Commonwealth of Virginia

Construction & Professional Services Manual

Department of General Services
Division of Engineering & Buildings
Bureau of Capital Outlay Management

Revision 1
October 1, 2004

CONSTRUCTION & PROFESSIONAL SERVICES MANUAL – 2004

PREFACE

The Commonwealth of Virginia Construction and Professional Services Manual – 2004 (called the Manual, or CPSM) is published under the authority of §2.2-1132, Code of Virginia, as amended, and sets forth the standards, policies, terms, conditions, and procedures to be followed by all departments, agencies, and institutions of the Commonwealth in procuring professional services, designs and constructions of all structures (except roads and bridges which are under the purview of the Virginia Department of Transportation) which are on state property to include new construction, and renovations, modifications and additions to existing facilities. The technical standards set forth in this **Manual** establish the levels of design, quality, energy efficiency, and performance required for projects on state property in addition to the minimum standards required by the applicable codes and standards for the project. These standards are intended to assure the protection of the public health, safety, welfare and accessibility as well as the protection of real property insofar as the use and occupancy of buildings on state property are concerned. The administrative and procedural requirements are intended to assure conformance with the Virginia Public Procurement Act, the Acts of Assembly (also called the Appropriations Act), and applicable Executive Orders and Fiscal Policies.

The Director of the Bureau of Capital Outlay Management, acting under the authority of the Director of the Division of Engineering and Buildings, Department of General Services, is responsible for the authoring, compiling, editing, publishing, maintaining and administration of the **Manual**. The Director of the Division of Engineering and Buildings is the Building Official for all construction on state property as authorized by §36-98.1, Code of Virginia as amended. The Division of Engineering and Buildings also has the statutory responsibility under §2.2-1159.B to establish standards for accessibility for the physically disabled and has the statutory responsibility under §2.2-1161 to assure compliance with the standards established. By written agreement with the Department of Housing and Community Development (DHCD), the State Fire Marshal's Office assists the Building Official by providing on-site Fire Safety inspections of buildings / facilities on state property.

This 2004 CPSM edition has been revised and updated to include legislation recently adopted, policies established by direction of the Governor, changes to the Uniform Statewide Building Code and referenced standards, and changes to DGS, DPB and DEB policies and procedures. The format and organization of the **Manual** has been revised from the previous editions to include Chapters 1 through 17 and Appendices A through Z, some of which are reserved for future material.

Significant changes or additions include:

- Chapter 7 contains information of codes, standards and policies which are mandatory in the design of a project.
- Chapter 9 establishes additional design policies and guidelines which must be followed unless a waiver is granted by the Director, DEB.
- Chapter 12 provides information on Building Official requirements for Permits and Certificates of Use & Occupancy.
- Chapter 13 provides guidance on Master Plans and Site or campus Master Utility Plans.
- Chapter 14 provides agency guidance and requirements for the Capital Outlay process.
- Chapter 15 provides guidance for agencies on Building Official requirements for various CO-forms for Non-Capital projects and for project which are exempt from the Capital Outlay process.

PREFACE

- Chapter 16 provides requirements and guidance for agencies for establishing and using the Building Committee.

The **A/E Manual - 2004** is not a separate manual but is now defined as Chapters 1 thru 10 and Appendices A through Z of the **2004 CPSM** and is incorporated by reference in the A/E contract for services. Any entity providing A/E and/or related services to the Commonwealth, including its departments, agencies and institutions, should be familiar with the contents and requirements of the **A/E Manual-2004** and base its fee proposal, services and Contract on the **A/E Manual-2004.**

The **Commonwealth of Virginia Construction and Professional Services Manual – 2004 (called the Manual, or CPSM)** is effective July 1, 2004, and supersedes the previous editions of the 12/96 edition of the CPSM including its Revisions 1, 2, 3, 4, and 5. This Manual is being published electronically in '.pdf' format and is available for download from the BCOM Website, URL http://bcom.dgs.virginia.gov. Paper copies will be available for purchase using the order form on the website. Revisions to the **Manual** will be made electronically and posted on the website. Holders of the paper copies will be responsible for downloading the revisions and posting same to their copy of the manual. Paper copies of the revisions will not be provided to holders of the paper copies.

Comments, suggestions or requests for clarifications and/or interpretations of the **Manual** should be e-mailed to manuals@dgs.state.va.us. To contact the authors, call William W. Scott, PE at bscott@dgs.state.va.us or (804) 786-6292 or W. Michael Coppa, RA at mcoppa@dgs.state.va.us or (804) 786-4398.

BCOM and I acknowledge the following who have contributed to this edition of the **Manual**:

Richard F. Sliwoski, P.E., the Director of the Division of Engineering and Buildings who was the guiding light and cool head in the process.

Members of State Agency Facilities Staff who made valuable input and who provided comments on the 'draft';

Members of ACEC/V, VSAIA and VSPE who provided input and comments on the 'draft';

The Real Estate and Construction Branch, Office of the Attorney General who provided valuable advice and guidance;

C.E. Altizer, P.E. and R. A. Farthing, P.E. of the State Fire Marshal's Office;

And especially the BCOM Architects, Engineers and staff who provided technical input, verified the technical accuracy and without whose help we would still be working on this edition:
Anne Billingham, Mike Chapman, Mike Coppa, Bill Crodick, Jim Frye, Les Harcum, Mary Hom, Brian Hudnall, Fred Kirby, Steve Matsko, Patrick McDonough, Chris Raha, Charlie Sanders, Bobby Schenk, Carl Smith, Ralph Smith, Melissa Stahl, Ron Thompson, John Whitfield and Elzy Williams.

CONSTRUCTION & PROFESSIONAL SERVICES MANUAL – 2004

PREFACE

I trust you will find this 2004 edition of the Construction and Professional Services Manual to be user friendly, easy to understand, helpful in determining requirements, clear as to the intent, and a road map to providing the services, submittals, forms and approvals as you travel through the process of constructing your project.

William W. Scott, P.E.
Director
Bureau of Capital Outlay Management

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RECORD OF REVISIONS

Revision #	Date of Revision	Date Posted	Posted By
1 & Errata	October 1, 2004	10/01/04	WWS

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CONSTRUCTION & PROFESSIONAL SERVICES MANUAL – 2004

CHAPTER 1: INTRODUCTION

SECTION 100.0 GENERAL

The Commonwealth of Virginia **Construction and Professional Services Manual – 2004** is written for those who have a basic knowledge and understanding of the building design and construction process and its terminology. State policies, standards and procedures for procurement of services, procurement of construction and contract management and administration differ from those used in the private sector and those used by agencies of the Federal Government. The policies stated herein are those of the Commonwealth of Virginia and are to be used by state agencies for construction on property owned by the Commonwealth subject to any delegations and/or authorizations which may be in effect for a particular agency.

The Commonwealth of Virginia **Construction and Professional Services Manual - 2004** (hereafter referred to as the **Manual**) consists of 17 Chapters and Appendices A through Z and contains policies, procedures and guidance that state agencies must follow in the planning, design, and execution of both capital outlay and non-capital outlay projects.

The **Construction and Professional Services Manual - 2004 for Architects and Engineers** (hereafter referred to as the **A/E Manual**) consists of the first 10 Chapters of the **Manual** and Appendices A through Z. The **A/E Manual** and all revisions thereto, shall be incorporated into the "Contract Between the Owner and the Architect/Engineer" in their entirety, except as amended or superseded in the Contract or an addendum thereto. Architects and Engineers must follow these policies, procedures and guidance stipulated in Chapters 1 through 10 in providing services to state agencies in the planning, design, and execution of both capital outlay and non-capital outlay projects unless otherwise exempt in writing by the Contract or its MOU.

SECTION 101.0 MANUAL DESCRIPTION

The contents of the **Manual** are directive in nature. Deviations from the policy and procedures outlined within shall be requested by the agency and must have prior approval of the Director of the Division of Engineering and Buildings, Department of General Services or his Designee.

101.1 The **Manual** is designed to present the project acquisition process from advertisement for A/E services to project completion (occupied building). The **Manual** is arranged in a sequence that parallels this project acquisition process. The 2004 Edition of the Manual including errata corrections will be posted on the BCOM Website and may be downloaded and printed by the users. DEB Directives concerning construction and professional services and DEB Directives concerning the 'application' of the USBC to buildings on state property will be posted on the BCOM Website when issued.

101.2 Revisions to the **Manual** will be issued electronically by posting on the DGS / DEB / BCOM 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.

101.3 The Bureau of Capital Outlay Management is responsible for maintenance of the **Manual** and the **A/E Manual**. Suggestions for changes or clarifications, questions, and requests for printed copies should be addressed to:

Bureau of Capital Outlay Management
Division of Engineering and Buildings
805 E. Broad Street, 8th Floor
Richmond, Virginia 23219

Or preferably e-mailed to: manuals@dgs.state.va.us

When submitting requests for printed copies, please download and use the "CPSM Order Form" posted on the BCOM webpage (URL is http://bcom.dgs.virginia.gov). When submitting suggestions for changes, please download and use the "CPSM Comment Form" posted on the BCOM webpage.

101.4 *Italics: The material that appears in italics in Chapters 1 through 10 of the **Manual** are instructions and/or guidance to the Agency and are not part of the Contract between the Owner and the A/E.* Chapters 11, 12, 13, 14, 15, 16 and 17 contain instructions and guidance to the Agency. These Chapters are not part of the Contract between the Owner and the A/E. They appear in standard type rather than *italics* for ease of reading.
Appendices A through Z are a part of both the **Manual** and the **A/E Manual** and shall be used by the A/E for their intended purposes in providing the services required by the Contract between the Owner and the A/E.

SECTION 102.0 MANUAL ORGANIZATION

The **Manual** is organized as follows:

102.1 Chapter 1 provides an introduction to and overview of the **Manual** and establishes the design and life cycle cost philosophy of the Commonwealth for its Capital Outlay Program.

102.2 Chapter 2 acquaints users of the Manual with the Capital Outlay, contractual and procurement terminology used in the Manual and its forms.

102.3 Chapter 3 contains the general terms and conditions for professional services contracts.

102.4 Chapter 4 describes the procedures used by agencies for procuring professional services.

102.5 Chapter 5 provides guidance on basic and additional A/E services as part of the standard contract for A/E services.

102.6 Chapter 6 contains guidance for calculating and determining fees for A/E services.

102.7 Chapter 7 contains applications of the Uniform Statewide Building Code which as DEB Standards are mandatory to apply to the design of building construction on state property, technical design criteria, and DEB policy affecting the design and construction of state facilities.

102.8 Chapter 8 establishes the format for the preparation of design documents and other professional studies by A/Es for Agencies of the Commonwealth. It also contains submittal requirements and approval milestones in the design stages of Capital Outlay projects.

102.9 Chapter 9 describes DEB design, operation, maintenance and procurement guidelines for use in developing plans and specifications for construction and renovation of state facilities and which must be followed unless a waiver in writing is granted by the Director of the Division of Engineering and Buildings.

102.10 Chapter 10 contains procedures for advertising projects, receiving and opening bids, awarding contracts, addressing informalities in bids, and handling bid protests. Chapter 10 also contains the procedures for construction administration, construction change orders, project completion, final inspection, facility occupancy and project close-out.

NOTE: The following **"Manual"** chapters are not a part of the **"A/E Manual"** and are not a part of the A/E Contract.

102.11 Chapter 11 contains guidance for special procedures such as design build, construction management, prequalification of contractors and delegation of review.

102.12 Chapter 12 contains information on Building Official reviews, permits, certificates and approvals applicable to both Capital Outlay and Non-Capital Projects

102.13 Chapter 13 contains requirements for developing Master Plans and Master Site and Utility Plans.

102.14 Chapter 14 contains guidance and procedures for agency planning of Capital Outlay projects and the approval process.

102.15 Chapter 15 contains guidance and procedures for utilization requirements, completion and submittal of the various 'CO' forms applicable to construction for both Capital and Non-capital projects

102.16 Chapter 16 provides guidance for selecting the Building Committee and describes the duties to be performed by the Committee.

102.17 Chapter 17 contains requirements for reports to be submitted by the Agency to BCOM.

SECTION 103.0 CAPITAL OUTLAY vs. NON-CAPITAL OUTLAY PROJECTS

103.1 Capital Outlay Projects, as defined by the Department of Planning and Budget 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). Capital Outlay Projects use an established authorization and approval sequence for the "Design Phase" of Project to include:

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

103.2 Non-Capital Outlay Projects, as defined by the Department of Planning and Budget Instructions, are usually small construction, renovation, repair or replacement projects which are funded by Agency resources and do not require authorization by the Legislature and the Governor. Non-Capital Outlay Projects in most cases do, however, involve work regulated by the Uniform Statewide Building Code and require a Building Permit from the Building Official or his designee. The design phases and approval process for the Non-Capital Outlay Projects is left to the agency's discretion depending on the project scope. However, the "construction documents" are required to be approved. The intended completion date and the Contractor's name or "work to be performed by agency forces" must be submitted along with the Application for Building Permit (CO-17A)

103.3 The Construction Phase is similar for both Capital Outlay and Non-Capital Outlay Projects (depending on the project scope) for Building Permits, Change Orders, Project Substantial Completion, and Certificate of Occupancy. The exception is usually that Capital Outlay Projects require submission of revised CO-2 and CO-8 forms for increases in the "Contingency" amount and for infusions and transfers of funds (See Chapter 14) while non-capital projects do not.

CONSTRUCTION & PROFESSIONAL SERVICES MANUAL – 2004

CHAPTER 1: INTRODUCTION

SECTION 104.0 DESIGN PHILOSOPHY

The design goal is to create a capital investment that meets the user's functional requirement and provides the most economical life cycle cost. The Commonwealth's design philosophy envisions a long and useful life for state buildings. These buildings will often be used for periods exceeding 50 years and, consequently, should be designed for durability, economy of operation and ease of maintenance. Further, §4-4.00 CAPITAL PROJECTS of the Appropriations Act states that "Projects shall be developed to meet Agency functional and space requirements within a cost range comparable to similar public and private sector projects." Note that this does not say the 'best' or 'most expensive' nor the 'cheapest'.

Building system components should be selected on the basis of life cycle costs. If an increased first or initial cost can be documented to show a reduced life cycle cost for the Commonwealth, particularly for operating and personnel costs, then the design should incorporate the more expensive first cost feature or system.

Agencies must ensure their architects and engineers 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.

Acceptance of a particular design does not imply that other, more cost-effective designs are not acceptable. A former Chairman of the AARB stated "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."

SECTION 105.0 FORMS

"CO-" Forms are listed in Appendix C and CPSM Formats and Samples are included in the various Appendices to the **Manual**. Electronic copies of many of these forms, formats and samples are available for download at the DGS Forms Center (URL is http://forms.dgs.state.va.us or http://forms.dgs.virginia.gov). A link to the Forms Center is also provided on the BCOM webpage.

More specific instructions are on the form download page. Visit the DGS Forms Center often to download the latest version of "CO-" forms.

SECTION 106.0 INDEX

This Manual is posted on the BCOM Website, (URL is http://bcom.dgs.virginia.gov) in '.pdf' format and is fully text searchable. Therefore, no index is provided for the Manual.

NOTICE:

CONSTRUCTION & PROFESSIONAL SERVICES MANUAL – 2004

CHAPTER 1: INTRODUCTION

DGS e-mail addresses will be changing sometime within the next year. Notice of the change will be posted on the Website. The names / mailboxes will remain the same but the address will change from “dgs.state.va.us” to “dgs.virginia.gov”

CONSTRUCTION & PROFESSIONAL SERVICES MANUAL – 2004

CHAPTER 2: TERMS & DEFINITIONS

SECTION 201.0 GENERAL

This chapter is designed to acquaint Agencies 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 Commonwealth of Virginia'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 state construction industry and professional service contracts.

SECTION 202.0 DEFINITIONS

Whenever used in the **Manual**, including their 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 opening of bids that clarify, correct or change the bidding documents.

additional service: A service that the Owner/Agency 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 documents 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. Virginia Business Opportunities (VBO)] and by "Posting the Notice" (*Code of Virginia*, §2.2-4300 et seq).

A/E Contract: The Form of Agreement (CO-3, CO-3.1, CO-3.2) and any documents 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: The **A/E Manual** shall consist of the **Construction & Professional Services Manual – 2004 (called the Manual), Chapters 1 thru 10 including 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.

Agency: Any of the departments, agencies and institutions of the Commonwealth of Virginia, including state-supported institutions of higher education; also referred to as the "Owner" in the Contract Documents.

Agency Contracting Officer: The person designated in writing by the Agency Head as being delegated authority to award and sign contracts, change orders and other documents related to a capital outlay project for the Agency. May also be called the Chief Facilities Officer.

CHAPTER 2: TERMS & DEFINITIONS

Agency Manual: The short term used for the **Construction & Professional Services Manual – 2004 (called the Manual), Chapters 1 thru 17 including Appendices A thru Z**, and all revisions thereto. Also called the **Manual**.

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

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.

Architect/Engineer (A/E): The term used to refer to the architect and/or engineer who contracts with the Owner 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 Owner. This term also includes any associates or consultants employed by the A/E to assist the A/E in providing services.

A/E Change Order: A document (CO-11a/e) issued on or after the effective date of the Contract (CO-3) agreed to by the A/E and approved by the Owner 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.

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 Owner could, after obtaining necessary approvals and certificates, occupy and utilize the space for its intended use. Guarantees and warranties applicable to that portion of the work begin on the date the Owner accepts the Project, or a portion thereof, for such Beneficial Occupancy, unless otherwise specified in the Supplemental General Conditions or by separate agreement.

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.

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Building Committee: The group constituted by the Agency in accordance with the requirements of Chapter 16 of the **Manual** and with the authority and purpose as set forth in Chapter 16 including interviewing and selecting A/E's for the planning and design of construction projects and other professional services required by the Agency.

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

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, any of which meets the criteria in Chapter 14 of the **Manual**.

Change Order: A document (CO-11) issued on or after the effective date of the Contract (CO-9) agreed to by the Contractor and approved by the Owner 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, CO-7. A Change Order, once signed by all parties, is incorporated into and becomes part of the Contract.

Chief Facilities Officer: The person designated in writing by the Agency Head as being delegated authority to award and sign contracts, change orders and other documents related to a capital outlay project for the Agency. May also be called the Contracting Officer.

Code of Virginia: 1950 *Code of Virginia* as amended, Virginia's codified statutes. Sections of the *Code of Virginia* are referred to herein as § xx-xx.

Competitive Negotiations: A method of Contractor selection that includes the following two elements (*Code of Virginia*, § 2.2-4301):

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

b. Public notice of the RFP at least ten (10) days prior to the date set for receipt of the proposal by posting in a public area normally used for posting of public notices and by publication on the public Internet procurement Web site designated by the Department of General Services [i.e Virginia Business Opportunities (VBO)].

Competitive Sealed Bidding: A method of contractor selection that includes the following elements (*Code of Virginia*, § 2.2-4301):

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

b. Public notice of the IFB at least ten (10) days prior to the date set for receipt of bids by posting in a designated public area and by publication of the public announcement or "Notice" of the availability of the Invitation For Bids (i.e. bid documents or IFB) on the public Internet procurement Web site designated by the Department of General Services [i.e Virginia Business Opportunities (VBO)]. Bids may be solicited solely from Contractors who have prequalified. (*Code of Virginia*, § 2.2-4317.). In addition, bids may be solicited directly from potential contractors. Any additional solicitations shall include businesses selected from a list made available by the Department of Minority Business Enterprise.

c. Public opening and announcement of all bids received.

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

e. Award to the lowest responsive and responsible bidder.

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

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

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

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Construction Management (CM): As used in this Manual, this term means services provided under contract with the Owner, which generally include coordinating and administering construction contracts for the benefit of the Owner, but may also include, if provided in the contract, furnishing construction services to the Owner. Agencies must obtain approval from the Director of the Division of Engineering and Buildings to utilize Construction Management procedures for construction. See Chapter 11, Section 1102 of the **Manual** for further descriptions. The Construction Manager has direct responsibility and liability to the Owner for performing the Work as described by the Contract Documents. Also called the CM/GC, or the 'Contractor' for the CM project.

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

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

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 (CO-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 (CO-7), this term shall mean the Contract (CO-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 who 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.

Contractor: As used in the Manuals and the Standard Forms, "Contractor" means the specific person or firm with whom the Owner has contracted to do the Work described in the Contract Documents for that undertaking. On a Design Build project, the Design Builder is the 'Contractor'. On a Construction Management project, the CM or CM/GC is the 'Contractor'

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 notice is oral it shall be confirmed in writing.

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

DEB: The acronym used to refer to the Division of Engineering and Buildings of the Virginia Department of General Services.

Defective: An adjective which, when modifying the word Work, refers to Work that is unsatisfactory, faulty, deficient, does not otherwise conform to the Contract Documents, 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 Owner at Substantial Completion or Beneficial Occupancy).

Design-Build (DB): A contract between a public body (the Owner) and another party in which the other party agrees to both design and build the structure, roadway or other item specified in the Contract. Agencies must obtain approval from the Director of the Division of Engineering and Buildings to utilize Design-Build procedures for construction, except as provided for under *Code of Virginia*, § 2.2-4306 and CPSM Section 1101.

"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.

DGS: The acronym used to refer to the Virginia Department of General Services.

DPB: The acronym used to refer to the Virginia Department of Planning and Budget.

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 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 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 Owner.

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 Owner/Agency 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 therefore, are authorized by a modification to the A/E Contract using the A/E Change Order, CO-11 a/e.

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

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

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.

Final Completion Date: The date of the Owner's acceptance of the Project from the Contractor upon confirmation from the A/E by a CO-13.1 and the Contractor by a CO-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 (CO-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 Contractor's 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 that 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.

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General Conditions (GC): The General Conditions of the Construction Contract, G.S. Form E&B CO-7, latest edition. Also the General Conditions of the Design Build Contract, G.S. Form E&B CO-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:

a. 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;

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

c. 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;

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

e. relocation from one site to another of a facility or structure either intact or by disassembly and subsequent reassembly; and

f. 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.

g. 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. (*Code of Virginia*, § 2.2-4301)

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 *Code of Virginia*, § 2.2-4301**.**

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Landscape Architect: An individual certified by the Commonwealth of Virginia as a 'Certified Landscape Architect' by the APELSLA 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 Section 43 of the General Conditions of the Construction Contract (CO-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 Owner 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 from $25,000 to $500,000. 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 & cooling. When replacement of components of utility systems is required (e.g. transformers, distribution panels, cables, etc.), new components should be sized to account for future growth if the existing components are operating at or near capacity.

(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 Owner 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 **A/E Manual** unless such change has been approved in writing by the Director of the Division of Engineering and Buildings or his designee and such written approval is attached to the MOU.

Minority-owned/controlled Business: A business enterprise that is owned or controlled by one or more socially or economically disadvantaged persons. Such disadvantage may arise from cultural, racial, chronic economic circumstances or background, or other similar cause. Such persons include, but are not limited to, Blacks, Hispanic Americans, Asian Americans, American Indians, Eskimos, and Aleuts.

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; structure

(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. (*Code of Virginia*, § 2.2-4301)

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.

Notice of Award: The written notification by Owner 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.

CHAPTER 2: TERMS & DEFINITIONS

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

Notice to Proceed: A written notice by the Owner to the Contractor (with a copy to 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.

Owner: For purposes of the Manuals, "Owner" shall mean the public body, i.e., agency, institution, or department, with whom the Contractor or the A/E has entered into a contractual agreement and for whom the Work or services will be provided, also referred to as "Agency."

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.

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

Pre-bid Conference: A meeting of interested, prospective bidders held by the Owner, usually with the assistance of the A/E, prior to the receipt of bids in which comments or questions concerning specifications or other provisions in the IFB or RFP can be received and considered (*Code of Virginia*, § 2.2-4316). 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 (§ 2.2-4317, *Code of Virginia*).

Professional Services: For the purposes of the Manuals, 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 Owner to inspect the Work for the Owner and/or to document and maintain records of activities at the worksite to the extent required by the Owner. The Owner shall notify the Contractor in writing of the appointment of such Project Inspector(s).

project manager: The generic designation of the representative of an Owner, an A/E or a Contractor or others through whom written decisions and notices are generally conveyed.

Project Manager: As used in the Manuals, the "Project Manager" shall be the Owner's designated representative for the Project.

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 Owner 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 offerers (*Code of Virginia*, § 2.2-4301).

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 (*Code of Virginia*, § 2.2-4301).

Responsive Bidder: A person or firm who has submitted a bid which conforms in all material respects to the Invitation to Bid (*Code of Virginia*, § 2.2-4301).

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.

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 (*Code of Virginia*, § 2.2-4301).

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

Small Business: As used in this **Manual** for procurement and reporting of Small Business, Women Owned Businesses and Minority Owned Businesses, Small Business shall mean a Corporation, partnership, sole proprietorship, or other legal entity formed for the purpose of making a profit, which is independently owned and operated, has fewer than 100 employees and the **average gross annual receipts** for the preceding three years **is less than $2,500,000.**

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

Special Conditions: That part of the Contract Documents which describes special or additional requirements or procedures applicable to the 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.

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 Owner 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 Owner for the purposes for which it is intended. The Owner, at its

sole discretion, may request approval from the Building Official for state buildings to take Beneficial Occupancy at this time or may choose to wait until final completion to occupy.

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 Owner, 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, CO-7.

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 Owner 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.

Unsealed Bid: An unsealed written offer conveyed by U.S. Mail, commercial courier service, facsimile, e-mail, or other means. The bids are normally opened and recorded when received.

USBC: The Uniform Statewide Building Code adopted by the Virginia Department of Housing and Community Development (DHCD) in conformance with the *Code of Virginia,* § 36-98 (Also referred to as the VUSBC).

VBO: The acronym used to refer to the Virginia Business Opportunities weekly publication, published by the Department of General Services, Division of Purchases and Supply in electronic form. Also called eVA or electronic VA procurement

VCCO: The acronym used to refer to a state 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 Officer (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 CO-8 recommending award of the contract to the successful bidder.

VPPA: The Virginia Public Procurement Act, §2.2-4300 thru 2.2-4377, *Code of Virginia* as amended

Woman-owned/controlled Business: Business enterprise at least 50 percent of which is owned by females or in the case of a 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.

SECTION 301.0 GENERAL POLICIES ON ARCHITECTURAL AND ENGINEERING SERVICES

301.1 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 §13.1-549. Other business entities must register with DPOR 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.

301.2 Prime Design Professional: Owners 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 Owner shall determine which entity best satisfies the Owner's requirements for providing the services, meeting the time schedule and budget limitations, and managing the services to be provided on the particular project.

301.3 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 Owner, the professional liability insurance coverage of the Association, its organization and management structure, each firm's financial condition and/or 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 for fee negotiation for a possible contract award, the Owner shall request a review of the Association's legal documents, preferably by the Office of the Attorney General but by the Owner's staff legal counsel as a minimum. 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'.

301.4 Disadvantaged Businesses: It is the policy of the Commonwealth of Virginia 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 Commonwealth 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 businesses and businesses owned by women and minorities in the evaluation of proposals.

SECTION 302.0 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 Owner of the proposed change, the reasons therefore, and the name and qualifications of the proposed replacements. The replacements must be acceptable to the Owner.

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 Owner for the Work of all associates, consultants and subcontractors, whether employees of the A/E or not, performed under the Contract.

SECTION 303.0 TAXPAYER IDENTIFICATION NUMBER

The A/E shall furnish to the Owner 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 304.0 RELATIONSHIP OF ARCHITECT/ENGINEER TO OWNER

Once the Contract for A/E services has been fully executed, the A/E shall be the professional advisor and consultant to the Owner for technical matters related to the project and shall be responsible directly to and only to the Owner. The Owner shall communicate all approvals, rejections, change requirements and other similar information to the A/E. The A/E shall advise the Owner 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 Owner 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 Owner's designated project representative. If the Owner issues orders directly to the Contractor, the A/E shall be copied on such orders.

SECTION 305.0 ARCHITECT/ENGINEER'S MANUAL

The **Construction & Professional Services Manual – 2004 (called the Manual), Chapters 1 thru 10 including Appendices A thru Z,** and all revisions thereto, **shall be called the "A/E Manual"** for

identification and the "**A/E Manual**" shall be incorporated into the Contract in its entirety except as amended or superseded in the Contract or an addendum thereto.

For the sake of simplicity, the provisions of the **A/E 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, development of master site plans, other studies, and related professional services.

Many of the changes, additions, or deletions made in revisions to the **A/E 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 the 2004 Edition of the Manual or any **A/E Manual** revision issued subsequent to the revision shown on the Contract Between Owner and Architect/Engineer (CO-3), will require additional work on its part, the A/E shall notify the Owner 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 Owner shall, after consultation with the Division of Engineering and Buildings, 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 the **A/E 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 Owner 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 306.0 "DESIGN-NOT-TO-EXCEED" COST AS RELATED TO A/E CONTRACT

The Owner 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 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 Commonwealth.

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 Owner and shall work with the Owner 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 Governor or his designee.

SECTION 307.0 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), the **A/E 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 Department of General Services and its Divisions, or the staff of any State Owner, in no way absolve any other person, firm or corporation involved in a project from their full responsibilities under law, codes and professional practice as required in projects for the Commonwealth of Virginia. Lack of comment by a State reviewer does not relieve the A/E from designing to meet the Code or **A/E 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, **A/E Manual** 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 Owner 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, an **A/E Manual** requirement, or a regulation is unclear as to meaning, he shall request a written opinion as to the applicable interpretation from the Division of Engineering and Buildings or from the applicable regulatory agency, as appropriate, and the A/E shall be entitled to rely on the written opinion, if any, which he receives.

SECTION 308.0 A/E LIABILITY INSURANCE, DESIGN ERRORS AND/OR OMISSIONS and RECORDS RETENTION

308.1 A/E LIABILITY INSURANCE: The A/E shall carry professional liability insurance covering negligent acts, errors, and omissions. 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 cost of construction of all State-owned projects designed by the A/E which are currently under construction, but in no event shall the amount of professional liability insurance be less than $100,000 per claim. As an alternative to the calculated amount indicated above the A/E may work with the Owner/Agency to procure a 'Project Insurance' package for that project which is satisfactory to the Owner / Agency or the A/E may provide a Certificate of insurance indication coverage in the amount of $2,000,000 per claim and $6,000,000 in the aggregate.

The A/E shall maintain this insurance coverage in force after completion of the services under the contract for a period of five years after final completion of construction or the A/E may purchase a 'completed operations' coverage for the project or projects.

Neither DEB's nor the Owner's review, approval, or acceptance of, nor payment for any of the services required shall be construed to operate as a waiver by the Owner of any rights or any cause of action arising out of the Contract. The A/E shall be and remain liable to the Commonwealth for all

costs of any kind which are incurred by the Commonwealth 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.

308.2 DESIGN ERRORS AND/OR OMISSIONS: 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 the **A/E 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 Owner delay damages, and any judgments, fines or penalties against the Owner 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. When determining the A/E's contribution for Change Orders attributed to errors and omissions (where the work has not yet been done by the Contractor), the Owner / Agency should also take into account the actions and efforts of the A/E during the construction phase that were above and beyond the scope of its contract to assist the Owner in obtaining a timely, quality product.

The Commonwealth 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 Owner. The A/E shall be advised of the design deficiency, informed that it is the Agency'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 Owner to determine required technical support and timing to minimize delay costs. Pending final decision by the Owner, 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 Owner's negotiator. If the A/E refuses to cooperate in the negotiations or disputes its responsibility, the Owner shall have the right to proceed with the remedial construction and/or change order negotiations without the A/E.

All changes to the Contract Document, whether to correct errors or omissions, to accommodate unforeseen or differing site conditions, or Owner requested changes, must be made / documented by Change Order, using Form CO-11.

308.3 RECORDS RETENTION: 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 Owner for safe keeping.

SECTION 309.0 OTHER INSURANCE REQUIRED OF THE A/E

Prior to the start of any work under the contract, the A/E shall provide to the Owner Certificates of Insurance forms approved by the Commonwealth of Virginia 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 Commonwealth of Virginia 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; Owners and Contractor's Protective Liability; and Personal Injury Liability (Libel, Slander, Defamation of Character, etc.);

Automobile Liability -- $500,000 Combined Limit for bodily injury and property damage per occurrence.

SECTION 310.0 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 Owner and the A/E, shall belong exclusively to the Owner. These materials and documentation, whether completed or not, shall be the property of the Commonwealth of Virginia 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 Owner.

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 §2.2-4342.F., *Code of Virginia*, 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 Owner at the completion of the A/E's work:

- original sealed and signed drawings
- original copy of the specifications
- copy of analyses made for the project
- indexed copy of the calculations made by each discipline for the project
- the Owner copy of all shop drawings, submittals, cut sheets, operation and maintenance instructions, parts lists, and other material related to the project.

The Commonwealth of Virginia, as owner of the documents prepared for its projects, 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 Owner 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 311.0 STANDARD PLANS

Where the Owner has engaged the A/E to prepare “Standard Designs” , "Standard Plans" and/or “Prototype Plans” for structures such as picnic shelters, sheds, bath houses, single family residences, cabins and utility buildings for the Owner to site adapt for use at various locations, the drawings for the Standard or Prototype Plans shall show

- the name of the Owner,
- the Title of the Standard or Prototype Structure for which the design was developed,
- the name of the A/E, and
- the 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 Owner, 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 312.0 REQUIREMENTS FOR A/E SEALS AND SIGNATURES

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 Commonwealth of Virginia and its Agencies 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 8 digit 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

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.)

"Working Drawing Sets" submitted to BCOM for review are 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.

"Final Documents" or **"Construction Documents"** are completed documents ready for bidding and include all corrections required by the BCOM 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:

1 set Building Official (at BCOM)
1 set Regional Fire Marshal's Office
3 sets Owner
(1 set Reviewer who reviewed the documents, if other than BCOM)

"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 8 digit State 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". Each addendum shall show

- the name of the A/E,
- the Project Title,
- the Addendum Number,
- the 8 digit state Project Code,
- the seal and signature of the responsible licensed professional,
- the date of the Addendum
- the page number and total number of pages,
- and a list of any attachments to and part of the Addendum

SECTION 313.0 SUBCONTRACTS

No portion of the A/E professional services shall be subcontracted without prior written consent of the Owner. Consultants proposed by the A/E during the selection and fee negotiation phases are assumed to be acceptable to the Owner unless the Owner 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 Owner names, qualifications and experience of the proposed consultants. The A/E shall, 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 314.0 MODIFICATION OF THE A/E CONTRACT (A/E CHANGE ORDERS)

The Owner may, upon mutual agreement with the A/E, issue written modifications to the scope of services of the Contract using G.S. Form E&B CO-11a/e. Any single change order, or accumulation of change orders, which increases the A/E Contract Amount by 25% of the original contract amount or $50,000, whichever is greater, must have the prior approval of the Governor or his designee. (§2.2-4309, Code of Virginia as revised)

The first Change Order which causes the cumulative total of Change Orders to exceed $50,000 or 25 percent of the original Contract Price, whichever is greater, and all subsequent A/E Change Orders which increase the Contract Amount must have the prior approval of the Governor or his designee. (§2.2-4309, Code of Virginia as revised) Once the cumulative total of modifications exceeds **25%** of the original contract amount, or $50,000, whichever is greater, all succeeding Change Orders which **increase** the Contract Amount 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 Owner in accordance with requirements of the Public Procurement Act and Chapter 6 of the **A/E Manual**.

SECTION 315.0 PAYMENTS TO THE ARCHITECT/ENGINEER

The following procedures are established in conformance with the Virginia Public Procurement Act (VPPA), §2.2-4300 thru 2.2-4377, *Code of Virginia* as amended, and, in particular, §2.2-4347 et seq., which is referred to as the Prompt Payment Act.

(1) The A/E shall submit its invoice to the Owner in the format shown in Appendix C and with the documentation required by the Owner. The invoice shall generally itemize or show a breakdown of the various phases or parts of the Total Contract Amount, the value of the various phases or parts, the previously invoiced and approved amounts for payment, and the amount of the current invoice. The invoice shall also include a certification statement signed by the A/E stating that the A/E has paid its consultants, subcontractors and suppliers their individual proportional share of all previous payments, including interest, received from the Owner. Invoices for reimbursables shall include documentation of costs for which reimbursement is sought. Invoices for Work being performed on an hourly rate basis shall show the technical classifications, names of the persons performing the work, manhours expended, marked up hourly rates for the classification, and the extended cost amount.

(2) Unless there is a dispute about the compensation due the A/E including, but not limited to, claims by the Owner against the A/E, then within thirty (30) days after receipt by the Owner of the A/E's invoice, which shall be considered the invoice receipt date, the Owner shall pay to the A/E the amount approved less any retainage and less any prior payments or advances made to A/E. The date on which payment is due shall be referred to as the Payment Date.

(3) The Owner may agree to make progress or partial payments to the A/E during any phase 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 Owner's opinion of the value of the Work completed as of the date of the invoice. The A/E may invoice the Owner and, if the Owner agrees that the submittal for the particular design phase is complete, the Owner 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 Owner. The A/E may invoice the Owner for the remaining 5% (balance of the value of that phase) when the submittal has been reviewed and approved.

(4) 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 Owner.

(5) 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 Owner 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 Owner to be payable to the A/E shall be due thirty (30) days from the date the dispute is resolved.

(6) Interest shall accrue on all amounts owed by the Owner 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 Owner and to calculate to the satisfaction of the Owner 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 Owner and the A/E as described in subparagraph (4) above, or a dispute as to the accuracy of any Request for 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 Commonwealth, 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 Service 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 Owner 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 316.0 PAYMENTS BY ARCHITECT/ENGINEER

The following procedures are established in conformance to the Virginia Public Procurement Act (VPPA), §2.2-4300 thru 2.2-4377, *Code of Virginia* as amended, and, in particular, §2.2-4347 et seq. (Prompt Payment Act).

The A/E shall at the time of contract award by the A/E 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 Owner, the proportionate share of the total payment, including any interest, received from the Owner 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 Owner 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 Owner, the A/E shall notify the Owner 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 Owner 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 Owner.

(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.

Failure on the part of the A/E to conform to the requirements of this section of the Manual and the VPPA may be considered a breach of the requirements of the Contract and/or a violation of law.

SECTION 317.0 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 Commonwealth of Virginia, whichever is sooner. The Owner, 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 318.0 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. (§2.2-4373, *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 319.0 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 Owner personnel, personnel of the Division of Engineering and Buildings, and other A/E's or Consultants performing design of related state facilities is prohibited.

The A/E shall not give out information concerning a project to anyone other than authorized Owner personnel, other A/E's performing design of related facilities and personnel of the Division of

Engineering and Buildings without specific prior approval of the Owner to release such information. This includes, but is not limited to, project photographs, floor plans, and project cost 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,
- IFB (document) source, and
- a project cost range (e.g. $3,000,000 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 320.0 DEFAULT:

In case of the A/E's failure to deliver the reports, documents, 'Record Drawings', or services in accordance with the Contract terms and conditions, the Owner, 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 Owner may have.

SECTION 321.0 TERMINATION OF CONTRACT BY THE OWNER / AGENCY

General: The Owner 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.

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 Owner 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 Owner, the Contract may be terminated by the Owner at any time thereafter upon written notice, effective immediately upon receipt. The Owner's forbearance in not terminating the contract shall not constitute a waiver of the Owner'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 Owner 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 Owner 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 Owner.

Termination for Convenience: The Owner 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 Owner of the products of the services for which the A/E has or will receive compensation.

Delivery of Materials: Any termination shall not relieve the A/E of the obligation to deliver to the Owner 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 Owner 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.

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 Owner.

SECTION 322.0 ASSIGNMENT OF CONTRACT

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

SECTION 323.0 ANTITRUST

By entering into a contract, the A/E conveys, sells, assigns, and transfers to the Commonwealth of Virginia 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 Owner under said Contract.

SECTION 324.0 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 325.0 ANTI-DISCRIMINATION

By signing the Contract, the A/E certifies to the Commonwealth 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 §2.2-4310 and §2.2-4311of the Virginia Public Procurement Act which provides that:

In every contract over $10,000, the contractor (i.e. the A/E) agrees the provisions in (1) and (2) below apply:

1. *During the performance of this contract, the contractor agrees as follows:*

a. The contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

b. The contractor, in all solicitations or advertisements for employees placed by or on behalf of the contractor, will state that such contractor 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 contractor 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 or consultants.

SECTION 326.0 CONTRACTUAL DISPUTES (§2.2-4363, *Code of Virginia***)**

326.1 The Owner's Dispute Resolution Procedures shall apply if in writing and if attached to the contract. If not, the following procedures shall apply:

A/E claims for additional compensation, whether relating to additional services, delay or other, shall be submitted in writing, no later than sixty (60) days after final payment; however, written notice of the A/E's intention to file such claim must be given to the Owner's Project Manager at the time of the occurrence or beginning of the Work upon which the claim is based. The filing of a timely notice is a prerequisite to recovery under this Section. The Owner shall provide the A/E written notice of receipt of the A/E's written claim for additional compensation or the A/E's written notice of intent to file such a claim within thirty days of receipt of the A/E's notice or claim. Although the A/E may be required to submit certain classes of claims prior to final payment, and the A/E is not prevented from filing claims during the pendency of the Work, the Owner shall not be obligated to render a final written decision on any claim until after final payment. All claims shall be submitted along with all practically available supporting evidence and documentation.

No written decision denying a claim or addressing issues related to the claim, if rendered prior to final payment, shall be considered a denial pursuant to this Section unless the written decision makes express reference to this Section and is signed by the Agency head or his designee. The A/E may not institute legal action prior to receipt of the Owner's final written decision on the

claim unless the Owner fails to render such a decision within ninety (90) days of submission of the claim or within ninety (90) days of final payment, whichever is later.

The decision of the agency head or other signatory on the Contract shall be final and conclusive unless the A/E within six (6) months of the date of the final decision on a claim, initiates legal action as provided in §2.2-4364, *Code of Virginia*. Failure of the Owner to render a decision within 90 days shall not result in the A/E's being awarded the relief claimed nor shall it result in any other relief or penalty. The sole result of the Owner's failure to render a decision within 90 days shall be the A/E's right to immediately institute legal action. No administrative appeals procedure pursuant to §2.2-4365, *Code of Virginia*, has been established for contractual claims under this Contract.

326.2 INFORMAL ALTERNATIVE DISPUTE RESOLUTION (§2.2-4366, *Code of Virginia*)

In the interest of successful completion of the project, disagreements and disputes should be resolved as soon as possible. To assist in resolving these disputes, the Director, Division of Engineering and Buildings offers agencies and A/E's an impartial Dispute Hearing Panel of 1 or more persons to perform an "Informal Alternative Dispute Resolution". The Agency and the Architect/Engineer may choose to resolve their claims against one another by Appeal to the Director, Division of Engineering and Buildings under the provisions of this "Informal Alternative Dispute Resolution" procedure in lieu of instituting legal action. If the Agency and the A/E both choose to avail themselves of this service, the following stipulations shall apply:

- The Agency and the A/E must both agree to pursue this process and each submit their "Application for Informal Alternative Dispute Resolution"
- The Director, DEB, will review the Applications and advise both parties of dates available for a hearing or deny the Application for a Hearing
- The Director, DEB, will impanel a Dispute Hearing Panel with expertise in the topics of being disputed
- Each party will be represented by its personnel who have knowledge of the facts related to the dispute. Therefore, neither party will be allowed Legal Counsel at the hearing.
- The Panel will review the Application and facts presented by each party prior to the Hearing.
- Each party will be given the opportunity to present its position and factual data on each item in dispute. Information shall be concise / condensed.
- The Hearing Panel will ask questions as appropriate and facilitate discussions toward an agreeable solution.
- If the parties do not agree on a solution during the hearing, the Hearing Panel thru the Director, DEB, will render an opinion on the proper resolution of the dispute.
- It is intended that the hearing be efficient and last no more than one day.
- The cost of this service will be based on the time charged to the Dispute Resolution times hourly rates for the panel. The cost will be divided and charged equally to the Agency and to the A/E unless both parties agree to other arrangements and notify the Director, DEB, prior to the hearing.

The "Application for Informal Alternative Dispute Resolution Procedure" shall contain the following information:

- A/E Name
- Agency Name
- Project Name
- Project Number
- Listing of Items in Dispute (The A/E and the Agency shall each submit a listing of the items in dispute with its summary of the pertinent facts in the dispute.)
- Value of the items or Work disputed (in dollars): $_____
- Documents and narrative that present the facts as the Applicant sees them for each disputed item
- Proposed Solution or Relief Sought
- Signature of the Chief Facilities Officer for the Agency or Contract Signature Authority for the A/E

SECTION 327.0 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 and local laws and regulations.

SECTION 328.0 PROHIBITION OF ALCOHOL AND OTHER DRUGS AT WORKPLACE

The Commonwealth of Virginia 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 §2.2-4312, Code of Virginia, the A/E shall establish a written policy to maintain and enforce a drug-free workplace, to specify actions that will be taken against persons for violations of the policy, and to require that such policy be binding on each of its consultants, subcontractors and suppliers performing work on the contract.

The A/E's policy 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, including potential hires, 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.

For the purposes of this section, "drug-free workplace" means a site for the performance of work done in connection with a specific contract awarded to a contractor (i.e. the A/E and its consultants, subcontractors and suppliers), in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

SECTION 329.0 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 APELSCIDLA Board. (§9-183.2; *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 §9-183, *Code of Virginia*.

Any projects designed by the A/E which have such security systems shall include the licensing requirements of §9-183, *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 330.0 USE OF STANDARD FORMS AND FORMATS

The A/E shall incorporate in every construction contract the applicable **GS Form E&B CO-7** (General Conditions of the Construction Contract) and **CO-7a** (Instructions to Bidders), which may be found in Appendix A of the **A/E 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 Director of the Bureau of Capital Outlay Management prior to their incorporation in the construction contract.

The A/E shall use the applicable Capital Outlay Forms and the Standard Engineering & Buildings Forms which are listed in Appendix C of the **A/E Manual**. These Forms are available electronically for viewing and/or download from http://forms.dgs.virginia.gov. The wording on the forms shall not be modified or altered without the specific written approval of the Director of the Bureau of Capital Outlay Management. 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 listed in Appendix C of the **A/E Manual** for the applications indicated. Formats are available electronically for viewing and/or download at http://forms.dgs.virginia.gov. 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 331.0 REPORTS ON THE PARTICIPATION OF SMALL BUSINESSES AND BUSINESSES OWNED BY WOMEN AND MINORITIES:

The following is required for professional service contracts with a fee greater than $100,000.

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 two (2) copies of this information to the Owner. 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. A format for the report will be provided by the Owner. A generic format is posted on the Forms Center

SECTION 401.0 GENERAL POLICY ON PROCURING A/E SERVICES

The Virginia Public Procurement Act (*Code of Virginia*, §2.2-4300 through 2.2-4377) 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.

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

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

*The Agency head will designate, in writing, a person, called in this **Manual** the Agency Contracting Officer or Chief Facilities Officer, who shall be responsible for the administration and supervision of the agency's capital outlay and construction program. This designee shall be responsible for assuring that the Agency 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 402.0 PROCUREMENT OF RELATED SERVICES

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

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

402.2 Nonprofessional: Cost consultants, interior design services, soils testing, concrete testing, project management, project administration, inspection/clerk of the works, and other services which may be performed by either licensed or non-licensed architects, engineers or others are considered to be Nonprofessional Services and shall be procured using procedures contained

in Chapter 7 of the DGS, Division of Purchases and Supply, *Agency Procurement and Surplus Property Manual*.

SECTION 403.0 PROJECT SCOPE OF WORK

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

SECTION 404.0 REQUESTS FOR PROPOSAL (RFP)

The Request for Proposal (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 the **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 manhours, labor rates, or cost for services with their qualification proposals. If no method is specified, the respondents may propose methods for negotiating the fee amount.

Each respondent shall submit ARCHITECTURAL/ENGINEERING FIRM DATA (pages AE-1 through AE-6) 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 AE-1 through AE-6 and/or do not include the requested information and data may be considered as Not Responsive to the RFP.

Sample RFP Formats for A/E services are located in Forms Center website. URL is http://forms.dgs.virginia.gov

Proprietary information from respondents will not be disclosed to the public or to the competitors provided such proprietary information is appropriately properly identified, as required by *Code of Virginia*, § 2.2-4342.F, in the RFP response.

SECTION 405.0 ADVERTISEMENTS FOR PROFESSIONAL SERVICES

405.1 Notice: Public notice of the Request for Proposals shall be given a minimum of 10 days prior to the date set for receipt of proposals. Public Notice of RFP's for A/E services for Capital Projects and for Term A/E Contracts shall be posted for a at least 21 days unless a shorter time but not less than 10 days is justified and approved in writing by the Director, Bureau of Capital Outlay Management or, where delegated, the Agency's Chief Facilities Officer / Contracting Officer. The written justification and approval shall be a part of the official procurement transaction record.

Public notice of any Request For Proposal shall be given by the following methods:

1) By posting a copy of the notice in a public area normally used by the Agency for posting such notices; and
2) By publication of a notice on the On-Line Bids page of eVA, Virginia's central electronic procurement website. The URL is http://vbo.dgs.state.va.us.
3) By publication of the Notice in a newspaper of general circulation statewide and/or in the general area of the project.

The public notice will show the name, address, phone and fax number to be used to obtain a copy of the RFP.

SECTION 406.0 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 agency 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. See DGS-30-360 format on the Forms Center for format and data requirements

The following data is required on each small business, women-owned business and minority-owned business: (1) Type of ownership and DMBE Certification Number, if certified (2) utilization in the most recent twelve (12) months of DMBE certified firms, and (3) planned involvement or services to be performed by DMBE certified firms 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. See Agency Contracting Officer for agency specific requirements.

SECTION 407.0 STANDARD FORMATS FOR RESPONSES TO RFPs

Standard formats for responding to Requests For Proposals (RFPs) provide a uniform forum for the A/E to present both the historical data on A/E firm and the project specific qualifications and help streamline the agency's review and evaluation process. Using standard formats also reduces the effort and expense of responding to RFPs and provides uniformity in the type information requested. Capital Outlay Forms AE-1 through AE-6, ARCHITECTURAL/ENGINEERING FIRM DATA, have been structured to obtain information on the responding A/E that is pertinent to the RFP. Agencies shall require that A/Es responding to Professional Service RFPs use these forms for their responses. Required additional or supplemental information shall be provided as requested in the individual RFP.

- **Form AE-1** provides historical data on the firm to include firm name, location, type of ownership, size, previous name(s), principals, type of personnel, consultants proposed, Professional Liability Insurance coverage, disadvantaged business utilization proposed, and variety of past project experience data.

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

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

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

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

- **Form AE-6** offers the A/E a forum for a narrative describing particular capabilities, expertise, project approach, current workload, and other information supporting the firms qualifications for the project.

- Blank copies of the AE-1 through AE-6 forms are downloadable from the DGS Forms Center. URL is http://forms.dgs.virginia.gov

A/Es interested in being considered by an agency for Emergency Procurements and Small Purchase Procurements should file with each marketed agency a generic copy of Forms AE-1 through AE-6 indicating consultants often used, current staff with qualifications, typical or representative projects, and a narrative summary of the firms capabilities. Such forms should be updated at least annually.

SECTION 408.0 PROCEDURES FOR QUALIFICATIONS BASED SELECTION OF A/E's

408.1 General:

- In the event of a bonafide emergency, the Agency may use **Category A, Emergency Selection Procedures**, to select a qualified and suitable A/E, negotiate a fee, and award a contract to provide the emergency services.

- Each Agency using **Category B - Small Purchase Procurement** procedures for services with a total fee, including reimbursables, less than $30,000 shall receive and maintain statements of interest and qualification statements on Forms AE-1 thru AE-6 from A/Es interested in serving the agency on such small service contracts. Selections of A/E's will be made from those A/E's having their qualification statements on file with the agency. Qualification statements should be less than one year old and reflect the current status and qualifications of the A/E.

- If the total A/E fee, including reimbursables, is expected to exceed $30,000, the Agency shall advertise and utilize the **Standard Category C RFP** procedures to select an A/E. The Agency Building Committee, either as a whole or through an appointed screening subcommittee, will review and evaluate the responses to the RFP in relation to the criteria listed in the RFP. This screening process will identify the three to five (or more) A/E's which appear best suited by experience, qualifications, project approach and other factors and those A/E's will be recommended for telephonic or personal interviews.

- The Building Committee will conduct interviews with three to five of the top-ranked firms. The interviews should be scheduled to allow sufficient time for a presentation by the firm, a question / answer period permitting the Committee to query the A/E on specific factors to be evaluated, and time for a brief closing summary to permit the A/E to highlight why it should be selected.

- After the interviews, the Committee will rank the firms interviewed and conduct competitive fee negotiations with the top-ranked firm, as authorized or directed by the Agency head. If a satisfactory fee, schedule and terms can be negotiated with the top-ranked firm, a contract will be awarded. If not, negotiations with the top-ranked firm will be terminated in writing and negotiations begun with the firm ranked number two and so on.

- **Notice of Intent to Award:** Once the fee negotiations are complete, the Agency shall "Post" a Notice of Intent to Award at the place the agency uses for "posting" notices. Proposers not selected have 10 days from the date of 'posting' in which to file a written 'protest' of the award of the Contract. In addition the agency may also post such notices on their Electronic Website and/or the DGS central electronic procurement Website. The Agency shall post a Notice of Award in like manner when the contract is successfully awarded.

- For **Term A/E Contracts**, the Building Committee should determine the disciplines or categories of contracts to be solicited and issue an RFP for each discipline or category. Even

though a proposer may qualify and be interviewed for a contract in more than one discipline or category**, the A/E can be awarded only one term A/E Contract with the Agency for that period.**

SECTION 409.0 PROCEDURES FOR CATEGORY A (§ 2.2-4303.F. - Emergency Procurement)

In the event of a bona fide emergency, the selection may be made without regard to use of the usual Professional Services Procurement procedures:

409.1 A written determination shall be signed by the Agency head documenting the nature and basis of the emergency and authorizing procurement of A/E services (and related corrective work, if applicable) on an emergency basis.

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

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

409.4 The Agency shall award a contract using Form CO-3 or CO-3.2 for the work and shall issue and post a written notice stating that the contract is being awarded on an emergency basis, identify the work being procured, identify the firm selected and the date of award of the contract. Post / publish the notice on the On-Line Bids page of eVA, Virginia's central electronic procurement website. The URL is http://vbo.dgs.state.va.us.

409.5 The Agency VCCO shall forward a copy of the signed Form CO-3 or CO-3.2, a copy of the Emergency declaration, and an explanation of the circumstances to DEB.

409.6 Issue a Purchase Order in eVA referencing to the Contract CO-3 or CO-3.2

SECTION 410.0 PROCEDURES FOR CATEGORY B (Code of Virginia, §2.2-4303.H, Small Purchase Professional Service Procurements with Total Fee Less Than $30,000)

If the total fee including reimbursable expenses will be less than $30,000, the Agency may use the following "Small Purchase Professional Service Procurement Procedures".

(Note: Agencies are encouraged to utilize the services of qualified Virginia based small businesses and businesses owned by women or minorities for Category B procurements.)

410.1 If the total fee including reimbursable expenses will be less than $30,000, the following procedure may be used to procure the A/E services:

(1) Advertise/post notice at least once a year requesting qualifications from A/E's interested in providing services to the agency on small projects where the fee will be less than $30,000.

(2) The Request For Qualifications (RFQ) should be similar to an RFP which lists information desired, the general types of work to be procured using these procedures, etc

(3) Require A/E response to RFQ to include Forms AE-1 through AE-6 emphasizing their qualifications for the type of small projects they seek to be considered for.

(4) Statements of qualifications (Forms AE-1 through AE-6) and RFQ responses shall be accepted at anytime to allow new firms to be considered for work and to allow A/E's to update their qualification forms to show current information.

(5) Agencies using this Category B procedure shall sort RFQ responses/interest packages, establish a listing of responding A/E's by qualification or discipline/capability, and file RFQ responses by category for use in selecting A/E's for interview.

(6) When the Agency desires to select an A/E by Category B procedures, the Agency shall:

(a) Identify, from a list of firms that have expressed an interest in doing work for the Agency and which have Form AE-1 through AE-6 on file with the Agency and which appear to be qualified and suitable to render the required services, not less than three A/Es for interviews.

(b) Conduct telephone or personal interviews with representatives of the three A/E's to determine current personnel qualifications, location relative to the work, expertise, workload, capability to meet the proposed schedule, past performance on similar projects and ability to provide the service within budgeted costs.

(c) Consideration should be given to number and value of previous agency and state contracts awarded to each firm. (One method would be to assess negative points for each previous Category B contract awarded to the A/E during the last 12 months.) Agencies shall consider the opportunity to maximize the participation of qualified Virginia firms interested in doing such work for the Commonwealth and to avoid favoritism or the appearance of favoritism.

(d) Rank order A/Es and negotiate fee for service using competitive negotiation procedures. Repeated selection of the same A/E firm for these 'small purchases' violates the intent of these procedures.

(e) *Award a contract and post notice of same. Post / publish the notice on the On-Line Bids page of eVA, Virginia's central electronic procurement website.* The URL is http://vbo.dgs.state.va.us.

(f) *Use Contract Form CO-3.2, and forward a copy of the signed contract to DEB.*

(g) *Issue a Purchase Order in eVA referencing to the Contract CO-3.2*

410.2 If the total fee including reimbursable expenses will be less than $5,000.00, this 'small purchase' process will allow the VCCO to select and call only one qualified A/E from the list of firms that have expressed interest. Repeated selection of the same A/E firm for these 'small purchases' violates the intent of these procedures.

(a) *Consideration should be given to number and value of previous agency and state contracts awarded to each firm. Agencies should consider the opportunity to maximize the participation of qualified Virginia firms interested in doing such work for the Commonwealth including Small Businesses, Minority Owned Businesses, and Women Owned Businesses. Agencies should avoid favoritism or the appearance of favoritism.*

(b) *Rank order A/Es and negotiate fee for service using competitive negotiation procedures.*

(c) *Award a contract and post notice of same. Post / publish the notice on the On-Line Bids page of eVA, Virginia's central electronic procurement website.* The URL is http://vbo.dgs.state.va.us.

(d) *Use Contract Form CO-3.2, and forward a copy of the signed contract to DEB.*

(e) *Issue a Purchase Order in eVA referencing to the Contract CO-3.2*

SECTION 411.0 PROCEDURES FOR CATEGORY C (Code of Virginia, § 2.2-4301, "Competitive Negotiation, 3.a and 4303.B,) Standard Professional Services Procurement Procedures

For a project with a fee amount which is expected to be greater than $30,000, and for smaller fees if desired, the Committee shall use a qualifications, suitability, and capability based selection process followed by competitive fee versus scope of work negotiations with the selected offeror.

411.1 Draft a Request For Proposal (RFP).

411.2 Advertise: *Post a notice on the On-Line Bids page of eVA, Virginia's central electronic procurement website. The URL is http://vbo.dgs.state.va.us. Post the advertisement in a public area normally used for posting public notices. Post / publish the Notice in a newspaper of general circulation statewide and/or in the general area of the project.*

411.3 Receive, evaluate, and rank *the respondents based on the data contained in the* ***Forms AE-1 through AE-6, ARCHITECTURAL / ENGINEERING FIRM DATA*** *submittals of each respondent with respect to the criteria listed in the RFP. If the total contract amount is expected to exceed $100,000, the evaluation criteria shall include factors for past and proposed use of Small Businesses and Businesses owned by Women and by Minorities.*

411.4 License*: Verify that the top ranked A/E's proposed for interview are, in fact, properly registered with the Board and licensed to provide A/E services in Virginia. Any respondent / proposer not properly registered/licensed shall be disqualified.*

411.5 Interview *a minimum of the top three ranked respondents who are deemed to be fully qualified, responsible, and suitable on the basis of their initial responses.* ***Discussions of fees, rates, design costs, etc., shall not be included in these evaluations or the interviews****. Allow the A/E to present more detailed information on the RFP criteria; on specific qualifications and expertise of the personnel proposed to be assigned to the project; on the concepts, methods and approaches proposed for the design; and other pertinent information. Evaluate responses of each interviewed firm along with other material and data submitted, the A/E's past performance, and responses from references, and rank order the firms as best suited for the project.* ***Proprietary information from respondents shall not be disclosed to the public or to the competitors provided such proprietary information in the RFP response is appropriately noted as proprietary information exempted from public disclosure as required by the Code of Virginia, § 2.2-4342.F.***

411.6 Negotiate *with the A/E ranked first as to overall suitability and qualifications. If the Owner cannot reach agreement on a fee amount based on compliance with all of the* ***Manual*** *requirements, the negotiations shall be formally terminated in writing. The Owner must then proceed to negotiate with the A/E ranked second. If not successful, the third, etc. It is understood that at any time during the negotiations, they may be terminated and the project readvertised.*

It is anticipated that the fee amount negotiated will cover all the services required. However, it is recognized that unforeseen circumstances may arise and that they must be resolved. Accordingly, at the time of negotiation, the hourly rates for the various technical personnel classifications must be set forth in the MOU for use in determining a reasonable fee amount for additional services.

411.7 Recommend *the A/E selected to the Agency Head or his Designee for approval.*

411.8 *The terms of the agreement shall be recorded in a written and signed MOU and attached to the GS Form E&B CO-3 signed by the Agency Contracting Officer and the A/E.*

411.9 *Post a Notice of Award. Post / publish the notice on the On-Line Bids page of eVA, Virginia's central electronic procurement website.* The URL is http://vbo.dgs.state.va.us.

411.10 *Issue a Purchase Order in eVA referencing to the Contract CO-3.2. Forward a copy of the Contract, Form CO-3, and the MOU to DEB.*

SECTION 412.0 A/E TERM CONTRACTS (*Code of Virginia,* §2.2-4301, *Competitive Negotiations, 3.a*)

A/E Term Contracts are a useful and effective tool for the Agency in effectively managing their planning, maintenance, and renovation programs and effectively handling emergency situations. The following policy governs the use of these contracts.

412.1 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 multiple small projects over a one-year period of time subject to the limitations below.

Some advantages for the agency include a reduction in the cost and time of advertising for services, a shorter response time from the A/E, and an improved efficiency and clarity in the production of the Contract Documents for the Agency. For the A/E, it is usually more cost effective to provide the services on multiple small projects for the same agency. Feasibility studies, cost studies, designs of small capital and/or construction project (project costs less than $1,000,000) and maintenance reserve project designs are examples of Term A/E Contract types of projects.

A/E design services for all construction and/or renovation projects with an estimated total project cost of $1,000,000 or more shall be advertised and procured individually.

412.2 Advertisement: Since there is a potential for the maximum total of fees to exceed $100,000, the advertisement, disadvantaged business utilization, selection and posting of notices procedures in Sections 404.0 through 406.0 herein apply. Publication of the notice/advertisement of the RFP shall be on the On-Line Bids page of eVA, Virginia's central electronic procurement website. The URL is http://vbo.dgs.state.va.us. Publish the Notice in a newspaper of general circulation statewide and/or in the general area of the project.

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

412.4 Rights to Issue RFPs and Project Orders: The Agency reserves the right, at its sole discretion, to issue separate RFPs for similar work and other projects as the need may occur. The Agency reserves the right to issue a Project Order under the provisions of this contract to have the A/E provide the type of services described to any branch or subsidiary of the Agency or to another state agency in the same general area.

412.5 Multiple Contract Awards from a Solicitation: An Agency may issue Term A/E Contracts to not more than four (4) of the fully qualified and best suited firms interviewed from a particular A/E Term Contract RFP advertisement / selection process.

412.6 Contract Award Period: The Agency shall have a period of 120 days from the closing date of the RFP solicitation in which to complete selection process and award a Term A/E Contract including the first Project Order to each of the A/E's selected for award of a Term A/E Contract.

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

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

Any individual Project Order fee shall not exceed $100,000 and the aggregate total of fees for all Project Orders issued during the term of the Term A/E Contract shall not exceed $500,000 unless a higher limit is approved in writing for that agency by the Director, Department of General Services. Agencies may specify lesser fees in the RFP than above if desired.

The Memorandum of Understanding prepared by the Agency will document the negotiated acceptable labor rates for the various A/E classifications/disciplines/skill levels. These rates will be used by the Agency in arriving at lump sum fees and any hourly rate work that is authorized by the Agency for Project Orders issued under the Term Contract resulting from this solicitation.

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

412.9 Contract Term: The term of the A/E Term Contract as relates to the issuance of new Project Orders shall be the earlier of one year from the date of the A/E Term Contract or when the cumulative total of fees for Project Orders issued reaches the maximum fee total or if the Contract is terminated in writing by either party. This one-year period shall be referred to as the Term.

If a Project Order is issued during the Term which, in the aggregate total of it, all previously issued Project Orders and any Change Orders to the previous Project Orders, reaches the term dollar limit, then no further Project Orders may be issued during that Term. It is understood that the A/E's Work under the Project Orders issued may not be completed during the

Contract Term; however, all terms and conditions of this Contract, including all rights and obligations, shall survive until the Work is completed, except the owners right to issue, and the A/E's right to accept, additional Project Orders. The Owner and the A/E are obligated to fulfill the requirements of all project orders, including change orders thereto, issued even though the term for issuing new project orders has concluded.

The Owner may, at its sole discretion, renew the Contract for an additional one-year Contract Term provided the option to renew was indicated in the RFP. If the Owner exercises its option to renew, the next Contract Term shall begin one year from the date of the execution of this Contract, or previous renewal, or the date that the Owner notifies the A/E that the option to renew is being exercised, whichever occurs first. A new aggregate limit of $500,000 shall apply to the second Contract Term, without regard to the dollar amounts of Project Orders issued during the first year of the Contract. Any unused amounts from the first Contract Term are forfeited and shall not carry forward to the next Contract Term. Subsequent renewals up to a maximum of four (4) one year renewals shall follow the same procedures. The maximum number of renewals is stated in **§2.2-4301,** *Competitive Negotiations.*

412.10 Project Orders: The first Project Order will be issued at the same time as the execution of the A/E Term Contract. It will authorize the A/E to perform the Work for a lump sum amount or at the marked up hourly rates agreed to and set forth in the MOU attached to the A/E Term Contract. A Form E&B CO-3.1a shall be used to award each Project Order.

It is understood that more than one Project Order may, at the owner's sole discretion, be offered to the A/E during the Contract Term. Although the potential exists for multiple project orders during the Contract Term with aggregate fees up to $500,000, the Agency does not represent or guarantee that the A/E will receive more than one Project Order.

The Project Order offered to the Term A/E Contractor should include a scope of work, a definition of the product required and a request for a fee proposal. If the A/E and the Owner cannot agree on the scope of work and/or the fee for a Project Order offered to the A/E, the Owner shall terminate negotiations with the A/E on that Project Order and pursue obtaining the services from other A/E's using proper procurement procedures. The Agency shall not offer the Project Order, nor request a fee proposal from a second A/E until negotiations have been terminated in writing with the Term A/E Contractor first offered that Project Order.

412.11 Procedures for Selection of the Architect or Engineer for a Term A/E Contract:

***412.11.1 Draft** a Request For Proposal (RFP).*

***412.11.2 Advertise:** Same as Category C*

***412.11.3 Receive, evaluate, and rank** the respondents .*

***412.11.4 License**: Verify that all A/E's are properly licensed to offer services in Virginia.*

***412.11.5 Interview**: The Building Committee will conduct interviews with a minimum of the top three ranked A/Es. If Term A/E Contracts are advertised to be awarded to more than one (1) A/E under this solicitation, the Agency shall, in addition to the three (3) minimum, include two (2) more interviewees for each Term A/E Contract the Agency intends to award. (e.g. 1 contract = 3 interviewees, 3 contracts = 3+2+2= 7 interviewees.*

***412.11.6 Selection**: Rank order the interviewees and select the A/E to be awarded a contract.*

***412.11.7 Negotiation**: Negotiate and agree upon the special terms and conditions, if any, and the hourly rates which pertain to the Contract and document same in the MOU. The Agency shall then offer a Project Order to the selected A/E and request a fee proposal for the work. Negotiate the fee for the services on the project.*

***412.11.8 Award**: If the negotiations are successful, the Agency will award a Contract to the selected firm. If negotiations, including hourly rates and other terms and conditions set forth in the MOU to the Term A/E Contract, are not successful, the negotiations shall be formally terminated (in writing) and the contract and the project offered the next firm for negotiation and possible Award of the Contract as described in §2.2-4301, Competitive Negotiation of the Code of Virginia, as amended. The Agency shall issue one Project Order as the basis for execution of the Term A/E Contract. The Agency shall not award a Term A/E Contract to the A/E until such contract can be accompanied by the first Project Order.*

***412.11.9 Documentation**: Issue a Purchase Order in eVA referencing to the Contract CO-3.2. Send a copy of the Contract Form CO-3.1, the MOU and the initial Project Order Form CO-3.1A to DEB. Also post a Notice of Award.*

***412.11.10 Subsequent Project Orders**: The Agency may offer additional project orders of a similar nature to the A/E in accordance with the Contract and the MOU and, upon successful negotiation of a fee for the services, include the project order services in the A/E's Contract.*

***412.11.11 Notice:** Post / publish the notice on the On-Line Bids page of eVA, Virginia's central electronic procurement website.* The URL is http://vbo.dgs.state.va.us.

SECTION 413.0 CONTRACT FORMS TO BE USED

The Standard Forms of Contract for Architect and Engineer Services, GS Forms E&B CO-3, 3.1, 3.1A, and 3.2 shall be used for A/E Contracts. Copies of these forms are on the Forms Center.

These Contract forms shall not be modified, other than filling in the appropriate data and information, without the recommendation of the agency's legal counsel and the approval of the Director of the Division of Engineering and Buildings.

SECTION 414.0 General Terms and Conditions for Professional Services

The 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 Agency legal counsel and the DEB Director.

SECTION 415.0 eVA BUSINESS-TO-GOVERNMENT VENDOR REGISTRATION

415.1 The eVA Internet electronic procurement solution, web site portal www.eva.state.va.us, streamlines and automates government purchasing activities in the Commonwealth. The portal is the gateway for vendors to conduct business with state agencies and public bodies. All vendors desiring to provide goods and/or services to the Commonwealth shall participate in the eVA Internet e-procurement solution either through the eVA Basic Vendor Registration Service or eVA Premium Vendor Registration Service. **The offeror must have registered in eVA prior to the deadline for submission of responses to this RFP to be eligible for the award of this contract for architectural/engineering services. Options available are:**

a. eVA Basic Vendor Registration Service: $25 Annual Fee plus a Transaction Fee of 1% per order received. The maximum transaction fee is $500 per order. eVA Basic Vendor Registration Service includes electronic order receipt, vendor catalog posting, on-line registration, and electronic bidding.

b. eVA Premium Vendor Registration Service: $200 Annual Fee plus a Transaction Fee of 1% per order received. The maximum transaction fee is $500 per order. eVA Premium Vendor Registration Service includes all benefits of the eVA Basic Vendor Registration Service plus automatic email or fax notification of solicitations and amendments, and ability to research historical procurement data, as they become available.

415.2 For single project A/E Contracts, the Transaction Fee is 1% of the amount of the contract including change orders to the contract with a maximum transaction fee of $500 per purchase order / contract.

415.3 For Term A/E Contracts, the Transaction Fee is 1% of the amount of the Project Order including change orders to the Purchase Order with a maximum transaction fee of $500 per purchase order.

Section 416.0 SWAM Procurement Plan

(Small, Women-owned, And Minority-owned businesses)

416.1 Agency Plan: In accord with Executive Order 29 (2002), an annual SWAM Procurement Plan that specifies the Agency's plans and goals for SWAM procurement is required. Department of Minority Business Enterprises (DMBE) certification of SWAM businesses is required. Plan guidelines are available from DMBE. The plan shall be updated each September 1st.

416.2 Audits: In order to assure compliance with certification requirements of SWAM subcontracting plans, the contracting or certifying agency 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.

CHAPTER 5: BASIC SERVICES AND RESPONSIBILITIES

SECTION 501.0 RESPONSIBILITIES OF THE OWNER TO THE A/E

The Owner, hereafter called the Agency in this chapter, shall be responsible for providing the following information/data to the A/E, if required, for the planning and design of the project. The information so furnished shall not relieve the A/E of the responsibility for evaluating the information provided and for notifying the Agency of any additional surveys, investigations, tests or other information required for the A/E to perform its services. If the Agency does not have this information, the Agency shall procure the information in accordance with published procurement procedures. Or, as an alternative, the Agency may request that the A/E obtain such information as an additional service and include compensation for this in the fee negotiations. The Agency shall include this information requirement in the RFP for A/E services.

The Agency shall:

501.1 Provide the A/E with either the Capital Budget Request forms containing such information as required by the Department of Planning and Budget or with other material establishing the building space requirements, adjacencies, functional requirements, special systems and siting requirements. Provide a copy of the BCOM review comments, if any, and any other relevant information that will clearly inform the A/E 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 Governor or his designee.

501.2 Provide the A/E with a budget Design-not-to-exceed construction cost which shall not exceed the construction cost on the approved G.S. Form E&B CO-2 for the project.

501.3 Set a schedule for planning and design of the project. The schedule shall allow reasonable times for review of the various phases by review agencies such as the Division of Engineering and Buildings, the Fire Marshal, the Art and Architectural Review Board, the Department of Historic Resources, the Department of Health, the Division of Soil and Water Conservation, etc. The schedule shall be developed in conjunction with the A/E but shall be based on the date the Agency has determined that the project needs to be placed under contract for construction. The schedule is considered an integral part of the project scope and shall be monitored for adherence. The Agency agrees to make every reasonable effort to assist the A/E in complying with the schedule.

501.4 Provide the A/E with a survey of the site in the form of topographic maps or plats locating relevant existing buildings to scale and, where necessary, showing bench marks, grades, lines of streets, pavements, property lines, rights-of-way, restrictions, easements, other improvements and trees.

501.5 Provide utility maps showing the location, size and elevation of all existing public and private utilities which might interfere with the project or to which the project might be connected.

501.6 Provide location and dimensions of existing buildings. Where the interior arrangement, construction, or floor level of an existing building affects the plans for the project, the Agency shall furnish the A/E with the necessary information as to interior arrangement, including reasonably accurate record drawings (if available), construction system information, and floor levels.

501.7 Provide a list of all-existing equipment, furniture, furnishings, apparatus, etc., to be used on the project, including all necessary characteristics required to coordinate the equipment in the project.

501.8 Provide a budget cost estimate of any equipment that the A/E will be required to specify and include in the contract. The Agency shall provide an itemized list of such equipment, with the standards as to type, size, quality, etc., for the A/E's guidance in preparing the specifications for this equipment.

501.9 If the A/E determines that roof scans, structural, chemical, mechanical, asbestos, lead based paint, or geotechnical investigations including borings or load tests for soil bearing capacity, are necessary, the A/E shall inform the Agency of such requirements and the Agency shall secure such information. The A/E shall provide guidance and criteria to assist the Agency in obtaining these services.

Any geotechnical investigation shall include testing, analysis of test results and design recommendations based on preliminary design parameters furnished by the A/E (e.g. type of construction, estimated column loads, estimated wall footing loads, proposed floor elevations relative to existing grade, etc.). The cost of the testing, analysis and design recommendations shall be borne by the Agency. Preparing a scope of work and the preliminary design parameters to assist the Agency in securing the geotechnical services shall be part of the A/E's Basic Services.

501.10 Provide all legal advice relating to the design and construction phases of the project. This does not include legal services to or on behalf of the A/E relating to its services and obligations.

501.11 Obtain the services of a professional construction cost estimator when an independent detailed quantitative cost estimate is required by the **Manual** and/or the Bureau of Capital Outlay Management to validate other cost estimates or funding requests. This does not relieve the A/E of responsibility for providing the cost estimate required by the A/E Contract.

501.12 Determine any specific development requirements of political subdivisions appropriate and consistent with state policy, opinions of the Attorney General, and existing statutes. (All requests and/or requirements of a political subdivision, preferably over the signature of its chief administrative officer, shall be included in the schematic design so that any questions might be reconciled very early in the planning process.)

501.13 Pay the invoice cost of all sets of Plans and Specifications for the initial schematic, preliminary and working drawing submittals. Where the Agency determines that the submittals made by the A/E were deficient, the A/E may be required to reimburse the Agency for the cost of any resubmittals required for DEB/BCOM review.

501.14 Compensate the A/E for the additional services in the preparation or presentation of any submittals to secure approvals for environmental or other applicable special requirements such as air and noise pollution provisions of local, state or federal agencies or preparation of environmental impact statements. These additional services are apart from those normally required by the Building Committee, the Art and Architectural Review Board, State Fire Marshal, Division of Engineering and Buildings, Department of Health, Department of Environmental Quality, Department of Conservation and Recreation (Division of Soil and Water Conservation) and Department of Historic Resources as of the date of the **Manual**, including its latest revisions.

501.15 Compensate the A/E in accordance with the contract. The values of the various phases or parts of the contract amount shall be set out in the Contract and/or MOU. The MOU shall also establish whether partial or progress payments are to be made during any phase or part of the project.

501.16 Procedures for the A/E's submission of invoices for services, for payments by the Agency to the A/E and for payments by the A/E to its consultants, subcontractors, and suppliers are set forth in Chapter 3, Sections 315.0 and 316.0 of the **Manual**. Should the amount invoiced exceed the amount of fee earned in the opinion of the Agency, the Agency shall approve payment for that portion of the fee/invoice earned and the Agency shall notify the A/E in writing of the amount not approved and the reason therefore.

501.17 The Agency does not have the authority to override the requirements of the **Manual**, the Budget, or the applicable codes and standards. Requests to deviate from or modify these requirements must be made by the Agency, in writing, with appropriate justification to BCOM. The Agency must receive written approval to make any such modification.

SECTION 502.0 QUALITY OF WORK

The A/E shall be responsible for the professional service, 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 Bureau of Capital Outlay Management for

compliance with VUSBC and this **Manual**'s project requirements and criteria. Errors and deficiencies shall be corrected by the A/E at no additional cost to the Commonwealth.

If the A/E *or the Agency* determines that a meeting with BCOM is necessary or would be beneficial to discuss or review the A/E's approach to designing the project, the A/E shall request the Agency to set up such a meeting with BCOM. *The Agency, at its own discretion, may request such a meeting with BCOM with or without the A/E present.* BCOM will make a reasonable effort to accommodate such requests, considering BCOM's workload at that particular time.

SECTION 503.0 STANDARDS FOR A/E SERVICES

Simply put, the A/E is hired to provide the knowledge, skills and abilities to convert the agency's functional, spatial, and aesthetic requirements for a project into a complete set of documents for bidding and construction and then to ascertain whether the project is constructed in conformance with those documents. The Basic Services normally provided by the A/E are generally described below and are more fully described in Chapter 8 (Project Design Standards and Requirements), Chapter 9 (Design and Procurement Criteria, Policies and Guidelines) and Chapter 10 (Construction Procurement and Administration) as being the responsibility of the A/E. The A/E shall adhere to the design policies outlined in Chapter 7 and Chapter 8 in developing the Project Design. The Agency may request a waiver of policy from the DEB Director for a specific project where technical requirements and life cycle cost considerations justify such a waiver.

The A/E must restrict itself to the authorized scope of work. Deviations from the authorized scope might include incorporating embellishments which increase the cost above programmed amounts for the project, or increase the building area or make major changes in construction criteria, including unauthorized buildings or areas in the project, selecting specific systems or equipment without economic or technical evaluation, or introducing special equipment. It is the A/E's contractual responsibility to design a facility that can be constructed within the "design-not-to-exceed" budget and which conforms with applicable codes and the technical criteria included and/or referenced in the **Manual**.

During the development of the project and through approval of preliminaries, the A/E may expect clarifications and refinements within the general scope of the project and shall make necessary adjustments accordingly. Generally, approval of the preliminary design based on incorporation of review comments and accepted Value Engineering (VE) recommendations will establish the requirements for development of the working drawings and final design of the project. Incorporating VE recommendations justified on payback (which should have been evaluated during preliminary design preparation) and changes in functional layout to achieve greater efficiency or cost savings are considered within the scope of the Contract. Changes or modifications required to conform to *Code* requirements are also considered to be work within the scope of the Contract.

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

CHAPTER 5: BASIC SERVICES AND RESPONSIBILITIES

The A/E shall be thoroughly familiar with the **Manual** and the definitions, scope of services, submittal requirements, technical criteria and standards, standard procedures, and standard forms required.

Public (Commonwealth of Virginia) work and private sector work differ in many respects, and the A/E must understand and take these differences into account as it carries out its basic services, particularly in preparing the construction contract documents. For example:

(1) The Commonwealth cannot limit bidding to a selected list of contractors known to do good work. Unless contractors are prequalified for the project, any licensed contractor may bid. Since bidder's level of knowledge and experience is unknown, drawing and specification requirements must be clear and concise, and must clearly indicate the specific features or work to be provided. The A/E cannot assume that the bidder will include features not specifically called for, and **shall not** leave essential items to be "worked out in the field" or "worked out on the shop drawings."

(2) Sections, details, and dimensions must be provided in sufficient quantity, clarity and detail to enable 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 is particularly important in drawings and specifications related to stairs, special connections for framing, typical details of system interfaces, flashings for roofs and walls, and similar building features.

(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, precast / prestressed concrete elements and common steel structural bolted connections. Other systems can be defined as closed engineered systems if approved by the DEB Director.

(4) In order to encourage competition that maximizes the use of public funds, performance specifications defining a desired result or assembly, or referencing recognized standards that 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 or assembly, then three manufacturers with their products or model numbers shall be referenced. The A/E should not reference both manufactured products and performance criteria because conflicts in the performance criteria and the product performance may create unnecessary conflicts. Sole source and proprietary specifications are not allowed without prior written authorization (*Code of Virginia,* § 2.2-4300.C. and 2.2-4303.E).

Understanding and implementing these basic differences in rules and policies may prevent many costly disputes, claims, and resubmittals by the A/E.

CHAPTER 5: BASIC SERVICES AND RESPONSIBILITIES

SECTION 504.0 A/E BASIC SERVICES

"Basic services" as used in the **Manual** means the application of professional architectural and engineering knowledge, skills, experience and expertise to translate the agency's spacial, functional and adjacency requirements into a facility design described by Plans and Specifications for construction that comply with applicable building codes and **Manual** requirements, are consistent with the Agency's project definition and satisfy the agency's "design-not-to-exceed" budget. After award of a construction contract, "basic services" involve making such reviews, evaluations, inspections, observations, and recommendations as appropriate to assist the Agency in obtaining a constructed facility conforming to the A/E's Plans and Specifications. "Basic services" are usually separated into sequential phases for the purpose of identification and payment.

The A/E shall document in writing summaries of all meetings, direction, guidance, clarifications, site visit observations, field orders and such and provide copies of the documentation to the Owner / Agency and to other participants or attendees as appropriate.

The following generally describes services to be provided during each phase of the project, unless specifically waived:

504.1 Project Initiation, including Schematic Phase

(1) Consult with the Agency to define, clarify and refine the Agency's requirements for the Project; review available data; confirm the scope of the project and the services required from the A/E; review the "design to" cost; establish the quality of materials, aesthetics desired and other factors pertinent to the project. Some or all of this information should be contained in the Capital Project Request. *The Agency should include the user of the facility and the staff responsible for the maintenance of the facility in the project discussions and development of the project criteria and in the review of the A/E's schemes for satisfying the project criteria.*

(2) Identify and analyze requirements of governmental authorities having jurisdiction to approve the design of the project and participate in consultations with such authorities.

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

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

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

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

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

(8) Prepare and submit Schematic material for this phase as described in Chapter 8. (Submittal to DEB may not be required if this information is essentially that which was included in an approved Preplanning Study.)

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

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

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

(12) Prepare and distribute minutes of project meetings or telephonic discussions summarizing discussions, agreements and direction given or received

504.2 Preliminary Design Phase

After written authorization to proceed with the Preliminary Design Phase, A/E shall:

(1) In consultation with Agency and based on the accepted study and/or submittal documents and review comments, determine the scope, extent and character of the project. *The Agency also shall include review and input from the user of the facility and the staff responsible for the maintenance and operation of the facility in the discussions at this phase.*

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

(3) Prepare and submit preliminary design documents as described in Chapter 8 for this phase.

(4) Prepare furnishing and equipment information floor plans that depict the proposed layout and demonstrate that the required items will fit functionally and spacewise in the rooms.

(5) Prepare and make presentations to the Art and Architectural Review Board and Department of Historic Resources as may be required for recommendations for approval.

(6) Prepare and submit a complete systems cost estimate with appropriate backup data. (See Chapter 8 and Appendix E for specific requirements.) In reviewing the estimated construction cost, the Owner should be aware that the A/E has no control over the market price of labor, equipment or materials, or over the Contractor's method of pricing, and that the estimated construction costs provided by the A/E are made on the basis of the A/E's qualifications and experience.

(7) Participate in the Value Engineering Study as described in Chapter 8. Include described A/E participation as a separate additional service in fee proposal.

(8) Prepare and submit to the Agency written responses to all reviewing Agencies comments and, if applicable, provide the technical data the Agency may need to substantiate any waiver request required.

(9) Resolve all outstanding issues, comments from reviewers, and Value Engineering recommendations before proceeding with the Working Drawing Phase.

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

Note: The Agency, including the user of the facility and staff responsible for its maintenance and operation should review the preliminary submittal to assure that the spatial, functional and operational requirements have been satisfied. All outstanding issues must be resolved and agreement reached on how to proceed before the A/E is authorized to prepare the Working Drawings. Changes made after authorization to proceed with Working Drawings may subject the Agency to a claim by the A/E for a change in scope or extra services.

504.3 Working Drawings (Construction Documents) Phase

After written authorization to proceed with the final design, A/E shall:

(1) On the basis of the accepted Preliminary Design documents, the accepted Value Engineering recommendations, and the review comments as finally resolved, prepare Final Drawings (hereinafter called "Plans") to be included in the Contract Documents showing the complete scope, extent and character of the work to be furnished and performed by Contractor(s). Also prepare Specifications for inclusion in the Contract Documents that conform with the sixteen-division (or seventeen-division, if adopted) format of the Construction Specifications Institute. Specify all finishes and provide color selections of all materials and finishes included in the construction contract. See Chapters 3, 7, 8 and 9 for detailed requirements concerning the Plans and Specifications.

(2) Provide technical criteria, written descriptions and design data for the Agency's use in filing applications for permits with or obtaining approvals of such governmental authorities as have jurisdiction to approve the design of the Project; assist the Agency in consultations with appropriate authorities.

(3) Advise the Agency of potential cost overruns, the necessity for unit pricing of any work, the necessity for additive bid items, and assist in preparing and documenting any requests or submittals required.

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

(5) Prepare/update a detailed systems cost estimate with back-up data and submit with working drawing submittal. See Chapter 8 and Appendix E for specific requirements.

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

(7) Prepare and submit completed Plans and Specifications and other documents in accordance with the requirements of Chapters 3, 7, 8 and 9 for approval.

(8) Make any revisions necessary to the Plans and Specifications to be reproduced so that they incorporate resolution and/or correction of all problems raised during review; submit a written response to all review comments to BCOM **prior to printing** the documents for bidding the project. **Do not use the Addendum method to resolve problems or make the corrections required by BCOM comments**.

(9) Assist the Agency in evaluating contractor and/or subcontractor prequalification data if contractors are prequalified for the project.

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

504.4 Bidding Phase

After written authorization to proceed with the Bidding Phase, the A/E shall, unless deleted by the contract or MOU or Change Order:

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

(2) Issue addenda, as appropriate, to interpret, clarify or define the requirements of the Bid Documents. Show Project Code and Title on each Addendum. Each Addendum shall bear the A/E seal, signature and date.

(3) Assist the Agency in determining whether the lowest bidders are responsive and responsible.

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

(5) Requirements for pre-approval of materials proposed by bidders / suppliers are not allowed to be specified. Substitutions are not allowed during the bidding process. The General Conditions of the Construction Contract gives specific procedures for considering substitutions after the contract for construction is awarded. If the A/E determines that other materials are acceptable during the Bid Period, an Addendum shall be issued to modify the specifications and any material that meets the specifications may be provided. "**Alternate bid items" are not permitted**

(6) Attend the bid opening, prepare bid tabulation sheets and assist the Agency in evaluating bids or proposals. Make recommendations for awarding contracts for construction, materials, equipment and/or services.

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

(8) Consult with Agency on the acceptability of any substitute materials and equipment proposed by Low Bidder when the Agency is authorized to negotiate with the Low

Bidder. The acceptability of a substitute material, equipment or work must be documented on the CO-9b, Bid Modification. (Note: See Chapter 9 and the CO-7 General Conditions of the Construction Contract.)

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

504.5 Construction Phase Services Required to be Performed by the A/E (Submittal Review and Construction Administration Services)

The following services are described in Chapter 10 of the **Manual** and in Section 15 (a) - (h) of the General Conditions of the Construction Contract, G.S. Form E&B CO-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 Director of the Division of Engineering and Buildings:

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

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

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

a. Any matters of a technical nature which affect the integrity of the exterior architectural, structural or fire safety systems or which affect the integrity or operation of the mechanical, plumbing, or electrical systems shall be validated by the A/E before a Field Order or Change Order is issued.

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

(4) **Shop Drawings:** The A/E shall review and approve (with or without conditions), reject or take other appropriate action on Shop Drawings and other submittals required of the Contractor. The A/E shall review for conformance with the Project design concept and compliance with the information given in the Contract Documents. Such

reviews and approvals or other action shall not extend to means, methods, techniques, sequences or construction procedures or safety precautions and programs incident thereto. See General Conditions Section 24.

(5) **Equals:** The A/E shall evaluate and determine the acceptability of any equal materials or equipment proposed by Contractor. See General Conditions Section 26.

(6) **Structural and Special Inspections**: The A/E shall provide the services described in Chapter 10 of the **Manual** relating to proper installation of structural systems on the project, including the review of applicable inspection and test reports by the agency's Testing and Inspection entity.

(7) **Disputes between Agency and Contractor:** The A/E shall act as initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the work thereunder and shall make recommendations to the Agency 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.

