# CHAPTER 9 – DESIGN SERVICES: CONTRACT DOCUMENT REQUIREMENTS

## SECTION 9.1 GENERAL

There are differences between work prepared for clients and owners in the private sector and work done for William & Mary and/or on state property. Contract document requirements are specific to the agency.

### 9.1.1 Pre-qualified Bidders

The Commonwealth cannot limit bidding to a selected list of Contractors known to do good work. Unless Contractors are pre-qualified for the project in accordance with this manual, any licensed Contractor may bid on a Design-Bid-Build project.

### 9.1.2 Contract Document Detail

Since the knowledge and experience of the Contractors bidding on the project is unknown, drawings and specification requirements must clearly specify the desired outcome. They must be clear, concise, and provide sufficient detailing of existing and proposed construction.

9.1.2.1 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 and/or phasing requirements.

### 9.1.3 Design Responsibility

Project design is the sole responsibility of the registered design professional (RDP) in responsible charge, otherwise known as the Architect/Engineer (A/E). This responsibility includes reviewing and coordinating submittal documents prepared by others, including phased and deferred/delegated submittal items for compatibility with the design.

If circumstances require, the A/E may defer the design of a specific element or system to the submittal phase of the project and delegate the design to the Contractor, provided all the following conditions are met:

- Deferred/delegated design intent is agreed to by the Director of Design & Construction prior to fee negotiation and is specifically allowed for in the A/E contract.
- Deferral of any item shall have the approval of the UBO prior to the WD submission.
- The A/E shall provide a consolidated list of approved deferred/delegated designs on the title sheet, or other prominent location of the design documents for review by the University Architect and DEB.

- Delegated designs shall be required to bear the seal and signature of the RDP responsible for their design and shall require the RDP to perform inspections. Inspection reports are to be filed with the DEB prior to DEB inspections.
- Documents for deferred submittal items shall be submitted to the A/E, who shall review them and forward them to DEB, via the University Project Manager with a notation indicating that the deferred submittal documents have been reviewed and found to be in general conformance to the design.
- The deferred submittal items shall not be installed until the deferred submittal documents have been approved by DEB.
- Approval of deferred or delegated designs will be documented by the memo provided in Appendix J.

### 9.1.4 Specifications to Encourage Competition

To encourage the 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 of the University Architect.

### 9.1.5 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. Projects are required to conform to the Campus Design Guidelines (available at https://www.wm.edu/offices/architect/campus-planning/guidelines/). 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.

### 9.1.6 Project Identification on Documents

The University and the A/E shall show the project number (see DCM Section 4.8) and building official's project code on all plans, specifications, contracts, correspondence, sketches, invoices, memoranda, addenda and other documents related to the project. Documents without the required identification are not complete. Each page/sheet/sketch/drawing of any addenda shall show the project code, addendum number, and page or sequence number to clearly indicate that the material is a part of the contract documents. The A/E shall require the Contractor to show the project number on all submittals including invoices, schedules, shop drawings, change order proposals, correspondence and other project documentation.

### 9.1.7 Project Design Initiation

The University will initiate the design of a construction project through the PIP (Project Initiation Process), which shall generate an approved HECO-2.

### 9.1.8 Minimum Requirements

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

### 9.1.9 University Facilities Projects

This manual applies to all design and construction projects whether capital, non-capital, or maintenance reserve projects at the University, regardless of fund source. These projects are subject to:

- Review by DEB for conformance to the VUSBC including its referenced standards.
- Campus Design Guidelines and Comprehensive Plan conformance
- The University Technical Standards.
- Campus Heritage and Preservation Guidelines.
- Project-specific requirements enumerated in the project's POR (Program of Record).

### 9.1.10 Designs and Permits

Projects/Work on state property shall be designed by and the documents sealed, signed and dated by Virginia-licensed Architect(s) and/or Engineer(s) in accord with the Building Permit Policy for Construction, State-Owned Buildings and Structures (Appendix P of the CPSM). Working drawings ready for bidding and the appropriate information for the Building Permit (HECO-17) shall be submitted to the appropriate building official for review and issuance of a Building Permit.

### 9.1.11 Project Inspections and CUOs

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 HECO-13.3a, Application for a CUO, to DEB when requesting that a CUO be issued.

### 9.1.12 Changes in Use Group Classification

When any existing University owned building is used for a new purpose and the "Use Group Classification" is changed, the appropriate building information will be submitted to DEB for review and approval, and issuance of a new CUO. When the University changes the Use Group Classification of a building or a portion thereof, the VUSBC requires that a new CUO be obtained.

9.1.12.1 - Compliance with Current VUSBC: The project shall be in comply with 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 the Virginia Rehabilitation Code.

