STATE OF MARYLAND

DEPARTMENT OF GENERAL SERVICES

Ellington Churchill, Jr., Secretary

DESIGN, CONSTRUCTION AND ENERGY PROJECT
MANAGEMENT AND DESIGN DIVISION

PROCEDURE MANUAL

FOR

PROFESSIONAL SERVICES

STATE OFFICE BUILDING
301 WEST PRESTON STREET
ROOM 1405
BALTIMORE, MD 21201

NOVEMBER 2015

"Changing DGS for the Better"

FOREWORD

This Procedure Manual is incorporated by reference and made a part of the Standard Form of Agreement with Architects and Engineers. In the event of any conflict between the provisions of this Manual and the provisions of the Architect/Engineer agreement, the provisions of the Architect/Engineer agreement shall govern.

This Manual has been prepared to serve as a guide for providing professional services during all phases of design and the preparation of contract documents for capital projects involving the construction, alteration or renovation of State buildings, with an estimated construction cost greater than $2 million. It is intended that the procedures outlined herein shall be followed to the fullest extent practicable for other State public improvements, such as facilities renewal projects, special structures, roads, utilities, site improvements, etc. For projects with an estimated construction cost less than $2 million, the procedures may be relaxed with the authorization of the DGS Assistant Secretary for Facilities, Planning, Design, Construction and Energy.

It is further intended to include all professional services. The term "Architect/Engineer" (A/E) includes architects, engineers, landscape architects, certified interior designers and other qualified professionals who may furnish such services in the development of State public improvements.

This Manual supersedes the DGS Procedure Manual for Professional Services dated July 2012. Please recycle the superseded document.

TABLE OF CONTENTS

CHAPTER I - GENERAL REQUIREMENTS		PAGE
1	Procurement of Professional Services	I-1
2	Phases of A/E Services	I-4
3	Available Funds	I-4
4	The Program and Design Criteria	I-4
5	Construction Cost Estimates	I-5
6	Coordination and Correspondence	I-8
7	Presentation to the State Board of Architectural Review	I-8
8	Value Engineering	I-10
9	Building Systems Commissioning	I-11
10	Certification of Contract Documents	I-11
11	Payments for Professional Services	I-12

CHAPTER II – PROCEDURES		PAGE
1	Conferences	II-1
2	Reports Due With Submissions	II-3
3	Areas, Volumes and Efficiencies Tabulation	II-3
4	Sub-Surface Exploration and Evaluation	II-4
5	Forest Conservation Procedures	II-4
6	Department of Natural Resources	II-5
7	Construction Drawings	II-5
8	Construction Specifications	II-15
9	Prevailing Wage Requirements	II-17
Design Phases		
10	Phase I - Schematics	II-18
11	Phase II - Design Development	II-18
12	Phase III - Construction Documents	II-22
13	Phase IV - Bidding Procedures	II-27
14	Phase V - Construction	II-29
15	Completion and Acceptance of Project	II-33
16	Phase VI - Post Construction Phase	II-35
Table II- Basic Submission Requirements for Design Phases		

CHAPTER III - CODES AND REGULATIONS		PAGE
1	Building Codes and Regulations	III-1
2	Other Applicable Regulations	III-1

CHAPTER IV - POLICIES AND STANDARDS		PAGE
1	Computer Aided Drafting and Design	IV-1
2	Drafting Standards	IV-1
3	Liquidated Damages	IV-2
4	Office Space Standards	IV-3
5	Building Efficiency Factors	IV-4
6	Equipment and Maintenance Manuals	IV-5

TABLE OF CONTENTS

CHAPTER V - ENERGY CONSERVATION GUIDELINES		PAGE
1	Introduction	V-1
2	Building Envelope Requirements	V-1
3	Heating, Ventilation and Air Conditioning	V-2
4	Electrical Power	V-4
5	Lighting	V-4
6	HVAC Controls	V-5
7	Submission of Energy Model	V-5

CHAPTER VI – RESERVED FOR FUTURE USE

CHAPTER VII – ROOFING STANDARDS AND GUARANTEE REQUIREMENTS
Note: This section is provided as a separate document on the DGS website

APPENDICES

Appendix A	Sub-Surface Exploration and Evaluation
Appendix B	Sediment & Erosion Control, and Stormwater Management
Appendix C	Floodplain Management Criteria for Flood-Prone Areas
Appendix D	Measurement of Building Areas, Volumes & Efficiency Factors
Appendix E	Architectural and Building Standards
Appendix F	Utility Permits and Connections
Appendix G	State Field Office
Appendix H	High Performance Green Building Program

ATTACHMENTS

Attachment 1	Standard Form of Agreement with Architects and Engineers *(see DGS website)*
Attachment 2	Review Drawing Distribution
Attachment 2a	Notes for Attachment 2
Attachment 3	Standard Estimating Format/Cost Estimate Worksheet (CEW)
Attachment 3a	Instructions for Preparation of DGS Cost Estimate Worksheet (CEW)
Attachment 4	Summary - Areas, Volume & Efficiency
Attachment 5	Monthly Progress Report
Attachment 6	Project Description Sheet
Attachment 6a	Directions for Completing Project Description Sheet
Attachment 7	Bill Form - A/E Full or Partial Services
Attachment 8	Bill Form - A/E Services Hourly Rate (Not-to-Exceed)
Attachment 9	Request for Determination of Prevailing Wage Rates
Attachment 10	Building Code Study Data
Attachment 11a	Sheet Nomenclature
Attachment 11b	Pen Settings (CADD)
Attachment 12	Sample Cover Sheet
Attachment 12a	Drawing Sheet Title Block - Horizontal Text Format
Attachment 12b	Drawing Sheet Title Block - Vertical Text Format
Attachment 13	Project Manual Cover
Attachment 14	Warranty Inspection Report

GLOSSARY

CHAPTER I
GENERAL

1. PROCEDURES FOR PROCUREMENT OF PROFESSIONAL SERVICES

1.1 THE FOLLOWING PROCEDURES GOVERN THE SELECTION OF ARCHITECTS AND ENGINEERS (A/E) to provide professional services for both individual projects and Indefinite Quantity Contracts (IQC) in the fee range as noted. All licensed professionals must be actively licensed in the State of Maryland by the Maryland Department of Labor and Licensing (DLLR) at the time of submission of professional qualifications to the General Professional Selection Services Board (GPSSB). The following procedures are in accordance with The State Finance and Procurement Article, Title 13, Subtitle 3, Annotated Code of Maryland, and State Procurement Regulations,Title 21, Subtitle 12, Chapters 04 and 05, Code of Maryland Regulations (COMAR).

1.2 TOTAL FEES IN EXCESS OF $200,000: Expressions of interest in projects within this fee category will be solicited through announcements in eMaryland Marketplace. Respondent firms will subsequently be asked to submit their qualifications to the General Professional Services Selection Board (GPSSB) for evaluation by the Qualification Committee. Firms whose qualifications are rated 85% or better of the maximum attainable score are qualified for the project. The Qualification Committee will forward the list of qualified firms to the DGS Secretary for a determination whether to require further evaluation by a Second Phase Review Panel. The Qualification Committee will present the final ranking of firms to the GPSSB for approval. Once approved, the Negotiation Committee will initiate negotiations with the most qualified (highest ranked) of those firms. The Negotiation Committee will attempt to negotiate a fair, competitive and reasonable fee with the most qualified firm. If successful, the Negotiation Committee will present the final fee to the GPSSB for approval and subsequent recommendation to the Board of Public Works (BPW). If unsuccessful, the Negotiation Committee will terminate negotiations with the top ranked firm and initiate negotiation with the next most qualified firm. (Title 21, Subtitle 12, Chapter 04, COMAR).

NOTE: The A/E's proposal shall include a fee for all phases of work defined in the Request for Proposal (RFP), and the costs of reimbursable expenses associated with the provision of services and deliverables in each phase of the contract. Occasionally, the initial contract may include only phases for which funds have been appropriated. DGS may add the additional phases to the A/E contract as funds are appropriated.

NOTE: As part of the A/E selection process, consideration should be given to including an Expedited Review Consultant, approved by MDE, on the A/E Team to optimize the sediment and erosion control and stormwater management system design review and permitting process.

1.3 TOTAL FEES UP TO $200,000 - INDEFINITE QUANTITY CONTRACT (IQC): DGS will periodically enter into an IQC with one or more firms to provide architectural and/or engineering services to design small construction projects, perform studies (including value engineering), review documents, or write programs. Expressions of interest for an IQC are solicited through announcements in eMaryland Marketplace (eMarylandMarketplace.com). Interested firms will be asked to submit a letter of interest, to the Department of General Services (DGS), and respondent firms will subsequently be asked to submit their qualifications to the General Professional Services Selection Board (GPSSB) for evaluation by the Qualification

Committee. A predetermined number of firms whose qualifications are rated 85% or better of the maximum attainable score will be presented to the GPSSB for approval to proceed to the fee negotiation phase. The Negotiation Committee will attempt to negotiate fair and reasonable hourly billing rates for a defined list of labor categories with the qualified firms. Once successful, the Committee will present the results to the GPSSB for approval, and subsequent recommendation to the BPW. (Title 21, Subtitle 12, Chapter 04, COMAR).

A. Individual Assignments on an IQC will be awarded successively to ranked firms if DGS is satisfied:

(1) with the services provided by the firm.

(2) that the firm has sufficient personnel and resources to undertake additional work.

(3) that the fee for the services proposed is fair, competitive, and reasonable.

(4) that another ranked firm does not have special qualifications or experience that would positively and significantly affect performance on a particular project.

1.4 SMALL BUSINESS RESERVE (SBR) PROGRAM for award of design contracts with fees not to exceed $25,000. The Department of General Services accepts Letters of Interest, on an ongoing basis, for the selection process for design projects with fees of $25,000 or less. This process is for the procurement for Architectural, Civil Engineering, Electrical Engineering, and Mechanical Engineering projects within the stated fee category. Contracts awarded through this process will be targeted for award to qualified small Architectural firms, Civil Engineering firms, Electrical Engineering firms and Mechanical Engineering firms which are certified as small businesses through the State's Small Business Reserve Program (SBR) and for which the Department of General Services has verified that the firm meets the SBR criteria for small businesses in the service category. A firm interested in being considered is to submit a letter of interest, and required documentation. Projects will be assigned successively to firms placed on the respective lists.

1.5 REIMBURSABLE EXPENSES

A. Reimbursable expenses *include* costs of reproducing and delivering project documents to DGS, and other State agencies that will issue permits for the project, for required review submissions, and for the bid ready documents submission to DGS. An amount shall be estimated for this expense based on estimates of the number of drawings and specification pages for the various submissions, the number of copies required for the review agencies involved, and the unit costs for reproducing drawings and specification pages. Delivery charges should be based on historical data from delivery services companies.

B. Reimbursable expenses *include* travel costs for trips to meetings included in the negotiated scope of services where the travel distance exceeds a 50 mile radius from the A/E's office. Mileage will be reimbursed at a rate identified by the DGS Project Manager during the fee negotiations based on prevailing federal mileage rate.

C. Reimbursable expenses ***do not*** include **miscellaneous office expenses,** such as the cost to reproduce and deliver documents**, by a courier or the US Postal Service,** between the various A/E Team's offices. Reimbursable expenses do not include the cost of travel between the A/E team's offices for project related meetings involving only the A/E team members.

D. When an A/E team includes one or more out-of-state consultants, travel expenses to attend required project site visits and other meetings included in the final negotiated scope of services are considered reimbursable. During fee negotiations, the A/E shall provide a per trip estimate, inclusive of transportation and lodging costs, to apply to the number of trips required, for a total amount to include in the negotiated agreement.

1.6 CHANGES TO THE A/E DESIGN TEAM

A. Once approved by the GPSSB, changes are not permitted on a design team unless written authorization is granted by the DGS Administrator for A/E Procurement.

B. If it becomes necessary for a prime firm to release a consultant firm on an approved design team, a written request and justification shall be provided for review by the GPSSB Administrator and DGS Project Manager. A copy shall be sent to the Office of Business Programs divisions within DGS.

(1) Information about the qualifications and experience of the proposed substitute firm shall be included in the written request.

(2) The Project Manager will reconvene the Qualification Committee from the original A/E Procurement to review the information submitted for the substitute firm.

(3) If the Committee finds the firm acceptable and determines that its inclusion on the design team would have no effect on the order of ranking in the original evaluation, a recommendation to approve the substitution will be forwarded to the GPSSB.

C. A similar procedure will be followed if it becomes necessary to add a consultant to an approved design team. In that case the recommendation to the GPSSB would also include any additional fees associated with the services to be provided by the added consultant firm.

D. When approved by the GBSSB, the Administrator will notify the prime firm in writing, authorizing the substitution or addition of a consultant firm.

E. In the case of an addition of a consultant, a contract modification will subsequently be issued to the prime firm to incorporate additional fees to the base contract.

1.7 CONSULTANT AGREEMENTS WITH THE A/E: Consultants employed by A/E firms under contract with DGS are bound by the terms of the agreement between the A/E firm and DGS and this manual.

2. PHASES OF (A/E) SERVICES

2.1 THE A/E AWARDED A CONTRACT for a project shall provide complete, professional services described in the Standard Form of Agreement with Architects/Engineers (Attachment 1 of this Manual) and, where appropriate, in the final accepted fee proposal prepared on DGS Form GPSSB-20 or other approved format.

2.2 THE SIX PHASES OF A/E SERVICES ARE:

A. Phase I - Schematic including Program Verification and Concept Development when negotiated in the A/E Contract

B. Phase II - Design Development

C. Phase III - Construction Documents

D. Phase IV - Bidding and Negotiating

E. Phase V - Construction

F. Phase VI - Post Construction

NOTE: All six phases may not be required for some projects. In those cases, the DGS Project Manager (PM) will define the scope of services to be provided prior to fee negotiation.

3. AVAILABLE FUNDS

3.1 DESIGN BUDGET: The A/E must design to budget. A preliminary budget will be identified during fee negotiations. This budget will be based on available or anticipated construction funds. The budget will include the anticipated base construction costs and current market inflation. A/E fees, construction contingencies, construction inspection and testing expenses, and other incidental costs are excluded from the preliminary budget. The A/E must not exceed the design-to budget throughout the design phases.

3.2 EXCEEDING BUDGET: At any phase of design, if the A/E determines that the program cannot be achieved within the design-to budget, the A/E shall notify the PM immediately to discuss alternatives. Submission of cost estimates that exceed the design budget, without alternatives, will not be accepted by DGS.

4. THE PROGRAM AND DESIGN CRITERIA

4.1 THE PROGRAM as delivered to the A/E and the A/E Qualification and Fee Proposals are firm regarding the scope of the project. The A/E is not authorized to make any changes to the program without written consent from the PM.

NOTE: In addition to DGS approval, the Department of Budget and Management (DBM) must

approve any changes to the program that will increase the cost by 7.5% or more or will increase the gross square footage by 5% or more.

4.2 DESIGN CRITERIA shall ensure that all State construction and renovation projects are:

A. Planned, designed and constructed to achieve efficient utilization of space, and sustainable design goals, enhance the health and wellness of building users, and reduce consumption of non-renewable resources.

B. Economical to construct, operate and maintain**.**

C. Designed as sound structures of conventional shapes that are attractive and functional. Special attention will be given to the economics of the interrelationship of architectural, structural, mechanical and electrical systems.

D. To achieve efficient site utilization

E. With consideration for adjacent structures and neighborhood fabric

F. With logical and safe pedestrian and vehicular circulation patterns

G. To clearly identify the main entrance

H. With efficient and well organized floor plans

I. Consideration of flexibility for future use

J. To accommodate intended use

K. With a sense of permanence

L. To reflect community values

M. To prevent the unnecessary removal of vegetation during the land development process.

N. To promote energy conservation through the cooling and wind buffering effects of trees

NOTE: The A/E shall investigate the availability of energy incentive/rebate programs offered by the local utility company. Appropriate features will be incorporated into the lighting design to accrue the maximum benefit of such programs for the State.

NOTE: The A/E will comply with the National Energy Policy Act (DOE) prohibiting the manufacture of certain light sources.

5. CONSTRUCTION COST ESTIMATES

5.1 SUBMISSIONS: Cost estimates must be furnished by the A/E, in accordance with the Standard Estimating Format, Attachment 3 of this Manual, at each of the following phases of work:

A. When the Schematic Design Phase is complete and submitted for review.

B. When the Design Development Phase is complete and submitted for review.

C. When Contract Documents are 50% complete and submitted for review.

D. When Contract Documents Are 95% complete and submitted for review.

E. A Cost Estimate shall be fully developed for all projects with an estimated construction bid cost in excess of $1.0 M or as otherwise directed by DGS. This requirement may only be waived by the DGS PM, in consultation with the Chief of the DGS Project Cost Center (PCC).

F. For specific projects, as identified in the Request for Proposal, a fully developed cost estimate will be required at the preliminary, conceptual level of design. Additionally, if the 95% CDs are not complete or substantially accurate, as defined by the DGS PM, a 100% CD cost estimate, fully developed, will have to be submitted by the A/E. Additionally, for specific projects, as identified in the Request for Proposal, a fully developed cost estimate will be required for post-bid analysis.

5.2 ESTIMATE QUALIFICATIONS: As it is essential that accurate estimates be provided, it is recommended that the A/E obtain certified, professional detailed takeoff estimates as soon as the drawings are sufficiently developed to realistically obtain such an estimate. On large, complicated projects, DGS may require such an estimate as part of basic services.

5.3 ESTIMATE SCHEDULE: Submission of the estimate with the associated phase design documents increases the likelihood of error, if the estimate is based on design data that may be out of date. The estimate must be based on the relevant design submission. The cost estimate shall be submitted within two (2) weeks following the submission of the current design phase documents package.

5.4 ESTIMATE FORMAT & CONTENT: All levels of estimates shall consider the project quality, whether material or assurance. The estimator, when appropriate, and acting in the best interest of the company, client or owner should apply value engineering techniques.

A. Estimate levels for various sections (structural, mechanical, electrical) of a project in development may not be equal. State the variation of section levels in the status evaluation portion of the estimate narrative.

B. The term Defined Area or System is the equivalent of terminology such as work breakdown structure, owner's special division of specified work, or syntax area. Prepare all levels of estimates by assigning defined areas or systems and state the costs for those defined areas or systems. Maintain the integrity of the Construction Specification Institute (CSI) numbering system within each of the defined areas or systems. The estimate should follow the current CSI Master Format 35 Division format for construction specifications.

C. The estimate should be produced independent of any preceding estimate and should be based only on the documents (drawings, specifications, etc.) for the current stage of design. A new estimate should not be created by editing the old estimate based on "marked up or red lined" changes in the drawings.

D. The estimate should be submitted in a spreadsheet format, preferably in a Microsoft Excel

file. The use of electronic estimating program software is strongly encouraged. It shall contain a summary of estimated costs, alternates and notes (if any), a soft copy of the estimate spreadsheet file (via email attachment or agreed electronic medium), and a hard copy printout of the estimate (for verification purposes).

E. The estimate spreadsheet formatting criteria should include columns for the item of work, the unit of measurement of an item, the quantity of an item, the unit cost of an item, and the total cost of an item.

F. Escalation should be calculated from the estimate reference point to the estimated mid-point of construction. This time frame should be multiplied by an annual escalation rate to determine the percent of escalation to be used. The escalation rate should be determined based on market conditions and industry forecasts projected at the time the design occurs. The escalation rate calculation should be explained in the Note section of the cost estimate summary.

G. General Contractors Overhead & Profit, should be calculated in accordance with the requirements of the DGS General Conditions.

H. Bond costs should be calculated in accordance with industry standard allowances at the varying levels of design and the current market conditions.

I. Budget contingency costs, described as a percentage of construction costs, should be included in each estimate as appropriate to the design phase. Budget Contingency is distinct from Construction Contingency, which is included in the Cost Estimate Worksheet. The Budget Contingency should reach zero upon completion of the 95% Construction Documents.

J. The DGS Cost Estimate Worksheet (Attachment 3 of this Manual) remains a standard requirement. However, a waiver may be requested, with full justification, by the A/E. The decision to grant the waiver will be made by the DGS PM, in consultation with the Chief of the DGS PCC.

K. Level One Estimate - Schematic Design
Prepare this level of estimate with information derived from the facility program plus outline design criteria. The purpose of this estimate level is to provide a better defined estimate for feasibility determinations.

L. Level Two Estimate - Design Development
Prepare this level estimate from not less than 25% complete preliminary design drawings and draft specifications. The purpose of this estimate level is to establish probable costs within the range of available information.

M. Level Three Estimate - Project Control / 50% Construction Documents (CDs)
Prepare this level estimate from design drawings and specifications that are at least fifty percent (50%) complete. This estimate level provides a greater amount of accuracy possible with better definition and detail. Use this level for value engineering applications before the completion of specifications and design drawings.

N. Level Four Estimate - Contract Drawings/95% CDs
Prepare this level estimate from not less than ninety five percent (95%) complete design

drawings and specifications. This level shows the probable project cost.

5.5 THE TRANSFER OF ESTIMATE INFORMATION TO FIELD COST CONTROL systems provides managers an opportunity to closely monitor and control construction costs as they occur. Computer estimating and cost control programs, whether industry specific or general spreadsheet type, are especially valuable for rapid and efficient generation of both the estimate and actual construction cost information.

5.6 FOR QUESTIONS OR ADDITIONAL INFORMATION related to the cost estimate requirements, please contact the Chief of the DGS Project Cost Center @ 410-767-4397.

6. COORDINATION AND CORRESPONDENCE

6.1 COORDINATION: The DGS PM is the liaison between the UA and the A/E. The A/E shall notify the DGS PM of all conferences it would like to schedule with UA personnel sufficiently in advance of the intended meeting date to permit attendance of all appropriate personnel. Generally, the meetings will be scheduled at a DGS Facility.

6.2 CORRESPONDENCE: The A/E is responsible to prepare concise minutes of all conferences. Within five working days of a conference, the A/E shall distribute the minutes via agreed electronic medium to the PM, the UA and others as appropriate.

6.3 COPIES: Throughout project development, copies of all directed to the DGS PM. The A/E is responsible for distributing drawings and specifications for review to the DGS, the UA and other agencies. (See DGS Review Drawing Distribution, Attachment 2 of this Manual).

6.4 PRESS RELEASES: A/Es under contract with the State shall not issue press releases nor respond to inquiries from any media source without prior written approval. Inquiries from any media source shall be referred to the DGS Public Information Officer. A/E shall coordinate any and all interface through the DGS Project Manager.

7. PRESENTATION TO THE STATE ARCHITECTURAL REVIEW BOARD

7.1 REQUIREMENTS:

A. The Architectural Review Board (ARB) is established in accordance with State Finance and Procurement Article, Sections 4-701 through 4-704, Annotated Code of Maryland. The A/E may be required to make a Concept Presentation to the ARB after program verification early in the Schematic Phase. This requirement will be identified in the Technical Proposal Package distributed during the Procurement of A/E services. Typically, presentations to the ARB take place toward the end of the Schematic and Design Development Phases.

B. Notification: The A/E will be notified of date and time of the ARB meeting and will be advised of the time limit for the presentation to the ARB. The Using Agency will be notified by DGS of the meeting and will be encouraged to be present.

C. Considerations: The ARB will consider all factors affecting the project, including program, siting, adaptability to the master plan (if one exists) and architectural design. The ARB, in its comments and recommendations, will evaluate the functional and esthetic aspects of the project design, and evaluate whether the project can be built economically and consistent with sound construction practices and with minimum maintenance requirements.

D. Recommendations: After considering the submission, the ARB members will discuss their recommendations with the A/E. The A/E will be given the opportunity to reply to the ARB's comments.

E. The A/E shall record Minutes of the discussions and distribute within seven days.

7.2 CONCEPT PRESENTATION shall include:

A. A review of the budget and program.

B. Site analysis including review of broader context and Master Plan (if one exists)

C. Video/Photographs**:** The A/E may prepare a video of the site and surrounding structures. The video shall be keyed to a plot plan. The video shall have a maximum play time of 5 minutes. A photographic display may be prepared in lieu of video.

D. Program Organization

E. Current Development of the concept.

F. The A/E shall record minutes of the discussions and distribute within seven days.

7.3 SCHEMATIC DESIGN PRESENTATION shall include:

A. Site Context Plan with photographs

B. Landscape concept discussing plant and paving materials

C. Preliminary Floor Plan layouts and elevations including mechanical equipment enclosures

D. Building Sections

E. Model or perspectives adequate to explain design

F. Discussion of potential building exterior materials

G. Concept of major interior spaces

H. Green building submission complying with the requirements of the High Performance Green building program.

I. A/E shall record minutes and distribute within seven days.

7.4 DESIGN DEVELOPMENT (DD) PRESENTATION shall include:

A. Refined Site Plan

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gross square footage by 5% or more.

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B. Economical to construct, operate and maintain**.**

C. Designed as sound structures of conventional shapes that are attractive and functional. Special attention will be given to the economics of the interrelationship of architectural, structural, mechanical and electrical systems.

D. To achieve efficient site utilization

E. With consideration for adjacent structures and neighborhood fabric

F. With logical and safe pedestrian and vehicular circulation patterns

G. To clearly identify the main entrance

H. With efficient and well organized floor plans

I. Consideration of flexibility for future use

J. To accommodate intended use

K. With a sense of permanence

L. To reflect community values

M. To prevent the unnecessary removal of vegetation during the land development process.

N. To promote energy conservation through the cooling and wind buffering effects of trees

NOTE: The A/E shall investigate the availability of energy incentive/rebate programs offered by the local utility company. Appropriate features will be incorporated into the lighting design to accrue the maximum benefit of such programs for the State.

NOTE: The A/E will comply with the National Energy Policy Act (DOE) prohibiting the manufacture of certain light sources.

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C. When Contract Documents are 50% complete and submitted for review.

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F. For specific projects, as identified in the Request for Proposal, a fully developed cost estimate will be required at the preliminary, conceptual level of design. Additionally, if the 95% CDs are not complete or substantially accurate, as defined by the DGS PM, a 100% CD cost estimate, fully developed, will have to be submitted by the A/E. Additionally, for specific projects, as identified in the Request for Proposal, a fully developed cost estimate will be required for post-bid analysis.

5.2 ESTIMATE QUALIFICATIONS: As it is essential that accurate estimates be provided, it is recommended that the A/E obtain certified, professional detailed takeoff estimates as soon as the drawings are sufficiently developed to realistically obtain such an estimate. On large, complicated projects, DGS may require such an estimate as part of basic services.

5.3 ESTIMATE SCHEDULE: Submission of the estimate with the associated phase design documents increases the likelihood of error, if the estimate is based on design data that may be out of date. The estimate must be based on the relevant design submission. The cost estimate shall be submitted within two (2) weeks following the submission of the current design phase documents package.

5.4 ESTIMATE FORMAT & CONTENT: All levels of estimates shall consider the project quality, whether material or assurance. The estimator, when appropriate, and acting in the best interest of the company, client or owner should apply value engineering techniques.

A. Estimate levels for various sections (structural, mechanical, electrical) of a project in development may not be equal. State the variation of section levels in the status evaluation portion of the estimate narrative.

B. The term Defined Area or System is the equivalent of terminology such as work breakdown structure, owner's special division of specified work, or syntax area. Prepare all levels of estimates by assigning defined areas or systems and state the costs for those defined areas or systems. Maintain the integrity of the Construction Specification Institute (CSI) numbering system within each of the defined areas or systems. The estimate should follow the current CSI Master Format 35 Division format for construction specifications.

C. The estimate should be produced independent of any preceding estimate and should be based only on the documents (drawings, specifications, etc.) for the current stage of design. A new estimate should not be created by editing the old estimate based on "marked up or red lined" changes in the drawings.

D. The estimate should be submitted in a spreadsheet format, preferably in a Microsoft Excel file. The use of electronic estimating program software is strongly encouraged. It shall contain a summary of estimated costs, alternates and notes (if any), a soft copy of the estimate

spreadsheet file (via email attachment or agreed electronic medium), and a hard copy printout of the estimate (for verification purposes).

E. The estimate spreadsheet formatting criteria should include columns for the item of work, the unit of measurement of an item, the quantity of an item, the unit cost of an item, and the total cost of an item.

F. Escalation should be calculated from the estimate reference point to the estimated mid-point of construction. This time frame should be multiplied by an annual escalation rate to determine the percent of escalation to be used. The escalation rate should be determined based on market conditions and industry forecasts projected at the time the design occurs. The escalation rate calculation should be explained in the Note section of the cost estimate summary.

G. General Contractors Overhead & Profit, should be calculated in accordance with the requirements of the DGS General Conditions.

H. Bond costs should be calculated in accordance with industry standard allowances at the varying levels of design and the current market conditions.

I. Budget contingency costs, described as a percentage of construction costs, should be included in each estimate as appropriate to the design phase. Budget Contingency is distinct from Construction Contingency, which is included in the Cost Estimate Worksheet. The Budget Contingency should reach zero upon completion of the 95% Construction Documents.