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

The following construction period services described in Chapter 10 of the Manual and in the General Conditions of the Construction Contract, CO-7 shall also be provided by the A/E as part of its Basic Services unless specifically deleted in the A/E Contract or its MOU and delegated by the Agency to its Project Inspector or separate Construction Administrator entities. (Note: When the service(s) has been delegated to other than the A/E, the description below applies to the person or entity to whom it has been delegated.)

(1) **Visits to Site and Observation of Construction**. An A/E representative who is knowledgeable of the project and competent in each discipline which has trade activities and stages of construction being performed shall visit the site at intervals 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 Agency informed of the general progress of the work in relation to the overall schedule. Document in writing.

(2) **Inspections of Work in progress by the A/E**. During his 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 Project inspector's Daily Report. Document in writing.

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

(4) **Defective Work**. During its monthly site visits and based on its observation during such visits, the A/E may disapprove or reject Contractor(s)'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 Agency 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. Document in writing.

(5) **Contractor Applications for Payment (G.S. Form E&B CO-12)**. Based on the A/E's on-site observations as an experienced and qualified design professional, information provided by the agency'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 Agency, based on such observations and review, that the work has progressed to the point indicated and that to the best of the A/E's present knowledge, information and belief, the quality of such work is generally in accordance with the Contract Documents (subject to an evaluation of such work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents and any other qualifications stated in the recommendation). In the case of unit price work, the A/E's recommendations for payment will include final determinations of quantities and classifications of such work subject to any subsequent adjustments allowed by the Contract Documents and approved by DEB.

(6) **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 Chapter 10 and advise the Agency 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 Agency.

(7) **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 Agency in time to allow Agency and DEB 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 Agency 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 Agency and Contractor of the results of such inspections.

(8) **Contractor's Completion Documents**. The A/E shall receive and review maintenance and operating instructions, schedules, guarantees, bonds and certificates of inspection, tests and approvals which are to be assembled by Contractor(s) in accordance with the Contract Documents, and shall transmit them to the Agency with written comments. The A/E shall receive the As built drawing mark-ups required from the Contractor and transfer data to and prepare the Record Drawings. Obtain and submit microfilm of Record Drawings.

(9) **Project Closeout**. A/E shall provide project closeout services as outlined in Chapter 10.

(10) **Other:** The A/E shall perform all duties described in or reasonably implied by Chapter 10 of the **Manual**, the Construction Contract, including the Plans and Specifications and the General Conditions of the Construction Contract.

SECTION 505.0 WORK NOT INCLUDED IN THE SCOPE OF BASIC A/E SERVICES

The following services are not considered to be included in the A/E's Basic Services. If any of these services are included in the A/E's Contract, they shall be set out separately with fees negotiated and included in the total fixed fee in the Contract. If requested in writing after negotiation of the Contract, they shall constitute extra services as described in Chapter 6 and shall be negotiated and authorized by Change Order to the A/E Contract using G.S. Form E&B CO-11a/e.

505.1 When, after approval of any stage of the design, it is determined that a substantial change in the overall scheme is advisable, and such change is ordered by the Agency with the authority of the Governor, the fixed fee amount for the additional work shall be agreed upon and added to the A/E contract by Change Order.

505.2 When the A/E is directed to prepare applications and supporting documents for Federal government grants, loans, or advances, the fixed fee amount for the additional work shall be agreed upon and added to the A/E contract by Change Order.

505.3 When the agency authorizes or directs the A/E to provide information or data which is normally the agency's responsibility, as described in Section 501, the fixed fee amount for the additional work shall be agreed upon and included in the initial contract as extra services or added to the A/E contract by Change Order.

505.4 When the Agency requests changes to drawings and specifications after the work is under construction, the fixed fee amount for the additional work shall be agreed upon and added to the A/E contract by Change Order.

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

505.6 When extra work is required as a result of damage by fire, unforeseen structural conditions, or other causes beyond the control of the A/E, the fixed fee amount for the additional work shall be agreed upon and added to the A/E contract by Change Order.

505.7 When the Substantial Completion of construction is delayed beyond the Contract Completion Date for more than 30 days by the Contractor or the Agency 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 Agency.

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

505.9 When the A/E is directed to prepare, document and submit an Environmental Impact Study or Report, the fixed fee amount for the additional work shall be agreed upon and added to the A/E contract by Change Order.

505.10 If the Agency decides after execution of the A/E Contract that prequalification of contractors and/or subcontractors is required, the services required of the A/E to assist in evaluating the prequalification data will be considered extra services and a fee for same shall be negotiated prior to the A/E performing the work.

505.11 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 506.0 IDENTIFICATION OF DOCUMENTS AND MATERIALS

The Agency and the A/E shall note the 11-digit project identifier (3-digit agency code, 5-digit project code, & 3-digit subproject code) on **all** project documents, correspondence, memoranda, invoices, submittals and other related material. The A/E shall require that the 11-digit project identifier is shown on all submittals, correspondence, and other documents generated by contractors, subcontractors, suppliers, consultants, testing entities or others associated with the project. If a project is not subdivided into sub-projects, use "000" as the subproject code. Otherwise, use the applicable subproject code.

An example of the format to be used is: 999-99999-999

SECTION 507.0 INTERIOR DESIGN SERVICES FOR FURNITURE, FURNISHINGS AND DECORATIONS FOR BUILDING PROJECTS

507.1 General

The Basic Services of the A/E for a project require the A/E to provide informational floor plans which use basic template outlines to show that the required furniture will fit in the rooms or spaces. (See Section 504.2 above.) 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. (See Section 504.3 above.)

Note: Agencies must pay particular attention to the Commonwealth's definition of "Basic Services" and what is included versus the definition of Interior design used in the private sector and the AIA standard contracts. Do not use standard AIA Contracts or AIA definitions of Basic/Additional Services.

This section discusses requirements for the 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 the **Manual**. A scope of services shall be determined and a fee negotiated for the interior design services described hereafter. These furnishings or furniture items are often procured by the Agency through the Division of Purchases and Supply (DPS) or through the Agency procurement office.

507.2 Scope

Examples of the scope of work for Interior Design services for furniture, furnishings and decorations when procured as an A/E additional service or as a separate contract are listed below. The person providing these services is referred to herein as the Interior Designer.

507.2.1 Selection of furniture, furnishings, and accessories including but not limited to sofas, chairs, tables, screens, planters, art work, carpets, draperies, etc. Most items are available on and should, if possible, be selected through DPS from state contracts.

- If the items are available on state contract, the Interior Designer will recommend the proper item and color, fabric, finish, etc., for the Agency to procure.

- If the items available on state contract are not considered acceptable for the particular application, the Interior Designer will prepare written justifications for the Agency stating why items available on state contracts are not suitable. If procurement of the items off state contract is approved, the Interior Designer will prepare adequate specifications and other data necessary for Agency procurement.

- If the items are not available on state contract, the Interior Designer will prepare adequate specifications and other data necessary for Agency procurement.

507.2.2 The Interior Designer shall select and coordinate all colors, fabrics, etc., with the colors of the building finishes. Although building finishes are selected by the A/E during design and finalized during the review of Contractor submittals, the Interior Designer shall verify actual Contractor applied finishes through on-site verification and/or coordination with the Agency Project Manager.

507.2.3 The Interior Designer shall prepare presentation boards of a minimum size of 15 x 20 inches to show furniture placement plans, catalog cutouts of furniture, furnishings and accessories, color samples, material swatches of draperies, carpets and fabrics.

507.2.4 The Interior Designer shall prepare a minimum of three interior design 8-1/2 x 11 inch binders/packages with accompanying floor plan sheets and deliver to the Agency Project Manager. These binders/packages shall include but are not limited to:

(1) Floor plans at 1/4" = 1'- 0" or larger scale indicating locations of all furniture, furnishings and accessories. These items should be identified with an item number keyed to the presentation boards and the furniture procurement list.

(2) Procurement lists identifying all items to be purchased by model number, contract number (for state contracts), identification number and description (for non-state contract items), quantity, price, etc. Care shall be taken in the selection of all items to ensure that delivery times are reasonably within the agency's schedule and state contracts, if applicable, will not be expired at the time of purchase.

(3) Photographic color reproduction or color copies of the presentation boards reduced to fit 8-1/2 x 11 inch binder or package.

(4) Specifications, drawings and other supporting data for standard procurement and special order items (draperies, custom-built screens or dividers, art work, etc.)

507.2.5 The Interior Designer shall advise, as needed, when changes must be made as a result of changes in requirements, non-availability of items or materials previously selected, etc.

507.2.6 The Interior Designer shall provide placement sheets for each room/area, listing each item of furniture or equipment that will go into the area.

SECTION 508.0 A/E PERFORMANCE EVALUATION

The Agency will evaluate the A/E's performance of the design phase services, including preparation of drawings and specifications, and prepare a G.S. Form E&B CO-8b, Opinion of A/E's Performance (Design Phase), using the current edition posted on the Forms Center and indicating its opinion of the A/E's performance. This evaluation includes a rating of the services performed in such categories as economy and suitability of design, overall engineering quality, adequacy of details and specifications, adherence to schedules and scope, consciousness of budget, responsiveness, and cooperation. The Agency shall provide a copy of the completed C0-8b to the A/E when completed. If the A/E wishes to comment on either evaluation, dispute any part of the evaluation or offer its side of the issue, the A/E may submit a response to the agency (with a copy to BCOM). The A/E's response shall be attached to and made a part of the Agency evaluation form for future reference.

The Agency shall also submit a completed copy of the C0-8b electronically to BCOM at the time of award of the construction contract.

Upon completion of the construction contract, an evaluation of the A/E's performance during construction, G.S. Form E&B CO-14a, Opinion of A/E Performance (Construction Phase), using the current edition posted on the Forms Center and shall be completed by the Agency Project Manager and Project Inspector. The evaluation will emphasize the evaluator's opinion of the quality and constructability of the design, timeliness and response with respect to shop drawing review, clarification of drawings/specifications intent, resolution of construction problems, and cooperation. The Agency shall provide a copy of this evaluation to BCOM and the A/E. If the A/E wishes to comment on either evaluation, dispute any part of the evaluation or offer its side of the issue, the A/E may submit a response to the agency (with a copy to BCOM). The A/E's response shall be attached to and made a part of the Agency evaluation form for future reference.

The completed CO-8a and CO-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 Commonwealth and shall be subject to the same protections. The completed evaluations shall be retained in the A/E's performance file at the Agency 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 agency selection panels in evaluating the A/E during the selection process.

Upon completion of the construction contract, the A/E shall complete an evaluation of the Contractor's performance during construction, G.S. Form E&B CO-14b, Opinion of Contractor's Performance, using the current edition posted on the Forms Center. An Evaluation shall be completed by the Agency Project Manager and Project Inspector. 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/specifications intent, resolution of construction problems, and cooperation. The A/E and Agency may also complete CO-14b evaluations on any individual Subcontractor performing work on the project to note above average or below average or poor performance by a particular subcontractor or supplier. The Agency shall provide a copy of this evaluation to BCOM and 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 Agency (with a copy to BCOM). The Contractor's response shall be attached to and made a part of the Agency evaluation form for future reference.

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CHAPTER 6: FEES AND PAYMENTS FOR A/E SERVICES

SECTION 601.0 ARCHITECTURAL AND ENGINEERING FEES

The Commonwealth's policy is to compensate Architects and Engineers in a fair and reasonable manner for providing the high quality services required by the **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. 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 602.0 A/E FEE PROPOSAL STANDARDS AND GUIDES

The A/E is expected to be thoroughly familiar with the **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 Agency, and the taxpayers of the Commonwealth of Virginia.

602.1 Plans and Specifications:

The A/E should be aware and keep in mind that there are differences between private work and Commonwealth of Virginia 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 *Virginia Public Procurement Act* as clarified and expanded upon in the **Manual**.

602.2 Personnel Classifications and Hourly Rates:

The following shall be used as guidance by the A/E in developing its fee proposal and by the Agency in evaluating the proposal and negotiating the fees for services.

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.

Hourly Rates:

The hourly rates proposed for the various classifications, categories, disciplines, and skill levels should be comparable to the average actual salary of qualified and competent persons in that skill level as marked up or adjusted for overheads and profit. Overhead markup consists of direct technical salary overhead (or "fringes") such as payroll taxes and insurances, 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 overheads and profit.**

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

The Owner shall have the right to require the A/E to submit documentation to support the proposed hourly rates with mark-up factors proposed for use in the fee negotiations and fee determination when the proposed hourly rates exceed what the Owner 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 which is appended to the A/E contract.

CHAPTER 6: FEES AND PAYMENTS FOR A/E SERVICES

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 manhours 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. Where the marked-up hourly rate for any classification exceeds $125.00 per hour for an A/E Project Manager / Coordinator, or exceeds $100.00 per hour for other technical classifications, documentation justifying the higher rate must be approved by the Agency Contracting Officer / Chief Facilities Officer and that documentation of that approval included in the record of the negotiations.

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 delivery of the A/E services to the Agency.
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 / 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 or have CADD skills.

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

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

Landscape Architect - A 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 Service of an Interior Designer" for Fee calculations / negotiations on state work relate to furnishings and accessories which are not part of the construction contract and are further explained in Section 507 of this ***Manual***.

Specification/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 a 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.

602.3 Additional Services

Chapter 5 describes the Basic Services required of the A/E as well as the responsibilities of the Agency and typical additional services that the Agency requests the A/E to perform.

The A/E and Agency 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 CO-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 Agency and/or the State Auditor for a period of three (3) years following conclusion of the Contract.

602.4 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 Owner 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 Commonwealth to be a part of the project design effort and are not an additional service required by the Agency.

Specialized outside computer analysis services **required by the Agency** for the project may be treated as an additional service. The compensation for such specialized computer analyses may be a 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% for A/E overhead and profit.

602.5 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 Commonwealth to be part of the A/E's staffing for the project.

The Agency 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 Agency'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 Agency approved direct cost to the A/E of such special consultant by 10% for the A/E's overhead and profit.

602.6 Reimbursable Expenses:

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

(2) The Agency 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 resubmittals 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 Agency.

(3) Where the A/E is engaged by the Agency to secure the reproduction of the Bid Documents, the A/E may be reimbursed for the actual direct cost of reproduction plus a mark up of 10% to account for the A/E's overhead and handling cost in securing this service for the Agency. The cost of reproduction and sending addenda to address BCOM review comments, clarify or supplement the Bid Documents 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.

(4) The Agency 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 Agency. The Agency 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.

(5) 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.

(6) 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 Agency. The travel rates and the per diem rates for lodging and subsistence shall not exceed the maximum amounts allowable for such expenses in the Commonwealth's Travel Regulations. Records supporting such requests for reimbursement shall be subject to audit by the Agency and/or the State Auditor.

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

(8) "The Agency will normally pay BCOM for the first schematic submittal review, the first preliminary submittal review, the first working drawing review and the review of the one corrected and highlighted bid set of documents. If additional submittals and reviews are required, the agency may require the A/E to reimburse the agency (by change order to the A/E contract or otherwise) for the actual costs of such additional review unless the A/E can submit justification satisfactory to the agency demonstrating why the A/E should not be held accountable / responsible for such costs."

602.7 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.

"Interior design" as used in this **Manual** as an additional service pertains to the design, selection, arrangement and color coordination of furniture, furnishings and accessories. These items include but are not limited to desks, chairs, lamps, tables, screens, planters, artwork, draperies and similar furnishings which are procured separately from the construction contract.

The "interior designer" shall verify the actual building surface finish colors applied by the Contractor and coordinate the selection of colors, fabrics and textures with the building colors. The "interior design" services also include the coordination with and preparation of procurement materials for the Division of Purchases and Supply for the furniture, furnishings and accessories.

SECTION 603.0 A/E FEE PROPOSAL WORKSHEET (FORM CO-2.3)

The Architect/Engineer shall prepare a detailed fee proposal using the G. S. Form E & B C0-2.3. The hourly rates and the manhours proposed should relate to the rates and times required for a qualified and competent person in that skill level to perform the work. Supplemental information shall be attached as necessary to support the proposed drawings, hourly rates and manhour 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.

NOTE: It is generally perceived that a person being compensated at a rate higher than the norm would be more efficient / productive / take less manhours than a person being compensated at a rate below the norm.

- 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 manhours 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 Prebid 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 data from the Contractor's "As Built" set of drawings and specs to the "Record Copy" reproducibles. This work also includes the Professional / Technical Level effort to compare the "As Builts" to the "Record Copy" for correctness.

- Construction Observation and Administration includes the Professional / Technical level effort to perform the on site 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 manhours and marked up hourly rates similar to the Basic Services Fee Proposal.

SECTION 604.0 PROPORTIONING OF THE A/E FEE AND PAYMENTS:

604.1 Phases of the 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 Owner'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 M O U. The proportioning of the fee should account for and show the negotiated amount for the following phases or facets of work:

- **Predesign services (Additional Services such as studies and similar activities.)**

- **Design Phase services include**
  - Schematic phase
  - Preliminary phase
  - Working drawing phase

- **Bidding phase services**

- **Construction phase services include**
  - Shop drawing/submittal reviews and admin
  - Site visits, inspections and admin

- **Project closeout**
  - Maintenance & Operations Manuals
  - Record Drawings

- **Budgeted Reimbursable Amounts**

- **Additional services (itemize)**

CHAPTER 6: FEES AND PAYMENTS FOR A/E SERVICES

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 Agency 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 CO-2.3 Fee Proposal Worksheet used for negotiations, the total negotiated A/E fee (excluding additional services and reimbursables) will be proportioned as follows:

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

In consideration of the services required by 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:

DESIGN PHASE SERVICES

(1) **Schematic Design Phase** - Value of the Schematic Phase is 20% of the Design Phase Fee. This phase is complete when outstanding issues are resolved, the schematics are approved, and the A/E is authorized to prepare Preliminaries.

(2) **Preliminary Plans and Specifications (Design Development Phase)** - Value of the Preliminary Phase is 30% of the Design Phase Fee. However, a proportional part may be billed monthly during the development of the documents. This phase is complete when outstanding issues are resolved, the preliminaries are approved as evidenced by completion of the conditions shown on the Form CO-5, and the A/E is authorized to prepare Working Drawings.

(3) **Working Drawings and Specifications (Construction Documents Phase)** – Value of the Working Drawings Phase is 50% of the Design Phase Fee. However, a proportional part may be billed monthly during the development of these documents. This phase is complete when outstanding issues are resolved, all changes have been made to the documents so that they are ready for bidding, and the working drawings and specifications are approved as evidenced by completion of the conditions shown on the Form CO-6**.**

Note: The Agency 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 315 of this **Manual**.

CONSTRUCTION PHASE SERVICES

(4) **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.

(5) **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) **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 Agency, as set forth in Chapter 10.

604.2 Payments to the A/E:

Payments to the A/E shall conform to the requirements in Section 315 of the **Manual**.

604.3 Payments by the A/E:

Payments by the A/E to its consultants, subcontractors and suppliers shall conform to the requirements in Section 316 of the **Manual**.

SECTION 605.0 DETERMINING CHARGES FOR CHANGES IN THE SCOPE OF WORK:

605.1 Changes to the Scope of Services:

605.1.1 The Agency shall notify the A/E in writing when a change in scope or "extra services" are required. The Agency 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 (CO-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.

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

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

Therefore, a revision to the **Construction and Professional Services Manual** (and the **A/E Manual**) shall be effective on the date stipulated and shall apply to **any and all** projects for which an approved C0-6 has not been issued as of the date printed on the revision.

Prior to approval of Preliminaries and issuance of the CO-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 Agency of this claim and submit documentation to the Agency to clearly support such claim within 60 days of the distribution date of the Revision.

If, after the CO-5 is issued and before the CO-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 to the Agency an itemized list of the additional work required by the revision. The Agency may obtain direction, guidance, and/or waivers from the Division of Engineering and Buildings as to which proposed additional A/E work items may be waived and which work items are valid extra work items. The Agency shall then provide direction to the A/E and, if necessary, issue a change order for the work.

Agencies and their 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.

605.2 Hourly Rates for Changes in Work:

The Agency 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. Acceptable categories are indicated in Section 602.2.

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

605.3 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 Agency) shall be construed to be time engaged on the project up to the completion of an 8 hour workday.

605.4 Invoices for Changes in Work:

Invoices or statements of expenses incurred by the A/E for reimbursables and for work authorized to be performed on an hourly rate or unit cost basis shall be rendered to the Agency 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 Agency. The A/E's disbursement and job records shall be subject to audit by the State for work done on a reimbursable and/or hourly or unit cost basis. The Agency 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.

605.5 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 Agency and/or the State Auditor 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 Agency and/or the State Auditor for a period of three (3) years following conclusion of the Contract.

SECTION 606.0 CHANGES TO A/E CONTRACT:

Changes in the Scope of Work and/or Cost of the A/E Contract (GS Form E&B CO-3 and CO-3.2) will be documented through the execution of a GS Form E&B CO-11a/e, A/E Contract Change Order. Any A/E contract change order which increases the original contract amount by more than 25 percent or $50,000, whichever is greater, must have the prior approval of the Governor 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 Contract Price, whichever is greater, and all subsequent A/E Change Orders which increase the Contract Amount must have the prior approval of the Governor or his designee. Submit the CO-11a/e in two copies to the Bureau of Capital Outlay Management for approval.

700. GENERAL

This Chapter contains Division of Engineering and Buildings (DEB) Standards which clarify the applications of Uniform Statewide Building Code (USBC) requirements as they pertain to buildings on state property, DEB Standards as they pertain to buildings on state property, and technical requirements for all state owned buildings and structures. The USBC is, in many respects, a performance code. The requirements in Chapter 7 prescribe the standards and requirements for buildings on state property which may be higher than the minimum requirements for the private sector owner but are necessary to meet the energy, performance, maintenance, safety, and accessibility standards for public buildings. The agency and A/E must design the facilities to meet the standards and requirements stated in this Chapter.

SECTION 701.0 BUILDING CODES & APPLICATION OF REQUIREMENTS

Codes and standards applicable on all state owned buildings and structures.

701.1 Administration: The *Code of Virginia* delegates authority for Building Code enforcement in state buildings to the Department of General Services (DGS) acting through the Division of Engineering and Buildings (DEB), and to the Department of Housing and Community Development (DHCD) acting through the State Fire Marshal's office (FM). DHCD is charged with adopting a USBC and the State Fire Marshal is charged with providing assistance to DEB in enforcing the Building Code and inspecting state-owned buildings (§ 36-98, *Code of Virginia*).

DGS, acting through the Division of Engineering and Buildings, is the designated building official for state-owned buildings. DEB is charged with reviewing plans and specifications, granting modifications, issuing Building Permits, issuing Certificates of Occupancy, and establishing rules and regulations as may be necessary to carry out its function as building official (§ 36-98.1, *Code of Virginia*).

DGS (DEB) and DHCD (FM) share responsibility for administering the Building Code as it applies to state-owned buildings. The Memorandum of Understanding that outlines their respective responsibilities is contained in Appendix L.

701.2 Building Code: Virginia Uniform Statewide Building Code (VUSBC)
The Building Code for all state-owned buildings is the current edition of the Virginia Uniform Statewide Building Code (VUSBC) with supplemental requirements, instructions, and modifications as indicated in this **Manual**.

701.3 Accessibility Standards: Uniform Federal Accessibility Standards (UFAS), 1988 edition, Accessibility standards for all state-owned buildings are as indicated in this **Manual**. VUSBC Chapter 11 and VUSBC-IPC Section 404 do not apply, except as indicated in this **Manual**. In case of conflict, the Manual requirements apply.

701.4 Energy Conservation Standards: Energy Conservation Standards for all state-owned buildings are as indicated in this **Manual**. In case of conflict, the **Manual** requirements apply.

701.5 Life Safety Code: Life Safety Code (NFPA 101) applies only to state hospital and health care facilities accredited by the Joint Commission on Accreditation of Hospitals (JCAH) and accepting federal Medicare/Medicaid funds. In case of conflict, the most stringent requirements apply.

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

Title II, Americans with Disabilities Act
Public Building Safety Regulations
Industrialized Building and Mobile Home Safety Regulations
Amusement Device Regulations
Virginia Statewide Fire Prevention Code
Certification of Tradesmen Standards
Department of Conservation and Recreation - Erosion and Sediment Control Regulations (VR 625-02-00)
Department of Conservation and Recreation - Stormwater Management Regulations (VR 215-02-00)
Department of Health Regulations
Department of Environmental Quality, Water Division, Regulations

701.7 Applicable Code: It is desired that state buildings be designed to conform to the latest code requirements.

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

1. The applicable code will be the VUSBC edition in effect at the time outstanding issues have been resolved, preliminary drawings are approved (usually on the C0-5), and authorization is given to proceed with development of the working drawings.
2. If preliminary drawings are approved during the 12 months before the effective date of a new edition of VUSBC, the applicable code will be designated by BCOM at the time of the preliminary approval.
3. If construction of the project does not begin within one year of the approval of the CO-6, the agency shall request, in accord with Section 701.7.2 below, confirmation from BCOM as to what code applies.

701.7.2 Reactivated Projects: Prior to reactivating a project that has been inactive for a period during which the effective code has changed; the Agency shall contact the Bureau of Capital Outlay Management for a determination of what code applies. BCOM will confirm any change of code in writing. The plans and specifications shall be revised as necessary to comply.

701.8 Modifications of Code Requirements: If after discussions with the Agency a modification to the requirements of the code is thought to be necessary, the head of the Agency 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 waive or grant a modification to the requirements of the VUSBC will be addressed to the Director of the Division of Engineering and Buildings.

701.9 Code Clarifications: Code clarification requests should be made in writing to the BCOM Director. The following are code clarifications that shall be applied to state owned buildings and structures:

701.9.1 Buildings at Colleges and Universities:

1. Buildings for business and vocational training shall be classified and designed for the Use Group corresponding to the training taught.
2. Academic / educational buildings having classroom-type education functions (including associated professor / teacher office spaces), shall include the following additional requirements:
   a. Provide a Fire 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.
3. Buildings housing research, testing and science laboratories shall include a Fire Protection Signaling System
4. Dormitories, Fraternity and Sorority Houses and similar dwelling units with sleeping accommodations – provide one of the following:
   a. Written University Policy which prohibits the use of these residences as housing for persons / groups / occupants for periods of less than 30 days, or
   b. Design that complies with the most stringent requirements of both Group R-1 (Hotels) and Group R-2 (Dormitory)

701.9.2 Residences for Rent

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

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

701.9.3 Temporary Change of Use and Occupancy

Temporary change of use and occupancy requires a Temporary Certificate of Occupancy. (Examples include dormitories rented for less than 30 days, armories used as sleeping quarters, and storage spaces used for business or assembly.) The application for Temporary Certificate of Occupancy must be complete, and include an Operational Policy that provides safety measures to address the life, health, and welfare of the occupants.

701.9.4 Maximum Occupant Load

In determining the means of egress requirements, the number of occupants for whom means of egress facilities shall be provided shall be established by the largest number computed in accordance with the Actual number, Maximum Floor Area Allowance per Occupant, and Number by combination.

1. Actual Number: The actual number of occupants for whom each occupied space, floor or building is designed.
2. Maximum Floor Area Allowance per Occupant: The number of occupants computed at the rate of one occupant per unit area as prescribed in the Maximum Floor Area Allowance per Occupant table in the applicable Virginia Uniform Statewide Building Code.
3. Number by combination: Where occupants from an accessory space egress through a primary space, the calculated occupant load for the primary space shall include the total occupant load of the primary space plus the number of occupants egressing through it from the accessory space.

701.9.5 Safety Equipment Not Required by Code

Safety equipment, including Fire Detection, Fire Alarm, and Fire Suppression Systems, which are not required by code, but are provided at the Owner'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. Incomplete systems are considered to be hazardous because such systems create a false sense of security for the occupants, and may result in life or fire hazards to adjacent areas. However, providing 'partial systems' to certain spaces such as storage spaces which will improve safety and not give a false sense of security to building occupants will be consider on a case-by-case basis where 'partial systems' are allowed by the USBC.

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

701.9.7 Reroofing – Secondary (Emergency) Roof Drains: If Secondary (Emergency) Roof Drains are not a part of the existing construction, then Secondary (Emergency) Roof Drains shall be provided for all reroofing work. If the average depth of accumulated water exceeds 4 inches, then structural calculations shall be submitted that demonstrate that the structure is adequate to sustain the accumulated water up to the elevation of the Secondary (Emergency) Roof Drains in accord with ASCE 7, Section 8.5.

701.9.8 Roof Load: The minimum design superimposed load for flat roofs and roofs with a slope of less than four (4) inches per foot shall be as indicated on the following Figure 701.9.8, Minimum Superimposed Loads for Design of Low-Sloped Roofs. Generally, roofs in areas in and west of the Blue Ridge Mountains and the indicated areas of Northern Virginia shall be designed for a minimum design superimposed load of 30 pounds per square foot. Indicated areas east of the Blue Ridge Mountains shall have a minimum design roof superimposed load of 20 pounds per square foot for roof design. Greater live, snow and/or combination loads shall be used where local experience, calculations, drifting or other conditions dictate.

701.9.9 Snow Load: All new buildings and additions shall be designed for snow loads as required by the VUSBC (International Building Code).

701.9.10 Wind Loads: All new buildings and additions shall be designed for wind loading as required by the VUSBC (International Building Code). See VUSBC Table 1609.

701.9.11 Seismic Loads: All new buildings and additions shall be designed for seismic loading as required by the VUSBC. See Figures 701.9.11A and 701.9.11B for maps clarifying seismic coefficients S_1 and S_S. When a Project is located between contours, use straight line interpolation or the value of the higher contour.

701.9.12 Design Data: The Structural Design Data given on the Construction documents shall comply with VUSBC 1603 and unless meeting the exception in VUSBC 1603.1, shall include the following additional information.

- Building Category from VUSBC Table 1604.5. Note: Do not use Table 1-1 in ASCE 7.
- Seismic Criteria: S_S from VUSBC Figure 1615(1), S_1 from VUSBC Figure 1615(2), R from VUSBC Table 1617.6, and the Seismic Design Category from VUSBC 1616.3.

701.9.13 Quality Assurance: When required by VUSBC 1705 or 1706, a Quality Assurance Plan shall be prepared and noted as such in the Construction Documents. The Project Manual shall include Form DGS-30-053, CO-6c, "Contractor's Statement of Responsibility for Quality Assurance".

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

701.9.15 ASME/ANSI A17.1, Rule 102.2(c) (4): In order to prevent people from being trapped in an elevator when power is automatically disconnected in accord with the requirements of ASME/ANSI A17.1, Rule 102.2 (c) (4), the policy below shall be applicable for all new and remodeled state building elevator systems.

Before power is automatically disconnected in accord with ASME/ANSI A17.1, Rule 102.2 (c) (4), provide controls necessary to send the elevator a safe designated recall level with a means of egress. This may be accomplished by one of the following:

1. Heat detectors required by Rule 102.2 (c) (4) shall provide a signal to initiate Phase I Fireman's Service Emergency Recall Operation Rule 211.3a. The activation sequence shall be similar to requirements for smoke detectors in Rule 211.3b. No additional heat detectors are required other than those called for by Rule 102.2(c) (4).
2. Provide an elevator travel time delay, equivalent to the elapsed time for an elevator to travel from its farthest stop to the designated recall level plus ten (10) seconds before power to the elevator equipment is disconnected and pre-action sprinkler is activated as required by Rule 102.2(c)(4). [Elevator Travel Time Delay = the time for an elevator to close its doors, under Phase I conditions, return to the designated recall level, and open its doors. If there are multiple elevators, the elevator having the greatest travel time shall be used in determining the time delay.] See Sample Circuitry Diagram in Figure 701.9.15.

701.10 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 Director, Division of Engineering and Buildings, acting in his capacity as Building Official for state-owned buildings, and after consultation with the State Coordinator for the National Flood Insurance Program [the Department of Conservation and Recreation (DCR)]. A copy of Executive Memorandum 2-97 has been included in Appendix J for information.

701.11 Fire Safety Review: Fire Safety reviews will be performed by the Bureau of Capital Outlay Management for projects in accord with Building Permit Policy for Construction – State Owned Buildings and Structures located in Appendix P.
Exception: Minor alterations such as relocating a sprinkler head within a space or addition of not more than 4 sprinkler heads may be reviewed and approved by the Regional Office of the State Fire Marshal.

701.12 Fire Protection Shop Drawings: Fire Suppression, Fire Detection, and Fire Alarm Shop Drawings shall be reviewed and approved prior to the work being installed. Where a complete fire protection system is designed and shown on the construction documents approved for bidding, the A/E may include a stipulation on the drawings and in the technical specification that the "Contractor shall bid and install the fire protection system as shown in the documents. Deviations in materials, locations, configurations or sizes proposed by the Contractor will be reviewed under the provisions of Section 26 of the General Conditions as a 'Substitution'."

701.12.1 A/E Shop Drawing Review: When the design (including Fire Suppression and Fire Detection & Alarm) is complete and code compliant at the Working Drawing submittal, then Shop drawings and submittal data shall be reviewed and approved by the A/E of record. Where the Agency permits the A/E to show an incomplete fire protection system design on the Working Drawings / construction documents, the A/E shall review and approve the fire

protection shop drawings and then submit the A/E approved Fire Protection Shop Drawings to BCOM for final approval of conformance with the Codes and Standards.

701.12.2 BCOM Shop Drawing Review: When the design (including Fire Suppression and Fire Detection & Alarm) is not complete or not code compliant, at the Working Drawing submittal, then Shop drawings and submittal data shall first be reviewed and approved by the A/E of record. If 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 BCOM for final review and approval.

701.13 Construction Inspection: In addition to the required Structural and Special Inspections, A/E Inspections, and Substantial Completion Inspection by the Building Official, the Owner shall cause Construction Inspections to be made to assure that the work performed is in accord with the approved Building Permit documents. See Chapter 10 for information on the scope of Structural and Special Inspections and the A/E Inspections.

701.13.1 Required Inspections: Inspections shall be performed in accord with the code, including the following:

1. Footing, excavations, and reinforcement materials for concrete footings prior to concealment
2. Foundation systems during periods of construction necessary to assure code compliance.
3. Preparatory work prior to the placement of concrete
4. Structural members and fasteners prior to concealment
5. Electrical, mechanical, and plumbing materials, equipment, and systems prior to concealment
6. Energy conservation material prior to concealment
7. Fire Suppression Sprinkler / Clean Agent System prior to concealment
8. Fire Detection & Alarm System prior to concealment

(Note: Part of Required Inspections may be included in the Structural and Special Inspections and the A/E Inspections. Despite this, Construction Inspections shall be made of the work as it is being performed to assure that conditions inspected by the Structural and Special Inspections and the A/E Inspections are preserved.)

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

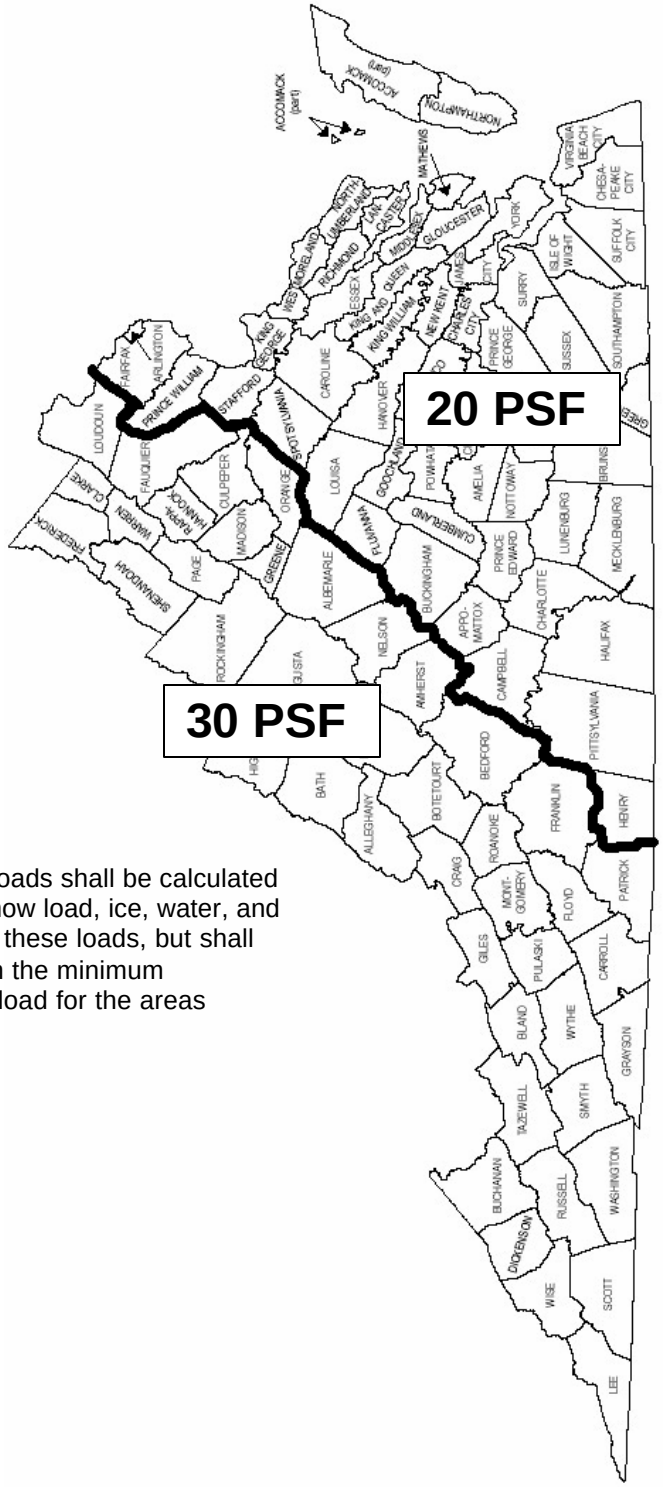
1. Individual certified by the Department of Housing and Community Development in the specialty being inspected
2. Virginia licensed Architect or Engineer
3. Individual approved by the Building Official upon recommendation of the Agency Facilities Officer based on the knowledge, skill, and experience of the proposed inspector.

701.13.3 Inspection Reports: Inspection reports shall be made on all inspection work. Final Report shall be made at the completion of the work. Reports shall meet the following:

1. Submitted within 30 days of completion of the work item being inspected and prior to the Substantial Completion Inspection.
2. Indicated deficiencies in the work shall be followed by reports that indicate the action taken to correct the work and acceptance of the work.
3. Formatted at the discretion of the Agency, but shall include a number and title (as indicated in Required Inspection), date, and signature of the Inspector. Final Report shall be so entitled, and indicate that the work was complete in accord with the approved Construction Documents (indicate the date of the approved Construction Documents and include a list of Addenda and Change Orders), or enumerate the deficiencies and corrective actions taken (do not include Addenda and Change Orders previously listed) to comply with the code.

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

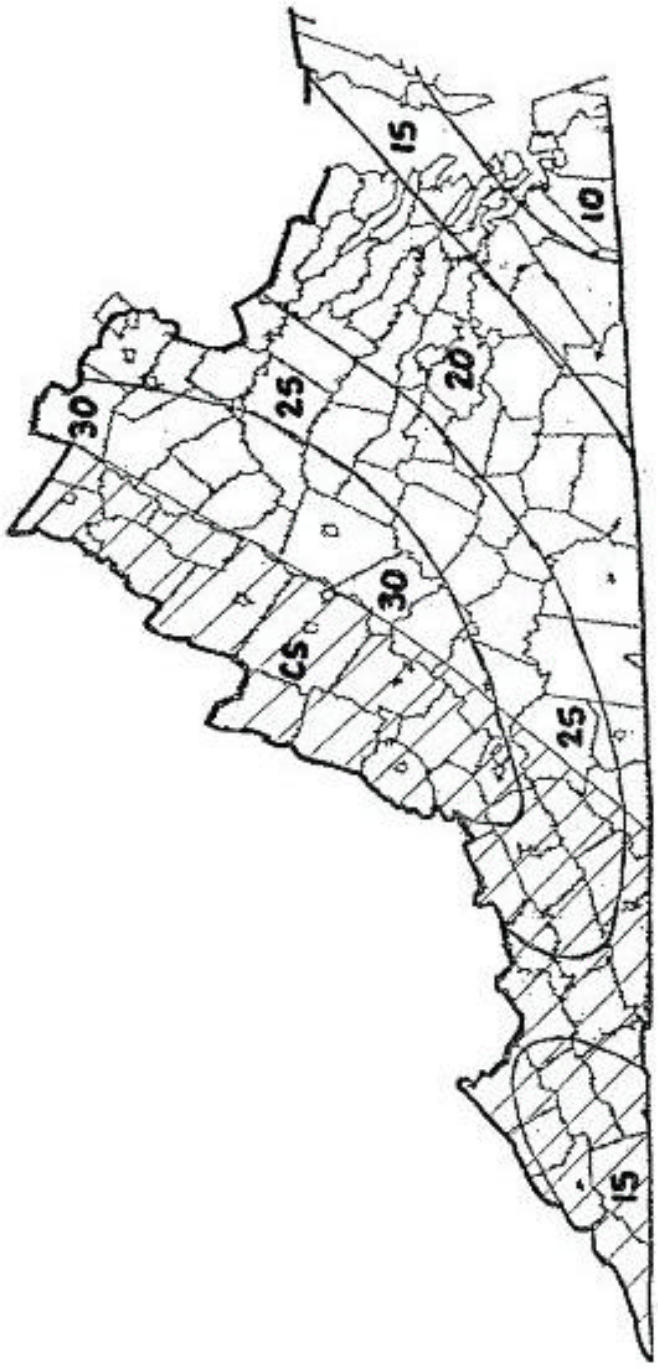
This Space between the text and the Figure 701.9.8 left intentionally Blank.



Actual design loads shall be calculated for live load, snow load, ice, water, and combination of these loads, but shall be no less than the minimum superimposed load for the areas shown.

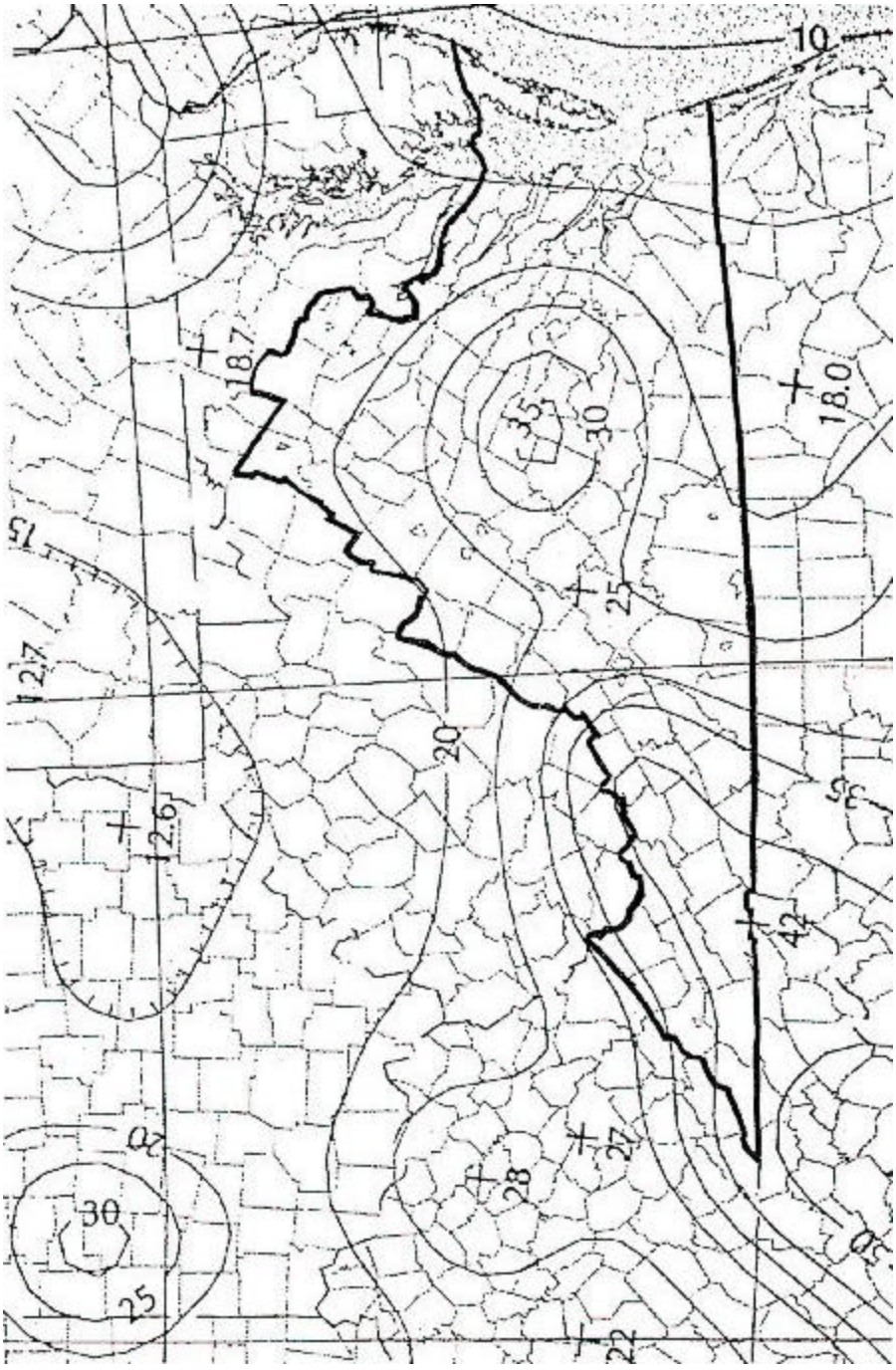
Minimum Superimposed Loads for Design of Low-Sloped Roofs

Figure 701.9.8



Ground Snow Loads
Taken from VUSBC Figure 1608.2
Courtesy of the International Code Council, Falls Church, Virginia.

Figure 701.9.9

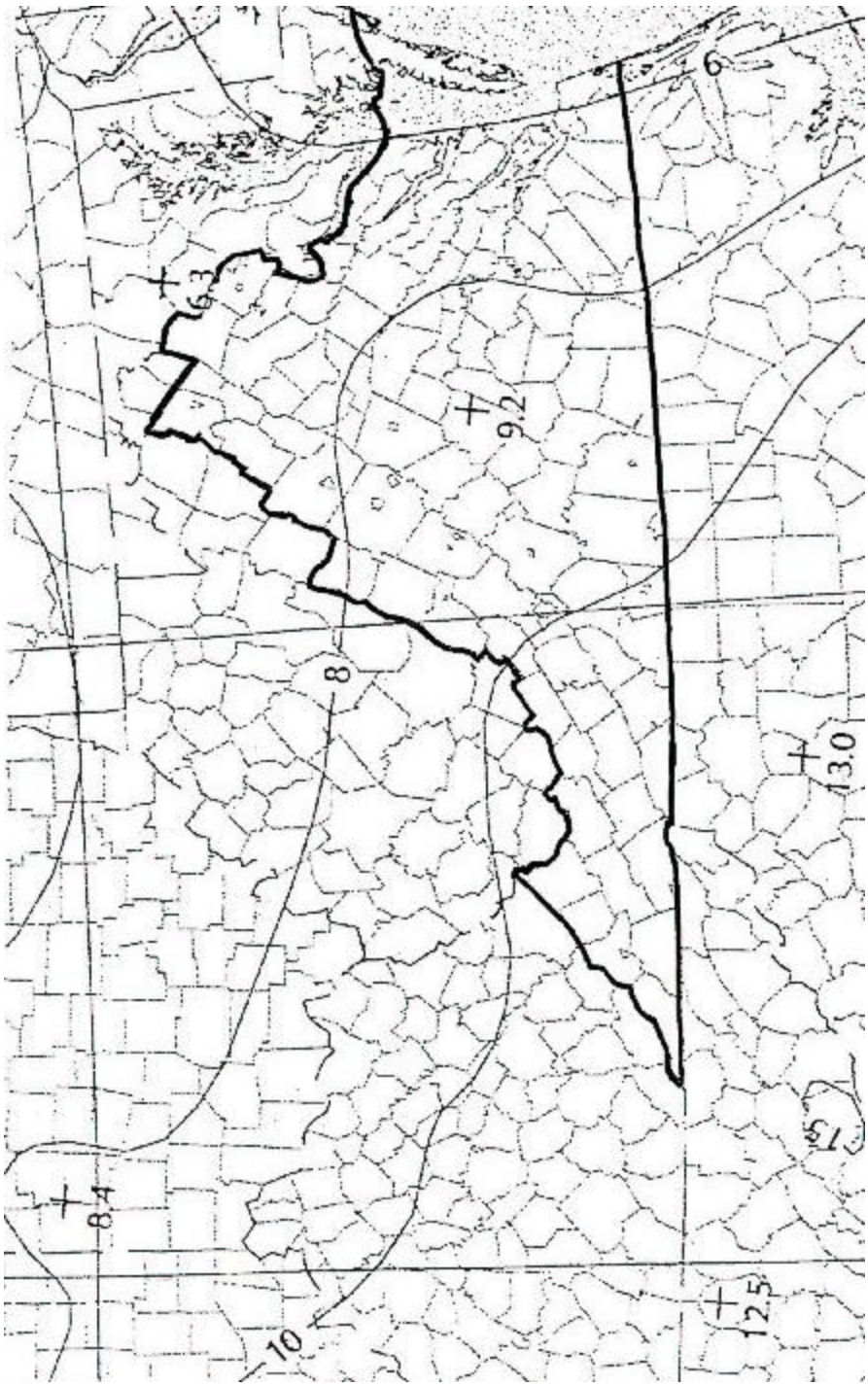


S_s, 0.2 sec. Spectral Response Acceleration, % g

Taken from VUSBC Figure 1615(1)

Courtesy of the International Code Council, Falls Church, Virginia.

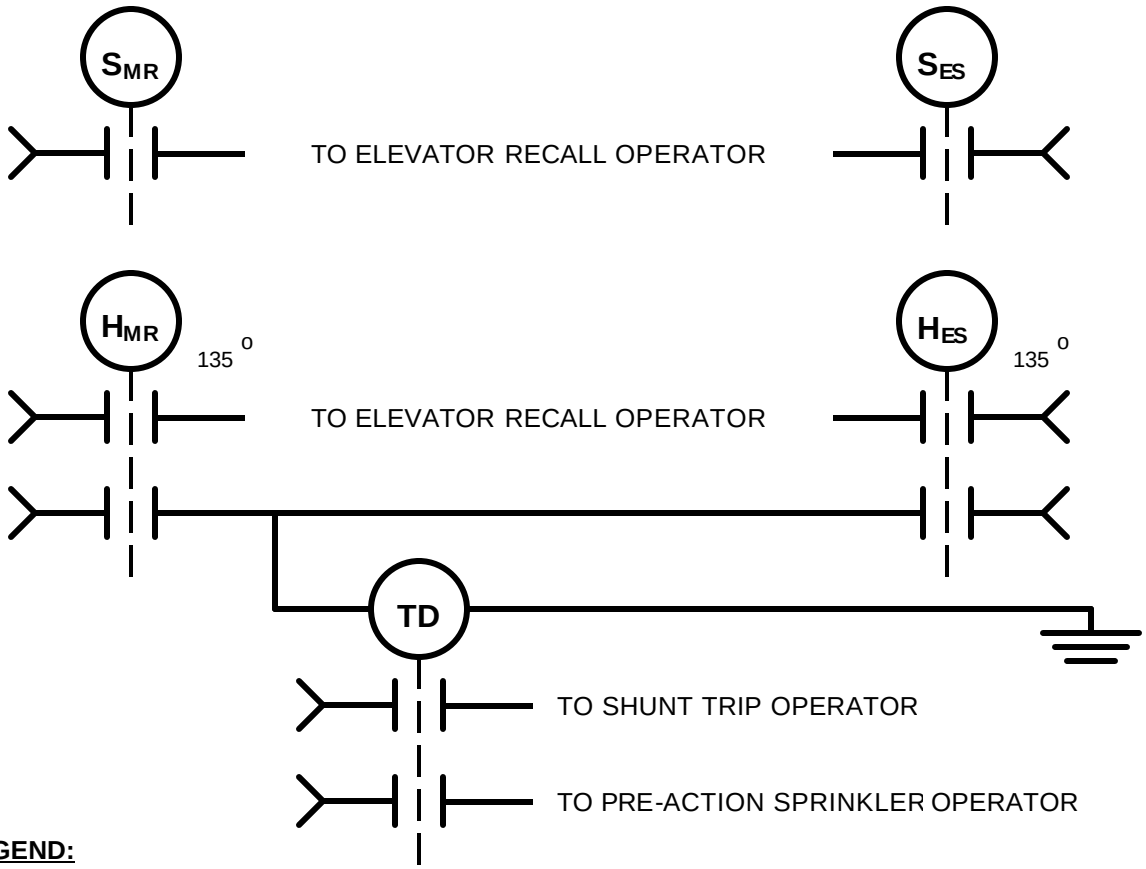
Figure 701.9.11A



S_1, 1.0 sec. Spectral Response Acceleration, % g

Taken from VUSBC Figure 1615(1)
Courtesy of the International Code Council, Falls Church, Virginia.

Figure 701.9.11B



LEGEND:

- H_{MR} Heat Detector in Machinery Room
- H_{ES} Heat Detector in Elevator Shaft
- S_{MR} Smoke Detector in Machinery Room
- S_{ES} Smoke Detector in Elevator Shaft
- TD Time Delay Relay
- Electrical Power
- Contact

OPERATION

After energization of heat detector, the time delay relay picks up when preset time has expired. This time is determined by the total elevator travel time in the longest run scenario, with an additional 10 seconds added. When this total time is satisfied, the timer contacts are closed and that will result in the shunt trip and pre-action operators being energized.

Elevator Recall Sample Circuitry Diagram

Figure 701.9.15

SECTION 702.0 ACCESSIBILITY STANDARDS for STATE OWNED FACILITIES

The Americans with Disabilities Act, 1990: Title II, Subtitle A, (and not Title III) of the Act applies to all state owned buildings and structures. The accessibility standards are the **Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG), published July 23, 2004, excluding the Architectural Barriers Act (ABA) Scoping requirements**. (Access Board, Suite 1000, 1331 F Street, NW, Washington, D.C. 20004-1111 or www.access-board.gov) For technical assistance, call the Office of Technical and Information Services at (202) 272-2253 or email ta@access-board.gov. In addition, Non-Discrimination Under State Grants and Programs promulgated by the Board for Rights of Virginians with Disabilities and effective on October 1, 1990, implement § 51.5-40, Code of Virginia applies.

702.1 Conflicting Standards / Modifications: 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. As ADA is a federal law, modification of the ADA law requirements cannot be granted by The Division of Engineering and Buildings. The Division of Engineering and Buildings reviews documents for compliance with these Standards during its normal review of capital outlay projects. Such review does not relieve design consultants from responsibility for designing in accord with the standards and Federal Law.

702.2 Clarifications for State Owned Buildings and Buildings on State Owned Property: Accessible facilities must be provided at the completion of construction. Adaptable facilities do not meet the requirements for accessibility in state buildings and buildings constructed or placed on state owned property.

702.2.1 Elevator Access: Section 206.2.3, *Accessible Routes – Where Required – Multi-Story Building and Facilities* clarification: All passenger elevators shall be accessible to the disabled.

702.2.2 Elevator Access: Section 206.2.3, *Accessible Routes – Where Required – Multi-Story Building and Facilities, Exception 4* does not apply. Residential facilities shall include at least one accessible route to connect each story and each mezzanine in multi-story buildings and facilities.

702.2.3 Stairways: Section 210.1, *Stairways – General* clarification: All stairways shall be accessible to the disabled.

702.2.4 Stairways: Section 210.1, *Stairways – General*, Exception 3 does not apply. Aisle stairways for assembly areas shall comply with Section 504.

702.2.5 Handrails: Section 505.10 *Handrails – Handrail Extension* clarification: Handrail extensions shall not be turned to the side or back. Handrail extensions shall continue straight and parallel to the stair run.

SECTION 703.0 SPECIAL PROCEDURES FOR ASBESTOS ABATEMENT

Asbestos shall be abated in state owned buildings and shall not be included in new construction

703.1 General Asbestos Requirements: Buildings constructed prior to 1980 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.

703.1.1 Renovation / Demolition / Addition projects in pre-1980 Buildings: Owner shall have all of the existing structures(s) surveyed/inspected by a Virginia licensed asbestos inspector for asbestos-containing materials (ACM) prior to submittal of the preliminary design for capital outlay projects, and prior to submittal of the construction documents for non-capital outlay projects. All suspect materials must be physically sampled and analyzed. The asbestos surveyor/inspector shall provide the Owner with a report of the survey/inspection which indicates those places where samples were taken, the results of the analyses, and drawings which indicate those areas, if any, where asbestos was found and where asbestos-containing materials must be abated or encapsulated. *(Note: It is recommended that the Agency have the testing performed prior to making its funding request. An estimated cost for asbestos abatement, if suspected, must be included in the cost estimate supporting the budget request.)*

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 Owner shall have a licensed asbestos designer in concert with the A/E prepare an asbestos abatement plan and prepare or update the agency Asbestos Management Plan as required by the Department of General Services letter dated May 1, 1989, and § 2.2-1164, 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.

703.1.2 Roofing Materials: Roof shingles, built-up roofing, flashings, and mastics which contain asbestos materials shall be removed and disposed of in approved and licensed disposal sites in conformance with the recommendations contained in the Asbestos Survey / Inspection report and the Asbestos Management Plan.

703.2 Asbestos Disclosure Statement: The A/E shall note on the drawings and in the specifications for all projects that no asbestos containing materials shall be used on the

project. 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:

1. *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.*

2. *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.*

3. *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.*

4. *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.*

703.3 Asbestos Removal: All ACM that will be disturbed as a result of a renovation, demolition, or addition work must be removed. The Owner 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.

703.4 Asbestos Documents: Project drawings and specifications shall be submitted to the Bureau of Capital Outlay Management with the Working Drawings submittal for all projects if abatement is to be performed.

703.5 Asbestos Contracting: The Agency 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.

703.6 Asbestos Abatement Contractor: 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.

703.7 Removal and Replacement of Sprayed-on Fireproofing: The A/E shall contact the State Fire Marshal early in the design phase to verify the original purpose of the fireproofing material to be removed or replaced and what, if anything, must be done to restore the fire resistive characteristics. Plans and specifications shall be submitted to the Fire Marshal 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 Fire Marshal, indicate the construction date, original and present uses, height of floors in feet, whether sprinkled, and any other information that may assist the Fire Marshal in his determination. If sprayed-on ACM is to be replaced, the Agency or its A/E shall also submit copies of the specifications for the intended replacement material and the bridging encapsulant specified by the asbestos project designer for review. The bridging encapsulant 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.

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

703.9 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. The Commonwealth of Virginia, 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 the Commonwealth of Virginia *General Conditions of the Construction Contract* 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 (e) to name the A/E as an insured party is waived. The A/E will include such waiver in a supplemental general condition to the project General Conditions.

703.10 Conflict of Interest Policies: The asbestos surveyor / inspector, the asbestos abatement designer, the Owner's asbestos management plan author and any other person or firm hired by the Owner 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 agencies, and the monitoring personnel shall be accountable only to Agency 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.

703.11 Asbestos Project Inspectors (Monitors): Each Agency shall ensure that asbestos abatement project specifications are followed by using a Virginia licensed project monitor to monitor the project and perform air quality testing throughout the duration and at final completion of the project. Further, on renovation and/or addition projects where Asbestos Containing Material (ACM) is left in place adjacent to the intended Work area, or is left in the Work area but is not anticipated to be disturbed by the Work, the agency shall use a Virginia licensed project monitor to monitor the renovation contractor's work to help avoid any disturbance of asbestos materials and potential contamination of the Work area or any other areas or systems.

703.12 Demolition / Renovation Notification Requirements: Any proposed demolition of a building which contains asbestos must be reported well in advance of any abatement activity

to the United States EPA as required by CFR Title 40 Section 61.146-147, as amended, and to the State Air Pollution Control Board. The Environmental Protection Agency interprets these regulations to include non-friable materials which may be disturbed and rendered friable by the demolition (or renovation) activity. Questions about whether a particular project or product type is covered by these regulations may be directed to the Region 3 Asbestos Coordinator, United States EPA, 841 Chestnut Street, Philadelphia, Pennsylvania 19107; (215) 597-9859. Renovation projects require special attention because all buildings are suspected to contain some form of asbestos and because renovations usually require disturbance of existing surfaces. Renovation projects are subject to the same Environmental Protection Agency regulations as demolition projects with respect to notification and removal of asbestos. CFR Title 40 Sections 61.146-147.

703.13 Procurement of Asbestos Consulting Services: Persons licensed by the Virginia Department of Professional and Occupational Regulation as asbestos inspectors, RFS inspectors, asbestos project monitors, asbestos project designers, asbestos management planners and asbestos analytical laboratories are considered as asbestos consultants and will be procured according to the guidelines established in Chapters 3 and 7 of the Agency Procurement and Surplus Property Manual.

Asbestos project designers provide services which may necessitate competitive negotiation where qualification factors as well as price should be used to determine the most suitable provider of the services.

A sample RFP for Asbestos Project Design Services is available from the Division of Purchases and Supply for use as a reference in drafting the procurement documents.

SECTION 704.0 SPECIAL PROCEDURES for LEAD BASED PAINT ABATEMENT

704.1 OSHA Regulations: Effective June 3, 1993 the U. S. Department of Labors 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 Section1926.62 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.

704.2 LBP Survey: When planning a renovation, demolition or addition project, the agency shall have the facility to be renovated surveyed for lead based paint (LBP) contamination and document all quantities and locations found. Budget figures shall include the cost of Contractor compliance with the VOSHA requirements for abatement, containment and protection of construction workers for the specific project.

704.3 LBP Testing: Agencies with multiple facilities with pending renovation projects should procure an indefinite delivery unit price contract with a qualified, licensed lead based paint testing firm to provide test reports as required for its facilities at the start of each planning process. This non-professional service procurement shall be in compliance with DPS procurement procedures.

704.3 LBP Removal: Where lead based paint is identified in areas to be renovated, the agency may choose to have all lead based paint abated or encapsulated prior to the start of construction or to have the work performed by the Contractor for the project.

704.4 LBP Disclosure: 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:

1. A lead-based paint inspection was performed and no lead-based paint was found.
2. 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.
3. 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.
4. 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.
5. 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 Safety and Health Administration regulations regarding lead-based paint protection for workers.

704.5 LBP Encapsulation: 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.

704.7 Disposal Testing: 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 705.0 Underground Storage Tank Systems & Aboveground Storage Tanks
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, *Aboveground Storage Tank Pollution Prevention Requirements.*

705.1 Delegated Authority: 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

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

SECTION 706.0 CHESAPEAKE BAY PROGRAM
State agencies 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 sitings / designs. This publication is available from the Chesapeake Bay Local Assistance group within the Department of Conservation and Recreation, (804) 225-3440.

SECTION 707.0 EROSION AND SEDIMENT CONTROL REQUIREMENTS

707.1 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 Department of Conservation and Recreation, Division of Erosion and Sediment Control for approval at the working drawings stage of plan development. Preparation and submission of the plan and narrative shall follow the requirements of the Virginia Erosion and Sediment Control Handbook, latest edition. The transmittal letter to the Division and the approval letter from the Division to the Agency shall be copied to the Bureau of Capital Outlay Management. Approval of the plan shall be secured prior to bid advertisement. Contact the regional or central Division office for clarification of the regulations. [*Erosion and Sediment Control Regulation* - VR 625-02-00]

707.2 Disturbance of land exceeding one acre: Requires submission of a stormwater management plan with calculations to the Department of Conservation and Recreation, Division of Stormwater Management. 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 regional or central Division office 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. [*Stormwater Management Regulations* - VR 215-02-00]

707.3 Disturbance of land exceeding five acres: Requires a discharge permit issued by the Department of Environmental Quality. This is not a substitute for the erosion and sediment control plan or the stormwater management plan, but an additional requirement. Contact the Department for permit applications and clarification of the regulations. The permit shall be approved prior to bid advertisement.

707.4 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 owner's property) of borrowing, wasting or stockpiling of soil products. A statement similar to the following shall be used:

> *The Contractor shall be responsible for satisfying any and all erosion control (EC) and stormwater management (SWM) requirements for any land disturbing activities, including but not limited to, 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 including providing a designated, certified "Responsible Land Disturber" before continuing with the concerned activity.*

SECTION 708.0 ENVIRONMENTAL IMPACT REPORT

Agency shall procure and submit an Environmental Impact Report (EIR) for each major state project (Virginia Code §10.1-1188). Regulatory authority is assigned to the Virginia Department of Environmental Quality (Va DEQ) in Virginia Code §10.1-1191. A 'major state project' is defined as any project or real property acquisition which cost $100,000 or more. Submission requirements are described in the "Procedure for Environmental Impact Review of Major State Facilities", prepared by the Virginia DEQ. An EIR may not be required by DEQ for some interior renovations and work covered by a previous EIR. However, the Agency must submit its request to DEQ citing the nature of the work and justification for excluding the project from the requirements for an EIR. DEQ will make a determination on the validity of the request and provide a written response on its findings.

The following are excerpts from the Code of Virginia:

§ 10.1-1188. State agencies to submit environmental impact reports on major projects.

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

"Major state project" means the acquisition of an interest in land for any state facility construction, or the construction of any facility or expansion of an existing facility which is hereafter undertaken by any state agency, board, commission, authority or any branch of state government, including state-supported institutions of higher learning, which costs $100,000 or more. For the purposes of this chapter, authority shall not include any industrial development authority created pursuant to the provisions of Chapter 49 (§ 15.2-4900 et seq.) of Title 15.2 or Chapter 643, as amended, of the 1964 Acts of Assembly. Nor shall authority include any housing development or redevelopment authority established pursuant to state law. For the purposes of this chapter, branch of state government shall not include any county, city or town of the Commonwealth.

Such environmental impact report shall include, but not be limited to, the following:

1. The environmental impact of the major state project, including the impact on wildlife habitat;

2. Any adverse environmental effects which cannot be avoided if the major state project is undertaken;

3. Measures proposed to minimize the impact of the major state project;

4. Any alternatives to the proposed construction; and

5. Any irreversible environmental changes which would be involved in the major state project.

For the purposes of subdivision 4 of this subsection, the report shall contain all alternatives considered and the reasons why the alternatives were rejected. If a report does not set forth alternatives, it shall state why alternatives were not considered.

§ 10.1-1190. Approval of Governor required for construction of facility.

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

§ 10.1-1191. Development of procedures, etc., for administration of chapter.

The Department shall, in conjunction with other state agencies, coordinate the development of objectives, criteria and procedures to ensure the orderly preparation and evaluation of environmental impact reports required by this article. These procedures shall provide for submission of impact statements in sufficient time to permit any modification of the major state project which may be necessitated because of environmental impact.

SECTION 709.0 Reserved

SECTION 710.0 Reserved

SECTION 711.0 Reserved

SECTION 712.0 Reserved

SECTION 713.0 Reserved

SECTION 714.0 Reserved

SECTION 715.0 Reserved

SECTION 716.0 Reserved

SECTION 717.0 DEB ROOFING STANDARDS FOR STATE BUILDINGS

The Appropriations Act requires all agencies to give first priority to the roofs of its facilities. Assuming roofs are equal in other respects steep roofs are more desirable than low-slope roofs. Economy, aesthetics, constructability and compatibility are valid considerations in evaluation and design of roof systems.

717.1 Roofing Abbreviations

BUR: Built-up Roofing
CSPE: Chlorosulfonated Polyethylene
EPDM: Ethylene Propylene Diene Monomer
FM: Factory Mutual
NDE: Non-Destructive Evaluation
NRCA: National Roofing Contractors Association
NRCA Manual: The NRCA Roofing and Waterproofing Manual (latest edition)
RCI: Roof Consultants Institute
RIEI: Roofing Industry Educational Institute
SPM: Single-ply Membrane
SPRI: Single-ply Roofing Institute
UL: Underwriters Laboratories

717.2 Acceptable Roofing

717.2.1 Low Slope Roofing Membranes: The following types of membrane are acceptable on low-slope roofs for state-owned facilities:

1. EPDM, Single-ply, 45 mil minimum thickness; 60 mil preferred.
2. Reinforced CSPE, Single-ply, 45 mil minimum thickness.
3. Built-up Roofing, Hot Bitumen, 4-ply minimum.
4. Hybrid 4 ply system with reinforced Modified Bitumen cap sheet

717.2.2 Metal Roofing: The following types of metal roofs are acceptable on state-owned facilities:

1. Double lock seam or flat seam terne metal roofs which comply with SMACNA Architectural Sheet Metal Manual or the NCRA Metal Roofing Manual are acceptable.
2. Lapped rib panels with exposed fasteners are acceptable only for utility structures such as sheds, or where part of a pre-engineered building where manufacturer is responsible for water tightness.

3. Architectural systems installed over a solid deck are acceptable only for slopes 4:12 or greater, if they use clip-on caps or single lock ribs.
4. Structural systems, which can span between widely spaced purlins, may be used for low-slope roofs, and must have machine-locked ribs a minimum of 2" high, with tape or gaskets between ribs.

If panels are longer than 10', details and specifications must show where system is anchored (ridge, center, or eave) and how expansion is accommodated. Gaskets or tape shall be used to make seams watertight. Use closures at ends of ribbed panels.

717.3 Other Roofing Membranes: The Director of the DEB will consider the use of membranes other than EPDM, CSPE, and BUR only if the Owner requests and the A/E supports, in writing, the use of the alternative system. The request must be received and approved before working drawings are submitted for review and shall provide the following:

1. The reasons for using other membrane(s).
2. A description of the system(s) and membrane(s).
3. A summary of evaluated design criteria listed in Section 707B.11.
4. The A/E shall confirm in writing:
   a. That the roofing membranes and systems have been investigated and in the A/E's opinion are suitable for use on the proposed project roof(s)
   b. That at least three installations have had at least five years of successful service in Virginia or contiguous states - provide project names and Owner, approximate roof sizes, locations, contact names and telephone numbers
   c. That the A/E has personally investigated at least three installations of the proposed system(s) and is satisfied that they will have a service life of ten or more years under normal conditions.

Requests that do not provide the foregoing information will be returned without action.

717.4 Reroofing: Before reroofing a facility or making major repairs, the Owner must procure a roof survey performed by an experienced and qualified inspection service. The roof survey shall use infrared or nuclear NDE moisture detection methods. For roofs repairs or replacement, an asbestos survey shall be performed and the findings reported in writing.

Exception: For roofs that are very small or that have reached an advanced stage of deterioration and where a roof survey does not appear cost effective, an Agency may, after determining the conditions by visual inspection, request a waiver of the roof condition survey. The request must be accompanied by a roof plan sketch with features noted, a written description of the problems cross referenced to the plan, an approximate area of the roof, and photographs showing the conditions which support the request. An asbestos assessment is required.

If complete reroofing is required:

1. Provide secondary (emergency) roof drains in accord with the requirements for new construction.

2. Provide guarantees for new construction
3. If insulation in the roof covering assembly provides required thermal resistance for the building, then provide insulation in the roof covering assembly in accord with the requirements for new construction.

717.4 Owner's Roofing Inspection: The Owner shall have a full-time inspector on the job while the roof is being applied. The inspector can be the project inspector or someone qualified to inspect a roof installation but, preferably, a RIEI Certified Quality Assurance Observer, RCI Registered Roof Observer or one who has attended Roof Consultants Institute Seminars. Before selecting an inspector, the Owner shall discuss the inspector qualifications with BCOM and the A/E.

The Roofing Inspector shall check all materials and application procedures and prepare a daily written report covering such items as: the weather conditions, the deck conditions, the materials stored, the materials installed, and the installation procedures used including bitumen temperature at kettle and point of applications, etc. A copy of the daily report shall be given to the Contractor. The inspector shall not permit installation of roofing materials without having first obtained from the Design Architect a copy of the manufacturer's certification confirming that the materials delivered for use on the project meet the specified ASTM Standards or other approved Standards. The Owner shall inspect the roof(s) semi-annually, as a condition of the roofing guarantee and states maintenance policy. The Owner shall also inspect the roof(s) before the two-year guarantee expires. See Appendix G.

717.5 Pre-roofing Conference: A conference shall be held before ordering roofing materials.

1. Representatives of the Owner (including the Roofing Inspector), Architect, General Contractor, Roofing Contractor, Deck Contractor, Mechanical Contractor, and Roofing Manufacturer will attend.
2. Review plans, specifications, flashing details, work scheduling, and workmanship standards required. Resolve problems and discrepancies.
3. Prepare a written record of proceedings and make it a part of the job record.

717.6 Guarantee: Specify guarantees and warranties for new construction or reroofing in the Special Conditions or General Requirements.

Provide the following Roofing contractors guarantee on the General Contractor Guarantee:

> *The roofing contractor shall guarantee its materials and workmanship associated with the roofing, flashings, and sheet metal work incidental to the work required under the roofing subcontract, against defect due to faulty materials or workmanship for a period of two (2) years from the date of completion of such work. It is understood and agreed by all parties hereto that the responsibility of the roofing contractor under this guarantee form or any contract document shall be limited to the limited guarantee herein expressed by said roofing contractor.*

Provide the following Owners Agreement on the Contractor Guarantee:

The undersigned named Owner for the Commonwealth agrees, from the date of acceptance of the project, to maintain the roof in accordance with the manufacturers written requirements and agrees to avoid damage to the roof surface by any parties under his control working or walking on the roof. The Owner recognizes his responsibility to inspect the roof semi-annually.

717.6.1 New Construction: The (General) Contractor shall furnish as a minimum, a manufacturers standard 10-year warranty / guarantee in which he agrees to maintain the entire roof system(s) in a completely watertight condition at no cost to the Owner for two (2) years from date of final acceptance; except the water tightness guarantee shall not be enforced when the Contractor can prove water damage was caused by the Owner. Authorized agents of the General Contractor, Roofing Contractor, and Owner shall execute the guarantee form.

717.6.2 Reroofing: The (General) Contractor shall furnish as a minimum, a manufacturers standard 10-year warranty / guarantee for the materials and workmanship associated with the roofing, flashings, and sheet metal work incidental to the reroofing project against defects due to faulty materials or workmanship for a period of two (2) years from the date of completion.

SECTION 718.0 WATERPROOFING and DRAINAGE for SUBSURFACE STRUCTURES
No state buildings for human or equipment occupancy shall be designed with basement floor levels below the water table.

SECTION 719.0 Reserved

SECTION 720.0 FIRE PROTECTION INFORMATION
This section defines the requirements and methodology for the development of the Fire Protection Information Plan. See Chapter 9 of this Manual for issues not related to code compliance.

720.1 Responsibilities: The A/E shall provide complete project specific drawings and specifications that result in code compliant Construction.

720.2 Existing Buildings – Compliance Alternatives: Where change of occupancy is intended for an existing building, full compliance with VUSBC or VUSBC Compliance Alternatives is required.

720.3 Drawings: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Tabulation of floor areas (new and renovated), total area, volume.
2. Tabulation of units: Number of auditorium seats, bedrooms etc.
3. Listing of applicable codes with dates.
4. Building Purpose and Occupancy.
5. Use Group(s) per VUSBC.
6. Indicate whether the building is designated as an "Emergency Shelter".
7. Type of construction and VUSBC Type #
8. Design Occupancy Load(s) per VUSBC.

9. Indicate the Seismic Design Category
10. Define each Group area and show its VUSBC Group classification (A-1, A-2, etc.).
11. Identify and show rating of all rated assemblies, smoke barriers.
12. Indicate use(s) of all building spaces (offices, auditoriums, etc.) or reference drawings where complete information may be found.
13. 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.)
14. 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.
15. Identify the extent of all fire-rated floor/ceiling and roof/ceiling assemblies.
16. 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).
17. Show locations of all portable fire extinguisher cabinets.
18. Provide drawings including typical and special details that clearly define the locations and extents of the application of Sprayed-on Fireproofing.
19. Define the UL Design Assemblies specific to the respective locations and application of the Sprayed-on Fireproofing.

720.4 Calculations: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Provide calculations that demonstrate and support the Type of Construction indicated for the project based on Use Group, Allowable Height and Allowable Area.
2. Provide calculations to support the indicated Design Occupant Load on a space by space and floor by floor basis.
3. Provide calculations to demonstrate and support the indicated capacity of the Egress Components through out the building.

SECTION 721.0 FIRE DETECTION & ALARM SYSTEMS

This section defines the requirements and methodology for the development of Fire Alarm System design. See Section 701.0 Building Code & Application of Requirements for Shop Drawings review procedures. See Chapter 9 of this Manual for issues not related to code compliance.

721.1 Responsibilities: The A/E shall provide complete project specific drawings and specifications that define a code compliant Fire Alarm System. User's Programmatic Requirements which may supplement or provide additional levels of protection above the minimum requirements of the code shall be included in the design. Changes to the design during the Construction Phase of the project shall be considered Substitutions in accord with the General Conditions. Changes shall be documented by Change Order and shall be submitted to the Building Official for review. The A/E shall assure that code compliant Fire Alarm Systems(s) are provided through the review of the Fire Alarm Shop Drawings and the observation of the progress and quality of the work. The A/E shall confirm that the Fire Alarm System(s) is complete and code compliant.

721.2 Working Drawing Submission: It is the responsibility of the A/E to provide a project specific design. Performance criteria do not meet the intent of this section.

721.2.1 Drawings: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Locate and identify all Fire Alarm System alarm-initiating and notification appliances.
2. Locate and identify where protective covers are utilized with Fire Alarm System alarm-initiating and notification appliances.
3. Locate and identify all Fire Alarm control and trouble signaling equipment.
4. Locate and identify all Existing Alarm System alarm-initiating and notification appliances.
5. Locate and identify all Existing Fire Alarm control and trouble signaling equipment.
6. Locate and identify the interface requirements for all Fire Alarm System alarm initiating devices provided by other trades such as HVAC Duct Smoke Detectors, Kitchen Hood Fire Suppression Systems, Fire Sprinkler Flow and Tamper Switches.
7. Locate and identify the 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.
8. Identify the Primary and Secondary Power Supplies and Connections.
9. Identify the Candela output levels for all visual alarm notification appliances. Candela ratings such as "15/75" are not compliant.
10. Provide a matrix that defines the interface of the Fire Safety Control Functions. Define the action that will initiate an alarm or trouble condition. Define the alarm-initiating device activated, the action of the control and trouble signaling equipment, and the resulting alarm notification appliance actions and resulting operation of interfaced equipment.
11. Provide Fire Alarm System Riser Diagram showing all system components. Define the "Zones" to be protected. Diagrammatically define the location of the constantly attended location from which the Fire Alarm System will be supervised. Define the interface between the Fire Alarm System and the constantly attended location

721.2.2 Specifications: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Provide wording in the Specifications that indicate that the location and type of Fire Alarm System alarm-initiating appliances, and the type of Fire Alarm System alarm notification appliances and control and trouble signaling equipment, the location of major components are not to be altered by the Contractor, without prior written approval by the A/E and the Building Official. Changes to the design depicted within the Construction Documents shall be considered Substitutions in accord with the General Conditions and are to be documented by Change Order.
2. Provide a description of the Acceptance Testing Requirements. Indicate which of the Acceptance Tests are to be witnessed by the Regional Office of the State Fire Marshal.

721.2.3 Calculations: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Demonstrate that the quantity and location of the Audible Alarms as indicated on the drawings attain the code defined Sound Pressure Levels in each of the respective spaces.
2. Demonstrate that the required capacity of the Secondary Power supply is attained.
3. Demonstrate that the indicated Candela performance is attained for Alarm Notification Devices where Protective Covers are utilized

721.3 Shop Drawings Review: Shop Drawings (Working Plans, Product Data and Calculations) are to be reviewed by the A/E of Record for compliance to the Project Contract Documents and the code. At the conclusion of the Shop Drawing review, the A/E of Record shall:

1. Verify the Underwriters Laboratories (UL) Listings and Classifications for the materials, components, and equipment provided for this project result in a code compliant Fire 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 Project Contract Documents and the code (cite the applicable NFPA).
3. Provide the Regional Office of the State Fire Marshal copy(s) of the approved complete Fire Alarm Shop Drawings.
4. Provide DEB/BCOM a copy of the "Sealed" Statement and a copy of the transmittal to the Regional Office of the State Fire Marshal.

721.4 Validation of the Fire Alarm Systems: Fire Alarm Systems are to be Acceptance Tested in accord with the requirements of the code. The Regional Fire Marshal's 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.

SECTION 722.0 FIRE SUPPRESSION SYSTEMS - SPRINKLERS

This section defines the requirements and methodology for the development of Fire Suppression System design. See Section 701.0 Building Code & Application of Requirements for Shop Drawings review procedures. See Chapter 9 of this Manual for issues not related to code compliance.

722.1 Responsibilities: The A/E shall provide complete project specific drawings and specifications that define a code compliant Fire Sprinkler System. User's Programmatic Requirements which may supplement or provide additional levels of protection above the minimum requirements of the code shall be included in the design. Changes to the design during the Construction Phase of the project shall be considered Substitutions in accord with the General Conditions. Changes shall be documented by Change Order and shall be submitted to the Building Official for review. The A/E shall assure that code compliant Fire Suppression Systems(s) are provided through the review of the Fire Suppression Shop Drawings and the observation of the progress and quality of the work. The A/E shall confirm that the Fire Suppression System(s) is complete and code compliant.

722.2 Working Drawing Submission: It is the responsibility of the A/E to provide a project specific design. Performance criteria do not meet the intent of this section.

722.2.1 Drawings: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Identify the Occupancy Hazard Classification and show the location of sprinklers for each of the spaces on each floor within the buildings. The location of Sprinklers are to be based on the VUSBC, NFPA 13 and the User's Programmatic Requirements with the understanding that the quantity, coverage, location and type of sprinkler are not to be altered by the Contractor, without prior written approval by the A/E and the Building Official. The resulting changes are to be documented by Change Order.
2. Show the location of Fire Department Valves and Risers within the building. Indicate that the Fire Department Valves are attached to either a Standpipe Riser, Combined Standpipe and Sprinkler Riser, or Wet Pipe Sprinkler System Risers. The locations of Fire Department Valves are to be based on the VUSBC, NFPA 13, NFPA 14 and the User's Programmatic Requirements.
3. Show proposed sprinkler piping and standpipe layout including the sprinkler mains (including cross mains) within the building and layout of branch lines for the most hydraulically demanding zone(s) on each floor of each Sprinkler System. Indicate the size of pipes that are shown.
4. Provide a table summarizing the characteristics of each of the Sprinkler Systems. Define the type of Sprinkler System(s), Areas of Coverage, Hazard, Minimum rate of water coverage (Density) per Area, Water required for each Area of Coverage, Hose Stream Allowances for each area, Total Water Requirements for each area of coverage, Hydraulically Calculated Pressure requirements at a common reference point at design flow for each area of coverage, and Water Supply (Flow & Pressure) available at the common reference point. See attached Table 1, Fire Sprinkler System Summary.
5. Provide a small scale drawing showing locations of water hydrants, test and flow hydrants (for waterflow tests), and routing of underground pipe. Indicate the Waterflow Test results, the date and time taken and who conducted the test. Indicate the Water Supply (Flow & Pressure) at a reference point common with the Sprinkler /Standpipe System Design.
6. Show and identify all existing Sprinkler Systems and Standpipe Systems.
7. Show and indicate all new connections to existing systems.
8. Provide sprinkler riser diagram with appropriate fittings, accessories, sizes, alarms, valves, etc., noted.
9. Show all System Drains
10. Show all Inspector's Test Station locations and associated discharge/ drainage piping.
11. Show the location of the Fire Department Connection(s) with all interconnecting piping to the Sprinkler and Standpipe Systems.
12. Show the location and details of the Fire Pump, Driver, Fire Pump Controller, piping, components and piping specialties.
13. Show the location of the Fire Pump Test Header and all interconnecting piping.
14. Show Sprinkler head type, K-factor and temperature ratings

722.2.2 Specifications: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Provide complete Specifications to reflect the Systems that are defined on the Drawings.

2. Provide wording in the Specifications that indicate that the type of systems, the location of major components, the quantity, type, coverage, location of sprinklers, and modifications to the distribution system are not to be altered by the Contractor, without prior written approval by the A/E and the Building Official. Changes to the design depicted within the Construction Documents shall be considered Substitutions in accord with the General Conditions and are to be documented by Change Order.
3. Provide a description of the Acceptance Testing Requirements. Indicate which of the Acceptance Tests are to be witnessed by the Regional Office of the State Fire Marshal.

722.2.3 Calculations: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Provide final Hydraulic Calculations for each of the Sprinkler Systems and the Standpipe System.
2. The Calculations shall demonstrate the performance of the system with an Automatic Water Supply for the most hydraulically demanding Zone on each floor of the building for each of the Fire Sprinkler Systems Compliant with NFPA 13 and NFPA 14.
3. The Calculations shall also demonstrate the performance of the Sprinkler and Standpipe Systems as connected to the Manual Water Supply (Fire Department Pumper Truck – validate Pumper Truck performance with Local Fire Department) by the Fire Department Connection and interconnecting piping Compliant with the VUSBC, NFPA 13 & NFPA 14.

722.3 Shop Drawings Review: Shop Drawings (Working Plans, Product Data and Calculations) are to be reviewed by the A/E of Record for compliance to the Project Contract Documents and the code. At the conclusion of the Shop Drawing review, the A/E of Record shall:

1. Verify the Underwriters Laboratories (UL) Listings and Classifications for the materials, components, and equipment provided for this project result in a code compliant Fire Suppression System.
2. Provide a "Sealed" Statement, attached to the reviewed Shop Drawings indicating that the Fire Suppression Shop Drawings (Working Plans, Product Data and Calculations) satisfy the requirements of the Project Contract Documents and the code (cite the applicable NFPA Sections).
3. Provide the Regional Office of the State Fire Marshal copy(s) of the approved complete Fire Suppression Shop Drawings.
4. Provide DEB/BCOM a copy of the "Sealed" Statement and a copy of the transmittal to the Regional Office of the State Fire Marshal.

722.4 Validation of the Fire Suppression Systems: Fire Suppression Systems are to be Acceptance Tested in accord with the requirements of the code. The Regional Fire Marshal's Office shall observe the installed Fire Suppression System and witness the Fire Suppression System Performance Tests. The A/E and Contractor shall certify that the Fire Suppression System is complete.

SECTION 723.0 FIRE SUPPRESSION SYSTEMS - CLEAN AGENTS

This section defines the requirements and methodology for the development of Fire Suppression Systems, other than NFPA 13 and/or NFPA 14 water based systems, compliant with the VUSBC. See Section 701.0 Building Code & Application of Requirements for Shop Drawings review procedures. See Chapter 9 of this Manual for issues not related to code compliance.

723.1 Responsibilities: The A/E shall provide complete project specific drawings and specifications that define code compliant Fire Suppression Systems. User's Programmatic Requirements which may supplement or provide additional levels of protection above the minimum requirements of the code shall be included in the design. Changes to the design during the Construction Phase of the project shall be considered Substitutions in accord with the General Conditions. Changes shall be documented by Change Order and shall be submitted to the Building Official for review. The A/E shall assure that code compliant Fire Suppression Systems(s) are provided through the review of the Fire Suppression Shop Drawings and the observation of the progress and quality of the work. The A/E shall confirm that the Fire Suppression System(s) is complete and code compliant.

723.2 Halon: Halon 1211, 1301, and 2402 shall not be used in the design of new fire extinguishing systems in state-owned buildings.

723.3 Working Drawing Submission: It is the responsibility of the A/E to provide a project specific design. Performance criteria do not meet the intent of this section.

723.3.1 Drawings: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Show and identify rooms/spaces to be protected by the proposed Fire Suppression System.
2. Show the enclosure partitions (full and partial height) of the protected area.
3. Identify the locations of the major Fire Suppression System Components.
4. Show the routing of the Fire Suppression System lines between the stored agent and the dispersion nozzles within each of the protected spaces. Indicate sizes of pipes that are shown.
5. Provide a table defining the type of Fire Suppression System(s), Areas of Coverage, Hazard, Minimum required Concentration of Fire Suppression Agent, Volume of Agent required for each Area of Coverage, Total Volume of agent for the areas protected by this system.
6. Show and identify all Existing Fire Suppression Systems.
7. Show the location of all dispersion nozzles for all spaces/areas protected.
8. Show the locations and components of the Automatic Detection System and Agent Releasing System.
9. Show the location of and define the interface requirements to connect to the building's Fire Alarm System.
10. Show the location of components for means of manually releasing of agent.
11. Location of controlled devices such as dampers and shutters

12. Provide Fire Suppression System riser diagram with appropriate fittings, fire suppression agent storage tanks, accessories, sizes, alarms, valves, etc…
13. Show and indicate all new connections to existing systems.
14. Show the location of instructional signage.

723.3.2 Specifications: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Provide complete Specifications to reflect the Systems that are defined on the Drawings.
2. Provide wording in the Specifications that indicate that the type of system, concentration requirements, quantity of agent required, location and type of dispersion nozzles, location of major components and modifications to the distribution system are not to be altered by the Contractor, without prior written approval by the A/E and the Building Official. Changes to the design depicted within the Construction Documents shall be considered Substitutions in accord with the General Conditions and are to be documented by Change Order.
3. Provide complete step-by-step description of the system sequence of operations including functioning of abort and maintenance switches, delay timers, and emergency power shutdown.
4. Provide a description of the Acceptance Testing Requirements. Indicate which of the Acceptance Tests are to be witnessed by the Regional Office of the State Fire Marshal.

723.3.3 Calculations: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Complete calculations to determine enclosure volume and quantity of agent required.
2. Calculations to define the size of backup batteries
3. The method used to determine number and location of audible and visual indicating devices.
4. The method used to determine number and location of detectors.

