding to the CSI Masterformat broad scope numbering system.
 - (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 Report, Lead-based Paint 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 as he/her deems appropriate.

(See Sample Specification Table of Contents in Appendix C.)

Note: CSI Master format numbering is subject to changes under consideration as may be in use by the A/E at this time.

For “On-Demand” (Make/Buy) bidding the Table of Contents shall include applicable requirements of the above, but should indicate the following documents as “Included by reference”: HECO-9, HECO-9a, HECO-10, HECO-10.1, HECO-11, HECO-12, HECO-13.2, and HECO-13.2a.

8.3.3 General Conditions of the Construction Contract: The General Conditions for the Construction Contract (HECO-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 (HECO-7) have very significant legal implications and, as such, have been reviewed by the Office of the Attorney General. No item of the General Conditions may be amended or deleted or its intent changed without prior written approval of the Vice President of Facilities.

The A/E shall be familiar with the above requirements and provisions and shall coordinate the requirements in the Specifications with those in the above documents.

8.3.4 Supplemental General Conditions: The 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 Vice President of Facilities. Excluding those specific modifications provided in Appendix A such as for Section 11 (Contractor’s and Subcontractor’s Insurance, Section 12 (“All-Risk Builder’s Risk Insurance), Section 25 (Fees, Services and Facilities), or Section 43 (Damages for Delay; Extensions of Time) for liquidated damages, any proposed modification or amendment shall first be approved.

Supplemental General Conditions DGS-30-377 shall be incorporated in all documents that require the General Conditions of the Construction Contract form HECO-7. The Supplemental General Conditions provide for the inclusion of Small Businesses and Women –Owned and Minority Owned (SWAM) Business.

8.3.5 Special Conditions: The “Special Conditions” set forth specific requirements that are peculiar 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, and so forth. The Special Conditions shall be included in Division 1 of the Technical Specifications.

8.3.6 Instructions to Bidders, HECO-7a(s): The Instructions to Bidders, HECO -7a, is a standard document, which has been written to conform to the requirements and procedures of the Mason Procurement & Payment. The Instructions to Bidders shall be reproduced and included in the Documents without modification. They shall not be retyped. 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 Vice President of Facilities.

The Architect/Engineer for the project shall be familiar with and conform to the requirements of the Instructions to Bidders, Form HECO-7a.

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. See Chapter 9.

8.3.7 Types of Specifications: The following three types of specifications are used on University projects.

1. **Non-proprietary or Performance Specifications:** This is the preferred method of specifying materials, equipment and systems. A non-proprietary specification shall be written either as (a) a generic performance specification (preferred); or as (b) a specification naming several manufacturers with associated 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 so as 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 manufacturer/model number type specification must list several 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 prepackages 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 products 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 Vice President of Facilities 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 noting/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.”

2. **Proprietary Specifications:** A specification is proprietary if it fails to meet requirements of a non-proprietary specification. 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 Vice President of Facilities to use a proprietary specification. The University 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.”

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 or piece of equipment which is available only thru an area franchised vendor is also considered to be a Sole Source item.

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

Sole source specifications may be used when the University Project Manager or A/E requests and receives, in writing, authority from the Vice President of Facilities to use a Sole Source specification. The University 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:

- a. Explain why this is the only product or service that can meet the needs of the University.
- b. Explain why this vendor is the only practicably available source from which to obtain this product or service.
- c. Explain why the price is considered reasonable.
- d. 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 either procure the sole source item and specify it as University furnished/Contractor installed or the University shall 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 this Manual.

8.3.8 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 and/or contractors, those known Virginia based vendors or contractors shall be listed prior to listing non-Virginia based firms. To further focus on the Commonwealth's "BUY VIRGINIA" emphasis, the Invitation to Bid (or Project Manual) cover shall be printed on the "BUY VIRGINIA" watermark/graphic available from website <http://www.forms.dgs.state.us>

8.3.9 Use of Standard or Guide Specifications: The use of standardized specifications or guide specs as a basis or resource for editing has many advantages for the A/E, the Reviewer and the Contractor. Performance guide specifications prepared by Masterspec, Spectext, the U. S. Navy and the Corps of Engineers are acceptable for editing. These guide specifications are available from the AIA, the CSI, the National Institute of Building Sciences in Washington, D. C., and others.

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.

Where Navy or Corps of Engineers guide specifications are used on a project, they shall be edited to delete references to Military specifications 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.

8.3.10 Restrictive Specifications and Performance Requirements: 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. 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 to suppliers of equipment.

8.3.11 Equal materials, equipment or assemblies: Any brand, make or manufacturer of a product, assembly or equipment which in the opinion of the A/E is the equal of that specified, considering quality, capabilities, workmanship, configuration, economy of operation, useful life, compatibility with design of the work, and suitability for the intended purpose, will be accepted unless rejected by the University as not being equal.

8.3.12 Substitute materials, equipment or assemblies: The General Conditions permit the Contractor to propose a substitute or alternate material, product, equipment, or assembly, which 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 operations, and suitability for the intended purpose. Examples of substitutes or alternates include proposing to substitute “precast concrete” for “cast-in-place concrete” floors or to substitute “precast concrete panels” for “masonry” walls. The Contractor’s proposal must include any cost differentials proposed. The University would have the A/E provide an initial evaluation of such proposed substitutes to include a recommendation on acceptability and indicate the A/E’s redesign fee to incorporate the substitution in the design. If the proposed substitute is acceptable to the University, a Change Order would be proposed to the Contractor to accept the substitute and to deduct the cost of the A/E redesign fee and the proposed cost savings from the Contractor’s Contract amount. The University will have the right to limit or reject substitutions at its sole discretion.

8.3.13 Unit Prices: Certain aspects of construction projects, such as the depth to suitable foundation bearing for footings, piles or caissons, or the locations and amount of rock to be encountered and removed often must be estimated based on limited factual data. In such situations, to ensure fairness for the University, the Bidders and the successful bidding Contractor, estimated quantities are shown for unit pricing and determining the low bidder. A statement is included on the Bid Form stating that actual quantities will be measured for the listed work and that the Contract Price will be adjusted upward or downward by change order to reflect the actual quantities involved times the Contractor’s unit price shown on the Bid Form (unless such prices have been modified by the Contract). See Standard Bid Form Format in Appendix C.

Where unit prices are used to competitively bid work that may vary depending on actual conditions encountered, the following method shall be used:

1. The A/E shall provide on the Bid Form the unit price schedule to include an estimated quantity of each work task or material listed. The estimated quantities should be reasonably accurate based on the best available information and the designers experience and judgment.

2. The bidders insert the unit prices for each and extend the estimated quantity times unit price to yield a cost.
3. The extended costs will then be added to the base bid for other work to give a total base bid.
4. A statement shall be included on the Bid Form stating that the payment for work listed in the unit price schedule will be based on actual quantities of listed items required for completion of the work.

Example of Unit Price Method and Wording

Base Bids for Parts C, D and E shall be based on the estimated quantities indicated to be provided complete and in accordance with the applicable portions of the plans and specifications. Payment amounts for each of these items will be based on the actual quantities authorized, provided and approved times the unit costs indicated by the bidder. The final contract amount shall be adjusted upward or downward based on the actual payment amounts versus the bid amounts for PARTS C, D and E.

Part C. - Excavation of Additional Unsuitable Material

Excavation of unsuitable material, where authorized or directed, below the levels required for the Work in Parts A and B and backfill with compacted material per specifications. (price per cubic yard) (Final amount shall be adjusted upward or downward based on actual quantity authorized)

Estimated quantity of 150 cubic yards @ \$_____ per cubic yard = _____
 (A/E fill in estimated quantity to be included in bid)

Part C = _____ Dollars \$ Part D. - Piling (Example for Timber Piling)

Timber piling provided complete in place in accordance with the plans and specifications (Priced per each pile at the indicated length):

40' Timber Piling 60 ea. @ \$ ea. = \$ 30' Timber Piling 20 ea. @ \$ ea. = \$

Part D = _____ Dollars \$

Part E. - Caissons (Sample for Caisson Foundations) Cast-in-place concrete caissons complete in place in accordance with the plans and specifications (Priced per linear foot of caisson complete and accepted for each caisson diameter):

36 inch Diameter 250 linear feet @ \$ / linear feet =\$_____

48 inch Diameter 175 linear feet @ \$ / linear feet =\$_____

Part E = _____ Dollars \$

8.3.14 Specifying New Types of Materials Equipment or Systems: Projects for the University are not testing grounds for new type 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 shows that the material will meet the applicable requirements for the project. The Vice President of Facilities must approve such utilization.

Unless the manufacturer of a new material furnishes factual data sufficient to evaluate the material, it should not be considered for use. If a new material is considered for use, a competitive-type

specification must be written to assure that a competitive; good-quality product will be obtained. The Vice President of Facilities may, where justified, authorize use of a new material, equipment or system for a particular project on a trial basis for observation/evaluation.

8.3.15 Phraseology: Specifications must clearly indicate the requirements for the project. Words or phrases that are vague or may be interpreted more than one way often lead to problems during bidding or construction and result in change order claims/requests. The following instructions are intended to reduce common errors and conflicts 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 University for whom the Work will be performed and (2) the Contractor who has the responsibility to the University 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. It is acceptable for certain specialty work to be performed by persons qualified, certified or licensed (if appropriate) and experienced in this type of work.
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.”
7. Describe the work that is included under the respective sections.
8. Specifications should clearly delineate air conditioning ducts, heating ducts and piping systems that 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.
9. Do not confuse any and all; “Correct any defects” should read “correct all defects”
10. Do not confuse the words “either” and “both”; e.g., “Paint sheet metal on either side” should read “Paint sheet metal on both sides”. “Either” implies a choice.

11. 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.
12. 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.
13. Use statements that are definite and contain no ambiguous words and phrases.
14. “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”.
15. “Reinstall” implies put existing back in an 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.
16. “Replace” implies removal of old material and furnish and install new material. The preferred wording would be to “remove” and “provide”
17. “Provide” is defined as “furnish and install”. When material or equipment is “furnished” by the University 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 University will “furnish” the materials in question.

8.3.16 Specifications on CD, DVD, Bluray, or Flash Drive: The University requires the A/E to provide one copy of the final completed Divisions 1 thru 16 specifications including addenda. As required by Appendix Q.

8.3.17 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. See Mason Design Manual for proprietary hardware information.

SECTION 8.4 COST ESTIMATE STANDARDS

Detailed descriptions and requirements for cost estimates are provided in Appendix E. 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. 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 of equipment or built-in systems, shall accompany the Building Cost Summary form.

A required independent cost estimate will be provided by the University for the Preliminary Submittal. The A/E and independent cost estimator shall endeavor to reconcile differences in the estimates. On large projects, where construction cost versus budget is in doubt, the University may also obtain an independent cost estimate based on the final plans and specifications.

SECTION 8.5 DESIGN INITIATION/PRE-DESIGN CONFERENCE

The University shall arrange for a pre-design conference. Participants should include the Associate Vice President for Planning and Design, the Planner, Design Manager, Construction Manager and the A/E's Project Manager and the responsible designer in each discipline (architect, civil, structural, mechanical, and electrical and others if needed).

If the University determines that such a conference is not needed for the project, the University shall notify the listed participants 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 to all 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
- Authorized Communications
- Design not to exceed Construction Budget
- Proposed Design Schedule
- Requirements of the Manual related to Chapters 7-10 of the Manual and Fire Safety Reviews
- Clarification / Resolution of Budget Development Comments
- Submittal Contents
- Review Requirements
- Intent of Review Comments
- Waivers and Code Modifications
- Sole Source/Proprietary Specifications
- Use of Standard HECO and 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

SECTION 8.6 SCHEMATIC DESIGN/PROJECT CRITERIA

8.6.1 General Requirements: Unless waived by the HECO-2 Action Wording, a schematic design/project criteria submittal shall be made to the Code official. The purpose of the schematic submittal is to develop further 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, an Assignable Room and Space Listing, or Department MOU, which was the basis for development of the Schematic Design.

A schematic “On Board” review meeting with the Code Official (BCOM or other) 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 Land and Building Committee is required. (See Appendix L) Reviews by the University

Building Committee and BCOM are also required. Also, see the Mason Design & Construction Guidelines.

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

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

8.6.3 Schematic Drawings: The following drawings shall be included as a minimum:

- Floor plans consisting of single line drawings of each floor layout showing space names, nominal room sizes, and circulation paths
- Roof plan
- Longitudinal building section with floor to floor and floor to ceiling dimensions
- Transverse building section
- Exterior elevation views
- Structural plan of a typical supported floor framing scheme and a typical section showing the proposed components of the floor system
- Orientation and approximate location of existing and proposed roads, walks, and parking, and utilities on a the site plan
- Any other information that would be of value to the University and the Architect/Engineer reviewing the project.

8.6.4 Verification of Existing Conditions: The A/E shall visit the site and ascertain pertinent local conditions that must be addressed in the design.

8.6.5 Cost Estimate: See Appendix E for Schematic Cost Estimate requirements.

SECTION 8.7 PRELIMINARY DESIGN

8.7.1 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, an Assignable Room and Space Listing, or Department MOU, which was the basis for development of the Preliminary Design.

8.7.2 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 E (Cost Estimate).

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.

8.7.3 Value Engineering: For every Project whose construction cost is valued at \$5,000,000 or more, the Commonwealth requires that a Value Engineering study be performed. (See §2.2-1133 Code of Virginia. The procedure for conducting the Value Engineering Study shall comply with Section 8.14. For projects, which are delivered through Design/Build or Construction Manager at Risk, the University Project Manager can request a waiver for the Value Engineering from the Vice President of Facilities. The theory is that Value Engineering is continuous with these two construction delivery processes and doing a separate VE study would be redundant. The University must seek and receive written approval from DGS requests that a written log of the value engineering decisions be submitted to DGS, so University Project Managers are advised to keep records accordingly. The University is required to report value engineering activity each year. This report includes a summary of the amount saved and general categories of savings.

8.7.4 Review Process: The A/E shall prepare and submit to the University Project Manager, in quantities specified, black line or blue line prints of all drawings together with copies of cost estimates, Narrative, reports and other data as set forth below. After the University Project Manager reviews the submittal, one set of review comments will be provided E-Mailed 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 Appendix L) Reviews by the University Building Committee the University Architect, and the Code Official (BCOM) are also required. The University Project Manager shall evaluate the need for the following reviews and assign responsibility accordingly:

- Fire Safety Review
- Erosion and Sediment Control Storm Water Management
- Department of Historic Resources (As required)

- Department of Health
- State Water Control Board
- Department of Air Pollution Control

- Department of Waste Management
- 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 to by the University.

8.7.5 Preliminary Submittal Requirements: The following information and data shall be the minimum acceptable requirements for a Capital Outlay project:

- Basis of Design Narrative describing 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 this Manual. See Appendix D.
- Cost estimate per Section 8.4 Cost Estimate Standards.
- Soils report to include boring logs, geotechnical analysis and foundation design recommendations. (For new construction and additions)
- Preliminary drawings as described hereafter.

Preliminary submittals shall include ventilation design criteria and sufficient data to show compliance with code requirements and standards of good practice.

8.7.6 General Requirements for Preliminary Drawings: Preliminary drawings shall show the following information unless such information is not applicable to the project:

Title Sheet(s)

- Project Identification: Project Code, Appropriation Act number, and University PIMS (or Work Order) number.
- Location and vicinity maps.
- Tabulation of floor areas (new and renovated), total area, volume.
- Tabulation of units: Number of parking spaces, auditorium seats, bedrooms etc.
- Listing of applicable codes with dates.
- Building Purpose/Occupancy.
- Use Group(s) per VUSBC.
- VUSBC Construction Type
- Occupancy Load(s) per VUSBC.
- Index of drawings.

Site Plans (site/improvement plan & composite utility plan minimum for new construction and additions; should be based on approved comprehensive Master Plan.)

- Scale and north arrow.
- New and existing contours affected by the new work.
- Floor and contour elevations.
- Applicable boundaries with survey computations.
- Dimensioned relationship Location of major components of the new work to with respect to boundaries and existing structures.
- Location of test borings.
- General parking and handicap parking.
- Handicapped-accessible routes
- Pedestrian traffic routes.
- Demolitions: structures, walks, utilities, trees, etc.
- Proposed landscaping (planting materials)
- Existing and new utilities: storm sewers, sanitary sewers, water supply, gas, steam distribution pipes and tunnels, electric and telephone poles and lines, hydrant locations and data on fire flow test.
- Site improvements such as fencing, lighting, etc.
- Typical paving section for proposed types/thicknesses.
- Identify/show special earthwork recommended and construction considerations noted in soils report.
- Archaeology Features **Demolition Drawings**

Interior Demolition

- Provide information on work to be removed;
- Note results of asbestos survey; and
- Note results of lead based paint survey.

Total Building Demolition

- Provide a floor plan showing building size;
- Describe existing material /construction to be removed;
- Show an elevation (drawn or photographic) of building;
- Note results of asbestos survey; and
- Note results of lead based paint survey.

Architectural Drawings

Floor Plans (for each floor)

- Plans of each floor at 1/8" = 1'-0" preferred (1/16" = 1'-0" must be justified)
- Overall dimensions.
- Space names and/or numbers assigned by the Planning and Design, and number of occupants of all spaces.
- If the work is an addition, show the relationship of new to existing spaces.
- Distinguish new from existing construction.
- Show demolition on the architectural plans or separate plans.
- Indicate asbestos locations regardless of who removes it or how it is removed.
- Indicate all openings, entrances, delivery areas.
- Indicate handicap access and Areas of Rescue Assistance.
- Show scale and north arrow.

Roof Plan

- All proposed and existing drains.
- Roof slope: 1/4" per 1'-0" to drain minimum for all areas (unless waived for reroofing) including auxiliary drains.
- Indicate slope (high to low) with direction arrows
- All new and existing equipment.
- All significant roof penetrations and structures.
- Identification of materials on existing roofs.
- Typical roofing section identifying materials.
- Access to roof.

Exterior Elevations (Scale 1/16" = 1'-0" minimum).

- All openings: windows (including operable notation), doors, louvers, and vents.
- Percentage of glass vs. gross wall area.
- Floor elevations (above sea level).
- Identification of all major finishes.
- All stairs, ramps, and railings.
- Rooftop equipment and structures.

- Expansion and control joints.
- Grade at the face of the building wall.
- Subsurface construction (dotted in).
- Existing and new work clearly distinguished.

Small Scale Sections (Scale: 1/16"=1'-0" minimum)

- One longitudinal and one transverse section minimum.
- Show all floor levels on sections.
- Indicate ceilings in proper relation to floors.
- Method and extent of insulating exterior envelope.

Detail Sections (Scale: 3/4" = 1'-0" minimum)

- One section for each type of wall construction.
- Identify all major materials and components.
- Identify insulation and note "R" value.

Finish Schedule

- May be included in the Basis of Design narrative or on drawing. Indicate proposed finishes for all spaces. Note those existing finishes to remain.
- Show ceiling heights of interior spaces.

Furnishing/Equipment Plans

- Show all major equipment to approximate scale.
- Show all built-in furnishings to scale.
- Show on these plans or on separate furniture information plans, furniture/furnishings outlines that the space was designed to accommodate.

Structural Drawings

- Show Live Loads, Wind Loads, and Seismic Criteria used for structural design
- Show design bearing / support capacity (soil bearing, pile capacity, caisson capacity) for foundation system geo-tech design criteria for shallow and deep foundations and earth structures.
- Foundation Plan indicating type & tentative sizes
- Foundation details and improved improvements to bearing strata and other special requirements.
- Floor and roof Framing Plans of each level indicating type of system and tentative member sizes/depths and column spacing with defined grid lines.

- Typical Section(s) of framing identifying materials, tentative member sizes, thicknesses and, depths proposed.
- Typical Section of floor system.
- Indicate structural construction materials and properties.
- Details of connections to existing buildings, if applicable.
- Identify elements of proposed lateral force resisting system.

Fire Protection (FP) Information & Sprinkler Plans

Provide plan of each level showing the following:

- Fire protection information* including:
 - Height and area calculations in accord with VUSBC.
 - Total building perimeter (linear feet)
 - Location of all 30' wide-open perimeter spaces served from a street by a minimum 18' wide posted fire lane (must be shown on a drawing)
 - Tabulation of area for each building level, story, or floor indicating number of occupants accommodated by each. If the project is an addition, list new and existing areas and occupancies.
 - Water flow test data required by NFPA 13.
 - Required or intended fire protection systems, fire detection and alarm systems, fire pump systems, smoke control systems per Chapter 7.
 - Define each Use Group area and show its VUSBC Use Group classification (A-1, A-2, etc.).
 - Identify and show rating of all rated assemblies, smoke barriers.
 - Indicate use(s) of all building spaces (offices, auditoriums, etc.) or reference drawings where complete information may be found.
 - Show the room/space number and the maximum number of occupants per VUSBC for each space.
 - Distinguish new walls from existing walls and new construction from existing construction. Completely show routes of all fire walls, fire separation walls (including exit access corridor walls), and smoke partitions.
 - Identify the extent of all fire rated floor/ceiling and roof/ceiling assemblies.
 - 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 proposed sprinkler piping layout including main sprinkler lines and a typical layout of branch lines (See 1994 NFPA 13, Figure A-6-1 for sample format.)
 - Show and identify all new and existing standpipes.

- Provide a small-scale drawing showing locations of water hydrants, test and low 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. Conduct the test in conformance with NFPA 13, 14, and 291 and provide the required documentation of test results. (See NFPA 14 Appendix for additional guidance.) Two locations are required for these tests of water supplies. Use an approved gauge to read the 'test' or 'residual' pressures at the hydrant nearest the building and a 'Pitot" tube or gauge at the next closest hydrant to measure the 'flow'. If the local water authority prohibits flow testing, indicate on the documents the flow and pressure data provided by the authority and note as such.

Plumbing Drawings

- Plans of each floor noting fixture locations and types.
- Indicate routing of main distribution lines with tentative sizes.
- Show general or schematic arrangement of all piping systems.
- Show location of water, sanitary sewer, storm sewer and sprinkler services to the building.
- Show tentative fixture schedule.
- Show location, sizes and types of Hot Water Heaters/ Heat Exchangers, Storage Tanks, and flues if required.
- Show gas piping layout and connected load, if applicable

Mechanical (HVAC) Drawings

- 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.
- Show equipment schedules with tentative sizes, capacities, ID #, features, etc.
- Indicate locations and sizes of fans, pumps, compressors, conveyors, etc.
- Schematic layout and elevation of equipment room and/or central system showing configuration, tie-ins, etc. as necessary to describe system. -Central heating or cooling plants, distribution piping, equipment. -Preliminary control diagrams.

Electrical Drawings (Power and lighting plans may be combined if product clearly conveys required information.) See Appendix D for additional Preliminary Submittal requirements.)

- Lighting plans for each floor showing approximate fixture locations, type, and lighting level required (design level in foot-candles).
- Power distribution plans showing location of incoming service (transformers and primary switches), generators, main switchgear, motor control centers and panel boards.
- Show interface points service entrances, main control panels and backboards for communications, fire alarm, EMCS and other pertinent systems -Plans for each floor showing proposed locations of receptacles, telephone and data outlets, switches, fire alarm and other devices.

SECTION 8.8 WORKING DRAWINGS PHASE (CONSTRUCTION DOCUMENT PHASE)

8.8.1 General Requirements: The A/E shall visit the site as necessary to ascertain pertinent local and site conditions. Based on the Preliminary plans 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 Architect or Engineer 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.

If any change from the information submitted at the preliminary stage relating to the mix or amount of space for institutions of higher education is made, the University Project Manager and/or A/E shall submit new information in accordance with the format shown on the sample form entitled Project Space Profile.

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 and responsible State Fire Marshal Office are required.

8.8.2 Plans, Sections and Details of Equipment or Systems: The drawings shall have sufficient plans, sections and details to indicate generally 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 8.3.7 for requirements concerning the use of brand names and models.

8.8.3 Cost Estimate: The A/E shall submit a detailed Cost Estimate in conformance with the requirements of Appendix E, 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.

8.8.4 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.