J. The DGS Cost Estimate Worksheet (Attachment 3 of this Manual) remains a standard requirement. However, a waiver may be requested, with full justification, by the A/E. The decision to grant the waiver will be made by the DGS PM, in consultation with the Chief of the DGS PCC.

K. Level One Estimate - Schematic Design
Prepare this level of estimate with information derived from the facility program plus outline design criteria. The purpose of this estimate level is to provide a better defined estimate for feasibility determinations.

L. Level Two Estimate - Design Development
Prepare this level estimate from not less than 25% complete preliminary design drawings and draft specifications. The purpose of this estimate level is to establish probable costs within the range of available information.

M. Level Three Estimate - Project Control / 50% Construction Documents (CDs)
Prepare this level estimate from design drawings and specifications that are at least fifty percent (50%) complete. This estimate level provides a greater amount of accuracy possible with better definition and detail. Use this level for value engineering applications before the completion of specifications and design drawings.

N. Level Four Estimate - Contract Drawings/95% CDs
Prepare this level estimate from not less than ninety five percent (95%) complete design drawings and specifications. This level shows the probable project cost.

5.5 THE TRANSFER OF ESTIMATE INFORMATION TO FIELD COST CONTROL systems provides managers an opportunity to closely monitor and control construction costs as they occur. Computer estimating and cost control programs, whether industry specific or general spreadsheet type, are especially valuable for rapid and efficient generation of both the estimate and actual construction cost information.

5.6 FOR QUESTIONS OR ADDITIONAL INFORMATION related to the cost estimate requirements, please contact the Chief of the DGS Project Cost Center @ 410-767-4397.

6. COORDINATION AND CORRESPONDENCE

6.1 COORDINATION: The DGS PM is the liaison between the UA and the A/E. The A/E shall notify the DGS PM of all conferences it would like to schedule with UA personnel sufficiently in advance of the intended meeting date to permit attendance of all appropriate personnel. Generally, the meetings will be scheduled at a DGS Facility.

6.2 CORRESPONDENCE: The A/E is responsible to prepare concise minutes of all conferences. Within five working days of a conference, the A/E shall distribute the minutes via agreed electronic medium to the PM, the UA and others as appropriate.

6.3 COPIES: Throughout project development, copies of all directed to the DGS PM. The A/E is responsible for distributing drawings and specifications for review to the DGS, the UA and other agencies. (See DGS Review Drawing Distribution, Attachment 2 of this Manual).

6.4 PRESS RELEASES: A/Es under contract with the State shall not issue press releases nor respond to inquiries from any media source without prior written approval. Inquiries from any media source shall be referred to the DGS Public Information Officer. A/E shall coordinate any and all interface through the DGS Project Manager.

7. PRESENTATION TO THE STATE ARCHITECTURAL REVIEW BOARD

7.1 REQUIREMENTS:

A. The Architectural Review Board (ARB) is established in accordance with State Finance and Procurement Article, Sections 4-701 through 4-704, Annotated Code of Maryland. The A/E may be required to make a Concept Presentation to the ARB after program verification early in the Schematic Phase. This requirement will be identified in the Technical Proposal Package distributed during the Procurement of A/E services. Typically, presentations to the ARB take place toward the end of the Schematic and Design Development Phases.

B. Notification: The A/E will be notified of date and time of the ARB meeting and will be advised of the time limit for the presentation to the ARB. The Using Agency will be notified by DGS of the meeting and will be encouraged to be present.

C. Considerations: The ARB will consider all factors affecting the project, including

program, siting, adaptability to the master plan (if one exists) and architectural design. The ARB, in its comments and recommendations, will evaluate the functional and esthetic aspects of the project design, and evaluate whether the project can be built economically and consistent with sound construction practices and with minimum maintenance requirements.

D. Recommendations: After considering the submission, the ARB members will discuss their recommendations with the A/E. The A/E will be given the opportunity to reply to the ARB's comments.

E. The A/E shall record Minutes of the discussions and distribute within seven days.

7.2 CONCEPT PRESENTATION shall include:

A. A review of the budget and program.

B. Site analysis including review of broader context and Master Plan (if one exists)

C. Video/Photographs**:** The A/E may prepare a video of the site and surrounding structures. The video shall be keyed to a plot plan. The video shall have a maximum play time of 5 minutes. A photographic display may be prepared in lieu of video.

D. Program Organization

E. Current Development of the concept.

F. The A/E shall record minutes of the discussions and distribute within seven days.

7.3 SCHEMATIC DESIGN PRESENTATION shall include:

A. Site Context Plan with photographs

B. Landscape concept discussing plant and paving materials

C. Preliminary Floor Plan layouts and elevations including mechanical equipment enclosures

D. Building Sections

E. Model or perspectives adequate to explain design

F. Discussion of potential building exterior materials

G. Concept of major interior spaces

H. Green building submission complying with the requirements of the High Performance Green building program.

I. A/E shall record minutes and distribute within seven days.

7.4 DESIGN DEVELOPMENT (DD) PRESENTATION shall include:

A. Refined Site Plan

B. Landscape Plan showing materials, patterns, and plants.

C. Photographs of context

D. A review of the Budget and Program

E. Boards and/or a power point presentation representing plans, sections, and elevations that illustrate design

F. Physical models or a computer generated model demonstrating massing and configuration.

G. Selections and samples of major building materials and colors

H. Interior materials and finishes for major spaces

I. Green building submission complying with the requirements of the High Performance Green building program.

J. A/E shall record minutes and distribute within seven days

7.5 ADDITIONAL PRESENTATIONS: Additional presentations of the schematic or design development phase may be required to resolve design concerns. When subsequent meetings are required, all previous submissions shall be made available by the A/E to the ARB. All costs associated with additional presentations shall be borne solely by the A/E unless there are special circumstances acknowledged by the DGS.

7.6 The DGS Project Manager shall resolve any conflicts with program, budget, scope of work or any other issues which may arises as a result of the ARB review process.

8. VALUE ENGINEERING:

8.1 DGS WILL UTILIZE VALUE ENGINEERING on all projects valued at $10 million and greater, and on selected projects under $10 million. Value Engineering Workshops will be conducted at the end of the Schematic Phase and the end of the Design Development Phase.

8.2 THE A/E DESIGN TEAM WILL CONDUCT A PRESENTATION for the Value Engineering Team at the beginning of each Value Engineering Workshop to explain the design concepts and documentation that have been developed during the respective phases.

8.3 THE A/E DESIGN TEAM WILL ALSO PARTICIPATE in the wrap up meeting after each Value Engineering Workshop. At that meeting the Value Engineering Team will present their findings and recommendations for cost saving measures to DGS, the Using Agency and the A/E Design Team.

8.4 THE A/E DESIGN TEAM WILL REVIEW THE VALUE ENGINEERING REPORTS produced, and provide written responses to the DGS Project Manager on the specific recommendations.

9. BUILDING SYSTEMS COMMISSIONING

9.1 COMMISSIONING AGENT: On most new building projects and major renovations, 7,500 s.f. or more, which require LEED certification, DGS will retain the services of a third party Commissioning Agent. The Commissioning Agent's services will begin early in the design phase of the project to assist the State with the review of designs and construction documents for building equipment and systems. The Commissioning Agent will also develop Operational and Functional testing programs for all mechanical equipment and systems, and building management, electronic control and security systems.

9.2 A/E DESIGN TEAM INTERFACE: The Commissioning Agent will provide reviews and comments on system designs and construction documents, and will participate in design review meetings. The A/E Design Team will treat comments of the Commissioning Agent as comments of the State, and will provide written responses and necessary and appropriate revisions to the design and construction documents.

9.3 TESTING PROGRAMS: The A/E Design Team will incorporate the Operational and Functional testing program specifications and charts developed by the Commissioning Agent into the Project Manual during the Construction Documents Phase.

9.4 A/E DESIGN TEAM RESPONSIBILITY: The participation of a Commissioning Agent in the project in no way relieves the Design Team (including the MEP consultant) of total responsibility for the proper design of all building systems and building management/control systems, thorough review of General Contractor shop drawing and equipment submissions for same, adequate construction phase observation and punch list inspection of the installation of same, and resolution of operational problems with same both during the acceptance and post-construction phases of the project.

10. CERTIFICATION OF CONTRACT DOCUMENTS

10.1 BID SET: There shall be a Bid Set of Contract Documents, which shall be the documents issued for competitive bidding of the construction contract, with construction drawings and the construction specifications Each sheet of the construction drawings shall bear the professional seal and signature of the responsible architect and/or engineer. The construction specifications shall contain a page with the seals and signatures of each licensed member of the Design Team.

A.The professional seal may be a digital reproduction applied to the construction drawings through the CADD software and the specifications through the word processing software.

B. The signature shall be an original signature written in ink on each construction drawing and on the specifications, seal and signature page.

C. State signatures **-** The DGS Project Manager and Chief of Project Management and Design, and the Using Agency Representative will sign the cover sheet of the Record Set.

D. Electronic Bid Documents – The Electronic Bid Ready Documents shall be the signed and sealed Bid Set of construction drawings and specifications delivered to DGS via agreed electronic medium in pdf format. As these documents will be uploaded to

eMarylandMarketplace during the bidding process, the pdf files shall be of a resolution no greater than 200 dpi.

10.2 PROFESSIONAL CERTIFICATION: The following certifications shall be placed on the cover sheet, and subsequent sheet as necessary based on the number of consultants on the design team, of the set of Contract Drawings and the seal and signature page of the Project Manual specification book:

Architects
The Contract Documents for the indicated public improvement were prepared under my supervision and, to the best of my knowledge, information and belief, they comply with the relevant building codes of the State of Maryland.

License No. _____, Expiration Date ___/___/_____

Engineers
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. _____, Expiration Date ___/___/_____

10.3 CARE OF CONTRACT DOCUMENTS: It is the responsibility of the A/E to maintain Contract Document CADD and word processor files in electronic media format until they are delivered to DGS as fully corrected as-built record documents at the conclusion of the Construction Phase of the project.

10.4 APPROVAL OF CONTRACT DOCUMENTS BY THE STATE does not relieve the A/E of responsibility for:

A. The accuracy and completeness of all documents.

B. Compliance with required Standards, Codes, Ordinances or other applicable regulations.

C. Compliance with the Standard of Care governing the A/E's performance in the proper coordination and detailing of the architectural and engineering work in the documents.

11. PAYMENTS FOR PROFESSIONAL SERVICES

11.1 PAYMENT is made on the basis of the negotiated fee for each phase of the contract as set forth in the DGS Standard Form of Agreement with the A/E.

11.2 FULL SERVICES CONTRACT payment requests shall be in the standard form shown on Attachment 7 of this Manual.

11.3 PARTIAL SERVICES CONTRACT payment requests may be made using the form shown on Attachment 8 of this Manual.

11.4 PAYMENT REQUEST invoices may be presented at the beginning of each month for work completed and accepted by DGS PM covering the cost of services performed during the previous month.

11.5 REQUIRED INFORMATION: The A/E shall submit one copy of the current Monthly Progress Report (Attachment 5 of this Manual) with each payment request.

11.6 REQUIRED SERVICES: All services required by DGS Form GPSSB-20 must be provided prior to DGS approval of each phase and prior to DGS approval of A/E invoices for payment of applicable fees.

11.7 FINAL PAYMENT

A. Final payment of the A/E's Phase V fee shall be payable upon submission of the "as-built" Record Set of Construction Documents. A/E fees required to produce the “As-built” record set of documents must be specifically detailed in the A/E’s fee proposal.

B. Final payment of the A/E's Phase VI fee shall be payable upon completion of the 23 month Post Construction inspection, in accordance with Chapter II, paragraph 16. A/E fees required to perform this final inspection must be specifically detailed in the A/E fee proposal.

END OF CHAPTER I

CHAPTER II
PROCEDURES

GENERAL

1. CONFERENCES

1.1 PRE-DESIGN CONFERENCE

A. General: As soon as practical after an A/E has been assigned to a project, the Department of General Services (DGS) Project Manager (PM) will call a conference to initiate the first general review and discussion of the project. This meeting will include the A/E, a representative of the Using Agency (UA), the DGS PM and Design Team Personnel.

B. Topics: The following will be furnished and/or reviewed with the A/E:

(1) Procedure Manual for Professional Services

(2) DGS Project Number and Project Name to be used on all correspondence, drawings,specifications, estimates, shop drawings, invoices, and other matters relative to the Project.

(3) Program: the approved project Program

(4) Statements in the program addressing the presence or absence of hazardous materials

(5) "Design-to" funds available for the project

(6) Names and phone numbers of UA personnel with whom the A/E may coordinate details

(7) Names of DGS personnel with whom the A/E will coordinate all work e.g. PM, Design Team, etc.

(8) Date and authorization for site visit

(9) Licensing and permit requirements e.g. Federal, State, Local, etc.

(10) Phase Schedule showing start and completion dates for all phases of the A/E contract including:

(a) Schematic Design - including, as negotiated, Program Verification, Concept Development, ARB Presentations, Value Engineering Workshop, Schematic Documents Submission to DGS

(b) DGS/UA Schematic Design Review

(c) Design Development - including, as negotiated, ARB Presentation, Value Engineering Workshop, coordination with Commissioning Agent (see Chapter I, paragraph 9) and/or Construction Manager, DD Documents Submission to DGS

(d) DGS/UA Design Development Review

(e) Construction Documents

(f) DGS/UA Review-50% CD, 95% CD, & 100% CD

(g) Bidding & Negotiation

(h) Construction Administration

(11) Review Drawing Distribution: for each review submission, the A/E will be responsible to distribute the number of review sets to the respective agencies listed on Attachment 2 of this Manual. If reviews and approvals/permits are required from more than one unit within MDE, i.e. sediment erosion/storm water, wetlands, etc., a separate submission of review documents must be sent to each unit. MDE will not internally distribute documents to all necessary reviewing entities.

(12) Additional information that the A/E may need to complete the Schematic Phase.

(13) Special DGS Policies applicable to the project, such as roofing, energy conservation, and green/sustainable design, commissioning, etc., described in other chapters and attachments of this Manual.

(14) Available Information: all site, utility, topographic, and master plan information; all available data for existing facilities undergoing project renovations, alterations or additions.

(15) Standard Submission requirements, including drawings, specifications, geotechnical report, calculations, areas/volume/efficiency summary, monthly progress report, Green Building submission, etc.

(16) Program verification process and procedures to effect program changes, if it becomes necessary.

1.2 OTHER CONFERENCES

A. DGS will schedule conferences to discuss review comments and resolve problems relating to design submissions at the conclusion of each design phase (Schematic, DD, CD) and at other times as needed.

B. The A/E shall record minutes of the discussions and distribute within seven days to all participants.

NOTE: The Architect and appropriate Consultants are required to attend all relevant conferences. The UA will be represented at all review conferences.

1.3 DOCUMENT REVIEW PROCEDURES

A. Review Comments shall be electronically transmitted from the DGS PM to the A/E.

B. The A/E shall review the Comments and respond by typing a <u>substantive</u> response directly below the DGS comment. A response that states “Will Comply” is not an acceptable response to a review comment. Detail must be provided as to how and when the comment will be addressed.

C. The A/E shall return the Comments to the DGS' PM via e-mail within ten working days of initial receipt.

D. The A/E shall proceed to the next design phase only after the DGS PM has approved the current design phase.

2. REPORTS DUE WITH SUBMISSIONS

2.1 MONTHLY PROGRESS REPORT

A. Requirements: The A/E shall provide the DGS PM a Monthly Progress Report (see Attachment 5 of this Manual) for all phases of design no later than the first day of the month immediately following the end of the report month. The report shall cover work completed for the entire month.

B. Schedule: The Monthly Progress Report will be completed progressively so that each submission includes prior status dates as well as current status. Estimated dates of completion of all design phases under the A/E contract will be furnished, as well as other information indicated on the form.

C. Delays: The schedule will clearly show (in "Remarks") the reasons for delays, e.g. program clarification, revisions, awaiting survey information, awaiting tests or borings, lack of funds, agency delays, review delays, etc. Include the dates that each delay started and ended.

D. Completion Percentages**:** Overall percentages of completion will take into account the status of both drawings and specifications of each of the individual disciplines involved in the project. In general it is considered that drawings constitute 3/4 of the work and specifications 1/4 of the work.

E. Construction Phase Reports: During the Construction Phase of the project, the Monthly Progress Report shall summarize Construction Administration activities during the month, i.e. progress meetings attended, shop drawings reviewed, ASIs issued, RFI responses issued, etc. The DGS Project Manager shall be provided updated copies of shop drawing, ASI and RFI logs.

2.2 PROJECT DESCRIPTION SHEET: The A/E shall complete and submit the original and two copies of the Project Description Sheet (see Attachment 6 of this Manual) with the DD submission, the 50%, 95% & 100% CD submissions, and other times on request from DGS.

2.3 GREEN BUILDING PLAN: The A/E shall comply with Appendix H, HIGH PERFORMANCE GREEN BUILDING PROGRAM.

3. AREAS, VOLUMES and EFFICIENCY TABULATION

3.1 AREAS, VOLUMES AND EFFICIENCY TABULATIONS are required for all new buildings and additions; they may also be required for alterations and renovations. Measurement and computation guidelines are described in Appendix D of this Manual.

3.2 FORMS: Use DGS Form, Summary Areas, Volumes & Efficiency, Attachment 4 of this Manual.

3.3 CONTENT: Submissions at each phase will include the tabulations for that phase, as well as the tabulations of the program and all prior phases (based on the approved plans of the prior phases). Show all information on the same form.

3.4 COPIES: Submit in triplicate to the DGS PM.

3.5 SCHEDULE: The A/E shall submit on the Attachment 4 form current detailed tabulations of areas, volumes and efficiencies with the submission of plans as follows:

A. Schematic Phase - Additionally, on each architectural floor plan, the actual net assignable and the programmed net assignable area will be noted for each programmed space.

B. Design Development Phase

C. Construction Document Phase - Mid-point Review (50%) and Final Review (95%)

D. Other interim submissions when requested.

4. SUB-SURFACE EXPLORATION AND EVALUATION

4.1 REQUIREMENTS for the sub-surface exploration and evaluation program to be undertaken by the geotechnical engineering consultant are documented in Appendix A of this Manual.

5. FOREST CONSERVATION PROCEDURES

5.1 REQUIREMENTS: In accordance with Natural Resources Article, Title 5, Forest and Parks, Subtitle 16, Forest Conservation, all construction activities involving but not limited to clearing, grading, erosion and sediment control on areas greater than 40,000 square feet by a unit of State government or any person using State funding for a construction project, shall require a "Forest Stand Delineation" and a "Forest Conservation Plan" for submission to and approval by the Department of Natural Resources, Resource Conservation Service, Forestry Division.

5.2 SITE: Subsequent to preparation of a "Forest Stand Delineation", in accordance with DNR Article, Title 5 and as an integral part of the site planning process, a "Forest Conservation Plan" shall be prepared and submitted which outlines the proposed forest retention, reforestation, afforestation and/or forest protection procedures associated with the proposed land use change.

5.3 CONSERVATION FUND: Per Maryland Natural Resources Code § 5-1610, if any entity subject to this subtitle demonstrates to the satisfaction of the appropriate State or local authority that the requirements for reforestation or afforestation, on-site or off-site, cannot be reasonably accomplished, that entity shall contribute money (fee-in-lieu) to the Conservation Fund, in accordance with COMAR 08.19.04.09, corresponding to the area determined by the "Forest Stand Delineation" and the "Forest Conservation Plan" as requiring planting. At the time of publication of this Manual, these fees were 30.5¢ per square foot for those projects inside a priority funding area, and 36.6¢ per square foot for those projects outside a priority funding area.

6. DEPARTMENT OF NATURAL RESOURCES

6.1 CHESAPEAKE BAY CRITICAL AREA CONSIDERATION

6.2 REQUIREMENTS: A/Es are required to incorporate the Chesapeake Bay Critical Area and Wetlands Regulations administered by the Chesapeake Bay Critical Areas Commission, Department of Natural Resources, into the design of construction projects.

6.3 CRITICAL AREAS COMMISSION (CAC) APPROVAL: For projects which have received general approval from the CAC, the A/E will be responsible for submitting Schematics, 50% and 95% construction documents to the CAC. In all instances, one copy of the transmittal letter acknowledging receipt by the CAC shall be submitted to the DGS Project Manager. The A/E shall provide to DGS, two copies of the CAC's letter which indicates their approval of each phase of the proposed design.

6.4 FORMAL PRESENTATION: The A/E may be required to make formal presentations to the CAC.

6.5 COAST SMART CONSTRUCTION PROGRAM: A/Es shall be required to Comply with the Coast Smart Construction Program under Coast Smart Council in the department of Natural Resources, created by House Bill 615-Section 3-1001-3-1004,and enacted into law in 2014 to establish Coast Smart Infrastructure siting and design criteria to address sea level rise and coastal flood impacts on capital projects.

7.0 CONSTRUCTION DRAWINGS

7.1 DRAWING STANDARDS: DGS requires that all CADD files be in AutoCAD DWG format. The standards defined in this manual are specifically for AutoCAD environments, for those consultants/sub consultants who do not use AutoCAD, it is their responsibility to ensure that files translated to AutoCAD adhere to these standards before delivery.

A. Electronic drawings shall be created and maintained in native AutoCAD vector file format (DWG); translations between vector file formats (DWG and DGN) should be avoided. ***The following should be avoided***:

(1) Drawing Exchange Format (DXF) - unless mandated by special requirement in this manual.

(2) Use of the following CADD entities: doughnuts, segments, solids and traces, point entities, custom fonts, patterns or line types or styles, special characters such as nested blocks, nested or circular Xrefs (reference files) and infinite lines.

(3) All drawings shall be void of duplicate entities.

B. All CADD drawing files should be created at full-scale (1-to-1). Drawing borders are referenced into paper space with insertion point 0, 0 and a scale of 1.

C. The DGS standard drawing size is D (24" X 36"). Other sizes are allowed only as needed, and require approval of DGS Project Manager.

D. Each facility shall be drawn in the CADD model file at full size (1 to 1). The CADD user then scales the data to fit the desired paper size at the correct scale through a view port in paper space using the zoom command and entering nXP where n is the scale factor required and XP remains constant.

E. The drawing sequence number for CADD drawing starts with an upper case letter specifying the discipline followed by a three digit sequential number, starting with 001 within each discipline code (i.e. C001, C002 …, C00n; A001, A002 … A00n). The discipline codes are listed below:

Discipline Code	Discipline	Discipline Code	Discipline	Discipline Code	Discipline
A	Architectural	H	Haz. Mats	P	Plumbing
C	Civil	I	Interiors	R	Real estate/lease
D	Demolition	IT	Info. Tech.	S	Structural
E	Electrical	L	Landscaping	T	Telecommunication
F	Fire protection	M	Mechanical	Z	Contractor/shop drawing

F. Construction Drawing Sets:

(1) The drawings listed in the table in *Attachment 11a* are commonly used in identifying a complete set of drawings for the construction of a new facility. Drawing sets for the construction of facility modifications must consist of a subset of the drawings listed the table in *Attachment 11a*. Construction drawing sets shall be arranged by discipline in the order shown in the table in *Attachment 11a*.

(2) Layers
For layer conventions, DGS has adopted the CADD LAYER GUIDELINES, NCS Latest Edition, published by the American Institute of Architects (AIA). This document is a constituent of the National CADD Standards.

G. The DGS standard fonts include only "out of the box" fonts; these are fonts that ship with every installment of AutoCAD. Any font not meeting this criterion must be submitted to the DGS Project Engineer for approval and inclusion in the project specific standard Font Library (.shx) file.

(1) All annotation text shall be left justified.

(2) The following text heights and colors must be used on all drawings to ensure uniformity in the contract documents:

ENTITY	PLOTTED TEXT HEIGHT (IN INCHES)	COLOR
Titles	0.25	3
Subtitles	0.175	3
Normal Text	0.125 or 0.1	2
Notes, callouts etc.	0.125 or 0.1	2

H. Line Widths and Colors:

(1) In AutoCAD, each color represents a different line width when plotted. It is preferable to control the line widths in a drawing by assigning a specific color to the layer, instead of assigning a specific color to a single element/entity (line, polyline, arc, etc.). The color of a single element/entity should be set to "BYLAYER", so the layer's color setting can be used to globally change all elements/entities on that layer, both in the model files and sheet files.

(2) Each "sheet file" submitted to the DGS, must be able to create a monochrome plot, matching the appearance of the submitted corresponding hard copy contract document, by using the Pen Settings in *Attachment 11b* .

(3) As an alternative to using the DGS Standard Pen Settings, the consultant may include one color-dependent plot style table (CTB) File called PLOT.CTB. This CTB File must define the pen number and pen width for all color numbers and be capable of producing monochrome plots for all submitted Sheet Files.

NOTE: If the consultant does not submit a file named PLOT.CTB, along with the Sheet Files, it will be assumed that the files use the DGS standard plot settings.

I. The DGS standard linetypes include "out of the box" linetypes (these are linetypes that ship with every installment of AutoCAD). Any new linetypes created by a consultant must be submitted to the DGS Project Engineer for approval and inclusion in the project specific standard linetype (.lin) file.

NOTE: It is preferable to control the linetypes in a drawing by assigning a specific linetype to the layer, instead of assigning a specific linetype to a single element/entity (line, polyline, arc, etc.). The linetype of a single element/entity should be set to "BYLAYER", so the layer's linetype settings can be used to globally change all elements/entities on that layer, both in the model files and sheet files.

J. The units for all A/E drawings shall be U.S. Survey Foot, inches and fractions of an inch, with the smallest fraction normally being 1/8" or as decimals. Dimensions of less than a foot must be shown in inches or fractions of inches, or as decimals.

K. Working Units, Coordinate Systems and Drawing Origins

(1) Units should be selected according to the discipline of the drawing, architectural (feet and inches), engineering (feet and tenths), or decimal. References to feet in this document are specifically to the U.S. Survey Foot (1200/3937 meters).

(2) All topography and topography related design including structural and architectural building footprints shall be submitted in the Maryland Coordinate System of 1987, also referred to as Maryland State Plane. Following are the parameters of the Maryland Coordinate System of 1987, below:

Map Projection:	Lambert conic conformal projection of the geodetic reference system of 1980		
Horizontal Datum:	NAD83 (2001)		
Latitude of Origin*:	37°40 North latitude		
Central Meridian:	77°00' West longitude		
Standard Parallel 1:	38°18' North latitude	Standard Parallel 2:	39°27' North latitude
False Easting*:	400,000 meters	False Northing*:	0 meters
Latitude**:	37°34' 38.14264" N	Longitude**:	81°31' 45.07877" W

* at the 77th meridian
** at artificial origin (0,0)

(1) Vertical spatial data shall be based on the National Geodetic Vertical Datum of 1988 (NGVD88).

(2) The lower left corner of all other drawings should be positioned at the Cartesian coordinate point of 0, 0, 0.

L. Externally Referenced Files:

(1) All files referenced in the host file shall use the “Attach” option within the XREF command, when reference files are merged into the final drawing package, AutoCAD users shall use the “Bind” option. Nested or circular xref files are not allowed.

(2) Reference files shall be added to all drawings using no saved paths. These paths do not include the drive letter and reflect the location of the reference file as it relates to the active file (the reference file is in the same folder/directory as the active file).

(3) Reference files shall be added on a specific layer and the prefix for that layer shall be "G-ANNO-REFR-" followed by the reference file name.

M. The patterns (hatching) to be used on DGS drawings include only “out of the box” hatch patterns; customized patterns must not be used.

N. All dimensioning text must be placed into the dimension layer. The size of dimension text is the same as the drawing field text (no smaller than 1/10" height, with 1/8" being preferable).

NOTE: Refer to the ANSI Y14.5M for additional dimensioning information not provided in this standard.