723.4 Shop Drawings Review: Shop Drawings (Working Plans, Product Data and Calculations) are to be reviewed by the A/E of Record for compliance to the Project Contract Documents and the code. At the conclusion of the Shop Drawing review, the A/E of Record shall:

1. Verify the Underwriters Laboratories (UL) Listings and Classifications for the materials, components, and equipment provided for this project result in a code compliant Fire Suppression System.
2. Provide a "Sealed" Statement, attached to the reviewed Shop Drawings indicating that the Fire Suppression Shop Drawings (Working Plans, Product Data and Calculations) satisfy the requirements of the Project Contract Documents and the code (cite the applicable NFPA Sections).
3. Provide the Regional Office of the State Fire Marshal copy(s) of the approved complete Fire Suppression Shop Drawings.
4. Provide DEB/BCOM a copy of the "Sealed" Statement and a copy of the transmittal to the Regional Office of the State Fire Marshal.

723.5 Validation of the Fire Suppression Systems: Fire Suppression Systems are to be Acceptance Tested in accord with the requirements of the code. The Regional Fire Marshal's Office shall observe the installed Fire Suppression System and witness the Fire Suppression System Performance Tests. The A/E and Contractor shall certify that the Fire Suppression System is complete.

SECTION 724.0 SPRAYED-ON FIREPROOFING DESIGN & SPECIFICATION

This section defines the requirements and methodology for the development of Sprayed-on Fireproofing Design & Specification. See Section 701.0 Building Code & Application of Requirements for Shop Drawings review procedures. See Chapter 9 of this Manual for issues not related to code compliance.

724.1 Responsibilities: The A/E shall provide complete project specific drawings and specifications that result in code compliant Fire Resistive Construction through the use of Sprayed-on Fireproofing. The A/E shall determine which members are required to be fireproofed and indicate the minimum thickness of the sprayed-on fireproofing to be applied. Changes to the design during the Construction Phase of the project shall be considered Substitutions in accord with the General Conditions. Changes shall be documented by Change Order and shall be submitted to the Building Official for review. The A/E shall assure that code compliant Fire Resistive Construction is provided through the review of the Sprayed-on Fireproofing Shop Drawings and the observation of the progress and quality of the work. The A/E shall confirm that the Fire Resistive Construction is complete and code compliant.

724.2 Removal and Replacement of Sprayed-on Material: Agencies and/or their A/E shall contact the Building Official early in the design phase to verify the original purpose of the fireproofing material to be removed or replaced and what, if anything, must be done to restore the fire resistive characteristics.

Submit Plans and specifications to the Building Official which will include any bidding documents, addenda or change orders which may relate to the fire resistive characteristics of the existing structure. Include the date(s) of construction, original and present uses, height in floors and feet, whether sprinkled and any other information that may assist the Building Official in his determination.

724.3 Working Drawing Submission: It is the responsibility of the A/E to provide a project specific design. Performance criteria do not meet the intent of this section.

724.3.1 Drawings: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Provide drawings including typical and special details that clearly define the locations and extents of the application of Sprayed-on Fireproofing.
2. Define the UL Design Assemblies specific to the respective locations and application of the Sprayed-on Fireproofing.

724.3.2 Specifications: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Provide complete Specifications to reflect the Sprayed-0n Fireproofing Assemblies that are defined on the Drawings.
2. The Specifications shall clearly state that no asbestos-containing material will be allowed to be used. Contractor shall be required to certify that the material being used contains no asbestos particles.
3. Where structural steel members having different thicknesses of sprayed-on fireproofing intersect or connect, provide sprayed-on fireproofing equal to the greater thickness on all members for a distance of two (2) feet minimum from the junction of the members.
4. Metal attachments such as miscellaneous angles, light gage framing, and hangers shall be covered in the areas of the attachment with the same thickness of sprayed-on fireproofing as the structural member.
5. All sprayed-on fireproofing shall be tested after installation according to ASTM E-605 and ASTM E-736, latest editions. Include the specific Validation Testing Requirements as defined in CPSM Section 724.4.1. These tests shall be made by an independent testing laboratory. The Owner shall arrange and pay for laboratory services for field and laboratory tests and reports. The Contractor shall schedule the tests while the material is accessible. If additional tests are required as a result of non-compliance with the specifications; the additional tests and reports shall be paid for by the Contractor.
6. The independent testing laboratory reports shall clearly show the location of the tests and test results. Copies of the reports shall be sent through the A/E to the Owner, State Fire Marshal and Bureau of Capital Outlay Management.

724.4 Shop Drawings Review: Shop Drawings (Working Plans, Product Data and Calculations) are to be reviewed by the A/E of Record for compliance to the Project Contract Documents and the code. At the conclusion of the Shop Drawing review, the A/E of Record shall:

1. Verify the Underwriters Laboratories (UL) Design Assemblies and for the materials, and components provided for this project result in a code compliant Fire Resistive Construction.
2. Provide a "Sealed" Statement, attached to the reviewed Shop Drawings indicating that the Sprayed-on Fireproofing Shop Drawings (Working Plans, Product Data and Calculations) satisfy the requirements of the Project Contract Documents and the Code.
3. Provide the Regional Office of the State Fire Marshal copy(s) of the approved complete Shop Drawings.
4. Provide DEB/BCOM a copy of the "Sealed" Statement and a copy of the transmittal to the Regional Office of the State Fire Marshal.

724.5 Validation of the Sprayed-on Fireproofing Assemblies: Sprayed-on Fireproofing Assemblies are to be Acceptance Tested in accord with the requirements of the code and the requirements defined herein. The Regional Fire Marshal's Office shall observe the installed Sprayed-on Fireproofing Assemblies. The independent testing laboratory reports shall clearly show the location of the tests and test results. The A/E and Contractor shall certify that the Sprayed-on Fireproofing Assemblies are complete. Copies of the reports shall be

sent through the A/E to the Owner, State Fire Marshal and Bureau of Capital Outlay Management.

724.5.1 Validation Testing Requirements: All sprayed-on fireproofing shall be tested after installation according to ASTM E-605 and ASTM E-736, latest editions. The location and number of tests of the sprayed-on fireproofing shall conform to the requirements below:

1. For Thickness on Floor Sections: One out of every four bays or similar units shall be inspected, but in no case shall a bay or unit exceed 2,500 sq. ft. Each bay or unit selected shall be divided into quarters. In each quarter, a 12-inch square shall be selected for taking thickness measurements. The thickness shall be determined by taking the average of at least ten individual symmetrical thickness measurements within the 12 inch square. Where more than one thickness is required by design, a similar procedure shall be followed for each of the required thicknesses.
2. For Thickness on Beams and Columns: Beam and column thickness measurements shall be taken within each bay or similar unit in which floor insulation thickness measurements are made. Four sets of random measurements shall be taken for each bay or unit.
3. For Density: Samples for density determination shall be taken for each 10,000 sq. ft. of pre-selected floor area, but in no case shall there be less than two per floor.
4. For Bond Strength: Samples for cohesion / adhesion shall be taken on thoroughly dried material adjoining test sections used for thickness and density determinations. There shall be one test for beams and one test for decks for each 10,000 sq. ft. of pre-selected floor area, but in no case shall there be less than two tests per floor.

SECTION 725.0 FIRE & SMOKE DAMPERS

725.1 Responsibilities: The A/E shall provide complete project specific drawings and specifications that locate, identify and define a code compliant Fire and Smoke Dampers. Changes to the design during the Construction Phase of the project shall be considered Substitutions in accord with the General Conditions. Changes shall be documented by Change Order and shall be submitted to the Building Official for review. The A/E shall confirm that the Fire and Smoke Dampers are complete, functional and code compliant.

725.2 Working Drawing Submission: It is the responsibility of the A/E to provide a project specific design. Performance criteria do not meet the intent of this section.

725.2.1 Drawings: Provide the following minimum 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. Provide a typical fire damper detail indicating damper, sleeve, method of support, fusible link, duct access door and a break-away joint between the sleeve and the connecting duct.
4. Provide a note stating that each shall be installed in accordance with the conditions of their listing and the manufacturer's installation instructions.

725.2.2 Specifications: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Provide complete specifications respective of the project Scope of Work.
2. Provide a description of the Acceptance Testing Requirements. Indicate which of the Acceptance Tests are to be witnessed by the Regional Office of the State Fire Marshal.

725.3 Validation of the Fire and Smoke Dampers: Fire & Smoke Dampers are to be Acceptance Tested in accord with the requirements of the code. The Regional Fire Marshal's Office shall observe the installed Fire & 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 726.0 FIRE SEPARATION for 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 to the above if the heating and cooling equipment is an approved single package or tandem unit.
2. Buildings of Use Group R-3.

SECTION 727.0 FIRE PUMPS

This section defines the requirements and methodology for designs which include Fire Pumps within the Fire Suppression System. This section is specific to the Fire Pump and it ancillary components. See Section 701.0 Building Code & Application of Requirements for Shop Drawings review procedures. See Chapter 9 of this Manual for issues not related to code compliance.

727.1 Responsibilities: The A/E shall provide complete project specific drawings and specifications that define a code compliant Fire Sprinkler System which include automatic Fire Pump(s). Changes to the design during the Construction Phase of the project shall be considered Substitutions in accord with the General Conditions. Changes shall be documented by Change Order and shall be submitted to the Building Official for review. The A/E shall assure that code compliant Fire Suppression Systems(s) are provided through the review of the Shop Drawings and the observation of the progress and quality of the work. The A/E shall confirm that the Fire Pump installation is complete and results in a code compliant Fire Sprinkler System.

727.2 Application of Fire Pumps in Fire Suppression Systems: A Fire Sprinkler/Standpipe Suppression System is to provide a reasonable degree of protection for life and property from fire based on sound engineering principles, test data, and field experience. One key component of the system is a reliable water supply of acceptable volume and pressure. The connection of the Fire Suppression System to a Public Water Supply that is of acceptable volume and pressure is considered to be the most "Reliable Water Supply". Where the Building Characteristics are such that the Water Supply Requirements of the designed Fire Suppression System can not be provided by the available Water Supply then the

incorporation of an automatically controlled fire pump into the Fire Suppression System, compliant with NFPA 20 *Standard for the Installation of Stationary Pumps for Fire Protection*, shall result in an "Acceptable Water Supply."

Sound Engineering Principles are to be incorporated into the design of the Fire Suppression System to result in the most Reliable and Acceptable Water Supply for the project.

727.3 Electrical Requirements: Fire Pump Electrical Components and systems shall comply with the *National Electric Code* (NFPA 70) Section 695 – *Fire Pumps*.

The Power for fire pumps shall be from a service which is both electrically and mechanically separate from the remainder of a building's power supply.

727.4 Emergency Electrical Systems: Fire Pumps are considered to be an Emergency System and shall comply with the additional electrical requirements of the *National Electric Code* (NFPA 70) Section 700 *Emergency Power*, where the following condition(s) occurs:

1. The building is more that 75 feet in height, or
2. The building has a total Assembly Design Occupancy Load that exceeds 1000 people, or
3. The building is designated as an Emergency Shelter (VUSBC Section 1604.5), or
4. Electric motor driven fire pumps are used and the height of the structure is beyond the capacity of the Fire Department Apparatus.

727.5 Working Drawing Submission: It is the responsibility of the A/E to provide a project specific design. Performance criteria do not meet the intent of this section.

727.5.1 Drawings: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Show the location of the Fire Pump, Pressure Maintenance Pump, Pump Controllers, piping, components and piping specialties.
2. Provide details of the Fire Pump, Pressure Maintenance Pumps, Pump Controllers, suction piping, discharge piping, components and piping specialties.
3. Provide a table summarizing the water supply characteristics for the most demanding area of each of the Sprinkler Systems supplied by the fire pump. Define the type of Sprinkler System(s), Water Flow and Pressure requirements for each Area of Coverage, Hose Stream Allowances for each area, resulting Total Water Flow and Pressure Requirements for each area of coverage, Water Supply (Flow & Pressure) available, fire pump, resulting available Water Supply, resulting safety factor in psig for each Sprinkler System.
4. Provide a small scale drawing showing locations of water hydrants, test and flow hydrants (for waterflow tests), and routing of underground pipe. Indicate the Waterflow Test results, the date and time taken and who conducted the test. Indicate the Water Supply (Flow & Pressure) at a reference point common with the Sprinkler /Standpipe System Design.
5. Show and identify all existing Sprinkler Systems and Standpipe Systems in the vicinity of the fire pump(s).

6. Show and indicate all new connections to existing systems.
7. Show the location of the Fire Department Connection(s) with all interconnecting piping back to the Fire Pump.
8. Show the location of the Fire Pump Test Header and all interconnecting piping.
9. Show the location of the electrical components of the Fire Pump, Driver, Fire Pump Controller, and ancillary electrical components.
10. Show the location, size and routing of the conduits and conductors serving the Fire Pump, Driver, Fire Pump Controller, and ancillary electrical components.
11. Provide details of the electrical components serving the Fire Pump, Driver, Fire Pump Controller, piping, components and piping specialties.
12. Where multiple fire pumps or multiple sources of power are required, provide a diagram on the drawings that defines all of the applicable components and defines the sequence of operation.

727.5.2 Specifications: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Provide complete Specifications to reflect the Systems that are defined on the Drawings.
2. Provide wording in the Specifications that indicate that the modifications to the Fire Pump and ancillary components are not to be altered by the Contractor, without prior written approval by the A/E and the Building Official. Changes to the design depicted within the Construction Documents shall be considered Substitutions in accord with the General Conditions and are to be documented by Change Order.
3. Provide a description of the Acceptance Testing Requirements. Indicate which of the Acceptance Tests are to be witnessed by the Regional Office of the State Fire Marshal.

727.5.3 Calculations: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Provide Hydraulic Calculations that demonstrate that the most hydraulically demanding Zone(s) of the Fire Sprinkler System(s) is satisfied by the Automatic Water Supply (water supply plus fire pump) compliant with the requirements of NFPA 13, NFPA 14, and NFPA 20.
2. Where the height of the structure is beyond the capacity of the Fire Department Apparatus, provide hydraulic calculations that demonstrate the performance of the Standpipe System(s) as connected to the Automatic Water Supply (water supply plus fire pump) compliant with the VUSBC, NFPA 13 & NFPA 14.

727.5.4 Existing Fire Pumps : Where an existing Fire Pump is to be used in the project, its performance and condition is to be established and validated. This is to be accomplished by submitting a copy of the recent Report of the Fire Pump Inspection, Testing, and Maintenance compliant with Section F-516.6 the *Virginia Statewide Fire Prevention Code: Fire Pumps - Inspection, Testing, and Maintenance* as a part of the Working Drawings Submission. Section F-516.6 requires that Fire Pumps be inspected, tested, and maintained in accordance with NFPA 25. Table 8.5.3 *Summary of Fire Pump Inspection, Testing and Maintenance* of the current edition of NFPA 25 *Standard for Inspection, Testing, and*

Maintenance of Water Based Fire Protection Systems defines the parameters for the Report. The performance and condition of the Fire Pump is to be validated on an Annual basis.

727.6 Shop Drawings Review: Shop Drawings (Product Data, Sketches and Certified Shop Test Pump Curves) are to be reviewed by the A/E of Record for compliance to the Project Contract Documents and the code. At the conclusion of the Shop Drawing review, the A/E of Record shall:

1. Verify the Underwriters Laboratories (UL) Listings and Classifications for the materials, components, and equipment provided for this project result in a code compliant Fire Pump System.
2. Provide a "Sealed" Statement, attached to the reviewed Shop Drawings indicating that the Fire Pump Shop Drawings (Product Data, Sketches and Certified Shop Test Pump Curves) satisfy the requirements of the Project Contract Documents, the VUSBC and NFPA 20.
3. Provide the Regional Office of the State Fire Marshal copy(s) of the approved Fire Pump Shop Drawings.
4. Provide DEB/BCOM a copy of the "Sealed" Statement and a copy of the transmittal to the Regional Office of the State Fire Marshal.

727.7 Validation of the Fire Pump: The Fire Pump(s) is to be Acceptance Tested in accord with the requirements of the code. The Regional Fire Marshal's Office shall observe the installed Fire Pump and ancillary components. The Regional Fire Marshal's Office shall witness the Fire Pump Performance Tests. The A/E and Contractor shall certify that the Fire Pump installation is complete.

SECTION 728.0 SMOKE CONTROL SYSTEMS

This section defines the requirements and methodology for the development of Smoke Control System design. See Section 701.0 Building Code & Application of Requirements for Shop Drawings review procedures. See Chapter 9 of this Manual for issues not related to code compliance.

728.1 Responsibilities: The A/E shall provide complete project specific drawings and specifications that define a code compliant Smoke Control System. Changes to the design during the Construction Phase of the project shall be considered Substitutions in accord with the General Conditions. Changes shall be documented by Change Order and shall be submitted to the Building Official for review. The A/E shall 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. The A/E shall confirm that the Smoke Control System(s) is complete and code compliant.

728.2 General Design Requirements: 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 the CPSM 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).

728.3 Selection of Smoke Control System: The VUSBC defines 3 methods of Smoke Control. These are 1) Pressurization Method, 2) Airflow Design Method, and 3) Exhaust Method. The Building Official's Approval is required for the use of any of these Methods within a project.

Agencies and/or their A/E shall contact the Building Official early in the design phase to obtain the approval of the Building Official for the method of Smoke Control for the project.

The Agency and/or their A/E shall submit a narrative that compares and contrasts the 3 methods to the project conditions which results in a recommended method. Provides conceptual floor plans which identify the locations of the major components, pertinent calculations, sequence of operation and any other information that may assist in the evaluation of the methods are to be included in the documents submitted to the Building Official

728.4 Working Drawing Submission: It is the responsibility of the A/E to provide a project specific design. Performance criteria do not meet the intent of this section.

728.4.1 Drawings: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Locate and identify all of the walls, floors and ceilings that define the perimeter of the space(s) to be protected by the Smoke Control System.
2. Locate and identify the HVAC System Components respective to the Smoke Control System.
3. Locate and identify all Smoke Dampers respective to the Smoke Control System.
4. Locate and identify all Motorized Dampers respective to the Smoke Control System
5. Locate and identify the interface requirements with the Fire Alarm System.
6. Locate and identify the interface requirements for all devices whose operation is required by the Smoke Control System such as Door Hold Open Devices, Smoke Dampers, Fire Shutters, Motorized Ventilation Dampers, Fans, Air Handlers, and Smoke Detectors.
7. Where required by the VUSBC, identify the Primary and Secondary Power Supplies and Connections.

728.4.2 Specifications: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Provide wording in the Specifications that indicate that the components of and their locations which make up the Smoke Control System are not to be altered by the Contractor, without prior written approval by the A/E and the Building Official. Changes to the design depicted within the Construction Documents shall be considered Substitutions in accord with the General Conditions and are to be documented by Change Order.
2. Provide a description of the Acceptance Testing Requirements. Indicate which of the Acceptance Tests are to be witnessed by the Regional Office of the State Fire Marshal.

728.4.3 Calculations: Provide the following minimum to demonstrate compliance with the requirements of the code:

1. Provide calculations that demonstrate the volume of the spaces respective of the Some Control System.
2. Provide calculations as defined by the "generally accepted and well-established principles of engineering" referenced by this CPSM section that establish the performance requirements for the Method of Smoke Control for this project.

728.5 Shop Drawings Review: The Shop Drawings (Working Plans, Product Data and Calculations) of the components that result in the Smoke Control System are to be reviewed by the A/E of Record for compliance to the Project Contract Documents and the code. At the conclusion of the Shop Drawing review, the A/E of Record shall:

1. Verify the Underwriters Laboratories (UL) Listings and Classifications for the materials, components, and equipment provided for this project result in a code compliant Smoke Control System.
2. Provide a "Sealed" Statement, indicating that the Shop Drawings submitted for the Smoke Control System (Working Plans, Product Data and Calculations) satisfy the requirements of the Project Contract Documents, the VUSBC, and the applicable NFPA Standard (cite the applicable NFPA Standard as referenced by the CPSM).
3. Provide the Regional Office of the State Fire Marshal copy(s) of the complete approved Smoke Control Shop Drawings with a copy of the "Sealed Statement".
4. Provide DEB/BCOM a copy of the "Sealed" Statement and a copy of the transmittal to the Regional Office of the State Fire Marshal.

728.6 Validation of the Smoke Control System(s): The Smoke Control System(s) are to be Acceptance Tested in accord with the requirements of the code. The Regional Fire Marshal's Office shall observe the installed components of the Smoke Control System(s) and witness the Smoke Control System Performance Tests. The A/E and Contractor shall certify that the Smoke Control System is complete.

SECTION 729.0 SPRINKLER HEAD DATABASE

All state agencies shall compile the information and maintain the DEB Sprinkler Head Database of information on all fire protection sprinkler heads installed in each of its buildings. The Database is web based and the URL is http://deb.dgs.virginia.gov/brpm/sprinklersystem/

729.1 General: Manufacturers of sprinkler heads sometimes discover malfunctions in their products and issue notices for recall, repair or replacement. Such notices often have a limited response time to receive free or reduced cost remedies. To facilitate timely responses by state agencies, it is essential that agencies maintain the DEB database of sprinkler head information on all sprinkler heads installed in its facilities, both existing and new. The Database should be updated whenever a new building is ready to occupy; whenever the Fire protection system is added to, upgraded or replaced in existing facilities; and whenever the sprinkler heads in an existing system are replace for whatever reason.

729.2 Format Requirements: Sprinkler head information shall be recorded and maintained by the agency using the web based application developed by DGS . Sprinkler head data for each existing building shall be compiled and recorded in the Sprinkler Inventory electronic Database by December 31, 2004. Data on replacement heads shall be entered to update the inventory as changes occur. Data on sprinkler heads installed in new facilities / buildings and on new sprinkler systems installed in existing facilities shall be recorded as part of the acceptance of the sprinkler system.

729.3 Submission of information: The Agency shall maintain the record copy of the Sprinkler Inventory for each of its buildings. The Agency shall use the Web enabled database provided by DGS, as the sole vehicle for compliance to the BCOM Sprinkler head Database mandate.

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CHAPTER 8: DESIGN DOCUMENT STANDARDS & REQUIREMENTS

SECTION 800.0 GENERAL

800.1 General Requirements: The A/E should be aware that there are differences between private work and work done for the Commonwealth of Virginia. These include:

800.1.1 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 1103.0, 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.

800.1.2 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.

800.1.3 Project design is the sole responsibility of the A/E. Specifications which require the contractor to provide engineering design are not acceptable unless the products specified for contractor design are closed engineered systems. Closed engineered systems include: pre-engineered buildings, manufactured mechanical equipment, prefabricated trusses, and precast and common steel structural connections. Other systems can be defined as closed engineered systems if approved by the Director, Division of Engineering and Buildings.

800.1.4 In order to encourage competition required in the expenditure of 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 (*Code of Virginia*, § 2.2-4300 et al).

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

800.2 Project Aesthetics: The Art and Architectural Review Board's philosophy that 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 Agency and the A/E must work together

to achieve an aesthetically acceptable design which meets the special and functional requirements of the project within the stipulated design-not-to-exceed cost.

800.3 Project Identification on Documents: The Agency and the A/E shall show the 8 digit Project Identification Code (PC # = Agency Code + 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 three-digit subproject identification code number. Example format: 999-99999-999. **Capital Project Documents without the required identification are not complete.**

Each page/sheet/sketch/drawing of any addenda shall show the A/E seal, the project title, the project code, the addendum number, the addendum date, and the 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 Identification PC# on all submittals including invoices, schedules, shop drawings, change order proposals, correspondence and other project documentation.

800.4 Capital Project Initiation: The Agency will be authorized to initiate the design of a Capital construction project upon receipt of an approved GS Form E&B CO-2. Depending on the project documentation previously submitted and the action wording on the CO-2, one or more of the following design progress phases for review by the Division of Engineering and Buildings may be required.

- Schematic Design/Project Criteria
- Preliminary Design/Design Development
- Working Drawings/Construction Documents
- Revised Working Drawings

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

SECTION 801.0 NON-CAPITAL OUTLAY CONSTRUCTION PROJECTS

801.1 General: Construction or improvement projects undertaken on state property which are not classified as Capital Outlay projects are not required to follow the capital outlay (CO-2, CO-4, CO-5, CO-6 and CO-8 submittal and approval process. However, the Non-Capital Construction Projects are subject to review and permitting by the State Building Official (the Director, Division of Engineering and Buildings) for conformance to the Virginia Uniform Statewide Building Code including its referenced standards and for the technical standards and policy requirements of the **Manual**. "Changes in Use Group Classification" of existing state owned buildings also require the submittal of information for the review and approval of the State Building Official and issuance of a new Certificate of Use and Occupancy.

801.2 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). Working drawings ready for bidding and an Application for Building Permit (CO-17a) shall be submitted to the Building Official (DEB/BCOM) for review and issuance of a Building Permit.
(Agencies see Chapters 12 and 15 and the "Building Permit Policy" in Appendix P for further information.)

Some interior renovation or modification projects which do not involve a Change in Use Group Classification or projects to alter systems regulated by the USBC may be permitted under the Building Official's Annual Permit to the Agency. (See Appendix P) The Agency shall follow the procedures and keep records of such work as set forth in the Annual Permit issued to the Agency.

801.3 The Non-Capital Construction Project 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 Agency shall submit the CO-13.1a, the CO-13.2a, the Fire Marshal's report and recommendation, and other applicable certificates or reports along with the Form CO-13.3a, Application for a Certificate of Use and Occupancy, to DEB/BCOM when requesting that a Certificate of Use and Occupancy be issued.

801.4 If the Agency 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 Agency shall bring the building into 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 CO-13.3a, Application for a Certificate of Use and Occupancy, to DEB/BCOM requesting issuance of a Certificate.

SECTION 802.0 DRAWING STANDARDS

Contractors, Subcontractors, Suppliers and Vendor bidders rely on bid documents for State Agency building related projects to be consistent in format, presentation, terminology and terms and conditions. Conformance with the standards in this Chapter provides that consistency. Creativity should be reserved for the project design, not the preparation of the construction documents. The following clarifies the requirements, standards, and expectations applicable to drawings prepared for bidding and construction on state projects.

802.1. General Requirements

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

- the Project Title and Project Code;
- the activity or function(s) to be performed in the facility;
- the version (date) of the 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 the building;

- VUSBC Classification of Construction and Type;
- Area for each floor and for entire building and volume of building;
- Predominate Floor Design Live Loads;
- Index of Drawings;
- Location and Vicinity Maps;
- Seals of the responsible Architect and Engineers, signed and dated

802.1.2. 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.

802.1.3. 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.

802.1.4. Building Floor Plan drawings for all disciplines shall be oriented the same to avoid confusion and to facilitate overlaying of drawings.

802.1.5. Topographic and site drawings shall conform to the approved site plan and shall show building location by dimensions, present and approximate finished grades, roads & walks, temporary & permanent erosion and sediment control devices, and stormwater management facilities.

802.1.6. Foundation and floor plans shall be drawn to a scale not less than 1/8" = 1'-0" with all necessary dimensions shown.

802.1.7. Roof plans are preferred at 1/8" = 1'-0" scale; however, roofs without mechanical equipment and metal / shingled pitched roofs may be drawn at a 1/16" = 1'-0" scale.

802.1.8. Foundation, floor and roof plans shall show all permanent equipment vents, utility or pipe penetrations, openings and such items affecting the construction.

802.1.9. Information plans to scale shall be furnished to BCOM and the Agency to clearly show the location and arrangement of built-in equipment/casework and of the furniture, fixtures, equipment, etc., which influence the location of utilities, including electrical, plumbing, heating, etc., and the assignment of space within the project.

802.1.10. Reflected ceiling plans shall show space numbers, locations of lights, HVAC items, sprinkler heads, speakers, smoke detectors, etc.

802.1.11. Design live load capacity for all floors and the roof in pounds per square foot shall be noted on structural floor plans.

802.1.12. All elevations shall be drawn to scale at not less than 1/8" to 1'-0".

802.1.13. A minimum of one transverse and one longitudinal section through the building shall be shown along with as many additional sections as are needed for understanding the plans. Include necessary dimensions on each.

802.1.14. Typical wall sections shall be drawn at not less than 3/4" = 1'-0" scale.

802.1.15. Typical window, door and special opening details shall be drawn at 1 1/2" = 1'-0" scale or larger.

802.1.16. Provide all necessary interior and exterior details, including special doors, windows, woodwork, paneling or other decorative work, toilets and washrooms, etc., with plans and elevations at a minimum scale of 1/4" to 1' and with construction details at a minimum of 3/4" to 1'.

802.1.17. Provide stair sections for each stair configuration including dimensions, sizes, framing members, components, and any special details required.

802.1.18. Door schedules shall include door number, label or type, size, material, frame, lintel, remarks. Also provide elevation and detail references.

802.1.19. Window schedules shall include make or type, size, material, lintel remarks. Also provide elevations and details, if required for complete description.

802.1.20. Finish schedules shall include space or room number, space name, floor finish, wall type/finish, ceiling type/finish, ceiling height, base, wainscot, remarks, and other columns, if required.

802.1.21. Mechanical equipment room plans shall be drawn at 1/4" = 1'-0" scale minimum.

802.1.22. Provide one longitudinal section and one transverse section through the building (minimum) to show mechanical work with relation to the work by other disciplines.

802.2. 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

802.3 Sizes of Drawing Sheets: Drawing sheet size, except in special cases approved by the Director of BCOM, 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.

802.4 Drafting Media: Completed manually drawn working drawings will be in pencil or ink on polyester drafting film with a minimum base thickness of .004 inch matted both sides. The A/E must furnish his own drafting film.

Completed computer generated working drawings shall be in ink on vellum or on drafting film (as selected by the A/E) suitable for reproduction.

Record drawings showing the As Built conditions shall be provided to the Agency/Owner on polyester drafting film with a minimum base thickness of 0.004 inch (4 mil) matted both sides.

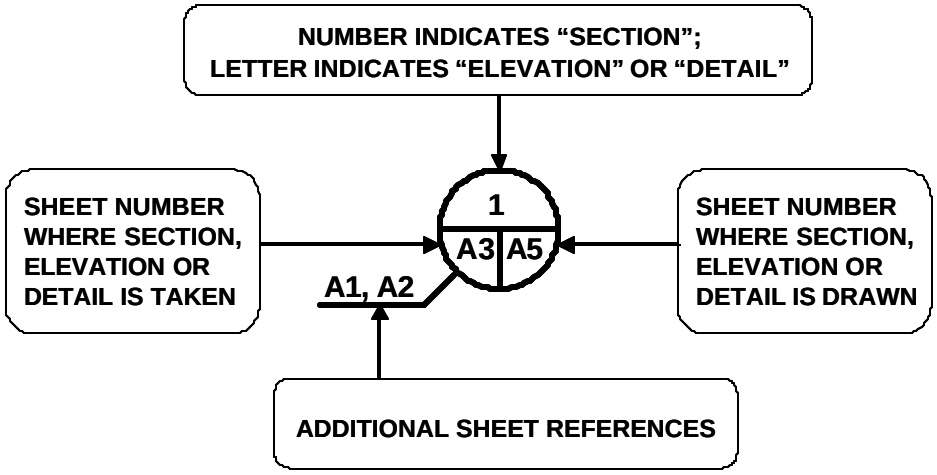
802.5 Orientation: It is customary for a building plan to be oriented with the main entrance toward the bottom or right edge of the sheet, depending upon the building shape. All plans shall have a North Arrow for orientation.

All discipline building plans shall be consistent in orientation insofar as practicable. See paragraph 802.1.4 above.

802.6 Lettering: The Division of Engineering and Buildings uses a microfilming system file for archival retention of construction drawings.

Unnecessary letter embellishments, poor spacing, careless lettering, weak lines, and lettering which is crowded or too small result in illegible films and poor reproductions. The minimum height for hand lettering on all projects shall be 1/8". 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.

802.7 Section and Detail Designation: The standard section symbol below will be shown both where the section or detail is cut and where the section or detail is drawn.



STANDARD SECTION, ELEVATION OR DETAIL SYMBOL

NOTE: SYMBOL SHOULD ALWAYS APPEAR AS PART OF TITLE, PLACED UNDER THE VIEW

802.8 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.

802.9 Drawing Numbers: Drawings shall be sequenced by discipline letter (as indicated in paragraph 802.2) and number, i.e., A-1, A-2, A-3.1, A-3.2, S-1, S-2, etc.

802.10 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.

802.11 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.

802.12 Seals: Since working drawing submittals are, in the opinion of the A/E, complete and ready for bid, all drawings submitted for working drawing 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.

802.13 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 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.

802.14 CADD Drawings on Diskettes: The Agency may require the A/E to prepare the drawings on CADD and to provide the Agency with one copy of the completed drawings on Compact Disks "CD"CD-ROM in "DXF" or "AutoCad Release 14" format **or other format specified by the Agency that is 100 percent compatible with the Agency's hardware and software**. The A/E shall provide the Agency with any special fonts, symbol libraries, special line types or line drawing software, or any other unique software required for the Agency to maintain the CADD drawings as current "As Built" documents.

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

SECTION 803.0 SPECIFICATION STANDARDS

803.1 General

803.1.1 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.

803.1.2 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 be avoided unless specific prior written approval is obtained from the Division of Engineering and Buildings.

803.1.3 The A/E shall use the latest published edition / revision of the General Conditions CO-7, Instructions to Bidders CO-7a, the Standard Bid Form format and wording, the Standard format and wording for the Notice of Invitation to Bid, and all other applicable CO Forms when compiling the project specifications. The latest editions are published on the DGS Forms Center at forms.dgs.state.va.us and may be downloaded / printed for use and inclusion in the documents.

803.2 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 (Format in DGS-30-256)
- Instructions to Bidders (GS Form E&B CO-7a) (DGS-30 -055)
- Prebid Question Form (DGS-30 -272)
- Bid Form Format (DGS-30 - 220)
- Standard Bid Bond Form CO-10.2 (DGS-30-090)
- The current Commonwealth of Virginia General Conditions of the Construction Contract (GS Form E&B CO-7) (DGS-30 - 054) (See Section 803.3 below.)
- Supplemental General Conditions, if applicable (Samples in DGS-30 -376)
- Contract Between Owner and Contractor (GS Form E&B CO-9, DGS-30 - 064)
- Workers Compensation Insurance Certificate (GS Form E&B CO-9a, DGS-30 - 076)
- Standard Performance Bond (GS Form E&B CO-10, DGS-30 - 084)
- Standard Labor and Material Payment Bond (GS Form E&B CO-10.1, DGS-30 - 088)
- Change Order blank (GS Form E&B CO-11, DGS-30 - 092)
- Schedule of Values and Certificate for Payment (GS Form E&B CO-12, DGS-30 - 104)
- Affidavit of Payment of Claims (GS Form E&B CO-13, DGS-30 - 108)
- Certificate of Completion by Architect/Engineer (GS Form E&B CO-13.1, DGS-30 –112) and Certificate of Partial or Substantial Completion by Architect/Engineer (GS Form E&B CO-13.1a, DGS-30 - 116).
- Final Report of Structural Special Inspections (GS Form E&B CO-13.1b, DGS-30 - 120)
- Certificate of Completion by Contractor (GS Form E&B CO-13.2, DGS-30 - 136) and Certificate of Partial or Substantial Completion by Contractor (GS Form E&B CO-13.2a, DGS-30 - 140).
- List of Drawings
- Submittal Register Format (Sample in DGS-30-364)
- Structural and Special Inspections List (CO-6b, DGS-30 - 052)
- Division 1 - General Requirements, Special Conditions, etc.
- Technical Specifications (Divisions 2 - 16 Applicable Sections)
  (a) Technical Specification Sections shall be numbered with appropriate five digit section numbers corresponding to the CSI Masterformat Broadscope 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 deems appropriate.

(See Sample Specification Table of Contents in Forms Center.)

803.3 General Conditions of the Construction Contract: The General Conditions of the Construction Contract, Form CO-7, is a standard document required to be incorporated in the documents for all building related construction, renovation, addition, and/or repair projects for which plans and specifications are prepared. The General Conditions (CO-7) have 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 Director of the Bureau of Capital Outlay Management.

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

803.3.2 "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 such as Section 11 or 12 with regard to amounts of insurance, or the use and amount of liquidated damages of Section 43, the changes shall be set forth and labeled "Supplemental General Conditions", and shall be submitted to the Division of Engineering and Buildings for approval. See sample in Forms Center (DGS-30-376).

803.3.4 The use of "Liquidated Damages" is an attractive option and can be effective when properly used and administered. "Liquidated Damages" is not a penalty clause and does not guarantee that the project will be finished on time. Specifying "Liquidated Damages" has significant legal implications and risks for the agency. If the agency wishes to specify "Liquidated Damages", the agency shall prepare a justification for doing so and attach documentation on how the proposed amount per day was determined and submit to the Director, DEB for approval.

803.3.4 The "Special Conditions" set forth specific requirements which 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.

803.3.5 The General Conditions (CO-7) may be included in the Project Manual by reference. However, the Notice of Invitation to Bid and the Instructions to Bidders (CO-7A) must state where the General Conditions (CO-7) are available for inspection and from whom the prospective bidders may request and receive a copy of the General Conditions. The entity tasked with issuing the documents for bidding shall be listed as the source for obtaining a copy of the General Conditions if not included in the bid documents.

The latest published edition of the General Conditions, CO-7, shall be bound in the specifications or referenced. If incorporated in the bid sets by reference, a complete copy of the General Conditions shall be provided to any requestor at no charge. A complete copy of these General Conditions shall be included in the Documents attached to/referenced by the Contract Between the Owner and the Contractor (CO-9).

803.4 Instructions to Bidders, G.S. Form E&B CO-7a: The Instructions to Bidders, CO-7a, included in this **Manual** is a standard document which has been written to conform to the requirements and procedures of the Virginia Public Procurement Act, §2.2-4300 through 2.2-4377, *Code of Virginia*, and has been reviewed by the Legal Counsel. 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 Director of the Bureau of Capital Outlay Management.

The persons at the Agency and the Architect/Engineer who are responsible for advertising for, receiving, and opening bids for the project shall be familiar with and conform to the requirements of the Instructions to Bidders, Form CO-7a.

803.5 Types of Specifications

The three types of specifications used on state projects are:

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

(b) A non-proprietary manufacturer/model number type specification must list 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 Director, Division of Engineering and Buildings, to list only those two manufacturers but consider equals if proposed by the Contractor.

803.5.2. Proprietary Specifications: A specification is proprietary if it specifies a product / requirements which only one manufacturer can meet but the product is available from multiple vendors or sources. Although a proprietary specification should be avoided because it restricts competition, circumstances such as space limitations, mandatory performance standards, compatibility with an existing system, etc, may leave no other reasonable choice (see below).

Two typical situations that may require proprietary specifications are:

- when only two manufacturers or suppliers provide an acceptable product or system, when there are no equals and when no substitutions are allowed; or
- 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 agency requests and receives, in writing, authority from the Director of the DEB to use a proprietary specification. The agency 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. The agency request shall explain why the proprietary specification is necessary. If approved to use a proprietary specification, the specification shall state that that "the product specified shall be used to the exclusion of all others and no other product will be considered to be equal."

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

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

The agency must obtain approval from the Director, Division of Engineering & Buildings to use a sole source specification / procurement for any and all items of material, equipment or services proposed to be included in the construction contract procurement. Submit the request to DEB using a completed GS Form E&B CO-18 with back-up and 4 point justification. The 4 point justification must address the following (by number and in order) in a direct and concise manner:

1. Explain why this is the only product or service that can meet the needs of the purchasing agency.

2. Explain why this vendor is the only practicably available source from which to obtain this product or service.

3. Explain why the price is considered reasonable.

4. Describe the efforts that were made to conduct a noncompetitive negotiation to get the best possible price for the taxpayers.

Prior to advertising the project for bids, the Agency shall either procure the sole source item and specify it as Owner furnished/Contractor installed or the Agency 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.

803.6 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.

To further focus on the Commonwealth's "BUY VIRGINIA" emphasis, the IFB (or Project Manual) Cover shall be printed on the "BUY VIRGINIA" watermark/graphic shown on the 'IFB COVER FORMAT SAMPLE' located in the Forms Center.

803.7 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 other sources for use with various PCs and word processing programs.

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 and appropriate notation made on the A/E's performance evaluation.

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

803.8 Restrictive Specifications and Performance Requirements

803.8.1 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.

803.8.2 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 suppliers of equipment.

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

803.9 Specifying New Types of Materials Equipment or Systems: Projects for the Commonwealth 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 show that the material will meet the applicable requirements for the project. The Director of DEB must approve such utilization as a 'trial' or 'pilot' use. Agency will be required to closely monitor the installation for compliance with manufacturer's instructions and conduct periodic inspections and report results to DEB.

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

803.10 Phraseology: Specifications must clearly indicate the requirements for the project. Words or phrases which 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.

803.10.1 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..."

803.10.2 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.....".

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

803.10.4 Do not use "etc." This term is too indefinite for bidding and inspection purposes.

803.10.5 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).

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

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

803.10.8 Do not confuse <u>any</u> and <u>all</u>; "Correct <u>any</u> defects" should read "correct <u>all</u> defects"

803.10.9 Do not confuse <u>either</u> or <u>both</u>; e.g., "Paint sheet metal on <u>either</u> side" should read "Paint sheet metal on <u>both</u> sides". "<u>Either</u>" implies a choice.

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

803.10.11 Do not use "<u>and/or</u>". The courts have considered this phrase to be intentionally ambiguous and, therefore, claims are often rendered in favor of the Contractor.

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

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

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

803.11 Specifications on Diskette or CD-ROM: The Agency may require the A/E to provide the Agency with one copy of the final completed Divisions 1 thru 16 specifications including addenda on diskette or CD-ROM in one of the following formats - Microsoft Word (Version 7.0 or later) or WordPerfect (Version 5.2 or later). The Agency shall specify the software preference in its notice to the A/E.

803.12 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 included in Appendix J.

SECTION 804.0 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. In addition to a printed copy of the Building Cost summary form and estimate backup/details, provide an electronic copy of the completed Building Cost Summary with each estimate. The system quantity, system unit cost and unit cost per building square foot shall be shown on the form. Backup estimating information, including quotes of estimated cost for major items of equipment or built-in systems, shall accompany the Building Cost Summary form. An independent cost estimate is required with the preliminary submittal. On large projects, where

construction cost versus budget is in doubt, the Owner may also obtain an independent cost estimate based on the final plans and specifications.

SECTION 805.0 DESIGN INITIATIONS / PREDESIGN CONFERENCE

The Agency shall arrange for a Predesign Conference at BCOM for all Capital Projects. Participants should include the Agency's Capital Outlay/Construction Representative, the Agency Project Manager, the BCOM Review Team and the A/E's Project Manager and responsible designer in each discipline (architect, civil, structural, mechanical, electrical and others if needed). Where the A/E and the Agency Project Manager are both experienced in the CPSM process and the Agency determines that a Predesign conference is not needed for the project, the Agency shall notify the BCOM Director, in writing, of the decision. The Agency will be 'at risk' for any extra costs for BCOM services caused by failures to conform to the CPSM procedures.

The purpose of the Predesign 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 Predesign 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 Predesign Conference agenda:

- Introduction of Attendees
- Role of BCOM
- Authorized Communications
- Design not to exceed Construction Budget
- Proposed Design Schedule
- Requirements of the **Manual** related to the Public Procurement Act, 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 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 Criteria
- Special HVAC or environmental requirements
- Fuel Analyses & Selection
- Special electrical power or lighting requirements
- Schedule requirements for design and for occupancy
- Geotechnical data
- Site particulars and requirements
- A/E's questions and clarifications

SECTION 806.0 SCHEMATIC DESIGN/PROJECT CRITERIA

806.1 General Requirements for Capital Projects

Unless waived by the CO-2 Action Wording, a schematic design/project criteria submittal shall be made to DEB for review (usually within 120 days after the effective date of the Acts of Assembly, also referred to as the Appropriations Act, containing the project). The purpose of the schematic submittal is to further develop data, detail and scope including schematic plans, as well as verify the data and program contained in the Capital Project Request. The project scope established by the schematic design, as agreed to by the Agency and the A/E and as approved by DEB/DGS/DPB, 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 **DPB Form S-1**, **Project Scope Profile**, or a listing of the Assignable Rooms and Spaces, which was used as the basis for development of the Schematic Design.

A schematic review meeting with BCOM reviewers may be requested by the Agency after the review is completed 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.

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

806.2 Basis of Design Narrative: The Schematic Design shall include a Basis of Design Narrative which provides the following information:

- Capacity and type of occupancy
- Functions to be housed in the building
- Proposed building location on the site
- Exterior Circulation - How this project will work with other area facilities
- Areas and/or capacity required for various activities proposed for building

- Indicate the type of construction proposed: fire resistive, protected or unprotected noncombustible, etc. and VUSBC Type #
- Outline description of basic materials
- Future construction or expansion to be accommodated, if any
- Style and character of building desired
- Structural Design Live Loads, Wind Loads, and Seismic Criteria used
- Type of foundation system selected
- A description of the types of HVAC systems being evaluated, estimated heating and cooling loads, fuels evaluated and fuel selected to be used
- 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

806.3 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 proposed roads, walks and parking on a site plan
- Any other information that would be of value to the Agency and the Architect/ Engineer reviewing the project.

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

SECTION 807.0 PRELIMINARY DESIGN (DESIGN DEVELOPMENT PHASE)

807.1 General Requirements for Capital Projects: Based on the previous approvals and direction, the A/E shall prepare the Preliminary Design consisting of drawings 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 **DPB Form S-1, Project Scope**

Profile, or a listing of the Assignable Rooms and Spaces which was used as the basis for development of the Preliminary Design.

807.2 Preliminary Cost Estimate: The A/E shall submit to the Agency 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).

The A/E shall also submit a take-off of the building areas of new construction and of renovated space calculated in conformance with Section 701A.

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.

807.3 Review Process: The A/E shall prepare and submit to the Agency, in quantities specified, black line or blue line prints of all drawings together with copies of cost estimates, reports and other data as set forth below. After the BCOM and the Agency review the submittal, one set of review comments and/or marked copies of the documents will be provided to the A/E by the Agency for response and/or resolution.

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.

807.4 Preliminary Submittal Requirements: The following information, data and drawings shall be the minimum acceptable for a Preliminary submittal for a Capital Outlay Project:

(1) 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 the **Manual**. See Appendix D.

(2) Building Systems and Equipment Checklist. See Appendix D.

(3) Project Cost Estimate by the A/E. Cost Estimate shall be assembled by Building System with level of detail commensurate with the level of design and material sizing at this stage. See Appendix E.

(4) An Independent Cost Estimate shall be obtained by the Owner. Cost Estimate shall be a detailed estimate assembled by Building System. See Appendix E.

(5) Soils Report to include boring logs, geotechnical analysis and foundation design recommendations.

(6) Calculations (1 copy to BCOM) from each discipline involved. Show design criteria, loadings, assumptions, evaluations and comparisons of alternative systems, cost factors and other considerations which support the systems selected and shown on the drawings. Provide Design Data required for Fire Safety review as required by Chapter 7.

(7) Preliminary Drawings as described below.

807.5 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: Agency, Project Code, Appropriation Act 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 work.
- Floor and contour 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.
- 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.

Demolition drawings

For interior demolition
- provide information on work to be removed;
- note results of asbestos survey; and
- note results of lead based paint survey.

For 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 and have written approval of BCOM)
- Overall dimensions.
- Space names and/or numbers
- 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).
- 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, 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.
- Give 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
- Foundation Plan indicating type & tentative sizes.
- Foundation details of improved bearing strata and other special requirements.

- Floor Framing Plans of each level indicating type of system and tentative member sizes/depths and column spacing.
- Roof Framing Plan.
- Typical Section(s) of framing identifying materials, thicknesses, depths.
- Typical Section of floor system
- Details of connections to existing buildings, if applicable.
- Identify elements of proposed lateral force resisting system.

Fire Protection (FP) Information (See Chapter 7)

Fire Detection and Alarm Systems (See Chapter 9)

Fire Suppression Systems - Sprinklers (See Chapter 9)

Fire Suppression Systems – Clean Agent (See Chapter 9)

Sprayed-on Fire Proofing Design & Specification (See Chapter 9)

Fire Pumps (See Chapter 9)

Smoke Control (See Chapter 9)

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.

Electrical Drawings
(Power and lighting plans may be combined if product clearly conveys required information.)

- Lighting plans for each floor showing approximate fixture location, type, and lighting level required (in footcandles).
- Power distribution plans showing location of incoming service, generators, and panelboards.
- Show interface points for communications, fire alarm, EMCS and other pertinent systems.
- Floor proposed locations for receptacles, telephone outlets and switches.

SECTION 808.0 WORKING DRAWINGS PHASE (CONSTRUCTION DOCUMENTS PHASE)

808.1 General Requirements for Capital Projects: The A/E shall visit the site as necessary to ascertain pertinent local and site conditions. Based on the preliminary plans (Design Development 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 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 Owner and Contractor, CO-9.

Specifications and drawings for any type of built-in equipment must be submitted with the working drawings 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 Agency 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.

808.2 Cost Estimate: The A/E shall submit a detailed Cost Estimate in conformance with the requirements of Appendix E - Cost Estimate, and advise the Agency 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 Agency 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.

808.3 Permits and Utilities: The A/E shall assist the Agency 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.

808.4 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 BCOM and provide one copy to the Owner's facilities office.

808.5 Submittal Documents: Working drawings shall be complete, coordinated, and ready for approval to bid. The working drawings including the specifications shall bear a uniform date as described in this **Manual**. The drawings shall consist of Architectural and Engineering drawings in such detail as to show clearly the work to be performed. These drawings shall be planned to produce a set of plans with all disciplines coordinated to describe the work required. Architectural and engineering details shall be included on the drawings with cross references on both the plan and the detail sheets designating specifically the location to which the particular detail applies. Do not include details which do not apply to the particular project.

808.6 Working drawings shall show or provide the following information:

Title Sheet(s)

- Project Identification: Agency, Project Code, Appropriation Act Number.
- 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.
- New and existing contours affected by work.
- Floor and contour 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.
- 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.

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 1/8" = 1'-0" preferred (but not less than 1/16" = 1'-0").
- Show room/space numbers.
- 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

Roof Plan
- All proposed and existing drains.
- Roof slope: 1/4" per 1'-0" to drains minimum (unless waived for reroofing).
- 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).
- 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 ÒRÓ value.
- One section with dimensions and details for each stair configuration.

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

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 Chapter 16.
- Engineered Design and details of Engineered systems such as Cast-In-Place Post-Tensioned Concrete, Precast Concrete Components, Steel Joists and Joist Girders, Pre-Engineered Metal Structures, and Shop / Prefabricated Wood Components may be required to be provided by the contractor. In this case, the structural drawings shall include complete loading information as well as all other performance or size constraints for the components.
- Structural drawings shall include plans at the same scale as the architectural plans. Details and sections shall be at a scale of not less than 3/4" to 1'.
- 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 of improved bearing strata and other special requirements.
- Floor Framing Plans of each level indicating type of system and member sizes/depths and column spacing.
- Roof Framing Plan.
- Typical Section(s) of floor and roof systems identifying materials, thicknesses, depths.
- Details of connections to existing buildings, if applicable.

Special Structural Requirements

See Appendix Q for special drawing and specification checklists for:
Cast-In-Place Reinforced Concrete,
Cast-In-Place Post-Tensioned Concrete,
Precast Concrete Components,
Structural Steel,
Steel Joists,
Pre-Engineered Metal Structures, and
Prefabricated Wood Components systems.

Fire Protection (FP) Information (See Chapter 7)

Fire Detection and Alarm Systems (See Chapter 7)

Fire Suppression Systems - Sprinklers (See Chapter 7)

Fire Suppression Systems – Clean Agent (See Chapter 7)

Sprayed–on Fire Proofing Design & Specification (See Chapter 7)

Fire Pumps (See Chapter 7)

Smoke Control (See Chapter 7)

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 clearly describe the work.
- Provide sections as required to clearly show 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.)

- Lighting plans for each floor showing approximate fixture location, type, and lighting level required (in footcandles).
- Power distribution plans showing location of incoming service, generators, and panelboards.
- Show interface points for communications, fire alarm, EMCS and other pertinent systems.
- Floor proposed locations for receptacles, telephone outlets and switches.
- Electrical plans shall list in kilowatts, electrical load total, three-phase load, motor load, and size of largest motor in horsepower.
- Show required lighting levels in footcandles for the various areas.

- Provide control diagrams, panel board schedules and riser diagrams.
- Provide Lighting Fixture Schedule on the drawings

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.

808.7 Not Used

808.8 Specifications: 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. Specifications shall conform to the requirements and standards listed in Section 803.

808.9 Rock Excavation: See Section 902.3 for requirements. Provide estimated quantities of rock excavation on the Bid Form.

808.10 The A/E shall prepare and submit Working Drawings and Specifications for the Agency to submit to the various review agencies for approval as pertinent to the project. (See Section 811.)

808.11 With this submission, the A/E shall furnish the Agency with an estimate of the time for constructing the project and include such in the appropriate paragraph of the Bid Form.

SECTION 809.0 BID FORMS AND PROCEDURES

809.1 Instructions to Bidders: Use the standard Instructions to Bidders, GS Form E&B CO-7a. Do not retype or modify the Instructions to Bidders, CO-7a, without permission from the Director of the Bureau of Capital Outlay Management. 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.

809.2 Unit Price Bids: Unit Price Bids without estimated quantities shall not be requested on the Bid form. Unit prices may be used only where the required quantity cannot be reasonably determined by the bidders from the documents. (e.g. total length of piles required, total length of caissons, amount of rock excavation, etc.) See Section 900.6 for guidance on Unit Price Bids.

In such case, an estimated quantity of the unit of construction is provided by the Agency (and its A/E) on the bid form; the quantity as provided on the bid form and the unit price inserted by the bidder are multiplied together to give a lump sum amount; and the lump sum amount is added with the other base bid amounts to determine the total base bid amount. Use the wording and format shown on the Sample Bid Form Format, DGS-30-220 in the Forms Center to allow an adjustment to the Contract Price based on the actual quantities provided and approved in the Work.

809.3 Bid Form Preparation: Bid Forms shall be prepared using the format and wording shown on the Sample Bid Form Format, DGS-30-220 in the Forms Center. The Bid Form shall state the basis for determining the low bidder for award of the contract as shown on the Sample Bid Form. The contractor's Disqualification Statement and the Immigration Reform and Control Act of 1986 statement shall be included on each bid form. See Section 810 of this Chapter for requirements and procedures concerning Additive Bid Items.

Including or use of "Allowances" in the Bidding is not permitted. Options are to specify the work in the documents and bid competitively with the rest of the project OR procure the work separately and include the subcontractor's name and price on the Bid Form similar to the method used for *"HVAC monitoring"* on Standard Bid Form Format DGS-30-220 .

809.4 Prequalification of Contractors or Subcontractors: As provided in §2.2-4306 of the *Code of Virginia*, prospective bidders may be prequalified for bidding on projects. (Prequalification criteria, procedures, and appeal process requirements are shown in Chapter 11 of the **Manual**.)

809.4 Advertising: The Agency shall notify the A/E in writing when final working drawings and specifications have been approved. The Agency shall establish a time and place for receiving bids. Bid receipt dates shall be coordinated through BCOM. The A/E shall use this information in completing the Advertisement, the 'Posting' and the Notice of Invitation For Bids.

For all work in excess of $100,000, a minimum period of 30 days shall be allowed from date of the original advertisement / Posting of Notice to the date of bid receipt unless otherwise approved by the BCOM Director. Projects estimated to cost less than $100,000 may be advertised for shorter periods of time such as 21 or 14 days (depending on whether more than one trade is involved) but no less than the 10 days required by the *Code of Virginia*.

§2.2-4301 of the *Code of Virginia, "Competitive Negotiation"*, requires that Requests For Proposals (RFP) be 'posted' **and** advertised in the newspaper of general circulation in the area. If the agency determines that the work can be procured by competitive negotiation, it must advertise the RFP in the newspaper as well as public posting and posting on the DGS Internet procurement website, URL http://vbo.dgs.state.va.us.

§2.2-4301 of the *Code of Virginia, "Competitive Sealed Bidding"*, requires that Invitations For Bid (IFB) be 'posted' **or** advertised in a newspaper or both. When advertising in the newspaper, the Agency may post the full Notice of Invitation For Bid (such as DGS-30-256) or it may used the 'short form' Notice posting the minimum information as shown in DGS-30-252 . Notice shall also be posted on the DGS Internet procurement website, URL http://vbo.dgs.state.va.us.

The Agency may authorize the A/E to advertise in the newspaper in the name of, and at the expense of the Agency, for construction bids in accordance with provisions of §2.2-4301 the *Code of Virginia*.

The IFB advertisement shall, as a minimum, include the information indicated on the "Sample Advertisement Format" shown as form DGS-30-252 on the Forms Center. Newspapers which are considered to have daily statewide circulation in Virginia are the Richmond Times-Dispatch, the Norfolk Virginian-Pilot, the Roanoke Times & World News and the Washington Post. The project may also be advertised in a newspaper which serves the area where the project is located if different from the above. A Notice of the Invitation For Bids shall be posted in a designated public area used for posting of such notices. For optimum exposure, the advertisement should also be filed with all organizations that regularly advertise and report construction bid data. Advertisements in other newspapers may be advantageous for large projects.

809.5 Virginia Business Opportunities (VBO): The project shall be posted on the On-Line Bids page of eVA, Virginia's central electronic procurement website. The URL is http://vbo.dgs.state.va.us.

809.6 eVA Registration

eVA BUSINESS-TO-GOVERNMENT VENDOR REGISTRATION: The eVA Internet electronic procurement solution, web site portal www.eva.state.va.us, streamlines and automates government purchasing activities in the Commonwealth. The portal is the gateway for vendors to conduct business with state agencies and public bodies. All vendors desiring to provide goods and/or services to the Commonwealth shall participate in the eVA Internet e-procurement solution either through the eVA Basic Vendor Registration Service or eVA Premium Vendor Registration Service. **All bidders or offerors must register in eVA prior to the award of a contract for construction or architectural/engineering services.**

a. eVA Basic Vendor Registration Service: $25 Annual Fee plus a Transaction Fee of 1% per order received. The maximum transaction fee is $500 per order. eVA Basic Vendor Registration Service includes electronic order receipt, vendor catalog posting, on-line registration, and electronic bidding.

b. eVA Premium Vendor Registration Service: $200 Annual Fee plus a Transaction Fee of 1% per order received. The maximum transaction fee is $500 per order. eVA Premium Vendor Registration Service includes all benefits of the eVA Basic Vendor Registration Service plus automatic email or fax notification of solicitations and amendments, and ability to research historical procurement data, as they become available.

The following statement must be included in the Invitation For Bids, preferably in the "Notice of Invitation to Bid" that is posted and included in the bid documents:

"eVA BUSINESS-TO-GOVERNMENT VENDOR REGISTRATION: The bidder or offeror must be a registered vendor in eVA to be awarded this contract. Bidder must include the cost of the **eVA** transaction fee in its bid."

SECTION 810.0 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 Agency and A/E should consider what features would be negotiated out if bids are over budget and include that Work as Additive Bid Items for cost or budget control. After the Agency and A/E have incorporated reasonable cost containment measures in the design, Additive Bids Items may, with the approval of the BCOM Director, be used for budget control subject to the following limitations:

- When additive bid items are approved for use, a maximum of four (4) Additive Bid Items may be included. Such Additive Bid Items are not intended to be a pricing exercise for the bidders.
- The total cost estimate of the Total Base Bid plus all Additive Bid Items **shall not exceed 110%** of the 'Construction Cost' on the CO-6 for Capital Outlay Projects or 110% of the Budget for Non-Capital Projects
- Additive Bid Items shall be structured to minimize additional effort necessary to prepare the bid.
- Additive bids shall not be used to provide essential elements of the project, such as connection to water supply, required lighting levels, or adequate HVAC capacity, or Work without which the building would not be habitable, functional or safe.
- The Work/Design as described in the Base Bid shall be of the level of quality required for the project. Additive bids shall not be used as a shopping list to upgrade, substitute for, or delete for credit any part of the Work included in the Base Bid.
- Only the term Additive Bid Item shall be used. Use of the term 'Alternate' is not permitted.
- The Work included in each Additive Bid Item shall produce a complete component which may be incorporated into the work in the Base Bid.
- Each Additive Bid Item shall be independent of other Additive Bid Items.
- None of the Additive Bid Items shall compromise the work in the Base Bid and other Additive Bid Items for compliance with Code, accessibility or safety requirements.
- Additive Bid Items shall be sequenced so the most essential Additive is listed first

- When the project bids are received and opened, the low bidder shall be determined based on the lowest **cumulative** bid for the Total Base Bid plus the total amount of the Additive Bid Items, taken in sequence as the Owner in its sole discretion decides to accept/award.

- Out-of-sequence selection of Additive Bid Items is prohibited, even if such manipulation would fit within the available funding.

- **Negotiation of Additive Bid Item amounts is prohibited.** Negotiations are allowed only for the Base Bid Work. If negotiations are required to allow the award of the Base Bid, the inclusion of any of the Additive Bid Items in the contract may not be considered in discussions during the negotiations, even if the negotiations of the Base Bid amount would yield sufficient savings to include an Additive Bid Item. Permission to negotiate with the low bidder must be obtained from the Director, Bureau of Capital Outlay Management.

SECTION 811.0 PROJECT SUBMISSION REQUIREMENTS

811.1 Capital Project Submittals

The A/E shall provide adequate copies of plans, specifications, cost estimates, and other applicable data for the Agency'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:

	Number of copies usually required					
Usual Reviewing Agency	**S**	**P**	**WD**	**RWD**	**BID**	**ADDENDA/ Change**
BCOM / Building Official	4	5	5	5	2	2
Change Orders for USBC regulated work						2
Regional Fire Marshal Office	_	1***	1***	1***	1#	1
Change Orders for USBC regulated work						1
DCR (Division of Soil and Water Conservation) (Erosion and Sediment Control - 4 copies *) (Stormwater Management - 4 copies *)	_	_	4*	_	_	
Other Review Agencies	**S**	**P**	**WD**	**RWD**	**BID**	
Art and Architectural Review Board	X	X	_	_	_	
Department of Historic Resources		2*	_	2*	_	_
Health Department (Food Service)		_	2*	_	_	_
Department of Environmental Quality (Air Division)		1*	1*	1*	_	_
Department of Environmental Quality (Water Division)		_	1*	1*	_	_
Department of Environmental Quality (Waste Division)		_	**	**	_	_
County or City Manager		_	1##	_	_	_
Chesapeake Bay Local Assistance Department		-	-	2*	-	_

Legend: S = Schematics P = Preliminaries
WD = Working Drawings or Resubmitted Working Drawings
RWD = Resubmitted Working Drawings BID = Bid Documents, including Addenda
Change Orders for any work regulated by the USBC shall be reviewed by BCOM

X Presentation to Board

* Pertinent parts or sections of documents only required to be submitted

** Submit data and dump location request for all asbestos-containing material or other hazardous waste materials resulting from renovation or demolition.

*** For renovation projects only where there is no change in Use Group classification or change within Use Group classification

Send one copy of all bid documents, addenda and Changes for both new construction and renovation projects to the regional Fire Marshal's Office.

When requested by the City/County Managers, send one copy of Preliminary Drawings

The A/E shall coordinate with and obtain approval of the utility designs from the local utilities agencies for connection and service. The A/E shall coordinate with local Fire Service entity for locations of on-site hydrants and Fire Department Connections.

The A/E shall coordinate with and shall obtain approval of the entrance design and 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.

811.2 Non-Capital Project Submittals

The A/E shall provide adequate copies of plans, specifications, cost estimates, and other applicable data for the Agency'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:

	Number of copies usually required					
Usual Reviewing Agency	**S**	**P**	**WD**	**RWD**	**BID**	**ADDENDA/ Change**
BCOM / Building Official	(4 Optional)		5	5	2	2
Change Orders for USBC regulated work						2
Regional Fire Marshal Office	_		1***	1***	1#	1
Change Orders for USBC regulated work						1
DCR (Division of Soil and Water Conservation)	_	_	4*	_	_	
(Erosion and Sediment Control - 4 copies *)						
(Stormwater Management - 4 copies *)						
Other Review Agencies	**S**	**P**	**WD**	**RWD**	**BID**	
Art and Architectural Review Board		X	_	_	_	
Department of Historic Resources		2*	_	2*	_	_
Health Department (Food Service)		_	2*	_	_	_
Department of Environmental Quality (Air Division)			1*	1*	_	_
Department of Environmental Quality (Water Division)	_		1*	1*	_	_
Department of Environmental Quality (Waste Division)	_		**	**	_	_

County or City Manager	_	1##	_	_	_
Chesapeake Bay Local Assistance Department	-	-	2*	-	_

SECTION 812.0 REVIEWS AND APPROVALS

812.1 General: Reviews are performed as a service to the Agency and do not relieve the Agency, 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. Section 813, Quality Control/Quality Assurance, describes Q/A requirements for A/E's for Capital Projects before submitting Working Drawings and subsequent submittals.

812.2 Building Official Review: The Director, Division of Engineering and Buildings (DEB), as Building Official for all buildings on state property is responsible for the review of the working drawings / bid documents to assure conformance with the requirements of the VUSBC, the Handicapped Accessibility, and other DEB Standards established for construction and/or modification of State Owned Buildings. The Bureau of Capital Outlay Management (BCOM) is the DEB Director's staff tasked with performing these reviews. See Chapter 12 for Building Official information.

When the Building Official is satisfied that the documents are in conformance with all applicable USBC and CPSM Chapter 7 requirements, a Building Permit, G.S. Form E&B CO-17, will be issued to the Agency.

812.3 Annual Permit Work: See Appendix P, "Building Permit Policy for Construction – State Owned Buildings & Structures" for guidance on the types of Work which may be performed by the Agency under the Annual Permit. The Agency Representative designated on the permit shall be responsible to the Building Official for review & approval of documents, issue of a Project Permit, and inspection of the Work for conformance with VUSBC requirements. See Chapter 12 for information on the Annual Permit Representative.

812.4 BCOM Review Comments: BCOM will transmit its review comments to the Agency in one of the following ways:

812.4.1 By written comments referencing the applicable page, detail, etc. Within 2 weeks after receipt of written comments from all applicable disciplines, the Agency, with input from the A/E, shall provide a written response to each BCOM comment, preferably on the comment sheet in the space provided or on a separate page if additional space is needed. All issues in dispute shall be resolved before the authorization is given to proceed to the next phase.

812.4.2 By a meeting /conference at BCOM where the Agency (and the A/E) are invited to discuss written comments and/or marked-up plans and specs and to discuss critical issues noted during the review. This method may be required by BCOM 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 Agency, or it's A/E, and distributed to all meeting participants within five (5) work days after the meeting.

812.4.3 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.

812.5 Resubmittals: 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.

812.6 Revised Submittals: All changes, revisions, and additions shall be highlighted in yellow on at least two revised submittal set of preliminaries or working drawings. If an Agency asks for a review to be expedited, all changes shall be highlighted in yellow on all sets of the revised submittal unless otherwise agreed to by BCOM.

812.7 Print and Release of Bid Documents:

812.7.1 All review comments shall be resolved and the documents shall be revised / corrected before the documents are released for printing. **Using multi-page addenda to address/resolve working drawing review comments IS NOT ACCEPTABLE.**

812.7.2 When revisions to the documents are complete in accord with BCOM, Fire Marshall, and other agency review comments, revised plans and specifications (with all changes, revisions, and additions highlighted in yellow on at least two of the sets) shall be submitted to BCOM for review.

812.7.3 When authorized to advertise for bid by the approved C0-6, other CO forms, or by the BCOM Director, contact the Program Management Section at (804) 225-3769 to establish a bid receipt date.

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

812.7.5 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**. Two copies of each addendum shall be sent to BCOM at the same time that it is issued to bidders.**

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

If Advertisements are authorized to be placed in the VBO and newspapers 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.

812.9 Review Times The following review times will be the goal for each Review Agency unless
(1) the submissions are obviously incomplete, (in which case the Submitting Agency shall be notified when the inadequacy is noted) or
(2) the Review Agency has some unusual circumstance which would cause the review times to be exceeded, in which case that circumstance shall be documented.

The review time indicated below is intended to be the average log in to log out time for all projects, regardless of size. Further, all Review Agencies will follow the usual practice of the Division of Engineering and Buildings in indicating approval of a stage of planning subject to inclusion of the recited review comments in the next stage of plans development. Note that the indicated review turnaround times are exclusive of Holidays, State Office Closings, and the two week downtime for the Christmas and New Years Holiday period.

This will be applicable to schematic and preliminary submittals also. In the case of working drawings, the review comments shall be incorporated in the plans and specifications prior to submittal of revised working drawings or to issuing the documents for bid.

Average Review Periods for Complete Submittals
Division of Engineering and Buildings – less than 3 weeks
(Goal is 85% reviewed in 14 days and 95% in 21 days)
Fire Marshal's Office - 3 weeks
The Department of Historic Resources - 3 weeks
The Division of Soil and Water Conservation - 3 weeks
The Department of Health - 3 weeks

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

812.10 Approvals: Approval of the submittal at any stage is dependent on the Agency and the A/E satisfactorily resolving the issues raised during the reviews by DEB/BCOM and other pertinent review agencies. Approval of Preliminaries on any project for which a Value Engineering Study is required will be dependent on the successful resolution of the Value Engineering recommendations and the DEB/BCOM review comments.

SECTION 813.0 QUALITY CONTROL / QUALITY ASSURANCE

813.1 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. Detailed criteria for coordination and quality assurance of the plans and specifications are shown in Chapter 9.

813.2 The A/E shall perform a Quality Assurance review of the working drawings prior to submitting the working drawings to DEB/BCOM. See Appendix Q for Checklists and guidance for QC/QA reviews and coordination of plans and specifications.

813.3. The first sheet of the plans and specifications submitted to BCOM and to the Owner for Working Drawing Review 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 814.0 VALUE ENGINEERING (VE)

814.1 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 §2.2-1133, *Code of Virginia*.) The study shall be conducted by a qualified VE Team concurrent with the preliminary (40%) 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 Agency.

814.2 Scope of VE Study: The VE Study shall be made by a multi-discipline team of five VE qualified professionals meeting on five consecutive work days. 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 shall be assembled and isolated away from their normal work station in order to avoid the normal daily interruption. The Agency will provide a suitable room with tables

and chairs. VE services shall be performed in a timely manner concurrently with the normal preliminary design review to minimize any delay in the schedule.

814.3 Procurement of the VE Study: The agency shall procure the services of a Value Engineering consultant using professional services RFP 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 response to the RFP shall include the proposers list of proposed and alternate team members and their respective resumes representing their various disciplines/areas of expertise, together with the certified (CVS) team leader's qualifications and discipline shall be submitted with the proposal and approved at the time of negotiations. Changes to or substitutions to the approved VE team configuration shall be submitted in writing to the Agency for approval.

The typical VE Team will be composed of

a. VE Team Leader (CVS)**
b. Architect
c. Structural Engineer
d. Mechanical Engineer
e. Electrical (or Civil) Engineer
f. Typing, Clerical and Estimating support staff as necessary

** The principle person responsible for prestudy work, assembling, editing and reproducing the recommendations generated by the Value Engineering Team Study. C.V.S. must edit and sign the final report.

814.4 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 (CVS) credentials that qualify him/her to perform such services. The CVS shall be certified by the Society of American Value Engineers and shall have had a minimum of eight years combined college education and practical on-the-job VE experience. Practical experience is considered to have been gained by being actively engaged as a consultant in VE activities.

Members of the team shall be registered architects and professional engineers licensed in the Commonwealth of Virginia. All shall have a good understanding of VE principles and methodology as evidenced by attending a certified forty hour workshop. Team members shall

be knowledgeable of the design and operational requirements and characteristics of the systems applicable to their discipline and the type of facility being studied.

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

(a) Two sets of 35% drawings (full size)
(b) Four sets half size drawings
(c) Outline Specifications & Systems Checklists (2 copies)
(d) Detailed Cost Estimate (6 copies)
(e) Basis of design (6 copies)
(f) Design Calculations (Structural, Mechanical, Electrical)
(g) Boring logs and soil reports
(h) Scope of Project/Program requirements (6 copies)

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

a. Pre-Study
   (1) Review complete design package & identify high cost areas.
   (2) Prepare cost model (actual vs. historical)
   (3) Prepare bar graphs of all sub systems.
   (4) Prepare preliminary cost worth ratios.

b. 40 Hour Study
   (1) Team Leader and coordinator.
   (2) Team recorder.
   (3) Presentation of recommendations.

c. Post Study
   (1) Write and assemble report.
   (2) Proof all VE recommendations, especially the cost estimate and life cycle analysis.
   (3) Calculate redesign effort for each recommendation in manhours.
   (4) Sign and submit final report within 7 days. Express mail 10 copies to the Owner and 5 copies to A&E of record.

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

(a) Contents page.
(b) Brief description of total project and project requirements with a copy of the Owner's program requirements.
(c) Brief summary of VE recommendations.
(d) One site plan, floor plan and elevation on 8-1/2"x 11" or fold out.
(e) Summary sheet (only) of 35% cost estimate.
(f) VE cost model of project.

(g) 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.
(h) 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 fold-out. Pages must be sequentially numbered in the lower right hand corner to facilitate assembly. Tabs should be used for quick reference of important sections of report.

814.8 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 , the Agency, and the DGS .

814.9 A/E Participation: The design A/E's involvement in the VE Study with anticipated manhours by discipline for routine general construction is summarized as follows:

	PM	ARCH	STRUCT	MECH	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 Agency	4	4	-	-	-	-
• A/E Review, Supplement, and Comment on VE Report to Agency	8	4	4	4	4	(4)
	PM	**ARCH**	**STRUCT**	**MECH**	**ELEC**	**CIVIL**
• Follow-up on Questions/ Decisions from Oral Presentation	4	-	-	-	-	-
MANHOUR TOTALS	**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 Agency within 14 days of receipt of the report.
- Participate in joint 35% review/VE resolution meeting at the Agency and at BCOM if required.
- Submit a final report within 14 calendar days of the resolution meeting to the Agency and BCOM. Implement all finally accepted VE recommendations into the project design.

814.10 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, 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 BCOM. 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.

814.11 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 Agency and the Architect/Engineer (A/E) shall review and evaluate the Value Engineering recommendations. Not all VE recommendations are automatically appropriate for inclusion in state projects.
- The A/E shall provide a written comment and/or evaluation of each VE recommendation to the Agency along with **the A/E's recommendation to accept, to reject, or to accept with modifications** each VE recommendation. The A/E shall also provide its responses to the Bureau of Capital Outlay Management (BCOM) preliminary review comments so that the VE recommendations and the BCOM comments may be resolved at the same time.
- 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 using the Format VE-1 in Appendix C (electronic version downloadable from the DGS website) and indicate its recommended disposition of each item. The A/E's completed electronic VE-1 Summary sheet shall accompany the detailed responses / explanations sent to the Agency.

- The Agency shall review the A/E's evaluation and recommendations on the VE Study and the A/E's responses to the BCOM review comments. The Agency shall indicate its proposed action (acceptance, rejection, or acceptance as modified) on the electronic VE-1 Summary sheet and forward electronic copies of the VE-1 to DEB along with printed copies of the VE Study.

- If any proposed action deviates from the requirements of the Virginia Uniform Statewide Building Code (VUSBC) or the **Manual**, the Agency shall also submit a request for code modification or waiver of **Manual** requirements for each item along with appropriate justification.

- The Bureau of Capital Outlay Management will review the responses to the BCOM review comments and the proposed action on the VE recommendations. A meeting of BCOM and Agency representatives will be required where the agency has rejected a VE recommendation for a design change that was also identified in the BCOM review or is judged by BCOM to meet the criteria of the project and save money. Upon resolution of the issue and agreement on a specific design direction, the CO-5 will be approved and authorization given to prepare working drawings.

SECTION 815.0 STRUCTURAL AND SPECIAL INSPECTIONS

815.1 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. USBC Chapter 17, Structural Tests and Inspections prescribes certain tests and inspections which are required to be performed on the structural systems for the building. These inspections have been, heretofore, provided on state projects by a combination of the Owner's Project Inspection, the A/E and the Owner's Independent Testing Lab.

815.2 The Director, Division of Engineering and Buildings, in his capacity as Building Official for all State-Owned buildings establishes the following procedure for the application of the Structural and Special Inspections for capital outlay projects.

815.2.1 The A/E, as part of its Basic Service of preparing bid documents, shall include in the project specification the requirements for the materials, for the submittals, and for the tests and inspections to be performed. Identify those tests and inspections to be performed by the Owner's Independent Testing Service and require all other tests to be performed and paid for by the Contractor. The A/E shall include a summary of required Structural and Special Inspections in Division 1 of the Specifications.

815.2.2 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.

815.2.3 Each project shall have an on-site Project Inspector/Clerk of the Works who shall, as part of his responsibilities, check all materials delivered of 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.

815.2.4 The Owner's Independent Test Lab shall inspect foundations, log and inspect pile and caisson installations, inspect and test concrete, and inspect and test bolted and welded connections as required by the specifications.

815.2.5 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 an Agency has received permission to exclude this service from the A/E contract, qualified Architects and Engineers of the Agency shall perform this function.

815.2.6 The Owner's Project Inspector and the Owner's Test Service shall furnish copies of all reports to the A/E.

815.2.7 The Agency shall submit with the CO-6 two (2) copies of the completed and signed G.S. Form E&B CO-6a Statement of Structural and Special Inspections, with copies of the edited schedule for Special Inspections - State-owned Buildings.

815.2.8 The Agency shall submit two (2) copies of the completed and signed Final Report of Structural and Special Inspections, G. S. Form E&B CO-13.1b with its request for a Certificate of Occupancy.

815.3 Appendix M, Structural and Special Inspections, contains the list of Structural & Special Inspections required for State-owned Buildings. The A/E shall edit the applicable list as necessary to indicate those materials and inspections which are and are not required for the project.

815.4 See **Chapter 10 and Appendix N** for additional information on other Project Inspector functions.

SECTION 816.0 "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 prefunctional performance testing including, but not limited to, pressure tests, flushing, cleaning, testing, balancing, adjusting and start-up of equipment and the calibration and testing of automatic controls. The specifications shall require that every mode of every part or zone of the HVAC system is operated under full and part load and through all normal operational modes. The specifications set forth the procedures and requirements for the performance testing, system acceptance and training of agency personnel if required.

900 GENERAL POLICIES

Chapter 9 sets forth the DEB design, operation, maintenance and procurement guidelines for use in developing plans and specifications for construction and renovation of state facilities and which must be followed unless a waiver in writing is granted by the Director of the Division of Engineering and Buildings.

900.1 Design Criteria and Guides

This chapter contains DEB design criteria, operation and specification guides for the design of buildings constructed on state owned property which are to be used and maintained by state agencies. Agencies and their A/E must address the criteria and guides for their applicability to the particular project. Where the A/E determines that there is a valid reason for not meeting or using the criteria or guides, the A/E must present their findings and justification to use differing criteria to the Agency for their concurrence. The Agency may then forward the request in writing to DEB for approval to use the different criteria.

Design criteria for a particular campus may be stipulated by the Agency as a supplement to this Chapter under the authority of Section 917.1. Standard criteria, procedures and restrictions for construction at a particular campus may be stipulated by the Agency as a supplement to this Chapter under the authority of Section 917.2. Should a conflict arise between the standards and criteria in the Manual and the criteria stipulated by the Agency, those shown in the Manual shall govern.

900.2 Procurement Criteria and Guides

This chapter contains criteria, sample wording, procedures and guides for procurement of construction on state projects. As stated elsewhere in the **Manual**, certain items such as the General Conditions of the Construction Contract (CO-7), the Instructions to Bidders (CO-7a), the Contract (CO-9), the Notice of Invitation to Bid, the Standard Bid Form format and wording, and other similar forms have been reviewed and approved by the Office of the Attorney General and must be used in the procurement process. The Agency is responsible for assuring that the A/E follows the proper procurement forms, formats and procedures since the Agency is responsible for the procurement and responds to protests, etc. If BCOM should note discrepancies in the procurements documents or procedures during its reviews, the reviewers will certainly bring these items to the attention of the agency but addressing (or correcting) these issues will, in general, be left to the agency. Approval to use Proprietary Specifications or Sole Source Procurements still must be approved by the Director, DEB except where that approval authority has been specifically delegated to an Agency Representative. . Should a conflict arise between the standards and criteria in the Manual and the criteria stipulated by the Agency, those shown in the Manual shall govern.

900.3 Proprietary and Restrictive Procurement Procedures

900.3.1 Proprietary Specifications: In general, the Commonwealth's policy is to allow competitive bidding to the greatest extent practicable and to limit the proprietary procurement to only that material and/or work which has been justified and approved. From time to time, a situation arises in which only a single product will perform the required function. In such cases, the A/E should forward a request through the Agency to the Director of the Division of Engineering and Buildings fully justifying the use of the proprietary product. Proprietary or restrictive requirements shall not be used unless it is conclusively established that no substitute will serve the purpose. Timely submittal of the request is required to avoid delays in the work. Use of proprietary items/specifications is prohibited unless formal written approval is obtained.

900.3.2 Proprietary Specification Language: If proprietary space specification authorization is granted, the item should be specified by manufacturer's name and catalog number, followed by not withstanding any other provision of this contract, no other product will be acceptable or language of similar import. When the approved proprietary product is available from the manufacturer to two or more vendors or approved installers who regularly work in the area of the project, the product may be included in the project specifications for competitive bidding.

900.3.3 Sole Source or Franchised Vendors: When the approved proprietary product is available only through a sole source provider or installer, or when the Agency, or the BCOM determine that it is in the best interests of the Commonwealth, the Agency shall procure the proprietary product (including installation where applicable) in accordance with the provisions of Chapter 43, § 2.2-4303.E., Code of Virginia. The price for such proprietary procurement shall be placed on the bid form for use by all applicable bidders.

900.4 Separate Contracts for Material and Equipment

As an alternative to Proprietary and Restrictive Procurement Procedures, the proprietary procurement shall be deleted from the scope of the Work being bid (the project plans and specifications) and a separate contract procured by the Agency for such work.

900.4.1 General: All procurement must be made in accord with the Virginia Public Procurement Act. 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 VPPA. Work 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.

900.4.2 Contractor purchased/Contractor Installed (subcontractor designated/price set by Owner): 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.

900.4.3 Contractor purchased /Contractor Installed (materials contract assigned by the Owner): 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.

900.4.4 Owner 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 is existing or pre-purchased laboratory or kitchen equipment. The Owner pays the supplier directly for the materials.

900.4.5 Owner purchased/Owner installed (or installed by Owner'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 owner and other contractors. An example of this is medical equipment.

900.5 Approvals, Equals, and Substitutes

900.5.1 Approvals and/or Submittals Prior to Bidding: The Bid Documents **shall not** require samples, shop drawings, or similar materials to be submitted for approval prior to receipt of bids. See Section 26 of the General Conditions of the Construction Contract.

900.5.2 Approvals of Submittals: 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.

900.5.3 Brand Names: Unless otherwise stated in the specifications, the name of a certain brand, make or manufacturer denotes the characteristics, quality, workmanship, economy of operation and suitability for the intended purpose of the article desired, but does not restrict bidders to the specific brand, make, or manufacturer. The brand names are shown to convey to the Contractor the general style, type, character and quality of article specified. When brand names are listed in the specifications, the Manual requires that three (3) brands with model numbers be listed.

900.5.4 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 Owner as not being equal. See Section 26 of the General Conditions of the Construction Contract.

900.5.5 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 Owner 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 Owner, 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 Owner will have the right to limit or reject substitutions at its sole discretion. See Section 26 of the General Conditions of the Construction Contract.

900.6. 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 Owner, 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 which 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 fills 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 $

900.7 Procurement of Furnishings and Loose Equipment

Loose equipment and furnishings are generally items moveable or portable versus permanently installed. It includes such items as fire extinguishers, but not fire cabinets; residential refrigerators; unattached residential stoves; unattached furniture; and other similar furnishings or loose equipment. The Agency shall purchase loose equipment using the procedures described in the Agency Procurement and Surplus Property Manual published by the Division of Purchases and Supply and the **eVA** procurement process.

900.8 Built-In Equipment

Built-in equipment comprises special purpose equipment or furnishings which are permanently built in or attached to general building construction. It includes such items as laboratory fixtures, 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:

(1) Bid the Built-in equipment as part of the Construction Contract.

(2) Bid prior to receipt of bids on the Construction Contract where the successful bidder agrees to be assigned as a subcontractor to the Construction 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 J for inclusion in the Construction Contract bids.

(3) Bid the Built-In Equipment to be furnished and installed, with or without assistance from DPS, as a separate contract for both procurement and installation.

900.9 Plans, Sections and Details of Equipment or Systems

900.9.1 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 803.5 for requirements concerning the use of brand names and models.

900.9.2 Where a particular manufacturers 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 Section xxx for technical requirements pertaining to the equipment."

Section 900.10 Project Reviews Entities

Many agencies and/or entities other than BCOM have been given authority to establish regulations or standards and/or to review projects for conformance with their requirements. The following is a listing of the usual agencies or entities that may have some authority over a project, depending on its scope of work. The Agency and it's A/E are responsible for determining which agencies or entities are applicable and for complying with their requirements.

Art & Architectural Review Board (AARB)
Code of Virginia Section 2.1-488.1

Local Officials
Code of Virginia Section 15.2-2202.C

Asbestos & Lead (DLI)
NESHAP, 40CFR Part 61
AHERA, 40CFR Part 763
Virginia Reg. VR 630-3-442

Underground & Above Ground Tanks (DEQ)
Virginia Reg. VR 680-13-02 USTS
Virginia Reg. VR 680-14-12 AST
Virginia Reg. VR 680-14-07 AST
Virginia Reg. VR 680-14-13 AST

Erosion & Sediment Control (DCR)
Code of Virginia Section 10.1-560
Virginia Reg. VR 625-02-00

Storm Water Management (DCR)
Virginia Reg. VR 215-02-00

Chesapeake Bay Preservation Act (CBLAD)
Virginia Reg. VR 173-02-01

Building Permits (DEB)
Virginia Uniform Statewide Building Code

Special Inspections (DEB)
Uniform Statewide Building Code

Air Division Permitting (DEQ)

Water Division Permitting (DEQ)
Virginia Reg. VR 173-02-01

U.S.Army Corp of Engineers Permits
Wetlands Management (Federal Regulation)

Department of Health
Dining Facilities
Septic Systems

Department of Social Services
Hospital Facilities
Child Care Centers

Dept of Criminal Justice Services
Code of Virginia Section 9-183

Davis-Bacon Wage Rates
Associated with Federal Aid Projects

Department of Historic Resources
Section 4-4.01.p; Appropriation Act

Handicapped Accessibility
Americans with Disabilities Act-1990 (ADA 90)
Uniform Federal Accessibility Standards (UFAS)f

Environmental Impact Report
Code of Virginia, Section 10.1-1188

901.0 SPECIAL BUILDING PLANNING REQUIREMENTS

901.1 Method of Determining Building Area and Volume

901.1.1 Building area and volume calculations are required by the Division of Engineering and Buildings and the Department of Planning and Budget for establishing project scope and for evaluation of the cost estimates.
901.1.2 New Construction: Building area and volume are calculated in units of total gross square feet and total gross cubic feet, according to the guidelines listed below.

901.1.2.1 Building area shall be calculated according to Figure 901.1.1.

901.1.2.2 Building volume shall be the sum of the volume of all levels calculated by multiplying the floor area as calculated according to Figures 901.1.1 and 901.1.2 at each level by the distance between the base floor level of successive floors. At the top level the floor area shall be multiplied by the distance between the top floor and average height to the top of roof surfaces (excluding parapets and other minor roof projections). Volumes for buildings with varying roof heights are calculated by the same method, but separately, under each roof and then summed.

901.1.2.3 Piling, foundations and power plant exhaust stacks are not included in area and volume calculations. When performing cost estimates, list costs for these items separately.

901.1.3 Renovations: Calculation of the building area for renovation work within existing buildings shall include only spaces where physical alterations are to be made.

901.1.3.1 Use the actual area for each space renovated, at least 70% of the entire floor or ceiling surfaces are being altered in which case the entire floor area would be used.

901.1.3.2 Plumbing, HVAC and/or electrical systems work is calculated on the basis of the area modified or served. An example would be: HVAC or lighting modifications to serve 300 square feet of floor area would calculate at 300 square feet. Plumbing modifications to a toilet space would calculate in the area of the whole toilet room.

901.1.3.3 Building volume calculations for renovation work are not required unless specifically requested by BCOM to confirm conformance with the authorized project scope..