8.8.5 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.

8.8.6 Submittal Documents: Contract Documents shall be complete, coordinated, checked and ready for approval to bid. Contract Documents shall bear a uniform date as described in this Manual. 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 that do not apply to the particular project.

8.8.7 Working Drawings: Shall show or provide the following information (in addition to items required for preliminary submission):

Title Sheet(s)

- Project Identification: Appropriation Act number, Project Code.
- Location and vicinity maps noted to show project location.
- Tabulation of floor areas (new and renovated), total area, volume.
- Tabulation of units: Number of parking spaces, auditorium seats, bedrooms etc.
- Listing of applicable codes with dates.
- Building Purpose/Occupancy.
- Use Group(s) per VUSBC.
- Type of construction and VUSBC Type #
- Occupancy Load(s) per VUSBC.
- Design Floor Live Loads.
- Index of drawings.

Site Plans (site/improvement plan & composite utility plan minimum requirements for new construction and additions)

- Based on approved comprehensive Master Plan.

- Scale and north arrow.
- Existing and new contours affected by the proposed work.
- Floor and pavement elevations.
- Applicable boundaries with survey computations.
- Dimensioned relationship of new work to boundaries and existing structures.
- Location of test borings.
- General parking and handicap parking.
- Handicap accessible routes
- Pedestrian traffic routes.
- Demolitions: structures, walks, utilities, trees, etc.
- Proposed landscaping (planting materials)
- 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.
- Profile of all utilities and any roads over 100 feet in length.
- Site improvements such as fencing, lighting, etc.
- Typical paving section of each type and thickness required.
- Identify/show special earthwork recommended and construction considerations noted in soils report.
- Archaeology Features

Demolition Drawings

For total building demolition, provide:

- Plan of building with length & width dimensions,
- Elevations (drawn or photographic) and cross section of building to be demolished
- Details of termination of demolition, underpinning, etc.

For interior / selective demolition, provide:

- Floor plans showing existing partition, etc., and showing or describing existing material /construction to be removed
- Information or estimates for bidding for work to be removed.

Architectural Drawings

Floor Plans (for each floor)

- Plans of each floor at a minimum 1/8" = 1'-0" preferred (but not less than 1/16" = 1'-0")

- Show room/space numbers assigned by Planning & Design
- Overall dimensions.
- If the work is an addition, show the relationship of new to existing spaces.
- Distinguish new from existing construction.
- Show demolition on the architectural plans or separate plans.
- Indicate asbestos locations regardless of who removes it or how it is removed.
- Indicate all openings, entrances, delivery areas.
- Indicate handicap access.
- Show scale and north arrow.

Reflected Ceiling Plans

- Ceiling tile / grid layout
- Light fixture locations
- Sprinkler head locations
- HVAC diffuser and grille locations
- Coffers, drop soffits, changes in height or materials
- Space numbers
- Speakers and smoke detectors

Roof Plan

- Plan(s) of each roof at a minimum 1/8"=1'-0" preferred (but not less than 1/16" = 1'-0")
- All proposed and existing drains, including auxiliary drains.
- Roof slope: 1/4" per 1'-0" to drains minimum (unless waived for re-roofing).
- All new and existing equipment.
- All significant roof penetrations and structures.
- Identification of materials on existing roofs.
- Typical roofing section identifying materials. • Access to roof.
- Indicate direction of slope (high to low) with arrows

Exterior Elevations

- Scale (1/16" = 1'-0" minimum).
- All openings: windows, doors, louvers, vents.
- Percentage of glass vs. gross wall area.

- Floor elevations (above sea level). Coordinated with Site Plan elevations.
- Identification of all major finishes.
- All stairs, ramps, and railings.
- Rooftop equipment and structures.
- Expansion and control joints.
- Grade at the face of the building wall.
- Subsurface construction (dotted in).
- Existing and new work clearly distinguished.

Building Cross Sections (Scale: 1/16"=1'-0" minimum)

- One longitudinal and one transverse section minimum.
- Show all floor levels / elevations on sections.
- Indicate ceilings in proper relation to floors.
- Method and extent of insulating exterior envelope.

Detail Sections (Scale: 3/4" = 1'-0" minimum)

- One section minimum for each type of wall construction.
- Identify all major materials and components.
- Identify insulation and note "R" value.
- One section with dimensions and details for each stair configuration.

Details

- Typical window, door and special opening details shall be drawn at a minimum 1- 1/2" = 1'-0" scale.
- Interior and exterior details, including special doors, windows, woodwork and other decorative work.
- Toilet plans and elevations shall be drawn at a minimum 1/4"=1'-0" scale.

Finish Schedule

- Indicate proposed finishes for all spaces. Note those existing finishes to remain.
- Give ceiling heights of interior spaces.
- Show (or specify) all finishes, textures, colors, etc., required to be provided by the Contractor.
- Use University assigned room numbers.

Door Schedule

- Doors numbered to University standards, type, size, material, hardware set number and fire rating if required.

Window Schedule

- Type, size, material and lintel requirements.
- Elevations of each window type.

Furnishing/Equipment Plans

- Show outline of all major equipment to approximate scale.
- Show outline of all built-in furnishings to scale.
- Provide elevations, sections and details as necessary to describe built-in equipment, casework and furnishings included in the work of this contractor.

Structural Drawings

- 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.
- Show design live loads, wind loads, and seismic criteria used for design of structural systems per VUSBC Section 1603.
- Design procurement criteria and typical details for 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 described in Chapter 9 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.
- Structural drawings shall include plans, with defined gridlines, at the same scale as the architectural plans. Details and sections shall be at a scale of not less than 3/4" = 1'-0".
- The plans, details and specifications shall completely define the structural system and any special conditions for the project.
- Foundation Plan indicating type & sizes.
- Foundation details with improvement criteria for bearing strata and other special requirements.
- Floor Framing Plans of each level indicating type of system, and member sizes/depths and column spacing and all penetrations.
- Roof Framing Plan.
- Typical Section(s) of floor and roof systems identifying materials, thicknesses, depths. Provide appropriate details to define structure.
- Details of connections to existing buildings, if applicable.

- Underpinning and temporary support of existing structures shall be designed to extent possible with available information. Design criteria and load information to be provided for completing the design by the Contractor for review by the A/E.
- Typical details for openings in floors and walls with limitations clearly noted.

Special Structural Requirements

See Chapter 8, Section 8.2 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.

Fire Protection (FP) Information Plans

Provide plan of each level showing the following:

- Define each Use Group area and show its VUSBC Use Group classification (A-1, A-2, etc.).
- Identify and show rating of all rated assemblies, smoke barriers.
- Indicate use(s) of all building spaces (offices, auditoriums, etc.) or reference drawings where complete information may be found.
- Show the VUSBC number of occupants to be accommodated in each space. (This number should be the same as the posted maximum for the space.)
- Distinguish new walls from existing walls and new construction from existing construction. Completely show routes of all fire walls, fire separation walls (including exit access corridor walls), and smoke partitions.
- Identify the extent of all fire-rated floor/ceiling and roof/ceiling assemblies.
- 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.

Fire Protection Design Supporting Material: 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:

- Provide height and area calculations in accord with VUSBC.
- Show the total building perimeter (linear feet).
- 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.
- 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:
- 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
- Provide complete water flow test data required by NFPA 13.
- Required or intended fire protection systems, fire detection and alarm systems, fire pump systems, smoke control systems per Chapter 7.

Sprinkler System Drawings

- Show proposed sprinkler and standpipe piping layout including main sprinkler lines and layout of branch lines. Call out sizes of all pipe 2" and larger. (See 1994 NFPA 13, Figure A-6-1.1 for sample of Working Drawing equivalent.)
- Dimensionally locate pipe centerlines horizontally and vertically for risers, for mains and branch lines where location is critical to interface with other work.
- Provide Sections to scale of congested areas showing all pipes, ductwork, conduit, fixtures, structure, etc. in their respective sizes and locations
- Indicate relative location of sprinkler piping on other discipline's sections.
- Provide sprinkler riser diagram with appropriate fittings, accessories, sizes, alarms, valves, etc., noted.
- Show static & residual pressure and water flow used for design.
- Show sprinkler head type and temperature rating
- Indicate type and locations of required anchors or braces.
- Show and identify all new and existing standpipes.
- 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.

Plumbing Drawings

- For renovation projects, provide (here or on cross-referenced demolition plans) plans showing demolition in sufficient detail that the work may be bid from the drawings.
- Plans of each floor noting fixture (including laboratory and compressed air outlet) locations and types of each.
- Plumbing fixture schedules showing designations, connection sizes, and mounting heights of handicapped fixtures. (Note that flush valve handles shall be located on the wide side of the handicapped enclosure).
- Plans showing layouts and sizes of sanitary DWV piping, cold condensate drainage systems, floor drains, acid waste systems, neutralizing tanks, etc.
- Plans showing roof drains and areas served by each in square feet, piping and sizes. Show downspout boots and connections to foundation drains.
- Plans showing domestic hot and cold water systems, including piping sizes, domestic water heaters with expansion and storage tanks, backflow preventers, water hammer arrestors, water meters, relief devices, and valves including pressure reducing, isolation and balancing.
- Plans showing layouts and sizes of compressed air piping, air compressors, air dryers, drains, etc.
- Plans showing deionized water systems.
- Riser diagrams for sanitary drain, waste and vent; domestic hot and cold water; deionized water; and compressed air where the system is extensive. Risers shall be designated and keyed to the plans. Show room numbers where the outlets/inlets occur and show drain fixture units at the base of each riser. Show sizes of water hammer arrestors.
- Details of hookups at water heaters, air compressors, etc., and roof drain installation.
- Schedules of water heaters, air compressors, air dryers, and drains.

Mechanical (HVAC) Drawings

- For renovation projects, show demolition in sufficient detail that it may be bid from the drawings.
- Plans of each floor and roof showing double line-duct layouts, mechanical equipment location and layouts. Plans shall show ceiling-mounted lighting fixtures.
- Plans of each floor showing chilled water, heating hot water, steam and condensate piping and piping sizes. Show provisions for expansion. (This may be shown on ductwork plans where congestion is not a problem.)
- Provide layouts of mechanical equipment and fan rooms to a scale not less than twice that of the floor plans. Show equipment, ducts, piping, etc. to coordinate the installation in tight areas. Show access and service space requirements such as that required for tube, coil, and fan removal.
- Provide schedules for all mechanical equipment, steam traps, air devices, etc. showing sizes, capacities, HP, CFM, electrical characteristics, locations, features, etc.

- Provide drawings showing control schematics, automation points, etc.
- Provide schematic diagrams of chilled and heating water, steam, and condensate piping.
- Central heating and cooling plants, distribution piping, equipment, anchors, expansion joints, etc. shall be shown as necessary to describe clearly the work.
- Provide sections as required to show clearly the work in 3 dimensions.
- Show the building loads (in BTU or pounds of steam per hour) to include transmission plus infiltration, outside air, domestic hot water, and kitchen, laundry and hospital hot water and outside air loads that are supplemental to those mentioned where applicable.
- Indicate the sensible and total air conditioning load of the building in tons. Also, show the outside air portion of the cooling load in tons.
- Provide details as necessary to show fittings for ducts.

Electrical Drawings

(Power and lighting plans may be combined if the combined drawing clearly conveys required information.)

- In renovation work or existing buildings, show existing electrical equipment, devices and lighting fixtures, etc., both to be removed and to remain. Provide sufficient detail so that work may be bid from the drawings.
- Plans shall show all casework, furniture, mechanical equipment and other equipment that impacts the electrical design.
- Plans shall list, in kVA, the total electrical load and the total load on any generators. Indicate the largest motor size, in horsepower.

Lighting Plans

- Lighting plans for each floor showing fixture location, type, and lighting level (calculated, in foot-candles).
- Provide Lighting Fixture schedule on the drawings. Schedule to include the following, at a minimum: fixture type, lamp and ballast information, reflector, lens and louver information, mounting method.

Power Plans

- Power distribution plans showing location of incoming service (transformers and primary switches), generators, main switchgear, motor control centers, and panel boards.
- Service entrances, main control panels, and backboards for communications, fire alarm, EMCS and other pertinent systems.

- Plans for each floor showing locations, and mounting heights, of receptacles, telephone and data outlets, switches, disconnect switches, motor starters and other devices.

Fire Alarm

- On electrical power floor plans, show location of control panel, battery and charger, transmitter, annunciator, fusible safety switch, remote trouble device, alarm devices, and each actuation device including fire extinguishing system switches.
- One electrical site plan, show location of any PIV valves or other devices to be connected to the fire alarm system.
- Show single line fire alarm riser diagram.

Site Plan

- Electrical site plan showing: electrical and telephone/data/CATV services, both new and existing; new and existing site lighting and their associated circuitry; location of transformers, primary switches, generators; circuitry to chillers, cooling towers, etc.
- Details of duct banks, equipment pads, manholes, lighting pole bases

Schedules, Risers, etc.

- Provide control diagrams, panel board schedules, motor control center schedules, distribution panel and main switchgear schedules, and riser diagrams for power, telephone, security and other systems.
- Sizes of all overcurrent protective devices, relays, CTs, PTs, starters and disconnects

Control Systems

- Provide a written sequence of operation for each mechanical and electrical control system stating explicitly how systems are to function.
- Give all pertinent data regarding safety, alarms, indicators, and control parameters.
- The sequence of operations may be shown on the control diagrams in lieu of in the specification.
- Provide control system diagrams.
- Indicate point(s) of connection of new to existing system.
- Indicate or describe location of operator interface (PC) unit.

Rock Excavation: See Section 7.14 for requirements. Provide estimated quantities of rock excavation on the Bid Form.

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.

SECTION 8.9 BID FORMS AND PROCEDURES

For Instruction to Bidders: See Sections 8.3.6

For Unit Price Bids: See Section 8.3.13

For Bid Form Preparation: See Chapter 9.

Prequalification of Contractors or Subcontractors: Prequalification criteria, procedures, and appeal process requirements are shown in Chapter 10.

Advertising: The University shall notify the A/E in writing when final Contract Documents have been approved. See Chapter 9 for advertising requirements.

SECTION 8.10 ADDITIVE BID ITEMS

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 University 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 University and A/E have incorporated reasonable cost containment measures in the design, Additive Bids Items may, with the approval of the Vice President of Facilities be used for budget control subject to the following limitations:

1. 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.
2. The total cost estimate of the Total Base Bid plus all Additive Bid Items shall not exceed 110% of the funds available.
3. Additive Bid Items shall be structured to minimize additional effort needed to prepare the bid.
4. 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.

5. 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.
6. Only the term Additive Bid Item shall be used. Use of the term Alternate is not permitted.
7. The Work included in each Additive Bid Item shall produce a complete component that may be incorporated into the work in the Base Bid.
8. Each Additive Bid Item shall be independent of other Additive Bid Items.
9. 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.
10. Additive Bid Items shall be listed so the most essential Additive is first, and so on.
11. When the project bids are received and opened, the low bidder shall be determined based on the lowest cumulative bid for the Total Base Bid plus the total amount of the Additive Bid Items, taken in sequence as the University in its sole discretion decides to accept or award.
12. Out-of-sequence selection of Additive Bid Items is prohibited, even if such manipulation would fit within the available funding.
13. Negotiations of Additive Bid Item amounts are 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.

SECTION 8.11 SUBMISSIONS

Prior to the submission of working drawings, the Architect shall furnish a written statement that will certify that the responsible architects and engineers have reviewed the documents and certify them to have been completely coordinated to industry standards of care. Where correction and/or additions are required after review by the University and/or the University Building Official, the responsible State Fire Marshal Office, etc., changes will be marked in yellow and returned to the review University and the University, upon completion of the corrections. The A/E shall provide adequate copies of plans, specifications, cost estimates, and other applicable data for the University’s use and for review by other applicable reviewing agencies. Submissions for building projects are indicated below and shall be adjusted as appropriate for a particular project:

Reviewing Entity	S	P	CD	RCD	YO	BID
BCOM	5	5	5	5	1	2
Mason Facilities Code Compliance	2	2	2	2	1	2
Regional Fire Marshal (renovation)		1	1	1		

Art and Architectural Review Board	1*	1*				
Number of copies usually required						
Reviewing Entity	S	P	CD	RCD	YO	BID
Mason Facilities Land Development						
Erosion & Sediment Control		1	1	1	2	
(Stormwater Management *)		1	1	1	2	
Number of copies usually required						
Other Review Agencies	S	P	CD	RCD	YO	BID
Department of Historic Resources	2*		2*	2*		
Health Department (Food Service)		1*	1	1		
DEQ (Air Division)	1*	1*	1*			
DEQ (Water Division)		1*	1*			
DEQ (Waste Division)		**	**			
County or City Manager		1**				
Chesapeake Bay Local Assistance Department			2*	2*		
Number of copies usually required						

Legend: S = Schematics P = Preliminaries CD = Contract Documents RCD = Revised or Required Re-submittal of Contract Documents Y/O = Yellow-out Documents
 BID = Bid Documents, including Addenda

* Pertinent parts or sections of documents only

** Submit data and dump location request for all asbestos-containing material or other hazardous waste materials resulting from renovation or demolition. Send one copy of all bid documents and addenda for both new construction and renovation projects to the responsible State Fire Marshal Office. When determined by the University as requested by the City/County Managers, provide one additional set of Preliminary Drawings.

The A/E shall coordinate with and obtain approval of the utility designs from the Physical Plant Department or, when applicable, local utilities agencies for connection and service, and shall obtain approval of any required turn lanes or transitions from the District Engineer of the Virginia Department of Transportation for entrances to the project site. If asbestos projects are authorized to proceed with working drawings, two copies are required, and an additional two if revision and resubmission is necessary.

SECTION 8.12 AUTHORITY HAVING JURISDICTION REVIEW AND APPROVALS

Prior to the submissions to the Bureau of Capital Outlay Management Review (BCOM) and other University and State Agencies, the University Project Manager shall review the documents to ensure that they meet the functional and operating requirements of the project.

8.12.1 **General:** Reviews are performed as a service to the University and does not relieve the 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. See Section 8.13, Quality

Control/Quality Assurance, for A/E requirements pertaining to this before providing Contract Documents and subsequent submittals.

When the Authority Having Jurisdiction is satisfied that the documents are in conformance with all requirements, a Building Permit, HECO -17, will be issued by the Authority Having Jurisdiction. 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.

8.12.2 Annual Permit Work: The annual letter from BCOM provides guidance for review and issue of permits for work not specifically requiring a building permit but for which other code, directives and standards may apply.

8.12.3 Review Comments: The Code Reviewer will transmit its review comments to the University Project Manager in one of the following ways:

1. By E-Mail: Within 1 week after receipt of written comments from all applicable disciplines from the University Project Manager, the A/E shall provide a written response to all comments, preferably by E-Mail with the response noted below the review comment. All issues in dispute shall be resolved before proceeding to the next phase. The University Project Manager will forward the comment responses to the responsible State Fire Marshal Office, and code reviewers.
2. By a meeting/conference: at BCOM or A/E office where the comments are discussed and critical issues resolved. This method may be required by the University where it is expedient to identify the general types or nature of deficiencies, especially if a resubmittal will be required. The proposed actions and decisions reached in the meeting will be accurately recorded in writing by the A/E and distributed to all meeting participants within five (5) workdays after the meeting. For responsible State Fire Marshal Office fire safety reviews, this process would be only at the invitation of that review University with minutes accurately recorded by the University or the A/E.
3. By an “On Board Review” meeting with BCOM and the A/E: Documents will be reviewed and issues discussed and resolved. The A/E will record the minutes of this meeting and submit them to the University within seven (7) working days. This method will be used only in reviews of revised (not resubmitted) working drawings with highlighted corrections, and under conditions stipulated by BCOM if approved by the University Project Manager. The “On Board Review” method will usually require that the revised working drawings be received at least three working days before the meeting.

8.12.4 Resubmittals: Drawing Submittals which are incomplete, which require extensive revisions, and/or which do not conform to the requirements of the Manual shall be properly completed and resubmitted for a new review. The A/E may be required to make such drawing resubmittals without compensation or reimbursement.

8.12.4 **Revised Submittals:** All changes, revisions, and additions shall be highlighted in yellow on at least two revised submittal set of preliminaries or one unbound set of working drawings and specifications. Any new information shall be highlighted in another color.

8.12.5 **Print and Release of Bid Documents:** Bid documents (plans and specifications) shall not be printed or released to bidders until the Code Official reviews revised documents and authorizes them to be printed and released.

When authorized to advertise for bid on Capital Projects by the approved HECO-6, Mason Facilities Contracts shall establish a bid receipt date.

Complete and coordinated documents, checked and sufficiently detailed to provide bidders and builders with a clear description of the University project requirements will be the key to gaining approval to print/release documents for bidding.

Clarification and corrective data shall be included in addenda to those documents issued at least 10 days prior to the date set for receipt of bids.

8.12.6 **Advance Advertisement/Notice:** In some cases, it may be advantageous to the University to advertise a project before bid documents are fully revised. In such case, the procedures below shall be followed:

1. If Advertisements are authorized to be placed in the newspapers and on the eVA website before bid documents are approved for printing and release, the Advertisement shall indicate: "Bid documents will be available to bidders on or about ___(date)___." The bid date shall be set to allow reasonable time to complete revisions, to review and print the documents, to issue the documents, and to give bidders at least three weeks to prepare bids.

8.12.7 **Review Times:** The review times published in the construction and professional services manual will be the goal for the project, exclusive of holidays, unless the submissions are obviously incomplete, (in which case the documents will be returned to the A/E).

The Art and Architectural Review Board receives presentations from the University at its normal monthly meeting (usually the first Friday of each month) and makes recommendations to the Governor.

8.12.8 **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 the Code Official 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 Code Official review comments.

SECTION 8.13 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 Contract Documents prior to submitting the working drawings documents to BCOM. The checklists in Appendix D 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 identify clearly 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 (which discipline's drawings) the information occurs on the drawings.

The first sheet of the plans and specifications submitted to BCOM shall contain the following statement signed by the responsible A/E:

“A Quality Control/Quality Assurance check has been made on this project’s documents and corrections have been made. The undersigned states that these plans and specifications submitted for review are complete and ready for bidding.”

Signed: _____
(Type Name & Title)

This statement shall not appear on the sets of documents issued to bidders

SECTION 8.14 VALUE ENGINEERING (VE)

8.14.1 General: Capital Projects with an estimated construction cost greater than \$5,000,000 shall have a 40-hour Value Engineering (VE) Study conducted on the design. (See §2.1-1133, *Code of Virginia*.) The study shall be conducted by a qualified VE Team prior to or concurrent with the preliminary (35%) design review utilizing the five-step job plan as recognized by the Society of American Value Engineers (SAVE). A presentation of the study results shall be made to the University. On large projects, a two day VE Study is encouraged at the Schematic Design phase.

8.14.2 Scope of VE Study: Generally, the VE Study should be made by a multi-discipline team of five VE qualified certified professionals meeting on five consecutive workdays. 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 shown otherwise in the RFP) shall encompass the recommendations of the VE study group and include detailed cost estimates, life cycle analysis and sketches, as necessary.

The VE Team should convene in a manner to allow dedicated deliberation without normal daily interruption. The University, or Certified Value Specialist (CVS) if so contracted, will provide a suitable room with tables and chairs, with immediate or convenient dedicated use of a copier. VE services shall be performed in a timely manner concurrently with the normal preliminary design review to minimize any delay in the schedule, dependent on availability of a functional cost estimate.

8.14.3 Procurement of the VE Study: BCOM members are certified VE Team Members and perform many of the University's VE Studies with an approved CVS. As an alternate, the University may choose to procure separately the VE services. If so, the University shall procure the services of a Value Engineering consultant using 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.

The VE proposer's response to the RFP shall include the proposer's 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.

The CVS is responsible for pre-study work, assembling, editing and reproducing the recommendations generated by the Value Engineering Team Study. The CVS must edit and sign the final report.

8.14.4 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 or 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 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.