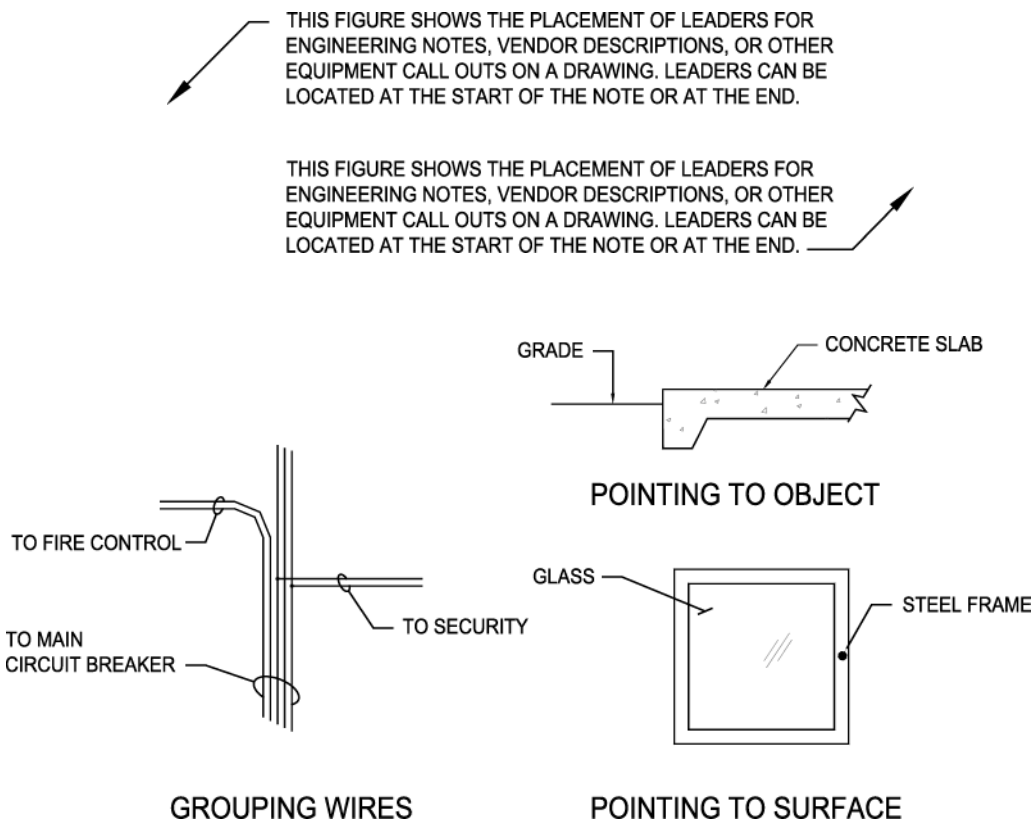
O. When a note or dimension cannot be placed close to an object a leader may be used. A leader consists of a short horizontal line, an angled line and a terminator.

(1) When placing a leader to the left side of a note the horizontal line must be place in line with the top of the note.
(2) If the leader is on the right side, the horizontal line is placed at the bottom of the note.

(3) All leader lines and arrowheads shall be created using the “Color 1” line weight.

(4) When a leader points to an object, the angled line must terminate with an arrowhead at its first object line. When the information refers to (applies to, or points to) a surface of an object, use a small filled dot or tilde. When the information refers to a bundle or grouping of wires or cables, use a lasso.

NOTE: An example is shown below:



P. Symbols used in drawings should comply with the U.S. National CADD Standard or ANSI and all symbols used in a drawing must be indicated in a legend.

Q. Sections and Details

(1) Sections

a. Sections must be drawn when additional clarification is warranted and details must be created whenever additional clarification is required and a section cannot readily be cut.

b. The three types of section indicators to be used are short sections, extended sections, and offset sections. All sections must be cut toward the top or left side of the drawing, except in unusual situations. In some cases, it may be necessary to cut a short section reading from the left, but this should be avoided if possible.

c. Sections must appear on the same drawing on which they are cut, if possible. If the section cannot be drawn on the same drawing, it must

appear on a separate drawing reserved for sections. Under no circumstances are sections to be scattered indiscriminately throughout the set of drawings.

d. Section cuts shall be lettered in alphabetical order on each drawing. The letter in the top half of the circle marker must indicate the section letter. The alphanumeric number in the lower half of the circle marker must indicate the drawing on which the section is shown. Heavy dark lines located in the position where the section is cut must indicate the location of the cutting plane.

e. Offset sections may be used only when section clarity requires adjustment of a portion of the cutting plane. On all section cuts, the circle markers must be placed so they can be read from the direction of cut.

(2) Detail Drawings

a. The detail must be a section, a plan view, an elevation, or an enlargement. Details must have an alphanumeric (e.g. A1) designation in the upper half of the circle marker. When details are intermixed with sections and it would be difficult to locate a lettered detail on a drawing, the details must be numbered consecutively with the sections. The alphanumeric number in the lower half of the circle marker must indicate the sheet number on which the details reside.

b. When a detail appears more than once on the same drawing, extend a line off the detail, abbreviate the word typical (TYP), and indicate the quantity in parentheses.

R. Orientation: All drawings by all disciplines shall be prepared with the same orientation.

S. Scale of Drawings: Scales noted in specific drawing types are the minimum. No other scales shall be used for Plans or Elevations unless prior written approval is obtained from the DGS PM. All sheets must contain both written and graphic scales.

T. North Arrow: All plans shall include a North arrow.

U. Overall and Detail Drawings for each discipline shall include all dimensions necessary to size and locate the features shown.

NOTE: References to other disciplines for dimensions (except for coordination) shall not be used.

V. Cross-References: Drawings shall depict keys to materials, symbols, abbreviations, and adequate schedules providing cross-references to drawing details and to specifications.

NOTE: The use of drawing note tabulations with reference letters or numbers noted on plans and details is not acceptable without prior written approval of the DGS PM. Such notes shall be written adjacent to the respective element, equipment item or system component.

7.2 DELIVERY OF DRAWINGS

A. Bid Ready Construction Drawings must be delivered on an electronic medium acceptable to DGS with the drawings in PDF format. As-Built Drawings shall also be delivered on the electronic medium, one file with DWG documents and a second file with the documents in PDF format. All XRefs and other inserted elements must be provided, along with any non-standard font or shape files used.

7.3. STANDARD SHEET FORMATS

A. COVER SHEET (Attachment 12a of this Manual)

(1) All Construction Drawing sets, regardless of design phase, shall have a cover sheet with the following information. Attachment 12a shows the standard Cover Sheet:

(a) Project Title

(b) DGS Project Number

(c) MDE Review Log-in Number

(d) Location-complete address including County

(e) Secretary of DGS and DGS address

(f) Board of Public Works (Governor, Comptroller & Treasurer)

(g) Consulting Firms: Name, disciplines, address, phone numbers

(h) Vicinity Map, with North arrow, to locate the project site within a geographic region showing its proximity to major features such as a city, towns, major highways, or other known geographic features.

(i) Location Map, with North arrow, to show how to access the project site from the nearest major roadways or streets shown on the Vicinity Map.

(j) Architects and Engineers Professional Certification Statements.

(k) Code Design Information e.g. date of Code, use group, construction classification, fire rating, total gross area, total net area, building height, occupancy loads, egress requirements and maximum travel distance to exit, plumbing fixture requirements.

(l) List of drawings

NOTE: For large projects, items (k) & (l) may be provided on the next sheet(s) after the Cover Sheet.

(m) State Signatures: <u>A signature block for DGS and UA signatures is required on the Cover Sheet only.</u> DGS and UA signatures are not required on the architectural and engineering drawing sheets.

B. ARCHITECTURAL AND ENGINEERING DRAWINGS

(1) *Attachments 12b and 12c* show the standard DGS sheet formats. Modifications to the standard cover sheet and border require prior approval of the Department of General Services.

(2) Title & Signature block shall include (as shown on Attachments 12a and 12b of this Manual):

(a) Title of Sheet, e.g. FIRST FLOOR PLAN, FINISH SCHEDULE, etc.

(b) Title of Project as stated in the contract.

(c) The DGS Project Number must appear on all drawings, specifications, contracts, shop drawings & correspondence.

(d) Date drawings completed.

(e) Revision block

(f) Drawing numbers shall be given to all sheets the sheets sequentially numbered.

NOTE: If more than one scheme is prepared indicate the Scheme numbers.

(g) Location of job, e.g. [FACILITY NAME], [ADDRESS], [CITY], [COUNTY], [STATE].

(h) Architects' and Engineers' names and seals may be placed to the left of the above title arrangement or in other locations as necessary. The seal may be a digitized copy incorporated through the CADD software.

(i) The Primary A/E is required to sign all drawings under his Seal. Consultants to the primary A/E must sign all drawings prepared by their office under their Seal. The Record Set of construction drawings shall bear original signatures in ink. Digitized signatures are not permitted.

(3) Drawing Numbers: Divide the sheets into groups according to disciplines and use the appropriate letter prefix for each, as specified in *Attachment 11a*.

C. SITE PLAN:

(1) Shall be drawn using a minimum scale of 1" = 40'.

NOTE: Architectural scales shall not be used.

(2) Shall show all existing buildings and structures, roads, walks, utilities, flood plains, forest stands, wetlands and critical areas within a radius of 200 feet (minimum) of the proposed structure.

NOTE: Some projects may require a larger radius.

(3) Indicate proposed site improvements, grading, access, parking areas, utilities, etc.

(4) Shall show future buildings adjacent to the proposed project and proposed structures if a master plan exists.

(5) Shall also depict grading, drainage, planting, lighting, access, sediment and erosion control, and storm water management within the limits of the contract.

NOTE: When required by MDE, complete Sediment and Erosion Control, and Stormwater Management Plans shall be submitted at each design phase after schematics, including the Engineer's and DGS' Certifications. (see Appendix B)

D. Storm Drain and Site Utility Profiles shall be drawn using scales of 1"=40' horizontal and 1"=4' vertical (vertical to horizontal exaggeration = 10/1).

E. Demolition Drawings shall clearly show existing conditions, what work is to be removed, and a reference provided to the drawing that shows the proposed work for the same area.

NOTE: If hazards are identified, e.g. lead, asbestos, PCBs, etc., the Demolition Plan and related notes shall describe the location and refer to the specification section which shall specifically reference the applicable regulations and describe the removal and disposal of the hazardous materials.

F. Architectural Drawings:

(1) Building Plans and Elevations shall be drawn using a minimum scale of 1/8" = 1'-0".

NOTE: Other scales shall not be used unless approved otherwise in writing by the DGS PM.

(2) Floor Plans shall:

(a) Be double line, drawn to a minimum scale of 1/8" = 1'-0".

(b) Show complete arrangements of all spaces with relation to structural system components and mechanical and electrical equipment spaces.

(3) Elevations shall graphically depict all design elements and materials to be used.

G. Structural Drawings shall include the following notes on one of the drawings:

(1) Design Dead Load Data, including Partition Load and Live Load, for all areas of the building and the roof.

NOTE: Allowances shall be included, wherever applicable, for additional loads due to mechanical equipment, piping, ceilings, etc.

(2) Design Bearing Value for all spread footings, caissons, and the Bearing Load for all piles.

(3) Concrete strength required for each part of the building.

(4) Steel Yield Point Strength for all reinforcing and structural steel.

H. Permanent excavation measures, such as Retaining Structures, Dewatering Systems, etc., plans and specifications shall be included (when required) in the construction drawings.

I. Mechanical and Electrical Drawings

(1) The first sheet of the HVAC system drawings shall summarize total heat loss for the building, heating and air conditioning loads in BTUs, heating design temperatures and humidity inside and outside, totalheat gain and ventilation load for the building in BTUs, and maximum gas consumption in cubic feet/hour (if applicable).

(2) The first sheet of the plumbing system drawings shall summarize total plumbing fixture units, maximum domestic water demand in gph, domestic hot water load in BTUs, and maximum gas consumption in cubic feet/hour (if applicable).

(3) Mechanical and electrical plans shall be developed to show complete layout of Plumbing, Heating, Ventilating and Electrical systems.

(4) All ductwork shall be double line.

(5) All mechanical work shown or detailed on more than one sheet shall be cross referenced.

(6) All building spaces shown on mechanical and electrical drawings shall be identified on the drawings. Room titles and numbers must be placed directly on the related spaces without interfering with any other dimensions or data. If room numbers are shown, a table with room numbers and names shall be included elsewhere on the same sheet.

(7) Mechanical or Electrical drawings shall provide complete temperature-control schematics and detailed operating sequences.

(8) Electrical drawings shall provide descriptions, features, and interface definitions for the telecommunications system.

8. CONSTRUCTION SPECIFICATIONS

8.1 GENERAL REQUIREMENTS FOR THE PROJECT MANUAL

A. The Cover Page shall include required information depicted on Attachment 13 of this Manual. The A/E shall include a 'mock-up' with the review sets of Specifications as the names of various State officials change.

B. Seal Page: One page of the Specifications (following the cover page) shall contain the Project Title, DGS Project Number, the professional seal and signature of the primary A/E firm, and the professional seal and signature of each consultant firm on the A/E team.

C. The Table Of Contents shall list all division and section numbers and titles in CSI Master Format protocol. As CSI issues annual updates, the most recent update will be the governing reference. Indicate the page numbers where the specification can be found following the section number and title. If the project does not include any work in a specific division, note NOT USED.

D. Sequence Of Project Manual Contents:

(1) Title Page

(2) A/E Seals & Signatures

(3) Table of Contents
(Reference that Division 00 - Procurement and Contracting Requirements is an eMarylandMarketplace attachment.)

(4) List of Drawings

(5) Wage Rates (see paragraph 9 of this Division)

(6) Division 1 through 35 Specification sections

E. Format: The A/E shall follow the Construction Specifications Institute Master Format Division and Section format, according to the current edition issued by CSI /Master Format.

F. Job Conditions: Statements relative to unusual job conditions, security requirements, etc., shall be included in Division 1 of the Specifications.

G. Proprietary Information: Where trade or brand name products are included, at least three acceptable manufacturers shall be named, along with the reference "or approved equal".

H. Hardware Schedules shall be included in the specification and hardware set number shall be listed in the door schedule. They shall be open to full competition. The A/E shall determine the requirements of the UA for the Master Key System, and shall develop the full keying schedule based on the UAs plan of use for a facility.

I. General References to other specification documents shall be avoided wherever possible, e.g. reference to County, SHA or WSSC specifications. If such specifications govern, the complete reference shall be reprinted.

8.2 INSTRUCTIONS TO BIDDERS AND GENERAL CONDITIONS

A. The A/E shall read and comply with DGS' Instructions to Bidders & General Conditions for Construction Contracts. The Division 01 Specifications shall be edited to eliminate any conflict with DGS Instructions to Bidders & General Conditions.

B. These Documents are standard for all projects and are available through the DGS Office of Procurement and Contracting. They may not be altered by the A/E. Supplemental or special conditions may not be used without prior written approval of the Assistant Secretary, DGS.

C. Reference shall be made to the latest DGS General Conditions in appropriate divisions of the specifications.

8.3 ELECTRICAL HIGH VOLTAGE WORK (over 600 volts)

A. If a project involves High Voltage Work, the contractor shall utilize the services of an independent high voltage electrical testing agency.

B. The Project Specifications shall read as follows where appropriate:

(1) The contractor shall secure and pay for the services of a high voltage electrical inspection agency to test and inspect all electrical high voltage components of the system prior to being energized.The tests and inspections shall follow the procedures as established by the International Electric Testing Association (NETA) in their specificationsfor acceptance testing. The contractor shall submit a copy of the test results and an analysis of the results prepared by a registered Professional Engineer to the A/E and to the DGS PM within ten days of the testing.

(2) Repeat testing due to unacceptable test results and/or inspection findings shall be the sole responsibility of the contractor.

C. The following statement shall be included in the appropriate sections of the electrical specifications:

(1) An electrical certificate from an independent (non-governmental) electrical inspection agency approved by the State of Maryland Fire Marshal must be submitted to DGS prior to or with the final payment invoice. The inspection certificate shall be used in lieu of a county or municipal permit for electrical work performed on property belonging to theState of Maryland. The electrical sub-contractor shall file with the independent inspection agency, and pay all fees associated with such filing, at the start of construction so that adequate rough-in inspection can be made during the course of work.

8.4 HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM WORK

A.The following requirements shall be included in the appropriate section of the mechanical specifications for projects that involve the installation or service of heating, ventilating, air conditioning, or refrigerating (HVACR) systems:

(1) A mechanical contractor bidding as prime contractor shall be a Maryland-licensed HVACR Master or Master Restricted contractor qualified in the areas of work included in the project.

(2) The prime contractor shall agree to employ only individuals holding valid licenses issued by the State HVACR Board of the Department of Labor, Licensing and Regulation (DLLR) to provide, or assist in providing, HVACR system installation or service required for the project.

(3) If the prime contractor subcontracts any of the HVACR system installation or service required for a project, the subcontractor must possess appropriate licenses issued by DLLR for the work to be performed. Employees of the subcontractor that provide or assist with HVACR system installation or service must hold appropriate licenses from DLLR for the work being performed.

8.5 UTILITY PERMITS AND CONNECTIONS

A. The A/E will be responsible for coordinating with any and all local and State regulatory agencies and public utility companies to identify those permits and approvals necessary to make utility connections to available public, private or municipal water, sewer, storm sewer, gas, electric, communication, and data services or to construct the necessary on-site sanitary facilities to support the building project in its entirety.

B. Utility Owner Approval: The A/E will obtain from the owners of the utilities, the necessary approvals for connection to same and an estimate of the connection fee.

C. Trade Permits: Mechanics and/or trade permits will be obtained by those trades as required of them.

D. The A/E shall include in the Project Manual a Division 1 specification section defining the Contractor's responsibility for utility permits and connections and how payment will be made to the utility owner. The specification section will also establish bid allowances for the costs of the required utility connections. The specification shall be as written in Appendix F of this Manual.

9. PREVAILING WAGE REQUIREMENTS

9.1 PROJECTS ESTIMATED TO COST $500,000 or more must be bid utilizing a Prevailing Wage Rate Determination issued by the Maryland Department of Labor, Licensing and Regulation. The DGS Project Manager will request a Wage Rate Determination on the DLLR website and provide it to the A/E for inclusion in the Project Manual.

9.2 FEDERAL FUNDS

A.When Federal funds are involved, and if Federal regulations (Davis-Bacon Act) require the use of a Federal prevailing wage schedule, the DGS Project Manager will request the schedule from the U. S. Department of Labor.

NOTE: Information on Federal wage rates can be obtained from the Federal Register, Procedures for Predetermination of Wage Rates.

DESIGN PHASES

10. PHASE I - SCHEMATICS - In addition to the requirements listed in Table II-1 at the end of this chapter, the following are required during the Schematic Phase of design:

10.1 FLOOR PLANS shall:

A. Show Overall Dimensions, including North arrow and graphic scale.

B. Show Door, Window, Elevator, Stair, Corridor, and Exit Locations.

C. Identify all major rooms, areas and spaces by name, actual net square footage, and programmed net square footage.

D. Contain a note below the plan indicating the approximate gross square feet and the net assignable square feet for each floor, including basements, mechanical floors, penthouses, etc.

NOTE: The first floor plan of multiple story buildings shall contain a summary of Areas, Volumes and Efficiency for the entire building.

10.2 ELEVATIONS: Block elevations of all sides shall be drawn using the same scale as the floor plans, unless otherwise approved by the DGS PM.

10.3 SECTIONS

A. Longitudinal Sections and Transverse or Cross Sections of the building are required.

B. If the building has a variety of unique spaces with varying heights and/or shapes the A/E shall supply as many sections as necessary to clearly convey the schematic design intent of the space or building.

C. Sections shall be developed using the same scale as Floor Plans and Elevations.

11. PHASE II – DESIGN DEVELOPMENT (DD) - In addition to the requirements listed in Table II-1 at the end of this chapter, the following are required during the DD Phase of design:

11.1 BUILDING CODE ANALYSIS TABLE AND MEANS OF EGRESS PLAN DRAWINGS

A. A Building Code Analysis is required for all buildings.

B. The Analysis shall include:

(1) Applicable Codes

(2) Use Group Classification

(3) Construction Type

(4) Building Area and Height Limitation

(5) Fire Resistance Requirements

(6) Specific Use Area Separation

(7) Occupant Load

(8) Egress Capacity Calculation

(9) Travel Distance

(10) Plumbing Fixture Requirements

NOTE: Plans for multi-story buildings shall show this information for each floor.

C. Projects Greater Than 10,000 Square Feet: an egress plan depicting the building code analysis shall be provided.

(1) The plan may be a single line drawing with all major rooms, corridors, stairs, elevators, fire separations and smoke partitions identified, and directional egress arrows and travel distances shown.

(2) Include a separate drawing at the start of the architectural plans in the contract drawings.

D. Projects Less Than 10,000 Square Feet: the building code analysis may be on the Cover Sheet or first architectural plan.

11.2 FLOOR PLANS SHALL:

A. Show the Following **-** Door, Window, Elevator, Stair, Corridor and Exit Locations, and furniture layouts.

B. Depict Major Rooms, Areas and Spaces by Name and Gross Square Footage, and note below the plan indicating the approximate Gross Square Footage and the Net Assignable Square Footage for each floor, including basements, mechanical floors, and penthouses.

NOTE: The first floor plan of multi-story buildings shall contain a summary of Areas, Volumes and Efficiency for the entire building.

11.3 ROOF PLAN shall indicate the type of roof with total 'R' value, mechanical equipment roof curbs, roof drain with overflow drain, vents, scuppers, flashing, roof access, tapered insulation, walk pads, and other features.

11.4 ELEVATIONS shall be developed to a degree sufficient to establish character of design, materials, textures, and color, including floor-to-floor height and overall height.

11.5 SECTIONS shall be drawn at 3/4" = 1'-0" scale to illustrate floor to floor heights, ceiling heights, changes in elevations, typical construction, etc. Wall sections shall initially be provided in the Design Development Phase documents.

11.6 ENGINEERING DRAWINGS SHALL:

A. Be Prepared for each Building System, e.g. Structural, Civil, Plumbing, Heating, Ventilating, Air Conditioning and Electrical Distribution, Fire Suppression System, Food Servicing System and Security System.

B. Show equipment layouts for specialized rooms such as laboratories; mechanical rooms, electrical rooms, kitchens, food serving areas, etc.

C. Show Lighting, Receptacles, Telephone and Special Systems Layouts.

NOTE: Single line drawings may be submitted that depict sufficient detail to convey the intent of the systems.

11.7 MECHANICAL DRAWINGS SHALL:

A. Include on the first sheet legends, abbreviations and symbols specifically used on the mechanical floor plans.

B. Depict proposed locations e.g. mechanical rooms, roof, etc. for HVAC, plumbing, and fire protection equipment.

C. Dimension required clearances for servicing and removing equipment, including equipment installed above ceilings.

D. Provide Schematic, Single Line Diagrams for the HVAC, plumbing and fire protection systems, depicting the various components e.g. air and water distribution, controls, etc.

E. Provide a List of Energy Efficient Equipment.

NOTE: The drawings shall depict sufficient detail to convey the intent and performance of the selected system.

11.8 ELECTRICAL DRAWINGS SHALL:

A. Include a Site Plan showing the primary telephone, fiber and electric power lines, duct banks and their associated manholes, utility transformer location, and generator location(s).

B. Include on an initial sheet legends, abbreviations and symbols specifically used on the electrical floor plans.

C. Include Building Plans showing both proposed exterior and interior lighting fixture layout, all wiring devices, e.g. receptacles, telephone/data, lighting switch locations, special systems layout e.g. fire alarm, security, etc., and public address system.

D. Include detailed Single Line Power and Fire Alarm Riser Diagrams.

E. Include Blank Panel, Switchgear and Motor Control Center Schedules.

NOTE: No circuiting is required for this submission.

11.9 SPECIFICATIONS

B. Specifications for Architectural, Structural, Site Improvements, Civil, Mechanical and Electrical work shall be included with the DD submission.

C. Content Shall:

(1) Provide a detailed narrative description of the project scope in Division 01 Summary of Work.

(2) Clearly define all components of each of the systems and all materials that are intended to be used on the project.

(3) Fire protection and underground utilities of each system, as well as all materials and methodology of installation.

(4) Provide a narrative description of HVAC and plumbing systems for all spaces in the building including equipment and controls, and provisions for implementation of energy conservation measures.

11.10 ELECTRICAL CALCULATIONS

A. Requirements:

(1) Load and demand analysis

(2) Load analysis for stand-by power systems

(3) Lighting power budget per the latest revision of ASHRAE/IESNA 90.1 (Latest Edition)

(4) Lightning risk assessment per NFPA 780, Appendix I

NOTE: One copy of these preliminary calculations shall be submitted with the DD presentation.All reference sources used to develop calculations shall be noted.

11.11 MECHANICAL CALCULATIONS: Submit one copy of building and system load calculations for HVAC and plumbing systems.

11.12 ENERGY CONSERVATION GOALS

A. For Energy Conservation the building exterior envelope shall comply with the envelope requirements of ASHRAE 90A and 90B (Latest Edition), and the latest edition of the International Building Code and International Energy Conservation Code.

B. The Goal for minimum requirements shall meet the code References in *Table C402.1.3, Table 402.1.4 of IEEC* and *Table 5-5-4 of* ASHRAE for following items under appropriate climate zones:

(1) New Buildings

(a) Walls

(b) Roofs

(c) Windows

(d) Slab on grade (heated)-(unheated)

(2) Renovated Buildings

(a) Walls

(b) Roofs

(c) Windows

C. If the above requirements are found to be non-attainable or that they would not result in energy conservation, such findings shall be submitted to DGS for review and direction.

12. PHASE III - CONSTRUCTION DOCUMENTS (CD) - In addition to the requirements listed in Table II-1 at the end of this chapter, the following are required during the CD Phase of design:

12.1 GENERAL REQUIREMENTS

A. Initial CD Review Submission is at approximately 50% completion.

B. Drawings: 50% CD Submission is defined as 50% completion of all drawings planned at that point to constitute the final set of CD's for Architectural, Engineering, and Site drawings.

(1) Electrical drawings shall contain circuiting for power and lighting for this submission.

NOTE: Review sets shall be marked "FOR REVIEW ONLY, NOT FOR CONSTRUCTION".

NOTE: The A/E team shall confirm to DGS that it has performed a Quality Control review of the 50% CD documents prior to submission.

C. Specifications: 50% CD Submission is defined as a Draft Copy of the Final CDs for Architectural, Engineering, and Site Specifications **including edited specifications of all sections related to the project. Unedited Master Specification sections are not acceptable**.

12.2 CALCULATIONS

A. Preliminary structural calculations shall be submitted for all elements that are designed or sized by the structural engineer.

B. Mechanical calculations shall be submitted upon request, presenting finalized load calculations for HVAC and Plumbing Systems, and equipment selection. Provide all input values used in the calculations e.g. design temperatures, occupancies, U or R values, etc.

C. Electrical calculations shall be submitted for the following with 50% CDs, and updated copies with subsequent submissions:

(1) Updated DD calculations

(2) Load analysis for stand-by power systems, including sizing calculations for stand-by equipment.

(3) Short circuit analysis using ohmic or per-unit method depending on system complexity. Reference IEEE Transactions on Industry and General Applications.

(4) Voltage drop analysis

(5) Power factor correction

(6) Lighting calculations (interior and exterior)

(7) Pole classifications, guy vector diagrams and guy strength when overhead transmission systems are involved.

(8) Depict on the first sheet the total electrical load in KVA, total lighting and receptacles in KVA, total power in KVA, largest motor HP, estimated emergency power demand in KVA, and the type and size of stand-by power units.

NOTE: Present all calculations in an organized format and note all reference sources used preparing calculations. Calculations previously submitted at the DD phase shall be updated for this submission.

12.3 SITE IMPROVEMENT DRAWINGS

A. Depict all existing and proposed conditions, materials, structures, fixtures, elements, etc. with sufficient detail to establish location, alignment and grade.

B. Storm Drain and Site Utility Profiles shall include, but not be limited to inverts, rim elevations, existing and proposed grade, flow-line gradients, pipe size and type, and all proposed utility crossings as shown on site utility plans.

12.4 CONSTRUCTION SCHEDULE

A. A CPM Schedule is typically required on construction projects unless the dollar value and nature of work clearly demonstrate no need for a CPM schedule.

B. During this Phase, the A/E shall identify significant construction milestones required for control and phasing of the project.

C. These milestones will be used in the Construction Phase to evaluate the Contractor's proposed CPM schedule.

12.5 CONSTRUCTION INSPECTION AND TESTING SERVICES (CITS)

A. CITS Contracts: For projects on which special construction inspection or quality assurance testing is to be provided by private construction inspection and testing firms (CITS), the required material inspection and testing requirements shall be part of the construction documents.

B. The A/E shall assist DGS in the definition of these services; and after award of the contract shall, on behalf of DGS, monitor the work of both the testing laboratory employed by the contractor and the CITS.

C. CITS Proposal Package

(1) With the 50% CD submission, the A/E shall include a CITS specification/proposal package indicating those contract items requiring materials inspection and testing and the estimated quantity of each.

(2) These documents shall be developed based upon a format provided by DGS.

(3) CITS specifications shall include and establish the requirements relative to inspection and testing:

(a) qualifications of the inspectors

(b) scope of work

(c) applicable standard test methods and procedures

(d) compliance and acceptance criteria

(e) reports and submissions

(4) CITS may include but may not necessarily be limited to inspection of:

(a) structural steel (both shop and field)

(b) welding

(c) concrete

(d) roofing and roofing materials

(e) asphalt

(f) soils

(g) foundations

(h) mechanical systems

(i) electrical systems

NOTE: The CITS testing requirements shall be comparable to the testing requirements included in the specifications for the contractor's testing laboratory.

D. CITS: DGS will use information furnished by the A/E to procure the services of a CITS by advertising and soliciting proposals from at least three (3) qualified firms, or by using a pre-approved Indefinite Quantity Contract (IQC).