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DESCRIPTION	ADJUSTMENT FACTOR *		REMARKS
	6'-8" OR GREATER CLEAR HEIGHT	LESS THAN 6'-8" CLEAR HEIGHT	
INTERIOR SPACES:			
(WHETHER FINISHED OR UNFINISHED)			SEE SECTION 910.1 FOR PROCEDURES FOR CALCULATING RENOVATED AREAS AND
- GENERAL FLOOR AREAS	1.0	0.5	BUILDING VOLUME.
- BASEMENTS	1.0	0.5	MINOR INTERRUPTIONS OF CLEAR HEADROOM
- PENTHOUSES/MEZZANINES	1.0	0.5	HEIGHTS LESS THAN 6'-8" ARE CALCULATED
- INTERMEDIATE FLOORED TIERS/INTERSTITIAL SPACES	1.0	0.5	AT FULL GROSS AREA.
- ATTICS AND CRAWL SPACES:			
- SPECIFIC AREAS INTENDED FOR CURRENT OR FUTURE USE AS: HABITABLE SPACE, STORAGE SPACE, OR AREAS FOR MAJOR EQUIPMENT	1.0	0.5 0.0	for ATTICS for CRAWL SPACES
- NOT INTENDED FOR CURRENT OR FUTURE USE DESCRIBED ABOVE, i.e., SPACE WILL ONLY CONTAIN STRUCTURAL OR SERVICE SYSTEMS (PIPING, DUCTS, CONDUIT, ETC.)	0.0	0.0	
- UTILITY AND SERVICE TUNNELS	1.0	0.5	ONLY INCLUDE PORTIONS OF TUNNELS WITHIN THE FOOTPRINT OF THE BUILDING PROPER.
- MULTI-STORY SPACES:			
- AUDITORIUMS	1.0	N/A	AREA FOR THESE SPACES TO BE CALCULATED
- THEATERS	1.0	N/A	AT ONE LEVEL ONLY, i.e., THE ACTUAL
- GYMNASIUMS	1.0	N/A	FLOOR LEVEL.
- OTHER MULTI-STORY SPACES	1.0 (each level)	N/A	AREA FOR SPACES OTHER THAN LISTED ABOVE SHALL BE CALCULATED AT ALL LEVELS THE SPACE PENETRATES MORE THAN 6'-8"
- VERTICAL OPENINGS			NO DEDUCTIONS SHOULD BE MADE FOR THESE
- INTERIOR STAIRS	1.0	0.5	VERTICAL OPENINGS, i.e., THEY SHOULD BE
- ELEVATOR SHAFTS/ESCALATOR OPENINGS	1.0	0.5	COUNTED THE SAME AS GENERAL FLOOR
- UTILITY/SERVICE SHAFTS & SIMILAR OPENINGS	1.0	0.5	SPACE.
- OTHER LIKE AREAS	1.0	0.5	
EXTERIOR SPACES:			**EXAMPLES:**
- NOT COVERED	0.0	0.0	PATIOS, COURTYARDS, UNCOVERED WALKWAYS UNCOVERED TERRACES, UNCOVERED ENTRY STEPS, UNCOVERED AREAWAYS, DECKS.
- COVERED, BUT UNSURFACED (i.e., NO CONCRETE, PAVING, GRAVEL OR SIMILAR SURFACE)	0.0	0.0	AREAS UNDER TYPICAL ROOF OVERHANGS
- COVERED AND SURFACED	1.0	1.0	COVERED WALKS, CANOPIES OVER PAVED AREA, COVERED BALCONIES, PORCHES, PORTICOS, COVERED ENTRIES, COVERED TERRACES, COVERED AREAWAYS.
- EXTERIOR STAIRS	1.0	1.0	CALCULATE GROSS AREA AT EACH COVERED
- ROOF TERRACES - COVERED OR NOT COVERED	1.0	1.0	AREA

* - FACTOR TO BE APPLIED TO ACTUAL MEASURED AREA TO COMPUTE GROSS AREA

GENERAL NOTES:

1 THE GROSS BUILDING AREA IS THE SUM OF ALL MEASURED AREAS ADJUSTED BY THE APPROPRIATE FACTORS NOTED ABOVE.

2 GROSS AREAS SHALL BE MEASURED FROM OUTSIDE FACE TO OUTSIDE FACE OF EXTERIOR WALLS OR FROM THE CENTERLINE OF COMMON WALLS SEPARATING BUILDINGS.
(OPEN-SIDED EXTERIOR SPACES SHALL BE MEASURED TO THE OUTSIDE EDGE OF THE COVERED SURFACE.)

3 THE OUTSIDE OF THE EXTERIOR WALL IS DEFINED AS THE "NEAT" OUTSIDE PERIMETER LINE OF THE EXTERIOR WALL FACE AS TAKEN AT EACH FLOOR LEVEL. NO DEDUCTION SHOULD BE TAKEN FOR SETBACKS AT WINDOWS, GLAZING, AND THE LIKE, NOR SHOULD ADDITIONS BE MADE FOR PROTRUSIONS SUCH AS PILASTERS, COLUMN ENCLOSURES, CORNICES, EXTERIOR BANDS, ETC.

4 SLOPING OR STEPPED FLOORS SHALL BE MEASURED AT THEIR FLAT HORIZONTAL PROJECTION.

Gross Building Area – Method of Computation

Figure 901.1.1

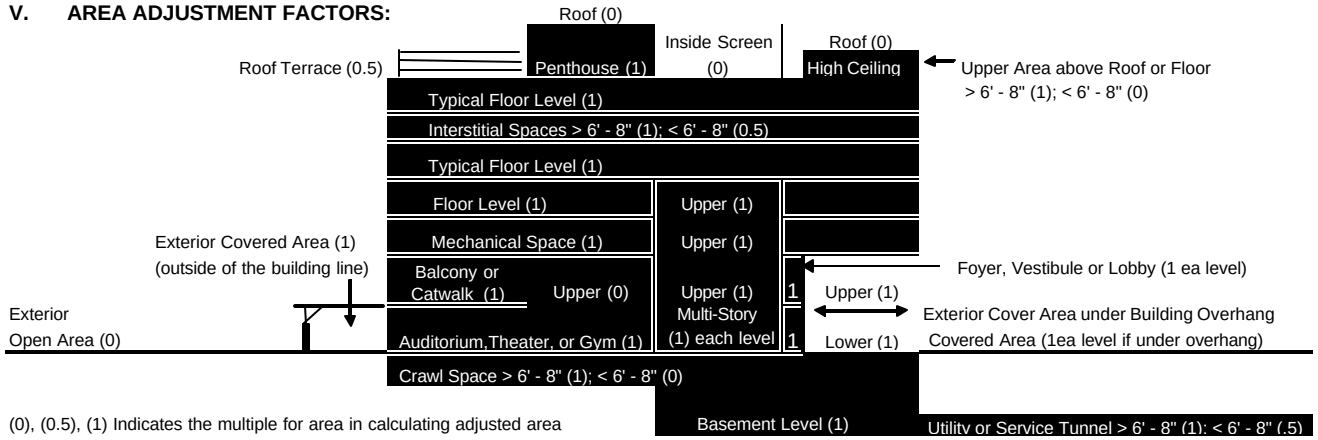
I. INTERIOR BUILDING SPACE	Area With Clear Height > 6'-8" a	Area With Clear Height < 6'-8" b	Area With Clear Height < 6'-8" (Adjusted) c = b x 0.5	Total Adjusted Area d = a + c	Assignable Area e	Non-assign Area f = d - e
- CRAWL SPACE						
- BASEMENT FLOOR						
- FIRST FLOOR						
- SECOND FLOOR						
- THIRD FLOOR						
- ADDITIONAL FLOOR LEVELS						
- ATTICS AND PENTHOUSES						
- INTERMEDIATE TIERS/INTERSTITIAL SPACES						
- CATWALKS						
- UTILITY AND SERVICE TUNNELS						
GROSS BUILDING AREA AND COST ESTIMATE AREA						

II. BUILDING EFFICIENCY FACTOR =

III. EXTERIOR SPACE	Measured Exterior Area	Adjustment Factor	Adjusted Exterior Area
- COVERED			
- ROOF TERRACE			
- EXTERIOR STAIRS			
SUBTOTAL OF EXTERIOR SPACES			

IV. TOTAL AREA FOR PROJECT SCOPE (I + III = IV)
FORMS (CO-2, CO-5, C0-6 etc)

V. AREA ADJUSTMENT FACTORS:



(0), (0.5), (1) Indicates the multiple for area in calculating adjusted area

Area Calculation for Gross Building Area, Building Efficiency and Cost Estimates

(continued on next sheet)

Figure 901.1.2

VI. NOTES

1) ATTIC & CRAWL SPACE AREA INTENDED FOR USE (CURRENT OR FUTURE) AS HABITABLE SPACE, STORAGE SPACE, OR AREA OCCUPIED BY MAJOR EQUIPMENT SHALL BE INCLUDED IN THE GROSS AREA IF > 6' - 8" IN HEIGHT.

2) PROJECT SCOPE SHALL INCLUDE THE EXTERIOR COVERED AND SURFACED SPACE OUTSIDE OF THE BUILDING LINE AS: COVERED WALKS, CANOPIES OVER PAVED AREAS, COVERED BALCONIES, PORCHES, PORTICOS, COVERED ENTRIES, COVERED TERRACES AND THE LIKE.

3) THE LOWEST LEVEL OF THE MULTI-STORY SPACE SHALL BE COUNTED IN THE INTERIOR SPACE FOR THAT LEVEL. ANY SPACE THAT PENETRATES THE FLOOR OR ROOF LEVEL BY > 6'-8" SHALL BE COUNTED AS ADDITIONAL AREA/ FLOOR LEVEL EXCEPT AREA FOR MULTI-STORY SPACES AS AUDITORIUM CHAMBER, THEATER, AND GYMNASIUMS SHALL BE CALCULATED AT ONE LEVEL ONLY.

4) AREA FOR VERTICAL OPENINGS AS INTERIOR STAIRS, ELEVATOR SHAFTS, ESCALATORS, UTILITY/SERVICE SHAFTS AND SIMILAR OPENINGS SHALL BE COUNTED AS GENERAL FLOOR SPACE ON EACH FLOOR THEY PENETRATE.

5) GROSS AREAS SHALL BE MEASURED FROM OUTSIDE FACE TO OUTSIDE FACE OF EXTERIOR WALLS OR FROM THE CENTERLINE OF COMMON WALLS SEPARATING BUILDINGS. (OPEN-SIDED EXTERIOR SPACES SHALL BE MEASURED TO THE OUTSIDE EDGE OF THE COVERED SURFACE.)

6) THE GROSS BUILDING AREA IS THE SUM OF ALL MEASURED AREAS ADJUSTED BY THE APPROPRIATE FACTORS NOTED ABOVE.

7) THE OUTSIDE OF THE EXTERIOR WALL IS DEFINED AS THE "NEAT" OUTSIDE PERIMETER LINE OF THE EXTERIOR WALL FACE AS TAKEN AT EACH FLOOR LEVEL. NO DEDUCTION SHOULD BE TAKEN FOR SETBACKS AT WINDOWS, GLAZING, AND THE LIKE, NOR SHOULD ADDITIONS BE MADE FOR PROTRUSIONS SUCH AS PILASTERS, COLUMN ENCLOSURES, CORNICES, EXTERIOR BANDS, ETC.

8) SLOPING OR STEPPED FLOORS SHALL BE MEASURED AT THEIR FLAT HORIZONTAL PROJECTION.

**Area Calculation for Gross Building Area,
Building Efficiency and Cost Estimates**

(continued from previous sheet)

Figure 901.1.2

901.2 Guidelines for Office Space Planning:

These guidelines are used for evaluating areas of common types of spaces. The guidelines are included in the Manual to help in planning space sizes and for calculating and justifying Capital Budget Requests space and area requirements. In the actual design of the project the agency may choose to make some spaces larger than the indicated guideline area and compensate by reducing the area allocated to other spaces. The use of areas greater than those indicated are not considered to be a valid justification for an increase in the authorized project square footage. Spaces which exceed the guidelines, any special space needs or special features required may need further explanation or justification in the Basis of Design.

Space Category &Type of Room or Space	Area Guideline	Remarks
Offices		
Agency Head	256 sf	16' x 16'
Deputy Agency Head	192 sf	12' x 16'
1st Level Below Agency Head	168 sf	12' X 14'
2nd Level Below Agency Head	144 sf	12' X 12'
3rd Level Below Agency Head	120 sf	12' X 10'
Private	120 sf	12' X 10'
Semi-private	96 sf	per person
Cubicle	64 sf	per person
Open Plan	64 sf	per person
Examining Room	110 sf	10' X 11'
Testing Room	100 sf	10' X 10'
Interview Area	64 sf	per person
Clerical Area	64 sf	per person
Conference Room	15 sf	per person
Assembly / Auditorium, Meeting, Theater, Lecture Hall/Room		
Fixed Seats (incl. aisle space)	10 sf	per seat
Chairs, not fixed	10 sf	per person
Tables and Chairs	15 sf	per person
Standing/Observation Space	3 sf	per person
Educational Spaces		
Classroom, 10 - 49 stations	20 sf	per station
Classroom, 50 - 99 stations	15 sf	per station
Lecture, over 100 stations	10 sf	per station
Laboratory, Biology & Chemistry	45 sf	per station
Laboratory, Engineering	60 sf	per station
Laboratory, Physics or Geology	40 sf	per station
Laboratory, Art & Architecture	60 sf	per station
Lab Storage, Biology & Chemistry	10 sf	per station
Lab Storage, Engineering	10 sf	per station

Lab Storage, Physics or Geology	8 sf	per station
Lab Storage, Art & Architecture	10 sf	per station
Dormitory		
Bedroom	115 sf	per bed
Lounge & Recreation Space	25 sf	per bed
Storage Space	10 sf	per bed
Library		
Stack Space	0.08 sf	per book
Reading Space	10 sf	per user
Library Services	2.5 sf	per user
Food Service, Food Courts, Dining Halls		
Dining Areas	15 sf	per seat
Serving Line and Counters	1.5 sf	per seat
Kitchen and Food Preparation	2.5 sf	per seat
Food Storage	1.5 sf	per seat
Dishwashing Area	0.7 sf	per seat
Receiving Area	0.4 sf	per seat
Waste or Garbage Area	0.3 sf	per seat
Recreation Buildings		
Bleacher Seats	5 sf	per person
Locker Area	20 sf	per locker
Weight Room	50 sf	per station
Exercise and Aerobics Area	20 sf	per person

Note: These guidelines shall not be used for calculating maximum occupancies for spaces or occupancy for egress!

901.3 Building Efficiency Ratios

901.3.1 General: Building efficiency is the ratio of Assignable Area to Gross Building Area expressed as a percentage and is determined based on the definitions and calculation procedures shown below. The minimum building efficiency ratios are a composite of the ratios or factors taken from recognized standards and are based on the definitions and procedures shown below. The minimum building efficiency ratios are intended to provide achievable minimum standards for design of an efficient, functional layout.

The definitions and procedures described below shall be used to determine the "Building Efficiency Ratio". Note that the "Gross Area" used in determining Building Efficiency differs from the VUSBC definition of gross area for determining the allowable gross area for the building for code compliance.

(Higher Education Agencies should note that the SCHEV guidelines for determining space needs or justification considers not only the assignable space (classroom, laboratory, etc.) but also all spaces which directly serve that space as being part of the "program space". Likewise, the SCHEV area and use factors for "program space" are based on their definitions without regard to actual layout.)

901.3.2 Definitions

Gross Area: The sum of all floor areas of the building included within the outside faces of the exterior walls for all stories. This includes the spaces that have floor surfaces as well as the open space in the floor for shafts, atriums and such. For determining building efficiency, the area of openings in the floor at each level for shafts and atria shall be in the gross area calculation at full value of the area of each opening.

Assignable Area: The area or the sum of all areas on all floors of a building assigned to, or available for assignment to, an occupant, including every type of space functionally usable by an occupant excepting those non-assignable areas defined below. The area of a closet or private toilet within an office or suite space shall be included in the calculation of the assignable area of that space. Assignable square footage shall include only program-related spaces; however, not all program related spaces are necessarily considered assignable.

Non-assignable Area: The area or the sum of all areas on all floors of a building not available for assignment to building occupants but which are necessary for the general operation of the building. Non-assignable space areas include corridors, stairs, lobbies, foyers, atria, entry vestibules, walls, columns, elevators, mechanical shafts, toilets (common and public), janitors closets, custodial, circulation, mechanical, HVAC and utility spaces, structural areas and open (shaft and atrium) spaces.

Custodial Area: That portion of the non-assignable area which is the sum of all areas of the building used for its protection, care, and maintenance. These include janitors closets, storage areas for custodial supplies and equipment, trash rooms, and custodial locker rooms.

Circulation Area: That portion of the non-assignable area which is required for physical access to other spaces, whether directly bounded by partitions or not. Circulation space includes corridors, elevator shafts, stairways, loading platforms, entry vestibules, foyers, atria, lobbies, tunnels and bridges. When determining circulation area, only spaces required for general access should be included. Aisles which are used for circulation within open office suites, auditoriums and other work areas are included in the calculation of the assignable area.

Mechanical Area: That portion of the non-assignable area designed to house mechanical/HVAC equipment, mechanical shafts, plumbing and sprinkler risers, electrical equipment rooms / closets, telephone and communications equipment rooms / closets, other utility services, and common or public (non-private) toilet facilities.

Structural Area: That portion of the non-assignable area which cannot be occupied or put to use because of the presence of structural features of the building. Included are columns, exterior walls, fire walls, and permanent partitions.

901.3.3 Calculations: The areas shall be determined from the actual floor plans for the facility. Section 701A further describes the factors and methods for calculation of floor areas.

Assignable square feet (ASF) as a percentage of gross square feet (GSF) shall be no less than the ratios listed below. Exceptions to these building efficiency factors must be approved by the Director of the Department of General Services. Requests must be supported by written justification submitted by the agency stating why these ratios cannot be obtained.

901.3.4 Building Efficiency Ratios

Building Type	**Ratio: ASF to GSF**
Office Building w/partitioned offices	70%
Office Building w/open office layout	90%
Classroom Building	66%
Classroom & Office Building	66%
Health/Fitness Building with gymnasium & classrooms	85%
Health/Fitness Building (gyms, classrooms, pool, handball courts)	80%
Hospital or Infirmary	60%
Engineering/Laboratory Building	72%
Instructional Shop Building	90%
Library Building	75%
Fine Arts Building	72%
Science Building w/Laboratories	65%
Physical Plant Service Building	85%
Student Union	75%
Dormitory Housing w/ common use toilets	65%
Apartment or Townhouse Style Housing	90%

Suite Style Housing w/ private toilets	80%
Auditorium / Theater	70%
Dining Facility	72%
Warehouse	93%
Maintenance Garage	85%

901.4. Energy Conservation Guidelines for Design and Operation

The following guidelines shall be considered by the Agency and the A/E when developing the criteria for the design and operation of the facility.

901.4.1 Architectural

- Comply with Mechanical Design Standards for energy conservation in Section 715A
- Reduce electrical energy consumption within the building by using natural light. Locate windows high in wall to increase ceiling reflection, where practicable.
- Use light color materials for walls and ceiling.
- Use adequate insulation and light colored or reflective roof surface.

901.4.2 Heating Ventilation and Air Conditioning

- Use activated charcoal filters or other efficient systems as approved by BCOM when odor control is required.
- Evaluate heat recovery; employ when economically feasible.
- Use hot and chilled water temperature reset controls.
- Size pumps, fans, chillers etc. to design load; do not oversize.
- Use variable speed drives on VAV fans.
- Use electric ignition instead of pilots.

- Provide means to shut-off HVAC distribution to unoccupied areas. Exceptions will be granted to hospitals, health care facilities, and other specialized construction, i.e., labs, computer rooms etc..

- Avoid the use of reheat systems.

- Use primary/secondary pumping and/or variable volume pumping.

- Avoid supplying simultaneous heating and cooling to a zone.

- Evaluate the use of energy management control and/or direct digital control systems.

- Evaluate thermal storage for electrical demand reduction, if current utility rates justify this technology.

- Evaluate the potential for co-generation.

- Evaluate the use of high efficiency, ground coupled, water source (geothermal) heat pumps.

901.4.3 Domestic Hot Water / Domestic Water

- Provide temperature control devices and time clocks for domestic water heaters.

- Consider instantaneous units for heating domestic hot water.

- Maximum water use rates for shower heads, faucets, water closets and urinals shall meet the requirements of the USBC.

- The use of domestic water for process cooling requires the approval of the Director of BCOM.

901.4.4 Electrical

- The levels of illumination, as recommended in Section 916.3 of this Manual, shall be used as the basis for designing maintained foot candle levels in applicable areas. Overall watts per gross square foot shall be no higher than 2.5 watts/gross square foot.

- Specify efficient lighting sources, e.g., reflective, electronic ballast, metal halide, etc.. Increased first cost shall be weighed against reduced operational and maintenance costs. See Section 916.4.

- Switching shall be provided for each lighting circuit, or for portions of each circuit, so that the partial lighting required for custodial, or for effective complementary use with natural lighting, may be operated selectively.

- In order to minimize energy usage during unoccupied hours, no lighting shall be installed that cannot be readily controlled (including emergency lighting intended to be controlled by authorized personnel only). The number of emergency lights shall be limited to the minimum required by the Virginia Uniform Statewide Building Code.

- Outside lighting shall be for security purposes only.

- Corridor and lobby lighting, as well as in other areas, should be reduced without going below established standards.

- The effect of total connected load, with respect to demand and energy rate schedules, shall be evaluated in the selection of all lighting and mechanical equipment. All available rate schedules shall be analyzed.

- Design switch circuits to permit turning off unused lights.

- Avoid the use of incandescent lighting.

- Control exterior lighting with photocells and time clocks.

- Motor shall conform to the requirements of Section 716.E.

901.4.5 Operational Criteria for Design

To comply with the ongoing program of energy conservation, the A/E shall incorporate into the design the ability to conform to the following operational criteria.

901.4.5.1 Heating Season:

(1) Set control devices so that full heating capacity of the system is not delivered to a space above 68°F space temperature, unless health reasons or programmatic reasons dictate higher requirements.

(2) During occupied hours, the temperatures of unoccupied spaces shall be reduced to at least 63ºF.

(3) During unoccupied hours, no heat shall be supplied to a building if the outside temperature is greater than 55ºF.

(4) During unoccupied hours and if the outside temperature is less than 55ºF., controls shall be set to supply heat to the extent that the space temperature shall not exceed 55ºF except during warm up of the space in a reasonable period of time.

(5) Adjust dampers so as to reduce to a minimum the induction of cold outside air into the heating system, and do not operate exhaust systems when buildings are unoccupied or during warm-up periods.

(6) Blinds, shades, drapes or other window coverings should be kept closed at night in order to reduce the heat loss through windows. Advantage should be taken of the suns heat by opening window coverings to admit sunlight when available.

901.4.5.2 Cooling Season:

(1) Set control devices so that full cooling capacity of the system is not delivered to a space below 78ºF. space temperature, unless health reasons or programmatic reasons dictate lower requirements.

(2) When spaces are not in use, space temperatures shall not be maintained below 83ºF by use of cooling cycle or ventilating equipment.

901.4.6 Facilities Operational Procedures

To comply with the ongoing program of energy conservation, the Agency shall incorporate the following operational procedures.

- It is imperative that windows and outside doors be kept closed when heating or cooling is required.

- Turn off heating equipment and close doors to spaces that are unoccupied for several hours.

- Central steam heating systems must be inspected on a continuing basis and all traps, expansion joints and other equipment repaired and maintained to prevent leaks both in distribution systems and in the buildings.

- Maintenance forces should regularly inspect and properly maintain the temperature controls to assure proper functioning.

- All systems carrying hot water, such as condensate returns, hot water heating systems, and domestic hot water systems, with particular emphasis on unions, valve stems and faucets, should be inspected and leaks repaired.

- The use of supplemental heating units, such as plug-in heaters, shall be avoided.

- Do not operate air conditioning equipment in spaces that will be unoccupied for several hours.

- When possible, reduce the amount of outside air brought through the cooling equipment.

- Use lights only when necessary since lights produce heat and add to the cooling load.

901.5 LEADERSHIP in ENERGY & ENVIROMENTAL DESIGN (LEED)

The U. S. Green Building Council (USGBC), a group of persons and other entities in the building industry promoting buildings that are environmentally responsible, profitable, and healthy places to live and work, has developed the LEED Green Building Rating System for evaluating sustainable concepts incorporated in the building and site developments.

The General Assembly in House Joint Resolution 108 encourages State Agencies and their A/E Designers to recognize and incorporate the Energy, Environmental, and Sustainability concepts listed in the LEED Green Building Rating System that are reasonable and feasible into the development and procurement of their projects.

The Department of General Services, Division of Engineering and Buildings, encourages that LEED sustainable development concepts and principles be considered in the planning, programming, design, construction, operation and maintenance, sustainment, restoration, and modernization of all Capital Projects to the extent such concepts are feasible, reasonable and consistent with its mission, program, functionality, project budget, the Uniform Statewide Building Code, the DEB Building Standards in the CPSM, the Governor's Executive Orders and policies, and the intent of the Virginia Public Procurement Act (§2,2-4300 et seq, Code of Virginia, as revised).

The USGBC LEED Green Building Rating System (http://www.leedbuilding.org) may be useful as a tool in identifying sustainable development principles and evaluating sustainability achieved thru the planning, design and construction process.

LEED Certification is an expense over and above the normal first cost of the project development. Agencies and Designers are encouraged to incorporate LEED energy, environmental and sustainability concepts into its projects. Pursuing the actual LEED Certification of the project and all associated expenses are left to the discretion of the Agency.

901.6. Design Checklist for Crime Prevention

The following checklist of items was provided by the Department of Criminal Justice Services (DCJS) to assist agencies in planning for safer campuses. Contact DCJS at (804) 786-4000 for additional information or assistance.

Street and Site Planning

1. Would any areas adjacent to the site be likely to cause a crime problem?

2. Is the site located adjacent to streets that have a relatively high degree of traffic at all hours?

3. Are the streets laid out in a manner to facilitate police and emergency vehicles?

4. Are streets straight and wide enough for effective patrol observation?

5. Does the site have only the minimum number of streets entering it, which could be blocked, secured or controlled if required?

6. Can access roads be provided to reservoirs and similar remote structures to permit maximum patrol observation?

7. Is adequate lighting provided along pedestrian and vehicular circulation systems?

8. Can the high-volume activities be located close to the patrol observation points?

9. Do vehicular and pedestrian circulation patterns maximize social deterrents to crime by enhancing intra-neighbor observation and recognition?

10. Are areas where crowds congregate designed so that police units can readily patrol?

11. Are structures sited to facilitate patrol observation and allow patrol access to all sides?

12. Are structures set back sufficiently from the perimeter street to deter the casual passerby from entering? Are signs used to denote territory or ownership?

13. Are dwelling units clustered into small groups which are removed from throughways, making strangers in each cluster more obvious?

Parking

1. Is sufficient off-street parking provided so streets may be cleared at night?

2. Can parking area be easily observed easily from the street? Does landscaping provide concealment?

3. Can the parking lot be at a lower grade than the surrounding streets, enabling a patrol to look down on it without unduly hampering design problems and increasing site development costs?

4. Is the parking for night activities located adjacent to the activity centers to reduce isolation?
5. Is the parking structure located away from the rest of the buildings in the area, so it does not provide access to the roofs of any of the adjoining buildings? Is the grade level fenced/secured?

6. Can parking areas be secured when not in use?

7. Is the off-street parking area in a secure place with an access control device which limits entrance and exit from the area to authorized persons?

8. Will parking be secured by a chainlink fence?

9. Are parking stalls laid out to permit maximum observation by patrol, other people or the attendants?

10. Is adequate view of pedestrians provided at vehicular access points crossing pedestrian walkways?

11. Can the attendants station be located to provide maximum observation?

12. Are technological devices needed in the parking area, such as closed-circuit television and sound devices, to provide adequate security? Are metal mirrors provided?

13. Are elevator towers located at the perimeter of the parking structures, adjacent a well traveled walkway or street?

14. Are parking structure stairs and elevator towers designed with at least one glazed wall in each?

15. Is there adequate lighting throughout, with the emphasis on the central areas?

16. Have the advantages of low and high profile lighting been evaluated for this location?

17. Can there be a designated area for parking bicycles or motorcycles?

18. Are bicycle racks in a readily observable area?

19. Are the racks immovable or securable?

Walkways

1. Are the walkways situated to generate enough traffic to provide a deterrent by virtue of the number of people using or observing the walkway at all times?

2. Are there access roads nearby so that emergency vehicles can get relatively close to any point on the walkways?

3. Are they routed past areas where the public is likely to congregate?

4. Are they wide enough to permit clear observation?

5. Are they sufficiently straight to provide adequate observation?

6. Are there any unnecessary indentations that could provide hiding places for would-be assailants?

7. Have the walkways been landscaped in a manner so as to provide minimum concealment for would-be attackers?

8. If they will be utilized at night, are they adequately lighted?

Landscaping

1. Is the landscaping of the type and situated in locations so as to maximize observation, while providing the desired degree of aesthetics? Minimize the use of planting with foliage or screening portion of the plant between 2' to 8' above finished grade.

2. Is lighting used in the landscaping both for security and aesthetics?

3. Are walls/fences planned in a manner so as not to provide concealment for a would-be attacker?

4. Are they set back from sidewalks and walkways?

5. Are walls or fences sufficiently high to deter circumvention?

6. Would it be feasible to use a chainlink fence or a see-through type of fence design, in lieu of a solid material?

Recreational Equipment

1. Are they situated so as to permit clear observation for patrol, free of parked vehicles or railroad cars?

2. Will these storage areas have at least a 50-foot cleared perimeter surrounding them?

3. Is parking provided for equipment away from buildings and fueling facilities so unauthorized vehicles can be readily observed by patrol units?

4. Is the area well lighted?

5. Can chainlink fencing be used instead of solid fences?

6. Can extra security be provided (chainlink fences, especially if pallets are stacked)?

7. If supplies are stacked, is there enough area available so it might be done in a systematic manner, allowing adequate land space for a patrol vehicle?

8. Can access roads be provided along spur tracks to make patrol easier or can they be paved to enable a patrol car to patrol them? If now, is there a possibility of barricading the spur tracks to deter truck or vehicle passage during off hours?

9. Can extra lighting be provided along the spur tracks?

Buildings and Structures

1. Are the buildings planned so that access to one will not give access to other buildings (interconnecting basements and attics)?

2. Are the larger buildings planned so that access to one part of the building does not give access to the entire building?

3. Have all means of gaining access to the roofs been removed (standpipes, flagpoles, trees, etc.)?

4. Are the buildings planned so as to provide no indentations, open courtyards or alleyways which could be used by assailants for concealment?

5. Is there a need for a service entrance? Are service entrances located so they can be seen easily by random patrol? Is it located to provide selective access and not to create an entrance way for criminals into the complex?

6. Can entrances for employees be situated adjacent to their designated parking areas?

7. Are the entrances clearly visible to patrol and the public?

8. Are the number of entrances minimal and, where possible, require passage through some central point, such as a lobby, where a clerk may be on duty? Is the control room designed to permit the maximum area of observation?

9. Are locking systems adequate? Can the entrances be oriented to increase visibility by patrol or neighbors?

10. Are all entrances well lighted?

11. Is it possible to have a multi-story structure? If so, can windows on the first level be eliminated, reduced in number, or made of vandal-proof materials?

12. Are unobservable windows kept to a minimum, especially on the first floor? Are only men housed in first floor dwelling units?

13. Are the windows on the first floor well lighted?

14. Do electrical plans provided for intrusion alarms in the areas of high crime incidents?

15. Are the stairwells open and able to be observed at all times from public areas?

16. Could the elevator use a shaft that would be observable from a public area (a glass shaft on the outside of the building)?

17. Is the elevator equipped with a security alarm button that would sound a silent alarm and automatically send the elevator to the ground floor?

18. Can functional areas be grouped together so they can be secured when not in use?

19. Has the number of like functional units or dwelling units on a corridor been limited to denote a territory and promote observation by neighbors?

20. Are storage areas secure?

21. Has special target hardening consideration been given to the office portion of each building?

22. Are offices located in an area that is readily controlled?

23. Are large areas of non-reflective glass to be used in the walls of laundry, vending and other vulnerable spaces?

902.0 CIVIL & SITEWORK

902.1 Earthwork

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

902.1.1 Drawing details of the following conditions will be required:

1 Over-excavation and replacement with suitable materials.

2 Subsurface profiles (boring logs) and limits showing the extent of rock, existing fill materials, water and existing unsuitable bearing materials.

3 Specific drawing notes stating that earthwork details are 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 contractors failure to maintain site/excavation stability, drainage or protection from frost penetration.

902.1.2 Earthwork specifications shall be definite, not general.

1 Coordinate Specifications with the Drawings.

2 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.

3 Specifications for materials and instructions shall state whether they are included in the base bid or will be an extra cost item.

4 Rock excavation shall be included in the base bid to the extent that locations are sufficiently identified in the geotechnical/soils report. See Section 702C.

902.1.3 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.

902.1.3.1 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.

902.1.3.2 General fill/backfill - Includes all classifications of materials noted in (a) above.

902.1.3.3 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.

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

902.1.3.5 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.

902.1.4 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.

902.2 Erosion and Sediment Control Requirements

902.2.1 **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 Department of Conservation and Recreation, Division of Erosion and Sediment Control for approval at the working drawings stage of plan development. Preparation and submission of the plan and narrative shall follow the requirements of the Virginia Erosion and Sediment Control Handbook, latest edition. The transmittal letter to the Division and the approval letter from the Division to the Agency shall be copied to the Bureau of Capital Outlay Management. Approval of the plan shall be secured prior to bid advertisement. Contact the regional or central Division office for clarification of the regulations. [Erosion and Sediment Control Regulation - VR 625-02-00]

902.2.2 **Disturbance of land exceeding one acre requires** submission of a stormwater management plan with calculations to the Department of Conservation and Recreation, Division of Stormwater Management. 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 regional or central Division office 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. [Stormwater Management Regulations - VR 215-02-00]

902.2.3 **Disturbance of land exceeding five acres requires** a discharge permit issued by the Department of Environmental Quality. This is not a substitute for the erosion and sediment control plan or the stormwater management plan, but an additional requirement. Contact the Department for permit applications and clarification of the regulations. The permit shall be approved prior to bid advertisement.

902.2.4 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 owners 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. The Contractor shall provide on-site, a person certified by DCR as a 'Responsible Land Disturber' in accordance with §10.1-563, Code of Virginia, as revised. "

(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.)

902.3 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 bed rock, 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 which 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 which cannot be removed by a 3/4 CY track mounted back hoe 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 which 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 $

902.4 Minimum Standards for Parking Spaces

The following minimum parking space dimensions are standards for use in the design of state parking decks, parking garages and parking lots. Parking configurations, aisles widths, etc., shall be designed to meet or exceed the minimum dimensions recommended by recognized standards for parking designs. Consideration shall be given to the duration of parking/turnover rate in the sizing of spaces and aisles and to the protection of columns and walls by the use of wheel stops, bollards or guard rails, if applicable.

Type vehicle	Minimum width	Minimum length	Minimum area

902.4.1 For Parking Decks and Garages Utilizing Self Parking

Standard Cars	8'-6" **	18'-0"	153 sf
Compact Cars *	8'-0"	15'-0"	120 sf
Handicapped Spaces***		- See UFAS	

902.4.2 For Parking Lots Utilizing Self Parking

Standard Cars	8'-6"min **	18'-0"	153 sf
Compact Cars *	8'-6"min **	15'-0"	120 sf
Handicapped Spaces***		- See UFAS	

* Compact car spaces may be incorporated/designated where restrictions by walls, columns, piers or other restraints impede the use of standard size spaces.

** 9'-0" width preferred

*** Locate H/C spaces to minimize H/C users exposure to crossing traffic

902.5 Policy for Parking Space Planning

The following Parking Space Planning Policy applies to all new buildings, additions, and conversions. Buildings which undergo major renovations should comply to the greatest extent possible.

All projects that renovate or alter accessible facilities must provide an adequate number of parking space for disabled people. Adequate number of parking spaces means a minimum of 2 percent of the spaces required by this policy but no less than one space for each renovation or alteration project.

Spaces provided in the agency's Transition Plan would not necessarily have to be included in the renovation but would have to be constructed as scheduled in the plan.

VUSBC Use	Minimum Parking Spaces Required

A-1	One parking space for every four fixed seats.
A-2,A-3	One parking space for every 100 gross square feet or one parking space for every four occupants.
A-5	One parking space for every four fixed seats, special parking plans will be considered.
B	One parking space for every 250 gross square feet.
E	One parking space for every two employees, plus one parking space for every 10 students on an urban campus OR for every two students on a commuter campus.
F, H	One parking space for every two employees.
S, U	One parking space for every two employees.
I-2	One parking space for every two employees, plus one parking space for every 10 resident beds OR for every two patient beds (no additional spaces are required for Day Care occupancies).
I-3	One parking space for every two employees, plus one parking space for every 20 beds.
M	One parking space for every 200 gross square feet.
R-2	One parking space for every two employees, plus one parking space for every five beds.
R-3, R-4	One parking space for every individual housing unit.

NOTES:

1. Normally, the Commonwealth does not build use groups A-4 (churches), I-1 (group homes), or R-1 (hotels). If an agency proposes to build a project in one of these groups, it must submit a parking proposal to the Director of the Bureau of Capital Outlay Management for review and approval.

2. Parking spaces for the disabled shall be located closest to the nearest accessible entrance on an accessible route and no more than 250 feet from the accessible entrance.

3. For purposes of calculating employees/students, their number is equal to the number of workstations or the maximum number of employees/students in a shift.

4. If it is impossible to comply with the requirements, an agency must request a waiver from the Director of the Division of Engineering and Buildings. The request shall explain in detail why compliance is impossible and shall provide an alternative proposal for parking.

5. Parking plans may be developed for an entire campus, facility or complex which address the total parking spaces available for all buildings and their associated Use Groups. Where insufficient parking is provided on site, the Parking Plan shall address the availability of off site parking for the building / facility occupants.

903.0 CONCRETE

903.1 Special Requirements for Cast-In-Place Concrete

The specifications shall contain the following requirements in Section 03300 - Cast-in-Place Concrete:

1. ACI 301,ÒSpecification for Structural Concrete for Buildings (current edition) shall be incorporated by references as the standard unless otherwise modified.

2. Field tests of fresh concrete shall include Sampling - ASTM C172, Slump - ASTM C143, Making and Curing Test Specimens - ASTM C31, Air Content - ASTM 231 or ASTM C173, and Unit Weight - ASTM C138.

3. The Owner shall engage the services of the concrete testing laboratory to perform the sampling, cylinder preparation and delivery, testing and reporting. The Contractor shall be responsible for adequate advance notice to the testing laboratory for the contractor’s concrete pours/placement.

Individuals performing the field tests of fresh concrete shall have proper training, qualifications, and be certified as a Concrete Field Testing Technician-Grade I by the American Concrete Institute or other recognized certification conforming to the minimum requirements of the American Concrete Institute's certification which requires the successful completion of a written and performance examination on the applicable ASTM test methods of this section.

904.0 MASONRY

904.1 Special Requirements for Masonry

All brick and concrete masonry unit construction on state projects shall conform to the requirements of ACI 530 / ASCE 5/TMS 402 and of ACI 530.1 / ASCE 6/TMS 602 as referenced in the current VUSBC.

905.0 METALS

905.1 Steel Roof Deck

Corrosion protection is critical to maintain the structural integrity of the roof deck from moisture leaks through the roofing membrane. NRCA Bulletin 15-91 provides guidance on protection. Do not allow 'primer paint' coated deck on state projects. Require the steel roof deck to be Factory Galvanized , G-60 or G-90 (ASTM A924-94) or Factory coating with aluminum zinc alloy (ASTM A792).

906.0 WOOD & PLASTIC

906.1 Reserved

907.0 THERMAL & MOISTURE PROOFING

907.1 Waterproofing & Drainage for Subsurface Structures

No state buildings for human or equipment occupancy shall be designed with basement floor levels below the water table. Varying degrees of subsurface water content require the following minimal waterproofing and drainage techniques.

907.1.1 Soils with little or no obvious water content:

(1) Waterproof walls and provide any suitable waterproofing protection board.

(2) Provide perforated type drainage pipe with gravel surrounding.

(3) Backfill with suitable material that has some porosity.

907.1.2 Damp to wet soils with no obvious water source:

(1) Waterproof walls and provide protection board. Note: If geotechnical type drainboard is used, protection board may not be required.

(2) Provide perforated type drainage pipe and (if necessary) surround with full height gravel to the underside of the impervious soil or material. An approved geotechnical type drainage board may be used in lieu of the full height gravel at the contractors option.

(3) Provide impervious soil or material at finish grade.

907.1.3 Walls or floors below the groundwater table:

(1) Delete the lowest floor or space below the highest calculated groundwater table possible, or

(2) Raise the level of the lowest top of floor structure above the top of the highest calculated groundwater table possible, and follow the waterproofing techniques listed in 707A.2(b).

907.1.4 The use of a geotechnical filter fabric is recommended for protection board and perforated drainage pipe.

907.2 Roofing Policy

907.2.1 General: The Appropriations Act requires all agencies to give first priority to the roofs of its facilities. The provisions of Sections 707B.1 through 707B.15 shall govern the design of all low-slope, flexible-membrane (built-up and single-ply) roofs. Section 707B.16 shall govern the design of metal roofing systems.

New or reroofing project working drawings and specifications shall be prepared by an architect or engineer appropriately registered by the Department of Commerce, Commonwealth of Virginia. Procurement of these professional services is addressed in Chapter 4 of this Manual.

Assuming roofs are equal in other respects, low-slope roofs that shed water are more desirable than flat roofs that do not; and steep roofs are more desirable than low-slope roofs. Economy, aesthetics, constructability and compatibility are valid considerations in evaluation and design of roof systems. This section provides not only mandatory provisions but sound advice on improving the survival rate of low-slope roofs.

907.2.2 Roofing Abbreviations

BUR: Built-up Roofing

CSPE: Chlorosulfonated Polyethylene

EPDM: Ethylene Propylene Diene Monomer

FM: Factory Mutual

NDE: Non-Destructive Evaluation

NRCA: National Roofing Contractors Association

NRCA Manual: The NRCA Roofing and Waterproofing Manual (latest edition)

RCI: Roof Consultants Institute

RIEI: Roofing Industry Educational Institute

SPM: Single-ply Membrane

SPRI: Single-ply Roofing Institute

UL: Underwriters Laboratories

907.2.3 Acceptable Roofing Membrane: The following types of membrane are acceptable on low-slope roofs for state-owned facilities:

1. EPDM, Single-ply, 45 mil minimum thickness; 60 mil preferred.

2. Reinforced CSPE, Single-ply, 45 mil minimum thickness.

3. Built-up Roofing, Hot Bitumen, 4-ply minimum.

4. Hybrid 4 ply system with reinforced Modified Bitumen cap sheet. See Section 707B.13.

907.2.3.1 Other Roofing Membrane The Director of the DEB will consider the use of membranes other than EPDM, CSPE, and BUR only if the Owner requests and the A/E supports, in writing, the use of the alternative system. The request must be received and approved before working drawings are submitted for review and shall provide the following:

1. The reasons for using other membrane(s).

2. A description of the system(s) and membrane(s).

3. A summary of evaluated design criteria listed in Section 707B.11.

4. The A/E shall confirm in writing:

    1. That the roofing membranes and systems have been investigated and in the A/E's opinion are suitable for use on the proposed project roof(s);

    2. That at least three installations have had at least five years of successful service in Virginia or contiguous states - provide project names and Owner, approximate roof sizes, locations, contact names and telephone numbers;

    3. That the A/E has personally investigated at least three installations of the proposed system(s) and is satisfied that they will have a service life of ten or more years under normal conditions.

Requests that do not provide the foregoing information will be returned to the Agency without action.

907.2.4 Reroofing

907.2.4.1 Before reroofing a facility or making major repairs, the Owner must procure a roof survey performed by an experienced and qualified inspection service. The roof survey shall use infrared or nuclear NDE moisture detection methods. For roofs repairs or replacement, an asbestos survey shall be performed and the findings reported in writing.

Exception: For roofs that are very small or that have reached an advanced stage of deterioration and where a roof survey does not appear cost effective, an Agency may, after determining the conditions by visual inspection, request a waiver of the roof condition survey. The request must be accompanied by a roof plan sketch with features noted, a written description of the problems cross referenced to the plan, an approximate area of the roof, and photographs showing the conditions which support the request. An asbestos assessment is required.

907.2.4.2 If complete reroofing is required, then the requirements for new construction guarantees shall be included; and

907.2.4.3 If complete reroofing is required and insulation in the roof covering assembly provides required thermal resistance for the building, then insulation shall be provided in the roof covering assembly in accord with the requirements for new construction.

907.2.4.4 Provide secondary (emergency) roof drains in accord with the requirements for new construction.

907.2.5 Owner's Roofing Inspection: The Owner shall have a full-time inspector on the job while the roof is being applied. The inspector can be the project inspector or someone qualified to inspect a roof installation but, preferably, a RIEI Certified Quality Assurance Observer, RCI Registered Roof Observer or one who has attended Roof Consultants Institute Seminars. Before selecting an inspector, the Owner shall discuss the inspectors qualifications with BCOM and the A/E.

The Roofing Inspector shall check all materials and application procedures and prepare a daily written report covering such items as: the weather conditions, the deck conditions, the materials stored, the materials installed, and the installation procedures used including bitumen temperature at kettle and point of applications, etc. A copy of the daily report shall be given to the Contractor. The inspector shall not permit installation of roofing materials without having first obtained from the Design Architect a copy of the manufacturers certification confirming that the materials
delivered for use on the project meet the specified ASTM Standards or other approved Standards. The Owner shall inspect the roof(s) semi-annually, as a condition of the roofing guarantee and states maintenance policy. The Owner shall also inspect the roof(s) before the two-year guarantee expires. (See roof inspection form in Appendix G.)

Appendix (G) provides criteria and qualifications for selecting (1) full time roof inspectors and (2) roof consultants. It, also, provides (3) criteria for non-destructive evaluation (NDE) roofing surveys and (4) criteria for drawings to accompany NDE surveys. Forms used with (1), (2), and (3) are included in Appendix G.

907.2.6 Roofing Conferences: A prebid conference is not required but is strongly recommended for reroofing or roofing repair projects. A pre-roofing conference is required and shall be specified.

907.2.6.1 Prebid Conference: If specified, bidders shall not be required to attend. They may question or comment on the specified roofing system, materials, details, and any other details thought to affect the roof. Response to comments shall be in writing or by addendum if bid documents need changing.

907.2.6.2 Pre-roofing Conference:

(1) A conference shall be required and held before ordering roofing materials.

(2) Representatives of the Owner (including the Roofing Inspector), Architect, General Contractor, Roofing Contractor, Deck Contractor, Mechanical Contractor, and Roofing Manufacturer will attend.

(3) Review plans, specifications, flashing details, work scheduling, and workmanship standards required. Resolve problems and discrepancies.

(4) Prepare a written record of proceedings and make it a part of the job record.

907.2.7 Guarantees: Specify guarantees and warranties for new construction or reroofing in the Special Conditions or General Requirements (Division 1) as follows:

907.2.7.1 For New Construction

(1) The (General) Contractor shall submit a written guarantee in which he agrees to maintain the entire roof system(s) in a completely watertight condition at no cost to the Owner for two (2) years from date of final acceptance; except the watertightness guarantee shall not be enforced when the Contractor can prove water damage was caused by the Owner.

The guarantee shall cover the roofing membrane and flashing, metal flashing, parapet coping, and all properly detailed penetrations of the roofing membrane for such things as stacks, curbs, expansion joints, etc., which exist when the work is performed.

(2) Provide the following Roofing contractors guarantee on the General contractors guarantee form:

> "The roofing contractor shall guarantee its materials and workmanship associated with the roofing, flashings, and sheet metal work incidental to the work required under the roofing subcontract, against defect due to faulty materials or workmanship for a period of two (2) years from the date of completion of such work. It is understood and agreed by all parties hereto that the responsibility of the roofing contractor under this guarantee form or any contract document shall be limited to the limited guarantee herein expressed by said roofing contractor."

(3) Provide the following Owners Agreement on the Contractors guarantee form:

"The undersigned named Owner for the Commonwealth agrees, from the date of acceptance of the project, to maintain the roof in accordance with the manufacturers written requirements and agrees to avoid damage to the roof surface by any parties under his control working or walking on the roof. The Owner recognizes his responsibility to inspect the roof semi-annually."

(4) Authorized agents of the General Contractor, Roofing Contractor, and Owner shall execute the guarantee form.

(5) The General Contractor shall furnish, as a minimum, a manufacturers standard 10-year warranty/ guarantee.

907.2.7.2 For Reroofing

(1) The Contractor shall guarantee the materials and workmanship associated with the roofing, flashings, and sheet metal work incidental to the reroofing project against defects due to faulty materials or workmanship for a period of two (2) years from the date of completion
(2) Also, include wording in paragraph 707B7.1(3) on the contractors guarantee form.

(3) Authorized agents of the Contractor and Owner shall execute the guarantee form.

(4) The Contractor shall furnish, as a minimum, a manufacturers standard ten-year warranty/guaranty.

907.2.8 NRCA Roofing and Waterproofing Manual: Use the latest edition of the NRCA Manual as a guide in preparing plans and specifications for all new roofing projects and for reroofing projects to the extent practicable unless:

1. The NCRA Manual conflicts with provisions of this section, or

2. The A/E documents need for and obtains BCOM approval to use different details and provisions.

907.2.9 Bidding Roofing Systems: Specifications shall include bids for only one type of roofing system Ñ either built-up roofing or loose laid single-ply roofing, for example, but not both unless the Owner obtains approval to bid more than one system from the Director of BCOM. If more than one is approved, the systems shall be specified as options permitting the bidder to select the system he wishes to use. **The systems shall not be bid as alternates.**

907.2.10 Materials Certification

907.2.10.1 Specify that at the pre-roofing conference, the Contractor shall give to the A/E the roofing manufacturers certification that the roofing materials being furnished comply with specified ASTM and approved standards.

907.2.10.2 Specify that such certification shall be received with roofing materials delivered to the job site.

907.2.10.3 Specify that the A/E must receive a copy of the certification and give it to the owners full-time roof inspector before roofing materials may be installed.

907.2.10.4 The A/E shall give a copy of the certification to the BCOM representative at the final inspection.

907.2.11 System Evaluation: The A/E responsible for roofing design shall evaluate and specify the roofing system(s) for:

- Fire Resistance Rating
- Wind Uplift Resistance
- Warranty
- Tear Resistance
- Attachment
- Resistance to harmful local chemicals
- Membrane compatibility with insulation
- Type of membrane seams and joints

907.2.12 Single-ply Membrane (SPM) Specifications

907.2.12.1 Specify SPM completely with latest listed ASTM and performance criteria.

907.2.12.2 SPM, if specified with either manufacturer or brand-name products, shall be specified with three manufacturers and three equivalent products.

907.2.12.3 Use the latest edition of Roofing Materials Guide, published by National Roofing Contractors Association, to determine equivalent SPM.

907.2.12.4 The single-ply membrane manufacturers representative shall check installation procedures at start-up and inspect the completed membrane installation before ballast is applied.

907.2.13 Built-up Roofing (BUR) Membrane Specifications

907.2.13.1 Specify BUR and each BUR system component with latest available ASTM standards.

907.2.13.2 Specify, minimally, a built-up four-ply hot bitumen system.

907.2.13.3 Hybrid four ply systems shall have a reinforced Modified Bitumen cap sheet at least 120 millimeters thick with a mineral granule surface applied with hot asphalt over a three ply (minimum) hot

bitumen system. Since Modified Bitumen systems vary significantly, the A/E shall contact BCOM to verify that other requirements proposed to be specified are satisfactory.

907.2.13.4 If manufacturers are specified, specify three manufacturers and three systems.

907.2.13.5 Specify Equiment-Viscous temperature (EVT) for bitumen application.

907.2.14 General Requirements: The following requirements are generally applicable to all low-slope roofs. They shall be specified as indicated unless waived by the BCOM for justifiable reasons:

907.2.14.1 Roof Slope

(1) Specify that all roofs shall slope 1/4" per foot, minimum, to drains on all new roofs.

(2) If a 1/4" slope is impractical on replacement roofs, the Owner may request authority to use a lesser slope from the Director of the DEB.

* Dead level valleys are unacceptable. Valleys shall slope a minimum of 1/8" per foot unless impractical. In such case a waiver may be requested by the Agency to allow a slope of 1/16" per foot.

907.2.14.2 Wind Uplift: Rating of complete roof assemblies shall be Class 1-60 (1-90 for open coastline locations) designed in accord with FM P7825; alternatively, loose laid, ballasted applications shall be designed to withstand wind uplift in accord with requirements in SPR1 RP-4 (or FM Technical Advisory Bulletin 1-29).

If the above design methods are not used, roof covering assemblies shall be designed to withstanding an uplift pressure as determined by criteria in:

(1) Factory Mutual (FM) Loss Prevention Data Sheets 1-7 and 1-28S or

(2) Single-ply Roofing Institutes (SPRI) SPRI RP-4 Wind Design Guide

907.2.14.3 Insulation: Unless otherwise required to comply with a Manufacturers roofing system, specify insulation as follows:

(1) C or R (per inch) factor

(2) 2 layers, if thickness permits

(3) Staggered joints

(4) Mechanically fasten the first layer to the deck (unless the A/E can justify in writing to the BCOM why the insulation cannot or should not be mechanically fastened); adhere the second layer to the first with hot asphalt.

(5) Compatible Insulation: The A/E shall assure the Owner that the specified type of insulation has been investigated and is entirely compatible with contiguous, specified roofing materials.

907.2.14.4 Rooftop Equipment

(1) Avoid if possible.

(2) Comply with NRCA Manual recommendations.

(3) Design clearances and details for easy re-roofing.

(4) Provide prefabricated walks to and around equipment that requires servicing; walks must not block roof drainage.

907.2.14.5 Approved Applicator: Specify that the roofing and base flashing applicator shall be approved by the materials manufacturer.

907.2.14.6 Roof Protection: All specifications must state that before moving equipment or materials over a roof, the Owner, General Contractor, Roofing Contractor, and any of their agents must protect the roof from damage during and following roofing work. Movement of equipment and materials without roof protection shall be cause for the Owner, General Contractor, Roofing Contractor or A/E to stop work until protection is provided and any damage is corrected. The Owner's roofing inspector shall record all such violations

907.2.14.7 Pre-Final Inspection Survey: Unless the Owner, on advice of his A/E, requests a waiver of the survey for justifiable reasons given in writing and the Director of the BCOM approves the waiver, specifications shall include the following survey provisions:

(1) The A/E shall notify the Owner, Contractor, and Roofing Contractor (in writing) that he has inspected the roof(s) and finds it (them) sufficiently complete to permit a roofing survey. In no case shall the survey be made earlier than forty days before the Substantial Completion Inspection.

(2) The Owner shall engage the services of an experienced, independent roof survey inspection service or laboratory, to survey the roof(s). The service shall use infrared or nuclear moisture detection methods, except if the method used requires roof probes or cuts, it shall not void the Contractors two year guarantee and the Manufacturers standard warranty/guarantee.

(3) The Roofing Contractor shall cooperate and assist the inspection service by making and repairing any required cores, test cuts, or probes in such a way that Manufacturer's and Contractor's warranty/guarantees are not voided.

(4) A copy of the survey report shall be delivered to the BCOM no later than ten days before the Substantial Completion Inspection. Also, copies of all survey reports shall be delivered to the Owner, A/E, Contractor, and Roofing Contractor.

(5) The Owner shall pay for the service except that if the survey shows roofing deficiencies caused by improper materials, poor workmanship, or Contractor negligence, the Contractor, at his expense, shall repair or replace the roof(s) and provide additional surveys until the roofing work complies with the contract documents. All corrective work shall be completed before the final inspection.

(6) Acceptance of the roofing system shall be contingent on a roofing survey report that indicates the presence of no detrimental amount of moisture; for example, moisture that would cause a significant lowering of the thermal resistance of the roof; separation of the roofing plies; blisters; etc.

(7) Insulation that has lost more than 20% of its dry thermal resistance (R-value) and any materials covering the insulation shall be replaced by the Contractor at no cost to the Owner.

907.2.15 Final Inspection

907.2.15.1 The following items must be given to the Owner's representative at the Final Inspection:

(1) A copy of the (general) contractors and roofing contractors two-year guarantee.

(2) A copy of the roofing manufacturers standard warranty/guarantee.

(3) A copy of the manufacturers certification that roofing materials comply with specified ASTM standards.

(4) Copies of the History of Roofing Installation, Sample Form A; Roof Information Worksheet - Built-Up Roofing, Sample Form B, or Roof Information Worksheet - Single Membrane Roofing, Sample Form E. The A/E shall obtain forms from the Owner and complete all applicable items. (The Forms may be found in Appendix G.)

907.2.15.2 Representatives of the Owner (and the A/E), the Contractor, the Roofing Subcontractor, and the Membrane Manufacturer shall inspect the roof(s) between nine months and one year before the closing of the General Contractors one year guarantee. The Owner shall also have the roof inspected at least three months before the two year guarantee expires and notify the Contractor in writing of any defects noted. The Owner shall require that any defects be corrected at least 30 days prior to expiration of the guarantee.

907.3 Reserved

907.4 Metal Roofing Policy

907.4.1 General: These provisions shall govern the design of all metal roofs (low slope or steep slope).

New or reroofing project working drawings and specifications shall be prepared by an architect or engineer appropriately registered by the Department of Commerce, Commonwealth of Virginia.

907.4.2 Roofing Conferences: A prebid conference is not required but is strongly recommended for reroofing or roofing repair projects. A pre-roofing conference is required and shall be specified. See Section 922.6.1 and 922.6.2.

907.4.3 Guarantees: Specify guarantees and warranties for new construction or reroofing in the Special Conditions or General Requirements (Division 1) as follows:

For New Construction the (General) Contractor shall submit a written guarantee in which he agrees to maintain the entire roof system(s) in a completely watertight condition at no cost to the Owner for two (2) years from date of final acceptance against defects due to faulty materials or workmanship for a period of two (2) years from the date of completion. See Section ???707B.7.1(1).

For new and reroofing the Roofing Contractor shall guarantee the materials and workmanship for a period of 2 years. See Section ???922.7.1(2). Include the wording in Section ???922.7.1(2) on the Contractor's guarantee form.

Also, include wording in paragraph ???922.7.1(3) on the contractors guarantee form.

Authorized agents of the General Contractor (if new construction), Roofing Contractor, and Owner shall execute the guarantee form.

The General Contractor (for New Construction) and the Contractor (for reroofing) shall furnish on all pre-engineered buildings and other standing seam roofing systems on buildings for uses other than utility or storage a twenty (20) year non-prorated watertighness warranty provided from the roofing manufacturer. A twenty (20) year finish warranty covering fading, chalking and film integrity is recommended when an applied finish is specified.

907.4.4 A wind uplift performance rating equivalent to UL Class 90 (U.L. Test 580) is recommended on all buildings for uses other than utility or storage.

907.4.5 Traditional double lock seam or flat seam terne metal roofs which comply with SMACNA Architectural Sheet Metal Manual or the NCRA Metal Roofing Manual are acceptable.

907.4.6 Lapped rib panels with exposed fasteners are acceptable only for utility structures such as sheds, or where part of a pre-engineered building where manufacturer is responsible for watertightness.

907.4.7 Architectural systems (which must be installed over a solid deck) are allowable only for slopes 4:12 or greater, if they use clip-on caps or single lock ribs.

907.4.8 Structural systems (which can span between widely spaced purlins) may be used for low-slope roofs, and must have machine-locked ribs a minimum of 2" high, with tape or gaskets between ribs.

907.4.9 If panels are longer than 10', details and specifications must show where system is anchored (ridge, center, or eave) and how expansion is accommodated.

907.4.10 Gaskets or tape shall be used to make seams watertight. Use closures at ends of ribbed panels.

907.4.11 Systems other than those described above must be approved by BCOM for use at Preliminary review stage. Submit product data on the system used as the basis of design, and show that at least 2 other manufacturers make comparable systems. Provide a list of a minimum of three (3) installations that have had at least five years of successful service in Virginia. Provide names and owner, approximate roof size, location, contact names and telephone numbers.

907.4.12 Comply with additional recommendations of manufacturer and NRCA Handbook.

907.4.13 Approved Applicator: Specify that the roofing applicator shall be approved by the materials manufacturer.

907.4.14 Roof Protection: All specifications must state that before moving equipment or materials over a roof, the Owner, General Contractor, Roofing Contractor, and any of their agents must protect the roof from damage during and following roofing work. Movement of equipment and materials without roof protection shall be cause for the Owner, General Contractor, Roofing Contractor or A/E to stop work until protection is provided and any damage is corrected.

907.4.15 Final Inspection

907.4.15.1 The following items must be given to the Owner's representative at the Final Inspection:

(1) A copy of the (general) contractors and roofing contractors two-year guarantee.

(2) A copy of the roofing manufacturers warranty/guarantee. See Section 707B.16.3(5).

(3) A copy of the manufacturers certification that roofing materials comply with specified (ASTM) standards.

(4) Copies of the History of Roofing Installation, Sample Form A; and Roof Information Worksheet – Sheet Metal Roofing, Sample Form C. The A/E shall obtain forms from the Owner and complete all applicable items. (The Forms may be found in Appendix G.)

907.4.15.2 Representatives of the Owner (and the A/E), the Contractor, the Roofing Subcontractor, and the Roofing Manufacturer shall inspect the roof(s) between nine months and one year before the closing of the General Contractors one year guarantee. The Owner shall also have the roof inspected at least three months before the two year guarantee expires and notify the Contractor in writing of any defects noted. The Owner shall require that any defects be corrected at least 30 days prior to expiration of the guarantee.

908.0 DOORS & WINDOWS

908.1 Not Used

908.2 Glazing: For a building designed with the capabilities for both heating and cooling, the use of double glazed glass is required and low-emissivity solar glass is strongly recommended. For buildings provided with heating only, double glazed glass shall be utilized. (A waiver from this requirement will be considered based on the merits of the case.)

908.3 Shading Window shading, interior and/or exterior, shall be completely described in the preliminary submittals. Window shading shall be taken into consideration when calculating cooling loads. Indicate who will provide window shading devices.

908.4 Operable Sash Windows shall have operable sash. If operable sash can be documented to be impractical, the Agency can request a waiver of this requirement from the BCOM Director.

909.0 FINISHES - Reserved

910.0 SPECIALTIES - Reserved

911.0 EQUIPMENT - Reserved

912.0 FURNISHINGS

912.1 Guidelines for Selecting Furniture and Accessories

912.1.1 Facilities should have functional interiors, reasonably pleasant in appearance and conductive to the purpose for which they were constructed. Lavish design, gold plated in any respect or even having the appearance of being wasteful of government funds, should be avoided. In furniture and furnishings,

items that should not be used include oriental and decorator rugs, period furniture reproductions (Williamsburg, French Provincial, Early American, etc.) figurines or "objects d art", free standing decorator items such as large world globes, leather covered furniture, and original paintings or numbered prints, especially if signed by the artist, ornate chandeliers and elaborate window coverings.

912.1.2 Criteria for furniture selection shall include function, anthropometric considerations, maintenance, durability, comfort and cost. Careful consideration shall be given to coordination of building and furniture finishes and colors. Shelving, storage and other similar tall or high density equipment shall conform to fire regulations regarding overhead clearances, density, etc.

912.1.3 Furniture selections should be made to the greatest extent possible from items available on State contracts. Selection of substitutions for items on contract must be supported by detailed information and documentation. This justification must accompany any waivers submitted to the Division of Purchases and Supply requesting procurement for non-standard items.

912.1.4 Provide detailed working drawings and specifications for the procurement, fabrication and installation of custom furniture, etc., from commercial sources.

912.1.5 Technical equipment, linens (except draperies and bedspreads), housekeeping items and other equipment shall not be included in the interior design procurement package.

913.0 SPECIAL CONSTRUCTIONS - Reserved

914.0 VERTICAL TRANSPORTATION

914.1 Elevators

914.1.1 Final Acceptance: Include the following statement in all Elevator Specifications:

"As a part of final acceptance of the project and in accordance with the General Conditions, the Contractor shall have a Qualified Elevator Inspector (QEI) conduct a full Acceptance Inspection and Test in accordance with ASME/ANSI A17.1 before final acceptance by the Owner. The Contractor shall obtain from the elevator contractor and/or manufacturer and furnish to the Owner all data affecting the elevator installation or modification, including 'as-installed' circuit and control wiring diagrams and maintenance manuals."

914.1.2 Microprocessors: If microprocessor control systems are provided for elevators, include the following:

1 In the general portion of the elevator specification include the following:

Repair Requirements: "For elevator microprocessor control system, provide maintenance diagnostic tools, electrical schematic wiring diagrams, and any access codes and passwords required for all maintenance functions, including diagnostics, adjustments, and parameter reprogramming. Tools may be hand held or built into the control system and shall function for the life of the equipment. Tools provided shall be usable throughout the life of the equipment without the requirement to return to the manufacturer. Provide complete operations and maintenance manuals including diagnostics instructions for troubleshooting the microprocessor system."

2 In the products portion of the elevator specification include the following under the Control Equipment description:

Solid-State Control: "Elevator controller shall be solid-state microprocessor based for dispatch and motor control."

914.1.3 Elevator Cab Size: All new buildings provided with elevator service shall have at least one elevator sized and configured to accommodate an ambulance type stretcher (76 inch x 24 inch) in the horizontal position. See the applicable BOCA Building Code Section on elevators and conveying systems for additional requirements. Where existing elevators are being replaced, the above criteria shall be met where possible.

914.1.4 Application of ANSI/ASME A17.1, Rule 102.2(c)(4): In order to prevent people from being trapped in an elevator when power is automatically disconnected in accord with the requirements of ASME/ANSI A17.1, Rule 102.2 (c)(4), the policy below shall be applicable for all new and remodeled state building elevator systems

914.1.5 Before power is automatically disconnected in accord with ASME/ANSI A17.1, Rule 102.2 (c)(4), provide controls necessary to accomplish the following:

1. Heat detectors required by Rule 102.2 (c)(4) shall provide a signal to initiate Phase I Fireman's Service Emergency Recall Operation Rule 211.3a. The activation sequence shall be similar to requirements for smoke detectors in Rule 211.3b. No additional heat detectors are required other than those called for by Rule 102.2(c)(4).

2. Provide an elevator travel time delay, equivalent to the elapsed time for an elevator to travel from its farthest stop to the designated recall level plus ten (10) seconds before power to the elevator equipment is disconnected and pre-action sprinkler is activated as required by Rule 102.2(c)(4). [Elevator Travel Time Delay = The time for an elevator to close its doors, under Phase I conditions, return to the designated recall level, and open its doors. If there are multiple elevators, the elevator having the greatest travel time shall be used in determining the time delay.] See Sample Circuitry Diagram in Figure 714A-1.

915.0 MECHANICAL DESIGN STANDARDS

The criteria contained in this section supplements VUSBC to assure minimum standards as indicated and applies to all appropriate projects in the Capital Outlay Program. Its purpose is not to limit architectural and engineering freedom, but to create an awareness that all designs must effectively minimize the use of energy. The development of these standards/guidelines has demonstrated that energy efficient designs provide very significant energy savings and reductions in life cycle costs. Compliance with these standards/ guidelines is mandatory.

The criteria in this section applies to all new buildings, additions and applicable renovation projects. Refer to the Appendix for portions of the latest codes which were not adopted and are, therefore, deleted from Code requirements. Energy efficiency considerations are a function of building design. All projects financed by the state will be evaluated for energy conservation and life cycle costs.

Computerized energy budget analysis, forecasting energy consumption in BTU/GSF/year is mandatory for all projects with greater than 8,000 gross square feet which have heating and cooling and with greater than 20,000 gross square feet which have heating only.

915.1 Building Envelope Design Standards

915.1.1 Should the characteristics or circumstances of a particular project justify not meeting any of the requirements below, approval of the design must be requested and obtained from BCOM. Such request must be supported by the merits of the particular project in conjunction with a Life Cycle Cost Analysis to demonstrate that the life cycle costs will not be increased when compared to a design in full compliance. The design shall comply with the VUSBC and this Manual.

915.1.2 The proposed design shall consider energy conservation in determining the orientation of the building on its site; the geometric shape of the building; the building aspect ratio; the number of stories for a given floor area requirement; the thermal mass of the building; shading and reflections from adjacent surfaces or vegetation; opportunities for natural ventilation; and wind direction and speed. The use of cantilevered spaces is discouraged. If unusual circumstances allow this design to be approved in a given instance, the U factor shall conform with the applicable Virginia Uniform Statewide Building Code and this Manual.

915.1.3 Thermal performance: Each building which is heated or mechanically cooled shall be constructed so as to provide the required thermal performance of the various components. The required thermal transmittance values (Uo) of any one component, such as roof/ceiling, wall or floor, may be increased and the Uo values or other components decreased when it is shown that the overall heat gain or loss for the entire building envelope does not exceed the total resulting from conformance to the required Uo values. A building that is designed to be both heated and cooled shall meet the more stringent of the heating or cooling requirements for the exterior envelope as provided for in this section when requirements differ.

915.1.4 For a building heated and cooled to the acceptable human comfort level, the following overall average Uo values shall be used as an assembly maximum:

Exterior Wall Assemblies* Uo = 0.110

Roof-Ceiling Assemblies**	Uo = 0.065
Floor over unconditioned space	Uo = 0.074
Wall adjacent to unconditioned interior space	Uo = 1.170
Wall below grade	"R" = 8.000

Unheated slab on grade	Horizontal	Vertical
@ 24" width/depth	"R"= 13	"R"= 7
@ 36" width/depth	"R"= 11	"R"= 6
@ 48" width/depth	"R"= 9	"R"= 4

*For the purposes of this Manual, the gross area of exterior wall assemblies shall consist of all opaque wall areas (including foundation walls above grade), peripheral edges of floors, window areas (including sash) and door areas, where such surfaces are exposed to outdoor air and enclose a heated or mechanically cooled space.

**Skylights shall be considered only if the combined heat gain/heat loss to the building (including solar gains) does not exceed the values obtained using the maximum "Uo" value shown.

915.1.5 For a building heated only (above 50º F), the overall average Uo values of the assemblies may be increased to the maximum values listed below:

Exterior Wall Assemblies	Uo = 0.190
Roof-Ceiling Assemblies	Uo = 0.080

915.2 Heating, Ventilating, and Air Conditioning Design Criteria

915.2.1 General

(1) Schematic submittals (or preliminary submittals if schematics are waived): Each building shall acknowledge compliance with this criteria and also state what special efforts for energy conservation are planned for the HVAC system.

(2) Preliminary submittals shall include ventilation design criteria and sufficient data to show compliance with requirements.

(3) The use of recognized, proven and cost effective energy conservation methods and equipment is encouraged.

915.2.2 Design Conditions: Design heating and cooling systems using the following criteria:

(1) Heating - Use the median of annual extremes for outside temperature included in the Figure 915.3.1 or the ASHRAE Handbook 1993 Fundamentals data. Use Inside Design Condition Criteria in Figure 915.3.2 for inside temperatures.

(2) Cooling - Use 2-1/2% figures for outside Wet Bulb and 2-1/2% figures for Dry Bulb temperatures included in Figure 915.3.1 or the ASHRAE Handbook 1993 Fundamentals data. Use Inside Design Condition Criteria in Figure 915.3.2 for inside design temperature.

(3) For any Occupancy/Use not shown in the Inside Design Condition Criteria, Figure 915.3.2, consult ASHRAE Handbooks or other applicable references for suggested criteria and obtain BCOM approval of conditions proposed for use in design.

915.2.3 Methods of energy conservation, such as energy recovery from exhaust air shall be evaluated.

915.2.4 System shutdown and night setback shall be provided for all systems to reduce energy use during periods of non-use.

915.2.5 Ventilation rates and total air circulated shall be kept to the minimum as required by VUSBC, ASHRAE Standard 62-1989, or recognized special space requirements. Each mechanical ventilation system (supply and/or exhaust) shall be equipped with a readily accessible means for either shutoff or volume reduction when ventilation is not required, including morning warm-up.

915.2.6 Use outdoor air for cooling as defined by the VUSBC.

915.2.7 Humidification for human comfort will not normally be allowed.

915.2.8 The use of electric resistance as the primary source of heat is not allowed without approval. If electric resistance heat is the only option for heating, documentation justifying the same shall be submitted to BCOM for approval.

915.2.9 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. Where practical the use of coal as the primary source for heating shall be considered in all cases. Parameters for analysis are described in Appendix I. The analysis shall be submitted for review with the preliminary documents and shall be summarized on the Life Cycle Cost Worksheets provided in Appendix I. The data submitted shall include:

(1) A Life Cycle Cost Worksheet for each fuel studied.

(2) Estimated yearly consumption for each fuel.

(3) Unit costs and other backup data to support the summary.

(4) Building area.

(5) Building heating load.

(6) Domestic hot water load.

(7) Other heating requirements.

(8) Building cooling load.

(9) Engineers and Owners recommendations.

A calculation of the total building energy consumption, expressed as BTU input per gross building square foot per year (BTU/GSF/YR), shall be submitted for each building.

915.2.10 Energy efficiency standards for small and large commercial package air conditioning and heating equipment, packaged terminal air conditioners and heat pumps, warm-air furnaces, packaged boilers, storage water heaters, instantaneous water heaters, and unfired hot water storage tanks shall meet the requirements of the VUSBC.

915.3 Climatic Conditions and Temperatures for Design

The interior and exterior conditions for use in the design of heating and cooling systems for state owned buildings are included in Figure 915.3.1, Climatic Conditions for Design and in Figure 915.3.2, Inside Design Condition Criteria.

	Winter °F	Summer °F	
Station	Median of Annual Extremes	Design Dry Bulb 2-1/2%	Design Wet-Bulb 2-1/2%
Alexandria/Reagan Nat'l AP	7	91	77
*Big Stone Gap	3	91	74
*Blacksburg	0	91	74
*Bluefield	8	81	71
*Bristol	4	89	75
Charlottesville	8	91	76
Danville AP	9	92	76
*Fairfax/Dulles IAP	7	91	77
Fredericksburg	6	93	77
Harrisonburg	0	91	74
Lynchburg AP	8	90	76
*Manassas	10	93	77
Norfolk AP	15	91	78
Petersburg	10	92	78
Richmond AP	10	92	78
Roanoke AP	8	91	74
Staunton	3	91	74
*Williamsburg	14	92	78
Winchester	4	90	76

Notes: For stations not listed above, coordinate design climatic conditions with the Division of Engineering and Buildings (DEB). Conditions shown shall be used for projects in these localities.

* These locations do not appear in ASHRAE.

Climatic Conditions for Design

Figure 915.3.1

OCCUPANCY/USE	SUMMER (COOLING)	WINTER (HEATING)
Offices/Business	78°Fdb	70°Fdb
Classrooms/Lecture	78°Fdb	70°Fdb
Residential	78°Fdb	70°Fdb
Libraries*	78°Fdb	70°Fdb
Archival Storage in Libraries	Special	Special
Art Storage in Museums	Special	Special
Kitchens***	85°Fdb or Spot Cooling	70°Fdb
Warehouses, Mechanical Rooms, Storage Rooms,& Electrical Rooms	Ventilate with outside air unless otherwise approved	40-55°Fdb For Freeze Protection
Pools**	82°Fdb 50-60% RH Pool Water: 80°F	82°Fdb 50-60% RH Pool Water: 80°F
Hospitals	Consult the ASHRAE Guide or other applicable references	
Laboratories* (Educational)	78°Fdb 30-60% RH	70°Fdb 30-60% RH
Gymnasiums/Recreation, Indoor Tennis & Racquetball Courts, Weight Rooms, & Aerobics Rooms***	80°Fdb	68°Fdb
Locker Rooms/Showers***	80°Fdb	70°Fdb
Prisons/Detention	82°Fdb	68°Fdb

* Conditions may vary depending upon actual user justified requirements. Deviations must be approved by the Bureau of Capital Outlay Management.

** Cooling for this type occupancy/use must be justified to and approved by the Director, Division of Engineering & Buildings (DEB).

*** These Occupancy/Use types are not normally provided with cooling unless justified to and approved by DEB . Where approved, design conditions shall not exceed those indicated.

Inside Design Condition Criteria

Figure 915.3.2

915.4 Building Energy Requirements

The preliminary submittal shall include calculations along with the Basis of Design per Appendix C to assure that the design complies with the VUSBC requirements and the Energy Conservation standards of this Manual including the thermal transmittance values shall be as outlined in Section 932.

915.5 Steam and Hot Water Distribution Systems

The basic requirements for these systems are as follows:

915.5.1 The distribution system will be planned, laid out and constructed with consideration given to future extensions, taking into account line routing, sizing, and valving (for main line and branch isolation).

915.5.2 Underground piping systems distributing steam, condensate, low and high temperature water and other heating media above 150ºF shall be installed in box trenches or tunnels. A direct burial system shall not be permitted without approval. Construction shall be designed to prevent the intrusion of water and other substances into box trenches or tunnels for a minimum of 25 years.

915.5.3 Pipe shall be properly supported, anchored, and guided to allow for expansion/contraction. Expansion loops, slip joints, and/or ball joints may be applied (to be packed and lubricated under full line pressure). Bellows type joints are not acceptable. Systems must be ventable and drainable.

915.5.4 The drawings for the distribution system shall include both a plan view and a profile view of the system indicating points of connection, anchorage points, loops, points of support, elevations (on profile view), junctions and crossovers/crossunders with other utilities or obstructions and other pertinent data required for construction. Drawings shall also include typical and special details of supports, anchors, connections and other similar conditions.

915.5.5 Materials of construction and fabrication must lie within allowable stress values specified by the ASME Code. Design life will be 30 years.

915.5.6 Pipe systems at elevated temperatures (greater than 150ºF.) will be designed to stay dry, be corrosion protected, and to have economic heat loss rates.

915.5.7 Above-ground steam and hot water distribution systems should be used where they are feasible.

915.5.8 Insulation materials must have high compressive strength, low permeability, low conductivity; must be non-corrosive, and vermin-proof. Insulation must be dryable if wetted, and withstand repeated or extended boiling without damage or loss of insulating qualities. Pre-molded types are to be used; loose fill and blanket types are unacceptable.

915.5.9 The piping shall be hydrostatically tested before insulating and before field joints are backfilled.

915.6 Domestic Hot Water Systems

915.6.1 In facilities with large hot water needs such as in prisons, dormitories, kitchens etc., water heating should be supplied by hot gas reclaim where practicable.

915.6.2 Evaluations should be made to prevent the operation of central space heating boiler plants, in summer months, solely for the purpose of supplying domestic hot water needs. A separate domestic hot water system should be used in this case.

915.6.3 Reduce per person requirements to the absolute minimum.

915.6.4 Use chemical sterilization and/or booster heater systems for dishwashing needs instead of higher temperature supply hot water.

915.6.5 Maximum water use rates for shower heads, faucets, water closets and urinals shall meet the requirements of the VUSBC.

915.6.6 Residential type water heaters for 1 and 2 family dwellings or apartment style units where a central domestic hot water system is not used or required shall meet the requirements of the VUSBC

915.7 Recording Energy Usage

Executive Order #54 requires agencies to reduce energy consumption and requires the Department of Mines, Minerals and Energy (DMME) to provide a consolidated report of such. Each facility with a Building Automation System (BAS) shall provide an Internet Protocol (IP) address to the BAS vendor for the transmission of energy data. The BAS will collect the facility energy consumption data required by DMME and transfer this data over the internet to the Statewide Energy Database DMME has selected Tridium Vykon Energy Suite as the software hosting the Statewide Energy Database. Contact DMME for details on the database and reporting.

The Agency shall collect and provide electronically energy consumption data to the Department of Mines, Minerals and Energy (DMME) Statewide Energy Database. The Agency shall provide facility energy consumption data to the Tridium Vykon Energy Suite over the Internet through the IP address provided. Contact DMME to coordinate details.

915.8 Building Automation Systems & Procurement Procedures

915.8.1. General: Current Building Automation Systems (BAS) and Energy Monitoring and Control Systems (EMCS) have proprietary protocol and programs which limit their ability to tie-in or interface with the systems of other manufacturers or vendors. Although ASHRAE has recently developed a

standard protocol for BAS/EMCS to facilitate interfaces between vendors, very little equipment is currently available that totally supports this protocol.
Therefore, it is essential that agencies give careful consideration and attention to the planning, procurement, pricing, and implementation of their BAS and EMCS requirements and expansions.

915.8.2. Planning: The planning for a BAS or EMCS shall include consideration and evaluation of the following:

- Will the BAS/EMCS serve a single or multiple buildings?
- What functions, control and data gathering activities will the BAS/EMCS provide?
- Will the BAS/EMCS be tied-in to a Central Station?
- Will the Central Station provide only monitoring and data gathering functions?
- Will the Central Station Operator be able to control the BAS/EMCS functions at the separate or remote building?
- Does the Agency have a BAS/EMCS currently installed at this location, campus, etc.?
- How many vendors have a BAS or EMCS at this location?
- Which vendors actively serve systems in this general area?
- Has the Agency obtained cost data for comparison for installation costs and for service/maintenance costs on similar systems? (This is necessary if the Agency intends to procure the BAS/EMCS as a sole source or competitively procured system.)

915.8.3. Policy on BAS/EMCS Competition: The Virginia Public Procurement Act (VPPA), § 2.2-4300 through 2.2-4377, *Code of Virginia* as amended, contains the statutory procurement methods, requirements and restrictions. Simply put, the VPPA requires that the BAS/EMCS be competitively procured unless specific approval has be obtain to use a sole source procurement. Unless otherwise approved, Building Automation Systems (BAS) or Energy Management Control Systems (EMCS) shall be specified using performance or non-proprietary specifications. This should result in maximum competition and best cost for the state.

Where an Agency has, or will have, multiple buildings with a BAS/EMCS and where the Agency has, or intends to have, a central monitoring or central control station for the multiple building systems, consideration should be given to having the systems/ central stations of 2 vendors so that the vendors can compete with each other for future systems and/or tie-ins.

915.8.4 Building Automation System Evaluation: To expedite the review of the BAS/EMCS system for a project, the A/E, with input from the Agency, shall provide the information required by the Building Automation Systems Questionnaire form (Form DGS-30-222) to describe the currently existing BAS's and shall submit to BCOM not later than with the preliminary drawing submittal. The information provided by this questionnaire is essential in considering the Agency request for approval of proprietary or sole source procurements and in the BCOM review of the proposed system at working drawings design stage.

915.8.5 BAS/EMCS Procurement: One of the following methods shall be used to procure the BAS/ EMCS for the project:

1. Non-proprietary / General Contract Bidding - All vendors may bid on the work. No special approvals are required. A Non-proprietary BAS/EMCS performance specification is included in the bid documents for competitive bidding along with all other work.

2. Proprietary / General Contract Bidding - Where two vendors each have a BAS/EMCS currently in operation at the site and/or where the Agency has made a determination in writing that only 2 or 3 vendors will be acceptable and all others are excluded, the Agency may obtain approval from the Director, Division of Engineering and Buildings, to proprietarily specify that the BAS/EMCS bidders be restricted to those vendors listed in the specifications. The successful subcontract bidder would be required to perform the work required by the documents just as any other subcontractor.

3. Sole Source Separate Procurement - Prior to completing the Working Drawings , the Agency must make a determination in writing that only one vendor can meet the Agency's requirements for the BAS/EMCS and obtain approval for a Sole Source procurement of the BAS/EMCS work. Once the use of sole source procurement is approved, the Agency must decide if the Agency will supervise and manage the vendor or if the Agency will assign the BAS/EMCS vendor's contract to the project (General) Contractor to supervise and manage.

The Agency shall then negotiate a price with the sole source vendor for the specified BAS/EMCS work and/or tie-in on the basis of the specifications and the contract management procedures selected and commit the agreement to writing.

If the (General) Contractor will be tasked with coordinating and supervising the BAS/EMCS vendor/subcontractor, the price and the name of the vendor for this automation work shall be placed on the Bid Form using the wording shown on the Sample Bid Form Format in Appendix C. The (General) Contractor Bidder is required to include this subcontract price plus any markups for supervision, coordination and profit in its bid and to be responsible for this work just as if the bidder had selected this subcontractor itself.

When using this method 3, any part of the HVAC control system, fire alarm system, valves, dampers, etc., which do not have to be Sole Source shall be competitively bid.

If the Agency/Owner elects Method 3, measures must be taken to ensure the cost and configuration of the system are reasonable such as using cost data for installation and for service/maintenance on similar systems for comparison.

915.8.6. Design and Specification of BAS/EMCS:

915.8.6.1 The Schematic Submittal shall indicate if a BAS/EMCS will be required for the project. If required, the submittal indicate which method the Agency intends to use to procure the system.

915.8.6.2 The Preliminary Submittal shall include a copy of the Sole Source procurement request approval from the Chief of Staff or the Proprietary procurement request approval from the Director, Division of Engineering and Buildings if method 2 or 3 are proposed for use.

915.8.6.3 If Method 1 or 2 above are selected for use, the A/E shall include the following BAS/EMCS information in the documents at the working drawing submittal:

- Performance specifications
- Sequence of operation
- Input / Output Summaries
- Control schematics
- Equipment (front-end computer, etc.) locations
- Control legend

915.8.6.4 If Method 3 above is selected for use, the Engineer shall require the BAS/EMCS vendor to provide the following to BCOM at the working drawing stage (and prior to the Owner's final agreement to the scope of work and the price):

- A breakdown of the vendor's proposed cost including materials, markups, subcontractors, labor, and training.
- A completed input/output summary similar to the one shown as Form DGS-30-223, including a cost per point broken out into major types. (i.e., A.I., A.O., D.I, D.O., etc.)
- Control schematics and sequence of operation including interface with any other control system, and software functions that will be incorporated into the system.
- Details of any major additions to the system front-end/operator interface hardware and software.

915.9 Piping & Equipment Color Code Schedules

Piping and equipment in central (power) plants and elsewhere as required by the Owner/Agency in mechanical equipment rooms shall be completely painted according to the Scheme For The Identification Of Piping Systems, ANSI A13.1-1981 and the Safety Color Code For Marking Physical Hazards, ANSI Z53.1, latest revisions. The Owner/Agency may require other appropriate identification devices in lieu of complete painting of piping and equipment in mechanical equipment rooms. In addition, all piping in the building shall be identified at 30' intervals and on either side of penetrations through walls and floors to show the contents of the pipe and the direction of flow. Include the painting requirements in the specifications to suit project.

915.10 Pressure Vessels

915.10.1 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.

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

915.11 Chemical Cleaning & Chemical Water Treatment of Boilers & HVAC Systems

915.11.1 The boilers, the HVAC systems, all system piping, and all system related equipment shall be thoroughly flushed out with pre-cleaning chemicals designed to remove construction related deposits such as pipe dope, oils, loose mill scale, and other extraneous material. Systems shall be cleaned and/or boiled-out in accordance with the manufacturers instructions and the recommendations of the Owners Water Treatment Consultant. The products used shall inhibit corrosion of the various metals in the system and shall be safe to handle and use.

915.11.2 The A/E shall consult with the Owner and his Water Treatment Consultant to determine the proper cleaning and water treatment requirements for boilers, piping, and other HVAC systems. If the Owner does not have a Water Treatment Consultant, the Owner shall utilize the Division of Purchases and Supply contract for water treatment.

915.11.3 The A/E shall specify the standards and requirements applicable to the chemical cleaning and water treatment of the system. The following should be addressed:

- The standards to be met by the Contractor in flushing, cleaning and treating the system;
- That the Contractor is responsible for providing all equipment, fittings, tubes, valves, connections, labor, chemicals, and miscellaneous hardware for the boiler boil-out, for the flushing, cleaning and associated water treatment, and for the initial chemical water treatment for the boilers and HVAC systems; and
- The chemicals to be used for the initial treatment of the system after flushing and cleaning have been completed;
- That the chemical formulation used shall be compatible with system materials;
- That the chemicals used shall conform to DEQ regulations and requirements; and
- That the chemical mixtures do not exceed DEQ or local effluent limits.

915.11.4 The A/E must specify that the Contractor notify the Owner (approximately) 30 days before the boil-out/cleaning of the system and the application of the chemicals are started. The Owners Water Treatment Consultant shall observe and monitor the boil-out/cleaning of the system and the initial charge of chemicals required for placing the equipment in normal service.

915.11.5 The contract documents shall require that after cleaning and chemically treating boilers and HVAC systems, the Contractor shall furnish the Owner, in writing, the following information:

(1) Date of initial treatment.

(2) Type of chemical(s) used for treatment.

(3) Estimated date that further treatment or testing will be required.

915.11.6 The Owner and his Water Treatment Consultant shall continue monitoring and treating the water after initial treatment.

915.12 Chlorofluorocarbon (CFC) Refrigerants

915.12.1 Federal law, Title VI of the Clean Air Act Amendments of 1990, places restrictions on the production (with eventual phase-out) of CFC refrigerants. The Architect/Engineer shall give due consideration to current Federal law and future implications of such in the design of state projects.

915.12.2 The use of CFC or other refrigerants shall be carefully considered. The A/E shall endeavor to protect the interests of the Commonwealth of Virginia recognizing the following:

(1) Responsibility to protect the environment.

(2) Dependability and serviceability of the proposed systems.

(3) Economic considerations both short and long term.

915.12.3 Where refrigerants are used, the mechanical equipment room design shall comply with the requirements of ANSI/ASHRAE Standard 15-1994.

915.13 Central Heating Plants - Reserved

915.14 Central Chiller Plants - Reserved.

916.0 ELECTRICAL

916.1 Temporary Electrical Service:

916.1.1 In construction projects where it is specified that the Owner/Agency will pay for the consumption of electricity required for construction, and electricity is not available directly from the Owner/ Agency, the following statements shall be added to the Specifications (usually the Special Conditions).

"The Contractor shall obtain a separate metered electrical service in the name of the Owner/Agency for use by the Contractor for construction purposes."

"Costs required to provide electrical service to one point on the construction site will be borne by the Owner/Agency. Distribution from that point shall be the responsibility of the Contractor."

916.2 Ground-Fault Circuit-Interrupter (GFCI) Protection

GFCI Protection is required in the following instances:

1 Where required by the latest version of the National Electrical Code in effect.

2 Where 125 volt, single phase, 15 and 20 amp receptacles are installed in exterior areas, in interior areas within six (6) feet of a sink or lavatory and in other areas where it is necessary to increase the level of safety.

916.3 Lighting Levels

Artificial lighting shall provide the recommended levels of illumination as given in Chapter 11 of the Illuminating Engineering Society of North America (IESNA) Lighting Handbook, 8th edition. Office area general lighting shall be designed for a minimum of 30 footcandles with 1/2 the luminaires switched on and 50 footcandles with all luminaires switched on provided adequate outlets are available for task lighting to achieve 75 footcandles at work stations. Minimize reflected glare in offices or office areas where computers are used by implementing such methods as low-brightness luminaires, indirect lighting, minimizing luminance ratios between different surfaces and such.

Provide multiple points of control by split switching of fixtures, occupancy sensors, daylight control, and such as required by ASHRAE 90.1-1989. Circuit large areas to allow general lighting to be reduced when the full lighting level is not necessary, such as during custodial/cleaning services.

Use energy efficient luminaires, lamps, and ballasts for general lighting. Limit the use of incandescent lamps to spotlighting and accent lighting and utility lighting in small areas.

916.4 Energy Efficient Lamps

Specifications for new construction and for light fixtures and electric motors being replaced in existing state facilities shall meet the minimum performance standards listed below.