Information Supplied to the VE Team: Prior to commencing the VE study, the A/E will forward the following information to the VE Team:

- Two sets of 35% drawings (full size)
- Five sets of half size drawings
- Outline Specifications & Systems Checklists (2 copies)
- Detailed Cost Estimate (6 copies)
- Basis of design (6 copies)
- Design Calculations (Structural, Mechanical, Electrical)

- Boring logs and soil reports
- Scope of Project/Program requirements (6 copies)

8.14.5 Certified Value Specialist (CVS) Responsibilities: The CVS shall have the following responsibilities for the VE Study:

- Pre-Study
 - (a) Review complete design package & identify high cost areas.
 - (b) Prepare cost model (actual vs. historical)
 - (c) Prepare bar graphs of all sub systems.
 - (d) Prepare preliminary cost worth ratios.
- 40-Hour Study
 - (a) Team Leader and coordinator.
 - (b) Team recorder.
 - (c) Presentation of recommendations.
- Post Study
 - (a) Write and assemble report.
 - (b) Proof all VE recommendations, especially the cost estimate and life cycle analysis.
 - (c) Calculate redesign effort for each recommendation in man-hours.
 - (d) Sign and submit final report within 7 days. Express mail 10 copies to the University and 5 copies to A&E of record.

8.14.6 VE Report Requirements: The results of the VE study performed on the project shall be documented as follows:

- Contents page.
- Brief description of total project and project requirements with a copy of the University's program requirements.
- Brief summary of VE recommendations.
- One site plan, floor plan and elevation on 8-1/2" x 11" or fold out.
- Summary sheet (only) of 35% cost estimate.
- VE cost model of project.
- Each VE recommendation will be described before and After VE and will be accompanied with a detailed cost estimate of savings, life cycle cost analysis, and sketches as necessary.
- Complete 5-step job plan (worksheets) of all work will be submitted as appendices for reference.

All reports must 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 foldout. 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.

8.14.7 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 will include representatives of the following: the A/E; University personnel including the Vice President of Facilities, Requestor, Architect for the University, University Project Manager and other specialist personnel).

8.14.8 A/E Participation: The design A/E’s involvement in the VE Study with anticipated man-hours by discipline for routine general construction is summarized as follows:

	PM	ARC	STRCT	MEC	ELEC	CIVIL
• A/E Design Team Present Over view of Design Concept	4	4	4	4	4	4
• A/E Design Team supports, reviews, & Supplements VE Effort	4	4	4	4	4	4
• Oral Presentation of VE Study Results to University	4	4	-*	-*	-*	-*
• A/E Review, Supplement, and Comment on VE Report to University	8	4	4	4	4	4
• Follow-up on Questions/Decisions	4	-	-	-	-	-
Totals (*As required)	24	16	12*	12*	12*	12*

The design A/E responsibilities include the following:

- Present an overview of the project criteria and development to the value engineering team.
 - Provide comments on the VE study report to the University within 14 days of receipt of the report.
 - Participate in joint 35% review/VE resolution meeting at the University.
 - Submit a final report within 14 calendar days of the resolution meeting to the University.
- Implement all finally accepted VE recommendations into the project design.

8.14.9 Criteria Challenge: In the package of documentation, which the design A/E prepares for the Value Engineering Consultant, the design A/E may include a Criteria Challenge Package to question specific project design criteria, instructions and/or user requirements and to identify alternate items or procedures that might satisfy the required functions at a lower life cycle cost.

Examples of criteria which might be challenged are the exterior appearance or materials which may have resulted from a visit to the AARB, requirements of the Architect for the University, the Energy Budget required by the Manual, a user requirement for every office to have a window, or a user criteria for square footage in spaces which exceed that necessary for the space function. Each challenge must include Code references, a life cycle analysis supported by recent research and testing, and any calculations that are necessary to support the challenge. A brief narrative describing the advantages, disadvantages and magnitude of potential savings shall be included as well.

The Criteria Challenge Package with the documentation provided to the Value Engineering Consultant shall be marked VALUE ENGINEERING and submitted with the Preliminary Submittal to the University Review Unit. However, project development will be based on current standards until such time as a formal approval is received for any waiver or deviation from codes, standards or Manual requirements.

8.14.9 A/E Action on VE Study: The following clarifies the specific submittals and approval procedures required for the VE Study responses and proposed action:

Both the University and the Architect/Engineer (A/E) shall review and evaluate the Value Engineering recommendations.

- The A/E shall provide a written comment and/or evaluation of each VE recommendation to the University Project Manager, along with the A/E's recommendation to accept, to reject, or to accept with modifications each VE recommendation.
- The A/E shall provide justification for rejection of, or modification to, any VE recommendation.
- The A/E shall prepare a Summary of Value Engineering Recommendations (see Format VE-1 in Appendix C) and indicate its recommended disposition of each item. The Summary sheet shall accompany the detailed responses / explanations sent to the University.
- The University shall review the A/E's evaluation and recommendations on the VE Study and the A/E's responses to the Code Official review comments. The University shall indicate its proposed action (acceptance, rejection, or acceptance as modified) on the Summary sheet.
- If any proposed action deviates from the requirements of the Virginia Uniform Statewide Building Code (VUSBC) or the Manual, the University shall also submit a request for code modification or waiver of Manual requirement for each item along with appropriate justification.
- The Code Official will review the responses to the University review comments and, in conjunction with the Architect for the University and the University Project Manager, the proposed action on the VE recommendations. The review will address where the A/E has rejected a VE recommendation for a design change that was identified in the VE study to meet the criteria of the project and save money. Upon resolution of the issue and agreement on a specific design direction, the HECO-5 will be approved and authorization given to prepare working drawings the Contract Documents.

SECTION 8.15 STRUCTURAL AND SPECIAL INSPECTIONS

The VUSBC in Chapter 1 prescribes the minimum inspections to be performed on a project. The VUSBC also adopts the International Building Code by reference. VUSBC Chapter 17, Structural Tests and Inspections prescribe 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 University's Project Inspection, the A/E and the University's Independent Testing Lab.

The University Building Official for all University-Owned buildings establishes the following procedure for the application of the Structural and Special Inspections for capital outlay projects. 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 including but not limited to inspections listed on the HECO-6b form. Identify those tests and inspections to be performed by the University'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 Structural and Special Inspections in Division 1 of the Specifications, using the HECO-6b form. See Appendix M for the Concept of the Process.

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.

Each project shall have an on-site Project Inspector/Clerk of the Works who shall, as part of his 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 University'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 A/E in accord 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 the University has determined to exclude this service from the A/E contract, qualified Architects and Engineers of the University shall perform this function.

The A/E's structural engineer, the University Project Inspector, and the University Project Manager or responsible person shall complete the Final Report of Structural & Inspections, Form HECO-13.1b, and submit to the University Building Official as soon as completed but prior to the Substantial Completion inspection for the project.

Appendix M, Structural and Special Inspections, contains the list of Structural & Special Inspections required for University -owned Buildings. The A/E shall edit the applicable list as necessary to indicate those materials and inspections that are and are not required for the project. See Chapter 9 and Appendix N for additional information on other Project Inspector functions.

SECTION 8.16 "COMMISSIONING" OF HVAC SYSTEMS

"Commissioning" for HVAC systems, as described in ASHRAE Guideline 1-1989 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 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 be 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 University personnel if required.

See section 9.14 for "Commissioning" inspection requirements.

SECTION 8.17 FIRE PROTECTION SHOP DRAWINGS

Fire Protection and Sprinkler shop drawings and submittal data shall be reviewed and approved by the A/E of record. When the submittal with any added notations is satisfactory to the A/E, the A/E shall so stamp and send one copy of such documents to the responsible State Fire Marshal Office, as appropriate, for final review before approval to begin installation.

CHAPTER 9: CONSTRUCTION PROCUREMENT AND ADMINISTRATION

SECTION 9.1 GENERAL

Section 2.2-4301, Code of Virginia, defines “Construction” as meaning building, altering, repairing, improving or demolishing any structure, building or highway, and any draining, dredging, excavation, grading or similar work upon real property.

Section 2.2-1132, Code of Virginia, provides that the Division of Engineering and Buildings shall provide assistance in the administration of capital outlay construction projects set forth in the appropriation act, 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, the Division of Engineering and Buildings may establish standards, as needed, for construction by the Commonwealth 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. In 2016 the General Assembly authorized (Chapter 780) George Mason University, as part of a five-year pilot program, to exercise additional financial and administrative authority as set out in each of the three functional areas of information technology, procurement and capital projects as set forth and subject to all the conditions in 2.0, 3.0, and 4.0 of the second enactment of Chapter 824 and 829 of the Acts of Assembly of 2008 except that (i) any effective dates contained in Chapter 224 and 829 of the Acts of Assembly of 2008 are superseded by the provisions of this item and (ii) the institution is not required to have a signed memorandum of understanding with the Secretary of Administration regarding participation in the non-general fund decentralization program in subsection C of 2.2-1132 in order to be eligible for the additional capital outlay project authority.

In accordance with the Act, the George Mason University Board of Visitors (BOV) approved the resolution for policy and procedures to comply with the Act on December 6, 2016. In accordance with the adoption, Mason hereby adopts the George Mason University Higher Education Capital Outlay (HECO) Manual. This Manual sets forth standards, policies, terms, conditions, and procedures to be followed by George Mason University, including all departments and colleges, in procuring Capital Professional Services and Capital Construction Services to comply with the Act.

Mason has been granted additional authority as a Tier II institution with Capital Outlay Pilot status under the Code of Virginia, Higher Education Management Act (the Act) and subject to the Pilot

status for Capital Outlay as authorized by the 2016 General Assembly (Chapter 780). The Governing Rules for Procurement (the Rules) establish the procurement policy for Mason in substitution to the Code of Virginia 2.2-4300 (VPPA).

In compliance with the Act and Chapter 780 (2016), this Manual serves to notify DGS/DEB, the A/E, Contractor, and other entities involved in regulating, proposing, or contracting with Mason for design, construction, and capital outlay projects of the procedures Mason applies to the management of its Capital Outlay Program. The Act provides that:

Tier II agencies with Pilot status have control over all capital outlay procedures regardless of the source of funds (General Fund or other). For pool funded projects, this control begins once the project has been funded by the Governor's Designee (6-PAC). The agency shall comply with the Pilot as it relates to the Virginia Public Procurement Act. Tier II agencies with Pilot status have the option of selecting their Building Official; Mason will continue to utilize DEB/BCOM as the University Building Official (UBO) for capital projects.

“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 , 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 Vice President of Facilities that competitive sealed bidding is either not practicable or not fiscally advantageous to the public. See Chapter 10 for Special Construction Procedures.

Contract Documents for capital outlay, maintenance reserve and non-capital outlay construction projects including, but not limited to, renovation, remodeling, demolition and repair work on buildings and other structures that require Plans and Specifications prepared by an Architect or Engineer, shall include the General Conditions of the Construction Contract HECO-7, and Supplemental General Conditions - SWAM. The University, at its discretion, may include a Supplemental General Condition to waive the requirements of Section 12 (b) of the General Conditions of the Contract, HECO-7, as it relates to the requirement for all Builders' Risk insurance for these categories of work if the University has, for each project, verified with the Department of Risk Management that its insurance will provide adequate coverage.

All Construction Work, for both capital and non-capital projects (over \$1 Million), shall be procured in accordance with this Manual regardless of the source of funds by which the contract is to be paid. Non-Capital work (under \$1 Million) may be procured as non-professional services in accordance with the Governing Rules and the Higher Education Manual and is not subject to the requirements of this Manual. If there is doubt, either contact Facilities Contracts Office for guidance or use the procedures of this Manual for procurement of construction.

SECTION 9.2 METHODS OF CONSTRUCTION PROCUREMENT

Three methods of construction procurement are typically utilized for Commonwealth of Virginia construction projects:

1. Competitive Sealed Bids (Design-Bid-Build and Small Purchases): Refer to Section 9.3.
2. Construction Management at Risk: Refer to Section 10.3.
3. Design-Build: Refer to Section 10.2.

For emergency procurement of construction services, other alternative methods of construction procurement, prequalification procedures and requirements for partial building permits on phased construction projects, refer to Chapter 10.

9.2.1 Reciprocity: In accordance with Code of Virginia § 2.2-4324, whenever the lowest responsive and responsible bidder is a resident of any other state and such state under its laws allows a resident contractor of that state a percentage preference, a like preference shall be allowed to the lowest responsive and responsible bidder who is a resident of Virginia and is the next lowest bidder. If the lowest responsive and responsible bidder is a resident of any other state and such state under its laws allows a resident contractor of that state a price-matching preference, a like preference shall be allowed to responsive and responsible bidders who are residents of Virginia. If the lowest bidder is a resident contractor of a state with an absolute preference, the bid shall not be considered. The Department of General Services posts a list on the eVA website of the state-by-state reciprocal preference data.

SECTION 9.3 CONSTRUCTION BIDS

9.3.1 Capital Outlay Construction Projects: All construction shall be procured by competitive sealed bidding in accordance with Title 2.2, Chapter 43 and the procedures described in this chapter or by special procedures as described in Chapter 10.

The Invitation for Bids for capital outlay construction projects shall include the General Conditions of the Construction Contract, G.S. Form E&B HECO-7; the Instructions to Bidders, G.S. Form E&B HECO-7a; the Notice of Invitation to Bid; a Bid Form; and other documents

9.3.2 Instructions to Bidders: See section 8.3.7. Appendix A contains instructions to bidders, HECO for Non-General fund Higher Education projects.

9.3.3 Virginia Construction Contracting Officer: A Virginia Construction Contracting Officer (VCCO) shall supervise the bidding and awarding HECO construction contracts. Procedures stipulated in this Manual shall be used in all cases.

9.3.4 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 the BCOM and, approval of the Director Facilities Project Management and Construction and issuance of the

Building Permit. The original signature Building Permit will be held on file by the University Project Manager for final completion.

9.3.5 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 in Appendix C. 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/E's 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 8.10 for further requirements and procedures concerning Additive Bid Items. Including or use of "Allowances" in the Bidding is not permitted.

9.3.6 Small Business Set Asides

Contracts for construction projects up to \$100,000 are set aside for small business as outlined below.

9.3.6.1 Total Construction Cost Less Than \$10,000

Contracts for less than \$10,000 are set aside for licensed contractors who are DSBSD certified micro businesses. Informally solicit bids from 2 micro businesses. If the cost is fair and reasonable, award the contract to the contractor with the lower bid. If the cost is not fair and reasonable, or upon due diligence (as determined by the Associate Director of Contracts in Facilities) it is determined that no micro business in a particular category exists, or was willing to submit a bid, the procedure in Section 9.3.6.2 below shall be utilized.

9.3.6.2 Total Construction Cost From \$10,000 to \$100,000

Contracts in this range are set aside for licensed contractors who are DSBSD certified small businesses. Informally solicit written bids from 4 licensed DSBSD certified small businesses and 1 licensed DSBSD certified micro business (unless upon due diligence it is determined that no micro business in a particular category exists, or was willing to submit a bid, as determined by the Associate Director of Contracts in Facilities). If the cost is fair and reasonable, award the contract to the contractor with the lowest bid. Post notice of award on eVA if the cost is over \$30,000. If the cost is not fair and reasonable, the set aside is removed and a minimum of 5 contractors shall be informally solicited.

9.3.6.3 Total Construction Cost More Than \$100,000

For contracts in this range, there is no set aside. Formally solicit written bids through posting on eVA. The bidder shall indicate in its bid whether it will be using specific subcontractors to comply with its small business procurement plan. If so, any variances between the contractor's listed subcontractors and the actual participation shall be submitted to the agency along with an explanation as to why the change is being made.

9.3.7 Use of DEB Contracts: For contract awards up to \$500,000 per project for renovation and up to \$250,000 per project for new construction, DEB has solicited and created a list of pre-qualified contractors. The list of contracts can be reviewed at the DEB Contracts web page. When

soliciting from the pre-qualified pool, or issuing orders under the contracts, the set aside procedures above for micro businesses and small business are applicable.

- Develop scope of work including plans & specifications (bid documents).
- Use HECO-7 General Conditions.
- Solicit for at least 21 days via email written sealed bids from all businesses listed based on the trade and region of the project. Additionally, for projects requiring specialized skills (i.e., historical plaster repair, repair of laboratory fume hoods), the agency may require Attachment 1 to further qualify the bidders.
- Receive sealed bids and open bids 24 hours later.
- If the cost is fair and reasonable, award should be made to the lowest responsive and responsible bidder.
- Award the contract using HECO9.1 (Notice of Intent to Award), HECO9 (Construction Contract) HECO9.2 (Notice to Proceed).
- Post the award on eVA.

9.3.8 Construction up to \$1,000,000: Construction up to and including \$1 Million can be procured as goods and services under Commonwealth of Virginia Purchasing Manual for Institutions of Higher Education and their Vendors. Procurement methods may include direct awards as per small purchase procedures, awards to “on demand” prequalified contractors per established procedures, established cooperative contracts (including JOC), IFB and competitive negotiation. Procurement method shall be determined by the VCCO with input from the Project Manager and as needed the Facilities Associate Director of Contracts reviewing factors such as project timeline, budget, and complexity to determine method in the best interest of the University. When public posting of a solicitation is required the posting will typically be 30 days prior to the bid/proposal due date, but shall be no less than 10 days; posting days for these purchases are at the discretion of the VCCO.

9.3.9 Advertising: The Construction Management Department shall establish a time and place for receiving bids. Bid receipt dates shall be coordinated through the University Construction Contract Administrator. The A/E shall use this information in completing the advertisement on the Notice of Invitation for Bids, Appendix C. Bids are generally not received nor opened on Mondays and Fridays. For general preparation of bid document see Chapter 8.

The advertisement should 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 should 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. 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 necessary for large projects. The advertisement will be circulated and posted for appropriate maximum exposure by Construction Management and be posted on the eVA web site when the expected procurement exceeds \$50,000.

9.3.10 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 Project Management & Construction Department shall conduct the pre-bid conference. The agenda shall include the following:

- Introductions of A/E and University representatives
- Synopsis of the Work by citing or reading portions of:
 - (a) Notice of Invitation for Bids
 - (b) Instructions to Bidders
 - (c) Pre-bid Question Form
 - (d) Bid Form
 - (e) Supplemental General Conditions
 - (f) Special Conditions

9.3.11 General Requirements: Other conditions or requirements included in the Bid Documents that should be called to the attention of the bidders:

1. Questions from the floor - A/E should answer only those questions where the response is to direct the questioner's attention to a particular portion of the bid documents. **ALL OTHER QUESTIONS SHOULD BE RECEIVED IN WRITING OR DOCUMENTED BY THE A/E AND RESPONDED TO IN WRITING IN AN ADDENDUM.**
2. 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.

9.3.12 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 concerning 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 that 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 that 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 BCOM 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.

9.3.13 Political Contributions Prohibited During Procurement Process: Per Code of Virginia § 2.2-4376.1 and § 2.2-3104.01, no bidder or offeror, including any individual who is an officer or director of such, who has submitted a bid or proposal to a state agency for the award of a public contract pursuant to the Virginia Public Procurement Act (Code of Virginia § 2.2-4300 et seq.) shall knowingly provide, or make an express or implied promise to make, a contribution, gift, or other item valued over \$50 to the Governor, his political action committee, or the Governor's Secretaries, if the Secretary is responsible to the Governor for any agency with jurisdiction over matters at issue ("Governor's Associates"), during the period between the submission of the bid and the award of the public contract. Likewise, the Governor's Associates shall not knowingly accept such a contribution, gift, or other item under these circumstances. Any person who violates this shall be subject to a civil penalty of \$500 or up to two times the amount of the contribution or gift, whichever is greater. The provisions of this paragraph shall not apply to contracts with a stated or expected value of under \$5 million or contracts awarded as the result of competitive sealed bidding (as defined in Code of Virginia § 2.2-4302.1).

9.3.14 Receipt of Bids: A Virginia Construction Contracting Officer (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 stapled together and permanently 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. The preferred days for bid receipt are Tuesdays, Wednesdays, And Thursdays.

SECTION 9.4 BID OPENING

9.4.1 Bid Opening: Bids shall be publicly opened by a VCCO 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 receipt of addenda, and any other pertinent information. See Appendix F for Procedures for Opening Bids.

SECTION 9.5 PROVISIONS FOR NEGOTIATION WITH LOW BIDDER

When the low bid exceeds available funds (noted on the Department MOU or HECO-2) and upon approval of the Vice President of Facilities, negotiations with the lowest responsive and responsible bidder may occur. In all cases, a record of the negotiations will become a part of the procurement *file* for the project. Negotiation shall be limited to the Work included in the Total Base Bid on the bid form only. Additive bid items, if any, cannot be considered in the negotiations nor can they be incorporated in the final negotiated contract. The A/E, as part of his basic services, shall advise the Owner as to the functional, operational, safety and code aspects of all proposed

changes in the Work. The A/E shall also advise the Owner of the appropriateness of the dollar value of each change. Once the negotiations are complete, the A/E shall assist the agency in preparing the documentation of the negotiations and prepare any sketches, details or other modifications to the plans and specification to clarify the Work to be performed by the Contractor. If negotiations are unsuccessful with the lowest bidder, the University can choose to negotiate with the next lowest bidder upon approval from the Vice President of Facilities.

SECTION 9.6 AUTHORITY TO AWARD A CAPITAL OUTLAY PROJECT CONTRACT

The VCCO approves all requests to award a contract (HECO- 8) to the low responsive and responsible bidder for capital outlay projects. Note the construction line of the budget shall reflect the award amount. Once the award is approved, the University shall "Post" a Notice of Intent to Award on the eVA website prior to contract award. If the low bid exceeds available funds (noted on the Department MOU or HECO-2) by 15% or less, the Vice President of Facilities can choose to infuse additional funds. If the low bid exceeds available funds (noted on the Department MOU or HECO-2) by 15% or more, the approval to infuse additional funds must come from the Senior Vice President for Administration and Finance.

SECTION 9.7 EXECUTION OF CONTRACT

The Senior Vice President for Administration and Finance has been delegated authority to execute contracts and consistent with existing board policies may sub-delegate this further. The Vice President of Facilities will execute a written contract with the Contractor using the HECO-9.

9.7.1 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 University, 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 as provided for in the Governing Rules § 50.

9.7.2 Stay of Award During Protest (Rules § 52): 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.

9.7.3 Notices to Proceed: Will be issued by the VCCO after bonds and insurance certificates have been reviewed by Legal Counsel and the Building Permit has been issued.

SECTION 9.8 CONSTRUCTION CONTRACT ADMINISTRATION

9.8.1 General: The General Conditions of the Construction Contract, HECO-7, describe the contract administration procedures. (Appendix A)

9.8.2 A/E Construction Period Services: Generally, the A/E's Basic Services requires 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 Memorandum of Understanding. These services and/or other services may also be provided by special consultants.

9.8.3 Construction Program Management: The University may assign a Construction Program Manager to assist the University 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 Architect/Engineer 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 consultants' authority.

SECTION 9.9 BONDS

9.9.1 Bid Bonds: For contracts with a value of \$100,000 or less, when Bid Bonds are not required by the Invitation for Bid or Request for Proposal, the University may require prospective contractors to be prequalified. For contracts with a value of more than \$100,000 but less than \$500,000, when Bid Bonds are not required by the Invitation for Bid or Request for Proposal, prospective contractors shall be prequalified. In no case shall bonding requirements be waived for projects with a value of \$500,000 or more.

9.9.2 Performance Bond and Labor and Materials Payment Bond: For contracts with a value of less than \$500,000, the University will consider waiving the Performance Bonds and Labor and Materials Payment Bonds if the University determines that the risk is acceptable. The decision will be noted in the bid documents. For contracts with a value of less than \$500,000, when Performance Bonds and Labor and Materials Payment Bonds are required by the Invitation for Bid or Request for Proposal, there are two methods to obtain these bonds - Commonwealth Self-Bonding Program or Standard Bonds. For bidders who have been prequalified in accord with the Commonwealth Self-Bonding Program, the Owner may at their sole discretion obtain the bonds through this program. All other contractors shall provide the Owner with Standard Bonds or Alternative Forms of Security (Code of Virginia§ 2.2-4338). In no case shall bonding requirements be waived for projects with a value of \$500,000 or more.