9.1.12.2 - Required Submissions:

- A copy of the evaluation signed by a licensed Architect or Engineer shall be submitted to DEB along with copies of small-scale floor plans for evaluation prior to construction.
- A copy of the Fire Marshal's report, and a Form HECO-13.3a, Application for a CUO shall be submitted to DEB requesting issuance of a CUO.

## SECTION 9.2 DOCUMENT STANDARDS

### 9.2.1 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.

### 9.2.2 Complementary Nature of Drawings and Specifications

Drawings and specifications shall supplement each other and must not conflict. Terminology used in specifications and drawings should be the same. Contract Documents including drawings and specifications are mutually complementary, and what is called for by one shall be as binding as if called for by all (there is no order precedence of documents). Intention of the documents is to include all labor, materials, equipment, and transportation necessary for proper execution of the work.

### 9.2.3 Individual Submission Identification

Each submission, (SD, PD, WD, and Permit Set) including resubmissions, shall be clearly identified as to the type of submittal, the revision number, if applicable and the submission date.

### 9.2.4 Individual Submission Dates

Each submission, (SD, PD, WD, and Permit Set) including resubmissions, shall have independent submission dates, i.e. no two submissions shall share the same submission date.

## SECTION 9.3 DRAWING STANDARDS

### 9.3.1 General Requirements

The following clarifies the requirements, standards, and expectations applicable to drawings prepared for bidding and construction on state projects. W&M drawing standards are in addition to, rather than in place of, standards and requirements noted in Chapter 5 of the CPSM. In cases of conflict the A/E shall seek clarification from the University Project Manager.

### 9.3.2 Standard Title Block

All drawings are to utilize the university standard title block and sheet file, which shall be provided to the RDP by the University Project Manager.

### 9.3.3 Size of Drawings

Drawings shall be produced in PDF format such that, when printed, the sheet size, except in special cases approved by the building official, shall be 24" by 36" (preferred) or, alternatively, 30" by 42". Drawings shall be prepared so as to be suitable for making clear, legible half-size reproductions.

### 9.3.4 Standard Drawing Sheet Information

Each drawing sheet shall include the same basic project information and must show:

- The name of the A/E
- The project title
- The project location
- The W&M project number
- The DEB building official's project code
- The drawing / sheet title
- The drawing / sheet number
- The seal and signature of the responsible licensed professional (permit drawings only)
- The uniform date of the completed documents
- Drawing revisions and associated revision dates

### 9.3.5 Title Sheet(s) Requirements

In addition to the standard information indicated above, the Title sheet shall clearly indicate the following:

- 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
- The Index of Drawings
- The master listing of all applicable abbreviations and symbols
    - Provide a listing of the discipline specific abbreviations and symbols at the beginning of each discipline
- Facility Capacity
    - Number of beds (dormitory)
    - Number of fixed seats (auditorium)
    - Number of parking spaces (parking deck)
    - Other information relating to capacity of the facility as applicable.
- Seal of the A/E Principal-in-Charge of the project, signed and dated (permit drawings only)
    - A/E may also require the seal and signature of a principal of its consultants.

### 9.3.6 Drawing Orientation

Building floor plans and drawings for all disciplines shall be oriented the same to avoid confusion and to facilitate overlaying of drawings. All plans shall have a North Arrow for orientation.

### 9.3.7 Arrangement of Drawings

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

| | | |
|---|---|---|
| T | - | Title Sheet and Index |
| D | - | Demolition |
| C | - | Plot and/or Site plans |
| C | - | Sanitary and Civil |
| B | - | Boring logs |
| L | - | Landscaping |
| LS | - | Life Safety |
| 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 |

### 9.3.8 Drawing Numbers

Drawings shall be sequenced by discipline letter as indicated above and number, i.e., A-1, A-2, A-3.1, A-3.2, S-1, S-2, etc.

### 9.3.9 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.

### 9.3.10 Seals

See HECO-3a for specific requirements regarding the application of seals.

### 9.3.11 Asbestos Abatement Documents

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. Asbestos drawings and specifications shall be incorporated into the contract documents as an appendix.

### 9.3.12 Uniform Date of Completed Drawings

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.

### 9.3.13 Limits of the Work

The drawings shall describe/show the work to be provided by the Contractor. Existing features, structures, archaeological 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 which the University will perform or have performed by separate contract shall be identified as “Not In Contract” or “NIC” if the abbreviation has been defined.

### 9.3.14 Record Drawings

Drawings shall be prepared electronically and provided to the university. This includes all CADD files, BIM models, GIS files, renderings, and other digital media, which shall be complete and georeferenced, as required. The A/E shall provide the university with any special fonts, symbol libraries, special line types or line drawing software, or any other unique software required for the university to maintain the electronic drawings as current “As Built” documents.

## SECTION 9.4 PROJECT MANUAL STANDARDS

### 9.4.1 General Specifications

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.