916.4.1 General Service Fluorescent Lamps and Incandescent Lamps: Each of the following general service fluorescent lamps and incandescent reflector lamps installed shall meet or exceed the following lamp efficacy and CRI standards:

Standards for Fluorescent Lamps

Lamp Type	Nominal Lamp Wattage	Minimum CRI	Minimum Avg Lamp Efficacy (LPW)
4-ft medium bi-pin	>35W	69	75.0
	<35W	60	75.0
2-ft U-shaped	>35W	69	68.0
	<35W	60	64.0
8-foot slimline	>65W	69	80.0
	<65W	60	80.0
8-ft high output	>100W	69	80.0
	<100W	60	80.0

Standards for Incandescent Reflector Lamps

Nominal Lamp Wattage	Minimum Average Lamp Efficacy (LPW)
40-50	10.5
51-66	11.0
67-85	12.5
86-115	14.0
116-155	14.5
156-205	15.0

916.5 Energy Efficient Electric Motors:

916.5.1 Except for definite purpose motors and special purpose motors, each electric motor installed (alone or as a component of another piece of equipment) after October 1,1997, or in the case of an electric motor that requires listing or certification by a nationally recognized safety testing laboratory, after October 1,1999, shall have a nominal full load efficiency not less than the following:

Nominal Full-Load Efficiency

	Open Motors			Closed Motors		
# Poles =	6	4	2	6	4	2
Motor (horsepower)						
1	80.0	82.5	....	80.0	82.5	75.5
1.5	84.0	84.0	82.5	85.5	84.0	82.5
2	85.5	84.0	84.0	86.5	84.0	84.0
3	86.5	86.5	84.0	87.5	87.5	85.5
5	87.5	87.5	85.5	87.5	87.5	87.5
7.5	88.5	88.5	87.5	89.5	89.5	88.5
10	90.2	89.5	88.5	89.5	89.5	89.5
15	90.2	91.0	89.5	90.2	91.0	90.2
20	91.0	91.0	90.2	90.2	91.0	90.2
25	91.7	91.7	91.0	91.7	92.4	91.0
30	92.4	92.4	91.0	91.7	92.4	91.0
40	93.0	93.0	91.7	93.0	93.0	91.7
50	93.0	93.0	92.4	93.0	93.0	92.4
60	93.6	93.6	93.0	93.6	93.6	93.0
75	93.6	94.1	93.0	93.6	94.1	93.0
100	94.1	94.1	93.0	94.1	94.5	93.6
125	94.1	94.5	93.6	94.1	94.5	94.5
150	94.5	95.0	93.6	95.0	95.0	94.5
200	94.5	95.0	94.5	95.0	95.0	95.0

916.5.2 When products which meet the minimum efficiency standards are available from two or more manufacturers before the dates indicated, the specifications shall require that the product provided meet the efficiency standards shown above.

916.6 Lightning Protection Systems

The A/E shall evaluate the building to determine if a lightning protection system is required. Lightning protection systems shall be provided on structures with risk factor of 4 or greater as determined by NFPA 780.

916.7 Exterior Lighting Systems

Agencies are reminded of the requirements of Chapter 4, Section 4.34 of the Agency Procurement and Surplus Property Manual concerning the procurement of shielded Exterior Lighting.
A/E's are reminded of the requirements of Chapter 4, Section 4.34 of the Agency Procurement and Surplus Property Manual concerning the use of shielded fixtures when designing Exterior Lighting.

APSPM Chapter 4, Section 4.34 is quoted as follows for your information:

"4.34 **Procurement of Outdoor Light Fixtures:** All state agencies and institutions shall procure only shielded outdoor light fixtures, unless exempted in writing by DGS/DPS. A shielded outdoor light fixture is an outdoor light fixture that is (i) fully shielded so that no light rays are emitted by the installed fixture above the horizontal plane or (ii) constructed so that no more than two (2) percent of the total luminaire lumens in zone of ninety to 180 degrees vertical angles is permitted, if the related output of the luminaire is greater than 3200 (§ 2.2-1111.B.3 *Code of Virginia*). Measurement details for shielded outdoor light fixtures may be found in Illuminating Engineering Society of North America Guide LM-64-01, *Photometric Measurements of Parking Areas* (Newly Revised) which is available for order at www.IESNA.org under the "Publications" tab.

If an agency/institution has a bona fide reason for not complying with this section, the agency/institution may submit a request for waiver from this requirement to DGS/DPS on a "Procurement Exemption Request" form, which can be found in Annex 13-D of this manual. Bona fide reasons for not complying include operational, temporary, safety or specific aesthetic need is indicated or that such fixtures are not cost effective over the life cycle of the fixtures."

916.8 Bus Duct Installations

Include the following paragraph in specifications for bus ducts:

"The bus duct shall not be energized until the A/E has received and reviewed a letter from the Contractor and a Commonwealth of Virginia Licensed Professional Engineer provided by the Contractor, certifying that the installation was inspected and it was determined that the entire bus duct system has been properly installed in accordance with the bid documents, including approved shop drawings and/or manufacturer's instructions for this project."

The certification of this work shall include the torqued pressure used to tighten bolts at all spliced joints in the bus duct system.

916.9 Power Surge and Lightning/Grounding and Protection /Grounding of Energy Monitoring Control Systems (EMCS)

All EMCS equipment must be grounded to a true earth ground to protect it from the effects of lightning and electrical noise. The building ground should be checked at the building's power distribution panel

for a good earth ground termination. If the equipment in the building is connected to a ground with higher resistance than that of the EMCS/BAS equipment, transients may be suppressed through the EMCS/BAS instead of the normal path resulting in possible damage to the EMCS/BAS equipment (a properly grounded EMCS/BAS may still be damaged by a poor building ground system). Do not rely on bolted structural steel to provide earth ground. Structural steel sweats and corrodes which causes higher resistance. Also corroded or galvanized pipe and small-gauge wire can cause the same problem. Cold water piping is a substandard earth ground.

Lightning arresters must be used at each point where a bus cable enters or exits a building. (Cable running between buildings should be protected at both ends.) The arrester should be a permanent, non-interrupting, non-faulting device with a fast (5 NANO-second range) response time for turn-off and turn on. Each arrester must be grounded directly to a ground rod. MOVs (metal oxide varisters) should be used as indicated by the EMCS manufacturer to further reduce the effects of lightning and electrical noise.

External electrical power surge and noise filtering devices should be used on all power feeds to the EMCS. Telephone lines connected directly to a EMCS panel (Internal Modem) should be protected by a power surge and noise filtering device.

916.10 Class 2 and Class 3 Electrical Cables

All cables including but not necessarily limited to data, voice, alarm, and security system cables and wires, installed in State-owned facilities shall be self-supported with an approved hanger device when cables or wires are not installed in an electrical raceway. Cables shall be supported at no greater than twelve foot intervals and securely fastened to the building structure. Installation to be in accordance with NEC 725.

916.11 Telecommunications Cabling Standards

916.11.1 The Council on Information Management has adopted Standards for Telecommunications Cabling which shall be used when preparing designs related to telecommunications wiring for state owned buildings.

916.11.2 The following standards of the Electronic Industries Association, Engineering Department, 2001 Pennsylvania Avenue NW, Washington, DC 20006 are referenced in the Telecommunications Cabling Standard:

ANSI/EIA/TIA-568-A. Commercial Building Telecommunications Cabling Standard

ANSI/EIA/TIA-569. Commercial Building Telecommunications Pathways and Spaces

ANSI/EIA/TIA-570. Residential and Light Commercial Telecommunications Cabling Standard

ANSI/EIA/TIA-606. Administration Standard for the Telecommunications Infrastructure for Commercial Buildings

ANSI/EIA/TIA-607. Commercial Building Grounding and Bonding Requirements for Telecommunications

916.12 Aluminum Conductors

916.12.1 Aluminum conductors smaller than No. 4 shall not be used on state electrical work.

917.0 AGENCY STANDARDS

917.1 Agency Design Standards: A/E shall obtain from the agency with which it has a contract for services the Design Criteria and Standards which the Agency has for its site or campus. Such Criteria and Standards shall not conflict with nor supersede the standards stated in this Manual unless approved in writing by the Director of the Division of Engineering and Buildings.

917.2 Agency Construction Standards: A/E shall obtain from the agency with which it has a contract for services the Construction Criteria and Standards which the Agency has for its site or campus. Such Criteria and Standards shall be used by the A/E to prepare the Special Conditions to be included in the Contract Documents.

918.0 RESERVED

919.0 RESERVED

920.0 RESERVED

921.0 FIRE ALARM SYSTEMS – Supplemental Requirements

921.1 General: The information contained within this Section is intended to supplement the requirements of CPSM Section 721 Fire Alarm Systems. The Schematic Design and Preliminary Design Submission requirements contained within this section are required for all Capital Projects to be reviewed by BCOM and are recommended to be preformed by the respective Agencies for Projects with "Delegated Authority".

921.2 Schematic - Basis of Design Narrative: Provide a general description of the Fire Alarm Systems proposed for this project. Show and identify the proposed rooms/spaces to contain the major Fire Alarm System Control and Trouble Signaling Panels.

921.3 Preliminary - Basis of Design Narrative: Provide a description of the Fire Alarm Systems proposed for this project.

921.3.2 Preliminary Drawings: The drawings shall contain the following information"

1. Show the locations of and identify the proposed Fire Alarm System alarm-initiating and notification appliances.
2. Show the locations of and identify the proposed Fire Alarm control and trouble signaling equipment.
3. Show the locations of and identify all Existing Alarm System alarm-initiating and notification appliances.
4. Show the locations of and identify all Existing Fire Alarm control and trouble signaling equipment.

921.3.3 Preliminary Specifications: Provide preliminary outline Specifications to reflect the Systems that are defined on the Preliminary Drawings to be utilized for this project.

921.4 Additional Work to Attain Compliance: Additional work required by the Regional Office of the State Fire Marshal to attain compliance of the Fire Alarm Systems is considered a "Design Error and/or Omission". Compliant with CPSM Section 308.0 Design Errors and/or Omissions and A/E Liability Insurance, the Engineer of Record is responsible for all resulting costs.

922.0 FIRE SUPPRESSION SYSTEMS (SPRINKLERS) – Supplemental Requirements

922.1 General: The information contained within this Section is intended to supplement the requirements of CPSM Section 722 FIRE SUPPRESSION SYSTEMS (SPRINKLERS). The Schematic Design and Preliminary Design Submission requirements contained within this section are required for all Capital Projects reviewed by BCOM and are recommended to be preformed by the respective Agencies for Projects with "Delegated Authority".

922.2 Schematic - Basis of Design Narrative: The narrative shall provide the following information:

1. Provide a general description of the Fire Sprinkler Systems proposed for this project.

2. Provide an indication of the Water Supply to the proposed building and an indication if a Fire Pump is required. (Calculations to support this position are desirable but are not required.)

922.2.2 Schematic Drawings: The drawings shall provide the following information:
Show and identify the proposed spaces/rooms pertaining to the major Fire Sprinkler Components such as the location or room in which the Fire Pump, Fire Pump Controller, System Alarm Valves are to housed.

922.3 Preliminary - Basis of Design Narrative: Provide a description of the Fire Sprinkler Systems proposed for this project.

922.3.2 Preliminary Drawings: The drawings shall provide the following information:

1. Identify the Occupancy Hazard Classification and show the location of sprinklers for the most hydraulically demanding zone(s) within the building for each Fire Sprinkler System. The locations of Sprinklers are to be based on the VUSBC, NFPA 13 and the User's Programmatic Requirements.
2. Show the location of Fire Department Valves and Risers within the building. Indicate that the Fire Department Valves are attached to either a Standpipe Riser, Combined Standpipe and Sprinkler Riser, or Wet Pipe Sprinkler System Risers. The locations of Fire Department Valves are to be based on the VUSBC, NFPA 13, NFPA 14 and the User's Programmatic Requirements.
3. Show proposed sprinkler piping and standpipe layout including the main sprinkler lines and layout of branch lines for the most hydraulically demanding zone(s) within the building for each System. Indicate the size of all pipes that are shown.
4. Provide a table summarizing the characteristics of each of the Sprinkler Systems to be provided. Define the type of Sprinkler System(s), Areas of Coverage, Hazard, Minimum rate of water coverage (Density) per Area, Water required for each Area of Coverage, Hose Stream Allowances for each area, Total Water Requirements for each area of coverage, Hydraulically Calculated Pressure requirements at a common reference point at design flow for each area of coverage, and Water Supply (Flow & Pressure) available at the common reference point.
5. Provide a small scale drawing showing locations of water hydrants, test and flow hydrants (for waterflow tests), and routing of underground pipe. Indicate the Waterflow Test results, the date and time taken and who conducted the test. Indicate the Water Supply (Flow & Pressure) at a reference point common with the Sprinkler /Standpipe System Design.
6. Show and identify Existing Sprinkler Systems and Standpipe Systems.

922.3.3 Preliminary Specifications: The specifications are to contain the following information:

1. Provide preliminary outline Specifications that reflect the Systems that are to be utilized for this project.
2. Define the Acceptance Testing Requirements for this project.

922.3.4 Hydraulic Calculations: Provide Preliminary Hydraulic Calculations for the most hydraulically demanding zone for each of the Fire Sprinkler Systems compliant with NFPA 13.

922.4 Additional Work to Attain Compliance: Additional work required by the Regional Office of the State Fire Marshal to attain compliance of the Fire Suppression System(s) is considered a "Design Error and/or Omission". Compliant with CPSM Section 308.0 Design Errors and/or Omissions and A/E Liability Insurance, the Engineer of Record is responsible for all resulting costs.

923.0 FIRE SUPPRESSION SYSTEMS (CLEAN AGENT) – Supplemental Requirements

923.1 General

1. The information contained within this Section is intended to supplement the requirements of CPSM Section 723 FIRE SUPPRESSION SYSTEMS (ALTERNATE AGENT).
2 The Schematic Design and Preliminary Design Submission requirements contained within this section are required for all Capital Projects reviewed by BCOM and are recommended to be preformed by the respective Agencies for Projects with "Delegated Authority".

923.2 Schematic Phase

923.2.1 Basis of Design Narrative: The narrative shall provide the following information:

1. Provide a general description of the Fire Suppression Systems proposed for this project.
2. Indicate the NFPA Standard that is cited by the VUSBC which provides the minimum requirements for the design, installation, testing, inspection, approval, operation, and maintenance of the proposed Fire Suppression System.

923.2.2 Schematic Drawings: The drawings shall provide the following information:

1. Show and identify rooms/spaces that are to be protected by the proposed Fire Suppression System.
2. Identify the proposed locations, rooms, in which the major Fire Suppression System Components are proposed to be located.

923.3 Preliminary Design Phase

923.3.1 Basis of Design Narrative: Provide a description of the Fire Suppression System proposed for this project.

923.3.2 Preliminary Drawings: The drawings shall provide the following information:

1. Show and identify rooms/spaces to be protected by the Fire Suppression System.
2. Show the enclosure partitions of the protected area.
3. Identify the locations of the major Fire Suppression System Components.
4. Show the routing of the proposed Fire Suppression System lines between the stored agent and the protected spaces.
5. Provide a table that defines the type of Fire Suppression System(s), Areas of Coverage, Hazard of each protected space, Minimum required Concentration of Fire Suppression Agent, Volume of Agent required for each Area of Coverage.
6. Show and identify all Existing Fire Suppression Systems.

7. Provide a Fire Suppression System riser diagram that define the; fire suppression agent storage tanks, accessories, automatic detection system, alarm devices, manual means of releasing agent, controlled devices, etc…

923.3.3 Preliminary Specifications: The specifications shall contain the following information.

1. Provide preliminary outline Specifications to reflect the Systems that are to be utilized for this project.
2. Provide step-by-step description of the system sequence of operation for the alarm, notification, control and release of the Fire Suppression System.
3. Define the Acceptance Testing Requirements for this project.

923.3.4 System Calculations: Provide Preliminary Calculations that define the enclosure volume and quantity of agent required.

923.4 Additional Work to Attain Compliance: Additional work required by the Regional Office of the State Fire Marshal to attain compliance of the Fire Suppression System(s) is considered a "Design Error and/or Omission". Compliant with CPSM Section 308.0 Design Errors and/or Omissions and A/E Liability Insurance, the Engineer of Record is responsible for all resulting costs.

924.0 SPRAYED-ON FIREPROOFING DESIGN & SPECIFICATION -Supplemental Requirements

924.1 General

1. The information contained within this Section is intended to supplement the requirements of CPSM Section 724 SPRAYED-ON FIREPROOFING DESIGN & SPECIFICATION
2 The Schematic Design and Preliminary Design Submission requirements contained within this section are required for all Capital Projects reviewed by BCOM and are recommended to be preformed by the respective Agencies for Projects with "Delegated Authority".

924.2 Schematic Phase

924.2.1 Basis of Design Narrative: The narrative shall provide a general description of the locations, fire resistance ratings,

924.3 Preliminary Design Phase

924.3.1 Basis of Design Narrative: Provide a description of the application of Sprayed-on Fireproofing proposed for this project.

924.3.2 Preliminary Drawings: The drawings shall provide the following information:

1. Provide drawings that define the locations and extents of the application of Sprayed-on Fireproofing.

2. Define the proposed UL Design Assemblies specific to the respective locations and application of the Sprayed-on Fireproofing.

924.3.3 Preliminary Specifications: The specifications are to contain the following information:

1. Provide preliminary outline Specifications that reflect the Assemblies that are to be utilized for this project.
2. Define the Validation Tests Required for this project.

924.4 Additional Work to Attain Compliance: Additional work required by the Regional Office of the State Fire Marshal to attain compliance for the Fire Resistive Construction is considered a "Design Error and/or Omission". Compliant with CPSM Section 308.0 Design Errors and/or Omissions and A/E Liability Insurance, the Engineer of Record is responsible for all resulting costs.

925.0 RESERVED

926.0 RESERVED

927.0 FIRE PUMP(S) – Supplemental Submission Requirements

927.1 General

1. The information contained within this Section is intended to supplement the requirements of CPSM Section 727 FIRE PUMP(S).
2 The Schematic Design and Preliminary Design Submission requirements contained within this section are required for all Capital Projects reviewed by BCOM and are recommended to be preformed by the respective Agencies for Projects with "Delegated Authority".

927.2 Schematic Phase

927.2.1 Basis of Design Narrative: The narrative shall provide an indication of the Water Supply to the proposed building and an indication if a Fire Pump is required. (Calculations to support this position are desirable but are not required.)

927.2.2 Schematic Drawings: The drawings shall provide the following information:
Show and identify the proposed spaces/rooms pertaining to the major Fire Pump Components such as the location or room in which the Fire Pump and Fire Pump Controller are to be housed.

927.3 Preliminary Design Phase

927.3.1 Basis of Design Narrative: Provide a description of the Fire Pump Components and description of operation specific to this project.

927.3.2 Preliminary Drawings: The drawings shall provide the following information:

1. Show the location of the Fire Pump, Pressure Maintenance Pump and Pump Controllers.
2. Provide a small scale drawing showing locations of water hydrants, test and flow hydrants (for waterflow tests). Indicate the Waterflow Test results, the date and time taken and who conducted the test. Indicate the Water Supply (Flow & Pressure) at a reference point common with the Sprinkler /Standpipe System Design.
3. Show and identify all existing Sprinkler Systems and Standpipe Systems in the vicinity of the fire pump(s).
4. Show the approximate location of the Fire Department Connection(s) and piping back to the Fire Pump.
5. Show the approximate location of the Fire Pump Test Header and all interconnecting piping.
6. Show the location of the electrical components of the Fire Pump, Driver, and Fire Pump Controller.
7. Where multiple fire pumps or multiple sources of power are required, provide a diagram on the drawings that defines the applicable components and defines the sequence of operation.

927.3.3 Preliminary Specifications: The specifications are to contain the following information:

1. Provide preliminary outline Specifications that reflect the Systems that are to be utilized for this project.
2. Define the Acceptance Testing Requirements for this project.

927.3.4 Hydraulic Calculations: Provide Preliminary Hydraulic Calculations for the most hydraulically demanding zone for each of the Fire Sprinkler Systems compliant with NFPA 13.

1. Provide preliminary Hydraulic Calculations that indicate that the most hydraulically demanding Zone(s) of the Fire Sprinkler System(s) will be satisfied by the Automatic Water Supply (water supply plus fire pump) compliant with the requirements of NFPA 13, NFPA 14, and NFPA 20.
2. Where the height of the structure is beyond the capacity of the Fire Department Apparatus, provide hydraulic calculations that indicate that the performance of the Standpipe System(s) as connected to the Automatic Water Supply (water supply plus fire pump) will be compliant with the VUSBC, NFPA 13 & NFPA 14.

927.4 Additional Work to Attain Compliance: Additional work required by the Regional Office of the State Fire Marshal to attain compliance of the Fire Suppression System(s) is considered a "Design Error and/or Omission". Compliant with CPSM Section 308.0 Design Errors and/or Omissions and A/E Liability Insurance, the Engineer of Record is responsible for all resulting costs.

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CHAPTER 10: CONSTRUCTION PROCUREMENT & ADMINISTRATION

SECTION 1000.0 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.

§ 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 port 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 for 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.

For purposes of § 2.2-1132, "construction" shall include 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 with the exceptions stated above.

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.

SECTION 1001.0 GENERAL REQUIREMENTS FOR PROCUREMENT OF CONSTRUCTION

1001.1 Capital Outlay Construction Projects:
All construction shall be procured by competitive sealed bidding in accordance with Title 2.2, Chapter 43 of the *Code of Virginia* (Virginia Public Procurement Act) and the procedures described in this chapter. (§ 2.2-4301 and 2.2-4303, *Code of Virginia*) See Section 1003.1.

The Invitation For Bids for capital outlay construction projects shall include the General Conditions of the Construction Contract, G.S. Form E&B CO-7; the Instructions to Bidders, G.S. Form E&B CO-7a; the Notice of Invitation to Bid; a Bid Form; and other documents described in Chapter 8. The Agency may, with DEB approval, include a Supplemental General Condition to waive the requirements of Section 12 (b) of the General Conditions of the Contract, E&B CO-7 as it relates to the requirement for all Risk Builders insurance for renovation and repair projects where the building will remain occupied during the Work and the building remains insured **if** the Agency has, for each project, verified with the Division of Risk Management that its insurance will provide adequate coverage. Use the wording shown in the Form DGS-30-376.

1001.2 Non-Capital Outlay Construction & Maintenance Reserve-Funded Projects: Non-capital outlay construction, or repair or replacement in kind, or remodeling or renovation and Maintenance Reserve projects which are not classified as 'capital' projects but which cost $100,000 or more shall follow the same bidding procurement procedures as described for capital

projects. Projects shall be posted / advertised and competitively sealed bid as described in this chapter.

1001.3 Small Non-Capital Outlay Construction Projects: Non-capital outlay construction, or repair or replacement in kind, or remodeling or renovation Work which is valued at less than $100,000 may be procured using the standard CPSM Competitive Sealed Bid procedures or by using the Small Project Procurement Procedures described in Section 1002. below

1001.4 Special Construction Procedures: Competitive negotiations may be used by an Agency on (1) projects using a fixed price design-build or construction management contract conforming to the procedures in Chapter 11 of the **Manual** (§ 2.2-4306, *Code of Virginia*) or (2) projects for the alteration, repair, renovation or demolition of buildings when the Contract is not expected to cost more than $500,000 and upon a determination in writing made in advance that competitive sealed bidding is either not practicable or not fiscally advantageous to the public (§ 2.2-4303.D, *Code of Virginia*). Competitive Negotiation procedures are described in Chapter 11 of this Manual.

1001.5 Virginia Construction Contracting Officer: Agencies having a Virginia Construction Contracting Officer (VCCO) shall use the services of the VCCO in bidding and awarding capital outlay construction contracts as described in Sections 1003, 1004, 1005, 1006, 1007, and 1008. Procedures stipulated in this **Manual** for advertisement, Invitation to Bid, Receipt of Bids, Opening of Bids and Award of Contracts shall be used. Not later than June 30, 2002, each Agency which procures construction, including renovation, work will be required to have at least one person who has been awarded the certification of VCCO to be in responsible charge of the construction and professional service procurements for that agency. After June 30, 2002, any agency which does not have a VCCO will be required to have each construction or professional service procurement reviewed and approved by DEB/BCOM.

1001.6 Authorization to Advertise for Bids: Authorization to advertise for bids is given on completion of technical review(s) of the project documents by the BCOM or the Agency Review Unit (for those so delegated) and approval of the Project CO-6 for Capital Projects. For Non-capital projects it is recommended that the documents be reviewed by BCOM before advertising for bid. Failure to do so puts the agency "At Risk" for change orders if bids are based on documents which do not conform to the requirements of the USBC or Chapter 7 of the Manual. Call BCOM at (804) 225-3769 to establish or change a date for receipt of bids.

1001.7 Work Performed by Other Than Public Contract: Unless waived by the action wording on the approved CO-2, Agencies authorized to perform construction using Agency work force personnel shall submit their plans and specifications bearing the seal of the responsible architect and/or engineer for State Building Official review, approval, and Building Permit prior to beginning work. The format and instructions for submittals are outlined in Chapter 8 of this **Manual**.

The wording to "proceed" waives the requirement to make submittals of the forms CO-4, CO-5 and CO-6 and of the design phase documents for Capital Outlay procedure review. **However**, this does not relieve the Agency (or their A/E or Contractor) from compliance with all applicable

building codes and standards **nor** does it relieve the Agency from submitting the plans/sketches and the specifications/work description as necessary to obtain a Building Permit for the Work.

Section 1001.8 SWAM Procurement Plan
(Small, Women-owned, And Minority-owned businesses)

1001.8.1 Agency Plan: In accord with Executive Order 29 (2002), an annual SWAM Procurement Plan that specifies the Agency's plans and goals for SWAM procurement is required. Department of Minority Business Enterprises (DMBE) certification of SWAM businesses is required. Plan guidelines are available from DMBE. The plan shall be updated each September 1st.

1001.8.2 Prequalification: SWAM Procurement Plans with identified goals for minority and women-owned business procurement, may include those goals as conditions or pre-qualification requirements in the terms and conditions for the award of any prime contract in excess of $100,000 and, if so included, may reflect those goals in the requirement for a subcontracting plan prepared and submitted within 30 days of award for construction. See Section 1103.0, Prequalification Procedures.

1001.8.3 Contract Size: If the size of vertical or horizontal construction contracts appear to limit SWAM vendors from bidding or winning such contracts, then the contracting agency may seek to reduce the size of the contracts to increase the pool of potential SWAM bidders. If the effect of reducing the size of such contracts is to cause a meaningful increase in price, a significant degradation in terms and conditions, a significant decrease in administrative efficiency or non-compliance with applicable federal contracting requirements or funding conditions, then the contracting agency or institution shall not be obligated to so reduce the contract size. In the case of construction contracts awarded to non-SWAM primes, the prime contractor shall seek to size the subcontracts so as to enable qualified SWAM subcontractors to bid effectively for such work so long as the effect of reducing the size of such subcontracts does not cause a meaningful increase in price or a significant degradation in terms, conditions or other applicable contract factors. In the case of non-highway construction, where appropriate for the construction job in question, the Commonwealth shall consider using a Construction Manager At Risk instead of a prime contractor in order to afford opportunities for M/W contractors to bid effectively for the work in question. Nothing contained in this paragraph shall require the contracting agency to accept contractors who do not meet applicable quality, safety and performance standards.

1001.8.4 SWAM Identification / Certification: The contractor shall provide Department of Minority Business Enterprises (DMBE) certification for all work provided by SWAM contractors under the Agency SWAM Procurement Plan as soon as practicable after the signing of the contract.

1001.8.5 Audits: In order to assure compliance with certification requirements SWAM subcontracting plans, the contracting or certifying agency 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 1002.0 PROCEDURES FOR SMALL CONSTRUCTION PROJECTS

1002.1 Small Non-Capital Outlay, and Maintenance Reserve-Funded Construction Projects:

Construction shall be procured by competitive sealed bidding in accordance with Title 2.2, Chapter 43 of the *Code of Virginia* (Virginia Public Procurement Act) and the procedures of this chapter. (§ 2.2-4301 and 2.2-4303, *Code of Virginia*) Also see Section 1003.1.

Building Permits are required for construction projects as delineated in the Building Official's "Building Permit Policy for Construction – State Owned Buildings & Structures" including all revisions thereto. See Appendix P.

The following procedures may be used for the procurement of small construction projects

1002.2 Non-Capital Outlay Minor Construction costing more than $50,000 but less than $100,000:

- Develop Scope of Work including plans & specifications (Bid documents)
- Use CO-7 or CO-7 SP General Conditions
- Post Notice of IFB in Public Place and the electronic VBO
- Receive Sealed Bids
- Open Bids next day
- Post Notice
- Bonds are not required but may be specified

1002.3 Non-Capital Outlay Minor Construction costing more than $5,000 but less than $50,000:

- Develop Scope of Work including plans & specifications (Bid documents)
- Use CO-7 or CO-7 SP General Conditions
- Post Notice of IFB in Public Place and the electronic VBO
- Solicit Bids from at least 8 licensed Small Business, 4 of which shall be Women Owned Business and/or Minority Owned Business
- Receive Faxed or emailed Bids by specified deadline
- Open / announce Bids same day at specified time
- Post Notice

1002.4 Non-Capital Outlay Minor Construction costing less than $5,000:

- Develop Scope of Work (Bid documents)
- Use CO-7 SP General Conditions
- Solicit Bids from at least 4 licensed Small Business, 2 of which shall be Women Owned Business and/or Minority Owned Business
- Receive Faxed or emailed Bids by specified deadline
- Open / announce Bids same day at specified time
- Post Notice

1002.5 Non-Capital Outlay Minor Construction Unit Priced Term Contracts:

- Develop Scope of Work including plans & specifications (Bid documents)
- Use CO-7 or CO-7 SP General Conditions
- Post Notice of IFB in Public Place and the electronic VBO
- Receive Sealed Bids
- Open Bids next day
- Post Notice

1002.6 Non-Capital Outlay Minor Construction:

Non-capital outlay minor repair or replacement in kind, or minor remodeling or renovation which does not meet the criteria for a capital project or a significant non-capital project, which does not have plans, and which does not modify the Use Group Classification, existing Exits or other Fire Safety Elements, may be procured in the same manner as non-professional services in accordance with Chapter 7 of the *Agency Procurement and Surplus Property Manual* and the *Code of Virginia*, Title 11, Chapter 7.

SECTION 1003.0 BID PERIOD ACTIVITIES

1003.1 General: Preparations for bidding including the preparation of Bid Documents, the Invitation for Bids, the Instructions to Bidders (Form CO-7a), the Bid Form, and Advertising are described in Chapter 8. Prequalification procedures are described in Chapter 11 of the **Manual**.

§2.2-4301 of the *Code of Virginia, "Competitive Sealed Bidding"*, requires that Invitations For Bid (IFB) be 'posted' **or** advertised in a newspaper or both. When advertising in the newspaper, the Agency may post the full Notice of Invitation For Bid (such as DGS-30-256) or it may used the 'short form' Notice posting the minimum information as shown in DGS-30-252 . Notice shall also be posted on the DGS Internet procurement website, URL http://vbo.dgs.state.va.us.

§2.2-4301 of the *Code of Virginia, "Competitive Negotiation"*, requires that Requests For Proposals (RFP) be 'posted' **and** advertised in the newspaper of general circulation in the area. If the agency determines that the work can be procured by competitive negotiation, it must advertise the RFP in the newspaper as well as public posting and posting on the DGS Internet procurement website, URL http://vbo.dgs.state.va.us.

1003.2 Prebid Conference: If a Prebid Conference or project showing is held (whether optional or mandatory), representatives of the Agency and the A/E shall attend. The Agency shall make the Project location or building available to the attendees / prospective bidders for their observation or inspection.

The A/E shall conduct such conference or showing. The agenda for the Prebid Conference shall include the following:

1. Introductions of A/E and Agency representatives

2. Synopsis of the Work by citing or reading portions of
   - Notice of Invitation for Bids
   - Instructions to Bidder
   - Prebid Question Form
   - Bid Form
   - Supplemental General Conditions
   - Special Conditions
   - General Requirements
   - Other conditions or requirements included in the Bid Documents that should be called to the attention of the bidders

3. 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.

4. The A/E should issue an Addendum to include a copy of the attendees sign-in sheet and the questions posed with the response to each.

The Agency and the A/E must be careful not to provide any information, instruction, or clarification to Prebid attendees which is not made available to all potential bidders.

1003.3 Addenda to the Bid Documents: Addenda shall be issued as necessary to clarify or correct information in the Bid Documents, to respond to questions raised by the Bidders, and/or to modify the Bid Receipt Date.

No oral explanation in regard to the meaning of the drawings and specifications shall be made and no oral instructions shall be given to the Bidders prior to the receipt of bids.

Addenda shall show the Agency Name, the Project Title, the 8-digit Project Code, and the specific items to be modified. Addenda shall be written in a clear and concise manner. Each item shall identify the location in the documents of the item to be changed (e.g. plan sheet number and view or specification section and paragraph number) and describe the change to be made (e.g. change dimension in Section from x'-xx" to y'-yy" or delete wording in Section 09999, paragraph 3 (b) as written and replace with the following words ".....")

Addenda to clarify or correct information in the Bid Documents should be issued at least 10 days prior to the Bid Receipt Date. Addenda which add work to the project, which provide significant information which must be considered by subcontractors and suppliers, or which contain many pages of corrections must be issued at least 10 days prior to the date set for receipt of bids or the bid date must be delayed to allow the 10 days. Addenda which serve primarily to provide clarifications or corrections which can be covered in a one page Addendum may be issued up to 6 days prior to bid date. Addenda which only delay or cancel the date for receipt of bids must be issued at least 24 hours prior to the date and time set for bid receipt.

One copy of all Addenda shall be submitted to 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 Regional Fire Marshal's Office which will have jurisdiction over the project.

1003.4 Receipt of Bids: The Receipt of Bids is a very important activity and agencies must follow the rules, procedures and process established for receiving bids. The person receiving the bids shall be thoroughly trained and knowledgeable of the proper procedure for receiving and documenting bids. This person will usually be the Agency VCCO or a person acting under the supervision of the Agency VCCO. The person must be focused on the receiving the bids and documenting the receipt. Failure to follow the procedures may result in bid protests, voiding the bid receipt and possible legal action.

Bids shall be received at the exact place listed for receipt of bids and until the deadline indicated in the Invitation For Bids (IFB) unless such time or place is modified by a properly issued Addendum. In case of conflict between the IFB and the newspaper advertisements or VBO/eVA postings, the IFB shall govern.

When bids are received, the bid envelope shall be date stamped and the time of receipt noted on the envelope. **The statutes and this Manual require strict compliance with the bid receipt deadline time.** The Agency Designee shall be responsible for deciding when the deadline time has arrived. If a bidder wishes to change the amount of his bid, such change must be received before the time set for receipt of bids. No bid or modification shall be accepted after that time has passed. The Agency Designee shall prepare a record of the bids received including the date and time for each.

Do not accept any bid which arrives or is attempted to be submitted after the deadline for receiving bids.

Bids, including any modifications thereto, shall be kept in a designated locked security container and retained there until immediately prior to the bid opening time when the bids shall be delivered to the Agency's Bid Opening Designee. (See Appendix F for further information and a Checklist for Receiving and Opening Bids.)

SECTION 1004 OPENING AND EVALUATION OF BIDS

1004.1 Bid Opening Procedures: Each organizational unit should have a person, such as the Agency's Virginia Construction Contracting Officer (VCCO), and an alternate who have been trained and are proficient in bid opening procedures to act as the Agency Bid Opening Officer. A separate person should be designated to record the bid data.

Once having established 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. After receiving either a negative reply or after answering questions, bids

shall be publicly opened in alphabetical order by the Bid Opening Officer and, with the help of the A/E, shall be reviewed for completeness**. Do not open work papers!**

See Appendix F for a checklist for receiving and opening bids and follow the checklist and process closely.

Prior to revealing any of the information in the bid, the Bid Opening Officer must verify that the bid bond or certified check in the amount of 5 percent is attached where required, that the Bid Form is signed by the bidder, and the bidder information complies with Item 4(b) and (c) of the Instructions to Bidders. If the bid bond or certified check is not included (for bids of $100,000 or more) or if the bid is not signed, the bid shall not be read or considered.

After 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 ____ or were not _____ submitted.
d. Receipt of Addenda l through _____ are acknowledged.
e. Bid Bond or Certified Check is _____ or is not _____ included.
f. Bid Form is signed.

Then...

g. Read Bid Information
   - Any Bid Modification properly received,
   - The Total Base Bid Amount, and
   - Any Additive Bid Item Amounts in order.
   - Any qualification to the requested information on the Bid Form shall be noted as the bid is read. (Such qualification may be cause for rejecting the bid during bid evaluation.)

1004.2 Bid Tabulation and Records: After the Bid Opening is complete, the Bid Opening Officer shall:

a. Keep all bids, work papers, etc. until 2-hours after bid opening for Contractor to state he made a mistake. Do not open work papers unless the low bidder claims an error, and then open only the work papers of that bidder.

b. After two hours, return all Bid Bonds, checks, etc., to all but 3 lowest bidders. Work papers shall be returned to all.

c. Keep bid bonds or checks from the three apparent lowest bidders in a secure place until Contract is signed.

d. Contact Department of Professional and Occupational Regulation, Contractor's Section, and verify Contractor Class and Registration Number of the three low bidders .

e. Prepare an official tabulation of the bids.

f. Evaluate the bids.

All envelopes, papers and data submitted with the bid shall be stapled together and permanently retained, except for work papers and for bid securities. Work papers shall be returned to the bidder unopened after the two hour period for claiming an error in bid has expired, unless needed to adjudicate an error in bid claim. Bid securities shall be returned to the bidders except that bid securities shall be retained for the three low bidders until a signed contract is obtained. Once the Contract is signed, retained bid securities shall be returned to the three bidders. Until that time, bid securities shall be retained in a secure place.

1004.3 Evaluation of Bids: Review the bids including any additive bid items versus the funds available. Evaluate the bids of the 3 apparent low bidders to determine if bids are responsive:

- any qualification or condition shown by the bidder as a basis of his bid. Any unsolicited qualifications or conditions noted on a competitive sealed bid may be cause for disqualification or rejection of the bid.
- any informality or irregularity on the bid form.
- The Agency may waive an informality if it does not affect price, quality, quantity, or delivery schedule of the Work being procured; however, waiving an informality is at the option of the agency, not a requirement. The Agency, however, must be consistent in waiving and informality.

Determine if the low bidder (as a minimum) is responsible:

- Contractor is properly licensed as a Contractor to do business in Virginia
- Contractor is able to get bonded for the project
- Contractor has necessary facilities, organization, and resources to fulfill the requirements of the Contract Documents
- Contractor has a satisfactory record of performance on other projects
- Contractor has a satisfactory record of moral and business integrity to assure good faith performance of the Work
- Contractor has necessary experience, technically skilled personnel and supervisory personnel to perform the Work
- Contractor is not debarred

Note: If sufficient grounds are apparently found to declare a Bidder / Contractor "Not Responsible", the Agency shall contact their legal counsel to review the information and findings before proceeding with the "Not Responsible" declaration.

1004.4 Notice of Intent to Award: Once the bid evaluation is complete, the successful low bidder has been determined, and the Agency has approval to award a contract, the Agency shall "Post" a Notice of Intent To Award, CO-9.1, (DGS-30-068) for a minimum of 10 days prior to award of

the Contract. A copy of the Bid Tabulation annotated to indicate the bidder to which the award is intended to be made and the intended amount of the award may satisfy this requirement. The Notice shall be posted at the place the agency uses for "posting" notices. In addition the agency may also post such notices on their Electronic Website and/or the DGS central electronic procurement Website.

SECTION 1005 PROVISIONS FOR NEGOTIATION WITH A LOW BIDDER

When the bid exceeds the approved construction budget and the conditions and right to negotiate were included in the Bid Documents (§ 2.2-4318, *Code of Virginia*), state agencies may request authority to negotiate with the lowest responsive and responsible bidder as outlined below.

In general, bids which are less than 10 percent over budget (up to $500,000) can reasonably be negotiated. If the bids are more than 10 percent over budget (or more than $500,000), the changes required would be significant and involve design and/or scope changes. Therefore, the Project should be re-bid after these changes are made. (See Section 810.0 for bid/budget management techniques.)

The Director of the Bureau of Capital Outlay Management may grant the Agency the authority to negotiate with the apparent low bidder after review of the Bid Tabulation, the specifics of the request and the justification submitted by the Agency.

The Agency's request for authority to negotiate may be made telephonically to the BCOM Director at (804) 786-6292 and shall include the following information followed within 24 hours by the written documentation:

a. Pre-bid estimate of construction cost from the approved CO-6 or other documentation
b. Tabulation of bids and bidders
c. Name of recommended Agency negotiator
d. Name of Architect/Engineer Firm's advisor(s)
e. A list of the items or work that the Agency proposes to consider in the negotiation. (VE recommendations previously rejected shall be considered.)

The Director of the Bureau of Capital Outlay Management will approve or disapprove the request normally within 24 hours after receipt of the written documentation. The Director may give verbal approval followed by written authorization to begin negotiations.

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.

Documentation of the negotiations shall clearly identify the Work changed or deleted and the value of each change or deleted item of Work. The Work changed or deleted is subject to approval of the DEB Director since this represents a change from the documents previously approved. The Agency shall complete a G.S. Form E&B CO-9b, Post Bid Modification, which shall become part of the contract.

SECTION 1006 AUTHORITY TO AWARD A CAPITAL OUTLAY PROJECT CONTRACT

When the apparent low responsive and responsible bidder is determined for a Capital Project, the Agency shall prepare a tabulation of bids and a G.S. Form E&B CO-8, Approval to Award Contract (DGS-30-056). The Director of the Division of Engineering and Buildings or an Agency Designee who is a Virginia Construction Contracting Officer (**VCCO**) shall have authority to approve the award of a contract to the lowest responsive and responsible bidder for capital outlay projects when the low bid is equal to or less than the "Construction" line amount on the approved Form CO-6.

When the lowest responsive and responsible bid exceeds the "Construction" line amount on the approved Form CO-6, the Agency may reject all bids, modify the documents and rebid, or it may

- submit a request to the Director, Division of Engineering and Buildings, to negotiate with the low bidder; or
- reallocate funds within the budget on the approved Form CO-6; or
- submit a Revised CO-2 to infuse funds into the project.

If the Agency chooses to pursue award of a contract in any of the three instances described above, the VCCO must submit the Form CO-8 along with a request for approval and justification from the applicable Agency Vice President or Chief Facilities Officer to the Director, Bureau of Capital Outlay Management for processing and approval in conformance with current approval policies.

When the apparent low responsive and responsible bidder is determined for a Non-Capital Project, the Agency shall determine if funds are available to award a contract.

SECTION 1007 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 Agency, no later than ten days after the award or the announcement posting of the decision to award, whichever occurs first. No protest shall lie (i.e. be sustained or have a basis) for a claim in which the selected bidder or offerer is not a responsible bidder. The written protest shall include the basis for the protest and the relief sought. The Agency shall issue a decision in writing within ten days of the receipt of the protest stating the reasons for the action taken. This decision shall be final unless the bidder or offerer appeals within ten days of the written decision by instituting legal action as provided for in § 2.2-4364, *Code of Virginia*. (§ 2.2-4360, *Code of Virginia*).

Stay of award during protest (§ 2.2-4362, *Code of Virginia*). An award need not be delayed for the period allowed a bidder or offerer 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 by the Agency Head that proceeding without delay is necessary to protect the public interest or unless the bid or offer would expire.

SECTION 1008 AWARD OF THE CONSTRUCTION CONTRACT

After receipt of authorization from DEB or the Agency VCCO, the Agency may enter into a written contract with the Contractor using the G.S. Form E&B CO-9. One copy of this form and the CO-9b, if used, shall be filed with the BCOM Director. A copy of the Notice of Award, G.S. Form E&B CO-9.1a, shall be **publicly posted** concurrent with the Notice to the Contractor that his bid has been accepted.

When the apparent low responsive and responsible bidder is determined for a Non-Capital Project, the Agency shall 'post notice' of the intent to award the contract.

SECTION 1009 REFUND OF DEPOSITS FOR DRAWINGS AND SPECIFICATIONS

The A/E's Basic "Bid Phase" Service includes having the bid documents printed, issuing bid documents to bidders, receiving and holding deposits on the bid documents, maintaining the listing of bid document holders, receiving and inspecting the bid documents returned after bidding, and returning deposit checks/ issuing refunds when the documents are returned in a condition usable for construction. Agencies may choose to perform these functions "in-house" or contract to have this function performed by a Project Manager. If not required of the A/E, the A/E Contract shall be modified, either in the description of services in the initial MOU or by a Change Order, to reflect the deletion of this basic service.

All checks used as a deposit for the purpose of securing plans and specifications shall be made payable to the A/E (or entity tasked with distribution of the Bid Documents). If the documents are returned in good condition, within 10 days after bid opening, checks will be returned or a refund issued to the Contractor. In case any of the deposits are forfeited, either in part or in their entirety, the A/E shall make an accounting to the Agency showing the number of sets of blueprints provided, the number of sets returned, and also the amount of money forfeited for payments of plans and specifications by the Contractors. Any forfeiture, as mentioned above, should then be subtracted from the A/E's statement for reimbursement of printing costs.

The A/E may require separate payment of a nominal shipping charge where the Contractor requests shipment rather than pickup of bid document sets. Shipping charges are intended to reflect only the cost of packaging and shipping the documents and are not refundable to the plans holders.

SECTION 1010 CONSTRUCTION CONTRACT ADMINISTRATION

1010.1 General:

Generally, the A/E's Basic Services requires the A/E to assist in the solicitation of bids, assist in bid opening, review submittals, inspect the Work, review and certify Contractor payment requests, issue clarifications of the Documents, issue Field Orders, process change orders and perform other functions associated with contract administration.

Agencies that have the resources and capabilities may request authority to administer the Construction Contract. The request will be submitted to the Director, Division of Engineering and Buildings, with the CO-5 or prior to the submission of the CO-6 for the project. The request must document the advantage to the Agency and the Commonwealth of using some entity other than the A/E to administer the Construction Contract and give a synopsis of how the Construction Contract is proposed to be administered.

Alternatively, the Agency may use the RFP process for Non-Professional Services to secure a consultant to perform Project Management and/or Project Inspection services. The selected Project Management / Project Inspection contract must clearly identify the services to be provided by the consultant and the limits of its authority. The Project Manager services which relate to the construction may impact the Contractor. Required interface or interaction between the Contractor and the Project Manager must be conveyed to the Contractor in the Special Conditions Section of the specifications. The A/E Contract must be modified to reflect the reduction in the A/E Basic Services.

1010.2 A/E Construction Period Services: The following services, described in the General Conditions of the Construction Contract, CO-7, shall be provided by the A/E of record and shall not be delegated to others unless specifically approved by the Director, DEB:

- Attend preconstruction meeting

- Make design changes required by uncovered hidden conditions

- Interpret plans & specifications

- Where the documents specify or show a means, method, sequence, technique or procedure, determine acceptability of substitute means, methods, sequence, techniques or procedures proposed by the Contractor

- Provide additional details as necessary to clearly describe what is required to be constructed

- Prepare and issue or validate all Field Orders and all Agency directed and/or authorized Change Orders involving any matters or items of 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.

  Note: Agency directed and/or authorized Change Orders and Field Orders on non-technical matters such as landscaping, finishes, colors, and similar items which do not affect the exterior architectural appearance or the structural, fire safety, mechanical or electrical system integrity could be handled by a qualified licensed professional on the Agency or Consultant's staff if the A/E's contract has been appropriately modified.

- Clarify discrepancies in documents

- Review/approve submittals
- Reject non-conforming submittals including Sprinkler Shop Drawings & Submittals. Furnish approved copies of Sprinkler submittals to the Regional Fire Marshal's Office.
- Verify conformance of submittals with Plans and Specifications
- Approve or reject alternate or substitute materials proposed by Contractor
- Approve or reject equipment and materials proposed by Contractor
- Resolve conflicts between manufacturer installation instructions vs Plans and Specifications
- Advise on acceptable procedures where installation instructions are not provided
- Approve or reject Contractor's proposed modifications to structural and other building systems
- Advise Owner on technical matters related to the project

The following construction period services shall also be provided by the A/E as part of his periodic site visit Basic Services unless specifically deleted by the A/E Contract or its Memorandum of Understanding:

- Conduct preconstruction meeting
- Confirm in writing, all oral orders given by the A/E to the Contractor and/or Project Inspector
- Transmit Owner's Orders to Contractor
- Review Contractor's CO-12 Schedule of Values, continuation sheets, and approve for acceptable level of breakdown, acceptable allocation of costs, proper listing of 'Unit Price' work shown on the Bid Form, and separate listing of Change Order costs.
- Verify quantities of unit price work and prepare Change Orders as appropriate for quantities actually performed or incorporated in the Work
- Review proposed work plan & schedule
- Review schedule for adequate time to review submittals
- Review/recommend approval of project CPM schedule per Section 19 of the CO-7, General Conditions of the Construction Contract
- Report on Contractor adherence to schedule

- Review/approve progress graph
- Approve Contractor's proposed type of temporary heat as it may affect protection of construction
- Advise Owner on construction matters related to the project
- Make site visits and provide written report
- Determine progress and quality of the Work
- Recommend suspension of Work
- Inspect/spot check Work for conformance with the Contract Documents and the codes and installation / workmanship standards therein. (e.g. reinforcing clearances and laps per ACI; ductwork conforming to SMACNA; wiring conforming to NEC; etc.)
- Note and report defects and deviations in the Work
- Identify to Project Inspector any specific checks or inspections to be made as the Work progresses including what to look for
- Require defective Work to be removed and redone
- Reject inferior or poor workmanship
- Reject Work which does not conform to Contract Documents requirements
- Require Contractor to make repairs or changes deemed necessary
- With Owner's approval, suspend Work which depends on non-conforming Work until an acceptable correction or replacement is provided by the Contractor
- Approve repair/restoration of damaged work
- Inspect roof and advise when ready for roof survey
- Approve CO-12 and Schedule of Values format and content / breakdown
- Schedule and conduct monthly pay meeting
- Review CO-12 pay request vs. work done & materials stored & certify amount
- Certify monthly pay requests
- Receive Contractor's affidavit of payment of claims

- Review Contractor requests/claims for extension of time
- Review Contractor claims for extras
- Verify Project is ready for substantial completion inspection prior to actual inspection
- Conduct Substantial Completion Inspection and prepare punchlist
- Conduct Final Completion Inspection
- Complete and sign Certificate of Substantial Completion, CO-13.1a, and Certificate of Completion, CO-13.1
- Prepare Record Drawings

1010.3 Construction Project Management: All Construction Project Management / Contract Administration activities not specifically required above to be performed by the A/E may be performed by the Agency or by the Agency's Project Management / Project Inspection Consultant. The Agency or its consultant may then, among others, review construction schedules, maintain accounts of the work, issue change orders, review applications for payment, issue certificates for payment, provide on-site observation of the work, instruct the Project Inspector, issue the Certificate of Completion and issue the final Certificate of Payment.

If the Owner relieves the A/E of responsibility for issuing Field Orders and/or Change Orders or rejecting Work, the person designated by the Owner to issue the Field Orders or Change Orders or reject the work or have authority to render decisions on the project shall be a Virginia licensed Architect or Professional Engineer who is experienced, knowledgeable and qualified to make the judgment on the matter. For an Agency with "Delegated Review Authority", the person designated as responsible for such reviews shall review and recommend approval or disapproval on all proposed change orders related to technical matters to assure continued conformance to the Code and adherence to requirements. A copy of all Change Orders related to technical matters or conformance to the applicable Codes and standards along with a copy of the justification and the recommendation of the "Delegated Review Authority" shall be forwarded to the Building Official (Director, Division of Engineering and Buildings) for approval as to code compliance.

The Owner may designate an on-site Project Manager to be the Owner's designated representative on the project. In such case, the Project Manager shall be the person through whom the Owner and the A/E generally convey written decisions and notices to the Contractor and receive information and notices from the Contractor. The Owner may also delegate from the Architect/Engineer to the Project Manager certain inspection, verification, acceptance, rejection, and administrative duties and authority. The scope of the Project Manager's authority is limited to that authorized by the Owner. The Owner shall provide the Contractor and the A/E information in writing defining the limits of the Project Manager's authority.

CHAPTER 10: CONSTRUCTION PROCUREMENT & ADMINISTRATION

SECTION 1011 PRECONSTRUCTION MEETING

The General Conditions of the Construction Contract (Form CO-7) requires that prior to the start of construction, and no later than 15 calendar days after the Notice to Proceed, a Preconstruction meeting shall be held. Attendees should include the Owner's Project Manager and Project Inspector, the A/E's Representative including representatives of each design discipline involved in the project, Fire Marshal's Office representative, the Contractor's Project Manager and Superintendent (and Scheduler, if Contractor desires), and representatives of the Contractor's major Subcontractors. A Safety Representative from Department of Labor and Industry may also be invited.

The purpose of the preconstruction meeting is to clarify and discuss the specifics related to, but not limited to, the following:

(1) Persons involved from each entity and their chain of authority.
(2) Names, addresses, telephone numbers, fax numbers and procedures/formats to be used for Requests for Information (RFI), Requests for Clarification (RFC), Requests for Proposals (RFP), shop drawing and sample submittals, and notices.
(3) Contractor's proposed construction schedule and Owner's sequencing requirements, if any.
(4) Schedule of Values and Certificate for Payment (Form C0-12) requirements and procedures.
(5) Procedures for shop drawing, product data and samples submittals.
(6) Procedures for handling Field Orders and Change Order Form C0-11.
(7) Procedures for Contractor's request for time extension, if any.
(8) Construction site requirements, procedures and clarifications to include:
    - Manner of conducting the Work
    - Work site specialities such as dust and erosion control, stormwater management, project signs, clean up and housekeeping, temporary facilities, utilities, security, and traffic
    - Safety
    - Layout of the Work
    - Quality control, testing, inspections and notices required
    - Site Visits by the A/E
    - Owner's Project Inspector duties
    - Running Punch List
    - As-Built Drawings
(9) Monthly Pay Meeting
(10) Requirement for the Contractor to furnish the Owner a list of hazardous materials that may be brought onto the job site. If additional material, not on the initial list, is to be brought to the job site, the Owner shall be given 48-hour prior notification.
(11) Project Close-Out requirements and procedures.

SECTION 1012 MONTHLY PAY MEETING

The intention is that the Contractor, the Owner and the A/E have timely exchange of information and cooperate to accomplish the Work as required by the Contract Documents. The Contractor is responsible

for managing the Work, obtaining approvals and requesting clarifications on a timely basis. The Owner and its A/E are responsible for making a reasonable effort to provide timely responses to the Contractor.

Section 36 of the General Conditions of the Construction Contract establishes the requirement for a monthly pay meeting which will usually be held at or near the Work site. In addition to Owner, A/E and Contractor representatives, the following representatives, at a minimum, should be available to attend portions of the meeting, as applicable or necessary:

- Owner's Project Inspector
- Contractor's Project Superintendent
- A/E representative of each discipline where construction work was performed for the current pay request or where work is projected to be performed in the coming month.
- Representatives for each subcontractor who performed work included in the current pay request or who is projected to perform work in the coming month.

The following additional topics should be included, as a minimum, in the monthly pay meeting agenda:

(1) Observations of status, quality and workmanship of work in progress
(2) Validation of the Schedule of Values and Certificate for payment
(3) Conformance with proposed construction schedule
(4) Outstanding Requests for Information Requests for Clarification and Requests for Proposal
(5) Submittals with action pending
(6) Status of pending Change Orders
(7) Status of Running Punch List items
(8) Work proposed for coming pay period
(9) Discussions of any problems or potential problems which need attention

SECTION 1013 OTHER MEETINGS

The A/E and/or the Owner may include requirements for other meetings, such as progress meetings, coordination meetings, pre-installation meetings and/or partnering meetings, in the Contract Documents in the Special Conditions or in Division 1 of the Specifications.

SECTION 1014 ACCESS TO WORK

The General Conditions of the Construction Contract require that the Architect/Engineer, the Owner, the Owner's Project Manager, the Owner's inspectors and other testing personnel, inspectors from the Department of Labor and Industry, and others authorized by the Owner shall have access to work at all times. The Contractor shall provide proper facilities for access and inspection.

SECTION 1015 AUTHORITY OF THE A/E DURING CONSTRUCTION

1015.1 A/E's Authority: Unless the Agency specifically designates an on-site Project Manager to act as the Owner representative, the A/E shall act as the representative, but not the agent, of the Owner during the construction phase. The A/E shall have authority to endeavor to secure the faithful performance by Owner and Contractor of the Work under the Contract to include the following:

- Review the Contractor's submittals for conformance to the requirements of the contract documents and return copies to the Contractor with appropriate notations.

- Interpret the requirements of the drawings and specifications and issue Field Orders to the Contractor as may be required.

- Recommend to the Owner suspension of the Work (in whole or in part) whenever such suspension may be necessary to ensure the proper execution of the Contract.

- Reject, in writing, Work, including material, installation or workmanship, which does not conform to the requirements of the drawings and specifications.

- Determine the progress and quality of the Work, subject to the right of the Owner to make an overriding decision to the contrary.

- Upon request by the Contractor, the A/E shall confirm, in writing within ten (10) days, any oral order or determination made by the A/E.

1015.2 Changes in the Work: The A/E shall have no authority to approve or order changes in the Work which alter the design concept or which call for an extension of time or a change in the contract price. Where such changes are in order, the A/E shall prepare the appropriate documents for the Owner's approval and issue same to the Contractor.

1015.3 Owner's Decisions: The Owner shall have the right, but not the duty, to countermand any decision of the A/E and to follow or reject the advice of the A/E, including but not limited to acceptance of the Work, as it deems best. In those instances where the A/E has been given authority to act, the A/E shall promptly do so, but in the case of disagreement between A/E and the Owner, the decision of the Owner shall be final.

1015.4 Orders to the Contractor: All orders from the Owner to the Contractor shall normally be transmitted through the A/E but may be communicated directly to the Contractor and the A/E by the Owner. **The Owner must be aware that any order issued directly to the Contractor without first consulting with the A/E may put the Owner at risk.**

1015.5 Construction Methods: The A/E shall not be responsible for construction means, methods, techniques, sequences or procedures (other than those expressly specified in Contract Documents), or for safety precautions and programs in connection with the Work, and the A/E shall not be responsible for the Contractor's failure to carry out the Contractor's own responsibilities.

1015.6 Project Management Consultant: Should the Owner choose to employ a different A/E or a Project Management Consultant to perform any portion of the services listed in Section 1010.2 above, the status, authority and responsibilities of the A/E or Project Management Consultant so employed shall be the same as that of the former A/E with regard to that service.

SECTION 1016.0 SCHEDULE OF VALUES AND CERTIFICATE FOR PAYMENT

The General Conditions of the Construction Contract, G.S. Form E&B CO-7, describe in Sections 20 and 36 the requirements for completing the Schedule of Values and Certificate for Payment, G.S. Form E&B CO-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 CO-12 documentation requesting payment. As previously described in this Chapter, the Owner may delete this service from the A/E Contract and assign the function and responsibility to the designated Project Manager when approved by the Director, Division of Engineering and Buildings.
The procedures and requirements in Sections 20 and 36 of the General Conditions are incorporated herein by reference. The following clarifies and amplifies the specified procedures associated with the CO-12.

1016.1 The A/E shall require the Contractor to provide the Schedule of Values totaling the amount of the Contract broken down into a sufficient level of detail (commensurate with the size of the project) to allow the A/E to verify the work completed. Where the total project has multiple floors, parts, or phases, the Contractor shall prepare appropriate schedules of values to facilitate review of and justification for payments. Unless waived by the Director of the Bureau of Capital Outlay Management, the Owner and A/E shall require the Contractor to use the CO-12 spreadsheet template which is available for download from the Bureau of Capital Outlay Management page of the DGS website (http://www.dgs.state.va.us/deb).

The Owner shall submit a copy of the initial approved CO-12 to the Director of the Bureau of Capital Outlay Management within sixty (60) days following the award of the construction contract. The Owner shall submit a copy of the final approved CO-12 to the Director of the Bureau of Capital Outlay Management at project closeout. Unless its use was waived by the Director of the Bureau of Capital Outlay Management, the Owner shall submit these copies in the electronic format described in the preceding paragraph. The electronic copies of the CO-12 spreadsheets may be submitted on diskette, or as an e-mail attachment.

1016.2 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. See Appendix C for sample formats and Supplemental Agreements for off-site stored materials away from the general location of the Project.

1016.3 All requests for payment must use page 1 of the Schedule of Values and Certificate for Payment (Form CO-12) , and page 1 shall be completed, signed and submitted by the Contractor with each

payment request. If the requirement to use the Bureau of Capital Outlay Management's CO-12 spreadsheet template was waived, the succeeding pages of the Schedule of Values may be prepared using alternate computer programs, provided the data is reported in the same format and contains the same information.

1016.4 The "Value of Work Completed" portion of the Form CO-12 shall be completed, the Contractor's certification completed and signed and the appropriate substantiating material attached to each request for payment.

1016.5 The labor progress for any item may be calculated based upon the estimated percentage of Work complete up through 50 percent. Thereafter, the evaluation of labor progress shall be based upon the effort required to complete that item or task. The material progress shall be calculated as the dollar cost of materials used in relationship to the amount estimated as necessary to complete a particular element of Work. When calculating material progress, credit shall be given for installed material as well as that stored on the site and any material stored off site which has been certified by the A/E in accordance with Section 36 of these General Conditions.

1016.6 The CO-12, Schedule of Values and Certificate for Payment, shall be completed, signed and submitted by the Contractor with each payment request.

1016.7 Based on the periodic observations at the site and on the Contractor's Schedule of Values and Certificate for Payment (CO-12), the A/E shall determine the amount owed the Contractor, shall mark the application as necessary, and shall issue the Certificate for Payment to the Owner with recommended amounts for payment shown. Where the amount recommended for payment differs from the amount requested on the Contractor's Application, a copy of the marked Schedule of Values and Certificate of Payment shall be furnished to the Contractor. The issuance of a Certificate of Payment shall constitute a representation by the Architect/Engineer to the Owner that the Contractor is entitled to payment in the amount indicated. By issuing a Certificate of Payment (E&B CO-12), the A/E shall not be responsible for making any examination to ascertain how and for what purpose the Contractor has used the monies paid on account of the contract sum.

SECTION 1017.0 INSPECTION OF WORK

The General Conditions of the Construction Contract, G.S. Form E&B CO-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. The A/E as part of Basic Services is required to visit the site, observe the Work in place, observe the Work in progress and evaluate the Contractor's conformance to the requirements of the Contract Documents. As previously described in this Chapter, the Owner may delete this service from the A/E Contract and assign the function and responsibility to the designated Project Manager when approved by the Director, Division of Engineering and Buildings.

The procedures and requirements in Section 16 of the General Conditions are incorporated herein by reference. The following clarifies and amplifies the specified procedures associated with the inspection of the Work.

1017.1 Inspection by A/E: A representative of the A/E firm or the Agency's professional/technical staff when design is accomplished in-house) shall be available to answer questions from the Project Inspector or in-house craftsmen and shall make visits as necessary to clarify plans and specifications.

Appropriate representatives of the A/E or Agency professional technical staff shall visit the site at least twice each month to observe the progress and quality of work, to determine if the work is proceeding in accordance with the Contract documents and to review the Contractor's Application for Payment (E&B Form CO-12). A qualified person in each design discipline of the project which had work performed during the pay period being verified or which will have work to perform during the upcoming pay period shall attend the monthly pay meeting. The Memorandum of Understanding shall indicate the minimum number and/or frequency of site visits by the A/E.

The A/E shall provide to the Owner and the Contractor after each visit to the site, a written report indicating the date, time of day, weather conditions and the names of the persons representing the A/E who participated in the visit. The A/E shall inspect / spot check Work for compliance with the Contract Documents and the codes / installation / workmanship standards therein. Identify to the Project Inspector any specific checks or inspections to be made as he inspects the Work as it progresses. The report shall advise the Owner of any problems that were noted and shall compare the A/E's observations of the actual progress of the Work with that reported by the Contractor. On the basis of his on-site observations, the A/E shall make every reasonable effort to guard the Owner against defects and deficiencies in the Work of the Contractor. He shall have the authority to inspect the Work, to note and report defective Work and deviations from the Contract Documents to the Owner, to reject same, and to recommend to the Owner the suspension of the Work when necessary to prevent defective Work from proceeding or being covered. **It is essential that the A/E and the Project Inspector work together, observe and inspect the Work, and regularly communicate to assure that work being performed conforms to the Contract Documents.**

1017.2 Owner's Project Inspector / Clerk of the Works: Except as provided in Section 1017.2.1, the Owner shall designate a specific individual to serve as inspector on every project whenever work on the project is in progress. Waiver of this requirement must be approved by the Director of BCOM. The name of the inspector shall be shown on the Form CO-8. Where completion of a Form CO-8 is not required, the name of the project inspector will be entered in the project file on a locally developed form. The Project Inspector shall 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.) Persons designated to inspect work regulated by the USBC must be licensed Architects or Professional Engineers, persons certified in their respective areas of competence by DHCD, persons certified in their respective trade by DPOR or persons otherwise approved by the Chief Facilities Officer as having the necessary knowledge and competence by education and experience to inspect the assigned work. (See CPSM Section 701.13.2).

1017.2.1 For small or simple trade contract projects, a Building and Grounds employee or a member of the administrative staff may serve as the Project Inspector. The agency, at its discretion, may designate an inspector for projects accomplished using in-house forces. The duties of the inspector will be consistent with the size and complexity of the job and similar to those listed in the following paragraphs.

1017.2.2 The firm, individual or Agency staff providing these inspection services (hereinafter called the Inspector) shall furnish all labor, materials, and resources for full-time Project Inspector/Clerk of the Works services during the construction of the project. The Inspector shall be a duly authorized and qualified person who shall be available during the entire time Work is in progress on the site.

On new construction and larger renovation projects, the Inspector should be provided with a separate jobsite office or trailer containing approximately 120 square feet, light, HVAC, a desk, a 36" x 72" work table, chair, plan rack, and telephone line. If the contractor is to provide this office/trailer, have the A/E include this requirement in the Special Conditions of the Specifications. Depending on the project, the Inspector should provide, or have access to, other office furnishings and/or equipment such as fax machine, camera, computer, copier, etc., necessary for performing these services.

The A/E shall provide the Project Inspector with a copy of all approved shop drawings, submittals, samples, schedules, change orders, clarifications, supplemental information, and other pertinent correspondence and material for the Inspectors use at the jobsite.

1017.2.3. The duties and functions of the Project Inspector including those listed in Chapter 7, Section 707B, of the **Manual**, and in Section 16 of the General Conditions of the Construction Contract, G.S. Form E&B CO-7, are described, generally, below. A detailed list of duties along with sample formats for recording required information are included in Appendix N.

1. Inspections/Quality Control

a. Inspect all construction materials, equipment, and supplies for compliance with the contract documents and/or approved shop drawings and submittals.

b. Inspect installations and workmanship for compliance with the standards described in the plans and specifications (e.g. ACI, NEC, ASME, SMACNA, NFiPA, BOCA, etc.).Verify compliance prior to cover or close-in of Work.

c. Observe and report on all tests performed by the Contractor.

d. Report presence of & activities performed by Owner's testing/inspection agents.

e. Report to the A/E and the Owner 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.

2. Records and Reports

a. Keep a record or records, including a daily log of construction activity, roofing activities, tests, inspections, and reports. Use photographs and annotated drawings to show the progress of, and changes in, the project during its construction. Keep records of site visits by the A/E's representatives, Owner's testing agents, and other visitors. Maintain a copy of these records at the site.

b. Submit a weekly summary report in an approved format to the Owner and A/E.

c. Immediately report all discrepancies in the Contractor's work to the A/E and the Owner. Also report any discrepancies noted in plans and specifications to the A/E for clarification or resolution. The Project Inspector shall not interpret or change the requirements of the plans and specifications.

3. Meetings

a. Attend all joint jobsite construction meetings and inspections held by the Owner and/or the A/E with the Contractor.

b. Review and maintain a copy of all meeting minutes and inspection reports.

4. Shop Drawings, Submittals and Samples

a. Record and maintain a copy for reference of all approved shop drawings, submittals, samples and installation instructions.

b. Check material/equipment delivered for conformance with approved submittals.

c. Check installations versus shop drawing and installation instructions.

5. Schedules and Payment Requests

a. Assist the A/E in review and verification of the CO-12, Schedule of Values & Certificate for Payment, submitted by the Contractor each month.

b. Maintain a record of construction progress by marking / annotating a copy of the project schedule to show pertinent information on actual start, stop and completion dates of the various activities. Compare work progress to Contractor's schedule and advise the Owner and A/E when progress deviates from schedule.

6. Project Closeout

a. Advise Owner and A/E if a portion or all of the project is ready for a Substantial or Final Inspection when such inspection is requested by the Contractor.

b. Receive copies of **Manual**s, documents, etc. from Contractor for delivery to Owner.

c. Assist Owner in coordinating training session for equipment.

1017.2.4 The Project Inspector has no authority to and shall not:

1. Authorize deviations from the Contract Documents;

2. Enter into area of responsibility of the Contractor's superintendent;

3. Issue directions regarding construction means, methods, techniques, sequences or procedures, or safety precautions and programs in connection with the Work;

4. Authorize or suggest that the Owner occupy the project in whole or in part;

5. Issue a certificate for payment.

6. Stop the Work.

1017.2.5 Supervisor: The Inspector shall report to the Owner's designated representative.

1017.3 "Commissioning" Inspection of HVAC Systems: The Project Inspector shall observe the Contractor's prefunctional 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 his periodic inspections of the HVAC systems to be present for such testing, balancing, adjusting and start-up of HVAC equipment and the testing of automatic controls to assure that these systems function properly.

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 Owner 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. These additional commissioning services may include, but are not limited to:

- Calibrate every instrument (sensor, switch, controller, etc.) in the system. (Note that Basic Service commissioning will utilize factory calibration.)

- Test three points for each analog instrument for linearity and accuracy.

- Calibrate all flow transmitters for 0%-100% of flow values with 3 point calibration along its span.

- Calibrate all pressure transmitters at three points along its span.

- Calibrate all temperature sensors and include any offsets required.

- Operate all control valves and dampers throughout their entire range. Verify that each actuator will close/open with specified air pressure.

1017.4 Other Inspectors: All other inspectors and testing personnel called for in the specifications as well as inspectors from the Department of Labor and Industry shall be provided access to the project as their duties require. The Agency shall procure the services of independent laboratories or firms to provide the Owner's inspection and testing services for foundations, steel frame connections, concrete testing, fireproofing and standard compaction control.

1017.5 Fire Marshal Inspections: The Regional Office of the State Fire Marshal's office shall be responsible for the Fire Marshal inspection of new and renovated state building construction in accordance with the agreement between the Department of General Services and the Department of Housing and Community Development.

1017.6 Hazardous Materials: Prior to the start of construction, the Contractor shall furnish the Owner a list of hazardous materials that may be brought onto the job site. If additional material, not on the initial list, is to be brought to the job site, the Owner shall be given 48-hour prior notification. When requested by the Owner, the Contractor shall furnish the Owner with material safety data sheets for any materials to be brought onto the job site.

SECTION 1018.0 DOCUMENTATION OF "AS BUILT" CONDITIONS

The Contractor shall be required at all times to maintain one record set of drawings and specifications in the Superintendent's office at the project site. This set of documents shall be designated the "As Built" documents and shall be used to record any changes or deviations from the original documents. The A/E shall review this set when he 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 1019.0 CONSTRUCTION CHANGE ORDERS

1019.1 Construction change orders may be necessary during the course of construction. No change order shall be issued, regardless of cost, that increases the approved scope of the project as shown on the approved CO-2 or as set forth in the Capital Project Request or Preplanning Study without prior approval of the Director of the Department of General Services. Change orders are most commonly necessitated by unforeseen site or building conditions; errors or omissions in the contract documents; an opportunity to reduce the operating cost of the facility under construction;

technology changes occurring since contract award which must be incorporated in the project; or a change in the Agency requirement. All changes involving the contract price, whether decrease or increase or performance time shall be documented in an approved contract change order (E&B CO-11 and CO-11a) to the construction contract. See Chapter 14 for Capital Projects and Chapter 15 for Non-Capital Project Change Order instructions

1019.2 The Owner may authorize changes in the construction contract. However, in accordance with §2.2-4309, *Code of Virginia*, Change Orders involving an increase in contract price of more than **25% or $50,000, whichever is greater**, shall have the prior written approval of the Governor or his designee. When a single change order or when the cumulative total of change orders exceeds the original contract amount by more than 25%, that change order and any subsequent change order that increases the contract amount shall have the prior approval of the Governor or his designee. Submit the Form E&B CO-11 and CO-11a to BCOM for approval of the contract change with supporting documentation outlined above.

1019.3 The Agency justification section of the CO-11a on all change orders shall:

1. Include a written statement by the Agency outlining the proposed cost sharing by the responsible design professional when the change results from an error or omission.

2. Or, answer the following questions when the change is generated by a change in the Agency requirement:

   (a) When was the change in Agency requirement known?

   (b) If before bidding, why were the changes excluded from the bid package?

   (c) Why can the Work not be packaged and bid separately?

   (d) What quantitative impact will the lack of this change have on Agency service delivery?

1019.4 An information copy of all CO-11 and CO-11a forms approved locally shall be sent to BCOM (without the cost back-up documentation) when the approved change order is issued to the Contractor.

1019.5 The total cumulative amount for all change orders for a single contract shall not exceed the construction contingency provided on the approved CO-8. The Agency may request approval through BCOM to DEB, DGS and DPB to infuse additional funds or to transfer funds to the contingency line item from another line item of the Total Project Budget or another Appropriation. Such a request shall be submitted on a revised CO-2 and a revised CO-8 with appropriate written justification for an increase in construction contingency.

SECTION 1020.0 INSPECTION FOR SUBSTANTIAL COMPLETION

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 CO-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 CO-13.2a to the Owner 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 will then coordinate and arrange 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 representatives of the General Contractor, including those of the mechanical, electrical, and major equipment subcontractors, the A/E, the Owner, the Director of the Division of Engineering and Buildings or his designee and the State Fire Marshal's 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 Division of Engineering and Buildings representatives agree that this project, or this portion of the project being inspected, is substantially complete in accordance with the contract documents, the A/E shall execute the appropriate Certificate of Partial or Substantial Completion (CO-13.1a), and submit them to the Owner. Attach copies of the punch list, the Contractor's CO-13.2a, the Application for Certificate of Use and Occupancy CO-13.3a, and other documents as appropriate. The Owner may forward this material to the DEB Director and request that a Certificate of Occupancy be issued, or the Owner 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 Owner for the costs of the re-inspections. Do not accept the project as Substantially Complete unless it (the part or whole) is ready for occupancy.

SECTION 1021.0 BENEFICIAL OCCUPANCY

Once the Owner, the A/E, the Contractor 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 Owner may submit a CO-13.3a, Application for Certificate of Occupancy, and a CO-13.3b, Checklist for Beneficial Occupancy, along with copies of the CO-13.1a, CO-13.1b (if applicable), CO-13.2a, Fire Marshal's acceptance report and other required operations permits to the DEB Director.

The Director of the Division of Engineering and Buildings 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 (CO-13.3) to the Owner to occupy the project, or applicable portion thereof, subject to any conditions or stipulations stated.

The Owner 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 (CO-13.3) issued by the Director, Division of Engineering and Buildings 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:

1. Floor plans (small scale) that show areas requested for occupancy and the exits/egress routes;

2. Type of Occupancy requested - e.g. move furniture in for staff, set up/prepare for students, etc.;

3. CO-13.1a with punchlist from A/E;

4. CO-13.2a with any attachment from Contractor;

5. CO-13.3b Checklist for Beneficial Occupancy;

6. Fire Marshal's report and recommendation;

7. Document stating that the Asbestos Abatement, if any, is complete;

8. CO-13.3a Application For Certificate of Occupancy with data on entire project and separate sheet showing data on area requested to be occupied;

The Owner 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 DEB Director, the State Building Official.**

SECTION 1022.0 FINAL COMPLETION INSPECTION

When the Contractor determines that the items listed in the "punch list" have been completed and that the Work is complete and ready for final testing and inspection, he shall complete Form CO-13.2 and send it to the A/E at least five (5) days prior to the date the Contractor has set for the Work to be ready for Final Inspection. The A/E will forward the CO-13.2 to the Owner and attach a written endorsement, based on his periodic inspections, as to whether or not he concurs with the date set by the Contractor.

The A/E shall receive the Certificate of Completion (CO-13.2), the Affidavit of Payment of Claims (CO-13), written guarantees, equipment and operating **Manual**s and related documents assembled by the Contractor, review same and turn them over to the Owner at the final inspection. The A/E shall record any items noted for completion or correction. He shall promptly follow up on the items and notify the Owner, in writing, when they are completed.

The A/E shall conduct the final inspection. A representative of the State Fire Marshal's office either will be present at the inspection or otherwise inspect the completed work and advise the Owner whether the work meets the fire safety requirements of the applicable building code. The Owner may have other persons participate in the inspection. If one or more re-inspections are required because the Work purported to be complete is not complete, the Contractor shall reimburse the Owner for all re-inspection costs.

If the A/E and the Fire Marshal's representative agree that the building is complete in accordance with the contract documents, and safe to occupy, the A/E shall execute the "Certificate of Completion by the Architect/Engineer" (CO-13.1) and deliver it, along with the Record Drawings and all other required material, to the Owner for final acceptance of the project.

SECTION 1023.0 PROJECT CLOSE-OUT

The A/E shall file with the Owner and the Owner with the Division of Engineering and Buildings, the Certificate of Completion by A/E, G.S. Form E&B CO-13.1. The Architect/Engineer shall not be required to file this Certificate of Completion before he, in his professional opinion, believes all construction requirements have been met.

SECTION 1024.0 RECORD DRAWINGS AND SPECIFICATIONS

1024.1. General: 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.

1024.2. Manually Prepared Drawings: Where the drawings were prepared by manual drafting on mylar, the original mylars shall be modified to show the "As Built" conditions, dimensions, locations, etc. and appropriate notations made on the mylars. Sections, details and/or sketches produced as part of addenda and those prepared during construction to clarify the documents or for Change Order work shall be transferred to and composed on additional drawing sheets for inclusion in the Record Drawing set. Once completed, the drawings shall be stamped "**Record Drawings**". The Record Drawings are then ready for microfilming and/or delivery to the Owner. Providing the Record mylars or drawings and specifications is a Basic Service of the A/E.

1024.3. CADD Drawings: Where the drawings were prepared by CADD drafting on paper or vellum, the original sealed masters shall be delivered to the Owner as described in Section 1025. below. The CADD information shall be modified to show the "As Built" conditions, dimensions, locations, etc. and appropriately noted. Sections, details and/or sketches produced as part of addenda and those prepared during construction to clarify the documents or for Change Order work shall be transferred to and composed on additional drawing sheets for inclusion in the Record Drawing set. Once the CADD data is completed, the drawings shall be printed (on a transparent medium suitable for use as a master for obtaining a mylar sepia) and stamped "**Record Drawings"**. The Record Drawings are then ready for microfilming and/or delivery to the Owner. Providing the original masters of the bid documents and the original Record Drawings is a basic service.

1024.4. A/E Seals on Record Drawings: The Department of Professional and Occupational Registration (DPOR) establishes requirements for work which require a professional seal, and promulgates standards for applying such seal. The Building Official (Director , Division of Engineering and Buildings) has the authority to require the seal on work which may be below the threshold set by DPOR. The Director , Division of Engineering and Buildings, is given the authority under statute to establish standards and criteria as they apply to state projects. These requirements are stated in the "Construction & Professional Services Manual for A/E's" which is included by reference in the A/E's contract with the Owner.

Commonwealth of Virginia Record Retention requirements state that the plans (sealed), specifications (sealed) and other documents which comprise the construction contract be maintained as part of the permanent records for the life of the building. The professional seal, signature and date indicate the person, or persons, responsible for the design shown on the plans and specifications which are submitted for Building Permit. Changes to the Work during construction are not specifically addressed, although the CPSM and the Building Permit do not allow changes which impact on Code compliance without input from the A/E.

The 'As Built' or 'Record Drawings" are required to be a part of the permanent records for the building. Record Drawings document the actual construction of the project to include approximate locations of utilities, minor deviations in locations or dimensions, and Work included in (or deleted from) the project by Change Order. The A/E's review and approval of Contractor submittals, inspections of the work, review during site visits of the Contractor's 'As Builts', reviews and acceptance of inspection and test reports, and the A/E's participation in the scoping and approvals of Change Order work provides the A/E with the background to prepare the 'Record Drawings'. The revisions to the plans to reflect the as built conditions are usually identified in some manner to indicate an 'as built' condition as opposed to the original contract documents, and the 'revision block' on the drawing is usually noted 'as built' and dated.

Where the CADD process is used to provide the 'Record Drawings' in lieu of the old method of actually modifying the original documents, the CPSM requires that a professional seal be applied (signed and dated) on the 'Record Drawings' to demonstrate to the Owner / Commonwealth that the above described information has been properly applied / plotted on the drawings. This is a contractual requirement with the Owner, and is not dependent on the minimum requirements of DPOR.

1024.5. Document Retention Requirements: The Owner / Agency is responsible for assembling, maintaining and retaining the Record / As Built construction documents for all building constructed on state owned property to include documentation of all renovations, remodels and additions. See the Records Retention Policy summary in Appendix R of the Manual. These documents may be in paper form, Mylar, or microfilm. Electronic copies of these document on CD have not yet been approved by the Library of Virginia Archivist as being a suitable storage medium.

The Record Documents include the Record Drawings of the As-Built Plans, Specifications, Maps and other pertinent documents. These documents shall be retained until the Building is removed from the state inventory. At that time the Agency shall contact the State Archvist at the LVA to determine the disposition of the documents.

1024.6. Microfilm Specifications: If the Agency chooses to maintain the Record / As Built documents by microfilming, the 35mm microfilm shall conform to the following:

1. Microfilmed Record drawings and specifications shall be made from the corrected original tracings and specifications. Drawings and specifications shall be stamped Record Drawings before filming. Also, sections of the specifications that have been changed by an addendum shall be clearly cross-referenced to the proper addendum before filming.
2. The film shall be silver halide type. Diazo vesicular and dry-processed silver are not acceptable.
3. The microfilm shall be of archival quality meeting the Standards for the Microfilming of Public Records for Archival Retention, established by the State Library Board of Virginia, June 27, 1977.
4. The film shall be made using a reduction ratio that most nearly fills the frame with the picture.
5. Do not exceed reduction ratio of 30X. If the original is too large to be included in a 30X reduction ratio, film in sections with 4" overlap.
6. Film the specifications with 8 sheets per frame (two rows of four).
7. Film only the first page of the Commonwealth of Virginia's General Conditions.
8. Attach to each jacket a list of the drawings and/or specifications sheets contained therein and the reduction ratio used when filming.

1024.7. Diskette or CD-ROM copies of CADD Drawings: If the plans were required to be prepared on CADD, the A/E shall update those plans to reflect the As Built conditions and provide one copy of the CADD documents on Compact Disk to the Owner.

SECTION 1025.0 OWNERSHIP OF DOCUMENTS

Original drawings and specifications as prepared by the A/E for the project shall be the property of the Commonwealth of Virginia, whether the work for which they are made is executed or not. The A/E shall provide to the Owner at the completion of the job, the original drawing tracings and original copy of the specifications at the time the Record documents are provided to the Owner.

SECTION 1026.0 MAINTENANCE AND OPERATING MANUALS

A specific set of operating and maintenance instructions written for the specific project shall be provided to the Agency at the final inspection. 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 head of the Buildings and Grounds operation of the Agency at the time of final acceptance of the project.

SECTION 1027.0 GUARANTEE PERIOD INSPECTION

Prior to the expiration date of the Contractor's one-year guarantee period, but not before 9 months of this period has elapsed, the Owner shall make an inspection of the building, equipment, and/or any other work included in the original Contract to determine whether any defects in materials or workmanship have developed. The Owner shall provide the Contractor with written notice of such defects and shall notify the A/E for advice in the correction of the defects.

SECTION 1028.0 START-UP/ACCEPTANCE OF MECHANICAL AND ELECTRICAL SYSTEMS

It shall be the A/E's responsibility to verify that the Contractor has all systems functioning properly per design intent; that equipment has been received per Shop Drawings 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 Owner 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.

CONSTRUCTION & PROFESSIONAL SERVICES MANUAL – 2004

CHAPTER 11: SPECIAL CONSTRUCTION PROCEDURES

SECTION 1101.0 DESIGN BUILD PROCEDURES:

The **PROCEDURES FOR UTILIZING DESIGN-BUILD (D/B) CONTRACTS** which follow were adopted by the Secretary of Administration on September 7, 1988 and previously included in Chapter IX of the *Commonwealth of Virginia Capital Outlay Manual*. These procedures remain in effect and all references in other documents to the Design Build Procedures in Chapter IX of the *Commonwealth of Virginia Capital Outlay Manua*l shall be interpreted to mean these Design Build Procedures in SECTION 1101.0 of the **Commonwealth of Virginia Construction and Professional Services Manual – 2003 Edition**.

PROCEDURES FOR UTILIZING DESIGN-BUILD (D/B) CONTRACTS

In accordance with the provisions of § 2.2-4306 of the *Code of Virginia* I hereby adopt the following procedures for the procurement of Design-Build contracts, which shall be followed by all departments, agencies and institutions of the Commonwealth. These procedures shall be effective July 1, 1988.

A. LEGISLATIVE AUTHORITY: Under authority of § 2.2-4306 of the *Code of Virginia,* the Commonwealth may contract to secure Design-Build (D/B) projects on a fixed price basis in accordance with these procedures. Under authority of § 2.2-4303 (D)(1) of the *Code of Virginia,* the Commonwealth is authorized to use competitive negotiations to procure Design-Build contracts.

B. CRITERIA FOR USE OF DESIGN-BUILD CONTRACTS (D/B): Design-Build contracts may be approved for 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 and housing.

C. PROCEDURE FOR APPROVAL TO USE D/B: The Agency shall request authority, in writing, to use a D/B contract. Normally the written request will be submitted with the Capital Project Request for the project. (See the Commonwealth Planning and Budgeting System Manual.)

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. If the Agency desires an exception to the rule set forth in Paragraph D.3(g) hereof, that the contract be awarded to the lowest cost offeror which has submitted an acceptable Technical Proposal, the Agency must submit a request for an exception along with its request for authority to use Design-Build Contract.

Exceptions may be granted by the Director, Division of Engineering and Buildings. The Director, Division of Engineering and Buildings, is the approving authority for requests to use D/B procedures.

D. DESIGN-BUILD SELECTION PROCEDURES: On projects approved for Design-Build, procurement of the contract shall be a two step competitive negotiation process. The following procedures shall be used in selecting a Design-Builder and awarding a contract:

1. The Agency shall appoint an Evaluation Committee which shall include a licensed professional engineer or architect from the Division of Engineering and Buildings. Agency members should include licensed professional engineers/architects if possible.

2. Selection of Qualified Offerors (STEP I)

   a. The Agency shall publish notice of its invitation for Design-Builders to submit qualifications. The notice shall appear in at least two daily newspapers and on the On-Line Bids page of eVA, Virginia's central electronic procurement website. The URL is http://vbo.dgs.state.va.us. The requirement to publish on eVA may be waived by the Director of Engineering and Buildings in order to expedite the process.

   b. The Committee shall evaluate each responding firm's submittals and any other relevant information and shall select no more than five offerors deemed most suitable for the project.

3. Selection of Design-Build Contractor (STEP II)

   a. The Agency shall prepare a Request for Proposal (RFP) containing the Agency'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 Agency will invite a minimum of two and a maximum of five D/B offerors deemed most suitable for the project, from those selected by the Committee to submit Technical and Cost Proposals. Sealed Technical Proposals will be submitted to the Evaluation Committee. Separately sealed Cost Proposals will be submitted to the Agency Treasurer/ Fiscal Officer, secured by and kept sealed until evaluation of the Technical Proposals and the design development negotiations are completed.

   c. The Evaluation Committee will evaluate the Technical Proposals based on the criteria contained in the RFP. It will inform each D/B offeror of any adjustments necessary to make its Technical Proposal fully comply with the requirements of the RFP. In addition, the Agency may require that offerors make design adjustments necessary to incorporate project improvements and/or additional detail identified by the Committee during design development.

   d. Based on the revisions made to the Technical Proposals, the Committee and an offeror may negotiate additive and deductive amendments to the offeror's Cost

Proposals. In addition, an offeror may submit cost deductions from its original sealed cost proposal which are not based upon revisions to the Technical Proposals.

e. At the conclusion of Design Development, the Evaluation Committee shall publicly open, read aloud, and tabulate the Cost Proposals. It shall add to or subtract from the Cost Proposal any cost adjustments contained in amendments submitted by a D/B offeror.

f. The Committee shall make its recommendation on the selection of a Design-Builder to the agency head based on its evaluation and negotiations. The agency head shall select the Design-Builder.

g. Award of the D/B contract shall be made to the offeror which submits an acceptable Technical Proposal at the lowest cost, unless the Agency has received the approval of the Director of Engineering and Buildings to award on an alternate basis.

h. The Agency shall notify the Division of Engineering and Buildings of the Agency head's selection of the Design-Builder and shall request authority to award a contract by submission of GS Form E&B CO-8 and supporting documents for the Governor's approval.

i. Upon receipt of the Governor's approval to award the contract, the Agency will notify all offerors who submitted proposals which offeror was selected for the project. In the alternative, the Agency may notify all offerors who submitted proposals of the Agency's intent to award the contract to a particular offeror at any time after the Agency has selected a Design-Builder, without waiting for the Governor's approval.