9.9.3 Commonwealth Self-Bonding Program: The Commonwealth's Self-Bonding Risk Management Program for Small Construction Projects (Self-Bonding Program) was developed by the Department of the Treasury's Division of Risk Management in conjunction with the Department of General Services' Division of Engineering & Buildings. This program was developed to address the mandates of the following sections of the Code of Virginia § 2.2-1839, §2.2-4336, and § 2.2-4337. The current procedures describing the Self-Bonding Program are available for view and download from the DEB website. Form HECO-16 Attachment (DGS-30-174), requests additional financial and insurance data from contractors seeking to prequalify for self-bonded projects.

SECTION 9.10 PRE-CONSTRUCTION MEETING

Prior to the start of construction, a Preconstruction meeting shall be held. Attendees should include the University Project Manager, 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, Superintendent (and Scheduler, if Contractor desires), and representatives of the Contractor's major Subcontractors.

SECTION 9.11 MONTHLY PAY MEETINGS

The intention is that the Contractor, the University 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. The 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, Requests for Clarification and Requests for Proposal
- 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 that need attention

SECTION 9.12 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 major trades. Such meetings should include the A/E, the project engineer for the mechanical discipline, the University Project Manager, the 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.

SECTION 9.13 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.

9.13.1 GCPay: Use of the web-based service, GCPay, for all pool-funded projects that include funds provided by the Six-Year Capital Outlay Plan Advisory Committee is mandatory. At this time, the use of GCPay is not used for other state projects or University developed projects. The monthly fee for using this system is paid by the project General Contractor. Payment requests for General Contractors and A/Es, and all project costs (equipment, testing, moving, move coordination, etc.), shall be accounted for in this system. Training on the use of the system is available from GCPay at www.gcpay.com. Access to and instructions for the use of the GCPay statewide contract are available at the Department of General Services website.

9.13.2 Payment for Stored Materials: If the Contractor requests, or intends to request, payment for materials stored in an approved and secure manner, the Schedule of Values must indicate the amount for labor and the amount for materials, and in a supplement thereto must include an itemized list of materials for that trade or work section. The material breakdown shall be in sufficient detail to allow verification of the quantities required for the project, the quantities delivered, the Work completed, and the quantities stored on or off the site.

All off-site stored materials for which payment is being sought shall be scheduled for installation within 6 months. Off-site stored materials shall be stored within the Commonwealth of Virginia. If the Contractor requests payment for materials stored out of state, contact BCOM for assistance. Go to the DGS Forms Center for a sample format for a Supplementary Agreements for off-site storage of materials or equipment away from the general location of the Project. (See Form DGS-30-370.)

SECTION 9.14 INSPECTION OF WORK

9.14.1 General: 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. In addition, Section 21 describes access to the work site.

The A/E's inspection services generally require at least twice a month onsite 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 Assistant Director of Building Code Compliance. The duties and functions of the Project Inspector include those listed in Section 16 of the General Conditions of the Construction Contract, HECO-7. A detailed

list of duties along with sample formats for recording required information are included in Appendix N.

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 communicate regularly to assure that work being performed conforms to the Contract Documents.

9.14.2 “Commissioning” Inspection of HVAC Systems: See section 8.16 for design phase commissioning requirements. Prior to any submittals and/or installation, a pre-installation meeting will be held. See section 9.12 above. 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 and the testing of automatic controls and report his 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 Mason Design Manual. 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 as extra 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 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 acceptance test 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.

9.14.3 Structural Inspections: See Section 8.15 of this Manual and Appendix M for this requirement.

9.14.4 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.

9.14.5 Fire Marshal Inspections: The Regional Office of the State Fire Marshal Office will normally be responsible for the Fire Marshal inspection.

SECTION 9.15 CONSTRUCTION CHANGE ORDERS

Generally, 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 this Contract which are within the general scope of this 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 Senior Vice President for Administration and Finance. See Appendix K for standard change order procedures. No change order shall be issued, regardless of cost that increases the approved scope of the project as shown on the approved HECO-2 or as set forth in the Capital Project Request, Preplanning Study, or Department MOU without prior approval of the Senior Vice President for Administration and Finance. Additionally, the total cumulative amount for all change orders for a single contract shall not exceed the construction contingency available in the current budget noted on the HECO-2 or the Department MOU. A request to infuse additional funds or to transfer funds to the Total Project Budget shall be submitted to the Vice President Facilities on a revised HECO-2 or Department MOU with appropriate written justification.

SECTION 9.16 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 and Project Inspector shall review this set when he or she visits 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.

SECTION 9.17 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 University Project Manager will insure 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, he shall complete and send Form HECO-13.2a with a list of the Work he knows to be unfinished or defective to the A/E at least ten (10) days prior to the date he has set for substantial completion. The A/E will forward the HECO-13.2a to the University and attach a written endorsement, based on his periodic inspections, as to whether or not he 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 Code Official, the University Project Manager, the Project Inspector, 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 the code official 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- 13.1 a), and submit them 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 Code 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. The University will not accept as Substantially Complete unless it (the part or whole) is ready for occupancy.

SECTION 9.18 BENEFICIAL OCCUPANCY

Once the University, the A/E, the Contractor, Code Official, and the State Fire Marshal's representative agree in writing that the facility, or a usable portion thereof, is substantially complete and ready for occupancy, the University may submit a HECO-13.3, Application for Certificate of Occupancy, and a HECO-13.3b, Checklist for Beneficial Occupancy, along with copies of the HECO-13.1a, HECO-13.1b (if applicable), HECO-13.2a, Fire Marshal's acceptance report and other required operations permits to the BCOM.

The Code Official, 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), to the University to occupy the project, or applicable portion thereof, subject to any conditions or stipulations stated.

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 § 36-106, *Code of Virginia*, 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):

- Floor plans (small scale) that show areas requested for occupancy and the exits/egress routes;

- Type of Occupancy requested - e.g. move furniture in for staff, set up/prepare for students, etc.;
- HECO- 13.1 a with punch-list from A/E;
- HECO-13.2a with any attachment from Contractor;
- HECO-13.3b Checklist for Beneficial Occupancy;
- Fire Marshal's report and recommendation;
- Document stating that the Asbestos Abatement, if any, is complete;
- 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 the Code Official.

SECTION 9.19 BENEFICIAL OCCUPANCY – RENOVATIONS WITH NO CHANGE OF USE

For renovations or alterations to existing buildings or portions of buildings, which do not constitute a change of use or 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). The issuance by the Code Official of an approved 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 HECO-13.5(Beneficial Occupancy). 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 HECO-13.4 to close the permit.

The following material is required for consideration of a request for Beneficial Occupancy on projects that will not be issued a Certificate of Use and Occupancy:

- Floor plans (small-scale) showing areas requested for occupancy and exits/egress routes;
- Type of Occupancy requested: move furniture in for staff, set up/prepare for students, etc.;
- HECO-13.1a with punch list from A/E;
- HECO-13.2a with any attachment from Contractor;
- HECO-13.3b Checklist for Beneficial Occupancy;
- State Fire Marshal's report and recommendation;
- Document stating that the Asbestos Abatement, if any, is complete;
- HECO-13.5 Beneficial Occupancy with data on entire project and separate sheet showing data on area requested to be occupied.

SECTION 9.20 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 University Project Manager will insure 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.

SECTION 9.21 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 University Project Manager shall sign the HECO- 17 and file a HECO-14.

SECTION 9.22 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.

SECTION 9.23 MAINTENANCE AND OPERATING MANUALS

Two sets of 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. **Note:** Two copies of O&M manuals are generally required which should be listed in the specifications.

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.

SECTION 9.24 OWNERSHIP OF DOCUMENTS

Ownership of all materials and documentation including the drawings; specifications; copies of the calculations and; analyses originated and prepared pursuant to the Contract between the

University and the Architect/Engineer, 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 University, whether the work for which they are made is executed or not. The Architect/Engineer 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. Security related documents and information are excluded from the Act 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 Virginia Freedom of Information Act provided the bidder, offeror, or contractor invokes the protections of the University Procurement Rules prior to or upon submission of the data or other materials. Identify the data or materials to be protected and state the reason why protection is necessary.

The Architect/Engineer shall provide the following documents to the University at the completion of the A/E's work:

- Original sealed and signed drawing tracings
- Original 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

SECTION 9.25 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.

SECTION 9.26 DEBARMENT AND ENJOINMENT

Code of Virginia § 2.2-4321 allows contractors to be debarred from construction contracts with the Commonwealth. A contractor may be debarred or enjoined only under the circumstances and by the procedures outlined in the DGS Debarment and Enjoinment Procedures for Construction. Debarment and enjoinder status of contractors and other vendors can be determined at the eVA website.

CHAPTER 10: SPECIAL PROCEDURES

SECTION 10.1 GENERAL

In accordance with the VA Public Procurement Act, 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, in writing by the Vice President of Facilities. These Design-Build and Construction Management Competitive Negotiation Procedures may be used for capital projects for the University.

SECTION 10.2 DESIGN-BUILD PROCEDURES:

1. **CRITERIA FOR USE OF DESIGN-BUILD CONTRACTS (D/B):** Design-Build 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.
2. **PROCEDURE FOR APPROVAL TO USE D/B:** The University shall request authority, in writing, to use a D/B contract. The Vice President of Facilities is the approving authority for requests to use D/B procedures.

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.

3. **DESIGN-BUILD SELECTION PROCEDURES:** On projects approved for Design-Build, procurement of the contract shall be a two-step competitive negotiation process. The selection will be made with cost as a significant factor in the evaluation. The following procedures shall be used in selecting a firm and awarding a contract:
 - a. 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 members of the committee.
 - b. Selection of Qualified Offerors (STEP ONE)
 - i. The University shall advertise Statement of Interest and Request for Qualifications 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.

- ii. Statement of Interest and Request for Qualifications responses must be submitted by interested parties by the due date and time to the location stipulated in the solicitation.
 - iii. The Statement of Interest and Request for Qualifications responses will be evaluated based upon the information submitted and any other relevant information. The Evaluation Committee will conduct this evaluation.
 - iv. The University may request additional information from the Offerors, if needed.
 - v. The Evaluation Committee will rank the firms based upon the overall merit of the information submitted and any other relevant information.
 - vi. 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.
- c. Selection of Design Build Contractor (STEP TWO)
- i. 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.
 - ii. The University will solicit the firms selected as specified in C.2.g above to submit proposals that include both technical and cost information by the date and time (a minimum of 30 days) to the location established in the RFP for receipt of the offers. The technical and cost data shall be submitted separately. The cost data shall include a lump sum cost to complete the requirements of the RFP. The cost data will be held unopened by the VCCO until the technical scoring is completed by all committee members.
 - iii. 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 VCCO of any adjustments necessary to make the proposal from a selected D/B offeror fully comply with the mandatory requirements of the RFP. The VCCO shall obtain the clarifications from the offerors in writing
 - iv. 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 VCCO. The VCCO 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.

- v. At the conclusion of presentations, the Evaluation Committee will score the proposals based upon the technical merits. The VCCO will then open the cost proposals and complete the scoring. Based upon this scoring a selection can be made of the D/B Team with the highest score based to recommend for the contract award.
- vi. If a selection is not made, 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, 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.
- vii. The Committee shall make the recommendation on the selection of the Design Build contractor to the Vice President of Facilities. The Vice President of Facilities shall approve the selection of the Design Build contractor. This approval shall be submitted to the VCCO in writing.
- viii. The VCCO will post the Notice of Intent to Award to the selected Design Build contractor and facilitate executing the contract (HECO-9DB). The University shall complete the HECO-8 and supporting documents.

SECTION 10.3 CONSTRUCTION MANAGEMENT PROCEDURES

1. **CRITERIA FOR USE OF CONSTRUCTION MANAGEMENT:** Construction management (CM) contracts may be approved for use on projects with an estimated construction cost in excess of \$10,000,000 where 1) fast tracking of construction is needed to meet University program requirements and/or 2) where value engineering and/or constructability analyses concurrent with design are required. Projects under \$10,000,000 may be authorized for the use of construction management contracting if the University can demonstrate compelling circumstances.
2. **PROCEDURE FOR APPROVAL TO USE CONSTRUCTION MANAGEMENT:** The University shall request authority, in writing to the Vice President of Facilities, to use a CM contract.

The request shall justify and substantiate that a CM contract meets the criteria found in paragraph B above and the use of CM is more fiscally advantageous than a competitive sealed bid construction contract with a general contractor.

The Vice President of Facilities is the approving authority for requests to use CM.

3. **STEP ONE: QUALIFICATION PROCEDURES:** On projects approved for CM, the University shall proceed as follows to qualify offerors who may submit proposals, utilizing a competitive negotiation process. The selection will be made with cost as a significant factor in the evaluation.
 - a. 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 members of the committee.
 - b. Selection of Qualified Offerors (STEP ONE)
 - i. The University shall advertise a Statement of Interest and Request for Qualifications in eVA and in a newspaper of general circulation in the area in which the contract is to be performed for a minimum of thirty (30) days.
 - ii. Statement of Interest and Request for Qualifications responses must be submitted by interested parties by the due date and time to the location stipulated in the solicitation.
 - iii. The Statement of Interest and Request for Qualifications responses will be evaluated based upon the information submitted and any other relevant information. The Evaluation Committee will conduct this evaluation.
 - iv. The University may request additional information from the Offerors, if needed.
 - v. The Evaluation Committee will rank the firms based upon the overall merit of the information submitted and any other relevant information.
 - vi. 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.
4. **STEP TWO: SELECTED OFFERORS WILL BE GIVEN THE OPPORTUNITY TO SUBMIT PROPOSALS:**

- 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 (a minimum of 30 days) to the location established in the RFP for receipt of the offers. The technical and cost data shall be submitted separately. The cost data shall include the cost of the general conditions to complete the construction phase based upon the schedule given, the CM fee as a lump sum, the pre-construction phase services as a lump sum, and the bonds and insurance as a percentage as noted in the RFP. The cost data will be held unopened by the VCCO until the technical scoring is completed by all committee members.
- 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 VCCO 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 VCCO 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 VCCO. The VCCO 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. At the conclusion of presentations, the Evaluation Committee will score the proposals based upon the technical merits. The VCCO will then open the cost proposals and complete the scoring. Based upon this scoring a selection can be made of the CM@Risks with the two highest score based on the RFP evaluation criteria with whom to proceed to negotiations.
- f. Negotiations will be held with two 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.

- g. After negotiations, the scoring is updated, if any modifications are necessary. Based upon the updated scoring a selection can be made of the CM@Risk with the highest score based on the RFP evaluation criteria to recommend for a contract award.
 - h. The Committee shall make the recommendation on the selection of the CM@Risk to the Vice President of Facilities. The Vice President of Facilities shall approve the selection of the CM@Risk contractor. This approval shall be submitted to the VCCO in writing.
 - i. The VCCO will post the Notice of Intent to Award to the selected CM@Risk contractor and facilitate executing the contract (HECO-9CM). The University shall complete the HECO-8 and supporting documents.
5. **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 Vice President of Facilities may grant a waiver of these contractual requirements in whole or in part.
6. **CONSTRUCTION MANAGER AT RISK CONTRACTS:** The CM at Risk contracts are structured into two phases:
- a. **Phase 1: Pre-Construction Phase Services:** These services are subject to the Terms and Conditions for Non-Professional Services and will be performed for a stipulated or fixed amount.
 - i. Use form HECO-9 – CM (1)
 - ii. The Phase 1 contract is associated with the work of the CM at Risk prior to the start of construction activities.
 - b. **Phase 2: Construction Phase Services:** These services are contingent upon the CM at Risk providing an agreeable GMP to the Owner.
 - i. Use form HECO-9 – CM (2)
 - ii. The Part 2 contract is associated with the work of the CM at Risk during the construction portion of the project.
 - c. In the event of phased permitting where the drawings and specifications are not complete for portions of the project, but where early release packages have been bid

and permitted, the agency shall use form HECO-9CM (ER) for the release of the work for those packages. Early release packages shall be established based upon approved working drawings for the work of that package and the value of the early release shall serve as an interim GMP for the work pending the full GMP for the project. The intermediate packages shall correspond with the partial permits being issued (example: clearing & grubbing, grading, or site utilities) or shall be for long lead items that need to proceed in order to maintain the project schedule (example: mill orders for structural steel). The early release packages are allowed provided permission has been granted by the Vice President of Facilities.

- d. If a GMP cannot be agreed upon, the Contract for Phase 1 is concluded and the University will not enter into a Phase 2 contract with the CM at Risk. At this point in the process, the documents are substantially complete; and after review and approval by the Vice President of Facilities, the project may be bid using standard competitive sealed bidding to the short-listed CM at Risk proposers (including the CM at Risk proposer with whom a GMP was not agreed upon). If the project were bid using standard competitive sealed bid procedures, then the construction contingency of the CM process would no longer be applicable. Allowances and contingencies are not permitted using the standard Design-Bid-Build process.

SECTION 10.4 PUBLIC PRIVATE PARTNERSHIP (PPEA) SELECTION PROCESS

This type of procurement is handled by Mason's Purchasing Office. Guidelines for this are available from the Purchasing Office.

SECTION 10.5 ENERGY PERFORMANCE-BASED CONTRACT (ESCO)

Procedures for the ESCO procurement methods can be found on the DGS Website. Projects utilizing ESCO still require inspection by Code Official and must comply with the VUSBC.

SECTION 10.6 EMERGENCY CONSTRUCTION PROCUREMENT

In case of an emergency, a contract may be awarded without competitive sealed bidding. However, such procurement shall be made with such competition as is practicable under the circumstances. A written determination of the basis for the emergency and for the selection of the particular contractor shall be included in the contract file. As a minimum, the agency shall post a written notice on eVA stating that the contract is being awarded on an emergency basis and identifying that which is being procured, the contractor selected, and the date on which the contract was or will be awarded. Refer to the Code of Virginia § 2.2-4303, F. for the complete statutory requirements.

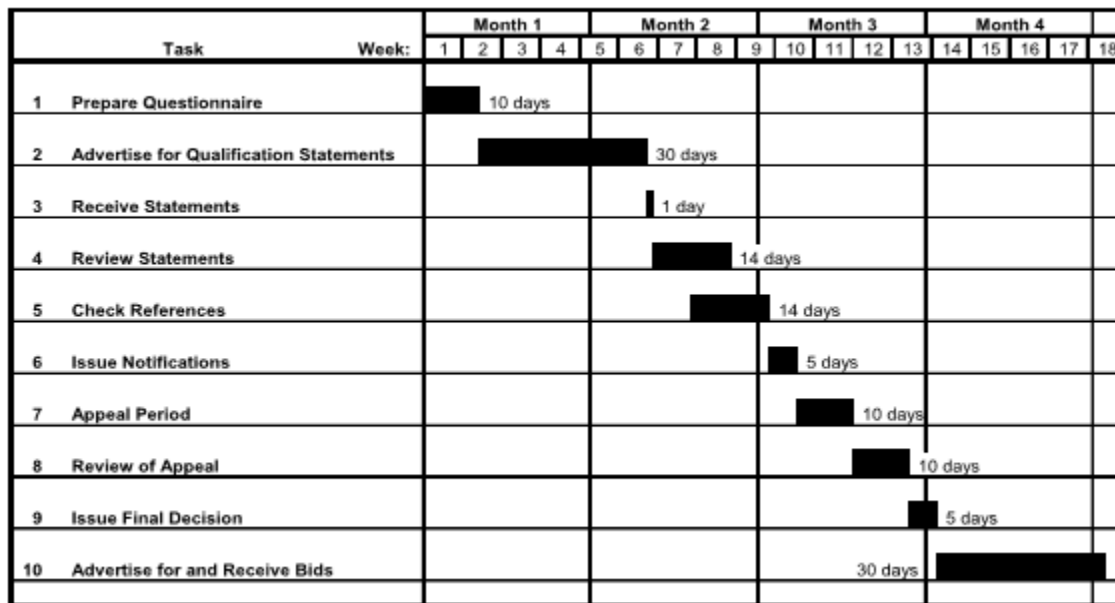
SECTION 10.7 PREQUALIFICATION PROCUREMENT

The University may prequalify contractors for a particular construction project and limit consideration of bids or proposals to prequalified contractors (Code of Virginia § 2.2-4317). The procedures contained in this section shall be used for prequalification of contractors for a particular construction project. The University may prequalify general contractors or selected subcontractors or both. Any prequalification of contractors and/or subcontractors shall be conducted in

accordance with the procedures stipulated in this section and Code of Virginia § 2.2-4317, and sufficiently in advance of the bid receipt date to allow potential contractors a fair opportunity to complete the process.

10.7.1 Objective: For projects that will be procured via the IFB (Design-Bid-Build) method, the objective of prequalification shall be to identify as many fully qualified Offerors as possible to bid on the proposed work. For projects that will be procured via the CM at Risk or Design-Build methods as described in section 10.2 and 10.3, the objective of prequalification shall be to determine which Offerors’ submissions demonstrate the greatest conformance with the requirements set forth in the RFQ, resulting in a “short list” of not less than 2 and not more than 5 Offerors. Prequalification is most frequently used for projects with sophisticated building systems, a unique site or constructability issue or where project scheduling or sequencing is critical. The bar chart in Figure 10.7.1.1 depicts reasonable timeframes for elements of the prequalification process. Shorter times may be used, provided they are consistent with the intent of the minimum time specified in § 2.2-4317. The University will advertise for the prequalification (Request for Qualifications) in a newspaper of daily statewide circulation and on eVA, and shall post the advertisement in the public area where Invitations to Bid and Requests for Proposals are generally posted. The date set for receipt of the Standard Form for Contractor's Statement of Qualifications will be at least thirty (30) calendar days from the date of the initial newspaper advertisement.

Figure 10.7.1.1



10.7.2 Forms: The Standard Form for Contractor's Statement of Qualifications, DGS-30-168, Contractor’s Statement of Qualifications (HECO-16) shall be the application form submitted by contractors when applying to be prequalified for a particular construction project. The HECO-16, when completed by interested contractors, shall address the Qualification Criteria portion of the RFQ issued for the proposed construction contract.

10.7.3 Building Committee: The University will establish a committee of at least five (5) state employees to review the HECO-16 forms submitted by interested contractors and determine

which, if any, of the contractors shall be prequalified. Of the five (5) persons one will be an accredited Virginia Construction Contracting Officer (VCCO) of the agency, one will be a registered architect or engineer and one will be the project manager for the proposed project. A licensed architect or engineer from the Bureau of Capital Outlay Management may be a member of the committee. The remaining person(s) should be state employees familiar with the design and construction industry. The A/E for the project may, at the discretion of the Committee, serve as an advisor to the Committee.

10.7.4 Denial of Prequalification: Code of Virginia § 2.2-4317, permits the University to deny prequalification to any contractor only if the agency finds at least one of the following:

1. The contractor does not have sufficient financial ability to perform the contract. Evidence that the contractor can acquire a surety bond from a corporation included on the United States Treasury list of acceptable surety corporations in the amount and type required for the project shall be sufficient to establish financial ability;
2. The contractor does not have appropriate experience to perform the construction project in question;
3. The contractor or any officer, director or owner thereof has had judgments entered against him within the past ten years for the breach of contracts for governmental or nongovernmental construction;
4. The contractor has been in substantial noncompliance with the terms and conditions of prior construction contracts with a public body, without good cause. The University may not utilize this provision to deny prequalification unless the facts underlying such substantial noncompliance were documented in writing in the prior construction project file and such information relating thereto was given to the contractor at that time, with the opportunity to respond;
5. The contractor or any officer, director, owner, project manager, procurement manager or chief financial official thereof has been convicted within the past ten years of a crime related to governmental or nongovernmental construction or contracting;
6. The contractor or any officer, director or owner thereof is currently debarred pursuant to an established debarment procedure from bidding or contracting by any public body, agency of another state or agency of the federal government; and
7. The contractor failed to provide to the University, in a timely manner, any information requested by the University relevant to 1 through 6 above.

The University will deny prequalification to any contractor who does not have the requisite Virginia license issued by the Virginia Board of Contractors to perform work in Virginia pursuant to Code of Virginia § 54.1-1100et seq.