E. Contract Monitoring assistance by the A/E may involve review of test results and field inspection reports submitted by the CITS.

12.6 FINAL CD REVIEW SUBMISSION: (95% COMPLETION) When CDs are 95% completed the A/E is required to submit the following to the DGS PM:

NOTE: Review sets shall be marked "FOR REVIEW ONLY, NOT FOR CONSTRUCTION"

A. 95% Complete Drawings: black or blue-line prints

B. Specifications: indexed and securely bound.

C. Structural, Mechanical and Electrical Calculations

(1) Two bound copies of each set of calculations shall be submitted.

(2) Calculation books shall be signed by the designer and the person who checked the calculations.

(3) The final structural calculations shall include all loading assumptions, material grades and strengths, code references, and any other information required for design.

D. Electrical Coordination Study (minimum requirements)

(1) Encompasses that segment of the distribution system between the origin of utility service and the first level of secondary distribution equipment.

NOTE: If service is derived from an existing state-owned distribution system, use the segment between the existing primary distribution equipment and the first level of secondary distribution equipment.

(2) The study shall include set points for all adjustable protective devices.

E. Sediment and Erosion Control and Stormwater Management updated computations.

F. DGS 50% CD Review Documents with responses to all DGS comments.

G. MDE APPROVAL: In accordance with Chapter III, Paragraph 2.1 of this manual, approval of the Sediment and Erosion Control and Storm water Management Plans by the Maryland Department of the Environment and a copy of the MDE approval or comment letter is required to complete this review phase. For construction projects requiring storm water management of 1 acre of disturbed area or more, the project must be registered on the NPDES, NOI (National Pollution Discharge Elimination System, Notice of Intent) website. If the civil engineer of record is the person submitting for the permit, they should also be the person electronically registering the project.

12.7 THE COST ESTIMATE WORKSHEET and a detailed breakdown of costs in the CSI format based on the Divisions used for the project shall be submitted within two weeks of the 95% CD submission. Four (4) copies are required.

12.8 FINAL REVIEW MEETING

A.When the 95% CDs have been reviewed by DGS, the DGS PM will schedule a mandatory meeting with all concerned DGS Design staff, the A/E and Consultants, and the UA.

B. At this meeting the CDs will be reviewed in detail to assure the DGS and the UA that all coordination issues and design related comments will be corrected on the Final CDs.

12.9 ALL NECESSARY PERMITS AND APPROVALS to make connections to existing electric, gas, water and sewer utilities needed to support the project shall be obtained or in the final stages of processing at the time 95% CDs are submitted.

12.10 FINAL CD SUBMISSION (100% COMPLETION): The A/E shall submit the following to the DGS:

A. DGS 95% CD Review Drawings and Specifications with responses to all DGS comments.

B. 100% Complete Construction Drawings in an electronic storage medium acceptable to DGS, one file with the signed and sealed Bid Set in pdf format scanned at 200 dpi. One complete bound hard copy of Bid Set drawings Printed from the submitted Electronic Storage medium.

C. 100% Complete Construction Specifications in an electronic storage medium acceptable to DGS with the signed and sealed Bid Set in pdf format. One complete 8.5”x11” (letter-size) bound hard copy of specifications PRINTED FROM THE SUBMITTED ELECTRONIC STORAGE MEDIUM.

12.11 FINAL APPROVALS

A.The A/E shall submit to the DGS PM Final Approvals and Permits from all regulatory agencies and public utilities involved in the project construction, e.g.

(1) State Fire Marshal's Office

(2) Department of Health and Mental Hygiene

(3) Maryland Department of the Environment

(4) water, sewer, telephone, gas and electric utilities owners

12.12 A/E CERTIFICATION: The A/E will furnish the certification of the CDs as required in *Chapter I, paragraph 10*.

12.13 CONSTRUCTION BID FORM INFORMATION

A. Bid Items: Language shall be proposed to describe the base bid line items and any alternates, allowances and unit prices to be included in the total bid.

B. Time of Completion: A/E shall recommend a construction duration to the DGS PM based on such factors as complexity of the project, long-lead time materials, time of year construction will start, etc.

C. Unit Prices:

(1) When separate prices or unit prices are required, they shall be listed ahead of the Base Bid line.

(2) Unit prices will reflect concealed conditions encountered during a project, e.g. conditions in site work such as unsuitable soil, abandoned foundations or other unknown subsurface obstructions, re-roofing, etc. and will be used to adjust the contract price higher or lower based upon actual costs during the course of work.

(3) When bidding these types of projects, base bid shall include:

(a) lump sum price work plus allowances and unit price work with estimated quantities established by the A/E and unit prices provided by the contractor to arrive at the base bid.

12.14 ALTERNATES

A. When authorized by the DGS PM, the A/E shall develop alternates to be excluded from the base contract work when considered necessary to assure project costs remain within established budgets. Alternates shall not exclude key elements of the project program or be used to affect a change in the scope of the project or in the materials or methods specified.

B. The following practices shall be followed by the A/E when specifying alternates:

(1) Priorities: The A/E shall review all alternates with the DGS PM, Design Team Leader, and the UA representative to establish the priority in which alternates will be listed. Add alternates, if accepted with the Base Bid, will be accepted in the order listed on the bid form. Alternates shall normally be all additive in a given bid.

(2) Federal Requirements: If any part of the project is federally funded, Federal Government requirements for Alternates shall be followed.

12.15 QUALITY CONTROL (QC) & QUALITY ASSURANCE (QA)

A. The A/E Team shall submit a single set of 95% CDs and final, 100% CDs at the time of each respective submission indicating that a senior staff member of the prime firm and each consultant firm responsible for QC/QA has reviewed the documents for conformance with the program, applicable building codes, and coordination issues with other engineers with at least ten years of experience.

B. QC/QA Drawings shall be signed and dated by each QC/QA Reviewer certifying that the review was conducted by that person.

13. PHASE IV - BIDDING PROCEDURES

13.1 ADVERTISEMENT: The DGS Procurement Division will post the project notice, contract documents and bid forms on the eMarylandMarketplace electronic procurement website.

13.2 BID DATE: DGS will determine the time and date for receipt of bids after contract documents are delivered to the DGS, or after a fixed delivery time and date are determined.

13.3 PRE-BID CONFERENCE: A pre-bid/pre-proposal conference will be conducted seven (7) days after the project is first advertised. The conference will be attended by the DGS PM, the DGS Procurement Officer, the UA representative, the A/E, and all interested prospective bidders.

A. The Procurement Officer (PO) will co-chair the meeting with the DGS PM. The PO

will open the meeting and provide a complete description of the project and the procurement issues regarding the project source selection and bid process, including the MBE program requirements.

B. The DGS PM will discuss the general scope of the project work, the construction documents, and the General Conditions.

C. The A/E will explain the technical requirements and receive and respond to technical questions.

D. The Commissioning Agent will explain the commissioning requirements

E. The meeting is intended to encourage an interchange of questions, answers and ideas so as to minimize problems during the procurement process and subsequent construction.

F. Prior to adjourning the Pre-Bid Conference, the PO and DGS PM will establish a cut-off date for receipt of all questions. This is typically set eight (8) days prior to the scheduled bid opening.

G. The A/E shall record and write minutes of the conference and incorporate issues addressed at the pre-bid conference into Addendum #1 to the bid documents. This addendum shall be issued quickly so the pre-bid attendees and non-attendees are equally aware of the cut-off date and deadline.

H. The PO will be responsible for receiving, routing and tracking all written questions during the 21 to 28 day bidding cycle (advertisement to bid opening).

I. During the course of the Bidding Phase, the A/E shall not engage in any discussion or conversation about the project with any prospective general contractor or subcontractor. If the prime A/E or any of the design team consultants are contacted by a contractor or a subcontractor, they shall state that they are not at liberty to discuss any aspect of the project or respond to questions about the contract documents. They shall inform the individual that they must submit any questions in writing to the DGS Procurement Officer.

13.6 ADDENDA

A. Interpretation: All interpretations of the bid documents shall be issued by the Procurement Officer during the bidding period. There shall be no verbal interpretation or oral pre-bid statements by State employees or their representatives.

B. Preparation: The A/E shall prepare all written addenda to the bid documents and deliver same to the DGS PM and the PO in electronic format and/or hard copy, as agreed to in advance by the DGS PM.

(1) Form: Each Addendum shall be in simple written form with a cover page prepared to identify the project. In responding to bidder questions, the A/E shall first identify the question, the Drawing or Specification Section affected and then insert the A/E's response directly beneath the question in <u>bold letters and in sentence form</u>.

(2) Changes to the Bid Documents: All additions or deletions to the Bid documents, specifications, drawings, sketches or attachments shall first identify the Division, Section, paragraph, subparagraphs or page numbers being changed,

followed by the amended text in bold type.

C. After an Addendum has been prepared by the A/E and forwarded to the DGS PM and the PO, the PO will post the addendum to the eMarylandMarketplace bidding website at least (7) days prior to the scheduled opening of bids. In the event that this time line cannot be maintained, bid due dates will be adjusted to allow for the necessary review and processing time by the prospective bidders.

13.7 BID OPENING

A. Bids are publicly opened on the eMarylandMarketplace bidding website by the PO. The bid results may be viewed on the website immediately thereafter.

B. If included in the A/E Scope of Services by the DGS PM, the A/E shall evaluate the low bid and the low bidder's qualifications, and make a written recommendation for award, to DGS.

C. If the Low Bid Is 10% higher or lower than the A/E's Estimate, the A/E is required to submit to the DGS an analysis identifying reasons for the variance. The A/E will review unit prices for reasonableness.

13.8 AT THE CONCLUSION OF THE BIDDING PHASE the A/E shall prepare a set of Conformed Documents:

A. To incorporate all changes or clarifications into the drawings and furnish a replacement Record Set.

B. To ensure that changes or clarifications to the plans and specifications are readily identified by noting Revised by Addendum #__ by clouding and numbering the revision.

14. PHASE V - CONSTRUCTION

14.1 CONTRACT AWARD: After the determination of the apparent low bidder, the DGS PM will pursue approval of a contract by the Department Procurement Review Board (DPRB) or the Board of Public Works (BPW). After approval, DGS will execute a contract with the successful bidder.

14.2 PRE-CONSTRUCTION CONFERENCE: Within ten (10) days after approval of award, a work initiation conference will be scheduled by the Construction Division of the DGS. The contractor, the DGS PM, DGS Office of Business Programs representative, the UA representative, the A/E, the DGS Construction Division Area Supervisor and Resident Inspector for the project, and the MDE representative will be present. At this time all procedures will be clarified. The DGS Area Supervisor will define the construction set of contract documents as the bid set with addenda and state the dates of each. The A/E is responsible for preparing and maintaining minutes of this conference.

14.3 PROGRESS MEETING AND PROJECT REPORT

A. Responsibilities

(1) The A/E shall attend all progress meetings, and is responsible for recording

and maintaining minutes. The A/E shall submit minutes for approval to the DGS PM and Resident Inspector within five working days following progress meetings.

(2) The DGS Resident Inspector is responsible to ensure that appropriate information is included in the minutes and that the minutes are in the standardized format.

B. Scheduling: Progress meetings will be held biweekly unless otherwise specified by DGS PM. The purpose of the progress meeting is to review the job progress and resolve problems that may be impeding progress. Problems strictly between the Contractor and the Sub-Contractor shall not be discussed. At each meeting, actual job progress and anticipated work as outlined in the project schedule will be reviewed. The following documents will also be reviewed:

(1) PCO Log (Inspector maintains)

(2) Submittal Log (A/E maintains)

(3) RFI Log (A/E maintains)

(4) Testing Log (Contractor or CITS maintains)

C. Requirements: At all required meetings during the construction phase, the A/E is required to bring members of the design team whose technical expertise is necessary to clarify or reconcile project difficulties. Those personnel are required to furnish to the DGS written reports summarizing clarification, direction, reconciliation or results of field inspections.

NOTE: The A/E shall include sufficient man-hours of the various disciplines in construction phase services to provide this support on an "on-call/as-needed" basis. No additional compensation shall be made to the A/E over and above the amounts included in the A/E fee unless the requirement arises for services outside the original contract scope.

D. Minutes: The progress meeting minutes are to contain the following information. Items (1) through (7) shall be on the first page of minutes.

(1) Project Name Title

(2) Project Number

(3) Progress Meeting Number

(4) Time and Date of Meeting

(5) Project Synopsis:

(a) Notice to Proceed

(b) Completion Date

(c) Contract Calendar Days (Original)

(d) Revised Contract Calendar Days (including approved time extensions)

(e) Contract Calendar Days Elapsed

(f) Contract Calendar Days Remaining

(g) Percentage of Time Consumed

(h) Percentage of Job Completion

(i) Anticipated Completion Date

(j) Bad Weather Days Requested

(6) Statement of Any Items with the Potential for Delaying the Project

(7) Summary of Work Completed to Date - Review/Update Project Schedule

(8) Old Business - Issues Resolved

(9) New Business - Projected Dates to Resolve New Issues

(10) Review PCO Log

(11) Review Submittal Log

(12) Review RFI Log

(13) Review Testing Log

(14) Review Status of Field Mark-up Record Drawings

(15) Participants

(16) Time and Date of Next Progress Meeting

(17) Time of Adjournment

14.4 MATERIALS AND COLORS: In the early stage of construction, the A/E shall, on receipt of samples and material submissions from the Contractor, select and coordinate the approval of brick panels, stone samples, concrete colors and textures, paint colors, and all other finishes with the DGS PM and the UA Representative. The DGS must also approve any material substitutions.

14.5 SHOP DRAWING REVIEW

A. The A/E Shall Review and Approve shop drawings, samples and other submissions by the Contractor for conformance with the general design concept of the project and for compliance with the information given in the Contract Documents. The A/E shall maintain an updated log of shop drawings received, documenting review status and actions required.

B. Reviews shall be accomplished within fourteen (14) calendar days of receiving the submission from the Contractor, unless otherwise authorized by the DGS PM.

C. The A/E shall compile a complete set of approved shop drawings, samples and other submissions from the Contractor throughout the duration of the project. Shop drawings shall be catalogued and filed by specification section reference. The entire catalogued file of shop drawings shall be turned over to the Using Agency when substantial completion is granted to the Contractor.

14.6 REQUEST FOR INFORMATION (RFI)

A. The Contractor will periodically issue RFIs for clarification of design intent or

construction detailing not readily apparent from the Contract Documents.

B. The A/E shall review and respond in writing to RFIs within ten (10) calendar days after receipt from the Contractor. If additional information is needed to develop a response, the A/E shall notify the contractor within five (5) days after receipt of the initial request from the Contractor. The A/E shall maintain a log of RFIs received, with response dates and actions pending.

14.7 PROPOSED CHANGE ORDERS (PCO) AND CHANGE ORDERS (CO)

A. Requirements: The Contractor will forward PCOs to the A/E to review and recommend approval or revision for all construction related change orders. The PCO should include a detailed cost proposal with an itemized breakdown showing all related material quantities, labor hours, material costs, unit prices, wage rates, labor and material burdens, and other associated expenses.

(1) The A/E is responsible for reviewing the Contractor's cost proposal and verifying that it is fair, reasonable, and accurately reflects the proposed changes.

(2) If the A/E finds that the Contractor's cost proposal does not accurately reflect the proposed changes, suggested revisions shall be clearly and legibly marked on the cost proposal, or a separate estimate shall be prepared itemizing revised quantities and/or costs. For complex PCOs, the A/E's estimate shall be prepared by the cost estimating consultant on the A/E team.

(3) The A/E is also responsible for the preparation and transmittal to the DGS Construction Division of PCO approval forms.

B. Unauthorized Changes: UA representatives are not authorized to issue instructions of any kind to contractors or A/E's except when such instructions relate to security or operating functions of a correctional institution.

C. Procedure: Changes requested by the UA must be submitted in writing to the DGS PM. These will be reviewed with the DGS Design Team and Construction Division, who will issue the necessary instructions to the contractor and/or the A/E.

D. Construction Change Order Approval Form: This form will note the reason for the change order. The change order may be required due to a user request for program change, field condition, design omission, or design error.

(1) The DGS may seek to recover all costs due to a changeorder that results from an error in the preparation of the construction documents.

(2) The DGS may seek to recover a portion of the costs, due to an omission in the documents which causes the State to incur a cost it would not have incurred had the construction documents been correct at bidding.

E. Deletions and Revisions: If a change order involves construction work deleted from the project or substantially revised during the Construction Phase, and the deletion or revision requires the A/E to render professional services beyond the negotiated Construction Phase services, additional compensation may be requested during the change order approval process. Additional fees applicable to such a change order shall be noted in the space provided on the Change Order Approval Form, and appropriate supporting documentation shall be provided. The request will be considered by the DGS when

reviewing the change order. If an additional fee related to a construction change order is approved, the A/E shall include the amount on their invoice form as Additional Fee for CO #____, to be processed with their next payment request.

14.8 CERTIFICATES OF PAYMENTS

A. Percentage of Completion: The general contractor's representative, the DGS Resident Inspector, the DGS PM, and the A/E will agree in draft form on the percentages of completion of the various segments of construction derived from an updated CPM schedule. The representative sub-contractors will participate in this effort as deemed necessary by the general contractor and the DGS Resident Inspector.

B. Monthly Estimate: After agreeing on the percentages of completion, the general contractor will prepare a typed copy of the prescribed payment requisition form and return it to the DGS Resident Inspector for signature.

C. Review: When the monthly payment requisition is completed the contractor will be responsible for submitting the document to the A/E for review and signature.

D. Submission: After the A/E has reviewed and approved the monthly payment requisition, the contractor shall deliver it to the DGS Resident Inspector, who will forward it through the DGS regional office and headquarters to the DGS Accounting Department.

15. COMPLETION AND ACCEPTANCE OF PROJECT

15.1 SUBSTANTIAL COMPLETION

NOTE: Substantial Completion is the date on which the project can be occupied and used for its intended purpose.

A. When a Project, or a designated portion thereof, nears Substantial Completion, the inspector will schedule a work list inspection. The architect, appropriate design consultants (i.e. civil, mechanical, electrical, landscape, security, etc.) the using agency, and the contractor will participate.

NOTE: For projects accepted in phases the acceptance sequence, e.g. work list inspection, substantial completion inspection, etc., will be repeated for each phase.

B. Work List: A work list will be generated for each category of work (i.e. Architectural, Civil, Mechanical, Electrical, Landscape, Security, etc.). Each work list will identify work not yet completed, work not yet started, and items requiring repairs or adjustment.

C. Substantial Completion Inspection: When the number of items remaining on the work list is insignificant, and none of the items remaining would prevent the intended use of the Facility or would inconvenience the UA if accomplished after occupancy, DGS will schedule a substantial completion inspection, which will include representatives from the A/E team. The entire project will be inspected and all defects or deficiencies observed in the construction or any deviations from the contract documents will be noted on the punch list, which will be generated by A/E in Excel format.

15.2 ACCEPTANCE: If, in the opinion of the DGS, the project is ready for acceptance, a

substantial completion inspection report will be issued to the Contractor establishing the date of acceptance and the start of the warranty period. All representatives must sign the substantial completion inspection report.

15.3 RECORD DOCUMENTS

A. As-Built Drawings

(1) Field mark-up record drawings shall be marked up by the Contractor on a regular basis during construction to record all changes in the work as they occur. The status of these field mark-up drawings shall be discussed in each progress meeting. The mark-up information will show the exact location of all exposed and concealed pipe runs, valves, plugged outlets, clean outs, and other control points including electrical conduits and ducts, and will incorporate all changes to the original bid documents authorized through approved change orders to the contract in such manner as will provide a complete, accurate as-built record. The location of pipes or control points concealed underground, under concrete,in chases or above hung ceilings shall be dimensioned. Field mark-up record drawings shall be neatly marked with colored pencil or ink, and reviewed by A/E as a regular submittal. Deliveryof the field mark-up record drawings to DGS is a condition for final payment to the Contractor.

(2) The Contractor shall submit the field mark-up record set of drawings to the inspector. If acceptable, the drawings will be forwarded to the DGS PM who in turn will forward them to the A/E. The A/E shall review the record set of drawings and incorporate the As-Built informationinto the original CADD contract drawing files.

(3) As-Built drawings must be corrected original CADD files submitted on electronic storage medium acceptable to DGS. A second electronic storage medium shall be provided to DGS with the drawing files in pdf format.

(4) Acceptance of As-Built drawings shall be conditional upon DGS approval of materials, quality, completeness and accuracy. DGS reserves the right to verify As-Built accuracy prior to final payment.

(5) As-built drawings on Capital Projects shall be turned over to the DGS within two months and on other projects within one month after satisfactory completion of the project. Final payment of the A/E's Phase V fee shall not be made until As-Built drawings and one complete set of contractor's field record set are submitted to the DGS PM/DGS Resident Inspector.

B. Maintenance Documents: The A/E shall obtain maintenance documents for all facility mechanical, electrical and control system equipment to include operation and maintenance manuals, trouble shooting guides, parts lists, and preventive maintenance requirements. These documents shall be reviewed for completeness and forwarded to the DGS Resident Inspector and the DGS PM prior to the substantial completeness inspection.

C. Guarantees, Warranties, etc.: The A/E shall obtain from the Contractor all Guarantees and Warrantees for all equipment, control systems, the roofing system, etc., and forward same to the UA with copy of the transmittal letter to DGS PM.

E. Approved Shop Drawings: Throughout the Construction Phase, the A/E shall

assemble a complete set of approved shop drawings for the UA. At the time of acceptance of the project the A/E shall forward this complete set of approved shop drawings directly to the UA. The A/E shall obtain a written receipt signed by the UA and forward it to the DGS PM.

16. PHASE VI - POST CONSTRUCTION PHASE (CONTRACTOR'S GUARANTEE PERIOD)

16.1 SITE VISITS: During the two year guarantee period, unless otherwise authorized by the DGS PM, the A/E and his design team shall participate in warranty inspections at 6, 12 and 23 months after acceptance of the project. These visits will be arranged by the DGS Construction Division and shall be in the presence of the UA representative and the DGS Construction Inspector.

16.2 REPORTS

A. The DGS Construction Inspector will file the Warranty Inspection Report (see Attachment 14 of this Manual) which will list contractual guarantee items, maintenance items and design complaints.

B. The A/E shall prepare a separate, detailed report of their observations, focusing particularly on serious design or construction deficiencies. The A/E's supplemental written report shall be submitted to the DGS PM and Construction Inspector.

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TABLE II

BASIC SUBMISSION REQUIREMENTS FOR DESIGN PHASES

SCHEMATIC PHASE	DD PHASE	CD PHASE
Cover Sheet (paragraph 7.2 and Attachment 11)	Cover Sheet (paragraph 7.2 and Attachment 11)	Cover Sheet (paragraph 7.2 and Attachment 11)
Transmittal Letter	Transmittal Letter	Transmittal Letter
Monthly Progress Report (3 copies, Attachment #5 & paragraph 2.1)	Project Description Sheet (3 copies, Attachment #6)	Project Description Sheet (4 copies, Attachment #6)
Cost Estimate (3 copies in CSI format w/ Summary of the 16 Divisions - Attachment # 3 & 3a)	Monthly Progress Report (3 copies, Attachment #5)	Monthly Progress Report (3 copies, Attachment #5)
Areas-Volume-Efficiency Summary (3 copies- Attachment #4)	Updated Cost Estimate (3 copies in CSI format w/ Summary of the 35 Divisions – Attachment #3 & 3a)	Updated Cost Estimate (4 copies in CSI format w/ Summary of the 35 Divisions – Attachment #3 & 3a)
Building Code Design Data (3 copies-Attachment #10)	Areas-Volume-Efficiency Summary (3 copies-Attachment #4)	Areas-Volume-Efficiency Summary (4 copies-Attachment #4)
Schematic Design Drawings	Building Code Design Data (3 copies-Attachment #10)	Building Code Design Data (3 copies-Attachment #10)

TABLE II

BASIC SUBMISSION REQUIREMENTS FOR DESIGN PHASES

SCHEMATIC PHASE	DD PHASE	CD PHASE
	Design Development Drawings	CD drawings appropriate for phase
Narrative Description (3 copies-Architectural & site improvements, and engineering analysis of structural, mechanical, electrical & civil systems)	Transmittal letter from MDE w/ signatures stating that the project was submitted for review (required for projects involving site work or hazardous/toxic waste)	Transmittal letter from MDE w/ signatures stating that the project was submitted for review(required for projects involving site & utility work)
Forest Delineation Plan (Chapter II, paragraph 5)	Outline Specifications (Chapter II, paragraph 11.9)	Specifications (indexed & securely bound w/ durable covers)
Value Engineering (Chapter I, paragraph 8)	Marked-up Schematic Review documents	Marked-up DD Review documents
Site Plan (Chapter II, paragraph 7.3 C)	Preliminary SEC/SWM plans & computations	SEC/SWM Plan, specs, and computations
Sub-Surface Exploratory Program Submit 3 copies on completion of schematics	Preliminary Electrical & Mechanical Calculations (Chapter II, paragraphs 11.10 & 11.11)	Structural, Electrical & Mechanical Calculations (paragraphs 12.2 A, B & C)
Sediment & Erosion Control and Stormwater Management Program	Building Code Analysis & Egress Plan	CITS specification/bid package (paragraph 12.5)

TABLE II

BASIC SUBMISSION REQUIREMENTS FOR DESIGN PHASES

SCHEMATIC PHASE	DD PHASE	CD PHASE
(Appendix B)	(paragraph 11.1)	
Green Building Submission (Appendix H)	Completed Geotechnical Report (Appendix A)	Building Code Analysis & Egress Plan (Chapter II, paragraph 11.1)
	Site Plan (Chapter II, paragraph 7.3 C)	Site Improvement Drawings (paragraph 12.3)
	Value Engineering (Chapter I, paragraph 8)	MDE approval - Sediment & Erosion Control and SWM (paragraph 12.6 G)
	Sediment & Erosion Control and Stormwater Management Program (Appendix B)	Sediment & Erosion Control and Stormwater Management Program (Appendix B)
	Updated Green Building Submission	Updated Green Building Submission
		Signed and Dated QA - QC Review Set with 95% CDs and 100% CDs
	This submission should include the Energy Conservation Analysis requirements defined elsewhere in this manual.	

END OF TABLE II

CHAPTER III:
CODES & REGULATIONS

1. BUILDING CODES and REGULATIONS

1.1 THE CODES and REGULATIONS guiding a design project shall be the editions currently in effect with the Department of Housing and Community Development - Maryland Codes administration at the time of the design contract approval.Attachment 10 - Building Code Study Data of this Manual shall be completed for each new building and existing building renovation project.

1.2 BUILDING CODE: The building code of the State of Maryland is called the Model Performance Code (MPC) *(COMAR 05.02.07).* It consists of the latest editions of the International Building Code (IBC), the International Residential Code (IRC), and the International Energy Conservation Code (IECC). Also referenced are the International Mechanical Code, National Standard Plumbing Code, the National Electrical Code, and ASHRAE standards. All Appendices, References, and Additions must be incorporated. Building renovation projects shall comply with the Maryland Building Rehabilitation Code *(COMAR 05.16.01)*, which incorporates the International Existing Building Code (IEBC).

1.3 FIRE CODE for the State is The State Fire Prevention Code, *COMAR 29.06.01*, including State Fire Marshal modifications. The Code references the latest edition of the National Fire Protection Association (NFPA) 101 Life Safety Code, and NFPA 1 Fire Code.

1.4 BUILDING PLUMBING SYSTEMS shall comply with *COMAR 05.02.01*, which references the National Standard Plumbing Code and the International Plumbing Code for industrialized building.

1.5 BUILDING SYSTEMS utilizing boiler supplied hot water shall comply with the requirements of *COMAR 09.12.01* Board of Boiler Rules Authority.

1.6 ELECTRIC, GAS, WATER, SEWERAGE, TELECOMMUNICATION, and DATA utility extension and connection work, when required, shall comply with all regulations and requirements of local and service district utility companies.

1.7 ELEVATORS, ESCALATORS, CHAIRLIFTS, DUMBWAITERS, MOVING WALKS etc. are governed by ANSI/ASME A17.1, latest edition, and other requirements of the State Department of Labor, Licensing and Regulation (DLLR), Division of Labor and Industry Elevator, Escalator and Chairlift Safety Authority *(COMAR 09.12.81 through 09.12.83).*

1.8 ACCESSIBILITY requirements are governed by The Maryland Accessibility Code *(COMAR 05.02.02)*, which references the most current Americans with Disabilities Act (ADA) Standards, Accessibility Guidelines (ADAAG), and other applicable Federal laws and regulations.

2. OTHER APPLICABLE REGULATIONS

2.1 SEDIMENT and EROSION CONTROL and STORMWATER MANAGEMENT shall comply with regulations of the Maryland Department of the Environment (MDE), Water

Management Administration, Environment Article sections 4-101 through 4-116, Annotated Code of Maryland and COMAR 26.17.01 and 26.17.02. When applicable, work in Non- tidal Wetlands areas shall comply with COMAR 26.23, and work in Wetlands areas shall comply with COMAR 26.24. Additional requirements are given in Appendix B of this Manual.