9.4.1.1- Standard Government Specifications
References to Federal Specifications, MILSPECS, Corps of Engineers Specifications and the like shall be avoided unless the requirements are specific, or specific prior written approval of the University is obtained.

### 9.4.2 Project Manual Requirements

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.

9.4.2.1 - 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 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 IFB or RFP
- Instructions to Bidders (HECO-7a)
- Prevailing Wage Determination from DOLI (if applicable)
- Prebid Question Form
- Bid Form
- The current revision of the General Conditions for the Construction Contract (HECO- 7). The General Conditions have very significant legal implications and may not be amended or deleted or its intent changed without prior written approval of the University Architect.
- Supplemental General Conditions
- Contract Between Owner and Contractor (HECO-9)
- Workers Compensation Insurance Certificate (GS Form E&B HECO-9a)
- Standard Performance Bond (DGS Form E&B HECO-10)
- Standard Labor and Material Payment Bond (DGS Form E&B HECO-10.1)
- Change Order blank (HECO-11)
- Schedule of Values and Certificate for Payment (DGS Form E&B HECO-12)
- Affidavit of Payment of Claims (DGS Form E&B 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 (Samples in DCM Appendix K)
- Division 1 – (CSI Format) General Requirements, Special Conditions, etc. which will include special conditions in Appendix L
- Technical Specifications (Applicable Sections)

- Technical Specification Sections shall be numbered with appropriate section numbers corresponding to the CSI Masterformat numbering system.
- 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. (Note: CSI Masterformat numbering is subject to changes under consideration as may be in use by the A/E at this time.)

9.4.2.2 - Table of contents for Bid Packages:
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

### 9.4.3 General Conditions of the Construction Contract

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.

9.4.3.1 - "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 CFO and University Architect.

9.4.3.2 - Supplemental General Conditions 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.

### 9.4.4 Division One Special Conditions

The "Special Conditions" described in Appendix L of the DCM 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 and shall be confirmed with the university Project Manager for each project. The A/E shall not insert Appendix L into the project manual – all provisions shall be placed in the appropriate technical section by the A/E.

### 9.4.5 Instructions to Bidders, HECO-7A

The Instructions to Bidders, HECO-7A, included in this Manual is a standard document which has been written to conform to the requirements and procedures of the University's procurement rules. The Instructions to Bidders shall be included in the Documents without modification for projects that will be awarded by the bidding process. 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 CFO and University Architect.

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

9.4.5.2 Information on where Bid Documents can be viewed and shipping charges, if any, should be placed in the Advertisement and Notice of Invitation for Bids.

### 9.4.6 Types of Specifications

The following three types of specifications are used on university projects.

9.4.6.1 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 a minimum of three manufacturers with model or series numbers.

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

- A non-proprietary manufacturer/model number type specification must list three manufacturers with their respective model numbers. Each of the listed manufacturers/model numbers must have been determined by the A/E to meet the specifications and be acceptable. If a named manufacturer 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.
    - 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 University Architect to list only those two manufacturers but consider equals if proposed by the Contractor.

- 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."

9.4.6.2 Proprietary Specifications:

A specification is proprietary if it fails to meet requirements of a non-proprietary specification. Although proprietary specifications 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:
    - When only two manufacturers or suppliers provide an acceptable product or system, when there are no equals and when no substitutions are allowed
    - 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 PM or A/E requests and receives, in writing, authority from the University Architect to use a proprietary specification. The University PM or A/E must request authority as soon as the need for the specification is recognized, preferably in the PD phase but definitely prior to submission of WD. 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."

9.4.6.3 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 through an area franchised vendor is also considered to be a Sole Source item.

- It is the policy of the University 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 PM or A/E requests and receives, in writing, authority from the CFO to use a Sole Source specification. The University PM or A/E must request authority as soon as the need for the specification is recognized, preferably in the PD phase but definitely prior to submission of the WD.

- The justification for a sole source request shall address the following (by number and order) in a direct and concise manner:
    - Explain why this is the only product or service that can meet the needs of the University.
    - Explain why this vendor is the only practicably available source from which to obtain this product or service.
    - Explain why the price is considered reasonable.
    - 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 Owner 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 University Procurement Rules.

### 9.4.7 Virginia Manufactured Products

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

### 9.4.8 Performance Guide Specifications

Performance guide specifications prepared by Masterspec, Spectext, the U. S. Navy and the Corps of Engineers and other sources 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 other sources for use with various word processing applications. The A/E shall edit the guide specifications to include only the materials, requirements, and procedures applicable to the project. Specifications which are submitted without editing will be rejected as an incomplete submittal. If Navy or COE guide specifications are used on a project, they shall be edited to delete references to Military and Federal Specifications. References to the Contracting Officer should be changed to the Owner. Also, requirements for tests, inspections, visits to the manufacturer's plant, etc. which are not normally required for state projects shall be deleted.