10.7.5 Written Notification: In accordance with the Code of Virginia § 2.2-4357, any contractor refused permission to participate, or disqualified from participation, in public contracts shall be notified in writing. Prior to the issuance of a written determination of disqualification or ineligibility, the University will (a) notify in writing each contractor that submitted the HECO-16 of the results of the evaluation (b) disclose the factual support for the determination, and (c) allow the contractor an opportunity to inspect any documents that relate to the determination, if so requested by the contractor within five (5) business days after receipt of the notice. The written notice to each contractor shall be delivered by U. S. mail.

Within ten (10) business days after receipt of the notice, the contractor may submit rebuttal information challenging the evaluation. The University will issue its written determination of disqualification or ineligibility based on all information in possession of the University, including any rebuttal information, within five (5) business days of the date the University received such rebuttal information. If the evaluation reveals that the contractor should be allowed permission to participate in the public contract, the University will cancel the proposed disqualification action.

If the evaluation reveals that the contractor should be refused permission to participate, or disqualified from participation, in the public contract, the University will so notify the contractor. The notice shall state the basis for the determination, which shall be final unless the contractor appeals the decision within ten (10) days after receipt of the notice by invoking administrative procedures meeting the standards of Code of Virginia § 2.2-4365, if available, or alternatively by instituting legal action as provided in Code of Virginia § 2.2-4364. If, upon appeal, it is determined that the action taken was improper, the sole relief shall be restoration of eligibility.

10.7.6 Establishing Contractor Qualification Criteria: Contractor experience qualification criteria shall be sufficiently general so that contractors with the qualifications and experience to complete satisfactorily the proposed project will not be arbitrarily excluded. For example, requiring a contractor to have constructed a two-story college dormitory is too restrictive. Therefore, experience criteria shall be expressed in terms related to the building's construction:

1. functional type (classroom, dining facility, maximum security prison, etc.);
2. job site access (dense urban location surrounded by multiple story buildings, open rural area, etc.);
3. height and physical size (14 stories with 4 below grade floors; 250,000 gross square feet);
4. foundation system (piles, spread footings, mat foundation, etc.);
5. structural system (reinforced cast in place concrete; structural steel; precast concrete members, etc.);
6. exterior wall system (granite panels; glass store front; brick with CMU back-up, etc.);
7. electrical service and distribution;

8. mechanical system (gas-fired package boilers; four pipe hot water/chilled water; centrifugal chiller, VAV box, etc.);
9. number of subcontractors used on a typical job;
10. roofing system (four-ply built-up; single-ply EPDM, etc.); and other similar criteria.

Qualification Criteria I, III, V and VI in the standard Qualification Criteria section of the RFQ (DGS-30-466), found on the DGS Forms Center, shall not be changed without the prior written approval of the Vice President of Facilities. Qualification criteria for Experience (II) shall be customized to suit the particular project for which qualification is intended.

10.7.7 References: Verification of References supplied by the contractor in Sections VI: 1, 2, 3 & 5 of the HECO-16 shall be accomplished using the Contractor Reference Sheet found on the DGS Forms Center.

10.7.8 Advertisement for Bids: The Notice of Invitation for Bids for the project shall be posted in a public place normally used for posting Notices or published in a newspaper of statewide circulation or both, and on eVA, Virginia's central electronic procurement website. The advertisement shall appear no less than 30 days prior to the date of bid receipt, unless otherwise approved by the Vice President of Facilities. The advertisement shall state that bids will be accepted only from those contractors prequalified to bid on the project. Further, the contractor shall be a registered vendor with eVA.

CHAPTER 11: BUILDING OFFICIAL REVIEWS, PERMITS AND APPROVALS

SECTION 11.1 GENERAL

11.1.1 **Building Official:** The Director of the Division of Engineering and Buildings is the Building Official for buildings and structures on state owned property in accordance with the Code of Virginia §36-98.1 and is called the Code Official in this Manual.

Certain state agencies that are designated as authorities 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.

The Building Official's technical staff is the Bureau of Capital Outlay Management and its Virginia licensed Architects and Professional Engineers.

The *Code of Virginia*, §36-98.1, delegates authority for building code enforcement for buildings on state property to the Department of General Services (DGS) acting through the Division of Engineering and Buildings (DEB). Further, the Virginia Uniform Statewide Building Code (VUSBC) indicates in Part 1, Chapter 1 that acting through the Division of Engineering and Buildings, the Department of General Services shall function as the building official and the building maintenance official for state owned buildings. This includes all buildings on state property (not otherwise exempt) both currently existing buildings and new or under construction buildings.

11.1.2 **Building Maintenance Official:** As provided in Part I and Part III of Chapter 1 of the VUSBC, the Department of General Services (DGS) acting through the Division of Engineering and Buildings (DEB) as the Building Maintenance Official hereby requires and directs that each and every state agency which has real property (land and buildings) shall comply with "any and all maintenance provisions of Part III, Chapter 1, (13 VAC 5-62-420 et seq.) of the VUSBC". The VUSBC adopts and amends the International Property Maintenance Code 2000 (IPMC) to be an enforceable part of the VUSBC.

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 Senior Vice President for Administration and Finance shall be responsible and accountable to the Building Maintenance Official for compliance with any and all maintenance provisions of Part III, Chapter 1, (13 VAC 5-62-420 et seq.) of the VUSBC. To facilitate the administration and operations of the University's compliance with the Maintenance Regulations, the University must submit an application to the Building Maintenance Official to designate a University Building

Maintenance Representative to respond to complaints of non-compliance and to assure that the Agency complies with the Maintenance Regulations. Once the applicant has been approved by the Building Maintenance Official, the Agency Building Maintenance Representative shall be the on-site representative of the Building Maintenance Official for compliance at that Agency. The Agency Building Maintenance Representative shall receive complaints, resolve the issues and otherwise assure compliance with the Maintenance Regulations for that Agency. The Agency Building Maintenance Representative shall submit a report to the Building Official by January 31 each year for previous calendar year's activity. The report shall itemize all complaints received, the action taken and any other noteworthy activities that may have been performed under VUSBC 129.7.

SECTION 11.2 BUILDING PERMIT POLICY FOR CONSTRUCTION – STATE OWNED BUILDINGS & STRUCTURES

The policy supplements the Virginia Uniform Statewide Building Code by further defining scope of work and submittal requirements to the Building Official for state owned buildings and structures.

SECTION 11.3 ANNUAL PERMIT

11.3.1 **Annual Permits** are issued by the Building Official at the Building Official's sole discretion to Agency Representatives at various state agencies in accord with the Virginia Uniform Statewide Building Code and the policies of the Building Official for Buildings on State Property for the purpose of assuring that the code is met throughout the state on ongoing work by the agencies. The Agency Representatives are not the Building Official, and their authority is limited as defined by the Building Permit Policy for Construction – State Owned Buildings & Structures.

11.3.2 **Agency Representatives** are limited to one principle Agency Representative (Alternate Agency Representatives report to the principle) per agency at the central agency location. Application may be made by completing the Annual Permits - Agency Representative Application which can be found at <http://forms.dgs.virginia.gov>. In order for an Agency Representative to be granted full Annual Permit authority they must be a registered architect or professional engineer in Virginia with experience in building design and a current knowledge of the Uniform Statewide Building Code. Agency Representative applicants that 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 Uniform Statewide Building Code. If given Annual Permit authority, they may have their authority limited.

SECTION 11.4 TEMPORARY STRUCTURES (TENT, STAGE, PLATFORM, BLEACHERS, & OTHER STRUCTURES)

11.4.1 **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 for the scope of work that requires a permit.

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.

11.4.2 Seasonal / Multiple Function Permit

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.

11.4.3 Art and Architectural Review Board (AARB)

“Temporary Structures” are not temporary if proposed for more than 180 days. Any ‘non-permanent structure’ placed on state property for more than 180 days requires approval of the AARB. Tents erected for more than 5 days may require the concurrence of the AARB Chairman.

11.4.4 Tent Permit Requirements

- **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 when tent sidewalls are closed, or 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.
- **Special Conditions:** Tents that are proposed to be occupied during wind speeds that exceed 35 MPH require a tie-down/ anchorage design signed and sealed by a Virginia licensed architect or engineer.

11.4.5 Stage / Platform / Bleachers Permit Requirements

- **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 / anchorage for structures including the proposed wind loads and live loads. Provide details of anchorage and calculations to show proper anchorage against overturning.
- **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 architect or engineer.
- **Inspection:** Responsible User or the Agency Representative shall inspect the installation for compliance with the approved construction / erection documents.

11.4.6 Permit Exceptions:

- **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).
- **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 BCOM.
- **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, 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.

11.4.7 Other Temporary Structures: Contact the Bureau of Capital Outlay Management.

SECTION 11.5 INDUSTRIALIZED BUILDINGS

11.5.1 Application for Permit to install, make utility connections, and occupy an Industrialized Building must be submitted to the Building Official at least 10 days prior to installation. See the Virginia Uniform Statewide Building Code and the Building Permit Policy for Construction – State Owned Buildings & Structures for the scope of work that requires a permit. Industrialized Buildings used as construction trailers on a project construction site are exempt.

11.5.2 AARB Requirements: Industrialized Building must obtain AARB approval. Industrialized Building used, as construction trailers on a project construction, do not require AARB approval.

- **Site Plan:** 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 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.

11.5.3 Industrialized Buildings without a Virginia Registration Seal: If the proposed building does not have a Virginia Registration Seal, the Owner must demonstrate that the building complies with the code. The following are required:

1. Signed and sealed documents shall be provided by a Virginia licensed architect or engineer showing the construction including structural, mechanical, electrical, and plumbing systems,
2. Fire Protection Information Plan shall be provided in accord with the CPSM.
3. Building shall be inspected by a Virginia licensed architect or engineer for compliance with the VUSBC, CPSM and UFAS, and a statement with seal, signature, and date, stating that the building conforms to these requirements.

11.5.4 Procurement Guidance: Define the use and occupancy of the building prior to procurement. Procure the building in accord with CPSM requirements, VPPA requirements, or by

a standard lease. Require Virginia seals and registration numbers on the industrialized building in accord with the Virginia Industrialized Building Safety Regulations, 13 VAC 5-91 et seq.

SECTION 11.6 TOWERS

11.6.1 Application for Permit to install a Tower must be submitted to the Building Official at least 10 days prior to installation. See the Virginia Uniform Statewide Building Code and the Building Permit Policy for Construction – State Owned Buildings & Structures for the scope of work that requires a permit. For leased facilities, applicant shall indicate the date when lease was approved by BRPM.

11.6.2 AARB Requirements: Towers require AARB approval. Adding antennae to existing buildings require AARB. Adding antennae to existing towers are exempt

- **Site Plan:** 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, 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 architect or engineer.
- **Inspection / Certificate of Occupancy:** Inspection by the A/E Record and submission of the Statement of Structural & Special Inspections (for an antenna addition to existing tower, letter from A/E with signed and sealed stating that the tower will accommodate added loads) is required. Submit inspection reports indicating compliance with approved documents.
- **Additions, Renovations, and Alterations:** Changes to a tower and the addition of antennae 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 the Bureau of Capital Outlay Management. Fee required with application. Make Checks payable to the Treasurer of Virginia.

SECTION 11.7 OTHER STRUCTURES (FLAGPOLES, ANTENNAE, FENCES, AND MISCELLANEOUS)

11.7.1 Flagpole/ Antennae

11.7.1.1 Application for Permit to install a flagpole / antennae more than 20 feet tall, and flagpoles/ antennae to be attached to existing buildings must be submitted to the Building Official at least 10 days prior to installation. See the Virginia Uniform Statewide Building Code and the Building Permit Policy for Construction – State Owned Buildings & Structures for the scope of work that requires a permit. Flagpole/antennae with a height of 20 feet or less may be permitted under the Annual Permit authority.

11.7.1.2 **AARB Requirements:** Flagpoles must be approved by the AARB prior to permitting / erection

- **Site Plan:** 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 architect or engineer.
- **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 architect or engineer is required. Submit inspection reports indicating compliance with approved documents.

11.7.2 Fences

11.7.2.1 **Application for Permit** to install a fence more than 6 feet tall must be submitted to the Building Official at least 10 days prior to installation. See the Virginia Uniform Statewide Building Code and the Building Permit Policy for Construction – State Owned Buildings & Structures for the scope of work that requires a permit. Fences may be permitted under the Annual Permit authority.

11.7.2.2 **AARB Requirements:** Fences must be approved by the AARB prior to permitting / erection.

- **Site Plan:** 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 architect or engineer.
- **Other Construction:** Indicate paving, sidewalks, electrical service, lighting, storage structures

11.7.3 **Miscellaneous Structures:** Contact the Bureau of Capital Outlay Management.

SECTION 11.8 CODES & STANDARDS COMPLIANCE DISPUTES

The Assistant Director of the Division of Engineering and Buildings, acting under the delegation by the Director of the Division of Engineering and Buildings, functions as the Building Official for providing the Building Official duties in accord with the Virginia Uniform Statewide Building Code, Section titled "Delegation of Duties and Powers", for all work regulated by the Virginia Uniform Statewide Building Code on state owned property.

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 the Division of Engineering and Buildings. Appeals shall be made in writing

within 21 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 Number:

Applicable Code/Edition/Section(s):

Disputed Application:

(Documents and narrative that describe in detail, with code references, the disputed application and the alternative proposed application.)

Proposed Modification:

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

Justification:

Signature of the Associate Vice President for Facilities:

The Director shall issue a written decision on the appeal within fourteen (14) days of receipt by the Division of Engineering and Buildings of the appeal application.

State agencies shall exhaust this appeal process prior to application for appeal to the State Technical Review Board.

CHAPTER 12: PROJECT COMMITTEES

SECTION 12.1 PROJECT COMMITTEES

Reserved

SECTION 12.2 ARCHITECT SELECTION COMMITTEE

Reserved

SECTION 12.3 BUILDING COMMITTEE

Reserved

SECTION 12.4 STEERING COMMITTEE

Reserved

CHAPTER 13:

MASTER PLANS, SITE, AND DESIGN GUIDELINES

SECTION 13.1 MASTER PLANS

Each capital project must conform to the University's Master Plan and a Site, Precinct or Neighborhood plan if one has been developed by the Facilities Planning Office and approved by the Board of Visitors. Each capital project shall demonstrate compliance with the University's MS-4 Plan.

SECTION 13.2 OTHER MASTER PLANS AND REQUIREMENTS

Each capital project must conform to architecture guidelines if any have been developed for the site. An Environmental Impact Report (EIR) shall be prepared for each qualifying project with an expected construction cost of \$500,000 or more.

Utility Plans will be developed and maintained by Facilities Engineering and Construction in conjunction with Facilities Management to insure utility capacities exist to support the Master Plan. Utility facility locations should be coordinated with the Master Plan. Current site and utility drawings are intended to depict the current condition of JMU's physical plant. Updates typically occur continually and are published annually. These updates show buildings completed, land acquired, utilities installed, etc.

CHAPTER 14:

PLANNING AND PROJECT APPROVAL

SECTION 14.1 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 Vice President of Facilities, execution of all capital outlay projects shall follow approval procedures in Section 14.4.

On all university projects, the HECO-2, HECO-4, HECO-5, HECO-6 and HECO-8 (HECO Forms) shall be submitted to and approved by the Vice President of Facilities in conformance with the Agency Pilot Program (Chapter 780 July 1, 2016). Building Official activities remain under the purview of the Director, Division of Engineering and Buildings (the Building Official for Buildings on State Property). HECO-4, HECO-5 and HECO-6 are only applicable to Design-Bid-Build General Funded projects

SECTION 14.2 CAPITAL PROJECT PLANNING

The budget planning process is managed by the Director of Capital Finance and the Director of Planning. The actual development of the capital budget submission packages will require the participation of the Director of Project Management and Construction. The resulting budget packages require approvals of the Board of Visitors, General Assembly and the Governor as appropriate.

This process generally follows the following steps directly related to the Capital Outlay Program:

- Mason develops its Six (6) year plan for Capital Projects.
- DPB issues its Budget Instructions (usually in February) See the DPB website.
- Mason submits their Capital Budget Requests (CBR) in the Performance Budgeting (PB) system, with project priorities indicated.
- Capital Project submissions are reviewed by DPB and DGS for possible inclusion in the Governor's budget based on program guidance established by the Governor.
- Capital Project submissions are reviewed and considered by the six-pack committee for possible inclusion in the Governor's budget based upon program guidance established by the Governor and input from DPB and DGS
- The Governor presents his Budget to the money committees in December
- "Part 2, Capital Project Expenses" of The Budget Bill contains those Capital Projects the Governor has selected for construction or planning in the coming biennium.
- The General Assembly considers and passes the Acts of Assembly (the Appropriations Act).
- The Governor signs the Acts of Assembly (the Appropriations Act).

- Authorization to proceed with the projects must be granted by the Governor (or his designee) before any planning for or construction can begin.
- Funds are not available to be spent until July 1 of the even numbered years or until action on the Acts of Assembly (the Appropriations Act) is completed.

SECTION 14.3 PROJECT AUTHORIZATION

Appropriated funds will be allotted and authority given to initiate a project, subject to interim approvals, reviews, and progress reporting, upon application from the agency but not before July 1 following General Assembly approval of the Biennial Budget which includes the project. In odd numbered years if a capital outlay project is added to the Budget during the short session, DPB may authorize the project after the Governor and veto session action on the amended Budget.

Architectural or engineering planning for or construction of, or acquisition of any capital project shall not commence or a revision be initiated without prior written approval of the Governor (§ 4-4.01 of the Appropriation Act (the Acts of Assembly)).

Under certain circumstances the Governor may authorize the initiation of Capital Projects under the conditions set forth in § 4-4.01 of the General Provisions of the Acts of Assembly. A project authorized under § 4-4.01 is subject to the Capital Outlay Process, including the submission of E&B Form HECO-2 to request authorization to initiate the project.

SECTION 14.4 PROJECTION EXECUTION

The following generally summarizes the capital outlay project implementation process:

- Mason procures an Environmental Impact Report (or obtains letter from DEQ that EIR is not required for the project). Preparation and submission of an environmental impact report is required for each major state project (Code of Virginia § 10.1-1188). Regulatory authority is assigned to the Virginia Department of Environmental Quality (Va. DEQ) in the Code of Virginia § 10.1-1191. Submission requirements are described in the “Procedure for Environmental Impact Review of Major State Facilities”, prepared by the Va. DEQ.
- [NOTE: Code of Virginia § 10.1-1190 provides that the State Comptroller shall not authorize payments of funds for major state projects unless the request is accompanied by written approval of the Governor after his consideration of the comments by DEQ on the environmental impact of the facility.]
- Mason obtains authority to initiate a Capital Outlay Project by submitting Form HECO-2 for approval.
- Issue Notification of Initiation of Environmental Impact Report Process (HECO-2a)
- Mason issues RFP for A/E services, interviews and selects A/E, negotiates fee, awards A/E Contract (Form HECO-3 and MOU) (See Chapter 3)
- Mason and A/E attend Pre-Design Conference.

- A/E develops and submits Schematic design for approval. Approve Schematic design and receive approval to proceed to Preliminaries. (HECO-4, as applicable)
- A/E develops and submits Preliminary design for approval.
- Conduct VE Study if value of the project authorized construction cost exceeds \$5,000,000, as applicable.
- Issue notice of availability of Preliminary design to local jurisdiction (HECO-5a)
- Obtain approval of design from AARB
- Approve Preliminary design and receive approval to proceed to Working Drawings. (HECO-5)
- A/E develops and submits Working Drawing submittal for approval. Review Working Drawings design. Receive approval of Working Drawings using HECO-6.
- Advertise / Post Notice of Solicitation
- Receive bids/proposals, open, and evaluate.
- If within Budget, submit HECO-8 to Award Contract
- If over budget but within range for negotiation, request approval to negotiate. If negotiations successful, prepare HECO-9b, Post Bid Modifications to Bid.
- Use Form HECO-9 to Award Contract for Construction
- Contractor submits Performance Bond using HECO-10 and Labor and Material Payment Bond using HECO-10.1
- Submit Information for Building Permit, HECO-17.
- For Change Orders to A/E Contract use HECO-11AE
- For Change Orders to Construction Contract, use Form HECO-11 and HECO-11a
- Submit Certificate of Use and Occupancy, Form HECO-13.3, or Beneficial Occupancy, HECO-13.5 followed by Permit Closeout, HECO-13.4
- Submit Project Completion Report using HECO-14

SECTION 14.5 PROJECT EXECUTION

14.5.1 Acquisitions of Real Property: Acquisition of real estate shall be handled as a Capital Outlay Project and is governed by this manual. To initiate an acquisition, submit an HECO-2 approved by Senior Vice President for Administration and Finance. For projects which consist of acquisition and construction, the request to acquire the property must be submitted on a separate HECO-2.

14.5.2 Demolition: Demolition of any building, regardless of size and type, shall be authorized by the Senior Vice President for Administration and Finance prior to proceeding. Demolitions which

are required to permit construction shall be approved through Mason Facilities Planning Office before preliminary drawings are prepared.

14.5.3 Temporary Facilities: Though funding for the modular or industrialized building or prefabricated building may be proposed from maintenance and operating funds. Prior to submitting a requisition (where purchase is involved) or before finalizing any contractual arrangements for lease of a temporary facility, submit plans of the structure to the Code Official for issuance of a building permit. The plans shall show that the structure meets the requirements of the Virginia Uniform Statewide Building Code or the Virginia Industrialized Building Unit and Mobile Home Safety Regulations and is accessible to the disabled. The plans shall include site location plan, proper anchorage, tie down and utilities for the structure.

Include a site plan indicating the proposed location of the facility. The location of the facility, as well as the aesthetics of the proposed structure, shall be presented to the Art and Architectural Review Board. Prior to occupancy, Mason shall apply to the State Building Official (Division of Engineering and Buildings) for a Certificate of Occupancy for the facility. Form HECO-13.3 TMP shall be completed and be accompanied by a letter report of inspection recommending occupancy of the facility from the Regional State Fire Marshal's Office.

14.5.4 Construction Projects: The project code will be the basic project identifier. For projects under blanket or umbrella appropriations, or projects with work or acquisitions at multiple locations that will be accomplished by separate actions/contracts or a single project to be accomplished through two or more contracts must have a two-digit sub-project code for each undertaking. The sub-code must be used on all capital outlay forms and correspondence.

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 should be completed at this point.
2. The University normally hires an A/E firm to prepare drawings and specifications (See Chapter 4) upon receipt of the approved HECO-2. An advertisement for A/E services is issued and a RFP is issued to the responding firms. The selection committee reads and ranks proposals then meets to short list firms for interview. Interviews are held and a firm is selected. With the Vice President of Facilities’ approval a fee proposal is received from the selected firm and final MOU is negotiated and a contract awarded on a HECO-3. See Chapter 4.
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:
 - a. bid,
 - b. pre-qualification,
 - c. design build,
 - d. construction manager, or
 - e. Other.

A University representative will present the project schematic design to the Art and Architectural Review Board (AARB) and Vice President of Facilities will present to the Board of Visitors for all construction and planning projects and any major repair or improvements project that affects that exterior appearance of a facility. Additional reviews may be required by the AARB. See Chapter 8 of this Manual for review requirements.

4. The A/E develops preliminary designs for review and approval (Form HECO-5). The Code Official, as outlined in Chapter 8 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 local municipalities 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.
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 HECO-17 is also required before the construction start. For information on Construction Change Orders, see Chapter 9 (Form HECO-11a and HECO-11).
7. A building or facility may be occupied when the project is substantially complete and a Certificate of Use and Occupancy has been issued 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 has been issued. Final inspection of all projects will be conducted by the Code Official and the responsible State Fire Marshal Office representative.