2.2 CHESAPEAKE BAY CRITICAL AREA criteria and compliance requirements are regulated under the provisions of COMAR Title 27. Additional requirements are given in Chapter II, paragraph 6 of this Manual.

2.3 FOREST CONSERVATION AND REFORESTATION REQUIREMENTS are regulated under the provisions of COMAR 08.19.01 - 08.19.06. Regulations for development of Forest Stand Delineation and Forest Conservation Plan are outlined in COMAR 08.19.04. Additional requirements are given in Chapter II, paragraph 5 of this Manual.

2.4 FLOOD PLAIN MANAGEMENT is regulated under the provisions of COMAR 26.17.04. Additional requirements are given in Appendix C of this Manual.

2.5 OTHER WATER RESOURCES are regulated under the provisions of COMAR 26.08.

2.6 WATER AND SANITARY SYSTEMS

A. Surface and Groundwater Treatment Plants, Wastewater Treatment Plants Discharging to the Waters of the State, and Connections in Excess of 400 Linear Feet to Municipal Water or Sewer Systems are governed under MDE Regulations in COMAR 26.03 and 26.04. The A/E shall obtain a Water & Sewerage Construction Permit from the Applications & Permits Section, Water Management Administration, Department of the Environment.

B. On-site Wastewater Collection and On-site Wastewater Treatment with Underground Effluent Disposal are regulated by the Health Department or other designated agency of the local jurisdiction. The A/E shall ensure compliance with all jurisdictional regulations and criteria, and shall obtain all required permits and/or written approvals.

C. Water Appropriation: When the project requires the withdrawal of either groundwater or surface water, the A/E shall comply with all permitting requirements and COMAR 26.17.06, Water Appropriation or Use.

2.7 SWIMMING POOLS are regulated by DHMH under the provisions of COMAR 10.17.01, Public Swimming Pools and Spas.

2.8 HOSPITALS: Hospitals are regulated in accordance with Maryland Department of Health & Mental Hygiene (DHMH) regulations for hospitals, care and treatment facilities (COMAR 10.07).

2.9 FOOD PREPARATION: Maryland DHMH Regulations for food service facilities *(COMAR 10.15.03*) applies when food preparation or serving areas are included in the project.

2.10 LEAD EXPOSURE is governed by Maryland Occupational and Health regulations for exposure to lead in construction work *(COMAR 09.12.32)*. Procedures for abating lead containing substances from buildings are outlined in *COMAR 26.02.07*.

2.11 HAZARDOUS WASTE is governed by MDE Standards for controlled hazardous substances. *(COMAR 26.13.03).*

2.12 FUEL STORAGE TANKS: Regulations for Underground Storage Tanks and Above Ground Storage Tanks are provided in *COMAR 26.10* Oil Pollution and Tank Management.

2.13 HISTORIC LANDS AND STRUCTURES are regulated by the Department of Planning - Maryland Historical Trust (MHT). Early in the planning stages of a project, the MHT shall review capital projects affecting historic properties.

A. For Projects located in Baltimore City involving Historic Structures, the Design Advisory Panel (DAP) shall also be invited to review project documents.

B. Based on an Initial Assessment by the Maryland Historical Trust, a Phase I Archaeological survey may be required.

C. Findings during a Phase I Investigation may require a Phase II Archaeological Investigation.

2.14 HIGHWAYS are regulated by the Maryland Department of Transportation (MDOT), State Highway Administration (SHA), for any construction affecting a State Highway route or right-of-way, or local jurisdictions where projects are accessed by their roadways.

END OF CHAPTER III

CHAPTER IV:
POLICIES AND STANDARDS

1. COMPUTER AIDED DRAFTING and DESIGN (CADD)

1.1 DRAFTING CONVENTIONS AND LAYERING SYSTEMS SHALL

A. Conform to the American Institute of Architects (AIA) standard layering system, latest edition, and national CADD standards.

B. Conform to the Construction Specification Institute (CSI) Drafting Standards, latest edition drafting format for both graphic and textural information used within drawings e.g. reference template, line, identity and material symbols.

C. Exhibit a Layer Index describing the layer name and layer contents e.g. Layer 1: Existing walls to remain, etc.

1.2 THE PROJECT MANUAL AND DRAWINGS shall be delivered on electronic media (compact disc or flash drive, which will not be returned) in addition to hard copies.

NOTE: 1.1 C. and 1.2 apply to all disciplines.

2. DRAFTING STANDARDS

2.1 ARCHITECTURAL SYMBOLS AND ABBREVIATIONS shall conform to The Architectural Graphic Standards, latest edition.

2.2 LANDSCAPESYMBOLS ANDABBREVIATIONSshall conform to The Architectural Graphic Standards, latest edition.

2.3 HVAC ENGINEERING SYMBOLS AND ABBREVIATIONS shall conform to The ASHRAE Fundamentals Handbook, latest edition.

2.4 PLUMBING ENGINEERING SYMBOLS AND ABBREVIATIONS shall conform to The ASPE Data Book, latest edition.

2.5 FIRE PROTECTION ENGINEERING SYMBOLS AND ABBREVIATIONS shall conform to The NFPA National Fire Codes, latest edition.

2.6 ELECTRICAL ENGINEERING SYMBOLS AND ABBREVIATIONS shall conform to the latest ANSI, IEC, IEEE, IES, ISA, NEC, NECA, NEIS, and NFPA standards.

2.7 STRUCTURAL ENGINEERING SYMBOLS AND ABBREVIATIONS shall conform to the latest AISC, ACI, and AITC standards.

2.8 CIVIL ENGINEERING SYMBOLS AND ABBREVIATIONS shall conform to the latest editions of the MDOT Standard Specifications for Construction Material, MDE Standards and Specifications for Soil Erosion and Sediment Control, and the DNR Forestry, Waterways, and Wetlands publications.

3. LIQUIDATED DAMAGES

3.1 The DGS Manager shall establish liquidated damages for the project based on the following:

ESTIMATED PROJECT COST	PROJECT CLASSIFICATION	LIQUIDATED DAMAGES per DAY
Under $25,000.00		$100.00
$25,000. to $100,000.	A	$250.00
$100,000. to $500,000.	B	$350.00
$500,000. to $1,000,000.	C	$550.00
$1,000,000. to $2,500,000.	D	$750.00
$2,500,000. to $5,000,000.	E	$1,000.00
$5,000,000. to $10,000,000.	F	$1,500.00
$10,000,000. to $15,000,000.	G	$2,000.00
More than $15,000,000.	H	$2,500.00

3.2 The DGS PM may, at his discretion, modify the suggested Liquidated Damages to meet the specific requirements of a given project.

4. OFFICE SPACE STANDARDS: (Facility Program Manual, DGS/DBM, latest edition)

OFFICE TYPE	RECOMMENDED NASF
Cabinet Secretary & Agency Executive Director	300
Deputy Secretary & Agency Deputy Director	250
Judge's Chambers	200 office + 75 toilet/closet
Commissioner (full-time), Director, Assistant Secretary & Division Chief	200
Assistant Division Chief, Assistant Director & Branch Head	175
Attorney, Doctor & Field Office Supervisor	150
Supervisory Professional (Private Office)	126
Supervisory Professional (Open Office)	120
Non-supervisory Professional (Private Office)	108
Non-supervisory Professional (Open Office)	90
Secretaries & Drafting Stations (CADD)(Conventional Office)	90
Secretaries & Drafting Stations (CADD)(Open Office)	81
-Word Processor & Clerical Stations (Conventional Office)	60
Word Processor & Clerical Stations (Open Office)	56
Conference Room	22 per person
Reception & Waiting Room (1 - 15 Persons)	15 per person
Reception & Waiting Room (over 15 Persons)	10 per person
Large Courtroom	2000
Typical Courtroom	1700
District Court Lobby	5 per person
Detention Cells (Individual)	90 NSF per cell
Sallyport	500

i. Space standards indicated above include normal furniture and equipment.
ii. Additional space may be allowed for unusual furniture and equipment requirements if justified.
iii. Enclosed offices should be a minimum of 100 NASF regardless of classification of occupant.
iv. Allow an additional 7 NASF per file cabinet in open office areas.

5. BUILDING EFFICIENCY FACTORS:

(Facility Program Manual, DGS/DBM, latest edition)

BUILDING TYPE	EFFICIENCY FACTOR RANGE	MID-POINT
Office (Non-University)	1.35 (75%) - 1.50 (67%)	1.42 (70%)
Administration/Office (University)	1.67 (60%) - 1.82 (55%)	1.74 (57%)
Library	1.52 (66%) - 1.67 (60%)	1.60 (62%)
Classroom	1.65 (61%) - 1.85 (54%)	1.75 (57%)
Science (Undergraduate)	1.65 (61%) - 1.85 (54%)	1.75 (57%)
Science (Research)	1.72 (58%) - 1.92 (52%)	1.82 (55%)
Medical (Teaching)	1.75 (57%) - 1.95 (51%)	1.85 (54%)
Dormitory	1.33 (75%) - 1.54 (65%)	1.43 (70%)
Dining Hall (Kitchen)	1.40 (71%) - 1.60 (62%)	1.50 (67%)
Student Union	1.60 (62%) - 1.75 (57%)	1.67 (60%)
Performing Arts Fine Arts	1.75 (57%) - 1.95 (51%)	1.85 (54%)
Theater, Auditorium, Concert Hall	1.45 (69%) - 1.60 (62%)	1.52 (66%)
Gymnasium	1.40 (71%) - 1.50 (67%)	1.45 (69%)
Patient Health Facility	1.70 (59%) - 1.85 (54%)	1.75 (57%)
Armory	1.25 (80%) - 1.35 (75%)	1.30 (77%)
District Court, MSC	1.70 (59%) - 1.85 (54%)	1.75 (57%)
State Police Barrack	1.50 (67%) - 1.60 (62%)	1.55 (64%)
Detention Facility	1.70 (59%) - 1.85 (54%)	1.75 (57%)
Maintenance Shop	1.25 (80%) - 1.35 (75%)	1.30 (77%)
Garage (Vehicle Support)	1.15 (85%) - 1.25 (80%)	1.20 (83%)
Park Comfort Station, Shower Building	1.30 (77%) - 1.40 (71%)	1.35 (75%)
Visitor's Center Concession	1.40 (71%) - 1.50 (67%)	1.45 (69%)

6. EQUIPMENT AND MAINTENANCE MANUALS

6.1 A/E RESPONSIBILITY

A. The A/E is responsible for obtaining Bound Manuals from the Contractor that are appropriate for installed equipment and required maintenance. The A/E's review of the O&M Manuals will be for compliance with the requirements of the construction documents.

(1) For projects on which DGS has retained a Commissioning Agent, that firm will provide a parallel review of the O&M Manuals to ensure that they properly document start-up and testing procedures.

B. The A/E shall furnish three Bound Manuals to the DGS that include:

(1) Wiring Diagrams: Detailed wiring diagrams of all signal systems, temperature control systems, equipment interlocks systems.

(2) Lubrication: Lubrication type, locationand schedule for each piece of equipment.

(3) Maintenance Schedules: requiredmaintenance data and schedules other than lubrication for each piece of equipment.

(4) Filters: types and required maintenance for each piece of air handling equipment.

(5) Catalog Cuts: descriptive literature of each piece of mechanical and electrical equipment, indicating model number, size and capacity, performance curves, etc., as would be applicable to adequately identify and describe the equipment involved.

(6) Spare Parts: recommended spare parts inventory.

6.2 MANUAL ORGANIZATION

A. Manuals shall be organized in Five Sections:

(1) Elevators

(2) Special Equipment

(3) Plumbing

(4) Heating, Ventilation and Air Conditioning

(5) Electrical

END OF CHAPTER IV

CHAPTER V
ENERGY CONSERVATION GUIDELINES

1. INTRODUCTION

1.1 THE ENERGY CONSERVATION GUIDELINES FOR STATE BUILDINGS:

A. Incorporates ANSI/ASHRAE/IESNA Standard 90.1 (Latest Edition) Energy Standard for Buildings Except Low-Rise Residential Buildings with minor changes.

B. Incorporates the International Energy Conservation Code (IECC) (Latest Edition)

C. Sets Minimum Performance Standards which shall be used in conjunction with the High Performance Green Building Program adopted by the State of Maryland (see Appendix H). A/Es are encouraged to exceed these minimums.

2. BUILDING ENVELOPE REQUIREMENTS

2.1 THE BUILDING ENVELOPE FOR NEW BUILDINGS AND RENOVATIONS shall comply with ANSI/ASHRAE/IESNA Standard 90.1 and International Energy Conservation Code (IECC) (Latest editions):

A. Insulation: A wall of a conditioned space adjacent to an unconditioned space shall meet or exceed insulation value per latest IECC Code.

B. Fenestration: Windows shall be provided with thermal breaks in the frame and low e insulating glass, and shall comply with latest IECC Code.

C. Vapor Retarders Shall:

(1) Be installed in all non-vented frame areas in ceilings, walls and floors.

(2) Have a permeability rating of 1.0 perm or less.

(3) Be installed on the side of insulation that faces toward the interior of the building.

2.2 BUILDING RENOVATIONS

A. All Renovations are required to comply with these energy conservation guidelines if possible.

NOTE: If industry standards cannot be achieved, the A/E shall provide a written explanation during the Schematic Phase.

B. Roof Replacements shall be upgraded to comply with these energy conservation guidelines.

C. Replacement Windows shall comply with the requirements of these energy conservation guidelines.

2.3 THERMAL INTEGRITY AND AIRTIGHTNESS

A. All New Building and Renovation construction shall utilize thermal integrity and air-tightness principals and details from the National Institute of Standards and Technology

(NIST) report NISTIR 4821 - Envelope Design Guidelines for Federal Office Buildings: Thermal Integrity and Airtightness.

3. HEATING, VENTILATING AND AIR CONDITIONING (HVAC)

3.1 THE HVAC EQUIPMENT AND SYSTEM shall comply with Section 6 of ANSI/ASHRAE/IESNA Standard 90.1 and the IECC except for the following:

A. Electric Resistance Heating shall be limited as a primary heating source.

B. Heating and Cooling Load Safety Factors:

(1) Maximum heating load safety factor shall be 10%.

(2) Maximum cooling load safety factor shall be 5%.

3.2 HVAC SYSTEM SELECTION: A minimum of four alternative HVAC systems shall be evaluated, with the selected system offering the optimum energy performance credits for Green Building certification:

A. For Buildings 90,000 GSF and Larger:

(1) Central station Air Handling Units (AHU) with Variable Frequency Drives (VFD) and Variable Air Volume (VAV) air distribution system using standard or low temperature supply air with thermal storage (ice or water), variable flow piping, and central heating/cooling plant.

(2) 4-pipe Fan Coil Unit (FCU) system, thermal storage (ice or water), and central heating/cooling plant

(3) Packaged heat pump system

(4) Geothermal heat pump system

(5) Other alternatives approved by DGS

B. Buildings 30,000 GSF to 89,999 GSF:

(1) Central station AHU with VFD and VAV air distribution system using standard or low temperature supply air with thermal storage (ice or water) and central heating/cooling plant.

(2) 4-pipe FCU system, thermal storage (ice or water) and central heating/cooling plant

(3) Geothermal heat pump system

(4) Variable Refrigerant Flow (VRF) System

(5) Other alternatives approved by DGS

C. Buildings 10,000 GSF to 29,999 GSF:

(1) VRF System

(2) 2-pipe or 4-pipe FCU system, thermal storage (ice or water) central heating/cooling plant

(3) Packaged terminal air conditioning units with Hydronic heat and central heating plant

(4) Packaged heat pump system and central heating plant

(5) Split DX cooling or heat pump systems and central heating plant

(6) Geothermal heat pump system

(7) Other alternatives approved by DGS

D. Buildings Less Than 10,000 GSF:

(1) VRF System

(2) Packaged terminal air conditioning system, Hydronic heat

(3) Packaged terminal heat pump system and central heating plant

(4) Split system DX cooling, Hydronic heating or gas fired furnaces

(5) Split system heat pump systems

(6) Geothermal heat pump system

(7) Other: An alternative Suitable for intended use, existing conditions, constraints and appropriate for location, orientation and size of that facility. DGS approval will be based on these criteria:

a. Initial cost

b. Maintenance cost

c. Operating cost

d. Life cycle cost

e. Simplicity to operate

f. Ease of construction

g. Flexibility for future expansion

h. Overall comfort to user groups

E. For any renovation project, regardless of size, which is proposed to be replaced in kind, a simplified cost/payback analysis must be performed which compares replacement in kind with at least one more energy efficient alternative.

F. Spaces that require year-round heating or cooling, such as server rooms, shall be provided with dedicated mini split/VRF HVAC systems.

4. ELECTRICAL POWER

4.1 THE BUILDING POWER DISTRIBUTION SYSTEM shall comply with Section 8 of ANSI/ASHRAE/IESNA Standard 90.1 and the IECC except for the following:

A. Provisions for Check-Metering shall be subdivided in accordance with lighting and receptacle outlets, HVAC systems and equipment, and service water heating, elevators and special-occupant equipment or systems of more than 20 KW.

B. A Maximum of ten percent of the electrical loads on any feeder may be from another usage category.

C. Variable Frequency Drives (VFD)

(1) VFD standard and optional features shall be tested to ANSI/UL Standard 508.

(2) VFDs shall be Pulse Width Modulation (PWM) type.

(3) The complete VFD, including all specified options, shall be listed by a nationally recognized testing agency e.g. as UL or ETL.

5. LIGHTING

5.1 THE LIGHTING SYSTEM AND EQUIPMENT shall comply with ANSI/ASHRAE/IESNA Standard 90.1 (Latest Edition) Section 9 except for the following:

A. Lighting System Design shall be based on the latest Life Safety Code, IBC, Green Building Program, and IESNA lighting design guidelines.

B. Exterior Lighting Control shall utilize electronic time clocks with or without photocell, or an energy management system in addition to control devices mentioned in ANSI/ASHRAE/IESNA Standard 90.1 Section 9.

C. Occupancy Sensors shall be installed subject to the occupancy and use of particular building spaces and applications as per IECC.

D. Dual–technology Occupancy Sensors shall be used.

E. Night Sky Pollution shall be minimized by the use of shielded luminaires and by the proper aiming of adjustable luminaires as per applicable green building design guidelines for all outdoor lighting.

NOTE: The A/E shall comply with 2013 Maryland Code (or the latest Edition) STATE FINANCE AND PROCUREMENT, 14-412 – Energy Efficient outdoor lighting in State buildings.

F. Light Sources shall be in compliance with the most current LED technology and LED drivers.

G. Ballasts shall be energy efficient, electronic type with low harmonics, as per latest technology.

H. Incandescent light shall not be used.

I. Exit Signs: LED Exit signs shall be used.

J. Daylight responsive control shall be provided as per IECC requirement *(C405.2.3)*

6. HVAC CONTROLS

6.1 HVAC CONTROLS AND EQUIPMENT shall comply with ANSI/ASHRAE/IESNA Standard 90.1 Section 6 and Section 7 and the IECC except for the following:

A. The HVAC Controls System shall maintain the set point temperature within "comfort zone" described in ANSI/ASHRAE Standard 55 (Latest Edition) and the IECC.

B. HVAC Equipment Control Diagrams, HVAC sequence of operations and a "points list" describing HVAC control points shall be provided for all projects.

C. Time Clocks shall be electronic type with battery backup.

6.2 ENERGY MANAGEMENT SYSTEMS (EMS)

A. Buildings 10,000 GSF Floor Area and Greater shall utilize an EMS employing a Direct Digital Control (DDC) network capable of performing automatic temperature control and energy management tasks.

B. The DDC Network shall be locally Ethernet accessible with a personal computer (PC) via direct communication ports, through telephone lines by using a modem or through internet access.

C. Each DDC Controller shall be capable of stand-alone operation with the ability to share information through a network.

D. The EMS shall control all HVAC dampers, control valves and the temperature regulation of all terminal devices.

E. The EMS shall have "open" architecture.

F. The EMS shall have the capability to incorporate security, fire protection and similar systems.

G. The Photocell with electronic Timer or EMS shall be used to control exterior lighting.

7.0 SUBMISSION OF ENERGY MODEL:

7.1 For all new construction projects over 7,500 gross square feet, an energy model must be completed for the building as designed on 100% construction documents. Final energy model input and results for expected energy use must be submitted to the Department of General Services (DGS) Project Manager in PDF Format.

END OF CHAPTER V

CHAPTER VI
RESERVED FOR FUTURE USE

END OF CHAPTER VI

CHAPTER VII
ROOFING STANDARDS

STANDARDS FOR NEW ROOFING CONSTRUCTION, RE-ROOFING, CONSTRUCTION AND ROOFING SYSTEM WARRANTY REQUIREMENTS HAVE BEEN REMOVED FROM THE DGS PROCEDURES MANUAL AND ARE NOW AVAILABLE ON THE DGS WEBSITE.

END OF CHAPTER VII

APPENDIX A

SUB-SURFACE EXPLORATION AND EVALUATION

1. REQUIREMENTS: The A/E will plan and perform the subsurface exploration and evaluation and analyze the information relative to the site and subsurface conditions as they pertain to project requirements.The data and analysis shall be adequate, correct and complete for the intended purposes of planning, design, quantity and cost estimating, and determining the construction feasibility of the project.

2. SUBSURFACE DATA: The A/Eshall provide site and subsurface data and evaluations to the State, bidders, contractors, and construction inspectors prior to technical review of documents, bidding, and construction, respectively.

3. GEOTECHNICAL ENGINEER: The work of subsurface exploration and evaluation will be performed under the guidance, direction, and control of the geotechnical engineer. All submissions to DGS relating to and including the results of thesubsurface exploration, evaluation and recommendations will bear the seal of the geotechnical engineer.

4. EXPLORATORY PROGRAM: During the latter part of the Schematic phase or the early part of the Design Development phase, the A/E will submit to the DGS, for review and approval, three (3) copies of the proposed Exploratory Program. The Exploratory Program will include, but not be limited to the following:

4.1 Scope: A summary of the project and design considerations.

4.2 Site Plan: A site plan showing locations of structures, grading, storm water management areas, and utilities in relation to test locations.

4.3 Boring Plan: A Layout of test borings/pits relative to existing physical features and proposed locations of structures.

4.4 Description: Number, type, and estimated depths of test borings/pits or other investigative systems.

A. Soil borings must be taken after the building footprint is established.

B. Soil borings must be supervised, on site, by the Geotechnical engineer to ensure the proper locations and proper depths.

C. Soil borings must be specified to be taken to refusal depth. If the Geotechnical engineer, at some intermediate depth, is comfortable with what is being observed in terms of bearing pressure potential, then the borings need not be extended further.

D. Soil boring must be taken at areas that the civil engineer determines are areas for possible use as fill material during the construction.

E. Soil borings must be taken at parking lot locations.

F. Soil borings must be taken where anticipated utility lines will be installed.

G. Soil borings must be taken at Storm Water Management areas.

H. Soil borings in an urban site must be taken on a grid that will cover the entire lot. Where necessary, test pits shall be excavated searching for old foundations and abandoned tanks.

4.5 Estimated Quantities: Estimated vertical linear feet of earth borings and rock coring and types and estimated quantities of laboratory and field tests.

4.6 Estimated Cost of the subsurface exploration including the billing unit prices.

4.7 After Approval of the Exploratory Program by the DGS, the A/E willconduct the subsurface investigation and evaluation. Prior to starting field operations, the A/E will verify the underground utilities with Miss Utility or a private utility locator.

5. GEOTECHNICAL REPORT: Upon completion of subsurface exploration and evaluation, the A/E will submit to DGS three (3) copies of the Geotechnical Report and any additional results, reports, supplements, revisions, modifications or clarifications developed subsequent to the original report. As a minimum, the report will address each of the following:

5.1 Geology: Geology and general nature of soil/rock/drainage/groundwater conditions in the project area.

5.2 History: A history of the project site and relevant information relating to nearby foundations and structures, underground springs, etc.

5.3 Boring Plan: Boring plan, to scale, indicating boring and test pit locations referenced to existing physical features and proposed locations of structures and other facilities.

5.4 Logs: Boring and test pit logs, with soil/rock description, classification, and depth and character of fill, ground water observations, and any other observations made during the exploration, including the ground surface elevations at borings and test pit locations.

5.5 Characteristics: Information relating to soil/rock character, consistency, compressibility, shear strength, safe bearing value, chemical content, corrosiveness, frost penetration depth, permeability, and relevant properties.

5.6 Quantity Estimates: Depths, locations, and quantity estimates of topsoil, unsuitable soils, existing fill, rock excavations, borrow, demolition debris or controlled substances, etc.

5.7 Rock Line: Rock line elevations with cross-sectional profiles, evidence that rock strata is sound and not underlain by mine cavities or lenses that would affect the stability and support capability. Make recommendations for corrections in case of questionable stability.

5.8 Foundation Analyses: Foundation analyses and recommendations including the presentation of risk and cost effectiveness considerations.

5.9 Foundation Information: All relevant foundation information including design parameters, elevations of bottom of footings or pile tips, related soil bearing or pile capacity, factors of safety and settlement analysis considerations.

5.10 Recommendations: Recommendations for design and support of floor slab, retaining or basement walls, water or damp-proofing and drainage, underground utilities, pavements of driveways and parking lots, stability of slopes, ground water seepage control, soil compaction, or other stabilization procedures.

5.11 Site Evaluation: relating to excavation and earthwork feasibility.If rock excavation is involved, indicate definition, removal and handling type of equipment, blasting requirements, etc. For earthwork, indicate shrinkage factors, suitability of on/off-site materials, and borrow requirements and source. Include groundwater observations, elevations and recommendations for temporary dewatering during construction and for permanent dewatering facilities after construction. Effects of seasonal variations will be noted. Seismic evaluation will be based on the International Building Code (Latest Edition).

5.12 Potential Problems: Identify problems which may affect the cost of constructionand/or may cause delays, including presence of controlled or hazardous substances, and furnish construction precautions and recommendations.Identify inspection, testing and quality control requirements during the construction.

5.13 Stormwater Management Recommendations: Recommend the type of stormwater management facilities suitable for the site and design parameters to be used by site engineer for systems sizing.

6. DRAWINGS AND SPECIFICATIONS

6.1 The Soil Boring Locations shall be shown on the existing Site Plan. The soil boring logs shall be shown on the civil drawings.

6.2 The Geotechnical Report shall be included in the Project Manual for informational purposes.

7. PAYMENT: Upon completion of work, the A/E will submit an invoice for the completed reimbursable work, i.e., test boring, test pits and laboratory testing, verified and approved by the A/E, to DGS for payment. Payment will be made by DGS to the A/E for the approved and completed testing work. All costs for boring stakeout, utility clearances, evaluation, engineering and inspection or supervision of field and office studies will be included in the A/E's basic fee for design services.

END OF APPENDIX A

APPENDIX B

SEDIMENT AND EROSION CONTROL, AND STORMWATER MANAGEMENT

1. REQUIREMENTS: It is required that review and approval be obtained from the Maryland Department of the Environment MDE), Sediment and Stormwater Administration (COMAR 26.09.01.01 thru 26.09.01.11 and 26.09.02), for all projects in which existing earth surfaces are disturbed in the execution of the project, or in which on-site stormwater management is required to achieve current discharge limitations established by the MDE. Should a flooding hazard be present which cannot be alleviated by natural features, retention measures may be required in the design of controls. The A/E will be responsible for submitting plans, specifications and computations with the Design Development and Construction Document submissions directly to the MDE for review. One copy of the submission and transmittal letter with the MDE's signature acknowledging receipt will be submitted to DGS as part of the DD and CD submissions to the DGS Project Manager.

2. PROGRAM: The A/E will provide sediment and erosion control, and stormwater management programs at all design phase submissions. The final stormwater management, sediment and erosion control plan(s) will address all aspects of the construction phase such as stabilization of temporary stockpiles of topsoil, waste material, etc. in addition to the overall requirements of the Sediment and Stormwater Administration.

3. CONTRACT DOCUMENTS: Contract documents for sediment and erosion control and stormwater management construction will be in accordance with the Regulations approved and adopted by the MDE. No changes in these measures as shown in the contract documents may be approved by any person or agency other than the MDE. The A/E will be responsible for revising contract documents for any changes required by the MDE.

3. REFERENCE MANUAL: The reference manual controlling specifications will be: The Maryland Department of the Environment Erosion and Sediment Control Guidelines for State and Federal Projects (latest edition) and Stormwater Management Guidelines for State and Federal Projects (latest edition). Manuals can be obtained at: Maryland Department of the Environment Sediment and Storm Water Administration, 1800 Washington Boulevard, Baltimore, Maryland 21230.