### 9.4.9 Restrictive Specifications and Performance Requirements

9.4.9.1 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.

9.4.9.2 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.

### 9.4.10 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.

### 9.4.11 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.

9.4.11.1 - 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.

### 9.4.12 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, bidders/proposers and the successful Contractor, estimated quantities are shown for unit pricing and determining the low bidder/proposer. 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).

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

- 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 designer's experience and judgment.
- The bidders insert the unit prices for each and extend the estimated quantity times unit price to yield a cost.
- The extended costs will then be added to the base bid for other work to give a total base bid.
- 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.

9.4.12.2 - 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 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):*

*48 inch Diameter 250 linear feet @ $ / linear feet =$*
*48 inch Diameter 175 linear feet @ $ / linear feet =$*

*Part E =_____ Dollars $*

### 9.4.13 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 University Architect must approve such utilization.

9.4.13.1 - Material Evaluation

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 University Architect may, where justified, authorize use of a new material, equipment or system for a particular project on a trial basis for observation/evaluation.

### 9.4.14 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.

- 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...”

- 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.....”
- 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 General Contractor is solely 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.
- Do not use “etc.” This term is too indefinite for bidding and inspection purposes.
- Minimize the use of cross-references and do not 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 033000, Cast-in-Place Concrete).
- Do not set up a paragraph in the various sections entitled “work not included.”
- Describe the work that is included under the respective sections.
- 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.
- Do not confuse “any” and “all”; “Correct any defects” should read “correct all defects”
- Do not confuse either or both; e.g., “Paint sheet metal on either side” should read “Paint sheet metal on both sides”. “Either” implies a choice.
- 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.
- 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.
- Use statements that are definite and contain no ambiguous words and phrases.
- “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”.
- “Reinstall” implies putting existing back in indicated place. If “reinstall” is used, the A/E must also indicate that the Contractor must carefully remove the item, properly store it, and then “reinstall” the item at the appropriate time.
- “Replace” implies removal of old material and furnish and install new material. The preferred wording would be to “remove”..... and “provide” .....
- “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.

### 9.4.15 Specifications on Digital Media

The University requires the A/E to provide one copy of the final completed specifications including addenda on Digital Media, written in the current version of Microsoft Word.

### 9.4.16 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. Sample types of acceptable Hardware Specifications and Schedules are available on the OUA website.

## SECTION 9.5 COST ESTIMATE STANDARDS

### 9.5.1 General

Detailed descriptions and requirements for cost estimates are in Appendix M.

### 9.5.2 Format

The format outlined in Appendix M shall be used for all University projects. Requests to use alternative formats must be approved by the University PM in advance

### 9.5.3 Detailed Cost Estimate

A detailed cost estimate consistent with the level of design is required from the A/E with each submittal. Backup estimating information, including quotes of estimated cost for major items of equipment or built-in systems, shall accompany the Building Cost Summary form.

### 9.5.4 Independent Cost Estimate

A required independent cost estimate will be provided by the University for the PD submittal. Additional independent cost estimates provided at the option of the University will be identified in the A/E contract.

### 9.5.5 Reconciliation of Cost Estimates

The A/E and independent cost estimator shall reconcile major differences between their respective cost estimates such that total estimated construction cost of the larger estimate is no more than 110% of the lower estimate.

## SECTION 9.6 PREDESIGN CONFERENCE/DESIGN READINESS

### 9.6.1 Participants

The University shall arrange for a Pre-design Conference. Participants should include the University PM, the A/E's PM and responsible designer in each discipline (architect, civil, structural, mechanical, 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.

### 9.6.2 Purpose

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.

### 9.6.3 Sample Topics

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

- Introduction of Attendees
- Role of DEB
- Authorized Communications
- Design not to exceed Construction Budget
- Schedule requirements including Proposed Design Schedule and Occupancy Requirements
- Requirements of the Comprehensive Plan, DCM, Technical Standards, and Design Guidelines
- Submittal Contents
- Review Requirements and Intent of Review Comments
- Waivers and Code Modifications
- Sole Source / Proprietary Specifications
- Use of Standard HECO and CO Forms and Formats
- Value Engineering / Value Management
- Construction Delivery Method and 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

### 9.6.4 Design Readiness

This section provides procedural guidance for University PM's and A/E's to ensure design documentation readiness in preparation for obtaining a project or building permit. This process is intended to bridge gaps and enhance communication between Facilities Operations, A/E's and DEB.