Form	Purpose	Required Approval (Final Approval in BOLD)	Copy Distribution
HECO – 2	<p>Authority to initiate non-general funded Capital Outlay project.</p> <p>This form shall be prepared by the Facilities Project Manager (PM) upon receiving Board of Visitors authority for the project. Completion and approval of this form accomplishes the following:</p> <ul style="list-style-type: none"> • Identifies fund sources • Confirms appropriation • Establishes the budget • Establishes the scope • Establishes the construction time • Allows schematic and preliminary design to proceed <p>Revisions to the authorized Project Budget total are accommodated on a revised HECO-2</p>	<p>Facilities Project Manager</p> <p>Director, Planning</p> <p>Director, Project Management & Construction</p> <p>Director, Contracts</p> <p>Associate Vice President for Facilities</p> <p>Senior Vice President for Administration and Finance</p>	<p>All approvals</p> <p>Master File</p> <p>DPB</p> <p>BCOM</p>

<p>HECO – 4</p>	<p>Approval of Schematic Design</p> <p>This form shall be prepared by the PM upon completion of schematic design documents. Schematic design must be approved by the Board of Visitors and the State Art & Architectural Review Board.</p> <p>Approvals will be obtained by the University.</p> <ul style="list-style-type: none"> • Requires acceptance of the schematic design documents by BCOM. 	<p>Facilities Project Manager</p> <p>Director, Planning</p> <p>Director, Contracts</p> <p>Vice President of Facilities</p>	<p>All approvals</p> <p>Master File</p>
<p>HECO – 5</p>	<p>Approval of Preliminary Drawings & Specifications</p> <p>This form shall be prepared by the PM upon completion of preliminary design documents. Completion and approval of this document accomplishes the following: (Note: Date of schematic approval by BOV and University Architect must be included.)</p> <ul style="list-style-type: none"> • Requires acceptance of the preliminary design documents by BCOM • Establishes the construction budget • Updates the project budget • Conforms to approved project scope • Allows construction document preparation to begin <p>Preliminary design must be approved by the AARB, the Board of Visitors and the University.</p>	<p>Facilities Project Manager</p> <p>Director, Planning</p> <p>Director, Contracts</p> <p>Vice President of Facilities</p>	<p>All approvals</p> <p>Master File</p>

<p>HECO – 6</p>	<p>Approval of Working Drawings & Specification (Required for all projects regardless of dollar value)</p> <p>This form shall be prepared by the PM upon completion of the contract documents. Completion and approval of this document accomplishes the following: (Note: Date of Preliminary approval by BOV and University Architect must be included. See HECO – 17 below for Building Permit contract documents)</p> <ul style="list-style-type: none"> • Signifies acceptance of the contract documents by BCOM • Confirms the budget • Confirms the construction time • Complies with approved project scope • Authorizes the construction procurement process 		<p>All approvals Master File</p>
<p>HECO – 6a</p>	<p>Statement of Structural & Special Inspections</p> <p>Structural and special inspections schedule in Appendix M.</p>	<p>Facilities Project Manager Vice President of Facilities BCOM</p>	<p>All approvals Master File</p>

<p>HECO – 8</p>	<p>Authorizations to Award Contract</p> <p>This form shall be prepared by the Construction Management PM upon completion of the procurement process. Final approval allows award of the construction contract.</p> <p>Note: A HECO -17 Building Permit is required prior to contract award. Revisions to the authorized Project Budget total are accommodated on a revised HECO -2.</p>	<p>Facilities Project Manager</p> <p>Director, Planning</p> <p>Director, Project Management & Construction</p> <p>Director, Contracts</p> <p>Associate Vice President for Facilities</p> <p>Senior Vice President for Administration and Finance</p>	<p>All approvals</p> <p>Master File</p> <p>DPB</p> <p>BCOM</p>

HECO – 11	<p>Contract Change Order</p> <p>Authorizes a change in a construction contract. This form shall be prepared for each change in a construction contract. All changes involving contract cost or performance time will be included in an approved change order</p>	<p>Facilities Project Manager</p> <p>Director, Planning</p> <p>Director, Contracts</p> <p>*Director, Project Management & Construction</p> <p>*Associate Vice President for Facilities</p> <p>*Senior Vice President for Administration and Finance</p> <p>*Depending on value of change</p>	<p>All approvals</p> <p>Master File</p> <p>Contractor</p>
HECO – 11a	<p>Change Order Justification</p> <p>Provides detailed justification and reasons for the change order</p>	Same as HECO -11	Same as HECO - 11

<p>HECO – 11a/e</p>	<p>Architect Engineer Change Order</p> <p>Authorizes a change in a contract for A/E services</p>	<p>Facilities Project Manager</p> <p>Director, Planning</p> <p>Director, Contracts</p> <p>*Director, Project Management & Construction</p> <p>*Associate Vice President for Facilities</p> <p>*Senior Vice President for Administration and Finance</p> <p>*Depending on value of change</p>	<p>All approvals</p> <p>Master File</p> <p>A/E</p>
<p>HECO – 13.1 HECO – 13.1a HECO – 13.1b HECO – 13.2 HECO – 13.2a</p>	<p>Certificate of Completion by A/E Certificate of Partial or Substantial Completion by A/E Final Report of Structural & Special Inspections Certificate of Completion by Contractor Certificate of Partial or Substantial Completion by Contractor</p> <p>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 HECO -13.3 “Certificate of Use and Occupancy.”</p>	<p>In accordance with instructions accompanying the forms</p>	<p>Master File</p> <p>A/E</p>

<p>HECO -13.3</p>	<p>Certificates of Use and Occupancy</p> <p>This form authorizes use of the facilities.</p>	<p>Facilities Project Manager</p> <p>Director, Planning</p> <p>Director, Project Management & Construction</p> <p>Director, Facilities Management</p> <p>SFMO</p> <p>BCOM</p> <p>Director, DEB</p>	<p>Master File</p> <p>A/E</p>
<p>HECO -17</p>	<p>Building Permit</p> <p>This form is prepared by the Code Review Team upon review of these working drawings and normally accompanies the HECO-6 for Director FPM&C review and Building Official approval. It is required prior to award of any construction contract.</p>	<p>Facilities Project Manager</p> <p>Director, Planning</p> <p>Director, Project Management & Construction</p> <p>SFMO</p> <p>BCOM</p>	<p>All approvals</p> <p>Master File</p>

Chapter 15: Reports

SECTION 15.1 MAJOR CAPITAL REPORTING

DGS is responsible for coordinating with, and collecting data from, other state agencies to compile three legislatively mandated reports. These reports are the Capital Outlay Progress Report, the Value Engineering Utilization Report, and the Construction Procurement Report.

SECTION 15.2 CAPITAL OUTLAY PROGRESS REPORT

Section 4-8.01 of the 2003 Acts of Assembly requires the Department of General Services to submit an annual report to the Senate Finance and House Appropriations Committees on the status of capital outlay projects. Every Agency having a capital outlay project is required to submit a report listing all active capital outlay projects. Active projects are defined as those for which an approved HECO-2 form has been issued. Projects are removed from the report the first reporting cycle following the submittal of the HECO-14 form.

SECTION 15.3 VALUE ENGINEERING UTILIZATION REPORT

The Director of the Department of General Services is required by the Code of Virginia § 2.2-1133 to report to the Governor and the General Assembly on or before September 15 of each year, the following:

- The number and value of the state capital projects where Value Engineering (VE) was employed;
- The identity of the capital projects for which a waiver of the requirements of § 2.2-1133, B was granted, including a statement of the compelling reasons for granting the waiver.

SECTION 15.4 CONSTRUCTION PROCUREMENT REPORT

Per Chapter 760, 2015 Acts of the Assembly, the Director of the Department of General Services is required to report the results of the Construction Procurement Survey to the General Assembly, as follows:

The Director shall (i) report such information quarterly to the Chairmen of the House Committee on General Laws and the Senate Committee on General Laws and Technology and (ii) post such reports on the Department of General Services' central electronic procurement website. In addition, on or before December 1 of each year, the Director shall submit an annual report to the Governor and the Chairmen of the House Committee on General Laws and Senate Committee on General Laws and Technology that includes (a) the Director's evaluation of and findings regarding the methods of procurement used for such construction procured by design-build or construction management at risk method and (b) any recommendations for the improvement of (1) the method

of procuring construction generally and (2) the Virginia Public Procurement Act (§ 2.2-4300 et seq. of the Code of Virginia).

APPENDICES

A General Conditions of the Construction Contract and Supplemental General Conditions

B Standard Higher Education Capital Outlay Forms.

C Standard Higher Education Formats

D Basis of Design Narrative and Systems Checklist

E Cost Estimate

F Checklist for Receiving and Opening Bids

G Roof Inspection Forms and Procedures

H Reserved

I Parameters for Calculation of Life Cycle Costs and Energy Analyses

J Reserved

K Construction Change Order Procedure Guidelines

L Art and Architectural Review Board and Board of Visitors

M Structural and Special Inspections

N Duties of the Project Inspector

O Project Types and Non-Capital Outlay Project Procedures

P Building Permit Policy

Q Record Document Standards and Formatting

R Reserved

S Reserved

T HECO Manual Revision History

U Reserved

V Real Property Transactions (Capital Outlay, Acquisitions and Leases)

APPENDIX A

GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT AND SUPPLEMENTAL GENERAL CONDITIONS

Standard DGS forms and formats are available for download from the DGS Form Center (<http://forms.dgs.virginia.gov>).

GENERAL CONDITIONS (HECO-7)

To view/download the latest version of HECO-7 contract document visit the Mason Facilities Website (facilities.gmu.edu).

To view/download the latest version of CO-7 contract document (referred to in HECO-7 above) visit the website listed above and enter “DGS-30-054” on the Forms Center.

SUPPLEMENTAL GENERAL CONDITIONS – FOR SMALL WOMAN OWNED & MINORITY OWNED (SWAM) BUSINESS PROCUREMENT PLAN

To view/download the latest version of The Supplemental General Conditions-SWAM, visit the DGS website listed above and enter “DGS-30-377” in the search box on the Forms Center.

SUPPLEMENTAL GENERAL CONDITIONS FOR RENOVATION PROJECTS AND FOR LIQUATED DAMAGES:

To view/download the latest version of these sample formats, visit the DGS website listed above and enter “DGS-30-376” in the search box on the Forms Center.

INSTRUCTIONS TO BIDDERS:

To view/download the latest version of the required contract document, visit the HECOM website listed above and enter HECO-7a.

GENERAL CONDITIONS DESIGN BUILD (HECO-7DB)

To view/download the latest version of the HECO-7DB visit the HECOM website listed above.

To view/download the latest version of the CO-7DB contract document referred to in the HECO 7DB visit the DGS website listed above and enter “DGS-30-056”.

HECO-7DB
Revised (July 1, 2006)

HIGHER EDUCATION COMMONWEALTH OF VIRGINIA
General Conditions for the Design Build Construction Contract for All Capital Outlay
Projects
Addendum Number One

The Commonwealth of Virginia General Conditions of the Design Build Contract Form DGS-30-056, CO-7DB (2004 Edition) are modified and supplemental as hereinafter described in this Addendum Number One.

a. Sections 2 (Contract Documents)

Delete Paragraph (a) and in its place add the following:

“(a) The Contract Between the University and the Design Build Contractor (CO- 9DB), the Worker’s Compensation Certificate of Coverage (CO-9a), the Standard Performance Bond (HECO- 10), the Standard Labor and Material Payment Bond (HECO- 10.1), the Schedule of Values and Certificate for Payment (CO- 12), the Affidavit of Payments of Claims (HECO- 13), the Contractor’s Certificate of Substantial completion (HECO-13.2a), and the Contractor’s Certificate of Completion (HECO-13.2) issued by the in its Higher Education Capital Outlay Manual (HECOM) are forms incorporated in these Design Build General Conditions by reference and are made a part hereof to the same extent as though fully set forth herein. They must be used by the Contractor for their respective purpose.”

Delete Paragraph (d) and in its place add the following:

“(d) The Mason Design Manual, current edition is included by reference herein and shall be used by the Contractor’s A/E as guidelines for the design.”

Delete Paragraph (e) and in its place add the following:

“(e) Chapter 8, Project Design and Technical Criteria of the HECOM current edition is included by reference and shall be used by the Contractor’s A/E as the referenced standards for design.”

b. Section 12 (“All Risk” Builder’s Risk Insurance)

In Paragraph (a) delete the words “and the Director, Division of Engineering and Buildings”

c. Section 15 Architects/Engineers Status

Delete Paragraph (c)

Delete Paragraph (e) and in its place add the following:

“(e) Chapter 8, Project Design and Technical Criteria of the HECOM current edition is included by reference herein and shall be used by the Contractor’s A/E as the referenced standards for Design”

- d. For all forms referenced in the G.S. Form E&B CO-7DB (12/2002 Edition) by “CO-,” replace “CO-“with “HECO-”.

APPENDIX B

STANDARD HIGHER EDUCATION CAPITAL OUTLAY FORMS

CPSM (CO) Forms are available direct from BCOM at the following Web Site:
http://forms.dgs.state.va.us/eo51/dgs_viewforms.asp?page=1&bu=BCOM

HECO Forms are available at the following location:
Facilities.gmu.edu

DESIGN CONTRACT MANAGEMENT FORMS

HECO-2.1a - A/E Selection Small Fee
HECO-2.1b - A/E Selection 3 Phone
HECO-3 - Contract between University and A/E
HECO-3.1 - Term Contract Form for A/E
HECO-3.1a - Service Order Term Contract for A/E
HECO-3.2 - Contract between University and A/E (Non-Capital)
HECO-3.3 - Term Contract for Cost Consultant
HECO-3.3a - Service Order for Cost Consultant
HECO-3.4a - Service Order for Construction Administration Manager
HECO-8b - A/E Performance
HECO-11a/e - Architect/Engineer Contract Change Order
HECO-12a/e - A/E Payment Invoice

AUTHORIZATION FORMS

HECO-2 - Authority to Initiate Non-General Fund Capital Outlay Project
HECO-4 - Approval of Schematic Design
HECO-5 - Approval of Preliminary Drawings and Specifications
HECO-6 - Approval of Working Drawings & Specifications
HECO-17 - Building Permit
HECO-8 - Authorization to Award Contract
HECO-14 - Project Completion Report

CONSTRUCTION CONTRACT MANAGEMENT FORMS

HECO-6a - Statement of Structural and Special Inspections;
HECO-6b - 96 VUSBC Special Inspections;
HECO-7 - General Conditions Capital Outlay Projects;
HECO-7DB - General Conditions Design Build Capital Outlay Projects;
DGS-30-377 – Supplemental General Conditions/SWAM;
DGS-30-376 – Supplemental General Conditions – Renovations and Liquidated Damages; HECO-7a - Instruction to Bidders;
HECO-7am - Instruction to Bidders Medical Center;
HECO-9 - Commonwealth of Virginia Contract between University and Contractor;

HECO-9DB – Commonwealth of Virginia Contract between University and Design Builder;
HECO-10 - Commonwealth of Virginia Performance Bond.
HECO-1 0.1 - Commonwealth of Virginia Payment Bond
HECO-1 1 - Contract Change Order
HECO-1 1 a - Change Order Justification
HECO-12 - Commonwealth of Virginia Schedule of Values and Certificate for Payment
HECO-1 3.1 - Certificate of Completion by A/E
HECO-1 3.1 a - Certificate of Partial Completion by A/E
HECO-1 3. 1b - Final Report of Structural and Special Instructions
HECO-1 3.2 - Certificate of Completion by Contractor
HECO-1 3.2a - Certification of Partial Completion by Contractor
HECO-13.3 - Certificate of Use and Occupancy
HECO-14 – Project Completion Report
HECO-14a – A/E Performance Rating (Bid/Construction Phase) (See CPSM)
HECO-14b – Contractor Performance Rating (See CPSM)
HECO-17 – Building Permit for all Capital Projects

APPENDIX C

STANDARD HIGHER EDUCATION FORMATS

RFP for A/E Professional Services - Single Project

RFP for A/E Professional Services - Term Contract

RFP for VE Professional Services

MOU for A/E Professional Services

MOU for A/E Professional Services

RFP for Competitive Negotiation (all types available)

RFP for Design/Build

Notice (IFB) of Invitation for Bids Format

Invitation For Bids – (See Contract Administrator for procedure) Standard Bid Form Format

IFB (Specifications) Cover Format

Invitation for Bids Contents Format

Standard versions of these forms and formats are available for download from the DGS Forms Center at <http://forms.dgs.state.va.us>.

APPENDIX D

BASIS OF DESIGN NARRATIVE AND SYSTEMS CHECKLIST

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, and mechanical and electrical loads should have been made.

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 #
- Indicate the proposed Virginia Energy Conservation Code compliance path
- 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
- General description of any proposed fire suppression systems (clean agent, chemical, etc.)
- Provide a general description of any proposed fire sprinkler systems.

- Identify applicable NFPA Standard (cited by the VUSBC) which provides the minimum requirements for the design, installation, testing, inspection, approval, operation, and maintenance of the proposed fire sprinkler or fire suppression system. Indicate the water supply to the proposed building and whether or not a fire pump will be required. (Calculations to support this position are desirable at this phase but are not required.)
- 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
- Total cubic foot volume
- 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

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.

Virginia Energy Conservation Code:

Describe the proposed Virginia Energy Conservation Code compliance path.

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 NFPA 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 requirement 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 Form DGS-30-219, Area Calculation Worksheet 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 8 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.
9. A description of items not considered to be a permanent part of the structure, such as workbenches, shelving, bins and removable partitions. (Show also on furniture footprint drawings.)
10. Where high-density file storage systems are proposed, provide data to demonstrate acceptable loading capacity.
11. 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?
12. Design features to make facilities accessible to and usable by the physically handicapped. If not incorporated, appropriate reasons/justification shall be given.
13. 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.

14. 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.
15. Describe special construction features incorporated into the facility such as barred windows, special wall/roof construction, etc.
16. 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 with 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.
9. Where high-density file storage systems are proposed, provide data to demonstrate acceptable structural loading capacity.
 10. Details using horizontal HSS tubes as beams: Do not recommend using HSS Tubes as horizontal beams where they are required to be fire rated. There is no UL Listing for this condition. HSS tubes used as columns and X-bracing can be UL Listed.
 11. Helical piers: if the engineer wishes to use helical piers, a recommendation must be made by the soils engineer in the soils report or supplemental report for the correct design.

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. Also, a statement as to whether heat recovery is contemplated for domestic water heating.
6. 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.
7. Design temperature of domestic hot water distribution system and extent of recirculation system within building.
8. Indicate materials to be used for each piping system.
9. 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, Ventilating and Air Conditioning:

1. Design Conditions

- a. Describe and/or list the indoor and outdoor design conditions to be used in the design of systems for this project.
- 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 140T maximum, and 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. State if smoke removal/control systems are to be employed.
- c. Describe the operation of the system in summer and winter modes.
- d. Describe any methods to reduce or minimize outside airflow

4. Air Conditioning

- a. Provide a complete description and/or schematics of the air conditioning system proposed including an explanation of why this system is preferred over others. Also, indicate locations of major components of the system. For larger systems, which qualify under Energy Conservation, a computerized comparison between at least two systems is required.
 - 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.
5. 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.
6. 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 peak loads.
 - 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 the Mason Design Manual.

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 tile 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 Material:

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 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:
 - e. Hazard classification of occupancy and applicable Code reference.
 - f. 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.
 - g. Describe fire pump operating parameters.
 - h. Approximate water demand for sprinkler system.
5. 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:
 - i. Lighting load and convenience outlet load separately.

- ii. Power load for building equipment such as heating, air conditioning, etc.
- iii. 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.
- c. 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.)**
- d. Type of conductors, such as rubber insulated, thermoplastic insulated, polyvinyl chloride jacket, etc., and where proposed to use.
- e. 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.
- f. A determination of short-circuit duty required for all service entrance protective devices and switchgear. Include cost premiums in cost estimate.
- g. 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.
 - i. 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.
 - ii. 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.
- i. Indicate interior lighting on lighting plans.
- 2. Outside distribution systems:
 - a. Contact the appropriate utilities or Dominion Virginia Power 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 #13 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.
13. State security requirements for Security/Entry Control System.
 - a. 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:
 - i. Annunciation Panels and Cabinets
 - ii. Visual and Audible Enunciators
 - iii. Magnetic Switches
 - iv. Proximity Sensors
 - v. Volumetric Sensors
 - vi. Wire Grids
 - vii. Vibration Detectors
 - viii. Power Supplies Integral to Items on this List
 - ix. Closed Circuit Television Cameras and Monitors, and
 - x. Video Recorders used for Intrusion Detection Purposes
 - xi. Access Control Systems
 - b. IDS installation can be divided into three general functional categories:
 - i. Sensitive compartmented information facilities.
 - ii. Conventional arms, ammunition, and explosives storage sites (AA & E).
 - iii. All other (including but not limited to communication facilities, special training facilities, special operational facilities, intelligence facilities, etc.).
 - c. Describe access control equipment (versus IDS) when required and outline locations, function, and area of control.

Energy Monitoring and Control System (ECMS):

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.

Roads, Driveways, Parking Areas and Walks:

1. State general soil conditions, with a brief outline of soil exploration and testing performed.
2. Indicate CBR value and pavement recommendations. (Show typical paving section on the drawings.)
3. Describe the type and volume of traffic, controlling wheel loads and types or classes of roads under consideration. Justify any deviation from criteria thickness for these classes.

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 type, 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

Indicate systems and equipment to be included in project. Provide equipment data and area in spaces provided. When two or more subsystems are used, show portion of each by % of gross to nearest 10%.