/s/ Carolyn J. Moss Sep 07, 1988
Secretary of Administration Date

CHAPTER 11: SPECIAL CONSTRUCTION PROCEDURES

1101.1. CHECKLIST FOR DESIGN BUILD PROCUREMENT

1101.1.1 CHECKLIST FOR DESIGN BUILD PROCUREMENT – BASIC PROCEDURE

- Prepare justification for using Design Build procedure.
- Obtain approval to use Design Build procedure.
- Establish DB Building Committee (Evaluation Committee)
- Select A/E consultant or have licensed professional on staff to prepare Preliminary level "scope and criteria" design. Standard procedures used to select the Owner's A/E
- Have Owner's A/E prepare schematics for Owner's approval / changes and then prepare Preliminary Documents (at least single line plans and elevations and outline specs to describe materials to be used and minimum level of quality and/or performance of systems.)
- Advertise for interested Design Builders to submit qualifications or interest (RFQ) showing qualifications of both the 'Designer' to be used and the 'Builder' to do the construction. See Section 1103 for procedures for Prequalification.
- Reference CO-7DB to be used as the General Conditions of the Design Build Contract and the CO-9DB as the Contract form to be used
- Receive responses / qualifications
- Review Responses and short list 3 (minimum) to 5 (preferred) qualified Design Builders to receive full Request For Proposal
- Prepare the RFP using above Preliminary Documents for the short listed DB Proposers. Obtain Copy of Design Build General Conditions from BCOM and use CO-7 DB for the DB project
- Distribute the formal RFP to the selected group with deadline for submitting both a Technical Proposal and a Cost Proposal (cost proposal to be in seal envelope like Bid).
- The Owner's A/E will also usually act as Owner's Rep to review DB Proposer's Technical Proposals for the design for conformance with the RFP and for conformance with the RFP during the Design Phase
- Evaluate Technical Proposal from each respondent for conformance with requirements of the RFP.
- If changes are required, to meet clarify and/or your requirements, advise each proposer of those clarifications and allow each to submit a revised Technical Proposal and a sealed modification to its previously submitted cost proposal. Specify deadline.

- Make presentation to AARB for approval of each proposed Design or gamble and wait till cost proposals are opened and then submit the winning / low price design; Your choice!
- Review revised Technical Proposals for compliance with the requirements of the RFP and clarifications issued. Assuming changes required were made, all proposals, though they may have different features, would now meet the requirements of the RFP. (EQUALLY ACCEPTABLE WITH RESPECT TO THE RFP CRITERIA)
- Open Cost Proposals form each Proposer along with any cost modifications submitted. Since ALL PROPOSALS meet the RFP requirements, award contract to the lowest price. COMPETITION IS REQUIRED. MUST HAVE AT LEAST 2 PROPOSERS TO OPEN. IF ONLY ONE PROPOSER, START OVER !!!!!
- DB Contractor obtains and submits Performance Bond and Labor & Material Payment Bond, etc, and sign contract.
- Have 'Predesign' meeting with BCOM to coordinate the documents that will be required for the Building Permit and whether partial permits will be issued for sitework phase, foundation phase and building phase.
- Submit documents to BCOM for Review and Building Permit. Note that Owner / Agency still must have independent structural and special inspections and that the work must still be inspected by other than the DB Contractor to assure conformance with the plans and specs.
- Inspections by BCOM and State Fire Marshal's Office Reps are required and a Certificate of Occupancy is required.

NOTES

- Builder must be licensed as a Class A Contractor in Virginia by DPOR
- Designer must be licensed in Virginia by DPOR as an Architect and /or Professional Engineer
- Design must conform to scope as authorized by CO-2
- Design must conform to CPSM Chapter 7 - Technical Requirements
- Design must conform to current VUSBC
- Must use all applicable CO- Forms, Contracts, etc for the project
- Must use CO-7DB for General Conditions
- Must use CO-9DB for Contract

1101.1.2 CHECKLIST FOR DESIGN BUILD PROCUREMENT – USING PROTOTYPE

- Prepare justification for using Design Build procedure. Obtain approval to use Design Build procedure.
- Establish DB Building Committee (Evaluation Committee)
- Select A/E consultant or have licensed professional on staff to oversee design
- Select Prototypical Design to use (Plans and Specs)
- List deviations or changes required and prepare Site Plan and Elevations
- Since Prototype will be used, make presentation to AARB for approval at this location
- Prepare the RFP for the short listed DB Proposers
- Advertise for interested Design Builders to submit qualifications or interest (RFQ) showing qualifications of both the 'Designer' to be used and the 'Builder' to do the construction. See Section 1103 for procedures for Prequalification.
- Receive responses / qualifications
- Review Responses and short list 3 (minimum) to 5 (preferred) qualified Design Builders to receive full Request For Proposal
- Distribute the formal RFP to the selected group with deadline for submitting both a Technical Proposal and a Cost Proposal (cost proposal to be in seal envelope like Bid).
- Evaluate Technical Proposal from each respondent for conformance with requirements of the RFP. If changes are required, to meet clarify and/or your requirements, advise each proposer of those clarifications and allow each to submit a revised Technical Proposal and a sealed modification to its previously submitted cost proposal. Specify deadline.
- Review revised Technical Proposals for compliance with the requirements of the RFP and clarifications issued. Assuming changes required were made, all proposals, though they may have different features, would now meet the requirements of the RFP. (EQUALLY ACCEPTABLE WITH RESPECT TO THE RFP CRITERIA)
- Open Cost Proposals form each Proposer along with any cost modifications submitted. Since ALL PROPOSALS meet the RFP requirements, award contract to the lowest price.
- Obtain Bonds, etc, and sign contract.

- Have 'Predesign' meeting with BCOM to coordinate the documents that will be required for the Building Permit and whether partial permits will be issued for sitework phase, foundation phase and building phase.
- Submit documents to BCOM for Review and Building Permit. Note that Owner / Agency still must have independent structural and special inspections and that the work must still be inspected by other than the DB Contractor to assure conformance with the plans and specs.
- Inspections by BCOM and State Fire Marshal's Office Reps are required and a Certificate of Occupancy is required.

NOTES

- Builder must be licensed as a Class A Contractor in Virginia by DPOR
- Designer must be licensed in Virginia by DPOR as an Architect and /or Professional Engineer
- Design must conform to scope as authorized by CO-2
- Design must conform to CPSM Chapter 7 - Technical Requirements
- Design must conform to current VUSBC
- Must use all applicable CO- Forms, Contracts, etc for the project

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CHAPTER 11: SPECIAL CONSTRUCTION PROCEDURES

SECTION 1102.0 CONSTRUCTION MANAGEMENT PROCEDURES:

The **PROCEDURES FOR UTILIZING CONSTRUCTION MANAGEMENT (CM) CONTRACTS** which follow were adopted by the Secretary of Administration on September 7, 1988 and previously included in Chapter IX of the *Commonwealth of Virginia Capital Outlay Manual*. The procedures were modified in December 2003, posted, and subjected to a public hearing. The procedures below are those adopted by the Secretary of Administration on December 18, 2003 after the public hearing. All references in other documents to the Construction Management Procedures in Chapter IX of *the Commonwealth of Virginia Capital Outlay Manual* shall be interpreted to mean these Construction Management Procedures as revised in SECTION 1102.0 of the **Commonwealth of Virginia Construction and Professional Services Manual - 2003 Edition.**

PROCEDURES FOR UTILIZING CONSTRUCTION MANAGEMENT (CM) CONTRACTS

In accordance with the provision of § 2.2-4306 of the *Code of Virginia*, I hereby adopt the following procedures for the procurement of construction management contracts which shall be followed by all departments, agencies and institutions of the Commonwealth (each of which is hereinafter referred to as the "Agency"). These procedures shall be effective January 1, 2004.

A. LEGISLATIVE AUTHORITY: Under authority of § 2.2-4306 of the *Code of Virginia*, the Commonwealth may enter into a contract with a Construction Manager in accordance with these procedures. Under authority of § 2.2-4303 (D) (1) of the *Code of Virginia*, the Commonwealth is authorized to use competitive negotiation to procure Construction Management contracts.

B. 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 Agency 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 agency can demonstrate compelling circumstances.

C. PROCEDURE FOR APPROVAL TO USE CONSTRUCTION MANAGEMENT: The Agency shall request authority, in writing to the Director of the Division of Engineering and Buildings, 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 Director of the Division of Engineering and Buildings is the approving authority for requests to use CM.

D. PREQUALIFICATION PROCEDURES: On projects approved for CM, the Agency shall proceed as follows to pre-qualify offerors who may submit proposals.

1. The Agency shall appoint an Evaluation Committee which shall include a licensed professional engineer or architect provided by the Division of Engineering and Buildings. Agency members shall include licensed design professional, if possible.

2. The Agency shall publish an invitation to pre-qualify (Request For Qualifications) in at least two daily newspapers and on the On-Line Bids page of eVA, Virginia's central electronic procurement website. The URL is http://vbo.dgs.state.va.us. The requirement to publish on eVA may be waived by the Director of Engineering and Buildings in order to expedite the process.

3. The Committee shall evaluate each responding firm's submittals and any other relevant information and shall and determine those deemed qualified with respect to the criteria established for the project.

4. In addition to the procedures described above for pre-qualifying firms for individual CM projects, the Division of Engineering and Buildings may establish prequalification procedures for particular types of construction projects in accordance with § 2.2-4317 of the *Code of Virginia* and firms qualified under that procedure may compete for projects of the type for which they qualified unless the Director of the Division of Engineering and Buildings determines that further pre-qualification for particular project is desirable.

E. SELECTION PROCEDURES:

1. The Evaluation Committee will send Request for Proposals (RFP) to the pre-qualified firms and request submission of formal proposals from them.

2. The Committee will evaluate and rank the proposals and conduct negotiations with two or more offerors submitting the best proposals. Should the Agency determine in writing and at its sole discretion that only one offeror is fully qualified, or that one offeror is clearly more highly qualified than the others under consideration, then, with the consent of the Director of the Division Engineering and Buildings, a contract may be negotiated with and awarded to that offeror.

3. The Committee shall make its recommendation on the selection of a Construction Manager to the Agency head based on its evaluation and negotiations. The Agency head shall select the Construction Manager.

4. The Agency shall notify the Division of Engineering and Buildings of the Agency head's selection of the Construction Manager and shall request authority to award a contract by submission of GS Form E&B CO-8 and supporting documents for the Governor's approval.

5. Upon receipt of the Governor's approval to award the contract, the Agency will notify all offerors who submitted proposals which offeror was selected for the project. In the alternative, the Agency may notify all offerors who submitted proposals of the Agency's intent to award the contract to a particular offeror at any time after the Agency head has selected the Construction Manager without waiting for the Governor's approval.

F. REQUIRED CONSTRUCTION MANAGEMENT CONTRACT TERMS: Any Guarantee Maximum Price construction management contract entered into by any department, agency 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 Director of Division of Engineering may grant a waiver of these contractual requirements in whole or in part.

/s/ Sandra D. Bowen 12-18-03
Secretary of Administration Date

CHAPTER 11: SPECIAL CONSTRUCTION PROCEDURES

Section 1102.1 Guide for using Construction Management or CM/GC

- CM/GC is Construction Management where the CM provides a Guaranteed Maximum Price (GMP) for the Construction and all related services and is 'At Risk' for bringing the project in within the GMP
- Compare project criteria to determine if it qualifies for consideration for CM/GC
- Prepare justification and request for approval to use CM/GC
- Determine criteria for CM/GC qualification
- Determine scope of services for CM/GC to perform during the Pre-construction (design) phase of the project
- Assuming project is approved for use of CM/GC, prepare an RFQ/RFP for posting and Advertisement
- Selection and contract will be in 2 phases or parts
- Part or Phase 1 will be Pre-construction period services which will be subject to the Terms and Conditions for Non-professional services and will be performed for a stipulated or fixed amount.
- Part 2 or Phase 2 Construction period services / construction will be contingent upon the CM/GC providing an agreeable GMP to the Owner. If a GMP cannot be agreed upon, the Contract for phase 1 is concluded and terminated and the Agency requests a GMP from the other qualified CM/GC's or since the documents are substantially complete, the project may be Bid.
- The CO-7 General Conditions apply to the construction contract.
- Any special arrangement on the CM/GC Contract (CO-9 CM/GC) can be stipulated in an MOU attached to that contract.

1102.2 CHECKLIST FOR CONSTRUCTION MANAGER "AT RISK" PROCUREMENT – BASIC PROCEDURE

- Does project meet criteria for using CM?
- What is the Justification for using CM "At Risk"?
- What are the benefits for using CM?
- Is it 'fiscally advantageous' to use CM? (must explain in request or documentation)
- Prepare justification for using CM At Risk (also called CM/GC) procedure.
- Obtain approval to use CM "At Risk" procedure.
- When will CM be Hired? (at what stage of the project?)
- Do you intend to use CM for "Preconstrcution" (i.e. design period) services?
- When will you require that the CM/GC give you a "Guaranteed Maximum Price" (GMP) ?
- Establish CM "AT RISK" Building Committee (Evaluation Committee) (BCOM must be represented on panel)

- Advertise for interested CM "At Risk" firms to submit qualifications or interest (RFQ) showing qualifications of both the 'Firm' and the 'Team Members' to do the construction. Use Prequalification procedures in Section 1103 and CO-16 .
- Use "Prequalification" format and procedures for 'qualifying' CM's to receive the RFP (CO-16, Questionnaire, Attachment 1, Reference letter. Consent to contact references letter,etc)
- Determine "Qualified CM's" to receive RFP
- Have Owner's A/E prepare Schematics or Preliminary Documents (at least single line plans and elevations and outline specs to describe materials to be used and minimum level of quality and/or performance of systems.) for use by CM proposers in responding to the RFP. These are the documents which represent the current state of the project scope and design
- Send Request for Proposals to 'Qualified' CM "At Risk" firms asking them to submit detailed proposals showing qualifications of both the 'Firm' and the 'Team Members' to do the construction and complete the cost proposal form. Describe data you want the qualified firms to submit
- The RFP should include above Preliminary Documents , the CO-7 CM "AT RISK", CO-9 CM "AT RISK" Contract and a Draft CM "At Risk" MOU project
- **Point out / emphasize the "SWAM" requirements that the CM must meet for the project.**
- Clearly point out that the CM "AT RISK" Contractor obtains and submits Performance Bond and Labor & Material Payment Bond, Insurances, etc, as part of the General Conditions Fee for the project
- Distribute the formal RFP to the selected group with deadline for submitting both a Service Proposal and a Fee / GMP Proposal
- Receive responses / proposals
- Review Responses and short list 3 (minimum) to 5 (preferred) qualified CM "At Risk" firms to be interviewed 'face-to-face' and make presentations.
- Conduct Interviews. Ask questions as necessary to determine the "best fit" firms for your project and Select 2 or 3 CM "At Risk" proposers for detailed negotiations
- Evaluate Technical Proposal and Cost Proposal from each respondent for conformance with requirements of the RFP and for a clear undersatanding by the Owner and the CM of what is required and what will be provided.

- If changes are required, to meet clarify and/or your requirements, advise each proposer individually of those clarifications and allow each to submit a revised Proposal including a modification to its previously submitted cost proposal or a new cost proposal. Specify deadline.
- Review revised Proposals for compliance with the requirements of the RFP and clarifications issued.
- Have 'Preconstruction' meeting with BCOM to coordinate the documents that will be required for the Building Permit and whether partial permits will be issued for sitework phase, foundation phase and building phase.
- Submit documents to BCOM for Review and Building Permit. Note that Owner / Agency still must have independent structural and special inspections and that the work must still be inspected by other than the CM "AT RISK" Contractor to assure conformance with the plans and specs.
- Inspections by BCOM and State Fire Marshal's Office Reps are required and a Certificate of Occupancy is required.

NOTES

- CM must be licensed in Virginia by DPOR as a Class A Contractor
- Must use all applicable CO- Forms, Contracts, etc for the project
- Must use CO-7CM "AT RISK" for General Conditions. See Forms Center.
- Must use CO-9CM "AT RISK" for Contract . See Forms Center.
- Must use an MOU similar to the Sample but made project specific

CHAPTER 11: SPECIAL CONSTRUCTION PROCEDURES

SECTION 1103.0 PREQUALIFICATION PROCEDURES

1103.1 An agency 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 1103.0 shall be used for prequalification of contractors for a particular construction project. The agency 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.

1103.2 The objective of prequalification shall be to qualify as many contractors as possible to bid on the proposed work. 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.

1103.3 The bar chart in Figure 1103-1 depicts reasonable times 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 agency shall advertise for the prequalification (Request for Qualifications) in a newspaper of daily statewide circulation; on the On-Line Bids page of eVA, Virginia's central electronic procurement website [URL is http://vbo.dgs.state.va.us], 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 shall be at least thirty (30) calendar days from the date of the initial newspaper advertisement.

1103.4 The Standard Form for Contractor's Statement of Qualifications, G.S. Form E&B CO-16 (CO-16) shall be the application form submitted by contractors when applying to be prequalified for a particular construction project. The CO-16, when provided to interested contractors, shall be accompanied by the minimum qualification criteria for the proposed construction contract.

1103.5 The agency shall establish a committee (the Building Committee) of at least five (5) state employees to review the CO-16 forms submitted by interested contractors and determine which, if any, of the contractors shall be prequalified. Of the five (5) persons one shall be an accredited Virginia Construction Contracting Officer (VCCO) of the agency, one shall be a registered architect or engineer and one shall be the project manager for the proposed project. The remaining persons 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.

1103.6 *Code of Virginia,* §2.2-4317, permits a state agency to deny prequalification to any contractor only if the agency finds at least one of the following:

a. 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;

b. The contractor does not have appropriate experience to perform the construction project in question;

c. 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;

d. The contractor has been in substantial noncompliance with the terms and conditions of prior construction contracts with a public body, without good cause. A state agency 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;

e. 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;

f. 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

g. The contractor failed to provide to the agency, in a timely manner, any information requested by the agency relevant to (a) through (f) above.

The state agency shall 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,* §54.1-1100 et seq.

1103.7 The agency shall notify, in writing, each contractor that submitted the CO-16 whether that contractor has been prequalified. If a contractor is denied prequalification, the written notice to that contractor shall state the reason(s) for denial of prequalification and the factual basis of such reasons(s). The written notice to each contractor shall be delivered by U. S. mail. A contractor denied prequalification shall have ten (10) calendar days from the postmark date of the written notice from the agency in which to appeal the denial of prequalification. The contractor shall submit the written appeal with any additional information which may support the appeal to the agency's designated appeal officer (Appeal Officer).

For higher education agencies the Appeal Officer shall be the Vice President for Finance / Administration. Non-higher education agencies shall designate an equivalent organizational position to serve as Appeal Officer. The Committee shall review the information submitted and make a recommendation on the appeal to the Appeal Officer within ten (10) calendar days of the date of the Appeal Officer's receipt of the appeal. The Appeal Officer shall notify the contractor, in writing, of his/her decision within fifteen (15) calendar days of receipt of the

appeal. The decision of the Appeal Officer shall be the final agency decision. There is no further administrative appeal procedure pursuant to *Code of Virginia*, §2.2-4357 and §2.2-4365; however, the contractor may initiate legal action pursuant to *Code of Virginia*, §2.2-4357 and §2.2-4364.

1103.8 Verification of References supplied by the contractor in Sections VI: 1, 2, 3 & 5 of the CO-16 shall be accomplished using the contractor reference sheet found on the DGS Forms Center. .

1103.9 Contractor experience qualification criteria shall be sufficiently general so that contractors with the qualifications and experience to satisfactorily complete 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 such as the building's:

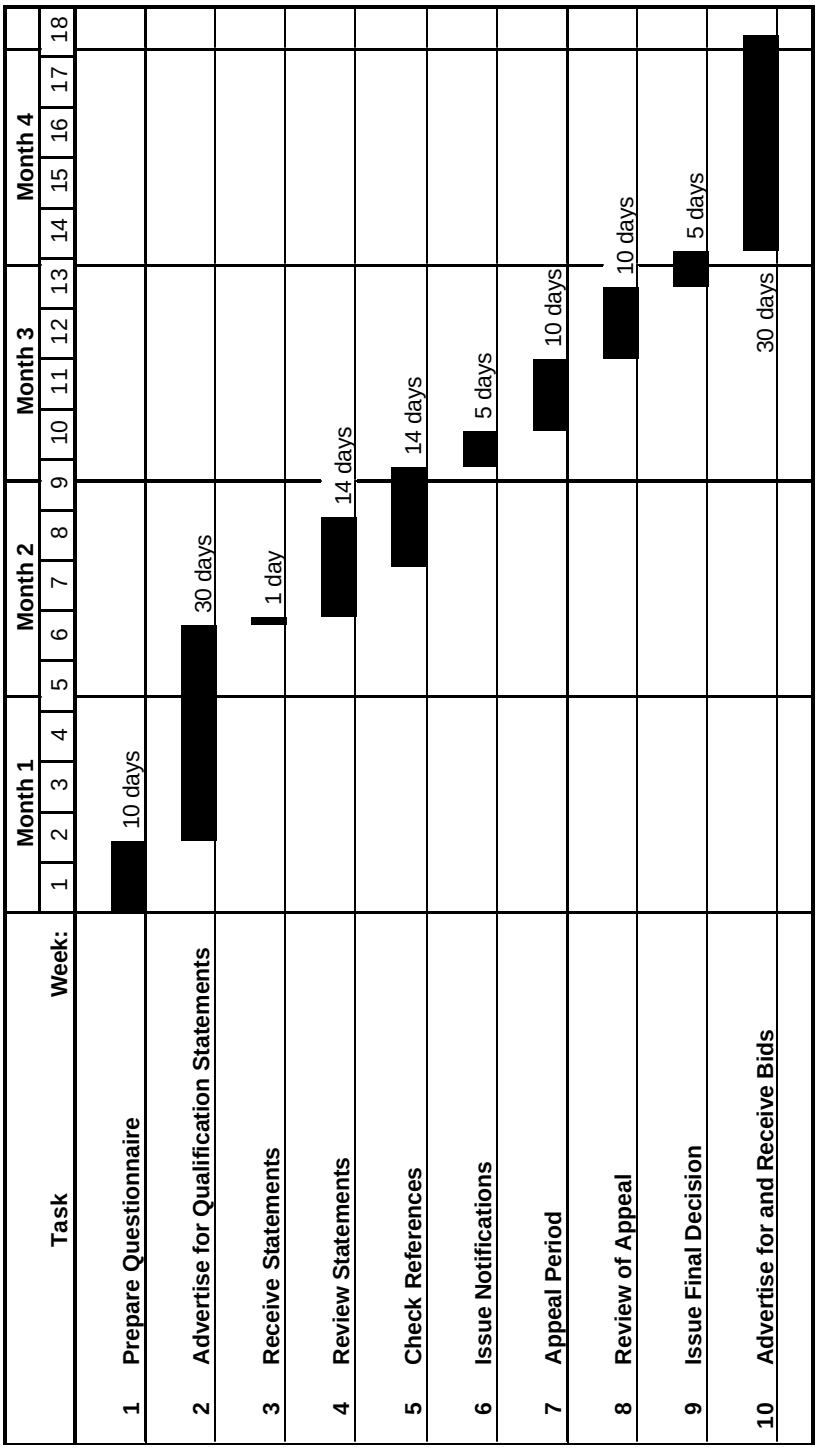
- **functional type** (classroom, dining facility, maximum security prison, etc.);
- **job site access** (dense urban location surrounded by multiple story buildings, open rural area, etc.);
- **height and physical size** (14 stories with 4 below grade floors; 250,000 gross square feet);
- **foundation system** (piles, spread footings, mat foundation, etc.);
- **structural system** (reinforced cast in place concrete; structural steel; precast concrete members, etc.);
- **exterior wall system** (granite panels; glass store front; brick with CMU back-up, etc.):
- **electrical service and distribution;**
- **mechanical system** (gas-fired package boilers; four pipe hot water/chilled water; centrifugal chiller, VAV box, etc.);
- **number of subcontractors used on a typical job;**
- **roofing system** (four-ply built-up; single-ply EPDM, etc.); and other similar criteria.

1103.10 Qualification criteria I, III, V and VI in the standard qualification criteria package on the DGS Forms Center shall not be changed without the prior written approval of the Director of the Division of Engineering and Buildings. Qualification criteria for Experience (II) shall be customized to fit the particular project for which prequalification is intended.

1103.11 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 the On-Line Bids page of eVA, Virginia's central electronic procurement website. The URL is http://vbo.dgs.state.va.us. The advertisement shall appear no less than 30 days prior to the date of bid receipt, unless otherwise approved by the Director of the Bureau of Capital Outlay Management. The advertisement shall state that bids will be accepted only from those contractors prequalified to bid on the project. Further, contractor shall be a registered vendor with the eVA electronic procurement system

1104.0 Procedures for Competitive Negotiations for Construction Contracts (where authorized)

This section is reserved for pending statement of requirements.



Prequalification Process

Figure 1103.3

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CHAPTER 12: BUILDING OFFICIAL REVIEWS, PERMITS & APPROVALS

SECTION 1200.0 GENERAL

1200.1 Building Official

The Director of the Division of Engineering and Buildings is the Building Official for buildings and structures on state owned property in accord with the Code of Virginia §36-98.1 and is called the 'State Building Official' in this Manual.. The Department of Transportation has authority over structures in the Right of Way that are not regulated the Virginia Uniform Statewide Building Code (USBC) [i.e. Occupiable buildings, Rest Area buildings, Welcome Centers, and such are regulated by the USBC and are under the jurisdiction of the State Building Official for USBC compliance]. Certain state agencies that are designated as authorities (i.e. Virginia Port Authority, VCU Health Systems) 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 (USBC) 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.

1200.1 Building Maintenance Official

As provided in Part I and Part III of Chapter 1 of the USBC, 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 USBC". The USBC adopts and amends the International Property Maintenance Code 2000 (IPMC) to be an enforceable part of the USBC.

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

The chief administrative official of each state agency which has real property 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 USBC. To facilitate the administration and operations of the Agency's compliance with the Maintenance Regulations, each agency must submit an application to the Building Maintenance Official to designate an Agency 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 1201.0 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. See Appendix P.

SECTION 1202.0 ANNUAL PERMIT

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.

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 1203.0 TEMPORARY STRUCTURES (TENT, STAGE, PLATFORM, BLEACHERS, & OTHER STRUCTURES)

Application for Permit to erect and use temporary structures must be submitted to the Building Official at least 10 days prior to the proposed use. See the Virginia Uniform Statewide Building Code and the Building Permit Policy for Construction – State Owned Buildings & Structures for the scope of work that requires a permit. Also see Chapter 15.

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

Seasonal / Multiple Function 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.

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.

TENT

Site Plan

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

Location

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

Floor Plan

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

Other Construction

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

STAGE / PLATFORM / BLEACHERS

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 overturing.

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.

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.

OTHER TEMPORARY STRUCTURES

Contact the Bureau of Capital Outlay Management.

SECTION 1204.0 INDUSTRIALIZED BUILDINGS

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.

AARB

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.

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.

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 1205.0 TOWERS

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.

AARB
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 1206.0 OTHER STRUCTURES (FLAGPOLES, ANTENAE, FENCES, MISCELLANEOUS)

FLAGPOLE / ANTENAE

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.

CHAPTER 12: BUILDING OFFICIAL REVIEWS, PERMITS & APPROVALS

AARB
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, 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.

FENCES
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.

AARB
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

MISCELLANEOUS STRUCTURES
Contact the Bureau of Capital Outlay Management.

SECTION 1207.0 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 21days 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 Chief Facilities Officer:

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.

SECTION 1208.0 DELEGATION OF REVIEW AUTHORITY

1208.1 General

An Agency may request authority to perform reviews of the Agency's construction project drawings and specifications for conformance with the requirements of the Virginia Uniform Statewide Building Code (VUSBC) and the Commonwealth of Virginia Construction and Professional Services Manuals. The request shall be justified based on agency project workload and the availability of sufficient and qualified full time employees that can be dedicated to the review process. The Agency

shall submit an application, (CO-15) to the Director of the Division of Engineering and Buildings requesting such delegation of review authority.

The Agency shall establish a separate group called the Review Unit to perform the reviews. The Review Unit shall be responsible for assuring that the documents for the new construction, addition, and renovation projects conform to the requirements of the VUSBC, the ADA, the UFAS, this Manual, and other applicable codes, standards, regulations and policies. The Review Unit is not authorized to perform Fire Safety Reviews. This review will be conducted by BCOM personnel. The Review Unit shall also assure that the proposed construction / renovation conforms to the authorized scope of work, conforms to good construction practices, provides a cost effective design solution to the project requirements, and meets the space and functional criteria used to justify the project.

The Agency Review Unit HAS NO AUTHORITY TO REVIEW project documents of other agencies.

1208.2 Delegation

Delegation shall be for a period of 12 months and may be renewed on request by the Agency. The satisfactory performance of the Agency Review Unit during the previous 12 month period and the appropriated project workload shall be factors in granting a renewal of review authority. The Director of the Division of Engineering and Buildings may audit bid package plans and specifications submitted by the Agency at the time each project is released for bid, by on-site over the shoulder reviews / observation by representatives of the State Building Official, or by audit of contracts resulting from IFBs and RFPs that are issued.

1208.3 General Requirements for Delegation of Review Authority

The minimum technical requirements the agency must meet for consideration of delegation of review authority are:

1 The agency shall have on staff as full time employees at least one registered Architect licensed in Virginia and at least one registered Professional Engineer licensed in Virginia in each of the following disciplines:
   - Civil/Structural engineering
   - Mechanical engineering
   - Electrical engineering

2 The above registered and Virginia licensed professionals shall be designated as the Review Unit, with the primary responsibility of plan and specification review.

3. Members of the Review Unit shall have the following qualifications:
   - Licensed in Virginia as an Architect or Professional Engineer;
   - Bachelors Degree from accredited college of Architecture or Engineering;
   - Accredited as a Virginia Construction Contracting Officer (VCCO)
   - Understanding of requirements of the VUSBC and referenced standards;

- Understanding of requirements of the ADA-90 and UFAS;
- Attended seminar and understand of requirements of this Construction and Professional Services Manual
- Understand and apply the of Virginia Public Procurement Act (§2.2-4300 et seq. *Code of Virginia*, as revised);
- Understanding of and experience in application of the General Conditions of the Construction Contract;

4 A reference library of the applicable codes and standards shall be readily available in the Review Team office for use by the reviewers.

5 The Review Unit shall assure compliance with technical and procurement requirements of Chapters 7, 8, 9, and 10, and referenced Appendices of the Commonwealth of Virginia Construction and Professional Services Manual as issued by the Department of General Services / Division of Engineering and Buildings, and with all applicable Codes, Standards, and Statutes.

6 The Review Unit shall not act on any requests for modification of VUSBC and related code / standard requirements, requests for waiver of the Commonwealth of Virginia Construction and Professional Services Manual requirements, and requests for interpretations of policies or directives related to Capital Outlay and Construction procurement procedures shall be requested from the Building Official for State Owned Buildings (the Director of the Division of Engineering and Buildings) who reserves the authority to grant such modifications and make such interpretations.

7 The Review Unit will be required to participate in an annual two day in-house training seminar with the BCOM review staff.

1208.4 Inspections

Inspections may be made by an Agency Inspector including members of the Review Team, through a request for assistance to the local building official, or by acquiring the services of a Project Inspector. The Fire Marshal shall inspect the fire safety elements of all facilities involved in new construction, renovations, additions or interior alterations. The Reviewers shall participate in the Substantial Completion Inspection and shall provide a report to the State Building Official regarding the status of the Work and shall provide a recommendation to the State Building Official concerning beneficial occupancy of the facility or applicable portion thereof. Representatives of the State Building Official shall inspect the facility for compliance prior to issuing the Certificate for beneficial occupancy of the facility or applicable portion thereof.

1208.5 Documentation of Reviews

The Review Unit shall submit a copy of the team's review comments and the approved CO-5 or CO-6 to the Director of the Division of Engineering and Buildings within 5 working days after the CO-5 or CO-6 is approved. **On the CO-6 the project authorization shall contain the phrase "all changes to the constriuction documents required by the Review Unit and the BCOM or Regional Fire Marshal reviewer shall be incorporated in the construction documents prior to the release of**

documents to potential bidders but no later than 10 days prior to the bid receipt date." A record set of the Bid Documents shall be sent to BCOM at the time documents are released to bidders. A copy of any and all addenda shall also be sent to BCOM at the same time such addenda are sent to the bidders.

1208.6 Award of the Construction Contract

Procedures in Chapter 10 of the Agency Manual for award of a construction contract including requests for permission to negotiate with the low bidder are not altered. The review team shall review the listing of changes to the bid documents which were negotiated to assure that the changes do not affect compliance with the applicable codes and standards. The Review Unit shall submit a signed statement with the CO-8 that the negotiated changes do not affect the code compliance, the Chapter 7 technical compliance, or the functional requirements for the project.

1209.7 General Requirements for Inspection

The Review Unit shall participate in the Substantial Completion Inspection and shall provide a report to the Building Official regarding the status of the Work and a recommendation concerning beneficial occupancy of the facility or applicable portion thereof for both Capital Outlay and Non-capital Projects. The Review Unit report will be required along with the other material submitted with the request for a Certificate of Use and Occupancy. The Division of Engineering and Buildings, in accordance with the Construction & Professional Services Manual, shall be notified and given the opportunity to attend the Substantial Completion inspection of all capital outlay projects.

1208.8 Review Unit Personnel Changes

Any change in assignment / designation of review personnel of the Review Unit shall be reported to DEB within 10 days of the change. Submit a revised CO-15, Application for Delegation of Review Authority, to the Bureau of Capital Outlay Management with the name and pertinent data only on the individual(s) dropped from and the individual(s) added to the team.

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CHAPTER 13: MASTER PLANS AND SITE & UTILITY PLANS

SECTION 1300.0 GENERAL

1300.1 MASTER PLANS

Pursuant to Section 4-4.01 of the 2003 Virginia Acts of Assembly, hereafter called the Appropriation Act, each State Agency which possesses state-owned real property shall have a Master Plan for each site. The Board of Visitors of institutions of Higher Education shall approve the Campus Master Plans on behalf of the Governor. (§4-4.01.g of the 2003 Virginia Acts of Assembly) The applicable Agency Head shall approve the Master Plan of that State Agency on behalf of the Governor.

The Master Plan drawings are intended to depict the current and proposed land use and development of the campus / physical plant as stated in the Agency's 10 year plan. The Master plan shall also contain a narrative describing the proposed land use and development of the campus / physical plant and proposed programs planned for development or implementation.

1300.2 SITE AND UTILITY PLANS

Site and Utility Plans are an integral part of the Facility development for code compliance, utility location info, and for state employee and contractor safety. The site and utility drawings are intended to depict the current condition of the Agency's physical plant. The Agency shall update its site and utility drawings by February 28 of each year. The update shall show buildings completed, land acquired, etc., and demolition of existing buildings or site improvements, since the last update. If no changes are required to the Plans, annotate the plans with: "Current as of (date)".

SECTION 1301.0 THE MASTER PLAN

1301.1 Each State Agency which possesses state-owned real property or proposes to acquire plant or property must have a Master Plan for each site. The Master Plan is intended to depict current and future land use and guide future growth of the Agency's physical plant in a planned and orderly fashion. Agencies with physical plant locations in the Chesapeake Bay Watershed shall be sensitive to the Chesapeake Bay Watershed Development Policies and Guidelines, published by the Chesapeake Executive Council, in the development of the Master Plan. Emphasis should be placed on compatible land use. Plans should address long range needs, to the extent possible, through the next 10 or more years. Future building sites and construction should be indicated to the extent that Agency long-range plans and program guidance provide such information.

Generally, the six year plan for capital construction is sufficient for actual facility siting. Longer range development may be indicated as generalized areas and labeled as to the anticipated use. The Master Plan is a flexible document; consequently, facility construction program accelerations or slowdowns will necessitate revisions to the facility development portion of the plan. The format and content requirements of this Chapter apply to all future new and revised Master Plans. Agencies currently holding approved Master Plans as of the date of this Manual are not required to revise their plans based solely on the new requirements of this Chapter. Future revisions must be in accordance with the provision of this Chapter.

a. Sites being used (or planned acquisitions) for approved programs that will remain in entirely natural, undeveloped condition are excluded from this requirement to develop a Master Plan.

b. If a site is planned for no more than two structures and is less than five acres in size, a site plan similar to that included with the working drawing submittal is adequate until such time as expansion and/or further development of the site is contemplated.

c. If there is no new development or disposition planned for a site, the current approved Master Plan, if in general accord with the requirements of this Chapter, is adequate. It will be revised to comply with this Chapter in detail upon its next revision.

d. For sites excluded under b) and c) above, the Agency must have a copy of the site plan with buildings numbered to conform to the FAACS numbering system.

1301.2 The Master Plan must be revised or updated as necessary to depict any approved changes in present or contemplated Agency program goals and objectives.

1302.0 MASTER PLAN REQUIREMENTS:

1302.1 Master Plans must be prepared by a Registered Architect or recognized Professional Planner. Drawings(s) / Site Plan(s) are to be provided to the Agency on Mylar reproducible or, where the Agency has the capability, the Agency may require that the A/E or Planner provide the Master Plan on 'CD' for CADD application.

1302.2 Present the material in the following sequence:

Cover Sheet - "Comprehensive Master Plan for (Agency) for (Location)"

CHAPTER 13: MASTER PLANS AND SITE & UTILITY PLANS

Table of Contents
Narrative Detail
Maps / Graphics – Current Conditions
Maps / Graphics – Future Developments
Site Utility Plans are required separately but may also be included in the Master Plan

1302.3 Narrative : Narrative information should supplement, not repeat, information contained on drawings or maps. This information will normally be presented on 8 ½" X 11" sheets with 11' X 17" foldouts but may be provided in tabular form, if such presentation would make it more understandable to the reader. The Agency may also include in the narrative its visions and plans for new or future programs, property acquisitions and such information.

1. Briefly describe the capacity and current load of utility plants and energy and utility lines serving the Agency complex. Where utilities are provided by commercial/ municipal sources, indicate connected capacity and/or any limitations stipulated in the contract/agreement between the Agency and the commercial/municipal source (e.g., sewerage, water, electric, natural gas).

2. Briefly describe the capacity of proposed new or enlarged energy/utility plants and systems and the general areas of development on the Master Plan that requires increased energy/utility system capacity

3. Briefly list and describe each proposed new or altered building. Include the name (function) of the building, the number of floors, the gross square feet, and when the year construction is planned to begin.
4. If land is anticipated to be surplus, indicate the location and amount of acreage.

5. If buildings are anticipated to be surplus, indicate the name, number and location of the building, the current function, the gross square feet, and the type of construction.

1302.4 The Master Plan Maps / Graphic Plans must be in 2 Sections:

a. Current Conditions

1.. Include a vicinity map to show the location of the site in Virginia and in the overall setting, i.e., on a county road map or a USGS sheet (most sites have been plotted on USGS base sheets and copies are available).

2. A topographic map with contours showing buildings, roads, parking lots, vegetation/tree areas (both improved and unimproved areas), and major

pedestrian avenues. Show the Limits of the 100 year Flood Plain if such exists on the site. Delineate areas under an approved timber management plan or which are leased for mineral extraction.

3. A site plan / map without contours showing buildings with name and FAACS number, roads, parking lots, major pedestrian avenues, archeological sites, historic land-marks, timber management areas and areas leased for mineral extraction.

b. Future Expansions / Development

1. A future development site plan without contours showing existing and future buildings (future facilities will be cross-hatched or highlighted by some other technique), existing and future roads (with traffic direction indicated), timber management areas, areas leased for mineral extraction, parking lots and major pedestrian avenues, proposed property boundaries, whether expanded or reduced (must relate to reasonable land needs: See DGS/DEB Directive No. One, Real Property Management), archeological sites, historic landmarks, and uses for land proposed for acquisition.

2. If additional land is proposed for acquisition, indicate the proposed use, how this relates to existing use, the location, information on terrain, water courses and bodies of water, 100-year floodplain, archeological sites and historic landmarks.

3. If land is anticipated to be surplus, indicate the location and amount of acreage.

4. Indicate proposed location of new or altered buildings. Include the name (function) of the building, the number of floors, the gross square feet, and when the year construction is planned to begin.

5. Indicate buildings that are anticipated to be surplus or demolished.

6 Indicate location of proposed new or enlarged energy/utility plants and systems and the general areas of development on the Master Plan that requires increased energy/utility system capacity.

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CHAPTER 13: MASTER PLANS AND SITE & UTILITY PLANS

1303.0 SITE AND UTILITY PLANS: Site and Utility Plans are an integral part of the Facility development for code compliance, utility location info, and for state employee and contractor safety. The comprehensive site and utility drawings are intended to depict the current condition of the Agency's physical plant. .

1303.1 SITE AND UTILITY PLANS GENERAL REQUIREMENTS

a. Site and Utility Plans must be on 24" x 36" reproducible sheets. Plans are to be provided to the Agency on Mylar reproducible or, where the Agency has the capability, the Agency may also require that the A/E or Planner provide the Plans on 'CD' for CADD application.

b. All maps must be to scale of 1 inch equals 100 feet scale (1"=100'). For tracts of land planned for limited development, smaller scale maps with greater contour intervals may be approved by the Division of Engineering and Buildings, but all areas involving development must comply with the 1" to 100' scale and 2' contour requirement.

b. Where contours are specified, 2-foot contour interval is required. In areas of significant elevation changes, a larger contour interval may be used.

c. Property boundaries and easements must be shown. Political subdivision lines shall be shown and labeled with the name of each jurisdiction, if the facility lies within more than one political subdivision.

d. For land with river, stream or tidal areas, the 100 year flood plains limits must be clearly identified.

1303.2 Utility distribution system plans must be on separate sheets as listed below. However, if the complexity of the systems makes inclusion of all systems illegible on only two sheets, additional sheets may be used to separate the systems further on other sheets.

- electrical, communications, heating and cooling systems, natural gas and water systems;
- storm drainage and sanitary sewerage systems which flow by gravity.

1303.3 The following site and utility drawings are required :

(1) A site plan with contours showing property boundaries, Bench Marks or Reference Points, buildings with name and FAACS number, roads, parking lots,

major pedestrian avenues, "wetland areas", 100 year flood plain limits, and vegetation / tree areas.

(2) A utility drawing without contours showing buildings, roads, parking lots, aboveground and buried electrical and communication lines, water distribution lines, natural gas lines and heating and/or cooling distribution lines.

(3) A utility drawing with contours showing buildings, roads, parking lots and storm drainage and sanitary sewerage lines.

SECTION 1304.0 SITE AND UTILITY PLAN MAINTENANCE

1. The site and utility drawings shall be maintained by the Agency office responsible for facility management.

2. "MISS UTILITY" has confirmed that the participating utility providers ("operators") who have utilities on state property will come onto that property and mark their utilities. "MISS UTILITY" is not responsible for, nor do they mark, utility lines that are owned and operated by the state agencies on state property. The state agency is responsible for having and maintaining the utility plans which depict the utility locations and marking those locations as necessary upon request.

3. State agencies MUST update THEIR Site Utility Plans with accurate locations of their utilities.

SECTION 1305.0 AGENCY LAND USE PLAN

1305.1 §2.2-1153, Code of Virginia, as revised, requires that each State Agency which possesses state-owned real property or proposes to acquire plant or property must have a Land Use Plan for each site or campus. Each State Agency is further required to submit a copy of each Agency Land Use Plan to the Division of Engineering and Buildings, Bureau of Real Property Management.

1305.2 To lessen the burden to Agencies of this requirement, the Bureau of Real Property Management will accept either the Agency "**Master Plan Maps / Graphic Plans"** described in Section 1302.4 above or the Agency **"Site Plan"** portion of the Site and Utility Plan described in Section 1303.3 (1) above as the Agency Land Use Plan for that campus or tract of land.

1305.3 Submissions of Agency Land Use Plans should be directed to the Bureau of Real Property Management. The Bureau's address is:
Bureau of Real Property Management, Attn: Monica Melville
805 East Broad St., Room 102,
Richmond, VA 23219.

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CHAPTER 14: CAPITAL OUTLAY PLANNING & PROJECT APPROVALS

SECTION 1400.0 GENERAL

This chapter describes the capital outlay process. It provides instructions on documentation required for approvals at various milestones in the Capital Outlay process. ALL capital outlay projects shall follow the approval procedures in Section 1404.4 unless specifically waived by the Director of the Bureau of Capital Outlay Management or the document authorizing initiation of the project or deviation is authorized by an entity delegated authority to do so by the Acts of Assembly, or by Agency MOU's with and approved by the Secretary of Administration.

On projects authorized under delegated authority to the agency, the CO-2, CO-4, CO-5, CO-6 and CO-8 (HECO Forms) shall be submitted to and approved by the Agency Designee in conformance with the Agency MOU. Building Official activities remain under the purview of the Director, Division of Engineering and Buildings (the Building Official for Buildings on State Property).

SECTION 1401.0 CAPITAL PROJECT PLANNING / BUDGETING PROCESS:

This section generally describes the budget process directly related to the Capital Outlay Program.

- The Agency develops its Six (6) year plan for Capital Projects.
- DPB issues its Budget Instructions (usually in February) See http://www.dpb.virginia.gov/
- Agencies submit their Capital Budget Requests (CBR) with priority indicated in late summer
- Capital Project submissions are reviewed and considered in the fall by DPB for possible inclusion in the Governor's budget based on program guidance established by the Governor.
- 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 in odd numbered years

SECTION 1402.0 CAPITAL OUTLAY PROJECT IMPLEMENTATION PROCESS

The following generally summarizes the capital outlay project implementation process.

- Agency 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 (Virginia Code §10.1-1188). Regulatory authority is assigned to the Virginia Department of Environmental Quality (Va DEQ) in Virginia Code §10.1-1191. Submission requirements are described in the "Procedure for Environmental Impact Review of Major State Facilities", prepared by the Va DEQ - current issue 2003. **[NOTE:** Virginia Code §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.]

- Agency obtains authority to initiate a Capital Outlay Project by submitting Form CO-2 for approval.
- Agency issues RFP for A/E services, interviews and selects A/E, negotiates fee, awards A/E Contract (Form CO-3 and MOU) (See Chapter 4)
- Agency 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. (Form CO-4)
- A/E develops and submits Preliminary design for approval.
- Conduct VE Study if value of the project authorized construction cost exceeds $5,000,000
- Issue notice of availability of Preliminary design to local jurisdiction (Form CO-5a)
- Obtain approval of design from AARB
- Approve Preliminary design and receive approval to proceed to Working Drawings. (Form CO-5)
- A/E develops and submits Working Drawing submittal for approval. Review Working Drawings design. Receive approval of Working Drawings using Form CO-6 and receive approval to advertise for bids.
- Contact BCOM to establish a Bid Date
- Advertise / Post Notice of IFB
- Receive Bids with Bid Bond, Form CO-10.2. Open Bids and evaluate.
- If within Budget, submit CO-8 for approval, fax Bid Form and Bid Tab to BCOM, Post Notice of Intent to Award Contract
- If over budget but within range for negotiation, request approval to negotiate. If negotiations successful, prepare CO-9b, Post Bid Modifications to Bid.
- Use Form CO-9 to Award Contract for Construction
- Contractor submits Performance Bond using CO-10 and Labor and Material Payment Bond using CO-10.1
- Submit Application for Building Permit, CO-17a. (See Chapter 15).
- For Change Orders to A/E Contract use CO-11AE
- For Change Orders to Construction Contract, use Form CO-11 and CO-11a
- Submit Application for Certificate of Use and Occupancy, Form CO-13.3a (See Chapter 15)
- Submit Project Completion Report using Form CO-14

SECTION 1403.0 CAPITAL OUTLAY 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.

CHAPTER 14: CAPITAL OUTLAY PLANNING & PROJECT APPROVALS

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.m** of the General Provisions of the Acts of Assembly. A project authorized under **§4-4.01.m** is subject to the Capital Outlay Process, including the submission of E&B Form CO-2 to request authorization to initiate the project.

SECTION 1404.0 PROJECT EXECUTION

1404.1 Acquisitions of Real Property:

Acquisition of real estate shall be handled as a Capital Outlay Project and is governed by DGS/DEB Real Property Management Manual Chapter 2, Fee Acquisition.

To initiate an acquisition, submit an E&B Form CO-2 to the Bureau of Real Property Management (BRPM). For projects which consist of acquisition and construction, the request to acquire the property must be submitted on a separate E&B Form CO-2 to the BRPM with an informational copy provided to the Bureau of Capital Outlay Management.

1404.2 Demolition:

Demolition of any building (plant) regardless of size and type shall be authorized by the Governor prior to proceeding. (§ 2.2-2402.B, *Code of Virginia*.) The Division of Engineering and Buildings' Directive Number One provides specific instructions on the approval process. Demolitions which are required to permit construction shall be approved before preliminary drawings are prepared.

1404.3. Temporary Facilities:

Though funding for the modular or industrialized building or prefabricated building may be proposed from maintenance and operating funds, such projects are essentially Capital in nature. Prior to submitting a requisition to the Division of Purchases and Supply (where purchase is involved) or before finalizing any contractual arrangements for lease of a temporary facility, submit plans of the structure to BCOM 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. See Chapters 12 and 15.

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, the Agency shall apply to the State Building Official (Division of Engineering and Buildings) for a Certificate of Occupancy for the facility. Application shall be made

on the E&B Form CO-13.3a Mod and be accompanied by a letter report of inspection recommending occupancy of the facility from the Regional Fire Marshal's Office.

1404.4 Construction Projects

Capital construction projects are generally executed as described above. [Also see Figure 1404-1]. The 3-digit agency code and the five digit project code assigned to the project in the Appropriation Act shall be the basic project identifier for the life of the project. Agencies with a blanket or umbrella appropriation; a project that will be accomplished by separate contracts at multiple locations or acquisitions at multiple locations; or a single project to be accomplished through two or more construction contracts, shall assign a 2-digit sub-project code for each undertaking. Several examples are given below. The agency code, project code and sub-code shall be used on all capital outlay forms and correspondence.

EXAMPLE BLANKET APPROPRIATION

Improvement: Blanket Authorization - Auxiliary (14666)

Project Number:	Title
234-14666-01	Replace Clipper - Dining Hall
234-14666-02	Renovate Pool Room, Student Activity Building
234-14666-03	Upgrade HVAC System Intramural Gym.

EXAMPLE MULTIPLE PROJECT LOCATION APPROPRIATION

Improvement: Upgrade Central Heating Plants (15111)

869-15111-01	Install Gas Boilers - Roanoke Shop
869-15111-02	Replace Traveling Grates - Tazewell Facility
869-15111-03	Install Industrial Water Treatment Equipment, Warrenton Heating Plant

EXAMPLE MULTIPLE CONTRACTS - SINGLE PROJECT

Construction: Freestone Recreation Area (19213)

707-19213-01	Construct Grand Pavilion
707-19213-02	Construct Beach Area Facilities, Phase I
707-19213-03	Construct Beach Area Facilities, Phase II

1404.5 Project Initiation:

Agencies shall submit a "Request for Authority to Initiate Capital Project, G.S. Form E&B CO-2" (CO-2 Excel format) to the BCOM E-mail address " coforms@dgs.state.va.us" on all projects except where agency has delegated authority to approve CO-2 locally. In such case, a copy of the locally approved CO-2 shall be forwarded to the BCOM E-mail address "coforms@dgs.state.va.us".

CO-2: REQUEST FOR AUTHORITY TO INITIATE CAPITAL OUTLAY PROJECT

Purpose:	To request authority to initiate a project.
Submit:	Subsequent to release of the Appropriation Act.
Other Uses:	(1) Change in "Movable Equipment & Furnishings" amount, (2) transfer money into or out of project, and (3) infuse additional funds.
Special Conditions:	E-mail the CO-2 to "coforms@dgs.state.va.us"

When the approved CO-2 authorizes an agency to **"proceed"**, subsequent submission of the Capital Outlay G.S. Forms E&B CO-5, CO-6, CO-13, CO-13.1 and CO-13.2 are waived unless specific submittals are noted on the CO-2. However, the Agency shall obtain a Building Permit prior to the start of the construction if the authorized Work requires such a permit. (See Chapter 15)

The Director, Department of General Services, may authorize minor increases in square footage of a project where the increase is justified (§4-4.01 of the Appropriation Act). The Agency head shall submit a written request for such an increase to the Director of Department of General Services stating the necessity and justification for the increase. Any request which would increase the cost of the project beyond the amount appropriated will not be considered.

The Total Project Budget breakout on the CO-2 will reflect the results of DPB and DEB review during the budget development process. List sub-projects with sub-project numbers and fund proportioning for each on page 2 and page 3, if needed, on the CO-2. Appropriate comments and instructions relative to changes from the figures submitted by the Agency with the Capital Budget Request will be provided to the Agency during or after budget development. The amount of funding shown in the equipment line on the CO-2 will remain fixed for the life of the project unless a revised CO-2 is submitted and approved by the DPB to adjust the equipment amount. Equipment purchases must be coordinated with and, where appropriate, procured through the Division of Purchases and Supply.

1404.6 Pre Design Conference

The Agency may hire an A/E firm to prepare drawings and specifications upon receipt of the approved CO-2. Prior to preparation of schematics or the continuation of design beyond the concept presented in the Capital Budget Request, the agency shall schedule a pre-design meeting with BCOM. The meeting may be held at BCOM. Participants shall include the BCOM lead reviewer for the agency, the A/E, the agency project manager, the user of the facility and, at DPB's discretion, the DPB budget analyst for the agency. The agenda for the meeting shall include:

- Introductions
- Role of BCOM
- Authorized Communications
- Project Scope
- Project Budget
- Proposed Design Schedule
- Required Reviews
- **Manual** Design Requirements
  - Public Procurement Act
  - Chapters 7 - 10 of the **Manual**
  - Fire Safety Reviews
  - Fire Protection System Design
- Clarification/Resolution of Budget Development Comments
- Waivers/CODE Modifications
- Content of Review Submission
- Intent of Review Comments
- Design Approach
- Sole Source / Proprietary Specifications
- Use of Standard Procurement / Specification Forms
- Value Engineering
- Prequalification
- Other Regulatory Reviews
- Fuel Selection

The Agency shall prepare and distribute minutes of the meeting to all participants within 14 days of the meeting. Participants shall have 10 days to note any corrections to the minutes that may be necessary.

The Agency may proceed with the project design at the conclusion of the 10-day review period for the pre-design meeting minutes. Agreements on design direction, scope, budget, review comment agreement, etc., reached during the pre-design meeting shall be incorporated in the first review submission.

1404.7 Schematics:

Schematic submittals are usually required for Capital Outlay Projects which have not had a Preplanning Study prepared. Section 806, outlines the requirements for the Schematic submittal. Generally, the Schematic translates the Agency's written project functional, spacial and adjacency requirements into a graphic presentation of floor plans, space sizes and relationships, and exterior building elevations. The Agency shall make a schematic presentation to the Art and Architectural Review Board as soon as the A/E completes and DEB approves the schematic submittal. Additional reviews may be required by the Art and Architectural Review Board.

CO-4 Application for Approval of Schematics

Purpose:	To submit and receive approval of the Schematic submittal and obtain authority to prepare Preliminaries. Use a separate CO-4 for each sub-project submitted.
Submit:	With Schematic submittal when Schematic drawings and data are complete and ready for review.
Other Uses:	N/A
Special Conditions:	CO-4 (Excel format) to the BCOM E-mail address "coforms@dgs.state.va.us"

1404.8 Preliminary Submittal:

The next project approval milestone is the submittal of preliminary drawings with the basis of design narrative, building systems and equipment checklist, and cost estimates to BCOM and other Agencies for review. Chapter 8, Section 807, of the Manual outlines preliminary submittal requirements. The Agency shall arrange for a value engineering study of each project with an estimated construction cost greater than $5,000,000. The study and Agency action on the study recommendations are a required part of a preliminary submittal. The Agency is responsible for making submittals to and obtaining approvals from the other review agencies listed in Section 811. BCOM is not involved in these reviews and approvals

After BCOM review and resolution of any differences between agency action on the VE recommendations and the BCOM preliminary review comments, an approved CO-5 will be issued to authorize preparation of working drawings. Any changes required by the BCOM review comments shall be incorporated in the next project submission.

CO-5: Application for Approval of Preliminary Drawings and Specifications

Purpose: To submit and receive approval of the preliminary drawings and obtain authority to prepare working drawings. Use a separate CO-5 for each sub-project submitted.

Submit: With the preliminary submittal when preliminary drawings and data are complete and ready for review.

Other Uses: To make adjustments to construction, A/E, Project Inspection and Other Budget Lines as project design develops.

Special Conditions: CO-5 (Excel format) to the BCOM E-mail address "coforms@dgs.state.va.us"

Agencies with an authorized Higher Education Capital Outlay (HECO) approval authority may perform its own schematic, preliminary and working drawings reviews of Capital Outlay Projects and approve its HECO Forms CO-4, CO-5 and CO-6. A copy of these Agency approved HECO forms shall be sent to the Bureau of Capital Outlay Management fin conformance with the Agency's Memorandum of Understanding with the Secretary of Administration.

The Agency shall notify (using the Form E&B, CO-5a), the chief administrative officer of the county, city or town in which the Agency intends to undertake the capital project that preliminary plans are available upon the request of the locality.

CO-5a Notification of Availability of Preliminary Drawings

Purpose: To notify the administrative officer of the local political subdivision of the availability of preliminary drawings.

Submit: To the appropriate administrative officer concurrent with submission of preliminaries to BCOM.

Other Uses: Not Applicable.

Special Conditions: None.

The purpose of the notification is to enable the locality to evaluate the project and to submit their comments to the agency. Upon receipt of a request from the locality, the Agency shall transmit a copy of the preliminary plans to the locality for comment (§15.2-2202.C).

1404.9 Working Drawing Submittal

The next project approval milestone is the submittal of completed working drawings and specifications by the Agency to the BCOM and other reviewing Agencies. See Section 811 for a listing of other agencies whose review and approvals may be required. A completed E&B Form CO-6 and the final cost estimate shall accompany the submittal to BCOM. BCOM will review the working drawings and specifications and, if appropriate, approve the working drawings and authorize the Agency to advertise the project for bids.

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 Agency in concert with its A/E shall be responsible for determining when these reviews are necessary and ensuring that the appropriate review Agencies receive the plans and specifications. Changes required by the BCOM review comments shall be incorporated in the bid package before the construction documents are released to prospective bidders.

The Agency shall submit two copies of the revised documents to BCOM before release of the documents to prospective bidders unless otherwise instructed. The Agency shall ensure comments of the State Fire Marshal, Division of Soil and Water Conservation, and other reviewing Agencies are received and incorporated in the bid package prior to advertising. Addenda to a bid package shall not be issued later than 10 days prior to bid opening. Confirmation that all comments have been incorporated must be submitted to BCOM at least 10 days prior to the bid receipt date.

CO-6: Application for Approval of Working Drawings and Specifications

Purpose:	To submit and receive approval of working drawings and to receive approval to advertise a project for bids. Use a separate CO-6 for each sub-project submitted.
Submit:	With the working drawings and when the working drawings are complete and ready for review.
Other Uses:	To make adjustments to the Construction, A/E, Project Inspection, and Other budget lines based on final project design.
Special Conditions:	CO-6 (Excel format) to the BCOM E-mail address "coforms@dgs.state.va.us"

Even though some agencies may have "HECO" authority to approve the HECO-2, HECO-5 and HECO-6 for their Capital Outlay projects, BCOM review or the Working Drawings / Construction Documents is required before a Building Permit is issued. It is strongly recommended that the Working Drawing plans and specifications be submitted to BCOM review prior to release to biddersso that any Codes and Standards deficiencies noted can be corrected prior to bidding. This is a more cost effective process that making corrections by Change Order to the Construction Contract.

Bid dates for Capital Outlay projects (both BCOM and HECO approved) shall be established with the BCOM. The purpose is to assure that state capital projects do not compete with each other or other significant projects for bidders on bid day. Call (804) 225-3769 to establish the bid date. Contractors shall be allowed 30 days from the date of first public notice to prepare and submit bids unless otherwise approved.

1404.10 Bid Opening and Contract Award:

On the date prescribed, Bids shall be publicly opened and announced as specified in Chapter 10. When the apparent low responsive and responsible bidder is determined, the Agency shall prepare a tabulation of bids and a G.S. Form E&B CO-8, Approval to Award Contract (CO-8). If the low bid is equal to or less than the Agency's construction estimate on the CO Form authorizing advertising (e.g., CO-6), the E&B Form CO-8 may be approved locally by the Agency's designated Virginia Construction Contracting Officer (VCCO). A copy of the approved CO-8 shall be E-mailed and the bid tabulation and bid form shall be FAXed to BCOM within two (2) business days after bid opening.

CO-8: Approval to Award Contract

Purpose: Authorize the award of a construction contract to the apparent low bidder.

E-mail: One copy of the approved/signed CO-8 with the bid tabulation to the BCOM within two business days after signature by the designated Virginia Construction Contracting Officer (VCCO).

Other Uses: To make changes in the project budget after contract award for all budget lines except "Movable Equipment & Furnishings"

Special Conditions: None

If the low bid exceeds the Agency construction estimate by less than 10%, and if funds are available within the approved total project budget shown on the approved CO-6, the agency may accept the bid. The designated VCCO shall sign the CO-8 which shall show the revised project budget breakdown. A copy of the approved CO-8 shall be E-mailed and the bid tabulation and bid form shall be FAXed to BCOM as stipulated above.

If the low bid exceeds the agency construction estimate by 10% or more, the agency may:

1) request authority to infuse additional funds,

2) request authority to negotiate with the low bidder or

3) reject all bids.

To infuse additional funds the Agency shall E-mail a revised CO-2, a CO-8 and the bid tabulation and bid form FAXed to the BCOM for approval of the funding action by DPB and approval of the contract award by BCOM.

Authority to negotiate with the low bidder shall be requested from the Director of the BCOM. Follow the procedures detailed in Section 1005 of Chapter 10 to request authority to negotiate.

In all cases where the low bid exceeds the agency construction estimate by more than 10%, approval to award a contract (even after negotiations with the low bidder) shall be required from the Director of the BCOM.

Prior to rejecting bids, the agency shall contact the BCOM at (804) 786-6292 and coordinate their proposed rejection with the Director of the BCOM.

When the CO-8 has been approved the agency may award a contract to the low bidder.

The project budget on the CO-8 shall reflect the contract award amount, A/E fees, supervision, equipment and a maximum of 5% of the low bid amount, or negotiated amount where negotiation with the low bidder was authorized, for the construction contingency. Remaining funds shall be de-allotted and held by DPB pending project completion. If during the course of construction the contingency is exhausted and additional contingency is required, the agency shall submit a revised CO-2 and a revised CO-8 to BCOM/DPB requesting approval of the additional contingency amount. The request shall identify the source of funds for the contingency increase and include an explanation as to why the additional contingency is needed.

1404.11 Building Permits and Demolition Permits:

Working Drawings and Specifications / Construction Documents must be reviewed and approved by BCOM prior to issuance of a Building Permit, Simultaneous with the submission of the CO-8 to the Director, DEB, the following shall be submitted to obtain a Building Permit and/or Demolition Permit:

CO-17a: Application for Building Permit See Chapters 12 and 15

CO-17.1: Demolition Permit (for demolition of Existing Buildings)

Purpose: To authorize demolition of existing structures on State property. (Interior demolition associated with renovations and repairs is usually covered by the Building Permit.)

Submit: One copy to Bureau of Real Property Management of CO-17.1 completed with all information and dates and copies of approval by other relevant State Agencies. One copy will be returned to the Agency when signed and approved by the Building Official and the Governor's Designee.

Other Uses: None

Special Conditions: Request must show dates of approval by the AARB and by Historic Resources (DHR) to demolish the structure. Also show dates of Asbestos Survey and Lead Based Paint Survey. Contract Documents must require proper disposal of Hazardous and Non-Hazardous materials including the proper handling and disposal permits. Authorization is contingent upon approval of the CO-8 for award of the Demolition Contract (or Construction Contract if demolition will be done as part of that contract).

1404.12 Change Orders to the Construction Contract

Contract change orders may be necessary during the course of construction. Change orders are most commonly necessitated by unforeseen site or building conditions; errors or omissions in the contract documents; an opportunity to reduce the operating cost of the facility under construction; technology changes occurring since contract award which must be incorporated in the project; or a change in the agency requirement. All changes involving the contract amount or performance time shall be included in an approved contract change order G.S. Form E&B CO-11 and justified or explained on the CO-11a (CO-11 and CO-11a). No change order shall be issued that will cause the balance of the project budget construction contingency shown on the approved CO-8 to be exceeded. Additional construction contingency shall be requested and approved as outlined in Section 1404.10 prior to issuing the change order.

CO-11 / CO-11a: CONTRACT CHANGE ORDER / JUSTIFICATION

Purpose: To request and receive approval of a change in the construction contract time, amount, or both.

Submit: For all locally approved capital outlay project change orders, submit one copy of the CO-11 and the CO-11a justification to the BCOM within 5 days after the change order is approved and signed.

For all change orders requiring the prior approval of the Governor or his designee, submit two copies of the CO-11 and CO-11a with one copy of the contractor back-up cost material. The CO-11a shall specifically address points identified below.

Other Uses: Must be used to document any and all changes to a construction contract (CO-9) using CPSM procedures. Must also be used to document change orders to maintenance reserve and other non-capital outlay construction contracts.

Special Conditions: **Any Change Order which changeswork regulated by the Building Code, its referenced Standards, or DEB Standards must be submitted to BCOM with copies of the document showing the changes to the regulated systems. BCOM review of these Change Orders is to assure compliance with the applicable codes and standards.**

Changes involving an increase in construction contract price of **more than 25% of the original contract amount or $50,000, whichever is greater,** shall have the prior written approval of the Governor or his designee. When the cumulative total of change orders exceeds the original contract amount **by more than 25% or $50,000, whichever is greater,** any subsequent change order that increases the contract amount, regardless of the amount, shall have the prior approval of the Governor or his designee. Submit the CO-11 and CO-11a to BCOM for approval of the contract change with supporting documentation. The Agency justification section of the CO-11a on all change orders shall

(1) include a written statement by the Agency outlining the proposed cost sharing by the responsible design professional when the change results from an error or omission; and

(2) answer the following questions:

(a) When was the change in agency requirement known?

(b) If before bidding, why were the changes excluded from the bid package?

(c) Why can the work not be packaged and bid separately?

(d) What quantitative impact will the lack of this change have on the service delivery of the Agency?

An informational copy of all CO-11's and CO-11a's approved locally shall be sent to BCOM without the supporting documentation.

1404.13 Change Orders to the A/E Contract

Change Orders to the A/E Contract may be necessary during the course of design and/or construction. Change orders are most commonly necessitated by unforeseen site or building conditions; changes in agency requirements; extra services required by the agency; technology changes occurring since contract award which must be incorporated in certain types of projects; or delays in construction which are not attributable to the A/E. All changes involving the contract amount, 'design-not-to-exceed budget' or performance time shall be included in an approved contract change order G.S. Form E&B CO-11a/e and CO-11a (CO-11a/e and CO-11a).

CO-11a/e / CO-11a: ARCHITECT/ENGINEER CONTRACT CHANGE ORDER / JUSTIFICATION

Purpose: To request and receive approval of a change in the contract time, amount or both.

Submit: For all change orders requiring the prior approval of the Governor or his designee, submit two copies of the CO-11a/e and CO-11a with one copy of the A/E back-up cost material. The CO-11a shall specifically address points identified below.

Other Uses: Used to document all changes to the A/E contract and/or MOU.

Special Conditions: None.

Changes involving an **increase in the A/E contract price of more than 25% of the original contract amount or $50,000, whichever is greater,** shall have the prior written approval of the Governor or his designee. When the cumulative total of change orders exceeds the original contract amount by **more than 25% or $50,000, whichever is greater**, any subsequent change order that increases the contract amount, regardless of the amount, shall have the prior approval of the Governor or his designee. Submit the CO-11a/e and CO-11a to BCOM for approval of the contract change with supporting documentation indicating how the change in contract amount was determined. The Agency justification section of the CO-11a on all change orders shall

(1) include a written statement by the Agency outlining the proposed cost sharing by the Contractor when the change results from a substitution proposed by the Contractor or

(2) answer the following questions when the change is generated by a change in agency requirement:

(a) When was the change in agency requirement known?

(b) If before bidding, why were the changes excluded from the bid package?

(c) Why can the work not be procured separately?

(d) What quantitative impact will the lack of this change have on the service delivery of the Agency?

1404.14 Building Occupancy:

The Building Official may approve a building or facility being occupied when it is substantially complete. A new building, addition to a building, or a renovated building with a new use group classification shall not be occupied until the State Building Official issues a Certificate of Use and Occupancy, Form CO-13.3. The Agency shall apply to the BCOM for a Certificate of Occupancy by submitting a Form CO-13.3a, Application, with the required reports and Certificates of Substantial or Final Completion attached. Requests for Partial or Temporary Occupancy shall also include a small scale floor plan with the subject areas requested for occupancy noted.

The application shall include a CO-13.1 or CO-13.1a (Certificate of Completion or Certificate of Partial/ Substantial Completion by A/E); a CO-13.1b (Final Report of Structural and Special Inspections); a CO-13.2 or CO-13.2a (Certificate of Completion or Certificate of Partial/ Substantial Completion by Contractor); a copy of the Contractor and A/E's punch lists; and a letter or report from the Regional Fire Marshal's Office stating there are no objections to the building being occupied or stating conditions for occupancy of the building; and a CO-13.3b (Checklist for Beneficial Occupancy). If the A/E's construction visits / inspections were limited, also include a CO-13.1c (Certificate…by Construction Inspector …). Projects which have elevators, food service / kitchen facilities, and/or water or waste water treatment facilities are required to be inspected separately and have a certificate of compliance issued by the inspecting entity. Include copies of certificates with the Electronic Application for Certificate of Use and Occupancy. The Building Official (Director, Division of Engineering and Buildings) may issue a Certificate of Use and Occupancy when, in his judgment, the building, or designated portion of the building, is substantially complete and all life and fire safety elements of the project design are functioning properly.

CO-13.3a Application for Certificate of Use and Occupancy

Purpose: To authorize the use of a building for its intended function. The certificate shall specify the use group, the type of construction, the occupancy load in the building and all parts thereof, the edition of the Uniform Statewide Building Code under which the building was constructed and any stipulations, conditions and modifications.

Submit: A completed CO-13.3a, Application for Certificate of Occupancy, with a completed and signed CO-13.1a Certificate of Partial or Substantial Completion by A/E or CO-13.1, Certificate of Completion by A/E; a completed and signed CO-13.2a, Certificate of Partial or Substantial Completion by Contractor, or CO-13.2, Certificate of Completion by Contractor; a CO-13.3b, Checklist for Beneficial Occupancy; and the Fire Marshal's Inspection / Acceptance Report to BCOM at least 5 work days prior to the requested occupancy date.

Other Uses: None.

Special Conditions: Include copies of certificates for elevators, food service / kitchen facilities, and/or water or waste water treatment facilities as may be applicable for the project.

CO-13.3a Application - Temporary or Partial Certificate of Use and Occupancy

Purpose: To authorize the use of a building or portion thereof for its intended function. The certificate shall specify the use group, the type of construction, the occupancy load in the building and all parts thereof, the edition of the Uniform Statewide Building Code under which the building was constructed and any stipulations, conditions and modifications concerning the building's use or occupancy.

Submit: A completed CO-13.3a, Application for Certificate of Occupancy, with a completed and signed CO-13.1a Certificate of Partial or Substantial Completion by A/E with current punch list; a completed and signed CO-13.2a, Certificate of Partial or Substantial Completion by Contractor including Contractor's list of incomplete work; a CO-13.3b, Checklist for Beneficial Occupancy; the Fire Marshal's Acceptance Report; and copies of any applicable specialty certificates; to BCOM at least 5 work days prior to the requested occupancy date.

Other Uses: None.

Special Conditions: Include a small scale floor plan showing areas proposed to be occupied with requests for Temporary or Partial Occupancy.

CAUTION: Agencies must be aware of the legal, insurance and warranty implications that requesting and taking Temporary or Partial Occupancy of a building, or a portion of the building, prior to final completion may have. First, the Contractor must agree that the Agency has its permission to occupy and the parties must agree to the conditions. Second, agreeing to occupy may indicate that the agency agrees that the portion occupied is 'substantially complete' when it really isn't. There may be implications on claims, defects and deficiencies, insurance, warranty start date, responsibility for safety and many other issues. The Agency should not request to occupy a building or space that has not been completed until all these issues have been addressed and resolved.

1404.14 Project Close Out

Every capital project which has an approved CO-2 authorizing the project to be initiated shall be closed out by the completion of and submission of a Project Completion Report, GS Form E&B CO-14. This includes projects which may have been cancelled by the agency and never constructed, projects where funds were reverted, projects which were combined with another project and the funds transferred, and projects where the funding was never allotted.

A project may be reported as 100% complete in the semi annual capital outlay status report when a Certificate of Occupancy, CO-13.3, has been issued by the State Building Official and in the case of renovation projects where there is no change in use group classification, when the owner has taken beneficial occupancy of the entire project area.

The Project Completion Report, GS Form E&B CO-14, shall be submitted to BCOM as soon as practical after the project is physically complete and the associated administrative steps have been concluded, but no later than 12 months after the owner occupies the building or the work has been accepted as substantially complete. Included in this generalized statement are such things as the contractors submission of warranty, operating manuals, maintenance procedures and other user required documentation; submission of the record drawings by the A/E; release of retainage to the contractor and final payment for any outstanding invoices and other ancillary or associated work/equipment provided by vendors and contractors not associated with the general construction; etc.

CAPITAL OUTLAY ORDER OF PROCEDURE

DOCUMENT	USE / ACTION
CO-2	Authority to Initiate a Capital Outlay Project
CO-3	Contract for A/E Services to design a Project
CO-4	Approval of Schematics (when Schematics are required)
CO-5	Approval of Preliminary Design
CO-5a	Notice to Public Body of Availability of Preliminaries
CO-6	Approval of Working Drawings (Plans and Specifications) (and Authorization to Advertise for Bids)
CO-8	Authority to Award a Construction Contract
CO-9	Contract for Construction
CO-17A	Application for Building Permit
CO-17.1	Application for Permit to Demolish a Building
CO-11AE	Change Order to the A/E Contract
CO-11 And CO-11a	Change Order to the Construction Contract Justification for Change Order
CO-13.3A	Application for Certificate of Occupancy
CO-14	Project Completion Report

FIGURE 1401

CO FORMS CAPITAL OUTLAY SUBMISSION SUMMARY

FORM #	DESCRIPTION	WHEN TO SUBMIT	FORMAT	CPSM CHAP
CO-2	Initiate Project	As required to initiate any project, or for approval of a scope or dollar change to approved project	Electronic	14
CO-2.3	A/E Fee Proposal	A/E submits to Agency	None	6
CO-3, CO-3.1, CO-3.1a, or CO-3.2	Owner – A/E Contracts	10 days after contract executed (w/ copy of MOU)	Paper	4, 14
CO-4	Schematic Approval	With Schematics	Electronic	14
CO-5	Preliminary Approval	With Preliminaries	Electronic	14
CO-5a	Notice to Locality	Completion of Preliminary Documents	Paper- Send to Chief Administrative Officer, Local Political Subdivision	14
CO-6	Working Drawing Approval	With Working Drawings	Electronic	14
CO-6a	Inspection Statement	With Working Drawings w/CO-6b attached	Paper	8
CO-6b	Special Inspection List	Attached to CO-6a	Paper	8
CO-8	Approval to Award Contract	Within 10 working days of bid opening	Electronic (FAX Bid Form, Bid Tab, & CO-9b)	10
CO-8b	A/E Performance Evaluation	Upon receipt of Approved CO-6	FAX, pdf (copy to A/E)	5, 8
CO-9	Owner - Contractor Contract	Within 10 days after signing contract	Paper	10
CO-9b	Post Bid Modification	Attached to CO-9 (also FAX w/CO-8)	Paper	10, 14

FORM #	DESCRIPTION	WHEN TO SUBMIT	FORMAT	CPSM CHAP
CO-9.1	Notice of Intent	When Bidder Notified	FAX (& "POST" copy)	10
CO-9.1a	Notice of Award	Concurrent with Award	FAX (& "POST" copy)	10
CO-10	Performance Bond	No submittal to BCOM	To Agency File w/CO-9	10
CO-10.1	Payment Bond	No submittal to BCOM	To Agency File w/CO-9	10
CO-11	Change Order to Construction Contract	When Change Order requires Governor's approval (2 originals)	Paper w/ CO-11a justification & backup	10, 14
CO-11	Change Order to Construction Contract	When Change Order DOES NOT require Governor's approval	Paper w/ CO-11a (or Electronic)	10, 14
CO-11a	Change Justification	With CO-11	Paper	10, 14
CO-11a/e	Change Order to A/E Contract	When Change Order requires Governor's approval (2 originals)	Paper w/ CO-11a justification & backup	10, 14
CO-12	Schedule of Values, Request for Payment	Within 60 days of Contract award and at project close-out	Electronic or diskette copy of the CO-12 Excel spreadsheet is preferred	10
CO-13	Affidavit - Payment of Claims	With Contractor's Final payment request	Paper, pdf	10
CO-13.1	A/E Certificate of Completion	After completion of Final Inspection	Paper, pdf	10
CO-13.1a	A/E Certificate of Substantial Completion	After Substantial Completion Inspection	Paper, pdf or FAX with CO-13.3a	10, 14
CO-13.1b	Final Report of Structural Inspections	After Substantial Completion Inspection	Paper, pdf or FAX with CO-13.3a	10, 14
CO-13.1c	PM or PI Certificate of Substantial Completion	After Substantial Completion inspection	Paper, pdf or FAX with CO-13.3a	14
CO-13.2	Contractor Certificate of Completion	After completion of Final Inspection	Paper, pdf	10

CHAPTER 14: CAPITAL OUTLAY PLANNING & PROJECT APPROVALS

FORM #	DESCRIPTION	WHEN TO SUBMIT	FORMAT	CPSM CHAP
CO-13.2a	Contractor Certificate Substantial Completion	Before Substantial Completion inspection	Paper, pdf or FAX with CO-13.3a	10, 14
CO-13.3	Certificate of Use & Occupancy	None	Issued by DEB/BCOM	10, 14
CO-13.3a	Application for Certificate of Use & Occupancy	After Substantial Completion Inspection - Prior to Occupancy	Paper, pdf or FAX w/ CO-13.1a,CO-13.2a, CO-13.3b & other reports	10, 14
CO-13.3b	Checklist for Beneficial Occupancy	With CO-13.3a	Paper, pdf or FAX	14
CO-14	Completion Report	Within 12 months of Building Occupancy	Electronic pdf	10, 14
CO-14a	A/E Performance	With CO-14	FAX, pdf (copy to A/E)	10
CO-14b	Contractor Performance	With CO-14	FAX, pdf	10
CO-15	Application for Review Delegation	As required	Paper	11
CO-16	Prequalification	As required by RFQ	None	11
CO-17	Building Permit	None	Issued by DEB/BCOM	10
CO-17a	Permit Application - Capital Project	With CO-8 for Capital Project	Electronic pdf or FAX	10, 14
CO-17a	Permit Application - Non-Capital Project	With plans & specs for Non-capital, Towers, Tents, Industrialized/Modular Bldgs	Paper, pdf	14
CO-17.1	Demolition Permit	After DHR & AARB Approvals, before demolition	Paper to BRPM w/attachments	14
CO-18	Sole Source Procurement Approval	Before Working Drawings	Paper	8

FORMAT TO BCOM explanations

Electronic = E-mail or other electronic transmission to a specified electronic address

FAX = Paper copies transmitted electronically from one FAX machine to BCOM FAX number OR a 'scanned' document in 'pdf' format sent electronically to BCOM E-mail address

Paper = Paper copy or original w/signatures sent by US Postal Service or by courier service

pdf = Indicates that 'scanned' document in 'pdf' format sent electronically to BCOM E-mail address may substitute for 'Paper' or FAX copy

FIGURE 1402

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CHAPTER 15: CONSTRUCTION RELATED "CO" FORMS REQUIREMENTS

SECTION 1500.0 GENERAL

This chapter describes the CO- Forms used for Construction Projects - both Capital and Non-Capital and regardless of the source of funds. Any work which meets the definition of "construction" as defined in Section 2.2-4301 of the Code of Virginia and which is regulated by the Uniform Statewide Building Code must be authorized by a Building Permit which is a Form CO-17. This Chapter provides instructions on the forms, documentation, and approvals required at various milestones in the process. Agencies are reminded that preparation and submission of an environmental impact report is required for each major state project which costs more than $100,000. (Virginia Code §10.1-1188). See Section 708 of the Manual

1501.0 CAPITAL OUTLAY PROJECT 'CO' FORMS FOR CONSTRUCTION:

In addition to these construction related 'CO' forms, all capital outlay projects must also follow the approval procedures in Section 1404.4 unless specifically waived by the Director of the Bureau of Capital Outlay Management (or other delegated authority) or the documents authorizing the project. Approval and notification forms are listed in the table at the end of this chapter.

1502.0 ANNUAL PERMIT DESIGNATION:

The Building Official has determined that certain repair, remodeling and improvement projects can be performed at the agency level by agency forces or by contracting with minimal risk to public safety. Appendix P, Building Permit Policy, identifies those types of projects. To facilitate the process, the Building Official, at his sole discretion, has established an Annual Permit Procedure where agencies may request authority to review, approve, permit and inspect these types of projects locally by submitting the name of an Architect or Engineer on staff who will be the agency designee responsible to the Building Official for assuring that work done under the Annual Permit Authority is recorded and meets the requirements of the Building Code. After approval of the qualifications of the proposed person, the Building Official will issue a letter to the Agency designation the person named in the letter as the designee for review and approval of documents for proposed projects under the Annual Permit and for inspecting such projects to assure compliance with the USBC and applicable standards. See Section 1202 of the Manual

1503.0 DEMOLITION OF BUILDINGS

Demolition of any building (plant) regardless of size and type shall be authorized by the Governor prior to proceeding. (§ 2.2-2402.B, *Code of Virginia*.) This includes obtaining recommendations for approval to demolish the building / structure for the Art & Architecture Review Board and the Department of Historic Resources. The Division of Engineering and Buildings' Directive Number One provides specific instructions on the approval process. Requests for demolitions of existing buildings which must be done to allow for the new construction should be requested and approved before preliminary drawings for the new construction are prepared. The Agency is required to

complete and submit E&B Form CO-17.1 with attachments to request authorization to demolish any building or structure on state property.

CO-17.1: Demolition Permit

Purpose: To authorize demolition of existing structures on State property.

Submit: One copy to Bureau of Real Property Management of CO-17.1 completed with all information and dates and copies of approval by other relevant State Agencies. One copy will be returned to the Agency when signed and approved by the Building Official and the Governor's Designee.

Other Uses: None

Special Conditions: Request must show dates of approval to demolish the structure by the AARB and by Historic Resources. Also show dates of Asbestos Survey and Lead Based Paint Survey. Contract Documents must require proper disposal of Hazardous and Non-Hazardous materials including the proper handling and disposal permits. Authorization is contingent upon approval of the CO-8 for award of the Demolition Contract (or Construction Contract if demolition will be done as part of that contract).

1504.0 TEMPORARY FACILITIES (Other than Tents and Stages):

Though funding for a modular or industrialized building or prefabricated building may be proposed from maintenance and operating funds, such projects are essentially Capital in nature. Prior to submitting a requisition to the Division of Purchases and Supply or the Agency Procurement Office (where purchase is involved) or before finalizing any contractual arrangements for lease of a temporary facility, the Agency must assure that the item being leased or purchased will meet the requirements of the USBC (Building Code). See Chapter 12 for guidance. Before the item is delivered to the site, the Agency should submit plans of the structure to BCOM for issuance of a building / foundation 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. See Chapter 12.

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, the Agency shall apply to the State Building Official (Division of Engineering and Buildings) for a Certificate of Occupancy for the facility. Application shall be made on the E&B Form CO-13.3a Mod and be accompanied by a letter report of inspection recommending occupancy of the facility from the Regional Fire Marshal's Office.

1505.0 CONSTRUCTION PROJECTS:

Capital construction projects are generally executed as shown in Chapter 14 and outlined in Figure 1401. The 3-digit agency code and the five digit project code assigned to the project in the Appropriation Act shall be the basic project identifier for the life of the project. Agencies with a blanket or umbrella appropriation; a project that will be accomplished by separate contracts at multiple locations or acquisitions at multiple locations; or a single project to be accomplished through two or more construction contracts, shall assign a 3-digit sub-project code for each undertaking.

Non-Capital Construction projects also must have an identifier for tracking purposes. The identifier is the three digit agency code followed by a five digit code composed on the last two digits of the yea in which the project is first submitted to BCOM for review followed by the three digit agency code. (e.g. 194-04194-xxx for DGS) The last three subproject digits are sequential numbers assigned by BCOM when the submittal or application is first received. (e.g. 194-04194-012 for the twelfth DGS non-capital submittal received)

1506.0 BUILDING PERMITS

The construction documents submitted for Building Permit shall have sufficient information, sizes, dimensions, details, material descriptions, loads and load capacities, plans, sections, elevations and details for the Building Official to determine that the proposed work conforms to the requirements of the Building Code and applicable standards and policies. For most projects, this submittal will be plans and specifications. For repairs, remodels and minor improvements, it may be plans and specs or sketches with dimensions or even a narrative of the work to be done. In any case, the documentation must describe what is to be done and show that the work will conform the requirements of the building code and applicable standards and policies.

The submittal of completed working drawings and specifications (or other materials) by the Agency to BCOM shall be accompanied by a completed E&B Form CO-17A, Application for Building Permit. For work to be permitted under the Annual Permit by the Agency Designee, the documentation must satisfy the designee.

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 before a Building Permit will be issued. The Agency in concert with its A/E shall be responsible for determining when these reviews are necessary and ensuring that the appropriate review Agencies receive the plans and specifications. Changes required by the BCOM review comments shall be incorporated in the documents and the Work as a condition of the Building Permit.

CHAPTER 15: CONSTRUCTION RELATED "CO" FORMS REQUIREMENTS

CO-17a: Application for Building Permit - for Capital Projects

Purpose: To request approval of Plans & Specifications including addenda and any post–bid modifications for construction upon approval of the CO-8 authorizing award of the Construction Contract. A separate Building Permit, CO-17, may be issued at the discretion of the Building Official for each phase of phased projects or to allow sitework to begin pending resolution of deficiencies in the documents.

Submit: Electronic CO-17a with all data including date of documents, number of addenda and dates, name and license number of Contractor, etc. Submit along with the CO-8 and any other material required to be submitted with the CO-8.

Other Uses: For projects reviewed by a Delegated Review Unit, also submit one (1) complete set of the Plans, Specifications, Addenda and any Post Bid Modification modifying the requirements of the Bid Documents along with the CO-17a (or copy of CO-17).

Special Conditions: E-mail the CO-17a (Excel format) to " boforms@dgs.state.va.us"

If negotiations were conducted with the Low Bidder to obtain a Contract, also include two (2) copies of the Post Bid Modification, CO-9b, and supporting documentation which describe the proposed changes to the Contract Documents.

CO-17a: Application for Building Permit - for Non-capital Projects

Purpose: To submit and receive approval of construction documents and to receive approval to begin construction

Submit: With the working drawings / construction documents when they are complete and ready for review. Submit 2 copies minimum (5 copies if more than one discipline is involved) of the documents. Submit Electronic CO-17a with applicable information filled in to describe the Work

Other Uses: To request extension of the Building Permit expiration date.

Special Conditions: E-mail the CO-17a (Excel format) to " boforms@dgs.state.va.us"

CO-17a: Application for a Building Permit - for 'Proceed' Projects

Purpose: To request approval of the Plans and Specifications (or other documents describing the Work) for a 'Proceed' Project so that construction work may proceed.

Submit: Electronic CO-17a along with five (5) copies of the completed Plans & Specifications or other documents which show/describe the work to be performed.

Other Uses: None

Special Conditions: E-mail the CO-17a (Excel format) to " boforms@dgs.state.va.us"

CO-17a mod: Application for a Building Permit (Modular / Industrialized Building)

Purpose: To request approval of Plans and Specifications to construct foundations and anchorage systems for Modular or Industrialized Buildings and to install and connect "labeled" Industrialized Buildings for temporary or permanent use.

Submit: Electronic CO-17a mod along with two (2) copies (minimum) of the Floor Plan(s) & Specifications or manufacturer's data with serial #'s and seals, Site Plan, Foundation Plan & details, Anchorage Plan & details, and Entrance / Egress / Access Plan & details which show / describe the work to be performed.

Other Uses: None

Special Conditions: Units proposed to be acquired and/or placed on state property shall conform to the requirements of the Virginia Industrialized Building Safety Regulations (IBR), shall have the appropriate labels of an Inspection service affixed, and shall have a Virginia Registration Number. See Chapter 12 for guidance for procuring an industrialized building to assure that it will be acceptable for use when delivered to the site.

E-mail the CO-17a (Excel format) to " boforms@dgs.state.va.us"

CO-17a tent: Permit / Certificate for Temporary Facility / Tent

Purpose: To request authority to erect and use a Temporary Facility or Tent for a relatively short period of time to accommodate specified functions. The application shall specify the use group, the type of construction, the occupancy load in the facility, the period of time the facility may be used, and any stipulations, conditions and modifications.

Submit: Submit a CO-17a tent with the TENT DATA completed. Also include a Site Plan showing the tent location and distances to adjacent building and property lines; a Floor Plan showing EXITS and furnishing layouts; and Tent Material Certificates of Conformance which document indicate Flame Resistance required by NFPA 701. Also submit data on stages, platforms, etc to be erected. Submit to BCOM at least 10 work days prior to the requested occupancy date.

Other Uses: None.

Special Conditions: Request shall indicate date proposed for erection, dates facility to be used, type of use / activity, and date to be taken down. Use of the facility will be subject to planned and unannounced inspections by the Fire Marshal and Building Official representatives.
E-mail the CO-17A (Excel format) to " boforms@dgs.state.va.us"

CO-17a twr: Building Permit Application – Communication Tower

See Bureau of Real Property Management Policy for instructions. Copy of application is in Appendix B and on the website.