General Purpose: Establish a process to ensure accurate design and contract documentation completeness. A series of document checklists have been developed to address design readiness in preparation for submission to DEB for review and eventual permitting. These checklists can be located in Appendix N of this Manual. These lists are intended to ensure design readiness as well as adherence to this Manual and Technical Standards. The design readiness process is outlined below:

- A/E's will complete the electronic checklists to validate that all requirements per this Manual and Technical Standards have been met.
- The completed checklists will be issued to the University PM as part of the SD, PD and WD submittals to the University PM.
- The University PM shall review the submittal for accuracy and address deficiencies prior to issuing the associated design documents to DEB for review.
- These checklists will not be submitted to DEB as part of their review. The checklists are intended to serve as a quality management tool for the University PM and A/E only. The University PM is responsible for ensuring the checklists are completed, reviewed and kept as part of the project file as a validation of design readiness.

## SECTION 9.7 SCHEMATIC DESIGN/PROJECT CRITERIA

### 9.7.1 General Requirements

Unless waived by the Director of Design & Construction, an SD/project criteria submittal shall be made to the University PM. The purpose of the SD submittal is to further develop data, detail and scope including schematic plans, as well as verify the data and program contained in the Capital Project Request or other project scope documentation. The project scope established by the SD, 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.

9.7.1.1 The SD submittal shall include a current Assignable Room and Space Listing, which was the basis for development of the SD.

### 9.7.2 On-Board Meetings

An SD "On Board" review meeting with DEB may be requested by the A/E or University PM to assist in verifying the design and program approach and the systems proposed for the project. The A/E shall not contact DEB without authorization of, and coordination with the University Project Manager.

### 9.7.3 Reviews

SD presentations to the State AARB, the University DRB, the University Architect, and the Building Committee are required. All review issues must be resolved before the A/E is authorized to proceed with the PD phase.

### 9.7.4 Basis of Design Narrative

The SD shall include a Basis of Design Narrative which provides the information on the Appendix N checklist.

### 9.7.5 Schematic Drawings

The drawings indicated on the Appendix N checklist shall be included as a minimum.

### 9.7.6 Verification of Existing Conditions

The A/E shall visit the site and ascertain pertinent local conditions that must be addressed in the design.

### 9.7.7 Cost Estimate

See DCM Appendix M for Schematic Cost Estimate requirements.

# SECTION 9.8 PRELIMINARY DESIGN (DESIGN DEVELOPMENT) PHASE

## 9.8.1 General Requirements

Based on the previous approvals and direction, the A/E shall prepare the PD 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 SD phase relating to the mix or amount of space occurs, submit new information in the format of a current Assignable Room and Space Listing, which was the basis for development of the PD.

## 9.8.2 On-Board Meetings

A PD "On Board" review meeting with DEB may be requested by the A/E or University PM to assist in verifying the design and program approach and the systems proposed for the project. The A/E shall not contact DEB without authorization of, and coordination with the University Project Manager.

## 9.8.3 Reviews

PD presentations to the State AARB, the University DRB, the University Architect, and the Building Committee are required. All review issues must be resolved before the A/E is authorized to proceed with WD.

## 9.8.4 Review Process

The A/E shall prepare and submit to the University PM, 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 reviews the submittal, one set of review comments and/or marked copies of the documents will be provided to the A/E by the University PM for response and/or resolution.

9.8.4.1 The following additional reviews may be applicable:

- Fire Safety Review
- DEQ, Erosion and Sediment Control Board
- DEQ, Stormwater Management
- Department of Historic Resources
- Department of Health
- State Water Control Board
- DEQ, Department of Air Pollution Control
- DEQ, Department of Waste Management
- City of Williamsburg

9.8.4.2 Submittal Approval: 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 WDs. The A/E shall not proceed with the development of the WD until all issues in the reviews are agreed upon.

## 9.8.5 PD Submittal Requirements

The following information and data shall be the minimum acceptable requirements for a project:

9.8.5.1 Cost estimate per DCM Appendices M and N.

9.8.5.2 Unless considered not applicable to the project, the drawings indicated on the Appendix N checklist shall be included as a minimum.

9.8.5.3 Outline Specifications and Basis of Design Narrative as indicated on the Appendix N checklist.

9.8.5.4 Soils report to include boring logs, geotechnical analysis and foundation design recommendations.

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

## SECTION 9.9 WORKING DRAWINGS (CONSTRUCTION DOCUMENTS) PHASE

### 9.9.1 General Requirements

The A/E shall visit the site as necessary to ascertain pertinent local and site conditions. Based on the PD submission documents including the review and the Value Engineering comments and resolution thereof, the A/E shall prepare the WD plans and specifications. The WD submission shall set forth in detail the requirements for the construction of the entire project and include the applicable procurement information. The A/E shall assist in the preparation of the procurement forms, the Special Conditions of the Contract, and the Contract Between Owner and Contractor, HECO-9. The WD checklist in Appendix N provides details regarding A/E seals and signatures, cost estimate (also see Appendix M), quality control/assurance, and drawing requirements.

### 9.9.2 On-Board Meetings

A WD "On Board" review meeting with DEB requested by the A/E or University PM to assist in verifying the design and program approach and the systems proposed for the project. The A/E shall not contact DEB without authorization of, and coordination with the University Project Manager.