Structural Systems

Foundation System	Ground Floor Area (SF) _____	
Type	Footing Bottom from Existing Grade	Compacted Fill
___ Spread Footings	___ 2'	___ Borrowfill 1'
___ Thickened Slab @ Edge	___ 3'	___ Borrowfill 2'
___ Pile Foundation	___ 4'	___ Borrowfill 3'
___ Caissons	___ 5'	___ Borrowfill 4'
___ Continuous Wall Footing	___	___ Borrowfill 5'
___ Grade Beams	___	___ Over 5'
___ Special (See Sitework Sect)	___	___

Slab on Grade	Slab on Grade Area (SF) _____	
Type	Slab Thickness	Floor Live Load
___ Floating	___ 4"	___ Under 100PSF
___ Grade Beam Supported	___ 5"	___ 101-200PSF
___ Pile Supported	___ 6"	___ 201-300 PSF
___ Reinforced	___ 8"	___ 301-400 PSF
	___ Over 8"	___ Over 400PSF

Structural Design Criteria		
Seismic	Roof Live/Snow Load	Wind Loading
___ Performance Category	___ Roof LL 20PSF	___ Wind 80 mph
___ Exposure Group	___ Roof LL 30 PSF	___ Wind 92 mph
___ Site/Soil Coeff	___ Roof LL 40 PSF	___ Wind 103 mph
	___ Roof LL 50 PSF	___ Wind 115 mph

Structural Frame Type	Gross Bldg Area(SF) _____	
___ Bearing Wall		
___ Steel Frame		
___ Concrete, Cast in Place		
___ Wood		
___ Concrete, Precast		

Supported Floor	Supported Floor (SF) _____	
------------------------	----------------------------	--

Type System
 Concrete, Cast in Place
 Concrete on Steel Joists
 Concrete on Steel Frame
 Concrete, Precast
 Wood

Floor Design Live Load
 Under 40 PSF
 40-60PSF
 61-80PSF
 81-100PSF
 101-150PSF
 152-200PSF
 Over 200PSF

Floor Span
 Under 26'
 26'-35'
 35'-45'
 46'-55'
 56'-65'
 Over 66'

Roof Structure

Roof Framing
 Concrete, Cast in Place
 Precast Hollow Core
 Concrete, Precast
 Wood
 Steel Joist
 Steel Framing

Roof Decking
 Steel
 Concrete Slab
 Wood
 Gypsum
 Other (List)

Roof Area (SF) _____
 Roof Span
 Under 26'
 26'-35'
 36'-45'
 46'-55'
 56'-65'
 Over 65'

Pre-Engineered Building

Type
 Rigid Frame
 Post & Beam

Gross Bldg Area(SF)
 Eave Height
 Eave height under 12'
 Eave height 12'-20'
 Eave height over 20'

Roof Slope
 1 in 12
 2 in 12
 3 in 12
 >3 in 12

Exterior Wall
 Prefinished Metal
 Masonry

Roof Material
 Roof Prefinished Metal
 Standing Seam Metal

Energy
 Insulation 'U'

Architectural Systems

Roofing
 Type of Material
 Built-up Roofing
 Shingles
 Sprayed Roof System
 Standing Seam Metal
 EPDM
 CSPE
 Modified Bitumen

Roofing Area (SF) _____
 Roof Insulation
 U=.03
 U=.04
 U=.05
 U=_____

Wind Uplift
 FM 1-60
 FM 1-90
 FM 1-120

 Fire resistance
 Class A
 Class B

____ Class C

Stairs

Number of Risers (EA) _____

Stair Location/Type

Stair Material

Miscellaneous

____ Exposed

____ Concrete

____ Closed Riser

____ Enclosed

____ Steel

____ Open Riser

____ Exterior

____ Steel Plan

____ Ships Ladder

____ Interior

____ Checkered Plate

____ Artic Access

____ None

____ Grate

____ Area of Rescue Assistance

Exterior Wall System

Exterior Wall Area (SF) _____

Type

Backup

Story Height

____ Brick

____ Wood Studs

____ Under 12'

____ Synthetic (EIFS)

____ Steel Studs

____ 12'-20'

____ Metal Panels

____ Concrete, CIP

____ Over 20'

____ Stucco

____ Concrete, Precast

Wall Insulation

____ Wood

____ Furring

____ Batt, R=____

____ Concrete, Cast in Place

____ Other

____ Rigid, R=____

____ Concrete, Precast

____ Stone (Granite, Marble, Inc.)

____ Other, R=____

____ Vinyl Siding

____ Other

Interior Wall System (Excludes Finishes)

Interior Wall Area (SF) _____

Type

Height

____ Concrete Masonry Unit

____ 8'

____ Steel Studs

____ 9'

____ Wood Studs

____ 10'

____ Concrete, Cast in Place

____ Over 10' (Height = ____ ft.)

Interior Finishes

Gross Building Area (SF) _____

Walls

Floors

Ceiling

____ Gypsum Board, Painted

____ VCT

____ Acoustical

____ CMU

____ Sheet Vinyl

____ Gypsum Bd

____ Ceramic Tile

____ Ceramic Tile

____ Plaster

- Wood Panels
- Plaster
- Vinyl Wall Covering
- Other

- Quarry Tile
- Exposed Concrete
- Terrazzo
- Carpet
- Hardwood
- Special Toppings
- Other

- Concrete
- Spray On
- Metal Panel
- Exposed Structure
- Other

Doors and Hardware

Door Type

- Hollow Metal Exterior, Size
- Aluminum Store Front (glass)
- Wood Exterior, Size
- Folding, Size
- Overhead, Size
- Vault, Size
- Metal Security Door
- Hollow Metal Interior
- Other _____

Surface Area One side(SF) _____

Frame

- Hollow Metal
- Steel Frame
- Aluminum
- Painted Wood
- Stainless Steel
- Other _____

Windows

Type

- Fixed
- Double Hung
- Projected
- Casement
- Sliding
- Storm
- Awning
- Jalousie
- Other
- Other

Surface Area One side(SF) _____

Glazing

- Single
- Double
- Thermal
- Safety
- Wire Glass
- Bullet Proof
- Reglazing
- Other

Frame

- Aluminum
- Painted Wood
- Vinyl Clad Wood
- Painted Steel
- Other
- Other

Specialties

- Jail Doors/Lock
- Clean Room
- Case Work
- Dark Rooms
- Loading Dock Equip
- Projection Screen

Gross Building Area (SF)

- Toilet Accessories
- Toilet Partitions
- Wire Partitions
- Metal Walkways
- X-Ray Shielding
- Wardrobes (Dormitory)

- ___ Marker & Tack Boards
- ___ Sign and Plaques
- ___ Flagpoles
- ___ Access Flooring
- ___ Telephone Enclosures
- ___ Ladders
- ___ Others

- ___ Chest of Drawers
(Dormitory)
- ___ Storage Shelving
- ___ Fireplaces
- ___ Movable Partitions
- ___ Postal Specialties
- ___ Exterior Sun
- ___ Control Devices

Mechanical Systems & Equipment

Plumbing Number of Fixtures

(EA) _____

Plumbing

Plumbing Fixtures

- ___ Flush Tank WC Floor mtd.
- ___ Flush Tank WC wall mtd.
- ___ Flush Valve WC floor mtd.
- ___ Flush Valve WC wall mtd.
- ___ Water Heater Electric
- ___ Water Heater Steam
- ___ Water Heater Gas
- ___ Instantaneous W.H., Elec.
- ___ Instantaneous W.H., Steam

Glazing

- ___ Tub
- ___ Shower Fiberglass
- ___ Shower/Receptor
- ___ Shower, Multi-head
- ___ Emergency Shower
- ___ Emerg. Eye-Wash
- ___ Other

Piping

- ___ Copper Pipe
- ___ PVC Pipe
- ___ Acid Resistant Pipe
- ___ Cast Iron Piping
- ___ Steel Frame
- ___ Valves, Fittings
- ___ Fixture Rough-ins
- ___ Pressure Reducer
- ___ Arrestors
- ___ Other

Roof Drainage

- ___ Gutter & Downspouts
- ___ Scupper & Downspouts
- ___ Roof Drains & Interior

Piping

- ___ Other

Building HVAC Systems

Heating Load (MBH) _____

Cooling Load (Tons) _____

Building Heating Systems

- ___ Boiler
- ___ Heat Exchanger
- ___ Other

Building Cooling Systems

- ___ Heat Pump, Water Cooled
- ___ Heat Pump, Air Cooled
- ___ Chiller, Reciprocating
- ___ Chiller, Rotary Screw
- ___ Chiller, Centrifugal
- ___ Chiller, Steam Absorption
- ___ Direct Expansion

Distribution Medium

- ___ Steam
- ___ Hot Water

_____ Hot Air
_____ Other

Fuel

_____ Gas
_____ Oil
_____ Coal
_____ Electric
_____ Geothermal
_____ Other

Heating Equipment

_____ Unit Heaters
_____ Fin Tube Radiation
_____ Individual Units
_____ Cabinet Unit Heaters
_____ Computer Room CW
_____ H&V Units HW, Oil
_____ Duct mtd. Coils
_____ Heat Reclaim
_____ Other

Dehumidification

_____ Desiccant
_____ Refrigeration
_____ Regenerative
_____ Non-Regenerative
_____ Other

Central Plant Systems

Central Heating Plant

_____ Boiler
_____ Chiller
_____ Geothermal
_____ Purchased (Outside source)
_____ Other

Heating Load (MBH) _____

Cooling Load (Tons) _____

_____ Cooling Tower
_____ Thermal Storage
_____ Roof Top Units
_____ Single Zone
_____ Multi Zone
_____ Ventilation
_____ Dual Temp. Water
_____ Air Cooled Condensing
Unit
_____ Computer Room Glycol
_____ Computer Room DX
_____ Other

Air Distribution

_____ Ducted Supply
_____ Ducted Return
_____ Dual Duct
_____ H&V Unit
_____ Air Handling Unit
_____ Fan Coil Units
_____ VAV Fan Powered
_____ VAV Terminal Only
_____ VAV Reheat
_____ Other

Mechanical Ventilation

_____ Power Roof Exhaust Fans
_____ Power Roof Supply Fans
_____ In Line Exhaust Fans
_____ In Line Supply Fans
_____ Fume Exhaust Hoods
_____ Kitchen Exhaust Hoods
_____ Kitchen Supply Hoods
_____ Wall Exhaust Fans
Fan Capacity (CFM)_____

Central Cooling System

_____ Chiller, Reciprocating
_____ Chiller, Rotary Screw
_____ Chiller, Centrifugal
_____ Chiller, Steam Absorption
_____ Direct Expansion
_____ Cooling Tower

Distribution Medium
 _____ Steam
 _____ Hot Water
 _____ High Temperature Hot Water
 _____ Other

_____ Thermal Storage
 _____ Air Cooled Condenser
 _____ Other

Fuel
 _____ Gas
 _____ Oil
 _____ Coal
 _____ Electric
 _____ Geothermal
 _____ Other

Fire Protection

Sprinkler Type
 _____ Dry
 _____ Wet
 _____ Preaction
 _____ Deluge Water
 _____ Deluge Foam
 _____ Other

Gross Area Sprinkled (Sq. ft.) _____

Classification
 _____ Light Hazard
 _____ Ordinary Hazard
 _____ Extra Hazard
 _____ Limited Area

Carbon Dioxide
 _____ Hose Reel
 _____ Flooding, Area
 _____ Flooding, Total

Booster Pump
 _____ Diesel
 _____ Electric
 _____ Other

Electrical Systems

Power
 Power Supply
 _____ 120/208
 _____ 277/480/120/208
 _____ 277/480
 _____ 120/240
 _____ Alteration to Existing
 _____ Explosion Proof
 _____ Other

Gross Building Area (Sq. ft.) _____
 Panelboards
 _____ A _____ V
 _____ A _____ V
 _____ A _____ V
 _____ A _____ V
 _____ A _____ V
 _____ A _____ V
 _____ A _____ V

Transformers
 _____ V _____ KW
 _____ V _____ KW
 _____ V _____ KW
 _____ V _____ KW
 _____ V _____ KW
 _____ V _____ KW
 _____ V _____ KW

Lighting

Fire Alarm

- Incandescent
- Fluorescent
- High Ind Discharge w/Battery Operated Emergency
- High Ind Discharge (HID) High Bay
- High Ind Discharge (HID) Low Bay
- Explosion Proof @
- Special System
- Other

Special Electrical Systems

- Uninterruptible Power Supply (UPS)
- Static/Battery
- Motor Generator Set
- Other

Electrical Generators

- Intermittent
- Continuous
- Cogeneration
- Fire Pumps
- Gas
- Diesel
- Turbine
- Integral Radiators
- Remote Radiators

Energy Monitoring & Control System(ECMS)

- Local Control
- Remote Control
- Building Only
- Tie to Central System

Security Detection

- Manual Local
- Automatic Detectors To Fire Station
- Addressable
- Mechanical & Electrical
- Extend Existing (Mfr. _____)
- Conduit Only
- Conduit & Wire
- Other

Special Electrical Protection

- Lighting Protection
- Electronic Grounding
- Distribution Grounding
- Other

- Equipment Capacity (KW)
- Voltage/Phase
- Speed (RPM)

Gross Building Area (Sq. ft.) _____
 Number of Control Points (EA) _____

_____ Intrusion Alarm for Access Control

_____ Access Control

_____ TV Camera & Monitor

_____ Conduit

_____ Conduit & Wire

_____ Other

Communications Systems

Telephone

_____ University Owned System

_____ Leased System

_____ Conduit Only

_____ Conduit & Wire

_____ Special System (Describe)

Television

_____ University Owned System

_____ Leased System

_____ Conduit Only

_____ Conduit & Wire

_____ Special System

(Describe)

Intercom

_____ Theater Sound

_____ Two-way communication

_____ Includes PA Systems

_____ Conduit Only

_____ Conduit & Wire

_____ Special System

(Describe)

Data Communications

_____ Conduit

_____ Conduit & Wire

_____ Special System (Describe)

Public Announcement

_____ Conduit Only

_____ Conduit & Wire

_____ Special System

(Describe)

Special Systems and Equipment

_____ Vacuum, Medical

_____ Vacuum, Industrial

_____ Oxygen

_____ Nitrogen

_____ Compressed Air

_____ Interior Steam System

_____ Low Pressure below 150 psi

_____ High Pressure above 150 psi

_____ Fuel Oil Storage

_____ Dust Collection

_____ Engine Exhaust

_____ Special System

(Describe)

Conveying Equipment

Bridge Cranes

Span

_____ under 50'

_____ 51'-75'

_____ over 75'

Capacity

_____ under 10T

_____ 10-20T

_____ 20-40T

_____ over 40T

Run

_____ under 50'

_____ 50-100'

_____ over 100'

Monorails

Type	Capacity	Run
_____ Manual	_____ under 5T	_____ under 50'
_____ Electric	_____ 5- 10T	_____ 50 to 100'
_____ Air Operated	_____ over 10T	_____ over 100'

Elevators

_____ Electric	_____ Escalators	Number of Stops (EA) _____
_____ Hydraulic	_____ Conveyors	
_____ Passenger	_____ Wheelchair Lift	
_____ Freight	_____ Dumbwaiters	
_____ Other		

Other Conveying Equipment

Fixed Hoist	Vehicle Lifts
_____ Manual	_____ Capacity under 5T
_____ Electric	_____ Capacity 5-10T
_____ Air Operated	_____ Capacity over 1 0T

Built-In Equipment

_____ Hospital Equipment	_____ Laboratory Equipment	_____ Exercise/Fitness Equipment
_____ Dental Equipment	_____ Casework	_____ Athletic / Sports Equipment
_____ Food Service Equipment	_____ Waste Disposal Equipment	_____ Maint Shop Equipment
_____ Chapel Equipment	_____ Paint Spray Booth	_____ Vault
_____ Movie Theater Equipment	_____ Special Warehouse Equipment	_____ Parking Lot Control
_____ Rifle Range Equipment	_____ Snow Melting Equipment	_____ Turnstiles / Personnel Access
_____ Other		

Demolition Interior

Interior Demolition	Gross Demolition Area (Sq. Ft.) _____
_____ Complete Interior of Bldg.	_____ Partial Interior of Bldg.
_____ Complete Interior Partition	_____ Partial Interior Partition
_____ Complete Interior Finishes	_____ Partial Interior Finishes
_____ Complete Interior	_____ Partial Interior
Mechanical	Mechanical
_____ Complete Interior Electrical	_____ Partial Interior Electrical
_____ Other	

Asbestos Removal Total Cost
(Lump Sum)

_____ Asbestos Removal -
Roofing Felts, Insulation
_____ Asbestos Removal - Piping
Insulation
_____ Asbestos Removal - Equip
Insulation
_____ Asbestos Removal -
Ceilings
_____ Asbestos Removal - Walls
_____ Asbestos Removal -
Fireproofing
_____ Asbestos Removal - Floors

Gross Affected Area (Sq. Ft.) _____

Lead Based Paint Removal

_____ Bulk Removal (Material
with lead-based paint still on it)
_____ Surface Removal /
Abatement

Gross Affected Area (Sq. Ft.) _____

Site Work, Utilities and Improvement Descriptions

Exterior Electrical

_____ University Owned
_____ Utility Co. _____
_____ Electrical Distribution,
Primary
_____ Electrical Distribution,
Secondary
_____ Substation/Transformer

Length of Run (LF) _____

_____ KVA Rating

_____ V _____ PH

_____ KVA Rating

Exterior Communication

_____ Fire Alarm Distribution
_____ Security Alarm Distribution
_____ Communication, Telephone
Distribution
_____ Exterior EMCS
Distribution
_____ Other

Length of Run (LF) _____

Length of Run (LF) _____

Length of Run (LF) _____

Length of Run (LF) _____

Length of Run (LF) _____

Area Lighting

_____ Poles with Lights: Foot
Candles _____

Number of Fixtures (EA) _____

Type Fixture _____

Mounting Height _____

_____ Building Mounted: Foot Candles _____	_____	_____
_____ Other: Foot Candles _____	_____	_____

Exterior Mechanical Distribution

_____ HTHW Distribution, Overhead	Length of Run (LF)	_____
_____ HTHW Distribution, Underground Encased	Length of Run (LF)	_____
_____ HTHW Distribution, Underground Trenches	Length of Run (LF)	_____
_____ Chilled Water Distribution	Length of Run (LF)	_____
_____ Condensate Collection	Size (Gallons)	_____
_____ Gas Distribution	Length of Run (LF)	_____
_____ Compressed Air Distribution	Length of Run (LF)	_____
_____ Other	Length of Run (LF)	_____

Exterior Water Distribution

_____ Water Distribution Piping	Length of Run (LF)	_____
_____ Fire Protection Water Distribution	Length of Run (LF)	_____
_____ Fire Hydrants	Quantity (EA)	_____
_____ Water Pumping Station	Capacity (GPM)	_____
_____ Fire Booster Pump	Capacity (GPM)	_____
_____ Potable Water Storage Tank	Size (Gallons)	_____
_____ Fire Water Storage Tank	Size (Gallons)	_____

**Exterior Sanitary Sewer
Collection**

_____ Sanitary Sewer Piping	Length of Run (LF)	_____
_____ Manholes	Quantity (EA)	_____
_____ Sewage Pump Station		
_____ Sewage Lift Station		
_____ Domestic Sewage Treatment	Size (Gallons)	_____

Exterior Stormwater System

_____ Storm Drainage Piping
_____ Box and Arch Culvert

Drainage Facing Materials
 Retention Pond, Wet
 Detention Pond, Dry
 Underground Structure
 Detention

Earthwork

Volume, Cut & Fill (Cu. Yd.) _____

Site Clearing
 Site Grading
 Excavation and Backfill
 Excavation of Unsuitable
 Materials
 Trench Excavation
 Structural Fill
 Other

Imported Fill
 Offsite Disposal
 Site Irrigation
 Site Dewatering (Major)
 Erosion Control
 Environmental Protection

Landscaping

Area Planted (SY) _____

Fine Grading
 Fertilizing
 Topsoil
 Seeding
 Sodding
 Trees
 Shrubs, Other Plantings

In Construction Contract
 By University
 Separate Contract

Site Improvements

Area Developed (SY) _____

Retaining Walls
 Signs
 Site Furnishings
 Flagpole & Misc.
 Concrete Walks
 Gravel Paths
 Wells (Water) _____

Pedestrian Bridge - Open
 Pedestrian Bridge -
 Enclosed
 Pedestrian Tunnel
 Steps/Ramps
 Bituminous Walks
 Special Walks
 Pavers

Roads & Drives

Paved Area (SY) _____

Concrete Roads
 Overlay Roads
 Slurry Seal Road

Flexible (Bituminous)
 Roads
 Surface Treatment Roads
 Other _____

Parking

Paved Area (SY) _____

- _____ Concrete Parking
- _____ Overlay - Parking
- _____ Slurry Seal Parking

- _____ Bituminous Parking
- _____ Surface Treatment - Parking
- _____ Graveled Parking Lot

Fencing

- _____ Selected Areas
- _____ Pedestrian Gates
- _____ Alarms

- Length of Fencing (LF) _____
- _____ Entire Perimeter
 - _____ Vehicular Gates
 - _____ Other

Pollution Abatement Structures

- _____ Water Treatment
- _____ Industrial Waste Treatment
- _____ Electro-Static Precipitator

- _____ Domestic Sewage Treatment
- _____ Oil Water Separators
- _____ Other:

Recreation Equipment/Fields

- _____ Playground Equipment
- _____ Tennis / Basketball Courts
- _____ Football/Soccer/Lacrosse Fields
- _____ Ticket Booth

- _____ Grandstands, Bleachers
- _____ Softball/Baseball Fields
- _____ Concession / Restroom Bldg
- _____ Other

Supporting Structures (Separate from building above)

- _____ Central Heating Plant
- _____ Mechanical Equipment Building
- _____ Well House
- _____ Vehicle Wash Platform
- _____ Other

- _____ Central Cooling Plant
- _____ Electrical Equipment Building
- _____ Guard House / Security Gate
- _____ Paint Storage Building

Special Foundations

Piling

Type	Length	Capacity
_____ Timber	_____ Under 25'	_____ 15 tons
_____ Concrete, Precast	_____ 26'-35'	_____ 20 tons
_____ Concrete, Pressure Inject	_____ 36'-45'	_____ 25 tons
_____ Steel H Piles	_____ 46'-55'	_____ 30 tons
_____ Steel Sheet Piling	_____ 56'-65'	_____ 35 tons
_____ Other	_____ 66'-95'	_____ 40 tons

_____ Over 95'

_____ tons

Caissons (Drilled and Cast-in-place)

Type

Size

Nominal Depth

_____ Plain Bottom

_____ 24" Diameter

_____ feet

_____ Belled Bottom

_____ 36" Dia

_____ feet

_____ 48" Dia

_____ feet

_____ 60" Dia

_____ feet

_____ 72" Dia

_____ feet

Other Special Foundations

_____ Underpinning of Existing Structures

_____ Other

Site Demolition

_____ Remove Utilities

_____ Remove Paving and Slabs

_____ Remove Structures

_____ Remove/Dispose of Asbestos (Exterior)

_____ Remove/Dispose of P.C.B.

_____ Remove/Dispose of Contaminated Earth

APPENDIX E

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. 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. The Building Cost Summary form (Form Number DGS-30-224) is available as an Excel spreadsheet template, which may be downloaded from the DGS Forms Center (<http://dgs.state.va.us>).

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. When the estimates exceed the approved or proposed construction budgets, the design and cost consultants will work with the University to create a narrative that describes how they will address this issue.

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.

FINAL/WORKING DRAWINGS PHASE ESTIMATE

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 Systems 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.

Foundation	Ground Floor	Sq. Ft.
-------------------	--------------	---------

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 & UTILITIES portion of the estimate under "Special Building Foundations" category

Slab-on-Grade	Slab on Grade	Sq. Ft.
----------------------	---------------	---------

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.

Structural Frame	Gross Building Area	Sq. Ft.
-------------------------	---------------------	---------

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.

Supported Floor Supported Floor Sq. Ft.

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 "Interior Finishes.

Roof Structure Roof Area Sq. Ft.

Includes construction of structurally integrated or independently supported roofs, i.e., precast concrete roof slabs, concrete topping, steel decking, joists, and beams. Roofing system excluded.

Roofing Roof Area Sq. Ft.

Includes roof curbing, roof insulation, roofing, gravel stops, gutters, and downspouts, flashing, skylights, roof-access hatches, and other related roofing items.

Stairs Number of Risers Each

Includes interior and exterior building stairs, landings, platforms, and railings.

Elevators Number of Stops Each

Passenger or freight elevators including conveyor cab, doors, controls and rails.

Exterior Walls Exterior Wall Area Sq. Ft.

Includes bearing or nonbearing 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.

Interior Walls Interior Wall Area (I side) Sq. Ft.

Includes partitions, bearing or nonbearing 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.

Interior Finishes Gross Building Area Sq. Ft.

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.

Doors & Hardware Surface Area One Side Sq. Ft.

Includes all exterior and interior doors, frames, hardware, caulking and painting.

Windows Glazed Walls Surface Area One-Side Sq. Ft.

Includes windows, glazed wall systems, glazing, caulking, and painting.

Specialties Gross Bldg. Area Sq. Ft.

Includes chalk and tack boards, signs and plaques, flag poles, access flooring, telephone enclosures, ladders, storage shelving, toilet and bath 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.

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., icemaker 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 Gross Area Protected 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 Gross Bldg. Area Sq. Ft.

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 Gross Building Area Sq. Ft.

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 Total Cost Lump Sum

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

Exterior Electrical Length of Run Lin. Ft.
Distribution

Includes overhead power distribution, i.e., poles, cross arms, insulators, guying, terminations, lightning protection, wire and cable, and underground distribution, i.e., excavation and backfill, concrete encased duct bank, direct burial duct, manholes, hand holes, 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 Number of Fixtures Each

Each Includes poles, fixtures, excavation and backfill, concrete work, wire, duct and conduit.

Exterior Mechanical Distribution Length of Run Lin. Ft.

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 Length of Run Lin. Ft.

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 Length of Run Lin. Ft.

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 Length of Run Lin. Ft.

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 Paved Area Sq. Yd.

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.

Paved Parking Paved Area Sq. Yd.

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.

Includes site grading, site excavation, soil stabilization, soil treatment, and site clearing. Also includes removal and disposal of unsuitable material; obtaining, placing, rolling, compaction, and proof rolling new/borrow material.

Landscaping Area Planted Sq. Yd.

Includes trees, shrubs, ground covers, and planters. Also includes fine grading and leveling, fertilizer and limestone application, spreading and leveling topsoil, seeding, mulching and sodding.

Site Improvements Area Developed Sq. Yd.