Purpose: To request approval of Plans and Specifications to construct foundations and tower structures for Communications Towers. Required for all towers on state property except those in the VDOT Right-or-Way (over which VDOT has jurisdiction) regardless of whether the towers are for state agency use or for use by leasee.

Submit: Electronic CO-17a twr along with five (5) copies (minimum) of the Tower Plan(s) & Specifications or manufacturer's data with load design data, Site Plan, Foundation Plan & details, and Anchorage Plan & details, Professional Engineer's Seals that are signed and dated.

Other Uses: None

Special

Conditions: Communications Towers to be constructed / erected by a private sector entity on land leased from a state agency must have approval of the lease from the Bureau of Real Property Management before a Building Permit will be issued. See Chapter 12 for guidance for Communications Towers.

1507.0 Change Orders

Change orders to the contract may be necessary during the course of construction. Change orders are most commonly necessitated by unforeseen site or building conditions; errors or omissions in the contract documents; an opportunity to reduce the operating cost of the facility under construction; technology changes occurring since contract award which must be incorporated in the project; or a change in the agency requirement. All changes to the requirements shown on the Contract Documents MUST be documented by a Change Order to the Contract, regardless of whether the project is 'capital' or 'non-capital'. Changes to the contract amount and/or performance time shall be included in an approved contract change order G.S.Form E&B CO-11. Change Orders to 'capital' contracts shall be justified or explained on the CO-11a . Change Orders to 'non-capital' contracts which require the approval of the Governor's Designee shall be justified or explained on the CO-11a . The Agency may require that the CO-11a also be used as a management tool for other 'non-capital' project change orders.

CO-11 / CO-11a: CONTRACT CHANGE ORDER / JUSTIFICATION

Purpose: To request and receive approval of a change in the construction contract time, amount, or both.

Submit: For all locally approved capital outlay project change orders, submit one copy of the CO-11 and CO-11a with the contractor back-up cost materials to the BCOM within 5 days after the change order is approved and signed.

For all change orders requiring the prior approval of the Governor or his designee, submit two copies of the CO-11 and CO-11a with one copy of the contractor back-up cost material. The CO-11a shall specifically address points identified in Section 1404.11.

Other Uses: Must be used to document any and all changes to a construction contract (CO-9) using CPSM procedures. Must also be used to document change orders to maintenance reserve and other non-capital outlay construction contracts.

Special Conditions: None.

Changes involving an increase in construction contract price of **more than 25% of the original contract amount or $50,000, whichever is greater**, shall have the prior written approval of the Governor or his designee. When the cumulative total of change orders exceeds the original contract

amount by **more than 25% or $50,000, whichever is greater,** any subsequent change order that increases the contract amount, regardless of the amount, shall have the prior approval of the Governor or his designee. Submit the CO-11 and CO-11a to BCOM for approval of the contract change with supporting documentation outlined in Chapter 10. The Agency justification section of the CO-11a on all change orders shall

(1) include a written statement by the Agency outlining the proposed cost sharing by the responsible design professional when the change results from an error or omission or

(2) answer the following questions when the change is generated by a change in agency requirement:

(a) When was the change in agency requirement known?

(b) If before bidding, why were the changes excluded from the bid package?

(c) Why can the work not be packaged and bid separately?

(d) What quantitative impact will the lack of this change have on the service delivery of the Agency?

An informational copy of all CO-11's and CO-11a's approved locally shall be sent to BCOM without the supporting documentation.

A/E Contract change orders may be necessary during the course of design and/or construction. Change orders are most commonly necessitated by unforeseen site or building conditions; changes in agency requirements; extra services required by the agency; technology changes occurring since contract award which must be incorporated in certain types of projects; or delays in construction which are not attributable to the A/E. All changes involving the contract amount or performance time shall be included in an approved contract change order G.S.Form E&B CO-11a/e and CO-11a (CO-11a/e and CO-11a).

CO-11a/e / CO-11a: ARCHITECT/ENGINEER CONTRACT CHANGE ORDER / JUSTIFICATION

Purpose: To request and receive approval of a change in the contract time, amount or both.

Submit: For all change orders requiring the prior approval of the Governor or his designee, submit two copies of the CO-11a/e and CO-11a with one copy of the A/E back-up cost material. The CO-11a shall specifically address points identified in Section 1404.11.

Other Uses: Used to document all changes to the A/E contract and/or MOU.

Special Conditions: None.

Changes involving an increase in the A/E contract price of **more than 25% of the original contract amount or $50,000, whichever is greater,** shall have the prior written approval of the Governor or his designee. When the cumulative total of change orders exceeds the original contract amount by **more than 25% or $50,000, whichever is greater**, any subsequent change order that increases the contract amount, regardless of the amount, shall have the prior approval of the Governor or his designee. Submit the CO-11a/e and CO-11a to BCOM for approval of the contract change with supporting documentation indicating how the change in contract amount was determined. The Agency justification section of the CO-11a on all change orders shall

(1) include a written statement by the Agency outlining the proposed cost sharing by the Contractor when the change results from a substitution proposed by the Contractor or

(2) answer the following questions when the change is generated by a change in agency requirement:

(a) When was the change in agency requirement known?

(b) If before bidding, why were the changes excluded from the bid package?

(c) Why can the work not be procured separately?

(d) What quantitative impact will the lack of this change have on the service delivery of the Agency?

1508.0 Building Occupancy:

The Building Official may approve a building or facility being occupied when it is substantially complete. A new building, addition to a building, or a renovated building with a new use group classification shall not be occupied until the State Building Official issues a Certificate of Use and Occupancy, Form CO-13.3. The Agency shall apply to the BCOM for a Certificate of Occupancy by submitting a Form CO-13.3a Application and a CO-13.3b Checklist for Beneficial Occupancy with the required reports and Certificates of Substantial or Final Completion attached. Requests for Partial or Temporary Occupancy shall also include a small scale floor plan with the subject areas for occupancy noted.

The application shall include a CO-13.1 or CO-13.1a (Certificate of Completion or Certificate of Partial/ Substantial Completion by A/E); a CO-13.1b (Final Report of Structural and Special Inspections); a CO-13.2 or CO-13.2a (Certificate of Completion or Certificate of Partial/ Substantial Completion by Contractor); a copy of the Contractor and A/E's punch lists; and a letter or report from the Regional Fire Marshal's Office stating there are no objections to the building being occupied or stating conditions for occupancy of the building; and a CO-13.3b (Checklist for Beneficial Occupancy). If the A/E's construction visits / inspections were limited, also include a CO-13.1c (Certificate…by Construction Inspector …). Projects which have elevators, food service / kitchen facilities, and/or water or waste water treatment facilities are required to be inspected separately and have a certificate of compliance issued by the inspecting entity. Include copies of certificates with

the Application for Certificate of Use and Occupancy. The Building Official (Director, Division of Engineering and Buildings) may issue a Certificate of Use and Occupancy when, in his judgment, the building is substantially complete and all life and fire safety elements of the project design are functioning properly.

CO-13.3a Application for Certificate of Use and Occupancy

Purpose: To authorize the use of a building for its intended function. The certificate shall specify the use group, the type of construction, the occupancy load in the building and all parts thereof, the edition of the Uniform Statewide Building Code under which the building was constructed and any stipulations, conditions and modifications.

Submit: A completed CO-13.3a, Application for Certificate of Occupancy, with a completed and signed CO-13.1a Certificate of Partial or Substantial Completion by A/E or CO-13.1, Certificate of Completion by A/E; a completed and signed CO-13.2a, Certificate of Partial or Substantial Completion by Contractor, or CO-13.2, Certificate of Completion by Contractor; a CO-13.3b, Checklist for Beneficial Occupancy; and the Fire Marshal's Inspection / Acceptance Report to BCOM at least 5 work days prior to the requested occupancy date.

Other Uses: None.

Special Conditions: Include copies of certificates for elevators, food service / kitchen facilities, and/or water or waste water treatment facilities as may be applicable for the project.

CO-13.3a Application - Temporary or Partial Certificate of Use and Occupancy

Purpose: To authorize the use of a building or portion thereof for its intended function. The certificate shall specify the use group, the type of construction, the occupancy load in the building and all parts thereof, the edition of the Uniform Statewide Building Code under which the building was constructed and any stipulations, conditions and modifications concerning the building's use or occupancy.

Submit: A completed CO-13.3a, Application for Certificate of Occupancy, with a completed and signed CO-13.1a Certificate of Partial or Substantial Completion by A/E with current punch list; a completed and signed CO-13.2a, Certificate of Partial or Substantial Completion by Contractor including

Contractor's list of incomplete work; a CO-13.3b, Checklist for Beneficial Occupancy; the Fire Marshal's Acceptance Report; and copies of any applicable specialty certificates; to BCOM at least 5 work days prior to the requested occupancy date.

Other Uses: None.

Special Conditions: Include a small scale floor plan showing areas proposed to be occupied with requests for Temporary or Partial Occupancy.

CO-13.3a mod: Application for Certificate of Use and Occupancy – Modular / Industrialized Building

Purpose: To authorize the use of a modular or industrialized building for its intended function. The certificate shall specify the use group, the type of construction, the occupancy load in the building, the edition of the Uniform Statewide Building Code under which the building was constructed, the labels and Virginia Registration Number of the units, and any stipulations, conditions and modifications.

Submit: A completed and signed CO-13.3a mod, Application for Occupancy – Industrialized Building with applicable attachments and the Fire Marshal's Inspection / Acceptance Report to BCOM at least 5 work days prior to the requested occupancy date.

Other Uses: None.

Special Conditions: Include a site plan showing the location of this building on the site with distances to adjacent buildings and property lines if not submitted with the CO-17a mod Application for Building Permit.

1509.0 Permit Close Out

Every project which has a Building Permit issued authorizing the Work shall be closed out by the completion of and submission of a Project Completion Report, GS Form E&B CO-14 for 'capital' projects or an e-mail notice of completion to boforms@dgs.state.va.us for 'non-capital' projects. This includes projects which may have been cancelled by the agency and

never constructed, projects where funds were reverted, projects which were combined with another project and the funds transferred, and projects where the funding was never allotted.

A 'capital' project may be reported as 100% complete in the semi-annual capital outlay status report when a Certificate of Occupancy, CO-13.3, has been issued by the State Building Official and in the case of renovation projects where there is no change in use group classification, when the owner has taken beneficial occupancy of the entire project area.

The Project Completion Report, GS Form E&B CO-14, shall be submitted to BCOM as soon as practical after the project is physically complete and the associated administrative steps have been concluded, but no later than 12 months after the owner occupies the building or the work has been accepted as substantially complete. Included in this generalized statement are such things as the contractors submission of warranty, operating manuals, maintenance procedures and other user required documentation; submission of the record drawings by the A/E; release of retainage to the contractor and final payment for any outstanding invoices and other ancillary or associated work/equipment provided by vendors and contractors not associated with the general construction; etc.

NON-CAPITAL CONSTRUCTION CO- FORMS SUMMARY

FORM #	DESCRIPTION	WHEN TO SUBMIT	FORMAT	CPSM CH
Optional	Initiate Project	None to BCOM	Agency discretion	10
Optional	A/E Fee Proposal	A/E submits to Agency	Agency discretion	6
CO-3, CO-3.1, CO-3.1a, or CO-3.2	Owner – A/E Contracts	None to BCOM	Use appropriate CO- form	4
CO-5a	Notice to Locality	Completion of Preliminary Documents	See Chapter 14	14
Transmittal Form	Working Drawings / Construction Documents	With documents	Paper	12
CO-6a	Inspection Statement	With Working Drawings w/CO-6b attached	Paper	8
CO-6b	Special Inspection List	Attached to CO-6a	Paper	8
CO-8 Optional	Approval to Award Contract	Agency discretion	To Agency File	10
CO-9	Owner - Contractor Contract	None to BCOM	To Agency File	10
CO-9b	Post Bid Modification	Attached to CO-9	To Agency File	10
CO-9.1	Notice of Award	No submittal to BCOM	"POST" copy	10
CO-10	Performance Bond	No submittal to BCOM	To Agency File w/CO-9	10
CO-10.1	Payment Bond	No submittal to BCOM	To Agency File w/CO-9	10
CO-11	Change Order to Construction Contract	When Change Order requires Governor's approval (2 originals)	Paper w/ CO-11a justification & backup	10, 14

FIGURE 1501

CO-11	Change Order to Construction Contract	When Change Order DOES NOT require Governor's approval	No submittal to BCOM	10, 14
CO-11a	Change Justification	With CO-11	See CO-11	10, 14
CO-11a/e 14	Change Order to A/E Contract	When Change Order requires Governor's approval (2 originals)	Paper w/ CO-11a justification & backup	3, 6,
CO-11a/e 14	Change Order to A/E Contract	When Change Order DOES NOT require Governor's approval	No submittal to BCOM	3, 6,
CO-12	Schedule of Values, Request for Payment	No submittal to BCOM	To Agency File	10
CO-13	Affidavit - Payment of Claims	With Contractor's Final payment request	To Agency File	10
CO-13.1a	A/E Certificate of Substantial Completion	After Substantial Completion Inspection	Paper, pdf or FAX with CO-13.3a	10, 14
CO-13.1	A/E Certificate of Completion	After Final Completion Inspection	To Agency File	10, 14
CO-13.1b	Final Report of Structural Inspections	After Substantial Completion Inspection	Paper, pdf or FAX with CO-13.3a	10, 14
CO-13.1c	PM or PI Certificate of Substantial Completion	After Substantial Completion inspection	Paper, pdf or FAX with CO-13.3a	14
CO-13.2	Contractor Certificate of Completion	After completion of Final Inspection	To Agency File	10
CO-13.2a	Contractor Certificate Substantial Completion	Before Substantial Completion inspection	Paper, pdf or FAX with CO-13.3a	10, 14
CO-13.3	Certificate of Use & Occupancy	None	Issued by DEB/BCOM	10, 14

FIGURE 1501 (cont.)

FORM #	DESCRIPTION	WHEN TO SUBMIT	FORMAT	CPSM CH
CO-13.3a	Application for Certificate of Use & Occupancy	After Substantial Completion Inspection - Prior to Occupancy	Paper, pdf or FAX w/ CO-13.1a,CO-13.2a, CO-13.3b & other reports	10, 14
CO-13.3b	Checklist for Beneficial Occupancy	With CO-13.3a	Paper, pdf or FAX	14
None	To Close Permit	When completed	E-mail note to boforms	10, 14
CO-14a	A/E Performance	Not Required	copy to A/E	10
CO-14b	Contractor Performance	Not Required	copy to Contractor	10
CO-17	Building Permit	None	Issued by DEB/BCOM	10
CO-17a	Permit Application - Non-Capital Project	With plans & specs for Non-capital, Towers, Tents, Industrialized/Modular Bldgs	Electronic	14
CO-17.1	Demolition Permit For a Building	After DHR & AARB Approvals, before demolition	Paper to BRPM w/attachments	14
CO-18	Sole Source Procurement Approval	Before Working Drawings	Paper	8

FORMAT TO BCOM explanations

Electronic = E-mail or other electronic transmission to a specified electronic address

FAX = Paper copies transmitted electronically from one FAX machine to BCOM FAX number OR a 'scanned' document in 'pdf' format sent electronically to BCOM E-mail address

Paper = Paper copy or original w/signatures sent by US Postal Service or by courier service

pdf = Indicates that 'scanned' document in 'pdf' format sent electronically to BCOM E-mail address may substitute for 'Paper' or FAX copy

FIGURE 1501 (cont.)

CHAPTER 16: THE BUILDING COMMITTEE

SECTION 1600.0 GENERAL REQUIREMENT

Every Agency having a capital project regardless of funds source shall establish a Building Committee. This requirement may be satisfied by one or more such committees dependent upon the needs and the project volume of the Agency. The committee shall be appointed by the Agency head or his or her designee.

SECTION 1601.0 AUTHORITY AND PURPOSE

The Building Committee assists the Agency head in interviewing and selecting Architects and Engineers to carry out planning, design or other professional services for the Agency and recommends to the Agency head the best qualified A/E firm to provide those professional services. The Committee will be guided in accomplishing these tasks by the requirements and policies contained in Chapter 4, "Procurement Procedures for Professional Services." The Committee may be used by the Agency head to interview and recommend a Design-Build Team or Construction Manager for a Capital Project approved for accomplishment using such procedures.

SECTION 1602.0 COMPOSITION OF BUILDING COMMITTEES

The Building Committee shall be composed of at least 5 members with representation from the following applicable areas:

a) Division/section responsible for facilities planning, preferably an Architect or Engineer (permanent member)
b) Technical person responsible for operation/maintenance of Agency facilities (permanent member)
c) Accredited Virginia Construction Contracting Officer (VCCO) (required)
d) Using department of the proposed new/renovated facility
e) Other departments as deemed appropriate by the Agency head
f) Office of the Attorney General of Virginia or Agency legal counsel (ex-officio, advisor)
g) Bureau of Capital Outlay Management (ex-officio, advisor)

The members specified in f) and g) above are not essential as active members to every Building Committee except when the Committee is selecting a Design-Build or Construction Management Contractor in which case the BCOM member will be an active member.

Committees appointed for the purpose of reviewing A/E firm qualifications and recommending an A/E for an A/E Term Contract shall be primarily composed of project management persons responsible for administering the Agency's construction/renovation projects and technical persons responsible for operation and maintenance of Agency facilities.

CHAPTER 16: THE BUILDING COMMITTEE

SECTION 1603.0 QUALIFICATIONS OF MEMBERS

At least two members of the committee must be knowledgeable of the:

a) functional and operational requirements of the proposed building project;

b) project technical requirements; and

c) administrative procedures for selecting design professionals, the development of a project design scope, the techniques for negotiating an A/E fee and the content and preparation of MOUs (an accredited VCCO).

SECTION 1604.0 BUILDING COMMITTEE FOR SMALL PURCHASE PROCUREMENTS

Committees appointed for the purpose of reviewing A/E firm qualifications and recommending an A/E for a single Category B contract, where the fee is expected to be $30,000 or less, may have as few as three members, one of which is a VCCO.

Where total fees will not exceed $5,000, the Committee may be one person who is an accredited VCCO.

CONSTRUCTION & PROFESSIONAL SERVICES MANUAL – 2004

CHAPTER 17: REPORTS

SECTION 1700.0 GENERAL

Section 4-8.01 of the 2003 Acts of Assembly requires the Department of General Services to submit a semi-annual report to the Senate Finance and House Appropriations Committees on the status of capital outlay projects. Report data includes the Project Number, Agency Name, Title, appropriated amount and other pertinent data.

SECTION 1701.0 CAPITAL OUTLAY PROGRESS REPORT

1701.1 Requirement: Every Agency having a capital outlay project is required to submit this report listing all active capital outlay projects. Active projects are defined as those for which an approved G.S. Form E&B, CO-2 has been issued. Projects become inactive the first report cycle following the submittal of the CO-14

1701.2 Frequency: The report is required to be submitted semi-annually. The Agency's report is due to BCOM by April 15th and October 15th with as of dates of April 1st and October 1st, respectively.

1701.3 Instructions: At least three weeks prior to the due date for the report, the Agency will be provided an EXCEL spreadsheet copy by E-mail of its portion of the most recent report submitted to the House and Senate money committees. The Agency shall mark up this report to show additions, deletions or changes in status as of the April 1 and October 1 dates. The updated report shall be E-mailed to BCOM at the address shown in Section 1701.5.

If a project shows no progress since the last report, an explanation must be given in the remarks column or on an attached sheet. Indicate the reason for lack of progress and what steps are being taken to get the project back on schedule.

INSTRUCTIONS FOR COMPLETING THE REPORT

EXPLANATION OF COLUMNS

COLUMN - PROJECT IDENTIFICATION : Use 8 digit number consisting of 3 digit Agency or Sub-Agency Code, plus 5 digit Project Code Number. Use 3 digit Agency or Sub-Agency Code under which the Appropriation is listed. Add to the 8 digit number the Sub-project code if appropriate. Give abbreviated project title.

COLUMN - BIENNIUM : Denotes Biennium in which the initial Appropriation was made. For even numbered years, use the double designation such as 88-90. For Appropriations made during the odd numbered years or mini-session, use 1989. Subsequent yearly or biennial additions or deletions to the Appropriation will be noted in remarks.

COLUMN - APPROPRIATED AMOUNT : This lump sum figure should reflect total of all funds appropriated for the project, plus or minus any funds added to or deleted from the project.

COLUMN - OBLIGATED TO DATE: This figure shall include the value of all expenditures to date of all funds that are obligated by signed contract or purchase order.

COLUMN - CO-2 APPROVED: Denotes date of approval of the initial CO-2 by the Governor. Dates of revised forms are not required.

COLUMN - DESIGN % COMPLETE : Show percentages thus:

A/E hired (CO-3)	5%
Design Criteria (Schematics) Approved	20%
Preliminary Plan & Specifications Approved	40%
Working Drawings & Specifications Approved	100%

Interpolate percentages to indicate status between points denoted. If plans are not required to be prepared either by Consultant or In-House personnel, then mark Column 6 thus: N/A.

COLUMN - CONTRACT AMOUNT - Figure denotes accepted low bid amount, plus or minus increases or decreases as generated by approved change orders. When a Contractor is not utilized (work performed by In-House personnel), then the budgeted amount for construction is the required figure.

COLUMN - CONSTRUCTION % COMPLETE - Show percentages thus:

Contract Awarded	1%
Work Begun	10%
Estimated Progress-Interpolate	Between 10% and 95%
Substantial Completion	95%

COLUMN - ESTIMATED COMPLETION DATE - As shown on Approval of Award of Contract (CO-8) and as revised by change orders or Owner estimate of substantial completion when done by In-House forces**. Include in the listing the 'planned' or 'estimated' Construction Completion Dates for all Projects under design.**

COLUMN - REMARKS - Identify any variation to normal procedures in addition to those uses as described in the explanation above; i.e., Job on hold, Contractor walked off site., Project under litigation., On hold, Governor's freeze. etc.

1701.5 Distribution: One copy shall be E-mailed to:
coforms@dgs.state.va.us

APPENDIX A: GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT (Form CO-7) AND STANDARD INSTRUCTIONS TO BIDDERS (Form CO-7a)

Standard DGS forms and formats are available for download from the DGS Forms Center (http://forms.dgs.virginia.gov).

GENERAL CONDITIONS (CO-7):

> To view/download the latest version of this required contract document (aka, Form "DGS-30-054"), visit the website listed above and enter "DGS-30-054" in the search box on the Forms Center.

SUPPLEMENTAL GENERAL CONDITIONS - for Small Business, Women-Owned and Minority-Owned (SWAM) Business Procurement Plan:

> To view/download the latest version of this required contract document (aka, Form "DGS-30-377"), visit the website listed above and enter "DGS-30-377" in the search box on the Forms Center.

SUPLEMENTAL GENERAL CONDITIONS for Renovation Projects and for Liquidated Damages:

> To view/download the latest version of these sample formats (aka, Form "DGS-30-376"), visit the website listed above and enter "DGS-30-376" in the search box on the Forms Center.

INSTRUCTIONS TO BIDDERS (CO-7a):

> To view/download the latest version of this required contract document (aka, Form "DGS-30-055"), visit the website listed above and enter "DGS-30-055" 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 B: GENERAL CONDITIONS OF THE DESIGN BUILD CONTRACT (Form CO-7DB)

Standard 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 Form CO-7DB (aka, Form "DGS-30-056"), visit the website listed above and enter "DGS-30-056" 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 C: LISTING OF FORMS AND FORMATS ON THE DGS FORMS CENTER

Standard DGS forms and formats are available for download from the DGS Forms Center (http://forms.dgs.virginia.gov).

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).

A copy of Form DGS-30-000 is also posted and available for download from the Bureau of Capital Outlay Management website (http://bcom.dgs.virginia.gov).

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APPENDIX D: BASIS OF DESIGN NARRATIVE AND SYSTEMS CHECKLIST

1. INTRODUCTION

The basis of design is a narrative description of the project and should be a bound presentation of facts sufficiently complete in accordance with the following format to expedite BCOM review of the Schematic and the Preliminary submittals. The Schematic Basis of Design narrative presents the basic information, criteria, logic, evaluations and considerations developed in each category to prepare the Schematic submittal. The Preliminary Basis of Design narrative expands upon the Schematic submittal to reflect the further analyses, evaluations and selections/decisions made to arrive at the Preliminary level of design.

Design computations, sizing of members or conductors, details of connections, etc., are not required to be submitted with the Schematic Basis of Design, but general computations supporting system selection, member depths, floor to floor heights, mechanical and electrical loads should have been made.

2. SCHEMATIC BASIS OF DESIGN INFORMATION

The Schematic submittal shall include a Basis of Design Narrative which as a minimum provides the following information in narrative or tabular format:

- Type of occupancy/VUSBC Use Group
- Estimated occupancy capacity and method or factor used for estimate
- Functions to be housed in the building
- Proposed building location on the site
- Exterior Circulation (i.e., how this project may interface with other area facilities)
- Areas and/or capacity required for various activities proposed for building
- Type of Construction proposed: i.e., fire resistive, protected or unprotected noncombustible, etc. and VUSBC Type #
- Outline description of basic materials
- Future construction or expansion to be accommodated, if any
- Style and character of building desired
- Structural Design Live Loads, Wind Loads, and Seismic Criteria used
- Type of foundation system selected
- Description of the types of HVAC systems being evaluated, estimated heating and cooling loads, fuels evaluated and fuel selected to be used
- Total square foot area per floor and per building
- Number of beds, seats or parking spaces, where applicable
- Total estimated construction cost based on the schematic documents
- Total proposed project budget

3. PRELIMINARY BASIS OF DESIGN INFORMATION

The following format is for a new building type construction project but is applicable to renovation and addition projects by addressing those portions relevant to that particular project. When a project consists primarily of mechanical, electrical, structural, or another discipline, the basis of design shall provide more detailed information for the major discipline. The narrative shall address or list the factors indicated for each section. Data may be presented in tabular form where appropriate.

Architectural:

(a) 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.

(b) Provide analysis of Virginia Uniform Statewide Building Code (VUSBC) and referenced standards (and NFiPA 101, Life Safety Code, if applicable) requirements of all occupancies involved. Determine occupancy classifications and compute occupant load, number of units of exit and other requirements. Describe unusual or critical code requirements and indicate how such requirement will be met.

(c) 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.

(d) Computation of gross floor area in accordance with Section 701A guidance and of Building Efficiency factor/ratio. Gross floor areas should be indicated on the drawings.

(e) 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.

(f) 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.

(g) 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.

(h) Provide furniture and equipment footprint drawings in preliminaries reflecting the Agency's updated equipment list which show the end result of the architect's space planning effort. The furniture footprint demonstrates the designer's plan for the various functions that are housed in the facility. The designer shall use standard furniture sizes to demonstrate adequacy of space and to communicate utility and service requirements to

engineering disciplines. (Although required for space, utility and service requirement development, these drawings are not included in the final construction bid package.)

(i) A description of items not considered to be a permanent part of the structure, such as work benches, shelving, bins and removable partitions. (Show also on furniture footprint drawings.)

(j) 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?

(k) Design features to make facilities accessible to and usable by the physically handicapped and conform to the requirements of Section 700C of the Manual. If not incorporated, appropriate reasons/justification shall be given.

(l) 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. 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.

(m) Describe special construction features incorporated into the facility such as barred windows, special wall/roof construction, etc.

(n) 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 submitted to BCOM for review and comment at the Schematic and Preliminary submittals.

Structural:

(a) 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.

(b) 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.

(c) Special features to be included in the structure which are not evident from the drawings.

(d) Description of the structural floor and roof systems proposed, with length, spacing and size of principal members (for beam and girder, etc.).

(e) Description of the Lateral Force Resisting System proposed with appropriate materials and dimensions.

(f) Statement of live loading to be used, to include floor loads, wind, snow, earthquake, etc., with data to justify.

(g) Statement of any special considerations that affect the design, (e.g., special corrosion resistance requirements, detention facilities, cranes, etc.).

(h) The usual accepted means of structural system selection is economy. Demonstrate this with cost comparisons of various appropriate framing systems such as:

(1)"Typical bay" member sizing and cost comparisons of alternate structural systems;

(2) Horizontal force resisting system for wind and earthquake;

(3) Consideration of unusual geometry (long span, high bay, deep cuts, etc.);

(4) Consideration of heavy equipment supports.

Plumbing:

(a) Describe system to be utilized on each part of the project.

(b) 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.

(c) Estimated number of fixture units and water demand in gpm for all plumbing fixtures.

(d) Estimated maximum and minimum water pressure at each building and indicate if booster pumping will be required.

(e) 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.

(f) Design temperature of domestic hot water distribution system and extent of recirculation system within building.

(g) Indicate materials to be used for each piping system.

(h) 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:

(a) Design Conditions

(1) Describe and/or list the indoor and outdoor design conditions to be used in the design of systems for this project. Refer to criteria in Chapter 7.

(2) 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.

(b) Heating

(1) 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.

(2) 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, interconnecting to the existing system at manhole no. 150 and traveling due north into the mechanical equipment room.) State if condensate return system is to be utilized. If condensate is to be wasted, heat reclaim shall be studied. If wasted, it should be cooled to 140°F maximum, then re-turned to the sanitary sewer system (unless specifically instructed otherwise). Indicate the maximum hourly production of condensate.

(3) 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.

(4) Describe the HVAC Control System. A specific type of control system will be specified, i.e., pneumatic, electric or electronic.

(c) Ventilation

(1) Indicate the quantity of outside air per person in all areas, the type of filtration, and whether **OSHA** requirements are applicable.

(2) State if smoke removal/control systems are to be employed.

(3) Describe the operation of the system in summer and winter modes.

(d) Air Conditioning

(1) 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.

(2) Define areas to be air conditioned.

(3) Identify special humidification or de-humidification requirements, as well as special filtration requirements.

(4) 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.

(e) Combination Systems

(1) For systems in which the heating, ventilating and/or air conditioning are combined, repetition may be eliminated by consolidating the aforementioned requested information. Describe changeover procedures and requirements.

(f) Energy Conservation

(1) 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.

(g) Briefly describe the controls for each system and indicate intended sequence of operation.

(h) Briefly describe testing and balancing requirements to be required.

(i) When the Owner has an Energy Management System, the preliminary submittal shall be prepared to conform to the requirements and procedures in Chapter 7.

Environmental Pollution Control:

Identify expected environmental pollution and the proposed method of control. A detailed description will be necessary for those facilities directly related to controlling air and water pollution such as sewage treatment plants, industrial treatment facilities, incinerators, smoke

elimination facilities, and other similar projects. When subsurface 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 Agency 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:

(a) Prepare an energy analysis as required by Chapter 7, Section 715L and submit Energy Analysis Summary. Describe criteria and assumptions in narrative. Describe purpose and justification of systems proposed.

(b) Describe environmental constraints such as applicable regulations, liquid wastes, gaseous emissions, treatments required, etc.

(c) Describe new boilers including rating, flow, temperature, pressure and type.

(d) Describe control systems.

(e) Describe any new auxiliaries to be added and what source of power will be used for their operation.

Refrigeration (Cold Storage):

(a) Identify areas to be refrigerated, indicating their usage and temperatures to be maintained.

(b) Describe type of refrigeration equipment and systems.

Thermal Storage:

(a) Describe the type (static or dynamic) of storage being considered.

(b) Provide preliminary cooling profile.

(c) Provide preliminary equipment and tank sizes.

(d) State how the A/E proposes to conform to State Procurement requirements when specifying thermal storage system and components.

Fire Protection Systems:

(a) Describe type(s) of automatic sprinkler and gaseous extinguishing systems to be utilized and note locations to be protected.

(b) Describe fire detection and alarm systems including location of detectors, manual stations, audible devices, control panels, etc.

(c) 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.

(d) Provide the following information about sprinkler systems:

(1) Hazard classification of occupancy and applicable Code reference.

(2) Water supply available at point of connection (static pres-sure 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.

(3) Describe fire pump operating parameters.

(4) Approximate water demand for sprinkler system.

(5) Statement of adequacy/inadequacy of water supply and planned upgrades by local jurisdiction, if any.

Electrical:

(a) Provide the following about interior distribution systems:

(1) Electrical characteristics (phase, voltage, and number of conductors in main distribution circuits).

(2) Breakdown in tabular form of the *estimated* connected load to show:

a. Lighting load and convenience outlet load separately.

b. Power load for building equipment such as heating, air conditioning, etc.

c. 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.

(3) 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.)**

(4) Type of conductors, such as rubber insulated, thermoplastic insulated, polyvinyl chloride jacket, etc., and where pro-posed to use.

(5) **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.

(6) **A** determination of short-circuit duty required for all service entrance protective devices and switchgear (usually available from power company). Include cost premiums in cost estimate.

(7) Type and arrangement of Cable Television Systems (CATV), Closed Circuit Television Systems (CCTV), Nurse Call, inter-com, sound, signal, and fire alarm systems. Identify number and location of telecommunication outlets (telephone, computer, word processing, etc.). Obtain information from the using activity.

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.

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 Owner.

(8) Indicate interior lighting on lighting plans.

(b) Outside distribution systems:

(1) Contact the Utility Companies for location and characteristics of nearest service facility capable of meeting project supply requirement and cost-of-service information for economic analysis.

(2) 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.

(3) Electrical characteristics of power supply to site including circuit interrupting requirements and voltage regulation.

(4) Estimate of total connected load and resulting kilowatt demand load by applying proper demand and diversity factors, if a group of loads is involved.

(5) Basis for selection of primary and/or secondary distribution voltage.

(6) Type of conductors, such as copper or aluminum, and where proposed to use.

(7) **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.

(8) 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.**

(9) Type, adequacy and routing of supporting structure(s) for telecommunication cable.

Electronic Systems:

(a) System engineering concepts. Describe the proposed type of system, its functions and the interrelationships if the system is a multi-use system (i.e., security, etc.; See items (m) and (n) below).

(b) Indicate circuit requirements.

(c) Indicate equipment selection in such categories as: Owner furnished equipment; standards manufacturers or commercially available items; and special equipment.

(d) Describe site or location considerations.

(e) Describe bonding and grounding requirements.

(f) Describe communication and control cables and radio links.

(g) Identify test equipment, repair shop, and spare parts storage requirements.

(h) 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.

(i) Identify wiring and cabling requirements plus terminations.

(j) Identify power and lighting requirements, including emergency or standby requirements.

(k) Describe air conditioning, including humidity and dust-control requirements.

(l) Identify interference and clearance requirements.

(m) State security requirements for Security/Entry Control System.

(1) 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 IDS:

Annunciation Panels and Cabinets
Visual and Audible Annunciators
Magnetic Switches
Proximity Sensors
Volumetric Sensors
Wire Grids
Vibration Detectors
Power Supplies Integral to Items on this List
Closed Circuit Television Cameras and Monitors, and
Video Recorders used for Intrusion Detection Purposes
Access Control Systems

(2) IDS installation can be divided into three general functional categories:

(a) Sensitive compartmented information facilities.
(b) Conventional arms, ammunition, and explosives storage sites (AA & E).
(c) All other (including but not limited to communication facilities, special training facilities, special operational facilities, intelligence facilities, etc.).

Describe access control equipment (versus IDS) when required and outline locations, function, and area of control.

Energy Monitoring and Control System (ECMS):

(a) Indicate if any EMCS will be utilized.

(b) Indicate if the EMCS will be stand alone or tied into central system.

(c) Indicate if a sole source is required for tie in.

(d) Describe the EMCS proposed to be used.

Site and Landscaping:

(a) Describe site and facility location and give reasons for selection and orientation.

(b) List and/or describe utilities available at the site.

(c) Describe existing vegatation, bodies of water, topography, and soil conditions.

(d) Describe existing site improvements to remain, to be altered, and to be demolished.

(e) Describe existing pedestrian and vehicular access, roads, sidewalks, and parking to include accessibility for the disabled.

(f) Describe proposed site improvements.

(g) Describe proposed contours, bodies of water, and landscaping improvements.

Water Supply:

(a) Describe the existing system including, but not limited to, the type, capacity, condition, present water use, and unsatisfactory elements.

(b) State type of construction proposed, materials for water mains, type of well, etc.

(c) State design factors with present and projected design population loads for sewage treatment plants. Coordination with appropriate state/local regulatory agencies is required.

(d) State materials to be used for sewer systems and sewage treatment plants.

(e) Identify standards (federal, state, local) governing the design.

(f) 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:

(a) Describe the existing system indicating particularly the type, capacity, condition, present flow and unsatisfactory elements.

(b) State degree of treatment necessary by effluent requirements and units needed to treat.(c) State design factors with present and projected design population loads for sewage treatment plants. Coordination with appropriate state/local regulatory agencies is required.

(d) State materials to be used for sewer systems and sewage treatment plants.

(e) Identify standards (federal, state, local) governing the design.

(f) 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:

(a) State general soil conditions, with a brief outline of soil exploration and testing performed. Indicate CBR valve and pavement recommendations. (Show typical paving section on the drawings.)

(b) 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

The Building Systems & Equipment Checklist form is available for download from the DGS Forms Center (http://forms.dgs.state.va.us).

On the Forms Center, search for Form "DGS-30-232" to download the current copy of this form. The form is available in Adobe pdf format. (The data may be typed in the form or printed and completed manually.)

APPENDIX E: COST ESTIMATE REQUIREMENTS AND FORMAT

1. GENERAL

All estimates shall be prepared in the **systems format** and shall be summarized on a **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://forms.dgs.state.va.us). **A printed copy of the Building Cost Summary form and the associated supporting estimate backup shall be provided with each submission. Unless waived by the Director of the Bureau of Capital Outlay Management, the Agency shall require their design and cost consultants to submit an electronic copy of each completed Building Cost Summary form**. The electronic copy of the form (i.e., spreadsheet) may be submitted to BCOM either on diskette, or as an e-mail attachment.

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. 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 budgets, to develop historical data for future estimates, and for verification of the Contractor's initial Schedule of Values (CO-12).

The estimate at each submittal is expected to reflect the A/E's or Agency's Independent Estimator's best information and experience. Pricing must reflect all requirements of the contract plans and specifications. Estimate backup may be prepared manually or by utilizing computerized estimating programs, however, the estimate must be summarized using the Building Cost Summary spreadsheet. A detailed breakdown of the components of each system or assembly shall be calculated, quantified and costed. The 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 summarized on the Building Cost Summary spreadsheet.

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. Refer to the notes on page 1 of the Building Cost Summary form.

When the estimates exceed the approved or proposed construction budgets, the agency, in consultation with their design and cost consultants, shall describe how they will address this issue.

2. 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 practical, the key assumptions made while developing the estimate must be described.

3. 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 between the **A/E cost estimate** and the **Independent cost estimate** is **10% or greater**, the Agency shall provide a **reconciliation** of the two consultant's estimates.

4. FINAL/WORKING DRAWINGS PHASE ESTIMATE

The A/E shall provide a final estimate based on the working drawings and specifications and shall be prepared using the systems format. A full and accurate description of each system shall be provided in the estimate. Quotations shall 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.

5. SUMMARY OF ESTIMATE SUBMISSION REQUIREMENTS

Design Phase	A/E Estimate	Owner's Independent Estimate
Schematic Phase	Required*	Optional (at owner's discretion)
Preliminary Phase	Required*	Required*
Working Drawing Phase	Required*	Optional (at owner's discretion)

* - Required are the following:

- a hard copy of the Building Cost Summary sheet(s) and supporting estimate backup must be submitted to BCOM
- an electronic version of the completed Building Cost Summary worksheet(s) must be submitted to BCOM (the Excel spreadsheet template, "Form DGS-30-224" is available for download from the DGS Forms Center)

COST ESTIMATING STANDARD SYSTEMS DESCRIPTIONS

Building Systems Descriptions

Includes cost of construction of all work inside the line 5 feet from the building. Cost each system separately. Same systems were indicated for entry on Summary Sheet.

System	System Unit	Unit/Measure
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, 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 non bearing walls from inside rough wall to outside finish walls, parapet walls, damp proofing, flashing, insulation, waterproofing, balcony walls and handrails. Includes exterior finishes, caulking and painting.

Interior Walls Interior Wall Area (1 side) Sq. Ft.
Includes partitions, bearing or non bearing walls, extending from floor-to-floor or floor-to-ceiling excluding finishes. Includes masonry walls, steel or wood stud framing, blocking, acoustic material (insulation), bracing, and anchorage, **but excludes** painting, gypsum board or other applied finish.

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.

Specialities 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 specialities, scales, exterior sun control devices and wardrobe specialities, 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., ice maker rough-in), floor drain and wall hydrant.

Heating, Ventilation, and Air Conditioning Capacity MBTU or Tons

Includes heating, ventilating and air conditioning systems, i.e., heat generating equipment, refrigeration, air distribution, piping, controls and instrumentation, and insulation.

Fire Protection 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, Uninterruptable 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.

SITEWORK, UTILITIES & IMPROVEMENT DESCRIPTIONS

Exterior Electrical Distribution Length of Run Lin. Ft.

Includes overhead power distribution, i.e., poles, crossarms, insulators, guying, terminations, lightning protection, wire and cable, and underground distribution, i.e., excavation and backfill, concrete encased duct bank, direct burial duct, manholes, handholes, cable, terminations, stress cones, and grounding. Also includes costs of transformers and substations for Agency-owned systems. Add in this total the costs of exterior Fire Alarm, EMCS, security and similar distribution lines.

Area Lighting Number of Fixtures 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, subgrade 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, subgrade 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.

Earthwork Volume (Cut + Fill) Cu. Yd.
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 watercourse, 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- 2Lin. 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.

Building Cost Summary Sheet

Standard DGS forms and formats are available for download from the DGS Forms Center (http://forms.dgs.state.va.us).

To view/download the latest version of the Building Cost Summary Sheet (Form "DGS-30-224"), visit the website listed above and enter "DGS-30-2244" 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 F: CHECKLIST FOR OPENING BIDS

The Agency shall assure that the person receiving bids, called the Bid Officer, is thoroughly trained / knowledgeable in the proper procedure for receiving and documenting bids.

PROCEDURES FOR RECEIVING BIDS

(1) On the morning bids are due, check the time on the clock, the date/time stamp, and the FAX machine in the bid receipt area to assure the times are coordinated and correct. Assure that the clock visible to bidders in the bid receipt area shows the correct time.

(2) When bids or modifications are delivered to the bid receiving office, the bids shall be date stamped and the time noted or stamped on the envelope showing the time of receipt.

(3) The bid receipt deadline must strictly comply with the specific time called for in the Invitation for Bids. It is suggested that the Bid Officer give a warning that the Bid Receipt Deadline is near such as **"The time is.now 1:55 pm and all bids must be received by 2:00 pm."**

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 bid are further described in the Instructions to Bidders, CO-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 Agency 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. After receiving either a negative reply or after answering questions, proceed to open the bids in alphabetical order. **Do not open work papers!**

(2) Paragraph 4 of the Instructions to Bidders requires the Contractor to place its Contractor License Class and License Number on the envelope and on the bid documents. Para. 4(c) of the CO-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 and
- that the Form of Proposal is signed by the bidder and
- Bidder information complies with Item 4(b) and (c) of the Instructions to Bidders.

Only then shall the other bid information be revealed. If the Bid Bond or Certified Check is not included or if the Bid is not signed, the bid shall not be read or considered.

(4) If a modification to the bid has been received, check it to assure that it has been signed by one of the persons listed on the Bid Form as authorized to make such modifications. If 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 ___ are 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 allow 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.

a. 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!**

b. After two hours, return all Bid Bonds, checks, etc., to all but 3-lowest bidders. Work papers can be returned to all.

c. Keep bids and bid bonds or checks from 3-lowest bidders until Contract is signed.

d. Contact 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).

e. Prepare an official tabulation of bids indicating:

- Name and Project Code of project as on the specifications
- Time and date of bid receipt and opening
- Exact Name, address, telephone & FAX numbers of Bidders
- Bidder's Virginia Registration Number (or non-requirement statement).
- All amounts bid for Base Bid(s), Parts, the Total Base Bid Amount, any Bid Modification and Additive Bid Items.
- Completion time stated, if Bidder was given the option.
- Acknowledgement of receipt of all addenda and number of addenda issued.
- Whether or not sealed work papers were submitted.
- Name of Agency Bid Opening Designee.

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APPENDIX G: ROOF INSPECTION FORMS AND PROCEDURES

1. The Roof Inspector

The minimum qualifications below serve as criteria for Owners who must select 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 BCOM.

C. He should be thoroughly familiar with the latest edition of the NRCA Roofing and Waterproofing Manual.

D. The Inspector should have a minimum of five years of full-time, practical roofing experience or approved equivalent experience.

E. 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 owners and Architects/ Engineers for the roof projects.

F. He should be trained and competent in the services he is providing.

G. Roof Inspector's Scope of Work:

(1) The Inspector shall monitor the work continuously during installation of the roof.

(2) He shall monitor the work for compliance with the contract documents and the State's Roofing Policy of Chapter 7 of the **Manual.**

(3) He shall immediately report any deviations from the contract documents, the State's Policy, or good roofing practice to the Architect and Owner. **A** written report shall follow an oral report.

(4) The Inspector may recommend suspension of work or rejection of non-complying work to the A/E and Owner.

(5) 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 Owner 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.

(6) 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 owners; 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 Owner'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 is used with infrared or nuclear surveys.

An NDE survey is mandatory before a newly constructed roof may be accepted. Depending on the size and condition of an existing roof, a survey may or may not be required before an Agency may repair or replace the roof. The following outlines requirements for NDE surveys:

A. Equipment, subject to the Owner's approval, shall be equal to the following:

(1) Infrared: AGA 720 system or Inframetrics 520 system
(2) Nuclear: Seaman Troxler 3216 Roof Reader, Nuclear Model R-50 or later model
(3) Electrical Capacitance: **As** approved by the Owner

B. Surveys

(1) 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 Owner 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 C1153, "Standard Practice for the Location of Wet Insulation in Roofing Systems Using Infrared Imaging", except as otherwise noted in this Appendix.

(2) Nuclear: Provide a grid, comprising 5'-0"on-a-side grid unit, to completely cover the roof or roofs. **Mark** each grid intersection with spray paint. Take readings at the inter-sections and record them on a roof plan. Provide daylight photographs of anomalies.

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:

(1) 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 Owner.

(2) On all other roofs a minimum of one dry and one wet core shall be taken from each roof surveyed.

(3) 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 air tight containers and taken to a laboratory for analysis.

(1) 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.

(2) 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:

(1) Identify and describe all anomalies.

(2) Identify and describe any visual survey defects that may be harmful to the roof.

(3) Give the causes for each anomaly and defect.

(4) Recommend alternate courses of corrective action for defects and anomalies harmful to the roof.

(5) 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:

(1) Print size, preferably, should be 24" X 36"; but in no case larger than 36" X 46".

(2) Minimum drawing scale is 1/8" = 1'-0" for roofs or portions of roofs surveyed.

(3) Provide one reproducible print (Mylar, etc.) and two non-reproducible prints, as **a** minimum, for each sheet of drawings.

(4) A legend defining all symbols and explaining abbreviations.

B. Drawings shall show the following as a minimum:

(1) All roofs surveyed

(2) State identification, title, and date

(3) An orientation north arrow and drawing scale

(4) The area of each roof and approximate overall dimensions

(5) All existing features, equipment, and roof penetrations of whatever nature (such as vents, stacks, drains, hatches, skylights, screens, railings, mechanical equipment, etc.) shall be accurately indicated, identified, and drawn to scale.

(6) All roof slopes and valleys noted with drainage arrows. If there is no slope, state that the roof is dead level.

(7) Where flashing is carried to a vertical surface, identify the surface (roof vent, masonry parapet, etc.) and give its height from roof level.

(8) For a visual survey, show and explain all roofing defects and anomalies. Show interior damage (to the roof system) by dotted line.

(9) For an infrared survey, accurately delineate moisture anom-alies 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 identifi-able features (such as parapets).

(10) Provide at least one detail section (3/4" = 1' - 0" minimum) showing roof construction where core samples were taken; more if there are differences in construction from core to core. Identify surfacing material, membrane product, insulation type and thickness, vapor barrier if used, and deck construction.

ROOFING FORMS

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: GUIDELINES FOR NON-CAPITAL OUTLAY BUILDING PROJECTS

GENERAL

In general, the procedures for **non-capital outlay projects** are the same as those for Capital Outlay Projects **with the exception of the requirement to submit Forms CO-2, CO-4, CO-5 and CO-6** to BCOM/DEB for approval. All building construction, additions and renovations must have a Building Permit as described in the Building Permit Policy included in Appendix P. Some work may be permitted by the agency under the Annual Permit Program for those agencies which have received such a permit. The plans and specifications for all other building construction and additions and those renovations which affect the Use Group Classification, the type of construction, means of egress, or other "life safety" features must be submitted to the Building Official for review along with a Form CO-17A, Application for a Building Permit. The Technical requirements and the procedures for procurement of construction (both Capital Outlay and Non-Capital Outlay) are covered by the **Commonwealth of Virginia Construction and Professional Services Manual for Architects & Engineers** and the **companion Commonwealth of Virginia Construction and Professional Services Manual for State Agencies**.

ARCHITECT/ENGINEER

- The A/E is responsible for having copies of the **Commonwealth of Virginia Construction and Professional Services Manual for Architects & Engineers (the A/E Manual**), the VUSBC, and the referenced codes and standards.

- Procedures for solicitation, selecting and contracting with the A/E described in Chapters 3, 4, 5, and 6 of the **Manual** should be followed by the Agency.

- Form CO-3, CO-3.1 or CO-3.2 should be used for the contract along with a Memorandum of Understanding (MOU) defining the A/E's specific scope of work, schedule, etc.

CODES AND STANDARDS

- Technical standards in Chapter 7 of the **Manual** are applicable to the design of all state projects.

- The VUSBC applies to the project.

- Accessibility Standards cited in Chapter 7, Section 700.C, also apply to state projects.

- The standards and guidance in Chapter 8 of the **Manual** should be followed in the preparation of the plans and specifications; especially Section 802 -Drawing Standards, Section 803 - Specification Standards, and the Sections describing the content of drawings.

- The **GENERAL CONDITIONS OF CONSTRUCTION CONTRACT, Form CO-7** and the **INSTRUCTIONS TO BIDDERS, Form CO-7a**, shall be used for building projects, whether new, renovations or additions.

- For consistency in working with "Building Contractors" on state building projects, the following CO Forms shall be used for execution of the construction contract:

CO-9	Contract Between Owner and Contractor
CO-9.1	Notice of Award
CO-9.2	Notice to Proceed
CO-10	Commonwealth of Virginia Standard Performance Bond
CO-10.1	Commonwealth of Virginia Standard Labor and Material Payment Bond
CO-11	Contract Change Order
CO-12	Schedule of Values and Certificate for Payment
CO-13	Affidavit of Payment of Claims
CO-13.1a	Certificate of Substantial Completion by Architect/Engineer
CO-13.2a	Certificate of Substantial Completion by Contractor

PROCEDURES PRIOR TO BEGINNING CONSTRUCTION

- Once plans and specifications have been completed, the Agency shall obtain a Building Permit from the Building Official (thru BCOM) or from the Agency Designee for those projects /work which can be performed under the Annual Permit where applicable.

- For those projects which must be submitted to the Building Official for review, submit the following to BCOM: electronic copy of Form CO-17a, BUILDING PERMIT APPLICATION; five (5) sets of Project Plans and Specifications. (It is suggested that this submittal be made to BCOM prior to bidding so that any deficiencies noted can be corrected prior to receipt of bids.)

- If the project is for renovation of existing facilities, also send one copy of the Project Plans and Specifications to the Regional Fire Marshal's office for review and comment.

- BCOM will review plans and specifications for compliance with the applicable Building Code, Standards, and Technical Requirements of the Manual. Assuming conformance with these requirements, a signed/approved building permit along with any comments and/or stipulations will be sent to the agency. If significant deficiencies are found or if the plans and specifications (or sketches and scope of work) are deemed insufficient to require code conforming work, a Permit will be denied and a resubmittal of corrected documents will be required.

- Agency shall send one copy of final plans and specifications and any addenda to the Regional Fire Marshal's office.

- Agency shall send copies of documents for approval to other review agencies such as Division of Soil & Water Conservation, State Water Control Board, etc., if required by the scope of the project.

PROCEDURES PRIOR TO OCCUPANCY

- Agency's Project Representative shall assure that all inspections and tests are performed to assure that the work performed conforms to the requirements of the applicable codes and standards and that the building is safe and ready for occupancy.

- Have Contractor complete Form CO-13.2 or 13.2a.

- Have Architect (or Agency Project Manager/Inspector) complete a Form CO-13.1 or 13.1a, a Form CO-13.3a, Application for Certificate of Occupancy, and a Form CO-13.3b, Checklist for Beneficial Occupancy.

- If new building, addition to or renovations of existing building, have Regional Fire Marshal inspect and provide report recommending acceptance for occupancy.

- On new buildings, on building additions, or on renovations that involve a change in Use Group Classification, the Agency submit above documents to BCOM. BCOM will review and prepare CO-13.3, Certificate of Occupancy, for signature and send signed Certificate to Agency.

APPENDIX I: PARAMETERS FOR LIFE CYCLE COST AND ENERGY ANALYSES

Parameters for Calculation of Life Cycle Costs and Energy Analyses

I. General Instructions For All Life Cycle Cost 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., indicate how the various costs were calculated and note the basis or source of the cost data.)

II. Additional Instructions For Calculating Life Cycle Costs For Energy Analyses:

a. Use the following periods for energy-related life cycle cost studies:

1) Building Envelop Studies:	30 years
2) Central Heating/Cooling Plants:	30 years
3) Building HVAC Systems:	20 years
4) 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 in the Manual or other criteria as approved by BCOM.

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 the various fuel/energy rates (i.e., $s/gallon, $s/kwh, etc.) and the data source for each.

III. 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 place results in Column "i".

f. Sum Column "i" and place results in the box at the bottom of the Worksheet.

Building Life Cycle Cost Summary Worksheet

Standard 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 "DGS-30-228"), 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: MISCELLANEOUS POLICIES AND MEMORANDA IMPACTING DESIGN AND CONSTRUCTION

Pages J-2 to J-5	Executive Memorandum 2-97 "Floodplain Management Program for State Agencies"
Page J-6	April, 1998 Joint DCR/ DHCD Memorandum "Historic Properties and the USBC"

COMMONWEALTH of VIRGINIA

Office of the Governor

George Allen
Governor

EXECUTIVE MEMORANDUM 2-97

FLOODPLAIN MANAGEMENT PROGRAM FOR STATE AGENCIES

Purpose

The purpose of this executive memorandum is to provide floodplain management policies and requirements to ensure the Commonwealth avoids unnecessary disaster cost and risk to human health, safety, and welfare; to emphasize the responsibility of all state agencies to promote flood hazard mitigation; and to assign responsibility for leadership and coordination to the Department of Conservation and Recreation, under the direction of the Secretary of Natural Resources.

National Flood Insurance Program: Policy and Requirements

The continued availability of flood insurance and many types of floodplain disaster assistance, development loans, and other financial resources are dependent on state and local participation in the National Flood Insurance Program (e.g. National Flood Insurance Act and regulations, Stafford Disaster Assistance Act). Lack of State compliance with the National Flood Insurance Program will result in State suspension from the program and increased disaster costs for the Commonwealth. The guidelines of the National Flood Insurance Program are not overly burdensome and provide common sense guidelines for avoiding risks in flood hazard areas.

1. The Department of Conservation and Recreation (DCR) shall be the coordinating agency for floodplain management and the National Flood Insurance Program. The Chief of the Floodplain Programs Section shall serve as the State Coordinator for the National Flood Insurance Program.

2. Pursuant to Section 10.1-603, *Code of Virginia*, and in accordance with 44 CFR Section 60.12 of the National Flood Insurance Program Regulations for Floodplain Management and Flood Hazard Identification, all construction or land disturbing activities initiated by an agency of the Commonwealth, or by its contractor, in floodplains shall comply with the locally adopted floodplain management ordinance.

   As a matter of policy, new state-owned buildings shall not be constructed within a 100-year floodplain unless a variance is granted by the Director, Division of Engineering and Buildings, in his capacity as Building Official for state-owned buildings pursuant to Section 36-98.1 of the *Code of Virginia*. A variance will be considered if the following conditions are met:

   a. Reasonable or economically justified alternatives do not exist.
   b. The lowest floor for the proposed construction is elevated or flood proofed two feet above the base flood elevation.
   c. Reasonable access during flood events is demonstrated. Water dependent uses, such as water treatment facilities, boat houses, fish hatcheries, and other similar uses, are a reasonable use and are exempt from floodplain prohibitions. The use, however, must comply with appropriate codes, ordinances, and regulations, and be flood proofed to the maximum extent practicable in conformance to Section 3107, Virginia Uniform Statewide Building Code.

The Building Official for state-owned buildings will provide written rulings on variance requests after consultation with the State Coordinator for the National Flood Insurance Program. Appeals to rulings may be made to the State Building Code Technical Review Board (Department of Housing and Community Development).

3. In the event a locality is not participating in the National Flood Insurance Program, State agencies shall comply with the standards of the Program when undertaking land disturbing or construction activity. These projects shall be submitted to the Building Official for state-owned buildings for review.

Floodplain Management Coordination: Policy and Requirements

The Department of Conservation and Recreation is the lead coordinating agency for floodplain management policy and programs of the Commonwealth. Floodplain management is an issue that impacts numerous agencies with land management, public works, construction and reconstruction, or related regulatory oversight. To assure coordination and efficiency in state agencies:

1. The Department of Conservation and Recreation is to Chair the Virginia Interagency Task Force on Floodplain Management. Within thirty days of the effective date of this executive memorandum, DCR will provide to the Governor's Office for review, approval, and implementation an outline of the structure of this task force. The task force will be a forum to develop interagency recommendations and products to promote the mitigation of public and private flood damages in the Commonwealth.

2. State agencies participating in flood protection projects with a federal interest shall be coordinated with the DCR Floodplain Programs Section. DCR shall serve as the technical advisor of the Commonwealth on viability of proposed alternatives.

3. Federal disaster assistance for flood damaged public buildings in the floodplain is calculated based on the assumption that the Commonwealth has flood insurance to the value of the building or limits of the program. The total amount of cost shared federal disaster assistance for an individual structure in the floodplain can be reduced by the amount of insurance available. Annually, the Department of General Services (DGS) shall review changes in the limits for the National Flood Insurance Program, which shall be provided to DGS by DCR, and determine if the Commonwealth's insurance program provides adequate protection. DGS shall provide DCR with a written summary of their findings.

Applicability and Effective Date

This Executive Memorandum rescinds Policy Memorandum 3-78: Floodplain Management Program for State Agencies, issued by Governor John N. Dalton.

This Executive Memorandum applies to all executive branch state agencies and institutions and shall be effective July 1, 1997, and shall remain in full force and effect until superseded or rescinded by further executive action.

Governor

COMMONWEALTH of VIRGINIA

Department of Historic Resources

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

2801 Kensington Avenue, Richmond, Virginia 23221

H. Alexander Wise, Jr
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
TDD: (804) 367-2386

Memorandum

April 2, 1998

Historic Properties and the USBC

Questions have been raised regarding the application of the Virginia Uniform Statewide Building Code (USBC) to historic buildings particularly as it relates to accessibility. This guidance is intended to help clarify the application of the USBC to historic buildings.

Section 3406.0 of the BOCA National Building Code, which is incorporated as part of the USBC, allows special provisions for historic buildings and reads:

> The provisions of this code relating to the construction, repair, alteration, addition, restoration and movement of structures shall not be mandatory for existing buildings or structures identified and classified by the federal, state or local government authority as historic buildings, when such buildings are judged by the code official as safe and in the interest of the public health, safety, and welfare regarding any proposed construction, alteration, repair, addition and relocation.

Simply stated, when a property is listed on or eligible for the Virginia Landmarks Register or is designated a contributing building to a state, county, or city district, the building need not strictly comply with the USBC. The local code official determines the extent of the exemption from USBC requirements.

Because most historic buildings are not exempt from providing accessibility under the Americans with Disabilities Act (ADA) requirements, the ADA should be followed in planning alterations to historic buildings. The ADA offers alternative requirements for properties that cannot be made accessible without "threatening or destroying the historic significance of the property" (4.1.7 of ADAAG). Owners of such properties should contact the Department of Historic Resources (the State Historic Preservation Office) to determine if the special accessibility provisions for historic properties apply. When special provisions are warranted, this office will document justification for the allowance.

Questions pertaining to these issues should be directed to William Mills Crosby of the Department of Historic Resources or the local city, county or town USBC code official. Staff of the Division of Building and Fire Regulation at the Department of Housing and Community development are also available for technical assistance.

H. Alexander Wise, Jr., Director
Department of Historic Resources

Warren C. Smith, Director
Department of Housing and Community Development

Petersburg Office
10 Courthouse Avenue
Petersburg, VA 23803
Tel: (804) 863-1620
Fax: (804) 863-1627

Portsmouth Office
612 Court Street, 3rd Floor
Portsmouth, VA 23704
Tel: (804) 396-6707
Fax: (804) 396-6712

Roanoke Office
1030 Penmar Avenue, SE
Roanoke, VA 24013
Tel: (540) 857-7585
Fax: (540) 857-7588

Winchester Office
107 N. Kent Street, Suite 203
Winchester, VA 22601
Tel: (540) 722-3427
Fax: (540) 722-7535

APPENDIX K: CONSTRUCTION CHANGE ORDER PROCEDURE GUIDELINES

OVERVIEW

The Agency should require that the Contractor and A/E use the following procedures in the development of change orders to any construction project which uses the Commonwealth of Virginia General Conditions of the Construction Contract. The procedures are based on requirements of the Commonwealth of Virginia Construction and Professional Services Manual and 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 (D.G.S. Form CO-11). Procedures outlined herein will generally begin once a change in the work is identified by the Owner, 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. A. Where the Owner 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 Owner will have the A/E prepare a Request for Proposal (RFP) to the Contractor describing the requested change and asking that the Contractor submit a price proposal for accomplishing said change in the Work.

   B . Where the A/E determines that a change to the Contract Documents is necessary or desired, the A/E will obtain approval from the Owner to prepare an RFP to the Contractor describing the requested change and asking that the Contractor submit a price proposal for accomplishing said change in the Work.

   C. Where the Contractor desires to make a substitution and/or where the Contractor desires to delete a requirement for Work described in the Contract Documents, or where the Contractor determines that the direction provided by the Owner or the A/E constitutes a change in the Work required by the Contract Documents, the Contractor shall prepare a price proposal for same and request that the Owner issue a Change Order.

   D. Where unit prices for Work were requested in the Bid Form and included in the Contract [reference General Conditions Section 38(a)(2)], the Contractor and the A/E will agree upon the actual quantity of the Work performed and multiply by the unit price included in the contract to determine the value of such Work accepted. If the value of

such Work is more than or less than the value for such Work included in the Contract Price, a Change Order will be prepared by the A/E to increase/decrease the Contract Price to reflect the Work performed and accepted.

E. Where Work or changes in the Work are to be performed under the procedures described in General Conditions Section 38(a)(3), the A/E shall prepare a Change Order describing the Work to be performed and directing the Contractor to keep an accounting of all labor, material and associated costs of performing the Work. The Change Order shall cite General Conditions Section 38(a)(3) as the basis for determining the cost of such Work and shall identify any specific requirements or formats not specified in Section 38(a)(3) which the Contractor will be required to use. One or more subsequent Change Orders will be issued to adjust the Contract Price and/or Time and each shall cite or reference the initial Change Order authorizing such Work to be done using this method for determining price and time compensation.

2. The Contractor will send his pricing proposal for the Change Order to the A/E and Owner. To facilitate analysis by the Owner 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

The general contractor and each affected subcontractor and sub-subcontractor must sign these forms.

3. When a mutually agreed price has been determined, the A/E shall make his written recommendation to the Owner 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 owner by the A/E unless the Owner was an active participant in the price negotiations.

4. If the Change Order proposal is acceptable, the Owner shall have a Change Order prepared.

5. The A/E shall prepare the Change Order form (Form CO-11) and the Change Order Justification (CO-11a) accompanied by a fall description of the change, including drawings if applicable, and copies of the estimate sheets used to reach the mutually agreeable price. The A/E will forward Form CO-11 to the Contractor for signature.

6. The Contractor will forward the signed Form CO 11 to the Owner. All backup material must be provided with each copy of the change order.

<u>IMPORTANT</u>: NO CHANGE ORDER WILL BE APPROVED IF THE LABOR, MATERIAL, AND EQUIPMENT ARE NOT ITEMIZED ON THE BREAKDOWN SHEETS (GC 1, SC 1, and SS 1).

7. Change Order approval authorities are described in Chapter 10 of the Construction and Professional Services Manual and Section 38 of the General Conditions.

8. No work on any change order shall be accomplished without the approval of the Owner and, if applicable, the Director, Department of General Services. Any work accomplished prior to the receipt of the fully executed change order is done at the Contractor s risk and will be removed at Contractor expense should the change order not be approved. No payment for work covered by a change order shall be invoiced or paid until the fully executed change order has been received.

9. The Owner will distribute approved Change Orders to the A/E and Contractor.

CONSTRUCTION CHANGE ORDER FORMS

Standard DGS forms and formats are available for download from the DGS Forms Center (http://forms.dgs.virginia.gov).

The following Construction Change Order forms are available for download from the Forms Center:

Form Number	Description	File Type
DGS-30-092	CO-11, Change Order (Construction)	Excel
DGS-30-096	CO-11a, Change Order Justification (incl'd w/ CO-11)	Excel
DGS-30-200	GC-1, Change Order Estimate (General Contractor's)	Excel
DGS-30-204	SC-1, Change Order Estimate (Subcontractor's)	Excel
DGS-30-208	SS-1, Change Order Estimate (Sub-subcontractor's)	Excel

To view/download the latest version of these forms, visit the website listed above and enter the Form Number 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 L: MEMORANDUM OF UNDERSTANDING (DGS and DHCD)

Reserved.

Being revised.

APPENDIX M: STRUCTURAL AND SPECIAL INSPECTIONS

The 2000 VUSBC Article 1, Section 113.2, "Special Inspections," requires special inspections to be performed on a project and cites VUSBC Section 1704, requirements for Special Inspections. These inspections have been, heretofore, provided on state projects by a combination of the Owner's Project Inspection, the A/E and the Owner's independent testing lab. CPSM Section 815 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 Agency shall review the list of Special Inspections for the applicable code (1996 or 2000), make appropriate notations on the list and forward the marked-up list with the completed Statement of Structural & Special Inspections, Form CO-6a, to BCOM 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 Owner's Project Inspector/Clerk of the Works will observe day-to-day operations and report deviations/discrepancies in the materials and/or work versus contract documents and approved submittals;

- the Owner's test lab will for the indicated items make on-site inspections, measurements, tests and sample collections, make applicable laboratory tests and submit copies of the reports to the Owner, 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, the Agency's Project Inspector and the Agency's Project Manager or responsible person shall complete the Final Report of Structural & Special Inspections, Form CO-13.1b, and submit to BCOM as soon as completed but prior to the substantial completion inspection report.

- The four page lists of special inspections related to either the 1996 VUSBC or the 2000 VUSBC are available on our website and may be used as a guide for the A/E in preparing the documents and in assuring that the inspections are made to obtain substantial completion and a Certificate of Occupancy.

STRUCTURAL & SPECIAL INSPECTION FORMS

Standard DGS forms and formats are available for download from the DGS Forms Center (http://forms.dgs.virginia.gov).

The following Structural and Special Inspection forms are available for download from the Forms Center:

Form Number	Description	File Type
DGS-30-048	CO-6a, Structural & Special Inspections, Statement of	Word
DGS-30-052 (1996)	CO-6b, Structural & Special Inspections, Listing of Required	Excel
DGS-30-052 (2000)	CO-6b, Structural & Special Inspections, Listing of Required	Excel
DGS-30-053	CO-6c, Contractor's Statement of Responsibility for Quality Assurance	Word
DGS-30-120	CO-13.1b, Final Report of Structural & Special Inspections	Word
DGS-30-124	CO-13.1b-twr, Final Report of Structural & Special Inspections for a Communication Tower	Word

To view/download the latest version of these forms, visit the website listed above and enter the Form Number 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 N: PROJECT INSPECTION

DUTIES OF THE PROJECT INSPECTOR / CLERK OF THE WORKS

The Project Inspector shall meet the CPSM Chapter 7, Section 701.13 criteria and 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 for Capital Outlay Projects. This listing supplements and expands upon the duties, functions and responsibilities generally described in Chapter 10 of the **Manual** and in Section 16 of the **General Conditions of the Construction Contract**. The Project Inspector is an employee of the Owner and is responsible to the Owner for performing the duties, observations, and services described. 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**. Administrative duties may be assigned to / performed by a Clerk of the Works in support of the Project Inspector

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 Owner ways to alleviate identified problems. Identify all work not done in accord with the Contract Documents and report it to the Owner and A/E.

- Immediately report all discrepancies in the Contractor's work to the Architect/Engineer and the Owner. 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. (See Formats on the DGS Forms Website at http://forms.dgs.virginia.gov)

- 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 deliveredÿfor 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 Owner 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 Owner 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 Owner 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 Owner, 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 Owner's Testing & Inspection agents.

- Verify invoices for on-site tests/site visits of independent testing entities, which are to be paid by the Owner.

- Submit to the Owner 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. (See Formats in Appendix N of the Manual.)

- 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 Owner 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 owner'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 Owner 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 jobsite:
    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. Owner'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 Owner on the acceptability of all proposals submitted by the Contractor for changes initiated by the Owner or Architect, and the acceptability of all claims for change orders initiated by the Contractor.

- The Inspector shall confirm to the Owner 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 General Contractor, and executed change orders from the Architect. He shall file copies with the Owner monthly.
- Throughout construction, the Inspector shall review the Contractor's detailed schedule and advise the owner on the Contractor's progress and all other construction scheduling issues. He shall monitor the schedule, notify the owner 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 Owner 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. He shall advise the Architect and Owner whether 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 Owner and Architect to approve or to revise the Certificate and application for payment.

- The Owner may assign the Project Inspector other duties related to the project.

The Project Inspector has no authority to and shall not:

1. Authorize deviations from the Contract Documents;

2. Enter into areas of responsibility of the Contractor's superintendent;

3. Issue directions regarding construction means, methods, techniques, sequences or procedures, or safety precautions and programs in connection with the Work;

4. Authorize or suggest that the Owner occupy the project in whole or in part;

5. Issue a certificate for payment.

Supervisor: The Inspector shall report to the Owner's Project Manager.

CHECKLIST OF PROJECT INSPECTOR / CLERK OF THE WORKS DUTIES

1. REPORTS/RECORDS (See Sample Formats for Reports)

___ Photographs (progress and non-conforming work).

___ Daily reports (prepare and maintain standard form).

___ Weekly reports (prepare and maintain summary of daily report).

___ Monthly reports (prepare and maintain summary of weekly report).

___ Record drawings (review periodically).

___ Notify A/E and Owner 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, Owner).

___ Safety notification (to GC, A/E, Owner).

___ Understands and maintains clarification requests.

2. MEETINGS (ATTEND, REVIEW MINUTES AND MAINTAIN COPIES)

___ Preconstruction meeting.

___ Monthly pay request.

___ Interim A/E inspection.

___ Pre-roofing conference.

___ Substantial Completion Inspection.

___ Final Inspection.

___ Coordination meetings.

___ Records Owner's minutes of meetings when A/E is absent.

3. SUBMITTALS (RECEIVE, USE, KEEP TRACK OF)

___ 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, Owner, superintendent, Architect/Engineer, consultants, special inspectors.

___ Special inspection reports.

___ Project inspector reports.

___ Minutes of meetings.

___ Operation and maintenance manuals, and instructions.

___ Any other documents and revisions resulting from issues concerning work.

4. INSPECTIONS/QUALITY CONTROL

___ Inspects all work and materials for conformance to Contract Documents, shop drawings, change orders.

___ Coordinates special inspections.

___ Judges clean-up effectiveness. If ineffective,notifies A/E and Owner of problems.

___ Verifies approved erosion & sediment control plan is on site and is being followed daily. Notifies A/E and Owner of deficiencies.

___ Verifies Contractor's disposal site has been approved.

___ Verifies that off site storage for Contractor materials is approved.

___ Verifies Contractor records proper disposal of hazardous material.

5. SCHEDULING/PAYMENTS

___ Assists A/E to verify accuracy of CO-12 quantities.

___ Compares work progress to scheduling.

___ Notifies A/E and Owner of Contractor's failure to comply with schedule.

___ Verifies Contractor time and materials for change orders and unit prices.

___ Advises Owner and A/E if separate Contracts are being executed.

6. PROJECT CLOSE OUT

___ Verifies readiness for substantial completion inspection.

___ Verifies readiness for final inspection.

___ Turns over complete and organized submittals, reports, records to Owner.

___ Provides list of unresolved issues.

___ Reports status of separate contracts at substantial completion inspection.

___ Coordinates Contractor's training of Owner's forces.

___ Receives and keeps track of punch list.

CONSTRUCTION & PROFESSIONAL SERVICES MANUAL – 2004

APPENDIX O: SMALL BUSINESSES AND BUSINESSES OWNED BY WOMEN AND/OR MINORITIES (SWAM)

Executive Order 29, issued in July 2002 by Governor Warner, established the framework for the participation of small businesses and businesses owned by women and minorities in the Commonwealth's purchasing programs. Since EO 29 was issued, the Commonwealth has made significant progress towards diversifying its supply chain.

The Governor has now approved certain key recommendations of the Intersecretarial Task Force on Minority Procurement. These recommendations both continue and expand the thrust of E0 29 by directing agencies to adopt more specific and extensive remediation strategies.

SB 598 adopted by the 2004 General Assembly provides that, when purchases are made under a remedial plan established by the Governor, they may be partially exempt from the VPPA.

The Governor's Chief of Staff, William H. Leighty, issued a Memorandum "SUBJECT: SWAM Procurement" dated July 30, 2004 to Heads of Executive Branch Agencies, Independent Agencies, and Institutions of Higher Education. The Memorandum addresses Governor Warner's plans for increasing state procurement from small, women-owned, and minority-owned (SWAM) businesses. The Memorandum also directs each institution and state agency to develop a specific plan for achieving its particular SWAM procurement goals, and complete that plan by September 1, 2004 where possible, and no later than October 1, 2004. Each institution and agency's plan will likely vary from the state goals, however, the sum of the agency/institution plans should reflect the overall state aspirational goals.

Copies of the following documents are copied into and are incorporated into this Appendix O of this Construction and Professional Services Manual:

- Executive Order 29, issued in July 2002 by Governor Warner
- SB 598 adopted by the 2004 General Assembly
- Governor's Chief of Staff, William H. Leighty, issued a Memorandum "SUBJECT: SWAM Procurement" dated July 30, 2004 with Attachment.

COMMONWEALTH OF VIRGINIA

OFFICE OF THE GOVERNOR

Executive Order 29 (2002)

EQUAL OPPORTUNITY IN STATE PROCUREMENT

Meeting the challenges of the 21st century and the New Economy demands that the Commonwealth of Virginia maximize the participation of its citizens and enterprises in the commercial life of the Commonwealth. Thus, it is the policy of the Commonwealth to make sure that small businesses and businesses owned by women and minorities receive every opportunity to compete for the Commonwealth's expenditures for goods and services. Ensuring the inclusion of these businesses in state procurement processes constitutes not only good public policy but also good business and enlightened self-interest.

Just as equal employment opportunity must be an integral part of normal personnel policy, procedures, and practices, so the use of small businesses and businesses owned by women and minorities must be an important feature of the Commonwealth's normal purchasing policy, procedures, and practices. No potential supplier should be precluded from consideration on the basis of race, color, religion, gender, age, or national origin. Every attempt must be made to fully utilize all of the Commonwealth's resources, human as well as material, in an effort to obtain high quality goods and services at reasonable costs.

Every employee who is delegated the responsibility either directly or indirectly to commit the expenditure of funds for the purchase of goods and services on behalf of the Commonwealth is charged with making the objective of supplier diversity a reality. Success depends upon the full, unqualified participation and commitment of all such employees. Employees must conduct all procurement procedures and practices in a fair and impartial manner, avoiding any impropriety or appearance thereof.

The Virginia Public Procurement Act (VPPA), in Section 2.2-4310(A) of the *Code of Virginia,* prohibits all public bodies from discriminating against anyone seeking a contract from the state on the basis of that person's race, religion, color, sex, or national origin. Additionally, whenever a public body engages in a solicitation, it is required to "include enterprises selected from a list made available by the Department of Minority Business Enterprise." The Department of General Services' Procurement and Surplus Property Manual defines solicitation to include Invitations for Bids (IFB), Requests for Proposals (RFP), telephone calls, or any other document issued by the state to obtain bids or proposals for the purpose of entering into a contract.

Under Section 2.2-4310(B) of the VPPA, each public body is required to develop a written program "to facilitate the participation of small enterprises and enterprises owned by women and minorities in procurement" that includes cooperation with the Department of Minority Business Enterprise, the United States Small Business Administration, and other public or private agencies. These programs must include provisions to ensure that the public body does not discriminate in the soliciting or awarding of contracts and that, when all solicitations are made, there are enterprises included in the solicitation selected from a list made available by the Department of Minority Business Enterprise.

By virtue of the authority vested in me under Article V, Section 1 of the Constitution of Virginia and Sections 2.2-103, 2.2-104, 2.2-106, and 2.2-1400 of the *Code of Virginia*, I hereby direct the Cabinet and all heads of all state agencies and public bodies to take the following action to implement the equal opportunity and nondiscrimination requirements set forth in the VPPA:

Each Cabinet Officer must submit to the Chief of Staff no later than August 15 of each fiscal year a written program from each agency or public body within his or her secretariat that aims to facilitate the participation of small businesses and businesses owned by women and minorities in procurement transactions with the agency or public body that fiscal year. The first such report is due by August 15, 2002.

Such programs must include provisions to ensure that the agency or public body does not discriminate in the soliciting or awarding of contracts in violation of Section 2.2-4310 of the *Code of Virginia* and that, when solicitations are made, businesses are included in the solicitation that are selected from a list made available by the Department of Minority Business Enterprise. Each written program must address minority prime contracting and subcontracting and include strategies for continuous improvement in both areas.

Each agency's or public body's written program must be reviewed and approved by the applicable Secretary with the advice and assistance of the Secretary of

Administration, the Director of the Department of Minority Business Enterprise, and the Director of the Department of General Services.

To assist agencies in the development of required written programs, the Chief of Staff is authorized to develop a model written program, in consultation with the Secretary of Administration, the Department of Minority Business Enterprise, the Department of General Services, and the Office of the Attorney General.

This Executive Order shall be effective upon its signing and shall remain in full force and effect until June 30, 2006, unless amended or rescinded by further executive order.

Given under my hand and under the Seal of the Commonwealth of Virginia, this 2nd day of July 2002.

_____
Mark R. Warner, Governor

Attest:

Text of SB598 is as follows:

Be it enacted by the General Assembly of Virginia:

1. That §§ 2.2-4310 and 2.2-4343 of the Code of Virginia are amended and reenacted, and that the Code of Virginia is amended by adding a section numbered 15.2-965.1 as follows:

§ 2.2-4310. Discrimination prohibited; participation of small, women- and minority-owned business.

A. In the solicitation or awarding of contracts, no public body shall discriminate against a bidder or offeror because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment. Whenever solicitations are made, each public body shall include businesses selected from a list made available by the Department of Minority Business Enterprise.

B. All public bodies shall establish programs consistent with this chapter to facilitate the participation of small businesses and businesses owned by women and minorities in procurement transactions. The programs established shall be in writing and shall include cooperation with the Department of Minority Business Enterprise, the United States Small Business Administration, and other public or private agencies. State agencies shall submit annual progress reports on minority business procurement to the Department of Minority Business Enterprise.

C. *Whenever there exists (i) a rational basis for small business enhancement or (ii) a persuasive analysis that documents a statistically significant disparity between the availability and utilization of women- and minority-owned businesses, the Governor is authorized and encouraged to require state agencies to implement appropriate enhancement or remedial measures consistent with prevailing law. For the purposes of this subsection, "state agency" means any authority, board, department, instrumentality, institution, agency or other unit of state government. "State agency" shall not include any county, city or town.*

D. In the solicitation or awarding of contracts, no state agency, department or institution shall discriminate against a bidder or offeror because the bidder or offeror employs ex-offenders unless the state agency, department or institution has made a written determination that employing ex-offenders on the specific contract is not in its best interest.

§ 2.2-4343. Exemption from operation of chapter for certain transactions.

A. The provisions of this chapter shall not apply to:

1. The Virginia Port Authority in the exercise of any of its powers in accordance with Chapter 10 (§ 62.1-128 et seq.) of Title 62.1, provided the Authority implements, by policy or regulation adopted by the Board of Commissioners and approved by the Department of General Services, procedures to ensure fairness and competitiveness in the procurement of goods and services and in the administration of its capital outlay program. This exemption shall be applicable only so long as such policies and procedures meeting the requirements remain in effect.

2. The Virginia Retirement System for selection of services related to the management, purchase or sale of authorized investments, including but not limited to actuarial services. Selection of these services shall be governed by the standard set forth in § 51.1-124.30.

3. The State Treasurer in the selection of investment management services related to the external management of funds shall be governed by the standard set forth in § 2.2-4514, and shall be subject to competitive guidelines and policies that are set by the Commonwealth Treasury Board and approved by the Department of General Services.

4. The Department of Social Services or local departments of social services for the acquisition of motor vehicles for sale or transfer to Temporary Assistance to Needy Families (TANF) recipients.

5. The University of Virginia in the selection of services related to the management and investment of its endowment funds, endowment income, or gifts pursuant to § 23-76.1. However, selection of these services shall be governed by the Uniform Management of Institutional Funds Act (§ 55-268.1 et seq.) as required by § 23-76.1.

6. The Board of the Virginia College Savings Plan for the selection of services related to the operation and administration of the Plan, including, but not limited to, contracts or agreements for the management, purchase, or sale of authorized investments or actuarial, record keeping, or consulting services. However, such selection shall be governed by the standard set forth in § 23-38.80.

7. Public institutions of higher education for the purchase of Items for resale at retail bookstores and similar retail outlets operated by such institutions. However, such purchase procedures shall provide for competition where practicable.

8. The purchase of goods and services by agencies of the legislative branch that may be specifically exempted therefrom by the Chairman of the Committee on Rules of either the House of Delegates or the Senate. Nor shall the contract review provisions of § 2.2-2011 apply to such procurements. The exemption shall be in writing and kept on file with the agency's disbursement records.

9. Any town with a population of less than 3,500, except as stipulated in the provisions of §§ 2.2-4305, 2.2-4308, 2.2-4311, 2.2-4315, 2.2-4330, 2.2-4333 through 2.2-4338, 2.2-4343.1, and 2.2-4367 through 2.2-4377.

10. Any county, city or town whose governing body has adopted, by ordinance or resolution, alternative policies and procedures which are (i) based on competitive principles and (ii) generally applicable to procurement of goods and services by such governing body and its agencies, except as stipulated in subdivision 12.

This exemption shall be applicable only so long as such policies and procedures, or other policies and procedures meeting the requirements of § 2.2-4300, remain in effect in such county, city or town. Such policies and standards may provide for incentive contracting which offers a contractor whose bid is accepted the opportunity to share in any cost savings realized by the locality when project costs are reduced by such contractor, without affecting project quality, during construction of the project. The fee, if any, charged by the project engineer or architect for determining such cost savings shall be paid as a separate cost and shall not be calculated as part of any cost savings.

11. Any school division whose school board has adopted, by policy or regulation, alternative policies and procedures which are (i) based on competitive principles and (ii) generally applicable to procurement of goods and services by the school board, except as stipulated in subdivision 12.

This exemption shall be applicable only so long as such policies and procedures, or other policies or procedures meeting the requirements of § 2.2-4300, remain in effect in such school division. This provision shall not exempt any school division from any centralized purchasing ordinance duly adopted by a local governing body.

12. Notwithstanding the exemptions set forth in subdivisions 9 through 11, the provisions of subsections C and D of § 2.2-4303, and §§ 2.2-4305, 2.2-4308, 2.2-4311, 2.2-4315, 2.2-4317, 2.2-4330, 2.2-4333 through 2.2-4338, 2.2-4343.1, and 2.2-4367 through 2.2-4377 shall apply to all counties, cities and school divisions, and to all towns having a population greater than 3,500 in the Commonwealth.

The method for procurement of professional services set forth in subdivision 3 a of § 2.2-4301 in the definition of competitive negotiation shall also apply to all counties, cities and school divisions, and to all towns having a population greater than 3,500, where the cost of the professional service is expected to exceed $30,000 in the aggregate or for the sum of all phases of a contract or project. A school board that makes purchases through its public school foundation or purchases educational technology through its educational technology foundation, either as may be established pursuant to § 22.1-212.2:2 shall be exempt from the provisions of this chapter, except, relative to such purchases, the school board shall comply with the provisions of §§ 2.2-4311 and 2.2-4367 through 2.2-4377.

13. A public body ~~which~~ *that* is also a utility operator may purchase services through or participate in contracts awarded by one or more utility operators ~~which~~ *that* are not public bodies for utility marking services as required by the Underground Utility Damage Prevention Act (§ 56-265.14 et seq.). A purchase of services under this subdivision may deviate from the procurement procedures set forth in this chapter upon a determination made in advance by the public body and set forth in writing that competitive sealed bidding is either not practicable or not fiscally advantageous to the public, and the contract is awarded based on competitive principles.

14. Procurement of any construction or planning and design services for construction by a Virginia nonprofit corporation or organization not otherwise specifically exempted when (i) the planning, design or construction is funded by state appropriations of $10,000 or less or (ii) the Virginia nonprofit corporation or organization is

obligated to conform to procurement procedures that are established by federal statutes or regulations, whether those federal procedures are in conformance with the provisions of this chapter.

15. Purchases, exchanges, gifts or sales by the Citizens' Advisory Council on Furnishing and Interpreting the Executive Mansion.

16. The Eastern Virginia Medical School in the selection of services related to the management and investment of its endowment and other institutional funds. The selection of these services shall, however, be governed by the Uniform Management of Institutional Funds Act (§ 55-268.1 et seq.).

17. The Department of Corrections in the selection of pre-release and post-incarceration services.

18. The Board of the Chippokes Plantation Farm Foundation in entering into agreements with persons for the construction, operation, and maintenance of projects consistent with the Chippokes Plantation State Park Master Plan approved by the Director of the Department of Conservation and Recreation pursuant to the requirements of § 10.1-200.1 and designed to further an appreciation for rural living and the contributions of the agricultural, forestry, and natural resource based industries of the Commonwealth, provided such projects are supported solely by private or nonstate funding.

19. The purchase of goods and services by a local governing body or any authority, board, department, instrumentality, institution, agency or other unit of state government when such purchases are made under a remedial plan established by the Governor pursuant to subsection C of § 2.2-4310 or by a chief administrative officer of a county, city or town pursuant to § 15.2-965.1.

B. Where a procurement transaction involves the expenditure of federal assistance or contract funds, the receipt of which is conditioned upon compliance with mandatory requirements in federal laws or regulations not in conformance with the provisions of this chapter, a public body may comply with such federal requirements, notwithstanding the provisions of this chapter, only upon the written determination of the Governor, in the case of state agencies, or the governing body, in the case of political subdivisions, that acceptance of the grant or contract funds under the applicable conditions is in the public interest. Such determination shall state the specific provision of this chapter in conflict with the conditions of the grant or contract.

§ 15.2-965.1. Participation of small, women- and minority-owned businesses.

Any locality may enact an ordinance providing that whenever there exists (i) a rational basis for small business enhancement, or (ii) a persuasive analysis that documents a statistically significant disparity between the availability and utilization of women- and minority-owned businesses, the chief executive of the local governing entity shall be authorized and encouraged to require implementation of appropriate enhancement and remedial measures consistent with prevailing law.

2. That any analysis that is used by the Governor or a locality as a basis for determining the existence of discrimination based on race or gender in the awarding of contracting opportunities shall use the standards established by the United States Supreme Court in *The City of Richmond v. J. A. Croson Company*, 488 U.S. 469, (1985) and any subsequent decisions of the United States Supreme Court or other binding authority concerning such standards.

COMMONWEALTH of VIRGINIA

Office of the Governor

Mark R. Warner
Governor

William H. Leighty
Chief of Staff

July 30, 2004

MEMORANDUM

TO: Heads of Executive Branch Agencies, Independent Agencies, and Institutions of Higher Education

C: The Governor's Cabinet

FROM: William H. Leighty

SUBJECT: SWAM Procurement

This memorandum addresses Governor Warner's plans for increasing state procurement from small, women-owned, and minority-owned (SWAM) businesses. Normally I would distribute this type of information through the Leadership Communiqué. However, because of the high priority that Governor Warner places on this topic, I am distributing this to you directly. This memorandum supplements and supercedes a memorandum dated July 6, 2004 that you may have received from DMBE.

Executive Order 29, issued in July 2002 by Governor Warner, established the framework for the participation of small businesses and businesses owned by women and minorities in the Commonwealth's purchasing programs. Since EO 29 was issued, the Commonwealth has made significant progress towards diversifying its supply chain. For example, the 3rd Quarter FY 04 SWAM Procurement Report showed that, over the last 7 quarters, purchases from minority-owned vendors had risen from 1.57% to 2.55% and from women-owned vendors from 0.93% to 2.10%. However, the progress we are making is slow and unsatisfactory.

The Governor has now approved certain key recommendations of the Intersecretarial Task Force on Minority Procurement. These recommendations both continue and expand the thrust of E0 29 by directing agencies to adopt more specific and extensive remediation strategies. These strategies are based in

significant part on the findings of the *Procurement Disparity Study of the Commonwealth of Virginia* prepared earlier this year by MGT of America.

I have attached to this memorandum those recommendations that you and your agency or institution need to implement. In particular, note that the recommendations include statewide aspirational procurement goals for small, women and minority businesses. Your agency or institution will need to develop a specific plan for achieving your particular SWAM procurement goals, and complete that plan by September 1, 2004 where possible, and no later than October 1, 2004. Each institution and agency's plan will likely vary from the state goals, and that is to be expected. This is not a one-size fits all situation. However, we expect the sum of the agency/institution plans to reflect the overall state aspirational goals, so be sure to push for plans that help us achieve these important goals.