### 9.9.3 Reviews

Reviews by DEB, the University Architect, and the Building Committee are required.

### 9.9.4 Plans, Sections and Details of Equipment or Systems

The drawings shall have sufficient plans, sections and details to generally indicate the intended equipment or system configuration in the space. Recognizing that it is often necessary to use some piece of equipment as a basis for designing, dimensioning and detailing, the drawings (but not the specifications) may be noted to indicate that the A/E has designed or detailed around a particular brand of equipment. In doing so, the A/E shall ensure that there is adequate space, capacity, etc., available to accommodate the other brands indicated in the specifications. See Section 9.4 for requirements concerning the use of brand names and models.

### 9.9.5 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.

### 9.9.6 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 DEB with the contract document submission.

### 9.9.7 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. The WD checklist in Appendix N provides details regarding A/E seals and signatures, cost estimate (also see Appendix M), quality control/assurance, and drawing requirements.

### 9.9.8 Rock Excavation

Provide estimated quantities of rock excavation on the Bid Form when applicable.

### 9.9.9 Estimate of Construction Duration

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 9.10 BID FORMS AND PROCEDURES

### 9.10.1 Instruction to Bidders

The HECO-7A shall be used to outline the Instructions to Bidders.

### 9.10.2 Unit Price Bids

Unit Price Bids are addressed in HECO-7A and Section 9.4 of this Chapter.

### 9.10.3 Bid Form Preparation

See Section 11.3 for information on preparation of bid forms.

### 9.10.4 Prequalification of Contractors or Subcontractors

Prequalification criteria, procedures, and appeal process requirements are shown in Chapter 12.

### 9.10.5 Advertising

The University shall notify the A/E in writing when final contract documents have been approved. Refer to Chapters 11 and 12 regarding advertising requirements.

## SECTION 9.11 ADDITIVE BID ITEMS

### 9.11.1 Design Not to Exceed Budget

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.

### 9.11.2 Additive Bid Items

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 be used for budget control subject to the following limitations:

- 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.
- University Architect Approval: Additive and Alternate Bid Items as well as options are allowed if approved by the University Architect.
- The work included in each Additive Bid Item shall produce a complete component that may be incorporated into the work in the Base Bid.
- Each Additive Bid Item shall be independent of other Additive Bid Items.
- None of the Additive Bid Items shall compromise the work in the Base Bid and other Additive Bid Items for compliance with Code, accessibility or safety requirements.
- Additive Bid Items may be listed in any order but consideration should be given to placing the most essential Additive first, and so on.
- Low Bid Determination: 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.
- Out-of-sequence selection of Additive Bid Items is permitted, but the award must be to the low bidder based on the process above.
- Negotiations of Additive Bid Item amounts and the Base Bid are allowed with the low bidder to permit award within funds available.
- The total cost estimate of the Base Bid plus all Additive Bid Items should not exceed approximately 110% of the funds available.
- Structuring Additive Bid Items: Bid Items should be structured to minimize additional effort needed to prepare the bid.
- 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.
- Intent: Additive Bid Items are not intended to be a pricing exercise for the bidders.

## SECTION 9.12 SUBMISSIONS

### 9.12.1 A/E Certification

Prior to the submission of construction documents, 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.

9.12.1.1 - Corrections and/or Additions:
Where correction and/or additions are required after review by the University and/or DEB, etc., changes will be clouded or marked in yellow and returned to the review agency 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.

9.12.1.2 - Review Agencies:
Submit required copies to review agencies in accordance with Table 9.12.1

9.12.1.3 - Utility Approvals:
The A/E shall coordinate with and obtain approval of the utility designs from the University FM 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 WD, two copies are required, and an additional two if revision and resubmission is necessary.

Table 9.12.1 – Design Phase Submissions and
Number of Copies Typically Required

| Reviewing Agency | EIR | SD | PD | WD | Bid/ Addenda | Change Orders |
|---|---|---|---|---|---|---|
| DEB | | | | via BITS | 1 | 1 * |
| SFMO | | | | | | |
| AARB | | 1 ** | 1** | | | |
| University Combined Administrator | | | | | | |
| (Erosion and Sediment Control) | | | | Elec. | | |
| (Stormwater Management) | | | | Elec. | | |
| Department of Historic Resources | | | | | | |
| Health Department (Food Service, Underground Water Lines 8" and Larger, Pump Stations and Sanitary Forced Mains) | | | | | | |
| County Manager | | | | | | |
| Chesapeake Bay Local Assistance | | | | | | |
| VDOT District Engineer | | | # | # | | |

* Change Orders for VUSBC regulated work
** Pertinent parts or sections of documents only
# Submit for approval when modifying roads on Campus, including placing utilities within.