5. CERTIFICATION: Contract drawings submitted to the MDE for approval must contain both Engineer's and DGS/Developer's Certifications as shown below:

5.1 Engineer's Certification

I/We, _____, do hereby certify that the sediment control provisions shown on this plan are designed in accordance with the guidelines, standards and specifications for soil erosion and sediment control issued by the Maryland Department of the Environment, latest edition.

Signature: _____ Title: _____ Date: _____

Printed Name: _____ MD Registration No.: _____

P.E./R.L.S./R.L.A. (Circle One)

5.2 DGS/Developers Certification

I/We hereby certify that:

A. All development and construction will be done in accordance with this sediment and erosion control plan, and further authorize the right of entry for periodic on-site evaluation by the State of Maryland, Department of the Environment enforcement inspectors.

B. Any responsible personnel involved in the construction project will have a certificate of attendance at a Department of the Environment approved training program for the control of sediment and erosion before beginning the project.

Signature: _____ Date: _____

Printed Name: _____ MD Registration No.: _____
Card Number

APPENDIX C

FLOODPLAIN MANAGEMENT CRITERIA FOR FLOOD-PRONE AREAS

1. REQUIREMENTS: All proposed project sites (including new construction, major improvements, and site work projects) shall be reviewed to ascertain that a one hundred (100) year floodplain determination has been made and that the source and map used for that determination are cited and attached to the program.

2. STANDARDS: All activities proposed within tidal and non-tidal floodplains, including construction of buildings, grading, or utility work, shall be designed to meet or exceed the standards set forth below.

2.1 Determination: The Maryland Department of the Environment, Water Management Administration (MDE-WMA) may provide assistance with determining the tidal/non-tidal nature of the floodplain. Proposed activities located within non-tidal floodplains are also subject to the provisions of Natural Resources Article, Section 8-803, Annotated Code of Maryland, and COMAR 08.05.03.01 et seq.

2.2 Permits: For tidal and non-tidal floodplains, permits shall be obtained from the Maryland Department of the Environment, and the Army Corps of Engineers (if applicable), and the Chesapeake Bay Critical Areas Commission.

3. BUILDING SITE

3.1 If a Proposed Building Site is in a tidal or non-tidal flood plain, all new construction, manufactured buildings, and substantial improvements shall be:

A. Anchored: Designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.

B. Materials: Constructed with materials resistant to flood damage.

C. Methods: Constructed by methods and practices that minimize flood damage.

D. Service Equipment: Constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

E. Review: Reviewed by MDE-WMA for consistency with flood damage reduction objectives.

3.2 If a Proposed Building Site is in a tidal or non-tidal flood plain:

A. Sewage Systems: New and replacement sanitary sewage systems are to be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

B. Onsite Waste Disposal: Onsite waste disposal systems are to be located to avoid impairment to them or contamination from them during flooding.

4. NEW CONSTRUCTION

4.1 All New Construction and substantial improvements (exceeding 50% of market value of structure) of non-residential structures within tidal or non-tidal flood plains shall comply with the following:

A. Floor Elevation: The bottom of the lowest structural member of the lowest floor shall be elevated at least two (2) feet above the 100-year flood level.

B. Water tightness: The structure shall be designed to be watertight to at least two (2) feet above the 100-year flood level. Walls shall be substantially impermeable to the passage of water, and structural components shall have the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

C. All hospitals, police stations, fire departments, emergency centers, or any other structure considered as National Security, and access to and from them shall be 2 ft. above 500' flood level.

(1) A Licensed Professional Engineer or Architect shall develop and/or review structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with accepted standards of practice.

(2) A record of such certification which includes the specific elevation to which such structures are flood-proofed shall be provided to MDE-WMA and indicated on design drawings.

D. Fully Enclosed Areas:Areas below the lowest floor that are subject to flooding shall be designed to automatically equalize hydrostatic floodforces on exterior walls, by allowing for the entry and exit of flood waters.

(1) All such designs shall be certified by a licensed Professional Engineer or Architect.

(2) The structure shall be provided with a minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding. The bottom of all openings shall be no higher than one (1) foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

5. ZONES VI-30, VE, V

5.1 All New Construction within Zones VI-30, VE, and V as delineated on the Flood Insurance Rate Map prepared by the Federal Emergency Management Agency (FEMA) shall comply with the following:

A. Location: Structures shall be located landward of the reach of mean high tide.

B. Elevation: The bottom of the lowest structural member of the lowest floor shall be two (2) feet above the 100-year floodlevel.

C. Foundation: Pile or column foundation and structure attached thereto shall be

anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously.

D. Support: Fill shall not be used for structural support of buildings.

E. Open Space: The space below the lowest floor shall be eitherfree of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or the supporting foundation system.

END OF APPENDIX C

APPENDIX D

MEASUREMENT OF BUILDING AREAS, VOLUMES, & EFFICIENCY FACTORS

1. GROSS AREA

1.1 The Gross Area of Buildings will be measured as follows:

A. Measurement - Measure from out to out of walls.

B. Full Areas - Include the gross area of each level:

(1) All interior floors (including stairs, shafts, etc.)

(2) Mezzanine or interior balcony

(3) Basement, sub-basement, pipe space, boiler room, etc. 6 feet or higher)

(4) Enclosed space beneath upper floors (stilt design)

(5) Mechanical space (six feet or higher)

(6) Penthouse (stair, elevator, equipment, etc. 6 feet or higher)

(7) Elevator machine room floor

(8) Fly gallery gridiron

(9) Utility Tunnels (six feet or higher) under building and within ten feet of the building perimeter.

C. Half Areas - Include one-half (2) of the gross area of:

(1) Paved porch/terrace with roof

(2) Exterior covered balcony

(3) Entrance canopy over paving

(4) Areaways (six feet wide or greater)

(5) Unenclosed space beneath building (stilt design)

(6) Loading dock with canopy

D. Exclusions - Gross Area

(1) Unusable/unfinished attic space under pitched roof

(2) Roof and roof parapets

(3) Interior court or yard

(4) Covered walks (site work)

(5) Sun shades

(6) Porch/terrace without roof

(7) Roof overhangs (no paved walkway beneath)

(8) Upper space of gym, pool, auditorium, lecture hall, large entrance exceeding one story, etc.

(9) Pipe tunnels beyond 10 feet of building (site work)

2. NET AREA

2.1 The Net Area of Buildings is defined and measured as follows:

A. Net Assignable Area:The sum of all floor areas of a building allotted an occupant between inner faces of walls and partitions or imaginary dividing lines of open areas.

Examples: offices, classrooms, mail rooms, conference rooms, libraries, file rooms, storage pertaining to an occupant or program (not custodial or general storage), seminar rooms, laboratories (including balance, supply and preparation rooms, etc.), lecture rooms or auditoriums (includingstorage, dressing and preparation rooms, stage, etc.), toilet and locker rooms (including shower rooms) only when they are private and directly supporting a room function (e.g., for a patient's room, examination room, gymnasium, kitchen, actor's dressing areas, student bedrooms or house-parent's apartment, etc.), lounges (academic, dormitory, faculty, patient, etc.), kitchen (including food storage areas, dining rooms, etc.), athletic courts, swimming pool, dance and wrestling rooms, rifle range, library reading and stack areas (including processing, study, audio, micro-film and typing rooms, but excluding "phantom" corridors not specifically defined by fixed or movable walls).

B. Non-Assignable (Supporting) Area:The total of all areas remaining after net assignable areas are deducted from the gross area.Non-assignable areas include the following:

(1) Custodial - for building protection, care, maintenance and operation, e.g., custodial storage, janitor closet, maintenance storeroom, locker room, toilet and shower room, shop, etc.

(2) Circulation - required for physical access to some subdivision of space, whether or not enclosed by partitions, e.g., corridors (access, public, service, including "phantom" corridors for large un-partitioned areas), elevator shaft, escalator, fire tower and stairs, stair hall, loading platform (except when required for a program function), lobby, public vestibule or entryway, tunnel, bridge, stair or elevator penthouse, elevator machine room, covered paved open areas, etc.

(3) Mechanical and Electrical - to house mechanical and electrical equipment, utility services and non-private toilet facilities, e.g., duct and service shafts, meter and communication closets, boiler room, mechanical and electrical equipment rooms, telephone equipment rooms, fuel room, toilet rooms for public or general use, etc.

(4) Construction - the areas actually occupied by the structural and other physical features of the building, e.g., exterior walls, fire walls, partitions, etc.

3. GROSS VOLUME

3.1 The Gross Volume of Buildings will be obtained as follows:

A. Full Volumes: (for fully enclosed areas) For each portion of the building, multiply the gross area (see paragraph 2.1 B.) by the average height of that portion from the underside of its base floor slab (or underside of crawl space floor slab or top of ground if

no slab exists) to the top of the finished roof.The height of enclosed space beneath plazas, etc. will be from the underside of the base floor slab to the finished surface of the plaza.

B. Half Volumes: (for partially enclosed areas) - For each half area of the building as follows (see paragraph 2.1C.), multiply one-half (½) of the gross area by the average height.

(1) Covered porch/terrace & building dock - from ground level to the top of the finished roof.

(2) Exterior covered balcony - from the underside of the floor construction system to the top of the finished roof.

(3) Entrance canopy over paving - from the underside of the slab to the top of the finished roof.

(4) Areaways - from the underside of base slab to top of enclosure walls or grating.

(5) Unenclosed space beneath building (stilt design) - From the top of slab to underside of ceiling, if there is an enclosed floor or crawl space beneath the open area. From underside of the slab to the underside of the ceiling, if there is no enclosed floor or crawl space beneath the open area.

4. TABULATION

4.1 Tabulation of Areas, Volume and Efficiency will be prepared and furnished by the A/E as follows:

A. Itemize:Itemized tabulations for the following:

(1) Gross Area - Floor by floor plus appurtenant areas.

(2) Net Assignable Areas - Room by room office space standards used in developing building programs are provided in Table 1 at the end of this Division.

(3) Gross Volume - Includes half volumes of partially enclosed areas as well as full volumes of totally enclosed areas.

(4) Efficiency Factors - Divide gross area by net assignable area, e.g., 49,209 SF gross area divided by 33,705 SF net assignable area = 1.46.

(5) Percent Efficient - Divide net assignable area by gross area and multiply by 100, e.g., 33,705 SF net assignable area divided by 49,209 SF gross area, multiplied by 100 = 68.5% efficient.

B. Building Efficiency Factors (Guidelines):Table 5 in Chapter IV identifies the range of efficiency factors for numerous types of buildings common to State facilities. They are to be adhered to closely.Refer to Attachment #4 of this Manual, Summary - Areas, Volume & Efficiency, for the method and parameters by which the efficiency factor of a building will be determined.

END OF APPENDIX D

APPENDIX E

ARCHITECTURAL AND DESIGN STANDARDS

All building design and design/build projects shall comply with all codes enacted in place by the State of Maryland, Department of Housingand Community Development, in compliance with COMAR.05.02.07. Informationabout the Maryland Codes Administration can be obtained from the internet (www.dhcd.maryland.gov) or at 301-429-7700, fax 240-334-4831.

The Design team shall also meet and exceed the minimum code standards in compliance with the following standards and/or policies established by the Department of General Services.

GENERAL REQUIREMENTS SUBGROUP

DIVISION 01 - GENERAL REQUIREMENTS:

1.0 Verify that the description and scope of work is complete and properly lists all salient features of the project.

2.0 Scheduling and phasing of work shall be specified to suit the needs of the Using Agency and coordinated with the contract work.

3.0 Specifications shall include a work sequencing schedule. Phasing requirements shall be practical and clearly stated.

4.0 Plans and specifications shall properly specify, define and identify existing material and equipment to be salvaged and turned over or to be delivered to the Owners address by the contractor.

5.0 Clearly define the procedures and restrictions for scheduling utility outages and interruptions with the Owner.

6.0 Any restriction of access to the site shall be defined in the contract drawings.

7.0 The A/E shall be responsible for applying and securing all necessary regulatory permits, in accordance with, but not necessarily limited to, those items indicated in Section 6, above.

A. W.S.S.C permits for water and sewer connections and stormwater management systems are required for projects constructed in Montgomery and Prince George's Counties.

B. Sediment and Erosion Control and Storm Water Management System permits are required from the Anne ArundelSoil Conservation District for projects constructed in the Severn River watershed.

1.0 Architectural/Structural, General

A. All drawings shall clearly differentiate graphically between existing elements to remain, existing elements to be removed, and all new work.

B. It is the responsibility of the A/E team to perform a Quality Control and Coordination Review of the Contract Documents before submission to DGS for review.

C. Check overall dimensions of mechanical/electrical equipment to ensure that the designed utility room is adequate and meets side clearances.

D. The test boring logs with soil classifications and ground water levels shall be shown on the drawings for future reference and use by DGS.

E.All drawings shall be appropriately annotated with written notes to fully describe the scope of work.

F. Drawing format (border, title block, etc,) shall be standard and consistent throughout the set of drawings from all disciplines. Refer to Attachments 11, 12a, and 12b for example.

G. Show modular grid or structural column grid with number and letter on each architectural, structural, mechanical, and electrical floor plan and building elevations.

H. All multi-story building typical floorplans and reflected ceiling plans should be drawn separately.

I. Reflected ceiling plan should show all diffusers, lights, access panels, etc.Coordinate sprinkler head locations with lighting and diffuser locations.

J. All plans and elevations shall be drawn to same scale (min 1/8 inch = 1 ft).

K. Indicate room names and room numbers on each architectural, mechanical and electrical plan.

L. All plans shall have the same building orientation.

M. Use consistent terminology on the drawings and in the specifications.

N. Check drawings and specifications for cross references to eliminate inconsistencies.

O. Indicate R-value of exterior wall system and roof system on the drawings.

P. Total area of each floor, including mezzanine and basement, shall be listed on the drawings.

Q. All “Not In Contract” equipment items shall be indicated in dashed outlines, and noted as “NIC”.

R. Recessed slab areas for any finish materials or equipment shall be shown clearly on the architectural and structural drawings.

S. Door schedule, window schedule and finish schedule should be included in the drawings and not in the specifications.

T. For elevation drawings, footings, foundation and basement wall lines below grade should be shown as dashed lines.

U. All wall sections shall be drawn at the largest scale possible to depict the full height of the building wall section.

V. All details shall be labelled with detail number and sheet number and shall be cross referenced in the Plan.

W. Provide North Arrow and graphic scale on all floor plans, for all disciplines.

X. Provide overall exterior wall lengths, offsets, projections and recessed dimensions in floorplans and site plan.

Z. List of all drawings on cover sheet shall match with the individual drawing titles.

FACILITY CONSTRUCTION SUBGROUP

DIVISION 03 - CONCRETE

3.0 All building floor slabs on compacted fill and gravel shall be minimum 5" thick reinforced concrete over a 10 mil vapor barrier with 0.3 perm rating. Vapor barrier pieces shall be overlapped a minimum of 4" and sealed with high density polyethylene seam tape.

3.1 Slope all floors to drains where provided, shall be indicated on the architectural and structural drawings.

3.2 Levelness and flatness tolerance for floor slabs shall be clearly specified.

3.3 All exterior hard surface areas abutting the building shall slope away from the building at a slope of 1/4:12.

3.4 Control joints shall be provided per ACI manual.

3.5 Exterior concrete pad landing shall be provided at all exterior door.

3.6 Pipe sleeves shall be provided in foundation walls where required for penetration.

3.7 The top of all footing elevation shall be shown in foundation plan.

3.8 Depressed area in slabs shall be clearly shown and detailed.

DIVISION 04 - MASONRY

4.0 Slip joints shall be provided under lintel bearing as required.

4.1 Provide 2" minimum continuous perimeter insulation on foundation wall above footing and extended 24" minimum under slab for meeting thermal requirements.

4.2 Expansion joints shall extend over the entire height of the building from top of foundation footing through the roof. Dimension and location of thermal expansion joint shall be determined by structural engineer.

4.3 Provide mortar net or equal at the bottom of all cavity walls with through wall flashing and weep holes. Weep holes shall be located 24” to 32” apart.

4.4 Flashing shall be installed over all exterior openings, at coping, beneath sills, over bond beams, at shelf angle, top of foundation, and at the bottom of cavity.

4.5 Location of all crack control joints in exterior masonry wall shall be provided per Brick Institute of America (BIA) and National Concrete Masonry Association (NCMA) and should be clearly indicated in Plan and Elevations.

4.6 Damp proofing shall be applied to the interior surface of all cavity masonry wall.

4.7 Horizontal reinforcement shall be shown in masonry wall section at 16” O/C.

4.8 Concrete masonry units at door jamb shall be filled and reinforced.

DIVISION 05 - METALS

5.0 Bollards, and steel angles or channels shall be used for all service and receiving areas to protect the building from damage. All exterior miscellaneous steel shall be hot dip galvanized.

5.1 Access to the roof top areas and elevator machine rooms shall be provided by means of a stairway with a landing at the top. Vertical ladders and alternating tread (Lapeyre) stairways shall only be used if approved in advance by DGS.

5.2 Provide exterior roof access ladders for access to different roof levels.

5.3 All steel beam and joist sizes must be shown in the framing plan.

5.4 Connections of steel members and joists to concrete and masonry wall shall be detailed in the drawings.

5.5 Connections to other construction by welding, anchor bolts, expansion shields or toggle bolts should be shown in drawings and indicate number, size and type.

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

6.0 Exterior use of wood elements should be avoided. Any wood product exposed to the weather must be properly treated to prevent insect infestation and decay.Pressure treated wood is recommended, but other wood species may be permitted if their anticipated service life is comparable to treated wood.

6.1 Dock and marine timber piling, bulkheads, piers, timber cribbing, and other marine related applications must be protected from destructive marine organisms with adequate preservative protection and treatment in accordance with applicable AWPA standards.

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

7.0 Refer to the DGS roofing policy for approved roofing systems, and warranty, listed separately on the DGS website.

7.1 Provide snow guards on all metal pitched roof installations with gutters and down spouts appropriately sized and in compliance with SMACNA.

7.2 Provide an overflow pipe at each roof drain or scupper in parapet condition..

7.3 Provide sound attenuation batts in all GWB partitions for privacy conditions and reduction of equipment noise for conference rooms, offices, mechanical equipment rooms, etc..

7.4 Provide walk pads to and around all roof mounted equipment.

7.5 Show 'R' value of required insulation in walls and roofs on the drawings. Low slope roofs should be insulated between the top of the roof deck and the built-up roofing system.

7.6 Provide insulated curb for all mechanical equipment and skylight curbs.

7.7 Parapet cap slope towards roof. Provide parapet expansion joint and expansion joint as required.

7.8 Indicate roofing type on roof plan (single ply/built up or TPO).

7.9 Guard rail shall be provided at flat roof perimeter if mechanical equipment is within 10' of roof edge.

7.10 All penetrating expansion joints, eaves, parapet and curbs shall be adequately detailed in architectural drawings.

DIVISION 08 - OPENINGS

8.0 Exterior doors and frames shall be painted galvanized steel. Where required by architectural style, solid wood panel doors are acceptable for certain projects in historical buildings.

8.1 Provide rabbeted saddle thresholds and door weather-stripping at all exterior doors. Provide an astragal for all exterior double doors.

8.2 Exterior overhead and coiling doors shall be an insulated type, weather stripped at the jambs and head.

8.3 All aluminum frames shall be thermal break design with insulated glazing.

8.4 Exterior frames shall be 14-gauge, galvanized steel. Interior frames shall be 16-gauge steel, except detention doors.

8.5 Exterior and interior doors shall be 16-gauge galvanized steel.

8.6 Fully glazed doors shall be glazed with safety glass. Glazed openings adjacent to entrance doors that extend to the floor, and glazed panels less than 18 inches above the floor shall be glazed with safety glass.

8.7 Door opening to toilet rooms, dressing rooms, or other private areas shall be located so as to block direct views into the rooms.

8.8 Mechanical rooms shall have doors of adequate size to accommodate the installation and removal of equipment.

8.9 Door types and window types shall be shown in elevation.

8.10 Window and door symbols shall have identifying number in each drawing and indicate width and height.

8.11 Indicate glazing type and thickness in the drawing.

8.12 Provide detail key references, symbols for sills, jambs and Headers and cross reference in door schedule.

8.13 Provide elevations, schedules and details for metal frame storefront or curtain wall system.

8.14 All door hardware shall comply with Americans with Disabilities Act (ADA) Standards.

DIVISION 09 - FINISHES

9.0 All interior metal stud and Gypsum Wall Board (GWB) systems shall be 5/8" thick, as per DGS standard.

9.1 Metal furring channels (hat section) shall be used for attachment of GWB on ceilings as prescribed by the Gypsum Construction Guide. Furring channels shall never be used to furr-out masonry walls; rather, 2 ½" metal studs shall be used in that application to allow wiring behind to accommodate electrical and plumbing work.

9.2 Provide access panels in gypsum board ceilings where required for service and maintenance of equipment located above the ceiling.

9.3 All expansion joints or control joints condition for lathing, plastering and stucco should be detailed on the drawings and their location shown on the ceiling Plans.

DIVISION 10 - SPECIALITIES

10.0 Provide solid plastic toilet compartments and urinal screens for all public toilets.

10.1 Provide corner guards at GWB partition external corners in high use corridor and public areas.

10.2 Exterior and interior building signage must comply with the requirements of the Americans with Disabilities Act.

10.3 All louvers shall be shown and dimensioned including mounting height on building elevations and be coordinated with mechanical drawings. All louvres shall be provided with birdscreen.

10.4 Location of portable fire extinguisher cabinet shall be shown in plan and details, which shall include mounting height.

DIVISION 11 - EQUIPMENT

11.0 All loading dock equipment, detention equipment, and food service equipment shall be clearly shown on plan and details.

DIVISION 12 - FURNISHINGS

12.0 Provide recessed floor mat flushed with floor level at the entrance vestibule where applicable.

12.1 Indicate location of blinds and shades in the drawings, and provide anchoring detail.

12.2 All manufactured case work shall be detailed

12.3 Electrical power and communication drawings shall be coordinated to verify placement of electrical outlets to accommodate flexible furniture arrangements.

DIVISION 13 - SPECIAL CONSTRUCTION

13.0 Provide calculation to justify requirement of lightning protection system.

13.1 Show location of roof-mounted air terminal and mounting detail, including bonding and grounding detail.

13.2 All engineered metal building systems shall be designed according to procedures detailed in MBMA's Metal Building System Manual. Indicate minimum design load, per latest IBC Code and Energy Code.

13.3 Fire alarm system shall comply with requirements of NFPA72 and shall be installed by technician certified by NICET Level III or registered fire protection engineer.

DIVISION 14. CONVEYING EQUIPMENT

14.0 Elevators

This chapter shall comply with IBC 2015 and ANSI/ASME A17.1 2013, or more current version if superseded.

FACILITY SERVICES SUBGROUP

DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING/PLUMBING

23.0 Provide sound and vibration isolation for all motor driven equipment. All equipment shall be on housekeeping pads, or structural steel.

23.1 Riser diagram shall be provided for each plumbing and compressed air system.

23.2 All roof-top HVAC equipment shall be located out of view or screened from view.

23.3 Coordinate mechanical floor plans with architectural plans. Ensure thatmechanical equipment rooms have adequate clearances on all sides to maintain and clean equipment, to repair or replace equipment, and to replace tubes in chillers or boilers.

23.4 Mechanical equipment rooms with water pumping equipment shall have floor drain systems sized to carry the supply line flow rate in the event of a catastrophic failure of a pumping unit or pipeline.

23.5 Floor drains shall be provided for equipment blow-offs.

23.6 Floor drains shall be provided with trap primers.

23.7 Provide building sections at critical locations showing the locations of pipes, ducts and mechanical equipment.

23.8 Mechanical rooms shall be located appropriately to minimize noise for building areas with noise sensitive uses.

23.9 The HVAC design shall utilize hard ducted return air systems. Plenum areas above ceilings shall not be used for return air distribution,unless DGS determines there is suitable justification to waive this restriction.

23.10 Provide access panels in ceilings where required for service and maintenance of equipment located above the ceiling.

23.11 All duct work layouts should be drawn in double line.

23.12 Volume control dampers shall be provided in all branch ducts for initial balancing and continued maintenance of the HVAC systems.

DIVISION 26 - ELECTRICAL

26.0 Beginning with the schematic phase submission, all electrical and telephone main equipment rooms and local closets shall be included in the floor plans.

26.1 For a design-build contract all calculations shall be received by the 50% CD submission. All electrical equipment, including lighting fixtures & Catalog cuts, shall be submitted for review.

26.2 Electrical power and lighting plans shall be drawn on separate drawings.

26.3 Demolition shall not be shown on the same plans with new work.

26.4 Show a complete fully circuited building power wiring system including service equipment switchgear, switchboard, panel boards, transformers, disconnect switches, motor starters, circuit breakers, receptacles, conduits, wires, boxes, and all those items requisite for a complete installed and operating system for the building including any alternates. All conductive components shall be copper.

26.5 Standard electrical schedules for Panelboards/Switchboard/MCC shall include the following information as applicable: schedule name, location, mounting, main device, bussing, interrupting capacity, voltage, phase, connected lighting load, power load, receptacle load, and expected demand load. Each circuit shall include the following: circuit number, description of load served, wire & conduit size, Phase wise &three phase connected load, total ampere load, and circuit breaker size. Lighting Fixture Schedule shall have, fixture symbol, fixture type, description of fixture with catalog number, fixture wattage & voltage, type & number of lamps, mounting height, remarks, etc.

26.6 LIGHTING: ALL Exterior & Interior Lighting Fixtures including High-Bay fixtures shall be LED type. LED Fixtures shall have electronic drivers with/without controls. LED shall have minimum 60000 hours life for 70% lighting output, being used in the fixtures. Compact Fluorescent, Fluorescent, High pressure sodium (HPS), and Metal Halide (MH) fixtures may be used as per project requirements & DGS and Using agency approval.

26.7 All panel boards shall have main circuit breakers. Main lugs only (MLO) panel boards and plug-in-type branch circuit breakers in the panel boards shall not be acceptable. All power distribution equipment, such as switchgear, switchboard/MCC, with maximum 400 amp ratings, shall have digital metering as a required accessory, to be supplied with original equipment, from the factory.

26.8 Surge Protective Devices (SPD) shall be provided for all Service entrance Panelboards/Switchboard/Switchgear/MCC as required. SPD shall be mounted inside the equipment, and directly connected to main bus via branch breaker for better protection. Panelboards feeding electronic loads, sensitive equipment, such as computer systems, voice/data, security systems, etc, shall also have inside mounted SPD. SPD shall be supplied with the power distribution equipment/panelboards by the manufacturers only. Outside mounted SPD separately purchased by contractor shall not be approved and/or accepted.

26.9 A separate insulated green grounding conductor shall be installed in all raceways with feeders & branch circuit wiring. All single phase circuit shall have separate neutral unless otherwise noted.

26.10 Rigid Galvanized Steel conduit (RGS) shall be used for all feeder wiring circuits, exposed exterior wiring. All interior wiring shall be in EMT unless otherwise noted.

26.11 All wiring shall be in conduit, copper wiring with THWN-THHN 75 degree temperature rating PVC insulation shall be used unless otherwise noted. MC Cables for indoor branch wiring may be used with pre-approval by DGS/Using Agency as required. MC Cable shall not be used for feeder circuits.

26.12 All supports and fasteners shall be used to hold all electrical system cables, conduits, cable trays, disconnects, panelboards, etc with adequate strength and safety factor. All electrical system equipment/components shall be supported from the building structures as required. No electrical system components shall be supported by other systems.

26.13 All low voltage special systems such as security, voice and data, coaxial cables, fiber optic, etc. may be installed on Cable trays as per NEC and applicable codes. No power wiring distribution shall be permitted on Cable trays.

26.14 The following values shall be used as a guideline when selecting motors: Fractional horsepower motors up to and including 1/3hp shall be single phase 120V AC and 1/2hp and above shall be three phase 208V/480V AC.

26.15 All emergency generators shall be sized as per connected loads with 20% spare capacity. Sizing calculations shall be done by A/E using standard software from any reputed generator manufacturer. Generator sizing calculations shall be submitted along with drawings for review. Generator shall be 3Phase 4Wire System unless otherwise noted. Complete generator system along with Automatic Transfer Switch and other accessories shall be from one manufacturer for one source responsibility. Complete generator system shall be factory tested and with minimum 5 years warranty by manufacturer.

26.16 Modifications to any existing Fire Alarm System/Security System/Low voltage special system including software/programming shall require services of manufacturer and/or factory authorized/trained & certified technicians.

26.17 Consider providing a weatherproof outdoor receptacle (In-Use type) on all exterior walls.

26.18 Grounding shall be provided as per NEC requirements. Project with new/modified incoming Utility service shall have new Service rated Grounding system as per NEC and per Utility company requirements with new ground rods along with underground grid. Third party testing shall be required for all medium/large projects as well as with new/modified utility service. Steel conduits shall not be used as grounding conductors/grounding path. Grounding system resistance value shall not exceed 5 ohms. For special systems including sensitive Voice/Data/Server/Security electronic equipments, separate grounding bus system with 3 ohm ground resistance (maximum value)

26.19 All underground wiring shall be in PVC conduit schedule 40/80. Medium voltage wiring ducts shall be concrete encased (3” inch minimum covering) as required.