Includes retaining walls, terrace and perimeter walls, signs, site furnishings, fountains, pools and water course, flagpoles and other miscellaneous related items. Also includes recreational areas/playing fields, recreational equipment, walks, ramps, steps, restrooms and similar improvements.

Supporting Structures Lump Sum Each

Includes treatment facilities, equipment buildings, pollution abatement structures, oil water separators, electro-static precipitators, wash platforms, guardhouses and similar structures. (Sum supporting structures with Site Improvements and enter as Site Improvements and Cost Summary sheet.)

Fencing Length of Fence Lin. Ft.

Includes footings, posts, fencing materials, alarms, gates and turnstiles for perimeter fencing. Includes station perimeter and individual facility.

Special Building Foundations Length E- 3E- 2 Lin. Ft.

Includes driven piling of wood, steel or concrete; caissons; pressure injected footings; cast-in-place piling; special or dynamic compaction; and other special building foundation systems required.

Demolition-Site Lump Sum Each

Includes removal, hauling and disposal of utilities, buildings, roads, paving, slabs, foundations, structures and related existing site features.

APPENDIX F

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 the clock visible to bidders in the bid receipt area shows the correct time.
2. When bids or modifications are delivered on 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 receive by 2:00 pm”**

The Bid Officer shall be responsible for deciding when the Bid Receipt Deadline has arrived and shall announce **“The 2 pm deadline has arrived. All bids and bid modifications in our possession at this time are deemed to be timely. No further bids or bid modifications will be accepted.**

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 telegram, facsimile, letter or written on the outside of the bid envelope before the time set for receipt of bids. Methods for modifying the bids are further described in the Instructions to Bidders, HECO-7a.
6. The bids, including any modifications, shall be kept in a locked security container by the Bid Opening Designee.

PROCEDURES FOR OPENING BIDS

1. Once the University Bid Opening Designee determines that the bid-opening hour has arrived, 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. Either after

receiving 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 5% is attached where required,
 - 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 envelope, check the time received to assure that it was before the deadline.
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 _____ were not _____ submitted.
 - d. Receipt of Addenda 1 thru _____ is acknowledged.
 - e. Bid Bond or Certified Check is _____ 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 low bidder claims an error!**
2. After two hours, return all Bid Bonds, checks, etc., to all but 3-lowest bidders. Work papers can be returned to all.
3. Keep bids and bid bonds or checks from 3-lowest bidders until Contract is signed.
4. Contract Department of Professional and Occupational Regulation, Contractor's Section, and verify Contractor Class and Registration No. of the 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 (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 University's Bid Opening Designee.

APPENDIX G

ROOF INSPECTION FORMS AND PROCEDURES

1. The Roof Inspector

The minimum qualifications below serve as criteria for the University if selecting an outside, full-time roofing inspector:

- a. 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.
- b. 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.
- c. He should be thoroughly familiar with the latest edition of the NRCA Roofing and Waterproofing Manual.
- e. The Inspector should have a minimum of five years of full-time, practical roofing experience or approved equivalent experience.
- f. He should identify, in writing, at least three projects where he has been the full-time roofing inspector. He should provide names, addresses, and telephone numbers of roof University's and Architects / Engineers for the roof projects.
- g. He should be trained and competent in the services he is providing.
- h. Roof Inspector's Scope of Work:
 - The Inspector shall monitor the work continuously during installation of the roof.
 - He shall monitor the work for compliance with the contract documents.
 - 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.
 - The Inspector may recommend suspension of work or rejection of non-complying work to the A/E and University.
 - He shall not:
 - (a) 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. He shall notify the University so that appropriate action can be taken.

- (b) Authorize deviations from the contract documents.
 - (c) Enter the area of responsibility of the Contractor's superintendent.
 - (d) Issue orders on any aspect of construction means, methods, techniques, sequences, procedures, or safety in connection with the work.
- 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, workmen on the job, material storage, deck condition, bitumen temperature, installation procedures, quality of workmanship, job-related visitors, and so forth.

2. The Roof Consultant

The Consultant should have the following qualifications:

- a. Roof consulting and testing services should be the Consultant's full-time occupation.
- b. He should have a minimum of five years of field experience in providing the service.
- c. 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.
- d. 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.
- e. 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.
- f. He should be trained, experienced and competent in performing required services.
- g. If testing is required, 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.
- h. He should submit resumes of his firm and all employees participating in the service.
- i. His resume should describe other related services and contributions, such as writing, lecturing, and serving as an expert witness that he has provided. He should list any professional qualifications or licenses.

- j. 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.

3. 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 the University may repair or replace the roof. The following outlines requirements for NDE surveys:

- a. Equipment, subject to the University's approval, shall be equal to the following:

- i. Infrared: AGA 720 system or Inframetrics 520 system
- ii. Nuclear: Seaman Troxler 3216 Roof Reader, Nuclear Model R-50 or later model
- iii. Electrical Capacitance: As approved by the University

- b. Surveys

- i. 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, thermogram, 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 small as 6 inches on a side. Surveys, inspection procedures, reports, etc. shall be conducted in accordance with the requirements and procedures in ASTM C1 153, "Standard Practice for the Location of Wet Insulation in Roofing Systems Using infrared Imaging", except of otherwise noted in this Appendix.

- ii. Nuclear: Provide a grid, comprising 5'-0" on-a-side grid unit, to cover completely 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.

c. 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:

- i. 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.
- ii. On all other roofs, a minimum of one dry and one wet core shall be taken from each roof surveyed.
- iii. 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.

d. Gravimetric Analysis

As soon as possible after samples are taken, cores should be sealed in airtight containers and taken to the laboratory for analysis.

- i. 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.
- ii. Identify all materials – surfacing, membrane (and number of plies), insulation, vapor barriers, adhesives, etc. – in the cores.

e. 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.

f. 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:

- Identify and describe all anomalies.
- Identify and describe any visual survey defects that may be harmful to the roof.
- Give the causes for each anomaly and defect.
- Recommend alternate courses of corrective action for defects and anomalies harmful to the roof.

- Provide the cost for correcting the defects and anomalies.

4. Drawings

The consultant hired to survey roofs shall provide plans complying with the following:

a. General Requirements are:

- Print size, preferably, should be 24" X 36"; but in no case larger than 36" X 46".
- Minimum drawing scale is 1/8" = 1'0" for roofs or portions of roofs surveyed.
- Provide one reproducible print (Mylar, etc.) and two non-reproducible prints, as a minimum, for each sheet of drawings.
- A legend defining all symbols and explaining abbreviations.

b. Drawings shall show the following as a minimum:

- All roofs surveyed
- State identification, title, and date
- An orientation north arrow and drawing scale
- The area of each roof and approximate overall dimensions.
- 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.
- All roof slopes and valleys noted with drainage arrows. If there is no slope, state that the roof is dead level.
- Where flashing is carried to a vertical surface, identify the surface (roof vent, masonry parapet, etc.) and give its height from roof level.
- For a visual survey, show and explain all roofing defects and anomalies. Show interior damage (to the roof system) by dotted line.
- 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).
- 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

Standard DGS forms and formats are available for download from the DGS Forms Center (<http://forms.dgs.state.va.us>).

For a listing of current DGS forms applicable to the design and construction process, download Form DGS-30-000 (Capital Outlay Management Forms Available for Download from the DGS Forms Center).

The following roofing forms are available for download from the Forms Center:

Form Number	Description	File Type
DGS-30-328	Roofing – Installation History	Word
DGS-30-332	Roofing – Built-up Roofing Data	Word
DGS-30-336	Roofing – Metal Roofing Data	Word
DGS-30-340	Roofing – Shingle Roofing Data	Word
DGS-30-344	Roofing – Single Ply Roofing Data	Word
DGS-30-348	Roofing – Inspection Checklist	Word
DGS-30-352	Roofing – Daily Inspection Log	Word
DGS-30-356	Roofing Consultant / Inspector Resume	Word

To view / download the latest version of a form, visit the website listed above and enter the Form Number (e.g., “DGS-30-328”) in the search box on the Forms Center.

Additional instructions for viewing and downloading forms are available in the Help Guide on the DGS Forms Center.

APPENDIX H
RESERVED

APPENDIX I

PARAMETERS FOR CALCULATING FOR LIFE CYCLE COSTS AND ENERGY ANALYSES

Parameter for Calculation of Life Cycle Costs and Energy Analyses

1. General Instruction for All Life Cycle Costs Analyses:
 - a. Costs are to be computed over a 30-year period, except as noted in Paragraph II below.
 - b. 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.
 - c. 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. Specific Instructions for Completing Worksheets:
 - a. Use a new Worksheet for each alternative.
 - b. Complete all general information at the top of the Worksheet.

- c. Fill in Columns “a” thru “f” for each year. Use escalated costs. On the Worksheet, specify the annual escalation rate used for each cost category. In the supporting documentation, identify the source basis for the chosen escalation rates.
 - d. Sum Columns “a” thru “e” for each year; subtract Salvage Value (Column “f”) and place results in Column “g”.
 - e. Multiply the Column “g” figures by the corresponding discount factor in column “h” and replace results in column “i”.
 - f. Sum Column “i” and place results in the box at the bottom of the Worksheet.
4. Building Life Cycle Cost Summary Worksheet

Standard Department of General Services (DGS) forms and formats are available for download from the DGS Forms Center (<http://forms.dgs.virginia.gov>).

To view/download the latest version of the Building Life Cycle Cost Summary (aka, Form “DGS30-228”), visit the website listed above and enter “DGS-30-054” in the search box on the Forms Center. Additional instructions for viewing and downloading forms are available in the Help Guide on the DGS Forms Center.

APPENDIX J
RESERVED

APPENDIX K

CONSTRUCTION CHANGE ORDER PROCEDURE GUIDELINES

OVERVIEW

The Contractor and 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

In order to ensure compliance with Paragraph 38 of the General Conditions, the following Change Order procedures are recommended:

1. Where the University desires to modify the requirements of the Contract Documents to add, to delete from, or to alter the sequence or timing of the Work, the University will have the A/E prepare a Request for Proposal (RFP), Architectural Supplement Instructions (ASI), Construction Change Directive (CCD), Request for Information (RFI) response or Bulletin to the Contractor describing the requested change and asking that the Contractor submit a price proposal for accomplishing said change in the Work. Changes in work can also be directed by a Field Change Order (FCO) directly from the University.
2. 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, ASI, CCD, RFI response, or Bulletin to the Contractor describing the requested change and asking that the Contractor submit a price proposal for accomplishing said change in the Work.
3. Where the Contractor desires to delete a requirement for 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 it and request that the University issue a Change Order.
4. Should the Contractor desires to make a substitution, that request shall be in writing to the architect and owner. Upon review and acceptance by both the architect and owner, the Contractor shall prepare a price proposal and request that the University issue a Change Order.

5. 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.
6. 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.
7. If the work is to progress prior to having a completed HECO-11 form, a FCO must be issued by the University.
8. 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:

GC- 1, General Contractor's Estimate for Change Order

SC- 1, Subcontractor's Estimate for Change Order

SS- 1, Sub-Subcontractor's Estimate for Change Order

Back up shall be provided for all material and equipment charged

The general contractor and each affected subcontractor and sub-subcontractor must sign these forms. These forms are available at:

http://forms.dgs.state.va.us/eo51/dgs_viewforms.asp?page=5&srch=&order=FormNum&sort=ASC&div=&bu=BCOM

9. 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.
10. If the Change Order proposal is acceptable and an FCO has not already been issued, the University will issue a FCO noting the agreed upon price, scope of work and potential schedule delay. The University will also have a Change Order prepared.

11. The A/E shall prepare the Change Order form (Form HECO-11) and the 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.
12. The Contractor will sign Form HECO - 11 and send to the University. All backup material must be provided with each copy of the change order.
13. **No work on any change order shall be accomplished without the approval of the University.**
14. The University will distribute approved Change Orders to the A/E and Contractor.

APPENDIX L

ART AND ARCHITECTURAL REVIEW BOARD, AND MASON BOARD OF VISITORS

1. ART & ARCHITECTURAL REVIEW BOARD (AARB)

PURPOSE OF THE AARB

The AARB consists of six members appointed by the Governor, plus a representative of the Department of Historic Resources, to advise him on the "artistic character" of buildings and works of art which are to be paid for by the state, or to be located on or over state property. In practice, the AARB recommends approval or disapproval to the Director of General Services, to whom the Governor has delegated this authority.

The AARB interprets its mandate from the Commonwealth in straightforward terms: to encourage the design of buildings and works of art which are both aesthetically and functionally appropriate to the University for which they are intended. While no rigid prescriptive standards exist, the AARB generally requires each submission to demonstrate:

- A resolution of basic functional and organizational requirements.
- A command of the fundamental principles of good design, including refinement of color, form, scale, material and craft.
- A positive contribution to the order and aesthetic of the physical setting.
- Due consideration of its environmental, historical and cultural factors.
- Concern for the greater public good.

AARB MEETING SCHEDULE

The AARB meets at 10:00 AM on the first Friday of each month of the year, unless the Friday or the following Monday is a state holiday, in which case the meeting will occur on the second Friday of the month. Meetings shown on the agenda.

SUBMITTALS

All requests for a place on the AARB Review Agenda will be made in writing via a Fact Data form and must arrive in the office of the AARB Chairman no later than 4:00 PM on the Friday two weeks before the date of the meeting at which the University wishes to make its presentation. University requests should also include, where possible on 11" x 17" sheets, the location and general form of the building, complete with north arrows and graphic scales. These documents will comprise the Board agenda and are the basis for the recording of the AARB actions.

In addition, a Consent Agenda is available for minor reviews and for demolition considerations. These items should include enough information to allow Board deliberation without University

representation at the meeting. Submission should include a site plan; proposed building plan and elevations; and photographs at a minimum.

Two submittals are normally required for most projects. The first submittal will occur at the Schematic Design phase. The second submittal will be made during the Preliminary Design phase and should include samples of materials and colors. Presentations during the Working Drawings phase may be required in unusual circumstances. If necessary, special arrangements can be made to review projects at intermediate stages.

PRESENTATIONS TO THE AARB

In general, University presentations should be organized so that they may be completed with 15 minutes, in order to allow adequate discussion within a 30-minute time frame. However, the Chairman will make a reasonable effort to accommodate the request of any University, which feels that additional time may be required because of the complexity of a particular project if this request is made at the time of the University's initial submittal.

The following items should be addressed (and well illustrated) by the University and its Architect/Engineer at each presentation to the AARB:

- **Program:** A brief description of the building program, including the purpose for the project and primary internal relationships.
- **Relationship to the Surrounding Community, Adjacent Sites, and University Master Plan:** Include discussion of land use policy, pedestrian and vehicular circulation systems, landforms, and architectural character.
- **Site Plan Strategy:** Discuss the relationships of the proposed design to existing topography and plantings, adjacent structures, service and pedestrian access, surface drainage, and orientation to the sun and wind. Photographs or slides and site diagrams are essential.
- **Mass, Scale, Form and Architectural Character:** Discuss the impact of the proposed design on existing views and the mass and scale of nearby structures. Explain how the proposed design conforms to the architectural and planning principles embodied in the Master Plan or in precedent examples. Describe and illustrate proposed materials, colors, finishes and constituent details. Include a brief description of the proposed site development, including grading, site drainage, paving, lighting, landscaping, and site furniture.

The architect/engineer project managers should be organized and well prepared. Presentations should not be elaborate and overly formal. Sketches and study models are often more useful than finished professional renderings and highly detailed models.

SUBMITTALS TO THE AARB

Submittals and presentations to the AARB will be coordinated by the Architect for the University with support from the University Project Manager. Generally, submittals for the AARB shall be completed three weeks in advance of the presentation and will include the following:

- University Name (include address, telephone and fax, contact person)

- Project Title (include project code and location)
- Current Project Status and Schedule (preplanning study, schematics, etc.; next milestone date)
- Project Description (area, number of stories, building and roof forms, predominant exterior materials)
- Brief Program Description
- Relationship to Approved Master Site Plan (include date of master site plan)
- Contextual Issues and Design Intent
- Previous History with AARB (dates and actions)
- Names and Titles of Those Appearing for the University and Architect/Engineer.
- Estimate of Time Required for this Presentation: Action This Date (for use by AARB) Note: Attachments to this data sheet submittal are required.

2. BOARD OF VISITORS (BOV)

ROLE OF THE BOV

The BOV is composed of sixteen members appointed by the Governor of the Commonwealth of Virginia, subject to confirmation by the General Assembly, for terms of four years. In addition, a non-voting student member is appointed to serve a one-year term each year before the annual meeting of the BOV. The Rector and Visitors serve as the corporate board for the University, and are responsible for the long-term planning of the University. The BOV approves the policies and budget of the University, and is entrusted with the preservation of the University's many traditions, including the Honor System.

As such, the BOV approves construction projects at the University and requires presentations at various stages of project execution. The Vice President of Facilities coordinates these BOV reviews.

BOV approval of Project Plans: is required and will be coordinated by the Associate Vice President for Facilities Management. These presentations will be similar to the AARB presentations noted above and may include:

- An aerial photo (whenever possible),
- A site plan demonstrating relationships with other buildings and major topographical and landscape features,
- Simple plans with the basic functional organization clearly portrayed,
- Rendered elevations with shadows and in color,

- Cross sections (often necessary to explain how additions are connected to their parent buildings),
- And either a rendered perspective or a model or one or more photographs of a model

APPENDIX M

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 8 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 Authority Having Jurisdiction 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 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 independent 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 N

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, NFiPA, 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 9 of the **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 will be assigned in writing. This in no way relieves the Architect/Engineer from providing and being responsible for his contractual obligations as described in the **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, NFiPA, 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 Architect/** Engineer (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 to change orders. The Inspector shall verify that all change orders are complete.

- 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:
 - a. Authorize deviations from the Contract Documents;
 - b. Enter into areas of responsibility of the Contractor's superintendent;
 - c. Issue directions regarding construction means, methods, techniques, sequences or procedures, or safety precautions and programs in connection with the Work; or
 - d. Authorize or suggest that the University occupy the project in whole or in part;

CHECKLIST OF PROJECT INSPECTOR

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.

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

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

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 offsite storage for Contractor materials is approved
- Verifies Contractor records proper disposal of hazardous material.

SCHEDULING/PAYMENTS

- Assists A/E to verify accuracy of HECO- 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

PROJECT CLOSE OUT

- Verifies readiness for substantial completion inspection
- Verifies readiness for final inspection
- Turns over complete and organized submittals, reports, records to University
- 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 O

PROJECT TYPES AND NON-CAPITAL OUTLAY PROJECT PROCEDURES

PROJECT TYPES

Those projects with total project costs less than \$2,000,000 are considered non-capital outlay projects. When the funding source is operating budgets, grants, gifts, a revenue source, or (Mason) 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 the HECO Manual. A summary of the various project types typical at Mason follows:

CAPITAL PROJECTS (>\$2,000,000)

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 (with State supported debt)

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 (without State supported debt)

Authority from the Board of Visitors. Requires project specific capital budget submittal for authority. Uses Mason non-general funds. Manage in accordance with the HECO.

Non General Fund Blanket (<\$2,000,000)

Authority from the General Assembly. Requires capital budget submittal for the blanket authority. Uses Mason non-general funds. (Usually amounts to ~\$4 mil to ~\$10 mil per biennial) Manage in accordance with the HECO.

NON CAPITAL PROJECTS (<\$2,000,000)

Non General Fund

Funding and authority from Mason. 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.

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

The following HECO forms and approvals are required:

HECO 2 "Project Authorization" - use the Work Order with appropriate fund code citation

HECO 2.1 series - A/E selection forms

HECO 3 series - A/E contracts

HECO 6 - Approval of Working Drawings (Note University level approvals may apply)

HECO 7 series - General Conditions and Instruction to Bidders

CO 9 series - formal contract documents

CO 10 series - formal bond documents

HECO 11 series - change order documents

CO 12 - Schedule of Values & Certificate for Payment

HECO 13.2 series - Certificates of Completion

HECO 13.3 series - Certificate of Use and Occupancy - if required

HECO 17 – Building Permit

APPENDIX P

BUILDING PERMIT POLICY

The Building Permit Policy for University Buildings and Structures is all work on university buildings and structures will continue to be done in accordance with the Virginia Uniform Statewide Building Code (VUSBC) and other applicable codes, directives and standards.

APPENDIX Q

RECORD DOCUMENT STANDARDS & FORMATTING

February 2017 Version

The Standards listed below are the minimum deliverables required by the Mason Facilities Archives for any project Completed on Mason property. **These deliverables MUST be turned in to the appropriate Mason Project Management and Construction project manager project manager within 90 calendar days of receiving the temporary Certificate of Occupancy, or final payment may be withheld.** All electronic requirements may be turned in on a CD or flash drive. Please contact Mason Facilities Archives for any clarification.

FINAL RECORD DRAWINGS/AS-BUILTS

PRINT: (1) Complete full drawing set

- Each drawing in the set should be labeled “RECORD DOCUMENT”
- Must be on paper or bond (no Mylar or Sepia will be accepted)

ELECTRONIC:(1) Complete drawing set in EACH of the following formats (see naming above):

DWG

- DO NOT include X-REF on any drawings
- Must be purged of all layers, blocks, etc.
- Do not use the color yellow on any drawings
- There must be a continuous and closed “polyline” around each room. This line should extend from inside wall to inside wall within the room.

This layer’s color should be “(3) Green” and line type should be “Continuous”

- All other layers should be based upon the AIA CAD Layer Guidelines

PDF

- All drawings should be black/white (monochrome)
- All drawings should be to the scale designated on the set
- When printed from Adobe Acrobat, all drawings should be the exact size of the printed set

NAMING CONVENTION FOR ALL ELECTRONIC DRAWINGS:

Each drawing sheet shall be one electronic file

Sheet Number-Sheet Name

Example: A001-Partition Schedule

SPECIFICATIONS, O&M MANUALS, WARRANTY INFORMATION

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 Mason project manager. Final Specifications (Project Manual) shall be labeled “Record Documents” on cover.

PRINT: (1) Complete set of each, printed and bound on 8.5”x11” paper

ELECTRONIC: (1) CD/flash drives, containing a complete set in PDF format

FINAL APPROVED SUBMITTALS AND SHOP DRAWINGS

ELECTRONIC: (1) CD/flash drive, containing a complete set in PDF format

FINAL COMMISSIONING REPORT AND FINAL TAB REPORT

ELECTRONIC: (1) CD/flash drive, containing a complete set of each in PDF format

CALCULATIONS

To include, but is not limited to: mechanical, structural, electrical/lighting, hydraulic/sprinkler, and storm water.

ELECTRONIC: (1) Complete set of each in PDF format

STUDIES AND MASTER PLANS

To include, but is not limited to: Pre-Design Studies/Narratives, Geotechnical Reports, Environmental Impact Reports, Hazmat Reports, Master Plans, etc.

ELECTRONIC: (1) Complete set in PDF format

*All graphics used in study or Master Plan must be included in TIFF format, minimum 300dpi resolution

CONSTRUCTION PHOTOS

ELECTRONIC: (1) Complete set in TIFF format, minimum 600dpi resolution

PROPERTY AND SITE SURVEYS (Must be on State Plane Virginia North Coordinate Systems)

PRINT: (1) Complete full size drawing set

ELECTRONIC: Complete drawing set in EACH of the following formats (see naming below):

DWG

- DO NOT include X-REF on any drawings
- Must be purged of all layers, blocks, etc.
- Do not use the color yellow on any drawings
- All other layers shall be based upon the AIA CAD Layer Guidelines

PDF

- All drawings shall be black/white (monochrome)
- All drawings shall be to the scale designated on the set
- When printed from Adobe Acrobat, all drawings shall be the exact size of the printed set

NAMING CONVENTION FOR ALL ELECTRONIC SURVEY SHEETS:

Each survey sheet will be one electronic file

Sheet Number-Sheet Name

APPENDIX R
RESERVED

APPENDIX S
RESERVED

APPENDIX T

HECO MANUAL REVISION HISTORY

APPENDIX U
RESERVED

APPENDIX V
REAL PROPERTY TRANSACTIONS (CAPITAL OUTLAY,
ACQUISITIONS AND LEASES)
See Director, Real Estate Management