# SECTION 9.13 CODE REVIEWS AND APPROVALS

## 9.13.1 General

Reviews are performed as a service to the University and do not relieve the A/E, or its Consultants from compliance with all codes, laws, rules, regulations, directives and standards applicable to the project whether or not cited in the review. See Section 9.14, Quality Control/Quality Assurance for A/E requirements before preparing and submitting contract documents for review. The University encourages A/E's and their consultants to ensure compliance to facilitate expedient reviews.

9.13.1.1 - Projects require a minimum two submittals to DEB, WD and the Permit Set. Comments provided by DEB at the WD phase review shall be addressed by the designer and incorporated into the design documents. The University PM will ensure WD comments received by DEB are incorporated in a timely manner, no later than 21 calendar days.

9.13.1.2 - The Director of Design & Construction may request additional reviews by DEB based on the complexity of the project. These reviews may include consultation, on-board reviews or full drawing detailed reviews as needed throughout the course of design development. This is typically determined as part of the project initiation process.

9.13.1.3 - Review Times: Refer to applicable sections of the CPSM.

## 9.13.2 University PM Review

Prior to the submissions to the DEB and other University and State Agencies, the University PM shall review the documents to ensure that they meet the functional and operating requirements of the project.

## 9.13.3 Review Comments

DEB will transmit its review comments to the University PM.

## 9.13.4 Re-submittals

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 resubmittals without compensation or reimbursement.

## 9.13.5 Revised Submittals

All changes, revisions, and additions shall be indicated by a highlight or revision cloud, as appropriate. Any new information shall be highlighted.

## 9.13.6 Costs for Review of Documents that are Not Ready

Reviews requested when the design is obviously not ready for review may result in a back charge to the A/E for the costs of inspection team effort and related costs.

## 9.13.7 Approvals

Approval of the submittal at any phase is dependent on the University and the A/E satisfactorily resolving the issues raised during the reviews by DEB and other pertinent review agencies. Approval of the PD on any project for which a Value Engineering Study is required will be dependent on the successful resolution of the Value Engineering recommendations.

### 9.13.8 Building Permit

When DEB is satisfied that the documents are in conformance with all requirements, the Permit Set ready for bidding and an Application for Building Permit (HECO-17a) shall be submitted for review and issuance of a Building Permit. Final approval of the WD and Permit Set 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.

### 9.13.9 Annual Permit Work

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 as a project permit under delegated authority authorized by DEB outlined in Appendix P of the CPSM. The University shall follow the procedures and keep records of such work as set forth in the University Project Permit procedures. The UBO's Letter, included at DCM Appendix G, provides guidance for review and issue of permits for work not specifically requiring a building permit but for which other codes, directives and standards may apply.

## SECTION 9.14 RELEASE OF BID DOCUMENTS

### 9.14.1 Issuance of Documents

Bid documents (plans and specifications) shall not be released to bidders until the DEB review process is complete without approval by the University Architect.

### 9.14.2 Completeness of Documents

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 efficiently completing the DEB review process.

9.14.2.1 - Clarification and corrective data shall be included in addenda to those documents issued.

### 9.14.3 Advance Advertisement/Notice

In some cases, it may be advantageous to the University to advertise a project before bid documents are fully reviewed. In such case the procedures below shall be followed:

9.14.3.1 - If Advertisements are authorized before bid documents are fully reviewed, 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 issue the documents, and to give bidders at least three weeks to prepare bids.

9.14.3.2 - If advertisements are authorized before bid documents are fully reviewed and bid documents must be released prior to completion of review, the Advertisement shall state that revised 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 issue the documents, and to give bidders at least two weeks to prepare bids.

# SECTION 9.15 QUALITY CONTROL/QUALITY ASSURANCE

### 9.15.1 A/E Responsibility

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.

### 9.15.2 Quality Assurance Review

The A/E shall perform a Quality Assurance review of the WD prior to submitting to DEB. See Chapter 10 for additional requirements and guidance for QC/QA reviews and coordination of plans and specifications.

### 9.15.3 Quality Statement

The first sheet of the plans and specifications of the working drawings only, being submitted to the DEB 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. These plans and specifications submitted for review are complete and ready for bidding."

*(Note: This statement shall not appear on the sets of documents issued to bidders.)*

# SECTION 9.16 VALUE ENGINEERING (VE) AND VALUE MANAGEMENT (VM)

### 9.16.1 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 prior to or concurrent with the PD submission.

### 9.16.2 Qualifications

The study shall be conducted by a qualified VE Team consisting of a Certified Value Specialist (CVS) and experienced, licensed professionals for each of the significant disciplines reviewed. Changes to or substitutions to the VE Team configuration shall be submitted in writing to the University for approval.

9.16.2.1 - VE Team members shall be separate and completely independent from the Project A/E & its consultant firms.

### 9.16.3 Procurement of VE Services

The University may perform VE studies with an approved Certified Value Specialist. Alternatively, the University may procure VE services utilizing professional procurement procedures.