26.20 Project buildings larger than 5000 sq feet shall be equipped with automatic lighting controls (occupancy sensors) to shut off lighting in unoccupied areas.

26.21 Project Facility/Buildings being used and occupied during construction, Construction Phasing Plans shall be developed with Using Agency & DGS for minimum disturbance to the occupants as required. Minimum power outages and existing utility disruptions shall be planned during design phase.

26.22 All electrical drawings shall be well coordinated with electrical specifications, and shall be edited for specific project, based on Master specs format.

DIVISION 31 – EARTHWORK/SITEWORK

31.0 Clearly indicate limits of clearing and grubbing.

31.1 Horizontal and vertical control monuments shall be shown.

31.2 Verify property line dimensions and bearings.

31.3 Verify the availability and location of all electrical, gas, water, sewer, and other utilities to be connected to a new building.

31.4 Sewer and water line crossing details shall be shown on the drawings showing allowable clearances within the project limits. Water and sewer lines shall not be in the same trench side by side.

31.5 Provide individual profiles for all water, sewer and storm drain lines. Profiles shall use the same horizontal scale as the site plan, with the vertical scale 10 times greater. Unless otherwise approved by DGS, the horizontal scale shall be 1”=40’ and the vertical scale shall be 1”=4’.

31.6 Provide invert elevations of all pipes passing through or under the exterior walls of a building.

31.7 Trees shall not be located over sewers or other underground utility lines.

31.8 Use standard symbol designations for all utility services shown on all utility plans in the construction documents.

31.9 Provide a North Arrow on the site plan and each floor plan for same orientation.

31.10 Show finished floor elevations, grade elevations, bench marks and grid lines for horizontal and vertical control.

31.11 Show spot elevations at all exterior door locations and at each corner of the building.

31.12 Provide an enclosure around the dumpster area.

31.13 Outdoor air conditioning units shall be screened with landscaping.

31.14 Storm Drainage Systems

> **A.** Coordination: The civil engineer shall be responsible for the coordination of building, roof and foundation drainage systems, site drainage systems, sediment and erosion control and stormwater management systems.
>
> **B.** Site evaluation: The A/E shall be responsible for identifying and bringing to the attention of the owner any unsafe conditions which may result in increased cost and any long-term maintenance concerns related to storm drainage.
>
> **C.** Grading Plan shall be checked against floor plans for requirements of steps, finish grades and elevations at all exterior entrances.

D. Indicate if provision for future expansion been considered in the site layout, design and details.

E. All site demolition work shall be shown in dotted lines in a separate demolition drawing.

DIVISION 32 - EXTERIOR IMPROVEMENTS

32.0 Curbs, bollards, wheel stops or retaining walls shall be provided at areas where vehicle damage to a building could occur.

32.1 Indicate type of ground cover on the landscaping plan.

32.2 Clearly identify all major site features, including sidewalks to the building and vehicular access to the loading and unloading area, with all necessary dimensions.

32.3 Stripe all parking spaces, including ADA spaces and aisle spaces, with appropriate dimensions and signage.

32.4 All existing structures requiring removal shall be clearly shown with dimensions and construction type.

32.5 Identify on the Site Plan the construction staging area, DGS office trailer location, and temporary utility hook-up.

32.6 Ensure that the geometrics for the service access driveway, including intersections with side streets, turn around area and other maneuver space requirements, are compatible with the design vehicles.

32.7 Clearly identify all work phasing, grading at all altered areas, limit of disturbance, and location of signage.

32.8 Vehicles shall have separate access to trash, service and supply areas, if site permits.

DIVISION 33 - UTILITIES

33.0 Show all existing and proposed utilities (water, sewer, electric, gas, communication, data, etc.)

33.1 The outline of new structures and location of new utilities shall be shown in a heavier line weight than existing features.

33.2 The location of exterior utilities shall be coordinated with the electrical, mechanical, and plumbing plans.

33.3 Check fire hydrant locations with respect to paved access and spacing for required coverage.

33.4 All connected utilities shall be adequately metered so that future comparison of actual energy usage to expected energy usage, as determined by the building energy model, is possible for all LEED certified projects.

APPENDIX F

UTILITY PERMITS AND CONNECTIONS

The following section shall be included in the General Requirements Subgroup Division 01 of the contract specifications on all projects requiring connections to private and public utility systems.

SECTION 01 18 10 - PROJECT UTILITY PERMITS AND CONNECTIONS

A. The project requires the following permits, utility connections, or related services provided by the government agencies or utility companies noted:

The bidder shall include in its bid the following allowances for these permits, utility connections, and related services:

1. Allowance amount: _____, for (describe permit, utility connection, or other service)

2. Allowance amount: _____, for (describe permit, utility connection, or other service)

Contractor shall obtain the necessary permits and shall subcontract with the named government agency or utility company for completion of the utility connections or related services described in this paragraph 01 18 10 A.

B. If the actual fee charged by the government agency or utility company for the permit, connection, or related service is more or less than the amount of the allowance provided in paragraph 01 18 10 A, the contract amount shall be increased or decreased by change order by the difference between the amount actually charged by the government agency or utility company and the amount of the allowance provided in paragraph 01 18 10 A. The contractor shall be entitled to no overhead or profit on any resulting increases in the contract amount.

C. Each government agency and utility company described in paragraph 01 18 10 A may invoice DGS directly for payment of the permit, connection, or service fees charged by the government agency or utility company. The contractor authorizes DGS to pay the fees directly to the appropriate government agency or utility company upon receipt by DGS of a proper invoice. DGS shall notify the contractor in writing of each payment made directly by DGS to a government agency or utility company under this Section 01 18 10.

D. Contractor shall reflect in contractor's schedule of values and requisitions the amounts of the allowances and the State's payments under this Section 01 18 10.

E. The permits, utility connections, and related services described in paragraph 01 18 10 A may not be the only permits, utility connections or related services required for proper performance of the work (as defined in the General Conditions) required by the contract. The contractor shall, at no additional cost to the State, obtain and pay for all other permits, connections, and related services required for proper performance of the work.

F. After execution of the contract with contractor, DGS may identify other permits, utility connections, or related services not identified in paragraph 01 18 10 A, and not otherwise required by paragraph 01 18 10 E, which DGS desires contractor to furnish for the project. In that event, DGS may issue a unilateral change order to the contractor requiring that the contractor furnish those permits, utility connections, or related services under the terms and conditions of Section 01 18 10.

END OF APPENDIX F

APPENDIX G
STATE FIELD OFFICE

FOR CAPITAL IMPROVEMENT PROJECTS THE A/E SHALL INCORPORATE THE APPLICABLE REQUIREMENTS OF THIS APPENDIX INTO A DIVISION 01 SECTION OF THE CONTRACT SPECIFICATIONS.

1. The Contractor shall furnish and maintain, at his cost and for the State's exclusive use, the following:

1.1 State Field Office: Provide one (1) prefabricated and completely furnished temporary office trailer unit with lockable entrances and operable windows. Only the State shall have keys to this trailer.At such time as deemed appropriate by the DGS Inspector, the State field office may be moved inside of the substantially complete building. This move, if necessary, will be done by the Contractor. All space requirements, specified equipment and services must remain intact.

1.2 Space Requirements:

A. The Field Office shall have a minimum of 500 gross square feet of floor area.

B. Provide running water connected to a public water supply, toilet room with flush water closet, lavatory and approved waste drainage system, medicine cabinet, paper towels and toilet paper (including dispensers). Exposed portions of water supply and waste drain connections shall be heat traced and insulated.

C. Installation Schedule: Provide a complete Owner's Field Office facility in a location on the site as coordinated with the owner. The office shall be set up and made ready for use promptly upon issuance of a "Notice to Proceed" and at least seven (7) days prior to beginning any work on the contract.

D. The Contractor shall provide weekly janitorial service to keep quarters of the State representatives clean and neat at all times and adequately stocked with supplies (i.e toilet paper, paper towels, etc). Floor shall be swept using a dust inhibitor and mopped weekly.

E. Equipment:

(1) Electric Water Cooler and Water: Provide continuous delivery for the duration of the construction project of 5 gallon bottled water such as " Deer Park" or approved equal.

(2) Heating:Sized to provide a nominal 70 degrees F inside temperature under the ASHRAE winter outside design conditions applicable to the construction site location. Provide distribution system sufficient for uniform heating and comfort.

(3) Ventilation: Mechanical type sufficient for comfort during the change between heating and cooling seasons.

(4) Air-conditioning: System sufficient to maintain a nominal 80 degrees F inside temperature under ASHRAE summer outside conditions applicable to the construction site location.

(5) Equipment Options:Provide the equivalent heating, ventilation, and air-conditioning in a single combination unit or in other combinations.

(6) Electrical:Complete wiring system including service entrance per NFPA No. 70. Provide one (1) duplex convenience outlet for each 150 square feet of floor space with four (4) duplex convenience outlets at a minimum. Provide additional outlets and

circuits for water cooler, air conditioning, and heating units as required. Provide a minimum of one (1) smoke detector. Provide fluorescent lighting based on 3 watts per square foot uniform distribution. (Requirement - 40 fc illumination at work surfaces).

(7) Telephone: Portable Digital Wireless Phone. Phone shall be a 'Smart phone", Samsung S-3 or equivalent. This is a minimum standard and shall be met or exceeded.

(8) Facsimile Machine:Fax machine may be included in All–in-One Printer and will become property of the State at the end of the project.

(9) Copier: Maintain photocopier, and provide copy paper (8½"x11" & 8½"X14") for the duration of the project.

(10) Digital camera – Quantity one (1). Minimum specification: Point & shoot, LCD display, 20.1 megapixels, JPEG/Other File Format. Accessories: One (1) 16G (or larger) SD Card, and provide batteries for the duration of the project. It will become property of the State at the end of the project.

(11) Computer, Accessories and Printer:
<u>Computer</u>
Dell Latitude, or equivalent manufacturer model
Energy Star Rated
Intel® Core™ i7-4600U Processor (2.1 GHz, 4M Cache), or equivalent
8GB RAM Minimum
500GB minimum Solid State Drive
DVD Drive
NVIDIA GeForce GT 720M 2GB Graphics - or equivalent
15.6" screen
Wireless LAN
<u>Software:</u>
OS: Windows 7 Professional, 64-bit
Microsoft® Office - Full version
<u>Computer Accessories:</u>
Wireless Mouse Keyboard
Compatible Docking Station
24" External LCD Monitor – Energy Star Rated
32 GB Flash Drive
Carrying Case
<u>Printer</u>
Konica Minolta BizHub 364e or equivalent
Color-capable network LED Multifunction Laser Printer (Scan, Fax, Print & copy)
Automatic two-sided (duplexing), printing, copying.
Printer Cartridges and paper for the duration of the project

Warranty: Two year warranty, parts and service with two year of at-site service with 24 hour response. All equipment shall be approved equal.

NOTE: Above requirements are minimum standard and should be met or exceeded, and/or approved equal. Any deviation will need approval by DGS. All equipment shall become property of DGS at the end of the project.

(12) First Aid Supplies: Comply with governing regulations

(13) Hardhats: Provide hard hats (Qty. 5) that comply with OSHA Standards.

(14) Safety Vest: Provide high visible safety vests (Qty. 5) that comply with ANSI standards.

(15) Office supplies including but not limited to:

(a) Trash cans (Qty. 2)

(b) Boxes of file folders (Qty. 4) - File folders to be furnished for duration of the project.

(c) Boxes of hanging file folders (Qty. 4) - Hanging file folders to be furnished for duration of the project

(d) Standard stapler (Qty. 1)

(e) 3-hole punch (Qty. 1)

(f) 2-hole punch (Qty. 1)

(g) Tape dispenser (Qty. 1) with tape (to be furnished for duration of the project)

(16) Internet Service, either via hard-wired WiFi router (802.11b/g/n) or wireless hot spot capable of supporting a minimum of 2 computers, with unlimited data, at a speed of at least 25Mbps.

F. Furnishings:

(1) Furniture: Provide the following new or, if acceptable to the State, like new, reconditioned items:

(a) 30"x60" desk, flat top double pedestal. (Qty. 1)

(b) Heavy-duty computer chairs (Qty. 2)

(c) Table suitable for 12 people (Qty. 1)

(d) Folding chairs (Qty. 12)

(e) File cabinets, metal 4-drawer legal-size, 27” deep, with baked-on enamel finish. (Qty. 2) File cabinets shall have keyed locks. Provide keys to inspector.

(f) Fireproof file cabinet, metal 4 drawer legal size 27” deep, heavy duty keyed lock, baked-on enamel finish. (Qty. 1) Cabinet should be securely mounted to the floor. Provide keys to inspector.

(g) Sample Shelves (Qty. 2 minimum): Ceiling-high units 30” deep, and minimum 3’ wide. Close ends and backs with plywood sheet.

(h) Adjustable Aluminum Plan Racks: Provide 1 unit with at least 10 sets of aluminum plan binders.

(i) Shades: Provide standard fabric roller shades or metal slat Venetian blinds at all windows.

(j) Fire Extinguisher: Provide ABC fire extinguisher, the number and extinguisher rating and location of which shall be in accordance with NFPA No.10.

G. Maintenance: The contractor will be responsible for the maintenanceand/or repair of all items listed in this section for the duration of the contract. If an item cannot satisfactorily repaired, it shall be replaced by the contractor within two (2) working days.

H. Security: Provide adequate security measures for the DGS Construction Office at all times. Within two (2) days of a reported theft, the Contractor shall be responsible for replacement of any equipment or supplies reported stolen from the DGS Construction Office.

A. INTRODUCTION

A.1 Brief overview of the Maryland High Performance Green Building Program

On April 24, 2007, House Bill 942 – Section 4-809 of the State Finance and Procurement Article – entitled "Maryland Green Building Council" was signed into law. This law re-established the Maryland Green Building Council (the Council) in the Department of General Services (DGS), providing for private sector membership, State agency membership and assistance and staffing by the DGS.

The following year, State Finance & Procurement Article 3-602.1, was signed into law defining High Performance Building and requiring all fully State funded buildings to be built to meet this definition. Schools (K-12) and Community Colleges were required to meet the definition as well.

A.2 The Program

The High Performance Green Building Program (the Program) was written for the use of all State of Maryland agencies that design and build facilities or prepare programs and budgets for the design and construction of their facilities. It is intended specifically for the use of project managers, capital planners, and the professionals who will design and operate State-owned facilities. All agencies engaged in the design and construction of State facilities should provide this Program to their design professionals.

The Program will be reviewed on an as needed basis by the Maryland Green Building Council (the Council) and revised to address changes and issues which may occur as high performance construction evolves.

For all questions concerning the Program contact:

Maryland Green Building Council
c/o Department of General Services - Office of the Secretary
301 West Preston Street - Room 1401
Baltimore, Maryland 21201
(410) 767-4938

B. GREEN DESIGN AND CONSTRUCTION CRITERIA

B.1 Criteria and Standards in Brief

1. All new buildings designed and constructed by State agencies which are fully funded and owned by the State shall meet or exceed the current version of the U.S. Green Building Council's LEED-NC™ Green Building Rating System Silver rating <u>or</u> shall comply with the Council's most recently amended version of the International Green Construction Code (IgCC). LEED projects shall be certified through the Green Building Certification Institute (GBCI) certification process. Projects required to comply include all new construction projects of 7,500 gross square feet or more.

2. All major renovations of existing buildings designed and constructed by State agencies which are fully funded and owned by the State shall meet or exceed the

current version of the U.S. Green Building Council's LEED™ Green Building Rating System Silver rating or shall comply with the Council's most recently amended version of the International Green Construction code (IgCC). LEED projects shall be certified through the Green Building Certification Institute (GBCI) certification process. Projects which are required to comply include all projects of 7,500 gross square feet or larger. A major renovation is defined as a renovation in which the building shell (exterior walls, floors and roof) will be reused for the new construction. In total renovation projects, existing HVAC, electrical, and plumbing systems shall be replaced.

3. Community College projects that receive State funds shall comply with the Program.

4. Public Schools (K-12) shall be constructed as High Performance Buildings in accordance with the requirements of the Interagency Committee on Public School Construction (IAC) Administrative Procedures Guide Section 105 – High Performance Schools.

B.2 Detailed requirements

For detailed requirements, refer to the complete version of the High Performance Green Building Program found on the Department of General Services website under Green Buildings Laws and Regulations.

ATTACHMENT 1

This Standard Form of Agreement with Architects and Engineers has been removed from 2015 DGS Procedure Manual, and can be found in a separate document on the DGS website.

END OF ATTACHMENT 1

ATTACHMENT 2

REVIEW DRAWING DISTRIBUTION

PROJECT NAME: PROJECT #:

FACILITY: DATE:

A/E:

SCHEMATICS (SD)	SETS	
DGS Project Manager	8	
Dept. of Budget & Management	1	
Using Agency [1]	1	
DNR Forest Service [5]	1	

50% CD'S CONTINUED	SETS	
Department of IT (DoIT) (Only if major IT equip. is involved)	1	
Washington Suburban Sanitary Commission-(P.G. & Mont. Counties)	1	
Construction Manager	2 to 4	

DESIGN DEVELOPMENT (DD)		
DGS Project Manager	8	
Dept. of Budget & Management	1	
Using Agency [1]	1	
Local Health Dept. [4]	1 to 4	
DHMH - Office of Food Protection & Community Health Services [6]	1	
Commissioning Agent	1	
Construction Manager	2 to 4	

95 CD'S		
DGS Project Manager	8	
Office of The State Fire Marshal	1	
Dept. of Budget & Management	1	
Using Agency [1]	1 to 4	
MDE Sediment & Storm water Plan Review [2]	1	
MDE-Div. of Engineering & Permits [3]	1	
Local Health Department [4]	1	
Commissioning Agent	1	
Construction Manager	2 to 4	

50% CD'S		
DGS Project Manager	8	
Office of The State Fire Marshal	1	
Dept. of Budget & Management	1	
Using Agency [1]	1 to 4	
MDE Sediment & Storm water Plan Review [2]	1	
MDE-Div. of Engineering & Permits [3]	1	
Local Health Department [4]	1	
MD National Capital Park & Planning (PG & Montgomery Counties Only)	1	
Commissioning Agent	1	

100% CD'S		
DGS Project Manager	8	
Office of The State Fire Marshal	1	
Dept. of Budget & Management	1	
Using Agency [1]	1	
MDE Sediment & Storm water Plan Review [2]	1	
MDE-Div. of Engineering & Permits [3]	1	
Local Health Department [4]	1	
Local Service District Utility Co. (Power, Water, Sewer)	1	
Commissioning Agent	1	
Construction Manager	2 to 4	

A/E CERTIFICATION: I / We certify that the above-checked submissions have been made to the designated agencies.

SIGNATURE:

NAME: _____ TITLE: _____ DATE: ___/

[1] see NOTE #1, Attachment 2a for mailing address, [2] see NOTE #2, Attachment 2a for details, [3] see NOTE #3, Attachment 2a for details, [4] see NOTE #4, Attachment 2a for details, [5] see NOTE #5, Attachment 2a for details, [6] see NOTE #6, Attachment 2a for details.

END OF ATTACHMENT 2

ATTACHMENT 2a

NOTE #1

IF USING AGENCY IS:	***ADDRESS CORRESPONDENCE TO:***
Department of Natural Resources Public Lands and Forestry Division	Director, Forest Service Tawes State Office Building E-1 580 Taylor Avenue Annapolis, MD 21401-2397
Engineering and Construction Department of Natural Resources	Director, Engineering and Construction Tawes State Office Building D-3 580 Taylor Avenue Annapolis, MD 21401-2397
MD Department of the Environment	Chief, Project Management Services or Chief, Sediment and Stormwater Plan Review Division 1800 Washington Boulevard Baltimore, MD 21230
MD Environmental Service	Chief, Engineering Division 259 Najoles Road Millersville, MD 21108-2515
Department of Health and Mental Hygiene	Director, Office of Capital Planning, Budgeting and Engineering Services 201 West Preston Street, Room 535 Baltimore, MD 21201
Department of Public Safety & Correctional Services	Director, Division of Capital Construction Services 6776 Reisterstown Road, Suite 201 Baltimore, MD 21215-2341 Executive Assistant Director Administration and Support Services Section Police & Correctional Training Commissions 6852 4th Street Sykesville, MD 21784-7433
Department of Maryland State Police	Facilities Management Division, Administrative Services Bureau MD State Police Headquarters 1201 Reisterstown Road

ATTACHMENT 2a

IF USING AGENCY IS:	***ADDRESS CORRESPONDENCE TO:***
Department of Juvenile Justice	Director of Capital Planning Department of Juvenile Justice 120 West Fayette Street Baltimore, MD 21201
Military Department	Directorate of Installations MD National Guard Fifth Regiment Armory 29th Division Street Baltimore, MD 21201-2288
Annapolis Buildings and Grounds	Director, Office of Facilities Operations and Maintenance 29 St. Johns Street Annapolis, MD 21401-1618
Baltimore Buildings and Grounds	Superintendent 301 W. Preston Street, Room 1311 Baltimore, MD 21201-2305
Judiciary of Maryland/ District Court Building	Assistant Chief Clerk District Courts/Multi-Service Centers 580 Taylor Avenue Annapolis, MD 21401-2395

OTHER USEFUL ADDRESSES:

DGS Project Managers
Office of Facilities Planning,
Design & Construction
301 W. Preston Street - Room 1405
Baltimore, MD 21201-2305

Department of Budget and Management
Office of Capital Budgeting
301 W. Preston Street - Rm 1209
Baltimore, MD 21201-2365

Office of Food Protection and
Consumer Health Services
Department of Health & Mental Hygiene
William Donald Schaefer Tower
6 St. Paul Street, Suite 1301
Baltimore, MD 21201-1608

Office of the State Fire Marshal
1201 Reisterstown Road
Pikesville, MD 21208

ATTACHMENT 2a

DGS Construction Division Regional Offices:

Eastern Region:
610 Taylor Avenue
Annapolis, MD 21401
Phone: 410-974-8212
FAX: 410-974-8216

Western Region:
Springfield Hospital Center - Muncie Building
6655 Sykesville Road
Sykesville, MD 21784
Phone: 410-795-2100
FAX: 410-795-7172

Central Region:
301 West Preston Street - 7th Floor
Baltimore, MD 21201-2305
Phone: 410-767-4360
FAX: 410-333-7140

NOTE #2
Submit to Storm Water Management and Sediment Erosion Control if more than 5,000 square feet or 100 cubic yards of earth is disturbed.
Submissions to MDE require Stormwater Management Waiver Application if a waiver is desired. This application, along with plans, should be submitted no later than 50% CDs.

NOTE #3
Submit to MDE Project Management Services if project has more than 400 feet of water/sewer lines or is a wastewater or water treatment project.
Submit to MDE Groundwater Permits Program if project involves development of an on-site well water supply system.

NOTE #4
Submit to Local Health Department if project involves on-site water and/or sewer, kitchen work or municipal utility ownership for off-site water and/or sewer connection.

NOTE #5
Submit to DNR Forest Service a preliminary Forest Conservation Plan with Schematics.

NOTE #6
For projects involving design and construction of new food preparation and service facilities or renovation to existing food preparation and service facilities, a Hazard Analysis and Critical Control Point (HACCP) Study must be performed and submitted to DHMH for approval.

END OF ATTACHMENT 2a

ATTACHMENT 3
Standard Estimating Format

Project Title & Reference # _____ _____ Gross SF

Summary of Estimated Costs _____ $_____ Cost/GSF

General Requirements Subgroup

Div 01/General Requirements

Facility Construction Subgroup

Div 02 /Existing Conditions
Div 03/ Concrete
Div 04/Masonry
Div 05/Metals
Div 06/Wood, Plastics and Composites
Div 07/Thermal & Moisture Protection
Div 08/Openings
Div 09/Finishes
Div 10/Specialties
Div 11/Equipment
Div 12/Furnishings
Div 13/Special Construction
Div 14/Conveying Equipment

Facility Services Subgroup

Div 21/Fire Suppression
Div 22/Plumbing
Div 23/Heating, Ventilating and Air Conditioning
Div 25/Integrated Automation
Div 26/Electrical
Div 27/Communications
Div 28/Electronic Safety and Security

Site and Infrastructure Subgroup

Div 31/Earthwork
Div 32/Exterior Improvements
Div 33/Utilities
Div 34/Transportation
Div 35/Waterway and Marine Construction

ATTACHMENT 3
Standard Estimating Format

DEPARTMENT OF GENERAL SERVICES COST ESTIMATE WORKSHEET

Name of file: *. XLS

* Escalation set at _____ %

Project Title: _____ Institution: _____ Estimate Date:
Project Number:_____ Estimate Reference Point: _____ Prepared by:

Location: _____ Agency/AE:

1. Design Phase: [ ]BUDGET [ ]SCHEMATIC [ ]DESIGN DEVELOPMENT [ ]50% CONSTRUCTION DOCUMENTS (CD) [ ]95% CD [ ]100% CD
2. Project Type: [ ]NEW CONSTRUCTION [ ]RENOVATION [ ]MAJOR [ ]MINOR [ ]SITE [ ]UTILITY
3. Design Period (Incl. review): ____ - ____ ____ - ____ ____ months
4. Construction Period: ____ - ____ ____ - ____ ____ months
5. Description:
6. Estimated Bid Date: ____ -
7. Estimated Mid-Point: ____ - ____ ____ months from reference pt.

8. Area (gsf)		Renovation	New
	Bsmt.	_____	_____
	1st	_____	_____
	2nd	_____	
	3rd	_____	_____
	4th	_____	_____
	5th	_____	
	Total	_____	

Total Net Sq. Feet:
Total Gross Sq. Feet:

Efficiency Factor:
Percent Efficiency:

9. Structure: $_____/gsf
A. Basic: New _____ gsf x _____ _____
B. Basic: Renovation _____ gsf x _____ _____
C. Asbestos Removal: _____
D. Built in Equip: _____
E. Demolition: _____
F. Other: Information Technology $_____ /gsf _____
G. Subtotal: _____
H. Regional Construction Factor: _____

I. Subtotal: (line g x line h) _____
J. Escalation to Mid-Point of Construction: _____% * _____
K. Subtotal (bid cost): _____

10. Site:

A. _____

B. _____

C _____

D. _____

E. _____

F. _____

G. Subtotal _____

H. Regional Construction Factor: _____

I. Subtotal: (line g x line h) _____

J. Escalation to Mid-Point of Construction: _____% * _____

K. Subtotal (bid cost): _____

Fund Source: (For DGS Use)

11. Utilities
A.
B.
C.
D.
E.
F.
G. Subtotal
H. Regional Construction Factor: _____

I. Subtotal: (line g x line h)
J. Escalation to Mid-Point of Construction: _____% *
K. Subtotal (bid cost): _____

12. Subtotal (9K+10K+11K = Bid Cost): _____

13a. Green Bldg. Construction Premium: _____% _____

13b. Total Construction Contingency: _____% _____

14. Inspection and Testing _____

15. Miscellaneous _____

16. CPM/Schedule _____

17a. Movable Equipment (Agency Estimated): _____

17b. Information Technology Equipment (Agency Estimated): _____

18. A/E Basic Services Fee: _____% _____

19. A/E Special Services Fee: _____% _____

20. A/E Green Design Fee: _____% _____

21. TOTAL PROJECT COST: _____

22. Total Construction Costs & Related Cost: _____

23. Prior Construction Funds: _____

24. New Construction Funds Required: _____

25. Total Design Fees & Related Cost: _____

26. Prior Design Funds: _____

27. New Design Funds Required: _____

FY _____ Request:
_____ Legislature
Planning _____
Construction _____
Equipment _____
TOTAL ** _____

Cost/Str @ MP
$ _____/Square Foot
Cost/BSU @ MP
$ _____/Square Foot
Total Cost/SF
$ _____/Square Foot

**Does not include costs for land acquisition.

AGENCIES: *ATTACH COPY TO ORIGINAL AND EACH COPY OF FORM A*

REV. 2015

ATTACHMENT 3

Standard Estimating Format

INSTRUCTIONS FOR THE PREPARATION OF THE DGS COST ESTIMATE WORKSHEET (CEW)

Complete the general information at the top of the worksheet. Insert the Name of the file (if applicable), Escalation % (construction cost estimates should be escalated to the midpoint of construction to account for the effects of inflation), Project Title, Project Number (Use the DGS Project Number - if assigned), Location (include County), Institution (for example: DGS, USM, MSU, DPSCS, DHMH, etc.), Estimate Preparation Date, Prepared by, Estimate Reference Point (see note below) and Agency/AE.