Your procurement officers will be concerned about the relationship of the SWAM procurement rules and goals and the Virginia Public Procurement Act (VPPA) and other procurement rules. SB 598 adopted by the 2004 General Assembly provides that, when purchases are made under a remedial plan established by the Governor, they may be partially exempt from the VPPA. Therefore, the Department of General Services/Division of Purchasing and Supply will soon distribute changes to the Agency Procurement and Surplus Property Manual. Entities such as

VITA, decentralized institutions, and independent agencies will need to adopt similar changes to their rules and procedures.

Please note that the SWAM procurement rules do not direct or encourage agencies or institutions to accept a bad business deal or a lower quality vendor, product or service in order to meet SWAM goals. To the contrary, these SWAM rules specifically state that quality, price and terms should not be sacrificed in any meaningful way in order to achieve our SWAM procurement goals. I am confident that we can achieve these SWAM goals without reducing quality or increasing costs.

If you have questions about these rules generally or about preparing your plan, please call DMBE for assistance. For example, there may be a procurement category of importance to your agency/institution but your purchasers have been unable to identify minority vendors. DMBE can help in identifying those vendors. DMBE can be reached by calling Ed Hamm or Jean Bass at 786-6585. Or perhaps your agency/institution has questions about how to implement the new procurement rules regarding small purchases or issues regarding construction contracts. DMBE and DGS can help with these issues. At DGS, you can call Rich Sliwoski for the construction contract issues and Ron Bell for other

questions. They can be reached at 804-786-3311. For technology purchases, Susan Wooley at VITA can provide guidance. Susan can be reached at 804-343-9004.

Thank you for your help in achieving these important procurement goals.

Attachment Below

July 2004

SWAM Procurement Programs
to be
Implemented by Agencies and Institutions

A. Aspirational Goals

1. **Statewide Goals.** Based on the Procurement Disparity Study, the Governor has adopted the statewide aspirational procurement goals set forth below. The percentage goals set forth below apply to the dollar value of the applicable contracts and procurements.

   a. Small Business Procurement Goal: Adopt a statewide aspirational small business goal of 40% combined prime and sub contracts with the state.

   b. In those procurement areas identified in the Disparity Study as having a minority availability above 1.0%, adopt the following specific statewide aspirational procurement goals for minority and women-owned businesses: **(Please note that the following detailed goals are statewide goals and not individual agency goals, see paragraph A 2 for an explanation.)**

Construction Prime Contractors

AA*	3.56%
NW*	5.56%
HA*	1.47%

Construction Sub Contractors

AA	5.03%
HA*	3.73%
AsA*	2.02%
NW	6.95%

A&E and Professional Services Prime Contractors

AA	4.97%
HA	2.48%
AsA	4.97%
NW	16.04%

Other Services – Prime Contractors

AA	8.52%
HA	2.51%
AsA	4.30%
NW	21.72%

Goods and Supplies

AA	4.23%
HA	1.51%
AsA	5.08%
NW	17.33%

* AA means African American

*NW means Non-minority women
*HA means Hispanic American
*AsA means Asian American

2. **Agency Plans.** Each agency and institution of the Commonwealth shall adopt an annual SWAM Procurement Plan that will specify that agency's or institution's plans and goals for SWAM procurement. Each agency's initial SWAM Procurement Plan shall be completed by September 1, 2004 where possible and in any event by September 15, 2004. **Note: agency SWAM procurement plans should include overall goals for establishing a "best effort" of purchasing from minority business vendors and you do not need to be establish agency goals broken down by ethnicity, as are the statewide goals.** To assist agencies in developing their SWAM Procurement Plans, DMBE will develop and distribute plan guidelines that agencies may follow. Because of differences in the available vendors and goods and services purchased by various agencies and institutions, it is anticipated that each agency's and institution's SWAM Procurement Plan will vary according to that agency's or institution's particular procurement circumstances. Some agency plans will call for SWAM procurement at levels below the statewide aspirational goals, and some will call for procurement at levels above the statewide aspirational goals. One size will not fit all. Where applicable and verifiable, "second tier" SWAM participation should be considered by agencies and institutions in preparing their agency plans in those circumstances where such second tier participation is assured by contract or other firm arrangement.

3. **Publication of Results.** Beginning with the 4th Quarter FY04 report, the quarterly SWAM Reports shall be made electronically and publicly available on the DMBE website, delineated by Secretariat and by agency and institution.

4. **Management Evaluation**. Progress toward achievement of an agency's or institution's SWAM Procurement Plan shall be included in the evaluation criteria for the chief executive officer for each such agency and institution, and shall be included by such chief executive officer in the evaluation criteria for their applicable senior management and procurement personnel.

B. Certification

Certification of SWAM vendors is necessary in order to obtain accurate and easily accessible data on SWAM Procurement and to assure a consistent and appropriate approach to compliance issues. In the past, many SWAM vendors saw no benefit in becoming certified so failed to do so. These new programs will provide important incentives to SWAM vendors to encourage them to become certified.

1. **Certified Vendors**. Beginning October 1, 2004, for the purposes of state procurement rules, no vendor shall be considered a Small Business Enterprise, a Minority Owned Business Enterprise or a Women-Owned Business Enterprise, or be entitled to the benefits of the state SWAM procurement opportunities, unless certified as such by the Commonwealth. All certified SWAM vendors shall be assigned a specific identification number, and through that process, standardized reports will be able to be generated from CARS, eVA and other state reporting systems. No vendor shall be required to certify under this program and no vendor shall be excluded from doing business with the Commonwealth because of their failure to certify as a SWAM vendor; provided, however, a qualified vendor who fails to certify shall be disqualified for participation in the applicable SWAM procurement programs.

2. **Definitions.** The definitions set forth below shall be applicable to SWAM vendors doing business with the Commonwealth, although federal definitions shall govern with respect to meeting federally funded highway construction and other applicable federally financed programs goals, and that, to the extent necessary, the Governor proposes legislation to codify these definitions for the purpose of this SWAM procurement program.

Minority-Owned Business Enterprise: A business concern which is at least 51 percent owned by one or more minorities or in the case of a corporation, partnership or limited liability company or other entity, at least 51 percent of the equity ownership interest in which is owned by one or

more minorities and whose management and daily business operations are controlled by one or more of such individuals.

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

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

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

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

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

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

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

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

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 individuals who own it.

C. Contract Sizing

The size of a proposed procurement can limit the potential participation by SWAM vendors. The following rules are designed to address that issue, while being sure to preserve the cost-savings and other benefits that the Commonwealth has achieved through bundling contracts and other procurement initiatives.

1. **Assessing Bundled Contracts**. For goods provided under statewide or regionally bundled contracts for which there are qualified available SWAM vendors, but with respect to which the size of such contract appears to limit SWAM vendors from bidding or winning such contracts, the contracting agency or institution seek to reduce the size of the contracts to increase the pool of potential bidders to include SWAM vendors. If the effect of reducing the size of such contracts is to cause a meaningful increase in price, a significant degradation in terms and conditions, a significant decrease in administrative efficiency or non-compliance with applicable federal contracting requirements or funding conditions, then the contracting agency or institution shall not be obligated to so reduce the contract size.

2. **Prime Contractor SWAM Procurement Plan**. Any contracting agency or institution that has established a SWAM Procurement Plan with identified goals for minority and women-owned business procurement, may include those goals as conditions or pre-qualification requirements in the terms and conditions for the award of any prime contract in excess of $100,000 and, if so included, may reflect those goals in the requirement for a subcontracting plan prepared and submitted prior to award for goods and non-professional services and within 30 days of award for construction and professional services. For contracts in which the subcontractor plan is due prior to award, failure to submit the plan in timely fashion shall disqualify the contractor from receiving the award. For contracts in which the subcontractor plan may be submitted within 30 days after award, failure to submit the required plan in timely fashion, including any applicable cure periods, shall be cause for contract termination or other appropriate remedies (including the obligation on the part of the contractor to continue full contract performance notwithstanding the withholding of progress payments until the required plan is submitted). A Virginia-certified M/W contractor who serves as prime contractor will receive credit for M/W subcontracting for work performed by such prime.

3. **Construction Contracts**. If the size of vertical or horizontal construction contracts appear to limit SWAM vendors from bidding or winning such contracts, then the contracting agency seek to reduce the size of the contracts to increase the pool of potential SWAM bidders. If the effect of reducing the size of such contracts is to cause a meaningful increase in price, a significant degradation in terms and conditions, a significant decrease in administrative efficiency or non-compliance with applicable federal contracting requirements or funding conditions, then the contracting agency or institution shall not be obligated to so reduce the contract size. In the case of construction contracts awarded to non-SWAM primes, the prime contractor shall seek to size the subcontracts so as to enable qualified SWAM subcontractors to bid effectively for such work so long as the effect of reducing the size of such subcontracts does not cause a meaningful increase in price or a significant degradation in terms, conditions or other applicable contract factors. In the case of non-highway construction, where appropriate for the construction job in question, the Commonwealth shall consider using a Construction Manager At Risk instead of a prime contractor in order to afford opportunities for M/W contractors to bid effectively for the work in question. Nothing contained in this paragraph shall require the contracting agency to accept contractors who do not meet applicable quality, safety and performance standards.

4. **Small Procurements**. The current procurement regulations have been modified to provide that for all small procurements under $5,000, at least one M/W Vendor be solicited. Procurement regulations applicable to IFBs and RFPs for amounts up to $100,000 that require solicitation of multiple vendors have been modified to permit award to a reasonably priced M/W Vendor or highest ranking offer that is other than the lowest priced vendor when such purchases are made by a public body that has established a SWAM Procurement Plan.

5. **Consultation with DMBE**. Each contracting agency or institution, in consultation with DMBE where practical, shall seek to identify those purchases in which contract sizing may influence the availability of purchasing opportunities to SWAM vendors (a "Size-Related Contract"). Where these purchases are identified, the agency shall determine whether there are M/W Vendors capable of meeting the purchasing requirements. If the agency identifies no M/W Vendors capable of performing the contract requirements, then the agency shall consult with DMBE to seek to identify available M/W Vendors unless contract timing issues require the agency or institution to complete the contract process before DMBE input can be obtained. For any Size-Related Contract for which the agency or institution determines that contract timing issues require contract award without identifying any M/W Vendors or consultation with DMBE, the agency or institution shall consult with DMBE promptly after award of the contract to develop potential M/W Vendors for the next similar procurement.

6. **Evidence of Compliance**. Each prime contractor who wins an award in which provision of a SWAM procurement plan is a condition to the award, shall deliver to the contracting agency or institution, on or before request for final payment, evidence and certification of compliance (subject only to insubstantial shortfalls and to shortfalls arising from subcontractor default) with the SWAM procurement plan. Final payment under the contract in question may be withhold until such certification is delivered and, if necessary, confirmed by the agency or institution, or other appropriate penalties may be assessed in lieu of withholding such payment.

D. Increasing Availability

The Disparity Study demonstrates that there is a low availability of minority firms in Virginia, relative both to the minority population in Virginia and to the availability of minority firms in adjoining states.

1. **Increasing Number of Available M/W Firms**. State agencies and institutions shall work together with DMBE and DBA to seek to increase the number of qualified M/W vendors who are available to do business with the Commonwealth. If state agencies or institutions are having difficulty in identifying sufficient available M/W vendors for particular areas of procurement, then those agencies and institutions shall work with their vendor organizations, DMBE and DBA in order to identify additional M/W vendors.

2. **Improved Data Access**. As soon as reasonably possible, in addition to its normal contract postings, each agency and institution shall post or provide accessible links to procurement information on eVA, VBO and VITA websites, in easily accessible form and in a location identified for SWAM procurement, including notices of contract opportunities. These postings will include (a) all existing term contracts with expiration dates, with such expiration dates clearly identified, (b) anticipated IFBs and RFPs that have not yet been developed including a best estimate of the date of issue of such IFBs and RFPs and contact information for potential vendors for pre-issuance contract information, and (c) other anticipated contract opportunities. This site shall be linked to the DMBE website.

E. Other

Audits. In order to assure compliance with certification requirements, SWAM subcontracting plans, and the other provisions set forth above, the contracting or certifying agency or institution, in cooperation with DMBE and DGS, 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.

APPENDIX P: BUILDING PERMIT POLICY

BUILDING PERMIT POLICY for CONSTRUCTION
STATE OWNED BUILDINGS & STRUCTURES

A Building Permit issued by the State Building Official is required for work in accord with VUSBC Section 111.0, *Application for Permit.* An Annual Permit issued by the Agency is required for work in accord with VUSBC Section 112.1.3, *Annual Permits.* No Permit is required for work in accord with VUSBC Section 111.1, *When required - Exceptions.*

General Requirements

- Applicable Codes: Virginia Uniform Statewide Building Code, 2000 edition and the Uniform Federal Accessibility Standards, April 1, 1988.
- The requirement for a Building Permit is determined by the type or character of the work. The **type of funding** (general, non-general, gift) **or program area** (capital, maintenance reserve, operating) in which the work is authorized **have no bearing on the requirement for a Building Permit**.
- *Construction documents* for work performed under the Annual Permit, are a State *Building Official* requirement, but are not required to be submitted for State *Building Official* review.
- The Agency shall submit to the State *Building Official* by July 31 of each year an Annual Permit Activity Report as of June 30 of work initiated under the Annual Permit. A report of audit conducted by the State *Building Official* or State Auditor during the Annual Permit period may be submitted for the Annual Permit Activity Report.
- HVAC, Electrical, Plumbing, Gas Piping, Fire Sprinkler, Fire Suppression, and Fire Alarm work shall be performed by, or under the supervision of, tradesmen certified by the Department of Professional and Occupational Regulation.
- The Regional Fire Marshals Office shall be notified prior to performing **building demolition**, and alterations to and relocation of Fire Sprinkler, Fire Suppression, or Fire Alarm systems by submitting a copy of the Project Permit.
- *Construction documents* for Annual Permit work, Fire Prevention Code inspection reports by the Regional Fire Marshal's Office, Property Maintenance Code inspection reports by the agency, Periodic ASME A17.1 required elevator test and inspection reports by an ASME QEI-1 certified elevator inspector, and Substantial Completion inspection reports by the agency of Division of Engineering and Buildings inspection **shall be on file** at the Physical Plant office of the agency for inspection by the State *Building Official* or Regional Fire Marshals Office.
- Code Clarifications and Technical Design Standards shall apply as indicated by Chapter 7 of the Construction and Professional Services Manual, July 1, 2004.

BUILDING PERMIT (Issued by DEB)

Character of work

Capital Projects including *structures* and site improvements

Projects involving the construction of new structures that are *occupiable*

Projects involving the site work, utility work, and foundations for Industrialized Buildings

Projects involving changing the use of a building either within the same *Use Group* or to a different *Use Group*

Projects involving removal or cutting a structural beam or bearing support

Projects involving the addition, removal, alteration, or relocation of all, or a part of, a *Means of Egress, Exit,* or *Fire Rated Assembly*

Projects requiring *Special Inspections*

Projects involving addition, removal, replacement, alteration, or relocation of *Elevators and Conveying Systems*

Projects involving the addition of or removal of an HVAC, Electrical, Plumbing, Gas Piping, Fire Sprinkler, Fire Suppression, and/or Fire Alarm System

Projects involving the following:

Mechanical – alteration or relocation of the quantity or source of ventilation, exhaust, or combustion air; alteration or relocation of boilers, water heaters, pressure vessels, or refrigeration equipment; change in refrigerant classification for replacement in kind of refrigeration equipment

Electrical – alteration or relocation of circuits greater than 1 phase, 240 volt, 50 amp or 1 phase, 277 volt, 30 amp

Plumbing – alteration or relocation of plumbing fixtures, water supply, water distribution, sanitary waste, special waste, or storm drainage

Gas Piping – alteration or relocation of fuel gas or fuel oil piping systems

Fire Sprinkler – alteration or relocation water supply or equipment other than sprinkler heads; relocation of more than 25% of sprinkler heads per story

Fire Suppression - alteration or relocation of suppression agent or equipment other than heads; relocation of more than 25% of heads per story

Fire Alarm – alteration of system logic; alteration or relocation of equipment other than alarm devices; relocation of more than 25% of alarm devices per story

Utility structures including communication towers, water tanks, and water and wastewater treatment

Roof replacement projects where the work is the replacement of more than 25 percent of an existing roof covering

Temporary structures

Demolition of structures (CO-17 Demolition Permit w/attachments required)

Requirements: *Construction documents* prepared under the supervision of, signed and sealed by a registered Architect or Engineer and submitted for review to the State Building Official.

ANNUAL PERMIT

Character of work

Projects limited to the addition, removal, alteration, or relocation of any wall or partition **that is not a part of a *Means of Egress, Exit,* or *Fire Rated Assembly***

Site improvements limited to parking lots and roads, fences, and other sitework regulated by the VUSBC

Projects limited to alteration or relocation of Mechanical, Electrical, Plumbing, Gas Piping, Fire Sprinkler, Fire Suppression, Fire Alarm not indicated above as requiring a permit to be issued by DEB

Requirements: *Construction documents* prepared under the supervision of and signed by a registered Architect or Engineer. **Regional Fire Marshal's Office acceptance of installed *Means of Egress, Exit, Fire Rated Assembly, or Fire Protection Systems*.**

Character of Work

Asbestos abatement (abatement documents shall be prepared and signed by a licensed asbestos designer)

Roof replacement projects where the work is limited to the replacement of less than 25 percent of an existing roof covering.

Replacement in kind of steep-slope (4:12 or greater) asphalt shingle roofing.

Requirements: *Construction documents* describing the work.

Character of Work

***Hot Work* including cutting, welding, Thermit welding, brazing, soldering, grinding, thermal spraying, thawing pipe, installation of torch applied roof system or any other similar work.**

Requirements: Agency shall implement safety measures in accord with the International Fire Code to prevent fire and fire spread.

NO PERMIT

Character of work

Ordinary Repairs and maintenance which are not regulated by the VUSBC

Replacement in kind of materials and equipment with that of similar characteristics in the same location

Periodic elevator tests and inspections by an ASME QEI-1 certified elevator inspector

Italicized words are as defined by the VUSBC

APPENDIX Q: QUALITY ASSURANCE CHECKLISTS

DESIGN COORDINATION

- The Working Drawing 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 work must conform to current criteria, guides, Codes and Standards established by the Division of Engineering and Buildings, 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 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. Submittals will be reviewed by the various disciplines in BCOM for compliance with requirements and standard criteria. Errors and deficiencies shall be corrected by the A/E at no additional cost to the Agency.**

- The A/E shall be responsible for the professional and technical accuracy and coordination of all designs, drawings, specifications and cost estimates of all disciplines and other work or materials furnished. This includes overlaying the plans either manually or by CADD to coordinate the locations of work in the various disciplines. Intersections of components of various disciplines shall be checked for conflicts and to assure that adequate space exists for the material to be installed where shown on the documents.

- 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.

- 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.

- Required information may be shown on plans, details, sections, notes and/or schedules as may be appropriate.

- The A/E shall determine that all work as indicated on the drawings is fully and consistently specified.

QUALITY ASSURANCE

- The following material/checklists in this chapter provide guidance to assist the A/E in reviewing the documents and represent the information the Commonwealth expects to be shown on the drawings to clearly identify the Work to be performed. The specification section numbers reflect those often used and are intended to show the types of information that should be included in the Quality Assurance check regardless of actual specification section numbering used by the A/E or where (which discipline's drawings) the information occurs on the drawings.

- Information may be shown or noted on plans, elevations, sections, details, schedules, tables, or notes as applicable to the particular item and the project scope of work. In general, where more than one type, size, thickness, class, strength, or characteristic is specified, the location and limits for each should be indicated on the drawings.

BIDDING NOTICES AND FORMS

Notice of Invitation to Bid (Advertisement)

- Project name and location shown
- Brief general description of project shown
- Specific location where Bids will be received (street address, building room number and any other special information)
- Time and date for receiving bids
- Date, Time and Location of Prebid conference
- Is attendance at Pre-Bid Conference mandatory? (Should not be mandatory unless there is specific justification.)
- Where can documents be obtained?
- How much is the deposit (and shipping charge, if any) for the bid documents?

Bid Form

- Does basic wording and format conform to standard bid form?
- Has Part A been properly edited for piles, caissons, and rock material?
- Has paragraph following Part B been included and properly edited?
- Have quantities been shown for Parts C, D, and E?
- Has Rock Excavation ben adequately addressed? Quantity shown?
- Have Additive Bid Items been clearly defined on the Bid Form?
- Have Additive Bid Items been clearly described/shown on the drawings?
- Has the Contract award statement from the Standard Bid Form been copied verbatim to the project Bid Form?
- Are there any subcontracts which have been procured separately which will be included in this contract?
- Has wording from Standard Bid Form been used to include this work?
- Has A/E filled in the number of calendar days or the required substantial completion date in the space provided for use by ALL bidders?
- Has the climatological data source to be used been indicated?

Supplemental General Conditions

- Are Supplemental General Conditions required?
- Have Supplemental General Conditions been approved by the DEB Director?
- Does wording of Supplemental General Conditions conform to Sample Format?

Have the following forms been included?

- Notice of Invitation to Bid
- Instructions to Bidders (G.S. Form E&B CO-7A)
- Prebid Question Form
- Bid Form
- The current Commonwealth of Virginia General Conditions of the Contract for Construction Projects (G.S. Form E&B CO-7)
- Supplemental General Conditions, if applicable
- Form of Agreement (G.S. Form E&B CO-9)
- Workers Compensation Insurance Certificate (G.S. Form E&B CO-9a)
- Standard Performance Bond (G.S. Form E&B CO-10)
- Standard Labor and Material Payment Bond (G.S. Form E&B CO-10.1)
- Change Order blank (G.S. Form E&B CO-11)
- Schedule of Values Format (G.S. Form E&B CO-12)
- Affidavit of Payment of Claims (G.S. Form E&B CO-13)
- Certificate of Completion by Architect/Engineer (G.S. Form E&B CO-13.1) and Certificate of Partial or Substantial Completion by Architect/Engineer (G.S. Form E&B CO-13.1a).
- Final Report of Structural & Special Inspections (G.S. Form E&B CO-13.1b)
- Certificate of Completion by Contractor (G.S. Form E&B CO-13.2) and Certificate of Partial or Substantial Completion by Contractor (G.S. Form E&B CO-13.2a).
- List of Drawings
- Submittal Register Format
- Structural and Special Inspections List

DIVISION 0 AND DIVISION 1

- Do Special Conditions conflict with the General Conditions?
- Have special conditions or requirements affecting the Contractor's Work been described in the Special Conditions?
- Is a list of Drawings included?
- Do submittal requirements conflict with Section 24 of the General Conditions?
- Have requirements for Temporary Facilities been specified?
- Are there any special construction phasing requirements or sequencing of Work?
  Have these been specified?
- Are there any special limits on Contractor access to the Work or Site?
  Have these been specified?
- Are there any special limits on Contractor hours of work?
- Are there any special requirements for giving notices to the Owner?

DIVISION 2

Section 02050 - Demolition and Removal
Show the following information on the project drawings:

- Plan of structures to be demolished
- Elevation of structures to be demolished
- Limits of demolition
- Depth of demolition and detail for termination of foundations / walls
- Locations of any monitoring stations required for vibration, wellpoints, etc
- Asbestos locations and/or statements
- Lead-based paint locations and/or statement

Section 02110 - Clearing and Grubbing
Show the following information on the project drawings:

- Limits of clearing
- Property Lines
- Trees and shrubs to remain in area to be cleared and detail of protection required
- Trees to be removed in areas which are not to be cleared
- Identify area to be totally cleared and grubbed.

Section 02200 - Earthwork (For structures and pavements; includes clearing and grubbing, excavation, fill/backfill, compaction and grading) Show the following information on the project drawings:

- Location and record of soil boring, water level observations, and test pits.
- Soil classification(s) per ASTM D 2487 and properties.
- Hydrological data including 100 year Floodplain (where available).
- Surface elevations, existing and new.
- Location of underground obstructions and existing utilities.
- Sources of borrow material and soil classification(s) of borrow, if located on state property
- Limits of areas to be cleared of trees, shrubs, and brush.
- Disposal areas for brush and wasted soil, if available on state property.
- Description/details of any special subgrade requirements or use of synthetic fiber filter fabric.
- Details of special construction such as under railroad or highway right-of-way.
- Areas to receive topsoil and to be seeded or sodded identified.
- Erosion/sediment control measures and storm water management facilities
- Typical cross sections of embankments or roadway construction indicating depths and extents of special compaction.

- Details of subsurface drain construction (include foundation drains and drains behind retaining walls).
- Have specifications been tailored for this project?
- Has "**suitable soils**" listing been tailored to suit this project?
- Have procedures for filling, backfilling and compaction been specified?
- Have specifications identified the tests to be performed on the fill/backfill and the standards to be met to assure proper compaction?

Section 02220 - General Excavation, Backfilling and Compaction
Show the following information on the project drawings:

- Surface elevations (contours, spot elevations or both), existing and new;
- Location of underground obstructions and existing utilities;
- Location of borings and test pits and logs of soil borings and test pits. Include ground water observations and topsoil thickness encountered in boring, soil classifications.
- Location of borrow and disposal area if located on state property;
- Clearing stripping and grubbing limits, if different from clearing limits;
- Areas to be seeded or sodded identified;
- Hydrological data including 100 year Floodplain, where available;
- Shoring and sheeting (if required) and design requirements/criteria to be used by Contractor's shoring and sheeting designer
- Pipe trench excavation details.
- Erosion/sediment control measures and storm water management facilities

Section 02225 - Excavation, Backfill and Compaction for Utilities
Show the following information on the project drawings:

- Location and logs of soil borings, water level observations, and test pits.
- Hydrological data including 100 year Flood Plain (where available).
- Surface elevations, existing and new.
- Location of underground obstructions and existing utilities.
- Sources of borrow material if on state property or at a prearranged source.
- Limits of areas to be cleared of trees, shrubs, and brush.
- Disposal areas for brush and wasted soil if on state property.
- Location and length of continuous concrete cradles, arches, or sleeves. Details/table of width and depth of trenches and pits for each type of pipe or appurtenance. Details of bedding for each type of pipe in varying earth and rock conditions; backfill details.
- Typical detail of method of stabilizing weak foundation material.
- Details of special construction such as under railroad and highways right-of-way requirements for jacking and boring.

- Details of sewage absorption trenches, absorption pits, and subsurface drains.
- Identify, detail, or note areas to receive topsoil and to be seeded or sodded and thickness of topsoil to be placed.
- Details of pavement repair.

Section 02270 - Erosion and Sediment Control/Stormwater Management
Show the following information on the project drawings:

- Temporary control devices required during construction
- Permanent control devices to regulate rate of runoff water and to control future erosion
- If disturbed area is greater than 10,000 sf, plans must be submitted by Agency to the Division of Soil & Water Conservation for approval
- If disturbed area is greater than 1 acre, plans must be submitted by Agency to the Division of Stormwater Management for approval
- Stabilization methods for soil stockpiles
- Temporary and Permanent erosion control and stabilization methods for borrow/waste areas

Section 02361 - Round Timber Piles
Show the following information on the project drawings:

- Plan layout (Singles and clusters, show cluster layout)
- Batter pile angle.
- Design loads
- Location of test pile, unless option to allow direction by the engineer is selected.
- Tip elevation (Estimated elevations/depths for bidding).
- Cutoff elevation (Top elevation)
- Subsurface soil data logs shall be shown on the drawings. (The entire soils report must also be included in an appendix to the specifications.)
- Staging area, if other than within the limits of work shown on the site plan.
- Sections, Details, Dimensions and Reinforcement of Pile Caps

Section 02363 - Concrete Filled Steel Casing Piles
Show the following information on the project drawings:

- Plan layout (Singles and clusters, show cluster layout)
- Batter pile angle.
- Design load capacity
- Location of test pile, unless option to allow direction by the engineer is selected.

- Tip/Base elevation (Estimated elevations/depths for bidding).
- Cutoff elevation (Top elevation)
- Subsurface soil data logs shall be shown on the drawings. The entire soils report must also be included in an appendix to the specifications.
- Staging area, if other than within the limits of work shown on the site plan.
- Size of Casing
- Concrete strength and Details of reinforcing.
- Sections, Details, Dimensions and Reinforcement of Pile Caps

Section 02365 - Pressure-Injected Footings or Piles
Show the following information on the project drawings:

- Plan layout (Singles and clusters, show cluster layout)
- Batter pile angle.
- Design load capacity
- Location of test pile, unless option to allow direction by the engineer is selected.
- Bottom elevation (Estimated elevations/depths for bidding).
- Cutoff elevation (Top elevation)
- Subsurface soil data logs shall be shown on the drawings. The entire soils report must also be included in an appendix to the specifications.
- Staging area, if other than within the limits of work shown on the site plan.
- Size of shaft
- Concrete strength and Details of reinforcing.
- Sections, Details, Dimensions and Reinforcement of Pile Caps

Section 02366 - Steel Sheet Piles
Show the following information on the project drawings:

- Plan layout
- Batter pile angle.
- Tip elevation (Estimated elevations/depths for bidding).
- Cutoff elevation (Top elevation)
- Subsurface soil data logs shall be shown on the drawings. The entire soils report must also be included in an appendix to the specifications.
- Staging area, if other than within the limits of work shown on the site plan.
- Grade of steel.
- Pile shape and weight.

Section 02367 - Precast/Prestressed Concrete Piles
Show the following information on the project drawings:

- Plan layout (Singles and clusters, show cluster layout)
- Batter pile angle.
- Design pile load capacity
- Location of test pile, unless option to allow direction by the engineer is selected.
- Tip elevation (Estimated elevations/depths for bidding).
- Cutoff elevation (Top elevation)
- Subsurface soil data logs shall be shown on the drawings. The entire soils report must also be included in an appendix to the specifications.
- Size and shape and Unit stresses for prestressing strands or wire.
- Detail of splices
- Detail of reinforcing and tendons
- Sections, Details, Dimensions and Reinforcement of Pile Caps

Section 02368 - Rolled Steel Section Piles
Show the following information on the project drawings:

- Plan layout (Singles and clusters, show cluster layout)
- Batter pile angle.
- Design pile load capacity
- Location of test pile, unless option to allow direction by the engineer is selected.
- Tip elevation (Estimated elevations/depths for bidding).
- Cutoff elevation (Top elevation)
- Subsurface soil data logs shall be shown on the drawings. The entire soils report must also be included in an appendix to the specifications.
- Staging area, if other than within the limits of work shown on the site plan.
- Sections, Details, Dimensions and Reinforcement of Pile Caps

Section 02371 - Drilled Foundation Caissons (Piers)
Show the following information on the project drawings:

- Subsurface soil data and logs.
- Top and estimated bottom elevation of each caisson.
- Size (diameter in inches), bearing capacity, and total number of each size of caissons.
- Dimensions of the bell, if required.
- Dimensions of the casing.

- Reinforcing steel details, if required.
- Location of caissons to be penetration tested, if required.
- Location of caisson to be proof tested, if required.
- Locations, size, bell dimensions, and installation sequence of load testing caisson, if required.
- Pilot hole size and depth into rock, if required

Section 02500 - Pavement and Associated Work
Show the following information on the project drawings:

- Typical section of each type or thickness of pavement showing dimensions and geometry, slopes, etc.
- Dimensions defining the limits and shape of the paved areas
- Details with dimensions of curbs, curb & gutter, raised islands, medians, curb cuts, ramps, and drainage structures
- Layout of parking spaces, pavement markings, traffic control signage, and painted indicators including handicapped parking spaces meeting UFAS requirements
- Existing and new grading contours or spot elevations
- New contours and spot elevations of paved areas showing drainage swales, slopes and directions of drainage flow
- Drainage structures including manholes, drop inlets, piping, culverts, sizes of piping/culverts and lighting standard locations.

Section 02660 - Exterior Water Distribution System
Show the following information on the project drawings:

- Plan and location of all new pipelines, including size and type of pipe.
- Show or specify maximum working pressure of the system.
- Location, size, and type of service of existing connecting, intersecting, and adjacent pipelines and other utilities.
- Paved areas and railroads which pass over new pipelines.
- Profile, where necessary to show existing parallel or crossing underground piping, conduits, clearances or unusual conditions.
- Note class or thickness of pipe, including material identification if more than one class or thickness is used. Show limits for each where class or thickness will be different for different sections of pipeline.
- Bedding conditions.
- Detail and Location of critical flanged joints, joints made with sleeve-type mechanical

couplings, grooved and shouldered type joints, and insulating joints.
- Location of valves, hydrants (showing which are traffic type hydrants), and indicator posts; and details concerning valves, where necessary).
- Show or specify size and shape of hydrant operating nut and cap nuts if nonstandard nuts are required; dimensions of threads (major diameter, minor diameter, pitch diameter, thread form, and number of threads per inch) on hydrant hose and pumper connections if nonstandard threads are required.
- Connection of service line to water main, if different from that specified.
- Location or size of thrust blocks, including type; or location of and details of metal harness, when necessary (metal harness, when necessary, must be shown for PVC plastic water main pipe).
- Details for fire hydrant installation.

Section 02690 - Site Steam or Hot Water Distribution System

The project drawings should show the following information:

- Plan and location of all new pipelines, including size of pipe.
- Show or specify maximum working pressure of the system.
- Location, size, and type of service of existing connecting, intersecting, and adjacent pipelines and other utilities.
- Paved areas and/or railroads which pass under or over new pipelines.
- Profile, to show elevations, manholes, laterals, crossing utilities, and unusual conditions.
- Note class or thickness of pipe, including material identification if more than one class or thickness is used. Show limits for each where class or thickness will be different for different sections of pipeline (unless clearly described in specs).
- Locations, types and typical and/or special details of above grade and in tunnel pipe supports and pipe guides.
- Locations of expansion loops or expansion joints.
- Locations and details of anchors
- Locations and typical and special details of pipe tunnels and trenches.
- Points of connection.
- Location and details of concrete thrust blocks.
- Location and details of manholes.
- Location and size of main and branch line valves
- Location and size of vents and drains.
- Location and detail of drip legs, trap stations, trap schedule, and method of condensate recovery.
- Diagrams of electronic circuitry for controls and instrumentation shown.

Section 02720 - Storm Drainage System
Show the following information on the project drawings:

- Plan and location of all new pipelines, including type of service and size of pipe.
- Location, size, and type of service of existing connecting, intersecting, or adjacent pipelines and other utilities.
- Paved areas and railroads which pass over new pipelines.
- Profile, where necessary to show existing parallel or crossing underground piping, conduits, clearances or unusual conditions.
- Invert elevations at beginning and end of pipelines and at manholes or similar structures.
- Note class or strength of pipe and limits for each where class or strength will be different for different sections of pipeline. Indicate shape requirements if different shapes available.
- Design details for all stormwater system structures including manholes, catch basins, curb inlets, and head walls.
- Storm drainage lines and culverts required to be watertight.
- Bedding details and location of cradle(s), when cradle is required.
- Location, size, elevation and details, if necessary, for stormwater retention basin or structure.

Section 02730 - Exterior Sanitary Sewer System
Show the following information on the project drawings:

- Plan and location of new pipelines, including type of service and size of pipe
- Location, size, and type of service of existing connecting, intersecting, or adjacent pipelines and other utilities
- Paved areas and railroads which pass over new pipelines
- Profile, where necessary to show existing parallel or crossing underground piping, conduits, clearances or unusual conditions.
- Invert elevations at beginning and end of pipelines and at manholes or similar structures
- Note class or strength of pipe and limits for each where class or strength will be different for different sections of pipeline
- Design details for pertinent manholes, septic tank(s), and sewage absorption trench including Health Department Requirements
- Bedding conditions, where different from those specified in the appropriate specification and location of cradle(s), when cradle is required, if not covered
- Sections and details of Pump Stations.
- Location and size of thrust blocks on pressure lines
- Location of flanged joints on pressure sewers if only used on part of line.
- Location of mechanical joints on ductile-iron piping (if used on only part of the system).
- Location, size, and type of service of existing connecting, intersecting, and adjacent pipelines and other utilities.

Section 02831 - Fence, Chain Link
Show the following information on the project drawings:

- Fence alignment.
- Posts: Minimum height to accommodate fabric and clearance, post size for line posts, corner posts, pull posts and gate posts.
- Post Setting Dimensions: Not less than indicated in chain link manufacturer's installation standards. Assure that embedment length in concrete slabs and walls will be at least 12 inches. Show typical details for each condition to be encountered.
- Chain-Link Fabric: Show height and size or gage on detail or section.
- As required: Top rail, bottom rail, top and bottom reinforcing wires, and where a higher degree of security is required other than provided by fabric, include barbed wire on supporting arms. Note method of supporting arm attachment to post tops - bolts, screws, tamper-proof fasteners or welding.
- Sleeve-Type Expansion Couplings: Specify/note as maximum of 21 feet on centers, if used.
- Gates: Location, size, and type. Include framing members size, weight, bracing, locking hasps, hinges, center pins, etc.
- Where special fencing requirements exist, such as wolf-proofing, antiburrowing provisions, crossing drainage ditches, provisions for electrical installations, or special security installations, specifications should be modified and appropriate details included on the drawings. Modifications and details should afford security equal to that of the fence.
- Where special entrance security requirements exist such as electronic locks, motor operated gates, closed circuit video; add details and modify the specification accordingly.
- Other information necessary to indicate layout and general configuration of the fence.

Section 02930 - Turf
Show the following information on the project drawings:

- Clearly indicate all areas to be turfed and if more than one type of turf is specified, delineate areas for each type.
- All turf specifications shall be written to reflect the environmental conditions peculiar to the project area.

Section 02950 - Landscaping, Trees and Shrubs
Show the following information on the project drawings:

- Description, number and size of trees and plants
- Layout/location of various trees and plants including groupings.

- Details of planting requirements including depth and diameter of excavations, mulching, protection, and supports
- Layouts and controls for irrigation systems if included in project
- Are tree and plants located away from existing and new underground utility lines, site improvements and surface drainage patterns?

DIVISION 3

Section 03300 - Cast-in-Place Concrete

The documents shall provide sufficient details with data on the various configurations or conditions of the concrete and reinforcing steel to facilitate bidding and shop drawing preparation. Details shall include, but not be limited to, rebar size, location and spacing, location and lengths of splices, and required embedment lengths and cover. Typical details with tabular information are acceptable with special sections and details shown as needed. Clearly indicate that the design of formwork and shoring required for construction are the responsibility of the contractor. The documents may require that the design of the formwork and shoring be performed by a licensed professional engineer and that the design responsibility shall rest with the contractor and his engineer.

Show the following information on the project drawings:

- Loading assumptions.
- Material strengths used in design, fc.
- Yield strength of reinforcement required.
- Details of reinforcement bars, showing number, sizes, bends, laps and stopping points of bars; location and details of stirrups; and mechanical connections to reinforcement bars.
- Show wire size and weight or wire size and spacing of wire fabric reinforcement and locations where used;
- Details of concrete sections, showing dimensions, reinforcement cover, and required camber.
- Expansion, contraction and construction joint locations with dimensions and details.
- Details and locations of critical construction joints, including waterstop locations and splices, keys and dowels when required.
- Locations where structural lightweight concrete or lightweight insulation or fill concrete will be used.
- Show locations and details for depressed structural slabs where required for static-disseminating and spark-resistant tile, terrazzo or other floor finishes in order to provide finished surfaces at the same elevations.
- When exposed concrete surfaces are specified, the locations in the finished structure shall be indicated. If other than cast finish is required, the type and location shall be indicated.

Section 03366 - Cast-in-Place Post-Tensioned Concrete

The documents may require that the post-tensioning system be engineered by the contractor. Clearly indicate all design, loading and performance criteria as well as all pertinent design assumptions. Require contractor to provide calculations and shop drawings for the post-tensioning system sealed by a licensed professional engineer. The A/E shall review these submittals for conformance with the design requirements.

Section 03410 - Precast Concrete (Non-Prestressed)

The documents may require the contractor to provide these components as an engineered system. Clearly indicate the layout and configuration of the units as well as the complete performance requirements. The contractor shall be required to provide calculations and shop drawings of the units sealed by a licensed professional engineer. The A/E shall review these submittals for conformance with the design requirements.

Show the following information on the project drawings:

- Live and dead (and lateral) loads for design (Note whether the topping is included in the specified dead load).
- Details and locations for fitting, bearing, and connections.
- Location of expansion and control joints.
- Style and area of steel fabric reinforcement in areas where required. Kind and size of reinforcing bars and spacing.
- Strength and type of concrete.
- Detail of placement of sealant or fillers in joints.
- Fire rating.
- Lightweight concrete unit weight.
- Special requirements for concrete cover over reinforcing.
- Areas where toppings are required, indicate areas where the full thickness of the topping is not present.

Section 03412 - Precast, Prestressed Concrete

The documents may require the contractor to provide these components as an engineered system. Clearly indicate the layout and configuration of the units as well as the complete performance requirements. Require contractor to provide calculations and shop drawings of the units sealed by a licensed professional engineer. The A/E shall review these submittals for conformance with the design requirements.

Show the following information on the project drawings:

- Live and dead (and lateral) loads for design and whether topping is included in the dead load.
- Details and locations for fitting, bearing, and connection of units.
- Location of expansion and control joints.
- Camber.
- Style and area of steel fabric reinforcement in areas where required. Kind and size of reinforcing bars and spacing.
- Strength and type of concrete.
- Detail of placement of sealant or fillers in joints.
- Fire rating.
- Lightweight concrete unit weight.
- Tendon types, physical properties, and allowable design stresses.
- Special requirements for concrete cover over tendons and other reinforcing.
- Areas where toppings are required, indicate areas where the full thickness of the topping is not present.

DIVISION 4

Section 04200 - Unit Masonry (Brick and/or CMU)
Show the following information on the project drawings:

- Locations and dimensions of each kind of masonry work.
- Masonry compressive strength fm, Type, and Fire rating, if required
- Mortar types and where used
- Vertical reinforcing bar size and spacing where required
- Horizontal reinforcing and spacing
- Control joint locations
- Expansion joint locations
- Bond pattern if other than running bond.
- Through-wall flashing and weep details.
- Control joint and expansion joint details.
- Special brick shapes if required.
- Bond beam locations, sizes, and reinforcing
- Lintel locations
- Lintel schedule with sizes, shapes, components, reinforcing, etc.
- Details of anchorage of masonry to supporting structure
- Details of Bearings on masonry and of anchorages to masonry

DIVISION 5

Section 05120 - Structural Steel

The documents shall provide complete details of the configuration of the structural steel and of any non-standard connections. The detailing of standard connections shown in AISC's Manuals of Steel Construction, Allowable Stress Design and Load and Resistance Factor Design may be left to the contractor. If this is done, the documents must clearly indicate all design loads and other criteria required for the development of connection details. The A/E shall review the shop drawings and verify design adequacy of fabricator detailed connections. The contractor shall not be required to provide a licensed professional engineer for the design of these connections.

Show the following information on the project drawings:

- Yield strength of steel used in design;
- The extent and location of structural steel;
- Designations of steel members;
- Centerline dimensional locations of framing members;
- Top of steel elevations above or below a reference elevation.
- Connection details of typical connections
- Details of special and moment resisting connections
- Beam or girder camber, if required
- Shoring information and typical details, if shoring required during construction
- Locations where galvanized steel will be used;
- Size and shape of crane rails;
- Types of connections (welded and bolted), including adjustable runway support connections if overhead, top running cranes are provided;
- Locations where high-strength bolts and slip critical connections are required and the loads and stresses required if design is provided by Contractor;
- The location of welds requiring nondestructive testing, along with type of testing required;
- Lateral bracing members / framing
- For composite beams show shear stud number, size and spacing required

Section 05210 - Steel Joists and Joist Girders

Standard open web steel joists and joist girders shall be indicated by size, type and spacing on the drawings. **For non-standard loading conditions,** the documents may require that the components be provided by the contractor as an engineered system. In this case, **clearly indicate all loading and design criteria**. The contractor shall be required to provide calculations and shop

drawings for these components prepared by a licensed professional engineer. The A/E shall review these submittals for conformance with the design requirements.

Show the following information on the project drawings:

- Joist series, size and spacing, point loads (if any), and slope
- Joist girder depth, kip load on each panel point, span, and slope.
- Design loads, including uplift and lateral forces in addition to gravity (dead and live) loads.
- Method of anchoring joists to supports
- Stiffeners at point / concentrated loads
- Framing between joists at openings through supported roof or floor
- Framing at equipment being supported by joists/joist girders
- Spacing and type of bridging and bracing.
- Accessory details as applicable
- Bearing details on masonry

Section 05310 - Steel Decks

Indicate which roof areas on the structure are considered by the structural engineer as functioning as diaphragms for the lateral force resisting system. Composite decks and diaphragm acting decks, including connections, should be designed by the structural engineer according to the Steel Deck Institute and details shown on the drawings. Drawings must show wind uplift loads for roof joist design in addition to the items listed below.

In addition to the above, show the following information on the project drawings:

- Structural properties (height, sheet thickness, section moduli, moment of inertia).
- Openings in floor and roof deck and typical detail of framing at opening
- Location, spacing, and size of hanger clips or loops for critical locations.
- Closure plates, where required.
- Location of cellular decking and whether it is to be used as electrical raceway.
- Weld or fastener spacing and size of same
- Whether construction is based on shored construction.
- End and side lap details

Section 05400 - Cold-Formed Metal Framing

Show the following information on the project drawings:

- The extent and location of all cold formed metal framing
- Indicate gage, size, section modulus, and other structural properties required.
- Connections and other installation details.
- Indicate concentrated loads, e.g., pipe supports, that may overstress a flange or connection.
- Slip connection requirements at underside of roof members

Section 05500 - Metal Fabrications

Show the following information on the project drawings:

- Location and configuration of all metalwork.
- All sizes and dimensions.
- Special fastenings, attachments or anchoring.
- Location and size of expansion shields larger than 3/8 inch in diameter.
- Location and identification of products to be galvanized.
- Location and special details of expansion joint covers.
- Connection details (other than manufacturer's standard) of grating.
- Locate and detail removable sections of handrails.
- Location and support detail of ladders.
- Location and details of all structural steel door frames.
- Sections, dimensions, sizes and details of all metal stairs.

DIVISION 6

Section 06100 - Rough Carpentry

Show the following information on the project drawings:

- Location and magnitude of concentrated loads
- Grade and stress rating of structural lumber
- Sizes and spacing of all wood framing members including trusses
- Location, size, type, and thickness of all materials
- Size and spacing of special fasteners

- Details of connections
- Size and spacing of anchor bolts
- Details of all connections and anchorage where special conditions exist such as high wind, hurricane, and earthquake areas
- Locations where treated lumber is required including type of treatment - preservative or fire retardant treatment
- Details of depressed floors to receive ceramic tile

Section 06180 - Prefabricated Wood Components

The documents may require that prefabricated wood components such as glue laminated structural members and trusses, metal plate fabricated wood trusses, and similar shop fabricated wood structural systems be provided by the contractor as engineered systems. All design and performance criteria must be indicated in the documents. The contractor shall be required to provide calculations and shop drawings for these systems prepared by a licensed professional engineer. The A/E shall review these submittals for conformance with the design requirements.

Section 06200 - Finish Carpentry

Show the following information on the project drawings:

- Location, size, type, and thickness of materials;
- Size and spacing of special fasteners or attachments;
- Special details, sections and requirements of millwork;
- Type and/or pattern of prefinished material;
- Profile and size of trim;
- Color and/or pattern of prefinished material
- Profile and size of trim
- Location and species of any wood that is to be stain, natural, or transparent finish

DIVISION 7

Section 07220 - Roof Insulation

Show the following information on the project drawings:

- The extent and locations of the work to be accomplished.
- Dimensions when space limitations or construction features govern thickness of insulation materials.
- Details at cants, edge strips, and nailers.

- Location and spacing of wood nailers.
- Location, type and spacing of special anchorages to substrate
- Extent of tapered insulation and slope

Section 07240 - Exterior Insulation and Finish System
Show the following information on the project drawings:

- Locations of EIFS.
- Thermal resistance value (R-Value) for each location if various R-values are used.
- If several levels of Impact Resistance are specified, indicate locations where each level is required.
- Joint layout on elevations.
- Details at edges and at joints and of special profiles

Section 07250 - Spray-Applied Fireproofing
Show the following information on the project drawings:
- Location of all sprayed fire protection.
- Thickness of sprayed on fire protection and rating required
- Drawings should also show fire protection other than sprayed-on for the following items:
  (a) Concrete fire protection of steel bearing members in elevator hoistways.
  (b) Plaster fire protection of structural steel and underside of steel decks in machine rooms.
  (c) Equivalent masonry, concrete or plaster fire protection on outside surfaces of exterior structural peripheral members.
- Bearing for members in certain areas may not require fire protection. Locations and members should be specifically identified on the drawings.

Section 07410 - Preformed Metal Roofing and/or Siding
Show the following information on the project drawings:
- Roof slope.
- Location, sizes, and details of flashing, closure strips, and accessories.
- Depth, thickness/gage, and configuration of roof and wall panels.
- Spacing of girts and purlins.
- Design loads for sizing girts and purlins.
- Method of attachment to supports

Section 07414 - Preformed Steel Standing-Seam Roofing

Show the following information on the project drawings:

- Roof slope
- Supporting structural framework.
- Intermediate support and attachment details, when applicable.
- Attachment clip spacing.
- Flashing support and fastening spacing.
- Roof venting. (Detail to preventing infiltration of wind-driven rain.)
- Sealant and closure locations.
- Locations for dissimilar metal protection.
- Details of all accessories such as ladders, walkways, antenna mounts, guy wire fastening, ventilation equipment, and lightning rods.
- Details of flashing at all roof penetrations. On roof plan add note to offset penetrations such that center of penetrations coincide with mid-point of panel seams.
- Detail how expansion of roofing will be accounted for
- Locations where panels will be anchored / attached / restrained

Section 07511 - Aggregate-Surfaced Bituminous Built-Up Roofing

Show the following design, details and information on the roof drawings:

- Roof-penetrating components such as roof drains and vents shall not be located within 18 inches of each other, of the toe of cant strip, or at juncture of roof with wall or other vertical surfaces.
- Roof drains with approved clamping rings and removable large dome strainers are used.
- Equipment mounted on curbs or structural supports are of sufficient height to accommodate roof flashings and installation of roofing under equipment.
- Structural supports are circular (pipe columns) to greatest extent practicable to permit use of circular collars with flashing flanges and umbrella flashing with clamping rings. Avoid use of pitch pockets, if possible.
- Curbs shall not restrict drainage of water from roof.
- Expansion joints in roofing shall be provided at each expansion joint in the structure.
- Details of expansion joints in roofing placed on curbs 8 inches high, minimum, above the membrane. Expansion joints shall not restrict drainage of water from roof.

- Indicate pressure treated wood cants at base of curbs for structural support.
- Area dividers in the roofing shall be provided:
  (1) where the roof deck changes direction and where substrate materials change;
  (2) uniformly spaced not over 200 feet apart on section of roof that exceeds 200 feet in length or width;
  (3) at each intersection where L- or T-shaped roof deck changes direction; and
  (4) where there is a difference in elevation between adjoining decks.
- Area dividers shall be located at high points, where practicable, shall not prevent drainage of water from the roof, and shall be placed on curbs above the water line.
- Flashing details provided at points where items will mount on or penetrate roofing membrane and at points requiring a typical flashing. Use isometric drawings as required to clearly indicate intersections of different types of flashings.
- Slope of substrate/roofing with directional arrows and live load limits.
- When backnailing of felts is required on a non-nailable deck, provide treated wood nailers, as a minimum, as follows:
  (1) Spaced no more than 21 feet apart (clear dimension), same thickness as insulation, and at right angles to roof slope on decks with roof insulation;
  (2) Spaced no more than 21 feet apart, embedded flush with deck top surface, and parallel to roof slope on decks without roof insulation; and
  (3) At right angle to roof slope of barrel roofs and spaced and installed as for decks with or without insulation, as applicable.
- Extent, location, and configuration of roof planks and walkways shown.
- Are treated wood nailers compatible with roofing material specified?

Section 07530 - Elastomeric Sheet Roofing System (EPDM)

Show the following information on the project drawings:

- Flashing and counterflashing at perimeter of roofing, pipe, conduit and other roof penetrations, and curbs. (Do not use sealant filled pitch pans for flashing roofing penetrations unless there is no alternative.)

- Expansion joints in the roofing at each expansion joint in the structure, placed on curbs above the waterline, and not restricting drainage of water from the roof.

- Roof drains not placed within 18 inches of other penetrations, expansion joints, or walls.

- Roof-mounted equipment on curbs or structural supports of sufficient height to accommodate roof flashings and installation of roofing under the equipment. Curbs shall not restrict drainage of water from the roof.

- Roof walkways for traffic areas and access to mechanical equipment. Provide openings in walkways to permit drainage of water from the roof.

- Slope of substrate/roofing with directional arrows.

- Live load limits of roof construction to caution against overload during stockpiling roofing materials.

Section 07600 - Flashing and Sheet Metal
Show the following information on the project drawings:

- Base, counter open valley, and eave flashing
- Roof drain flashing
- Expansion joints - (The contract drawings should contain details of building expansion joints at walls, ceiling, floors, roof, and parapets. Include exterior and interior details. Provide isometric detailing for expansion joints intersections.)
- Sheet metal roofing - show extent, slope, method of attachment and provisions for thermal movement of roofing
- Downspout locations, gauge, size, and method of attachment
- Gutter size, gauge, locations, and method of attachment

DIVISION 8

Include a complete door schedule. The door schedule should assign a separate number for each opening and should indicate:

- the door type and style,
- material,
- design (whether flush panel, full flush, paneled, glazed, or louvered)
- size and thickness,
- glazed or unglazed,
- fire rating class for fire doors,
- hardware set number, (may be here or in specifications)
- threshold material, if any, and
- material for frames, mullions, and transom bars.

It is recommended that standard door-type nomenclature, SDI 106, be used to indicate designs (e.g., F, L, G, GL, etc., in lieu of A, B, C, etc.).

Section 08110 - Steel Doors and Frames
Show the following information on the project drawings:

- Sizes of door openings, direction of swings, and travels of doors.
- The side of wall or partition where door is to be located.
- Details of nonstructural mullions, mullion covers, and removable mullions.
- Type and thickness of glazing required; whether or not insulating glass units are required.
- Method, type, number and spacing of anchors required for anchoring door frames to adjoining construction.
- The type of doors and frames required for various openings, and optional types of materials and construction, if any.
- Indicate locations which require Safety Glass (on plan or in schedule)
- Indicate the free area for louvers in doors.
- Indicate whether fire doors are required on one or both sides of the fire wall.

Section 08120 - Aluminum Doors and Frames
Show the following information on the project drawings:

- Size of door openings, thickness, swing and travel of doors and design; whether flush, paneled, glazed, or louvered; width of stiles and rails
- Elevations of each door and frame type, at 1/4-inch scale
- Details of head, jamb, sill, mullions, and transom sections; key sections to door frame elevations; type and spacing of anchors
- Type and thickness of glazing required and method of glazing
- Details of weatherstripping for exterior doors
- Amount of free area for louvers
- A separate number for each door opening on door schedule

Section 08210 - Wood Doors
Show the following information on the project drawings:

- Locations and travel of doors
- Sizes, types, and thicknesses,
- Glazing and louver requirements

- Designs
- Fire rating requirements
- Color or finish
- Door swing
- Sound transmission class

Section 08500 - Metal Windows
Show the following information on the project drawings:

- Type of material
- Sizes and types of windows;
- Metal and wood subframes, casings, or stools, if any;
- Hardware required.
- Sizes, location, and swing of ventilators; direction of slide for sliding ventilators;
- Location and details of fixed sash.
- Typical window sections and details.
- Show glass thickness. Show special glazing such as safety glass, if any.
- Method of anchoring windows to adjoining or adjacent construction; note size and types of clips, anchors, screws, or other fasteners in details.
- Details of nonstructural mullions and mullion covers; details of anchoring and reinforcing nonstructural mullions at windows to receive window cleaner anchors.
- Number of window cleaner anchors required and locations.
- Locations of windows requiring special operators, if any. Show method of operation and concealment of operators, cables and rods, as appropriate. Show wiring diagram for motor driven operators, if any.
- Locations of windows designated as forced entry resistant, if any.

- Locations of fire-rated windows, if required.

Section 08710 - Finish Hardware
Show the following information on the project drawings:

- Location, class, and hourly rating of fire doors;
- Location and installation details for blocking behind door stops (wall bumpers) mounted on wallboard partitions; and
- Hardware set numbers (HW-2, etc.) in the door schedule or list doors by number in each hardware set in the specifications.
- Are the following items included in the schedule - thresholds, automatic door bottoms, weatherstripping, acoustic seals, kick plates, panic hardware?

Section 08800 - Glazing
Show the following information on the project drawings:

- Locations of each type of glass, using the same terminology used in the specification.
- Thickness of glass, unless glass of each type is the same thickness.
- Frame and rabbet details, indicating method of glazing.

Section 08900 - Glazed Curtain Wall System
Show the following information on the project drawings:

- Large scale details showing the sizes and configuration of principal wall system framing members, panels, and other components as well as details of flashings, copings, weep, and drainage system.
- Methods of securing system framing to structures and details of fastenings, anchors, and auxiliary shapes.
- Details of expansion joints and each type of typical joint.
- Type and thickness of glass and details showing methods of glazing for all conditions.
- Details for installing each type of panel specified.
- Details of any required field applied thermal insulations, sound insulations, baffles, fillers, fire stops, or other seals at joints between curtain wall and edges of floor slabs.
- A schedule showing the various types and sizes of system units and of all window units.

DIVISION 9

Section 09310 - Ceramic Tile, Quarry Tile and Paver Tile
Show the following information on the project drawings:

- Rooms, areas, or spaces that are to be tiled such as floors, walls, wainscots (give heights), shower rooms and compartments; and, sink, vanity, or work table tops and splash backs, should be shown in the finish schedule.
- Bases, thresholds, and treatment at windows, doors and trimmed openings, including sills and vertical returns back to window or door frames, should be properly detailed.
- Spaces which require cleavage membrane or membrane waterproofing.
- Where a mortar bed is required, and where it is desired that surface of tiled floor be flush with adjacent floor, indicate depressed structural slab or sub-floor.
- A schedule showing tile types, sizes, patterns, trim, and built-in tile accessories required for each room or space. Identify type of trim shape by the designations of ANSI A137.1. Do not indicate sizes if specified in this section.
- Slope of floors to drain is 2% or less.
- Details and locations of expansion and control joints in tile walls or floors.
- Treatment at tile recesses for radiators, convectors, drinking fountains, lighting fixtures, and other recessed items.
- Locations where concrete walls or partitions, or masonry walls are to be furred to receive ceramic wall tile.

Section 09500 - Acoustical Treatment
Show the following ceiling information on the project drawings:

- Location of acoustical tile ceiling (ATC) systems. If more than one type of system is used, key each system to locations on the reflected ceiling plan or the Finish Schedule using symbols ATC-1, ATC-2, etc.

- Arrangement of panels, light fixtures, diffusers, other penetrations and exposed suspension grids when used are shown on the Reflected Ceiling Plan. Have these items been coordinated with Mechanical & Electrical?

- Maximum spacing of suspension members for concealed grid suspension systems.

- Location and material of fire stops above suspended ceilings.

- Location of systems required to have ceiling sound transmission class (STC), fire endurance ratings, or both.

- Details of special or patterned panels if necessary to describe adequately.

- Where acoustical ceilings are provided in conjunction with thermal insulation beneath vented attic spaces, under certain types of roof decks, careful attention should be given to furnishing adequate details on the contract drawings. Such features as support of insulation over flush-mounted light fixtures, conduit, acoustical units, and suspension system components and around heating, air conditioning, and other utilities shall be covered by the details. Appropriate specification shall be included in Section: Ceiling, Wall and Floor Insulation, to cover the installation of insulation over the suspension system, light fixtures and other ceiling penetrations.

Section 09660 - Resilient Tile Flooring

Show the following information on the project drawings:

- Type, location and layout pattern of floor tile.

- Type and location of base, stair treads, edge strips, and joints between resilient and other types of flooring.

- Manufacturer's name and number. Note on drawings or in specs: Colors listed are for color identification purposes only. Listing is not intended to limit selection of equivalent textures and colors from other manufacturers.

Section 09900 - Painting

Drawings shall include project documentation such as details, sections, elevations and/or schedules which indicate the type and extent of work. Specific quantities of work shall not be cited in the specification. Work shall be coordinated between the drawings and specifications and include the following:

- Reputtying and Reglazing

- Resealing of Existing Exterior Joints

- Removal of Existing Coatings

- Has potential for lead paint and/or asbestos been investigated and addressed on renovation projects?

- Has Finish Schedule been coordinated with this Specifications Section?

- Are types of paint compatible with materials being painted?

- Are number of coats of paint shown in schedule or specified?

- Do specifications establish the level of workmanship required for painting?

DIVISION 10

Section 10800 - Toilet and Bath Accessories
Show the following information on the toilet room plans and elevations:

- Mounting heights required above Finished Floor

- Locations of all fixtures, partitions and accessories including plan and elevation dimensions.

- Number of accessories required.

- Clearances as required to meet UFAS standards for handicapped accessibility

DIVISION 11

Section 11193 - Detention Hollow Metal Frames, Doors and Door Frames
Show the following information on the project drawings:

- Sizes of door or view window, speaking port, louver, view port and food pass, if any, openings, thicknesses of doors, swings, and travels of doors.

- Indicate detention hollow metal doors as Sec. Holl. Mtl. or SHM and show that the term means Detention Hollow Metal Doors and Frames, in a schedule of abbreviations.

- The size of wall or partition where door is to be located.

- Type and thickness of glazing required.

- Method, type, and spacing required for anchoring frames to adjoining construction.

- Include a complete door schedule. The door schedule should assign a separate number for each opening and should indicate the door type and style, material, design, size, thickness, hardware set number, threshold material, if any.

Section 11400 - Food Service Equipment
Show the following information on the project drawings:

- Equipment location, including all elements located in counters and dishwashing counters and at sinks.

- Size, material and details for custom-fabricated equipment.

- Floor, wall, and ceiling penetrations. Include mounting height and size of pass through window at soiled dish counter.

- Locations for raised bases, retainer curbs, or depressions.

- Locations for recessed, grated floor drains required for equipment.

- Locations for exhaust fan curbs, supply fan curbs, exhaust duct, supply duct, and ductwork material.

- Location for fire suppression system tanks and actuating stations.

- Locations and type of hoods, plumbing enclosure housing and control panel of automatic washdown system.

- Location and detail drawing of insulated floors, including under-floor perforated drains and vent pipes.

- Location of disposer control centers.

- Locations of disconnect switches.

- Location and detail drawings of electrical chases and raceways and plumbing chases. Assure that underfloor electrical chases are provided to and among cash registers.

- Location of remote compressors and refrigeration systems.

- Location of all utility connections to building water, sanitary, gas, electrical, sprinkler, fire alarm, oil, compressed air, steam, and other utility systems. Include convenience outlets at point of use of plug-in equipment.

- Detail drawings should be provided to show water metering devices located to provide one device to serve two kettles where practical.

- Details of the remote pressurized syrup containers and associated supply lines to drink dispenser(s).

Section 11601 - Laboratory Equipment and Fume Hoods
Show the following information on the project drawings:

- Location of equipment, by unit number.

- Location of utility connection.

- Relation to adjacent trades.

- Remotely located blower and ductwork, to create negative pressure at hood. Require appropriate weatherproof caution labels attached to outlet end of exhaust duct systems where warning of dangerous chemical fumes will be necessary for the protection of workmen in the vicinity.

- Optimum face velocity.

- Fans and ductwork needed to create negative pressure. Laboratory fume hoods are ventilated enclosures designed to provide a safe working area for laboratory activities involving hazardous materials, generated fumes, aerosols, gases, and particulate matter. To operate satisfactorily, air is removed from this enclosure at an optimum face velocity. Require velocities measurable at the maximum face area of the hood, with maximum allowances for hood, filter, and appurtenance static pressure losses within the specified limits.

DIVISION 13

Section 13121 - Pre-engineered Metal Buildings

The documents may require that pre-engineered metal structures be provided by the contractor as engineered systems. All design and performance criteria must be indicated in the documents. The supporting structure for the engineered system shall be detailed on the drawings with the assumed reactions from the engineered system indicated. The contractor shall be required to provide calculations and shop drawings for these systems prepared by a licensed professional engineer. The A/E shall review these submittals for conformance with the design requirements.

Show the following information on the project drawings:

- Floor and eave height dimensions required

- Clear spans, clear heights necessary

- Roof slope required (or minimum and maximum slope)

- Type of roof and wall coverings

- Approximate locations for downspouts, roof ventilators, louvers, and skylights

- Location and required R factor of insulation

- Depth of roof and wall coverings, if necessary

- Location of liner panels

- Minimum design roof dead, live, and snow loads.

- Basic wind speed in miles per hour.

- Collateral loads for special equipment or crane loads, special live loading

- Importance factor for wind and seismic computations.

- Foundation plan with dimensions and details and the allowable design bearing capacity of soil on which this design is based. Require Contractor to include in his price any modifications necessary for his building.

- Where applicable, state the allowable horizontal drift between the pre-engineered metal building and adjacent or adjoining construction.

DIVISION 14

Section 14200 - Elevators
Show the following information on the project drawings:

- Fire-rated hoistway, with vent at top where required by code.

- Waterproofed pit, with ladder, indirect drain or sump, light and (GFIC) outlet.

- Machine room, with ventilation to maintain temperature, light and outlet, and fire extinguisher. Do not run pipes, ducts, conduits, etc. through or over the machine room or locate other equipment in the machine room. For new machine rooms in existing buildings show how pipes, ducts, conduits, etc. are relocated.

- Hoist beam at top of shaft, removable if necessary for overhead clearance.

- Smoke detectors in each lobby and machine room to initiate firefighter's return.

- Heat detectors in shaft and machine room to activate elevator return and sprinkler time delay.

- Power feeders to machine room with disconnects for elevator machine and cab lighting, phone connection in machine room.

DIVISION 15

Section 15250 - Mechanical Insulation
Show the following information on the project drawings:

- Areas where pipe insulation differs from the Typical;

- Areas where ductwork is to be internally insulated;

- Areas where metal jackets are to be used on interior piping;

- Pumps to be insulated and encased in 20 gage boxes, if required;

- Heat exchanger temperatures.

Section 15320 - Fire Pumps
Show the following information on the project drawings:

- Configuration, slope to drain, and sizes for each piping system;

- Location and type of each pump, including associated equipment and appurtenances;

- Capacity of each item of equipment;

- Locations and details for special supports for piping; and

- For pipe larger than 12 inches, details of anchoring piping including pipe clamps and tie rods.

Section 15330 - Fire Extinguisher Sprinkler Systems
Show the following information on the project drawings: (See NFPA 13):

- Location and detail of each sprinkler system entrance to include
  supply riser,
  alarm valve,
  water motor alarm,
  fire department inlet connection,
  pressure or flow switch,
  fused disconnect switch,
  and associated electrical connections.

- Location where each sprinkler system begins including connection to water distribution system piping.

- Location of sprinkler system control valves, post indicator valves, wall indicator valves and inspector test stations.
- Area of sprinkler system coverage when system is protecting partial areas.

- Details of sprinkler piping anchors where required.

- On renovation projects, indicate existing sprinkler piping layout and sprinkler heads on project drawings only if existing sprinkler system is being modified and such layout is necessary for clarity or coordination with new work. Show new sprinkler system work.

- Show predominate hazard classification; identify any areas with a different classification

- Preaction valve detail for elevator shaft and machine room sprinklers

- Show information on water supply to include
  Water flow available in gpm
  Static Water Pressure in psi
  Residual Water Pressure in psi
  Hydrant locations

Section 15400 - Plumbing Systems
Show the following information on the project drawings:

- Configuration and sizes of piping systems

- Locations of hot water and cold water shut-off gate valves for each toilet room

- Dimensioned location and type or schedule # of each plumbing fixture with clearances as required to conform to UFAS accessibility requirements.

- Typical details for attaching wall-hung fixtures to walls

- Whether piping is run above or below ground, floors, and ceilings and whether concealed or exposed

- Capacity and operating characteristics of each item of equipment

- Locations and details for special supports for piping

- Locations, sizes, and types of cleanouts

- Locations, sizes, and typical details for extended rim floor drains

- Detail or sections through each type roof drain, floor sink, and grease interceptor or separator

- Roof drain / roof leader piping location and sizes

- Location of acid-resistant DWV piping, cleanouts, traps, drains and accessories
- Cleanouts in crawl spaces or exterior of buildings shall be not less than 3 feet from building wall

- Exterior buried piping shall not run parallel within 5 feet of exterior building wall

- Location and size of water hammer arresters

- Ranges and accuracies for gages and thermometers

- Capacity, size, bypass valves, and piping for water meters and detail of water meter box (Coordinated with serving utility entity)

- Locations and sizes of access panels for valves

- Details of pipe penetrations in outside walls

Section 15512 - Chilled, Condenser or Dual System Water Systems
Show the following information on the project drawings:

- Single line plan and necessary sections indicating location, sizes, and routing of associated piping. Piping larger than 4" diameter should be shown by double lines.

- Locations of anchors, expansion loops, and fittings

- Details of anchors and guides

- Flow diagrams for system(s).

- Appropriate schedules and details for equipment or components.

Section 15520 - Steam or Hot Water Distribution Systems (Interior)
The project drawings should show the following information:

- Plan and location of all new pipelines, including size of pipe.

- Maximum working pressure of the systems.

- Location, size, and type of service of existing connecting, intersecting, and adjacent pipelines and other utilities.

- Locate and detail the pipe entry through building wall or slab. Include detail of interface between the tunnel or box trench and the building.

- Isometrics to show elevations, manholes, laterals, crossing utilities, and unusual conditions.

- Locations, types and typical and/or special details of pipe supports and guides.

- Locations and isometric of expansion loops.

- Locations and details of anchors. Indicate pitch of pipe and direction.

- Points of connection.

- Location and size of main and branch line valves

- Location and size of vents and drains.

- Location and detail of drip legs, trap stations, trap schedule, and method of condensate recovery.

Section 15652 - Central Refrigeration Equipment for Air Conditioning
Show the following information on the project drawings:

- Indicate size and locations of cooling tower supports.

- Locations of water treatment tanks and control panels.

- Indicate size and routing of refrigerant safety relief discharge piping. Consult ANSI/ ASHRAE 15 Safety Code for Mechanical Refrigeration.

- Indicate a cooling tower basin heating system for cooling towers that will be required to operate when outside temperatures are below freezing and the heat generated through the refrigeration process (with head pressures maintained) will be insufficient to preclude freeze-ups. Either electric immersion heaters or steam or hot water coils may be used for supplemental heating.

- Indicate vibration isolation requirements

Section 15850 - Air Handling Equipment
Show the following information on the project drawings:

- Arrangement plan and details for air handling equipment and accessories.

- Equipment schedules with sound ratings (loudness level), electrical characteristics, capacities.

- Equipment pads, foundations, supports, and vibration isolators.

Section 15900 - Temperature Control Systems

Show the following information on the project drawings:

- Sequences of operations and system schematic. (Specification should contain a narrative description detailing how the controls are to operate.).

- Direct Digital Controller Architecture Schematic: Show general architecture of DDC system including controllers, communication LANs, workstation terminal, etc.

- Dampers: Show type of damper (opposed or parallel blade).

- Control Valves: Show control valve nominal size, flow capacities, type of fluid, inlet pressure, maximum and minimum pressure drop at design flow, and calculated Cv. (Select valves for smallest Cv within available pressure constraints, pipe velocities, economy of design, and noise criteria.)

- Indicate pressure and temperature indicator's scale ranges and location. Location of temperature wells and pressure taps.

- Smoke detectors and location of key-operated override switches, when required, along with the zoning arrangements for these systems.

- Indicate location of meters provided in this and other sections.

- Location of room sensors, pressure sensors and outdoor sensors.

- Input / Output summary as described in the Manual.

- Location and horsepower of air compressors and refrigerated air dryers when required.

- Elementary wiring diagrams.

- Location and types of automatic dampers, including smoke dampers, e.g., opposed or parallel blade.

- Mechanical Flow Drawing: Show relative position of all individual HVAC components, input sensors (temperature sensors, pressure sensors, equipment proofs, override buttons, etc.), output components (actuators, valves, dampers, etc.), and hardwired safeties (smoke detectors and freeze stats).

Section 15996 - Testing/Adjusting/Balancing: Heating, Ventilating and Cooling Systems
Show the following information on the project drawings:

- A unique number or mark for each piece of equipment or terminal.

- Air quantities at air terminals in cfm and direction of air flow (2-way, 4-way, etc.).

- Air quantities and temperatures in air handling unit schedules.

- Water quantities and temperatures in thermal energy transfer equipment schedules.
- Water quantities and heads in pump schedules.
- Water flow measurement fittings and balancing fittings.
- Ducts for special locations (wet, corrosive, etc.)

DIVISION 16

Section 16100 - Interior Wiring and Circuiting
Show the following information on the project drawings:

- Plans showing locations of all fixtures, receptacles, switches, and outlet sizes.
- Show Branch Circuiting with identification of circuits for all light fixtures and switches. Show wire size, type insulation, Alu or Cu wire, method of running circuit, and number of conductors including ground fault protection, as applicable.
- Provide Panelboard schedule for branch circuits.
- Show conduit sizes and runs.
- Show mounting height for outlets and switches on elevation or note on drawings.
- Have equipment rooms and electrical rooms been checked for adequate heat dissipation? (i.e. cooling or ventilation)
- Are wiring and equipment suitable for kitchens, mechanical rooms and other hot locations?
- Are voltages, loads and characteristics of electrical powered equipment compatible with the service provided?
- Have conduit stub-outs and circuiting been shown / located for future planned needs?

Section 16200 - Diesel-Electric Generators
Show the following information on the project drawings:

- Verify that general information and data below has been shown:
  a. Piping plans and elevations.
  b. Fuel Piping and tank details.
  c. Engine setting plan and details.
  d. Civil; architectural; structural; heating, ventilating, and air conditioning; plumbing; and electrical plans and details.
  e. Flow Diagrams indicating the number of engines and other system requirements.
  f. Diagrams indicating sizes of all piping not provided by the engine manufacturer.
  g. Indicate any additional specified water treatment requirements.

- One-Line Diagrams:
  a. Indicate the number of engine-generator units and other system requirements.
  b. Are wiring and raceway requirements shown?.
  c. Are elevations of switchgear arrangements, the secondary unit substation, motor control centers, and the control switchboard shown?.
  d. Are ratings for buses, instrument transformers, relays, instruments, circuit breakers, motors, motor controllers, lighting transformers, and other requirements shown or covered in the specifications?

- Miscellaneous: Provide any limiting dimensions, not covered in the specifications, by codes, or defined on to-scale drawings, which are necessary for proper system operation.

Section 16400 - Service and Distribution

Show the following information on the project drawings:

- On electrical site plan, show location of service to property and overhead or underground routing of service to building. Show transformer location, if applicable, and service entrance location.

- Show service cable size and type (aluminum or copper) wire.

- Show ground service and tie to protective ground.

- Show single line main power riser diagram from service entrance to distribution panelboards. Connection of equipment should be indicated by circuit runs. Indicate type of insulation, wire size, number and type of conductors for feeders including equipment ground and ground fault protection.

- Indicate wiring and raceway requirements. Provide elevations of switchgear arrangements, the motor control centers, and the control switchboard.

- Show ratings for buses, instrument transformers, relays, instruments, circuit breakers, motors, motor controllers, lighting transformers, and other requirements not covered in the specifications.

- On electrical power floor plans, show location and identification number of Main panel and of distribution panelboards.

- Show Panelboard Schedules to include size, rating, circuit breaker ratings, class and number of poles, terminals and equipment ground.

- Verify that sufficient space exists to install panelboards in locations as indicated.

- Verify that panelboards are not improperly recessed in fire rated walls.

- Disconnects shown for motors and electrical powered equipment

- Has spare capacity (25%) been included in all Mains and Panelboards?

- Have structural supports been designed and shown for electrical equipment, masts, and such?

Section 16510 - Interior Lighting
Show the following information on the project drawings:

- Type, style, mounting, lamp arrangement, Ballast type, Power Factor, and Lumens per watt . Use Schedule if necessary.

- Location of fixtures on plan. Coordinate with reflected Ceiling Plan.

- Wattage, voltage, and frequency rating required

- Type of reflector, diffuser required

- Glass/plastic lens

- Accessories required, such as photocell, time switches, and auxiliary lamps

- Mounting height above floor or grade to bottom of fixture

- Indicate type of rods or straps used to suspend fixtures. (if more than one type of hanger is used)

- Reflecting or non-reflecting surface finish

- Shielding required

- Referenced sketch

- Exit and emergency lighting shown for corridors, stairs and egress routes. (See UFAS 4.28.3)

Section 16530 - Exterior Lighting (and accessories)

The following information shall be shown on the drawings or included in the project specifications:

- Luminaire schedule indicating pertinent information (mounting, lamps, ballasts, and voltage).

- Type of luminaire;

- Voltage and wattage rating required;

- Accessories required, such as photocell, time switches, and auxiliary lamps;

- Location of poles or standards;

- Referenced sketch; and

- Extent and location of the work to be accomplished and wiring and equipment necessary for a complete installation.

- Detail of pole base and foundation including anchorage and grounding

Section 16700 - Communication Systems
Show the following information on the project drawings:

- On electrical site plan, show location of service to property and overhead or underground routing to building.

- Show location and size of communications equipment mounting board.

- On electrical power floor plans, show location of control panel

- Show single line **communications riser diagram**. Connection of equipment should be indicated by circuit runs in lieu of conduit runs. Do not indicate number and size of conductors for interconnection of communications components.

- Show mounting height for outlets on elevation or note on drawings.

Section 16722 - Interior Fire Alarm System
Show the following information on the project drawings:

- 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.

- On electrical site plan, show location of master fire alarm box, annunciator, circuit run to the connection to the campus fire alarm circuit, circuit run into the building and connection to control panel, and circuit run for master box marker light. Circuit runs should show conduit size and numbers and size of conductors.

- Show single line fire alarm riser diagram. Connection of equipment should be indicated by circuit runs in lieu of conduit runs. Do not indicate number and size of conductors for interconnection of fire alarm components.

- Show mounting height for panels on elevation or detail drawings, if critical.

- Location of Visual Annunciators (strobe lights) adjacent to Exits or EXIT signs to meet requirements of UFAS 4.28.3

- Intercom system for Areas of Rescue Assistance

APPENDIX R: RECORDS RETENTION POLICY

REFERENCE: RECORDS RETENTION AND DISPOSITION SCHEDULE
GENERAL SCHEDULE NO's. 101, 102 and 106

The following guidance is intended to supplement and clarify the records retention requirements of General Schedules 101, 102, and 106 as they relate to specific records and documents which are usually a part of the files for the procurement and administration of Construction and Professional Service Contracts to include a Capital Project, a Non-capital Construction Project, a building renovation project or the erection or placement of a temporary or permanent structure on state property.

Construction and Professional Service Procurement Records

Refer to LVA GS-102, *Fiscal Records Retention and Disposition Schedule*.

Public Announcements, RFP's and Notifications *(CO-7a,*

Retain 3 years after publication of notification, then destroy when no longer needed administratively.

A/E Qualification Forms for 'Small Purchase' Procurements *(AE-1 thru AE-6)*

Retain until information is superseded or 3 years after date on forms, then destroy.

Bids and Proposals

- Bid and proposal files *(Includes responses to RFP's, AE-1 thru AE-6, CO-16,)*
Retain 3 years after award to successful bidder, closure, cancellation, or until audit, whichever is longer; then destroy when no longer needed administratively. (Refer to LVA GS-102, *Fiscal Records Retention and Disposition Schedule)*

- Unopened bids
Return to bidder unopened. (Refer to LVA GS-102, *Fiscal Records Retention and Disposition Schedule)*

Contracts and Authorizations for Capital Construction & Improvement Projects

- Construction Contracts, Attachments, Change Orders *(CO-7, CO-9, CO-9a, CO-9b, CO-9.1, CO-9.2, CO-10, CO-10.1, CO-11, Final CO-12,)*
Permanent. (Refer to LVA GS-102, Fiscal Records Retention and Disposition Schedule)
Duplicate copies - Retain until no longer having administrative value, then destroy.

- A/E Contracts, MOU's, and Change Orders *(CO-3, CO-3.1, CO-3.1A, CO-3.2, CO-11a/e*
Retain originals 5 years after the terms of the contract are fulfilled and audited, then destroy.
Retain duplicates as long as administratively required, then destroy.

- Change Order Backup Material *(CO-11a, Cost data, quotes, calculations,*
Retain 5 years after contract completed or until audited, whichever is longer.

Furnishings, Equipment & Service Contracts Files
Retain originals 5 years after the terms of the contract are fulfilled and audited, then destroy.
Retain duplicates as long as administratively required, then destroy.

Purchase orders
Retain 3 years or until audit, whichever is longer, then destroy. (Refer to LVA GS-102, *Fiscal Records Retention and Disposition Schedule)*

Invoice and accounting files *(monthly CO-12's, A/E Invoices,*
Retain 3 years after project completion or until audit, whichever is longer, then destroy.
(Refer to LVA GS-102*, Fiscal Records Retention and Disposition Schedule)*
Destroy duplicate copies when no longer needed for administrative purposes.

Construction Project Planning and Design – Capital & Non-capital

Capital Project Authorizations and Approvals *((CO-2, CO-4, CO-5, CO-6, CO-8, CO-*
Retain Record Copy of each form including revised editions in the permanent project record.
Retain duplicates as long as administratively required, then destroy.

Capital Project Requests, Justifications and Ranking for Projects *(DPB 'H' forms and 'P' forms and associated data)*
Retain 5 years after completion of project or denial of request, then destroy.

Design Progress Plans for Construction *(schematic, preliminary* ***& prefinal plans, documentation and specifications*****)** *(CO-5a, Submitted documents*
Retain Record Copy of each 1 year after project completion and acceptance, then destroy.
Dispose of duplicate copies when no longer administratively required.

Project Design Progress Review Comments and Memoranda
Retain Record Copy of each 1 year after project completion and acceptance, then destroy.
Dispose of duplicate copies when no longer administratively required.

Site Drawings and Plans

– Master Planning & Site Development Plans
Retain preliminary / working copies until final version approved, then destroy when no longer needed administratively.

- Site Utility Plans
Retain preliminary / working copies until final version approved, then destroy when no longer needed administratively.

- Topographic Site Plans & Surveys

Retain preliminary / working copies until final version approved, then destroy when no longer needed administratively.

Construction Contract Administration – Capital & Non-capital

Temporary Certificates of Use and Occupancy *(CO-13.3,*

Retain 5 years after the issuance of the Certificate of Use and Occupancy, then destroy.

Construction Inspection Files (Building, Electrical, Mechanical, and Plumbing) *(CO-13.1a, CO-13.2a, CO-13.3a, CO-13.3b,*

Retain 5 years after final inspection or the issuance of the Certificate of Use and Occupancy, then destroy.

Other Inspection Files

Retain 3 years after the close of the inspection, then destroy.

Project Correspondence, Reports and Memoranda

Retain 5 years after project completion, then destroy records no longer considered to have administrative or legal value.

Equipment Reference Files

Retain until superseded ***or equipment is no longer owned***, then destroy.

Warranty File

Retain 1 year after warranty expiration, then destroy.

Construction Record Documents

Capital Project *As-Built Record Plans, Specifications, Drawings, Plats & Maps (CO-13.3, CO-14 and CO-17.1)*

Retain original or microfilm copies until building disposed of, then transfer to the Archives, Library of Virginia for permanent retention. Refer to Construction & Professional Services Manual, Department of General Services, for microfilm standards.

Capital Project Affidavits and Certificates *(CO-13, CO-13.1, CO-13.1b, CO-13.1c, CO-13.2)*

Retain *original or microfilm copies* permanently. Refer to Construction & Professional Services Manual, Department of General Services, *for microfilm standards*.

Construction or Renovation Record Drawings, Plans, and Specifications *(CO-13.3, CO-14, CO-17.1)*

Retain as-built record drawings until disposal or removal of the building, lines, or facility from state inventory; then contact Description Branch, LVA concerning document archival or destruction.

Retain 'As-Built' marked-up drawings 3 years after transfer of data to record drawings is completed, then destroy when no longer needed administratively.

Surveys, Plats and Maps

Retain final plats, maps and unrecorded surveys permanently.

Uniform State Building Code Variances

Retain approved applications and supporting documentation for the life of the building to which the modification relates, then destroy.
Retain denied applications 3 years after denial, then destroy.

Policy Variance Files

Retain approved applications and supporting documentation permanently.
Retain denied applications 3 years after denial, then destroy.

Certificates of Use and Occupancy *(CO-13.3 including any subsequent versions for changes in use or occupancy)*

Retain for the life of the building in state inventory to which the certificate relates, then destroy or transfer to new owner.

Site Drawings and Plans

- Master Planning & Site Development Plans

Retain final approved development plans, maps and unrecorded surveys permanently.

- Site Utility Plans

Retain approved utility plans and unrecorded surveys permanently.

- Topographic Site Plans & Surveys

Retain approved plans and unrecorded surveys permanently.

Photographs of Construction Activities / Progress

Refer to LVA GS-101, *Administrative Records Retention and Disposition Schedule*.

Permits

Building Permits *(CO-17, CO-6a, CO-6b,*

Retain 5 years after project completion and permit expiration, then destroy.

Building Demolition Permits *(CO-17.1*

Retain 3 years after disposal or removal of the building, lines, or facility from state inventory; then contact Description Branch, LVA concerning document archival or destruction.

Drawings & Specifications, Building Permit copy

Retain 5 years after final inspection and issuance of Certificate of Use and Occupancy, then destroy.

Temporary Use Permits *(versions of CO-13.3*

Retain temporary permits 1 year after the expiration of the permitted activity or use, then destroy.

Special Use & Other Permits (versions of CO-13.3

Retain 3 years after the expiration of the permitted activity or use, then destroy.

Annual Building Permit & Reports

Retain 3 years after end of report period, then destroy.

Elevator & Boiler Inspection Reports / Records

Retain 3 years after reinspection date, then destroy.

APPENDIX S: AARB GUIDELINES AND SUBMITTAL INSTRUCTIONS

COMMONWEALTH of VIRGINIA

DEPARTMENT OF GENERAL SERVICES

ART AND ARCHITECTURAL REVIEW BOARD

GUIDELINES FOR SUBMITTALS AND PRESENTATIONS
JANUARY 2003
REVISED July 2003

Purpose of the Board

The Art and Architecture Review Board consists of five members appointed by the Governor (and 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 Board recommends approval or disapproval to the Director of General Services, to whom the Governor has delegated this authority. Membership criteria are set out in Section 2.2-2400 of the Code of Virginia.

The Board 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 agency for which they are intended. While no rigid prescriptive standards exist, the Board 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.

Board Meeting Schedule

The Board meets at 10:00 a.m. on the first Friday of each month of the year, unless the first Friday or the following Monday is a state holiday, in which case the meeting will occur on the second Friday of the month, (please refer to the Commonwealth Calendar, http://www.vipnet.org/portal/cgi-bin/calendar.cgi for schedule and updates). Meeting locations will be noted on the Meeting Agenda. Generally speaking, meetings are held at the Science Museum of Virginia at 2500 West Broad Street, Richmond, VA 23219.

Submittals

All requests for a place on the Board's Agenda will be made in writing via a Fact Data Sheet and **must** arrive in the office of the Board Chairman **no later than 4:00 p.m. on the Friday two weeks before the date of the meeting,** (**strict adherence to this policy is necessary**), at which the Agency wishes to make its presentation. Agency requests should also include, where possible on 8 ½'' x 11" sheets, the location and general form of the building, complete with north arrows and graphic scales. **Eight original copies** of presentation documents/materials shall be provided for distribution to Board members. These documents will comprise the Board Agenda and also serve as the basis for the recording of the Board's actions.

Items to be included in the Consent Agenda or for demolition consideration should include enough information to allow Board deliberation without Agency representation at the meeting. Submission should include a site plan, proposed building plan and elevations and site photographs at a minimum.

Two submittals are normally required for Capital Outlay projects. The first submittal will occur at the Schematic Design phase. The second submittal is made during the Design Development phase and should include samples of materials and colors. Presentations during the Construction Documents phase may be required in unusual circumstances. If necessary, special arrangements can be made to review projects at intermediate stages.

Presentations to the Board

In general, Agency presentation 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 Agency 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 Agency's initial submittal.

The following items should be addressed (and well illustrated) by the Agency and it's Architect/Engineer at each presentation to the Board:

- 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 Agency 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.

Presenters 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.

How to Contact the Board

The Board may be contacted through its Chairman, who also maintains the Board Agenda:

Richard L. Ford, Jr., A.I.A.
Commonwealth Architects
101 Shockoe Slip, Third Floor
Richmond, Virginia 23219
Phone: (804) 648-5040
Fax: (804) 225-0329
Email address: rlfaia@comarchs.com (*please note, **no** presentation information will be accepted via email*)

ART AND ARCHITECTURAL REVIEW BOARD
SUBMITTAL FORMAT

Submittal Data is **Due Two Weeks Before Meeting**

Date of Meeting:

Agency Name (include address, contact person, telephone, fax, E-mail):

Project Title (include project code and location: city, county, etc.):

Current Project Status and Schedule (Phase: Schematic, etc.; next milestone date):

Project Description (area, number of stories, building and roof forms, and predominant exterior materials):

Brief Program Description:

Relationship to Approved Master Plan (include date of master site plan):

Contextual Issues and Design Intent:

Previous History with AARB (dates and action):

Names and Titles of Representatives for the Agency and the Architect/Engineer:

Estimate of Time Required for the Presentation:

Action this Date for use by AARB):

AARB 1-2003

APPENDIX T: RESERVED

APPENDIX U: RESERVED

APPENDIX V: RESERVED

APPENDIX W: RESERVED

APPENDIX X: RESERVED

APPENDIX Y: RESERVED

APPENDIX Z: RESERVED