9.16.3.1 - The procurement process should begin at least 90 days prior to the anticipated date the PD phase will be submitted.

9.16.3.2 - RFP evaluation factors shall include the experience, qualifications and expertise of each proposed team member.

### 9.16.4 Scope and Procedure

Each design review shall utilize the five-step job plan as recognized by the Society of American Value Engineers (SAVE).

9.16.4.1 - CVS Responsibility: The CVS is responsible for pre-study work, assembling, editing and reproducing the recommendations generated by the Value Engineering Team Study.

9.16.4.2 - Work Space: The University, or CVS if so contracted, will provide a suitable room with tables and chairs, with immediate or convenient dedicated use of a copier.

9.16.4.3 - A presentation of the study results shall be made to the University.

### 9.16.5 Large Projects

On large projects, a one- or two-day VE Study is encouraged at the SD phase.

### 9.16.6 Value Engineering Reports

The VE report shall encompass the recommendations of the VE study group and include detailed cost estimates, life cycle analysis and sketches, as necessary.

9.16.6.1 - The CVS must edit and sign the final report.

### 9.16.7 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 SD and PD drawings (full size)
- Five sets of half size drawings
- Outline Specifications & Systems Checklists (5 copies)
- Detailed Cost Estimate (5 copies)
- Basis of design (5 copies)
- Design Calculations (Structural, Mechanical, Electrical)
- Boring logs and soil reports
- Scope of Project/Program requirements (5 copies)
- Digital copies of the above documents

### 9.16.8 A/E Responsibilities

During the Value Engineering Study, the 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 review/VE resolution meeting at the University.
- Review and submit a final report within 14 calendar days of the resolution meeting to the University.
    - Provide a written comment and/or evaluation of each VE recommendation using Format VE-1 – form DGS-30-212.
    - Provide written recommendation to accept, to reject, or to accept with modifications each VE recommendation.

- Provide justification for rejection of, or modification to, any VE recommendation.
- Implement all finally accepted VE recommendations into the project design.

### 9.16.9 Action on VE Study

The University, including O&M staff and facility end users, shall review the A/E's evaluation and recommendations on the VE Study and the A/E's responses to DEB review comments. The University shall indicate its proposed action (acceptance, rejection, or acceptance as modified) on the Summary sheet.

## SECTION 9.17 STRUCTURAL AND SPECIAL INSPECTIONS

### 9.17.1 Minimum Inspections to be Performed

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, Special Inspections and Tests, prescribes certain tests and inspections which are required to be performed on the structural systems for the building. These inspections have been, heretofore, provided on state projects by a combination of the Owner's University's Project Inspection, the A/E and the Owner's University's Independent Testing Lab.

### 9.17.2 Procedures for Special Inspections

The UBO for all University-Owned buildings establishes the following procedure for the application of the Structural and Special Inspections for capital projects.

9.17.2.1 - A/E Basic Services - Design:

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 Owner's 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 K for the Concept of the Process.

9.17.2.2 - A/E Basic Services - Construction:

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.

9.17.2.3 - Project Inspector:

Each project shall have an on-site Project Inspector 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. This individual may be the assigned University PM or other appropriate University staff member.

9.17.2.4 - University's Independent Test Lab:

The University's Independent Test Lab shall inspect foundations, log and inspect pile and caisson installations, inspect and test concrete, inspect and test bolted and welded connections as required by the specifications, inspect steel construction, perform seismic inspections and testing, inspect wood or light gage construction, and inspect fireproofing. Where required the University shall retain a testing service to conduct smoke control testing.

9.17.2.5 - A/E Site Visits:
The A/E in accordance with their contract shall visit the site with representatives of each discipline having work in progress to assure conformance with the design shown in the documents. Where the University has determined to exclude this service from the A/E contract, qualified Architects and Engineers of the University shall perform this function.

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

### 9.17.3 DCM Appendix K
Appendix K, 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.

### 9.17.4 DCM Appendix O
Appendix O contains additional information on other Project Inspector functions.

## SECTION 9.18 COMMISSIONING OF HVAC SYSTEMS

### 9.18.1 General Commissioning Requirements
Commissioning for HVAC systems, as described in ASHRAE Guidelines for Commissioning of HVAC Systems includes:

- Development of the project criteria
- Design of the HVAC systems including preparation of the plans and specifications describing the HVAC system components and requirements
- Review of shop drawings and submittals
- Inspection of the installations of the systems and observation of applicable tests
- Final testing, balancing, start-up, initial operation, and acceptance of the HVAC system including controls.

### 9.18.2 Design of Commissioning Process
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.

### 9.18.3 Contractor Requirements

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 agency personnel if required.

### 9.18.4 Review of Results

Design & Construction and O&M staff will review the results of the commissioning process.