Note: The Estimate Reference Point is the time frame on which the costs used to prepare the estimate are based. For example, if Means Construction Cost Data 2015 was used to estimate the costs of the project, the estimate reference point would be January, 2015. Check the estimating guide or the A/E's estimate being used to determine the reference point by which the costs are established. If prices which are quoted by supplier are used to establish the costs of the project, the estimate reference point should be taken as the date at which the supplier's quote is no longer valid.

Item 1 Indicate the design phase of the project. Check the applicable block.

Item 2 Indicate the type of project. Check the applicable block(s).

Item 3 Indicate design period in month/year from start to completion and the total number of months (for example: JAN-15 - DEC-15).

Item 4 Indicate construction period in month/year from start to completion and the total number of months (for example: JAN-16 - JUN-17).

Item 5 Provide a brief project description. Note any special features of the project, problems which may be encountered, and any assumptions made in order to prepare the CEW.

Item 6 Estimate the bid date of the project

Item 7 Based on the established project schedule, estimate the mid-point of the construction period. Allow time from project bid date to construction start date to account for award of the project and time before the contractor receives notice to proceed with construction. Enter the number of months from the estimate reference point to the mid-point of construction.

Item 8 List the gross square footage for each floor of the building under the appropriate column. These figures are used to determine the structure costs for items 9A and 9B. Also, list the total net square footage (NSF) and the total gross square footage (GSF). Gross Areas are to be calculated in accordance with instructions in the DGS Procedures Manual. Show the Efficiency Factor (GSF/NSF) and Percent Efficiency (NSF/GSF x 100).

Item 9* List the project costs in the appropriate spaces. In establishing the costs for Item 9, include costs for the project's General Conditions and costs for the General Contractor's overhead and profit. Do not include any escalation costs in the base costs of the project.

Item 10* For Item 10, use items A through F to describe the site work items that are relevant to the project and list the estimated costs for those items. Below are listed typical items to include in Item 10:

Site preparation (grading, compaction)
Dewatering
Retaining Walls
Shoring & underpinning
Excavation support systems
Slope/erosion control
Paving-curbing
Surfacing
Lighting
Landscaping
Marine work
Fencing
Drainage
Building Demolition

Item 11* For Item 11 use Items A through F to describe the utility items that are relevant to the project and list the estimated costs for those items. Below are listed typical items to include in Item 11:

Water Treatment Plant	Sanitary distribution
Wastewater Treatment Plant	Steam distribution
Components	Electric distribution
Septic Systems	Telecommunications
Water distribution-domestic	Emergency Power
Water distribution-fire	Utility tunnel
Well	Fuel systems

***Note:** For Items 9, 10, and 11: Generally, budget estimates are prepared using 10% for general conditions and 15% for the general contractor's overhead and profit. In addition, a market variance may need to be applied to account for market conditions at bid time. Estimators (design) contingency may range up to 25% depending on the detail of the project information. The above factors are generally used by DGS to adjust the basic cost as established, using Means as an estimating guide. For new building construction, item 10 and 11 portray the costs for all site work and the utility improvements in the project which are over 10 feet from the structure.

On Item 9F, include the estimated cost for information technology systems and equipment for that portion of the system installed as part of the general construction contract. Items may include common equipment such as electronic private branch exchange (PBX), fiber optic or copper vertical riser distribution cables, cable termination equipment and related wiring in wiring closets on each floor, and wire connecting the wire closet terminations to the wall jacks or other outlets to which telephone stations and computers will be connected.

On Item 9H, 10H, and 11H, list the regional construction factor for the County that the project is located in. The regional construction factor accounts for variations in the wage rates established by the Department of Licensing and Regulation as applicable to the 24 localities of Maryland. The factors for all budget types of estimates are listed below:

FACTOR	COUNTY
1.0	Anne Arundel, Baltimore City, Baltimore, Carroll, Harford, Howard, Montgomery, Prince George's, Calvert, Caroline, Carroll, Cecil, Frederick, Kent, Queen Anne's, Talbot
0.95	Dorchester, Somerset, Wicomico, Worcester
1.05	St. Mary's, Washington, Charles
1.10	Allegany, Garrett

For all submissions based on A/E design documents, the regional construction factor should be 1.0, since only applicable regional costs, based on wage and market evaluations, should be included in design estimates.

On Item 9J, 10J, and 11J determine the amount of escalation to be added to the basic project cost. Escalation is taken from the estimate reference point, established under the general items at the top of the CEW form, to the estimated mid-point of construction, established in Item 7. This time frame is multiplied by an annual escalation rate to determine the percent of escalation to be used. The amount to be inserted on Item J is equal to line I multiplied by the percent of escalation. On item K add the subtotal of Item I with the escalation cost of Item J. The total of Items 9K, 10K, and 11K is the expected construction cost at bid.

NOTE: The escalation factor used for budget estimates is updated yearly and provided by the Department of Budget and Management as part of the Instructions for the Preparation and Submission of Capital Project Requests. If needed, contact the DGS Cost Center at the number indicated at the end of this document for the latest inflation allowances. The escalation factor used for design estimates should be based on market conditions and industry forecasts projected at the time the design occurs.

Item 12 Sum the amounts listed for Items 9K, 10K, and 11K. This amount constitutes the estimated construction cost as of the mid-point of construction date.

Item 13a A green building construction premium should be computed as 2.0% of Item 12. This premium is for the application of costs related to the construction of a building associated with green construction practice, in conformance with LEED Silver rating principles outlined by the Maryland Green building Council. This factor can be increased or decreased, based on specific information and/or applications identified by the cost estimate preparer.

Item 13b A contingency amount is computed as 5% of Item 12. This contingency is considered a construction contingency for change orders during construction. For projects being requested in FY's 2017-2021, use a 10% contingency instead of the current 5%. When your project reaches the current year request the 10% contingency should be reduced to 5%. That 5% should be incorporated into the base cost of the structure in CEW (line 9).

Item 14 Insert an amount for Construction Inspection and Testing. Depicted below are rates applied against the sum of Item 12 and Item 13a/13b:

Expected Construction Cost	Rate
0 – 4,000,000	4.6% (0.046)
4,000,000 – 9,000,000	3.2% (0.032)
9,000,000 and greater	2.2% (0.022)

Item 15 Enter any miscellaneous costs and include a reference. These costs may be design-related, i.e. value engineering, building commissioning, topographic, boundary and archeological surveys, borings, test pits, etc. or construction related, i.e. separate but related construction contracts, utility connection fees, etc.

Item 16 Enter a cost for the construction schedule (Use $10,000 plus .001 of Item 12 if using a CPM, otherwise, estimate an allowance).

Item 17a Insert the estimated cost of the movable capital equipment request programmed for the project less the information technology equipment. (See Item 17b.)

Item 17b Insert the estimated cost of the information technology capital equipment (voice, video, data, and wireless) request programmed for the project. Items typically included here are equipment that have very substantial costs associated with them, such as an electronic private branch exchange (PBX) that serves a major building or buildings in a facility campus or hub servers that support a complex network of data links, even if it is intended to be part of the general construction contract work identified in 9F. If the IT work is anticipated to be handled by a separate vendor contract, then it should also include fiber optic or copper vertical riser distribution cables, cable termination equipment and related wiring in wiring closets on each floor, and wire connecting the wire closet terminations to the wall jacks or other outlets to which telephone stations and computers will be connected, that are not installed as part of the general contract. Do not include items not eligible for capital funding.

Item 18 Enter the total amount of all basic estimated or contracted A/E services fees, including approved change orders for the project as of the date of the estimate. The typical estimated A/E fee

should be 7% for new construction and 7.5% for renovation (Item 12 plus Item 13b). Fees in excess of these percentages need to be justified. (see below)

Item 19 Enter the total amount of all estimated or contracted fees for special design services. Examples of this include special consultants for acoustics, kitchen, telecommunications and museum exhibit design services, special surveys, etc.

Item 20 Enter the total amount of the estimated or contracted fee for green sustainable design practice. This is for the application of costs related to the design of a building associated with green construction practice, in conformance with LEED Silver rating principles outlined by the Maryland Green building Council. The typical estimated fee should be approximately 1% to 2% of the estimated construction cost. (Item 12 plus Item 13a). This factor can be increased or decreased, based on specific information and/or applications identified by the cost estimate preparer.

Item 21 Sum the amounts listed for Items 12 through 20.

Item 22 Enter the total amount of all construction related costs from Item 21.

Item 23 Enter all prior construction funds authorized for this project.

Item 24 Enter the difference between Item 22 and Item 23.

Item 25 Enter the total amount of all design related costs from Item 21.

Item 26 Enter all prior design funds authorized for this project.

Item 27 Enter the difference between Item 25 and Item 26.

Below Item 27, enter the Construction Cost of the Structure per Square Feet at the Mid-Point of Construction of the Project (Typically Item 9K divided by Total GSF in Item 8). Enter the Construction Cost of the Structure/Site/Utilities per Square Feet of the Project. (Typically Item 12 divided by Total GSF in Item 8). Enter the Total Project Cost per Square Feet of the Project (Typically Item 21 divided by Total GSF in Item 8).

For Additional Information: Please contact Joseph Pitruzzella @ 410-767-4397 in the DGS Project Cost Center if you have any questions on the preparation and submission of Cost Estimate Worksheets.

ATTACHMENT 4

SUMMARY - AREAS, VOLUME & EFFICIENCY

PROJECT: _____ PROJECT NO: _____

FACILITY:_____ DATE: _____

ARCHITECT/ENGINEER: _____

ITEM	AREA (SF)			
	PROGRAM	SCHEMATIC	DD	CD
GROSS AREA (Notes 1 & 2)				
NET ASSIGNABLE AREA (Notes 1 & 2) (Sh. 3 to __ incl.)				
GROSS VOLUME (Note 1)				
EFFICIENCY FACTOR (Note 3) % EFFICIENCY (Note 4)				
SUBMISSION DATE (Note 5)				

NOTES:

1. Gross Areas, Net Assignable Areas and Volumes shall be calculated in strict accordance with DGS Procedure Manual Appendix D.

2. Attach additional sheets as follows: Sheet 2 - Tabulation of Gross Areas; Sheet 3 (repeated as needed) - Tabulation of Net Assignable Areas (Room by Room).

3. To obtain Efficiency Factor: Divide Gross Area by Net Assignable Area (e.g. 49,209 SF Gross Area divided by 33,705 SF Net Assignable Area = 1.46).

4. To obtain % Efficiency: Divide Net Assignable Area by Gross Area and multiply by 100 (e.g. 33,705 SF Net Assignable Area divided by 49,209 SF Gross Area multiplied by 100 = 68.5% Efficiency).

5. Submit in triplicate to the DGS Project Manager with each phase submission of review documents. Figures shall be shown for all previous phases as well as the current phase submitted.

ATTACHMENT 4

TABULATION OF GROSS AREA

PROJECT: _____ PROJECT NO: _____

FACILITY: _____ DATE: _____

ARCHITECT/ENGINEER: _____

DESCRIPTION	GROSS AREA (SF)			
	PROGRAM	SCHEMATIC	DD	CD
Utility Tunnels (Within 10 feet)				
Crawl Space (6 feet or more high)				
Sub-Basement				
Basement				
Ground Floor				
Mezzanine				
Balcony				
Fixed Bleachers (w/rooms below)				
1st Floor				
2nd Floor				
3rd Floor				
4th Floor				
Other				
Other				
Mezzanine (Boiler or Equip. Room)				
Penthouses (Stairs, Elev., Mech.)				
Areaways (1/2)				
Canopies (1/2)				
Roof or Floor				
Overhangs (1/2)				
Open piazza under bldg. (1/2)				
Covered Balcony (1/2)				
Loading Dock (1/2)				
TOTALS				

ATTACHMENT 4

SUMMARY - AREAS, VOLUME & EFFICIENCY

PROJECT: _____ PROJECT NO: _____

FACILITY: _____ DATE: _____

ARCHITECT/ENGINEER: _____

Room No.	DESCRIPTION	NET ASSIGNABLE AREAS (SF)			
		PROGRAM	SCHEMATICS	DD'S	CD'S

END OF ATTACHMENT 4

ATTACHMENT 5

MONTHLY PROGRESS REPORT

PROJECT NAME: _____ PROJECT NO. _____

FACILITY: _____ STATUS AS OF _____

SURVEY & BORINGS	
Survey Request:	Rec'd:
Borings Request:	Rec'd:

SCHEMATICS			
Pre-Design Conference:			
Project Review Meeting:			
Schematics to DGS:			
Area-Vol-Efficiencies to DGS:			
Architectural Review Board Submissions			
1	2	3	4
Approved by Review Board:			
Approved by DGS for DD:			

DESIGN DEVELOPMENT		
DD to DGS:	Est. to DGS:	
Area-Vol-Efficiencies to DGS:		
Architectural Review Board Submissions		
1	2	3 4
Approved by Review Board:		
	Submitted	Approved
DBM		
DHMD (Food)		
DHMH (Hospital)		
Fire Marshal		
Water Resources		
Rendering		
Job Description Sheet		
Cost Estimate		
Approved by DGS for CD:		

CONSTRUCTION DOCUMENTS		
Prevailing Wage Scale: Req't:	Rec'd:	
CD to DGS 50%:	100%:	
Area-Vol-Efficiency to DGS:		
Cost Estimate to DGS:		
CD Ret'd. to A/E for Corr:		
Bldg. Code Certif. by A/E:		
Job Description Sheet to DGS:		
CD to DGS for Bid:		

Est. Compl. Date of CD:	
Est. Bid Due Date:	
Change from last month	YES ☐ NO ☐

PROGRAM RECEIVED:

PERMIT STATUS:

SCHEMATICS	☐	**STUDY**	☐
MASTER PLAN	☐		
Estimated Completion Date:			
Actual % Completion this date:			

DESIGN DEVELOPMENT
Estimated Completion Date:
Actual % Completion this date:

CONSTRUCTION DOCUMENTS		
Overall % Completion this date:		
	PLANS % COMPL	SPECS % COMPL
Architectural		
Civil		
Site/Utility		
Landscape		
Structural		
Mechanical		
Electrical		

BIDDING		
Liquidated Damages:	$	per
Pre-Bid Conference:		
Bid Due Date:		
Number of Addenda:		

Note: Complete all applicable items at each submission. Submit one completed copy to DGS on the first of each month. Submit monthly until after construction award. Include one copy with payment request. Enter reasons for any delay and dates of review meetings.

Remarks:

A/E CERTIFICATION: I/We certify that the above-checked submissions have been made to the designated agencies.

Name: _____ Title: _____ Date: _____

END OF ATTACHMENT 5

ATTACHMENT 6

PROJECT DESCRIPTION SHEET

DESIGN PHASE: ☐ DD ☐ 95% CD ☐ 100%CD **DATE:**_____

PROJECT: _____ **PROJECT NO:** _____

FACILITY: _____

ARCHITECT: _____

ENGINEERS: _____

_____

A. DESCRIPTION _____

_____

B. OCCUPANCY: _____

_____

C.	GROSS AREA (SF)	NET ASSIGNABLE AREA (SF)	PERIMETER WALLS (SF)
Basement			
Floor 1			
Mezzanine			
Floor 2			
Floor 3			
Penthouse			
Covered Atrium			
TOTALS			

D. TOTAL VOLUME _____ **cubic feet**

E. EFFICIENCY: _____

$\frac{\text{ASSIGNABLE AREA}}{\text{GROSS AREA}}$ = X ____ 100 = _____ % E EFF. $\frac{\text{GROSS AREA}}{\text{ASSIGNABLE AREA}}$ = _____ Efficiency Factor

F. REMARKS: _____

_____

G. ADA: _____

H. HAZMAT REMOVAL REQUIRED:_____

PROJECT DESCRIPTION SHEET

CONSTRUCTION

1. Foundations	
2. Structural	
3. Exterior Walls	
4. Partitions	
5. Floors	
6. Floor Finish	
7. Ceilings	
8. Roof	
9. Roof Finish	
10. Wall Finish	
11. Doors & Frames	
12. Windows	
13. Toilet Room Partitions	
14. Plumbing	_____ Total # Fixtures _____ WC _____ SH _____ DF _____ OTHER _____ LAV _____ SS _____ UR
15. Sewers	Sanitary: _____ Storm: _____ Septic:
16. Water Supply	
17. Fire Protection	
18. Heating	
19. Heating Plant	
20. Ventilation	
21. Air Conditioning	Tons: %
22. Electric	
23. Special Electric	
24. Site Electric	
25. Elevators	
26. Parking Lots	
27. Roads	Curbs
28. Walks & Steps	
29. Built-in Equipment	
30. Site Specialties	

SKETCH

ATTACHMENT 6a
Directions for Completing
PROJECT DESCRIPTION SHEET

The project Architect/Engineer shall complete a separate Project Description Sheet (Attachment #6) for each building of a project and submit the original with 2 copies to the Department of General Services:

(1) to accompany the design development plans,

(2) to accompany the final plans (prior to bid, after all revisions.) And

(3) at such other times as requested.

Keep description brief, use abbreviations.

GENERAL

1. Give brief description of structure. When project has more than one building, give building title here.

2. State occupancy:

Garage or Parking . . . . . number of vehicles;
Nursing Home, Dormitory or Hospital . . . . . number of student or patient beds;
Auditorium or Gym . . . . . number of seats;
Housing . . . . . number of rental units;
Library . . . number of volumes, number of carrels, number of seats, (incl. carrels);
Dining Hall . . . . . serving capacity per hour, number of seats;
Kitchen . . . . . meal capacity;
University Academic Buildings . . . . . number students each building, number of classrooms, number of faculty offices;
Public Schools . . . . . number of pupils, number of faculty offices, number of classrooms;
Office of Administration Building . . . . . number of personnel; etc.;
Court Houses . . . . . number of courtrooms, number of seats;

3. Give gross area in square feet, assignable area in square feet and length of perimeter walls in linear feet for each floor or level. Gross and Assignable Areas shall be figured on the basis of Assignable Area and Supporting (unassignable) Areas as defined in Appendix D of this manual.

4. State gross volume of structure in cubic feet. Use height from underside of lowest floor construction system to average top of finished roof surface for each portion of areas above. For slabs on grade, use height from bottom of gravel.

5. Figure efficiency both ways as indicated: as a percent and as a factor (e.g. 60% and 1.67).

6. For additional information or continuation of other items.

7. State whether facilities for the handicapped are included.

8. State whether asbestos abatement is required.

9. Draw a one-line plan view to a small scale; give basic dimensions and indicate number of stories of each portion of facility.

ATTACHMENT 6a
Directions for Completing
PROJECT DESCRIPTION SHEET

CONSTRUCTION

1. State types - spread footings, caissons, piles (timber, pipe, h, precast concrete, cast-in-place, Pressure injected, etc.), grade beams, etc. If footings are on engineered fill, so state.

2. State types - structural steel, reinforced concrete, precast units, wall bearing or structural frame, timber, post-tensioned, etc.

3. State type and materials - curtain or bearing, solid or cavity, brick, brick and block, precast, metal, wood frame, with or without insulation, etc.

4. State type and materials - fixed or movable, bearing or non-bearing, brick, block, tile, metal, precast, gypsum, metal or wood stud and sheet-and-rock, concrete, etc.

5. State type and materials - precast or poured-in-place concrete, steel deck or form with concrete fill, steel or wood joist, flat slab, etc.

6. State finish materials - resilient flooring, concrete, carpeting, terrazzo, etc. (State total square yard area of carpeting and terrazzo). (Do not include toilet rooms in this item.)

7. State finish materials. (Do not include toilet rooms in this item.)

8. State construction - flat or pitched, wood, concrete or steel framing, metal deck, concrete slab, precast, gypsum plank, etc.

9. State materials - built-up, slate, asphalt shingles, galvanized, copper, etc.

10. State finish materials - paint, epoxy coatings, ceramic tile, glazed block, wainscots, plaster, etc. (Do not include toilet rooms in this item.)

11. State type and material - hollow metal or wood, solid core wood, glass aluminum and glass, overhead, roll-up, revolving, etc. (Include type of frames - hollow metal, steel, wood, etc.)

12. State type and material - fixed double hung, projected, casement, sliding, awning, pivoted, window wall, aluminum, wood, steel, stainless steel, bronze, etc.

13. State types and materials of construction and finishes for floor, walls, ceiling, including wainscots, type of toilet partitions, etc.

14. State number of each type plumbing fixture; give total number. Add types not listed in spaces provided. Give size and type of domestic water heater.

Use the following abbreviations:

BP - bed pan sterilizer	BT – bathtub	DF - drinking fountain
DS - dish sink	FD - food waste disposal	HB - hose bibb
KS - kitchen sink	LAV – lavatory	LS - Lab sink
LT - laundry tub	PS - pot sink	SB - special bath
SC - shower compartment	SH - shower head	SS - service sink
U - urinal	UK - unit kitchen	WC – toilet
WH - water heater	WTC - water cooler	

15. State type of material, size and length (over 10 feet from building) for each type and size of sewer. State type and capacity (gallons) of septic system.

16. State type of materials, size and length (over 10 feet from building) of water lines. If from wells, state number and capacity. Include hot and cold water lines from a central facility.

17. State types and locations - sprinklers, standpipes, smoke or heat detectors, fire alarm system, extinguishers, hydrants, Fire Department connections, etc.

18. State types of systems including types of temperature control systems.

19. State whether plant is individual (state fuel) or central. State size and length (over 10 feet from building) of each outside line (steam, hot water, cold water, etc.) from a central plant.

20. Brief description. State cubic feet per minute quantities of total outside air and total exhaust air.

21. State types of systems, air conditioning tonnage, percentage of building that is air conditioned.

22. State service, distribution and utilization voltages, phase, amperage, overhead or underground service (give length over 10 feet from building), wiring method of building such as type, concealed or exposed, etc.

23. State electrical specialties such as audio-visual, stage lighting, lightning protection, intrusion protection, communication systems, emergency systems (e.g. battery units or generator), time system, power for computers, etc.

24. State items of site electric, such as exterior lighting, sub-station, etc.

25. State type and number of elevators, dumbwaiters, moving stairs, etc.

26. State type of construction, area in square yards and number of vehicles.

27. State type of construction and area in square yards. Give type of curbs and length in feet.

28. State type of construction and area in square yards.

29. State what built-in-equipment is included in project such as kitchen, snack bar, exhaust hood, special refrigeration, cabinet work, laboratory equipment, library stacks, wardrobes, special exhaust or waste systems, chalk and tack boards, draperies, pedestal floor (give area), etc.

END OF ATTACHMENT 6A

ATTACHMENT 7

BILL FORM - A/E FULL OR PARTIAL SERVICES

PROJECT NAME: _____ PROJECT NO: _____
FACILITY:_____ STATUS AS OF:_____

TOTAL LUMP SUM FEE: $_____

FEES DUE FOR BASIC DESIGN

#	SCHEMATIC PHASE	$_____	X _____ (% COMPLETE)	= $_____ (AMOUNT DUE)
#	DD PHASE	$_____	X _____ (% COMPLETE)	= $_____ (AMOUNT DUE)
#	CD PHASE	$_____	X _____ (% COMPLETED)	= $ _____ (AMOUNT DUE)
#	DUE FOR BIDDING PHASE	$_____	X _____ (% COMPLETED)	= $ _____ (AMOUNT DUE)
#	CONSTRUCTION PHASE	$_____	X _____ (% COMPLETED)	= $ _____ (AMOUNT DUE)
#	POST CONSTRUCTION PHASE	$_____	X _____ (% COMPLETED)	= $ _____ (AMOUNT DUE)
	TOTAL	**$ _____**		

During the design and construction phase, when special services, extra work, and reimbursable expenses have been authorized by DGS, the A/E fee for such services shall be listed separately for each item. Use the following format:

FEES DUE FOR ADDITIONAL SERVICES

A/E DESIGN EXTRA WORK ITEM #1 _____ (%COMPLETE) $_____ (AMOUNT DUE)

(LIST COMPANY'S #'s and DESCRIBE WORK EXTRAS)

A/E DESIGN EXTRA WORK ITEM #2 _____ (%COMPLETE) $_____ (AMOUNT DUE)

(LIST COMPANY'S #'s and DESCRIBE WORK EXTRAS)

SPECIAL SERVICES $_____ X _____ (%COMPLETE) $_____ (AMOUNT DUE)

REIMBURSABLE EXPENSES $ _____ (TOTAL NTE) $_____ (AMOUNT DUE)
(ATTACH ORIGINAL RECEIPTS)

TOTAL FEE NOW DUE $_____
PREVIOUS AMOUNTS BILLED/PAID $_____
AMOUNT OF PAYMENT DUE THIS REQUEST $_____

NOTE: The following certification shall appear at the bottom of all payment requests.

"I/We certify that payments have been made from the proceeds of prior payments, and/or that we will make timely payments from the proceeds of payments now due to all consultants and others who have been engaged in the professional services rendered, all in accordance with the State Standard Form of Agreement with Architects and Engineers."

END OF ATTACHMENT 7

ATTACHMENT 8

BILL FORM - A/E SERVICES HOURLY RATE (NOT-TO-EXCEED)

PROJECT NAME: _____ PROJECT NO: _____
FACILITY: _____ STATUS AS OF: _____

TOTAL LUMP SUM FEE:	$ 25,000

Services rendered May 1 to May 31, 20___

Either using Billing Rates -

John Smith, Project Architect 40 hrs. @ $115.00 . . . . . $ 4,600.00

Or using Hourly Rates -

James Jones, Architectural Designer 32 hrs. @ $34.00 . . . . . $1,088.00

Jane Doe, CADD Operator 30 hrs. @ $23.00 . . . . . $ 690.00
$1,778.00 x 2.8 . . . . . $ 4,978.40

CONSULTANT SERVICES

A&L Engineering (copy of bill attached) . . . . . $ 1,300.00

TOTAL FEE NOW DUE $10,878.40

PREVIOUS AMOUNTS BILLED/PAID . . . . . $ 6,200.00

AMOUNT OF PAYMENT DUE THIS REQUEST . . . . . $ 4,678.40

(Supply original and three copies)

NOTE: The following certification shall appear at the bottom of all payment requests.

"I/We certify that payments have been made from the proceeds of prior payments, and/or that we will make timely payments from the proceeds of payments now due to all consultants and others who have been engaged in the professional services rendered, all in accordance with the State Standard Form of Agreement with Architects and Engineers."

END OF ATTACHMENT 8

ATTACHMENT 9

REQUEST FOR DETERMINATION OF PREVAILING WAGE RATES

This page for determination of prevailing wage rates was originally intended for A/Es but now this function is performed by DGS Project Managers. This page, therefore, stands deleted.

END OF ATTACHMENT 9

ATTACHMENT 10
BUILDING CODE STUDY DATA

DESIGN PHASE: **~ SD** **~ DD** **~ CD** **DATE:** _____

1) PROJECT: _____ **PROJECT NO.:** _____

FACILITY: _____

_____

2) <u>APPLICABLE CODES</u>:

A)	**Building Code**	**IBC - 2015**
		IRC - 2015
		IEBC - 2015
B)	**Fire Code**	**NFPA - 101(Life Safety Code) 2015**
		NFPA - 1 2015 (Fire Code)
		NFPA - 13 (Sprinkler Code) 2013
C)	**Mechanical Code**	**IMC - 2015**
D)	**Plumbing Code**	**National Standard Plumbing Code - 2015**
E)	**Electric Code**	**NEC - 2014**
F)	**Energy Standard**	**ASHRAE 90.1 (Latest Edition)**
G)	**Elevator and Escalator Safety Code**	**ANSI/ASME A17.1 2013**
H)	**Accessibility Code**	**MAC (COMAR 05.02.02 & 2010 ADA Standards)**
I)	**Energy Conservation Code**	**IECC - 2015**

3) <u>BUILDING USE, CONSTRUCTION CLASSIFICATIONS AND HEIGHT:</u>

		IBC 2015	**NFPA 2015**
Use Group	(Sect. 302):	_____	_____
Special Use and Occupancy	(Chapter 4):	_____	_____
Building Height Allowable	(Table 504.3):	_____	_____
Number of Stories	(Table 504.4):	_____	_____
Allowable Area Factor	(Table 506.2)	_____	_____
Actual Building Height:		_____	_____
Unlimited Area Building	(Sec. 507):	_____	_____
Required Separation for Mixed Use Occupancy	(Table 508.4):	_____	_____
Incidental Use Areas	(Table 509):	_____	_____
Fire Separation Distance	(Table 602):	_____	_____

4) BUILDING AREAS:

BUILDING ACTUAL GROSS AREAS :

First Floor : _____
Second Floor : _____
Third Floor : _____
Mech. Penthouse : _____
Total (GSF) : _____

MAXIMUM ALLOWABLE AREAS:

Per IBC Table 506.2 : _____ + _____ + _____
Allowable Area Factor **Frontage Increase (506.3)**

BUILDING AREA MODIFICATION : _____
(List Total Area per Floor Sec. 506.2)

5) OCCUPANCY LOADS:

USE	IBC (Table 1004.1.2)	LIFE SAFETY (Table - 7.3.1.2)
	_____	_____

6) EGRESS WIDTH:

		IBC (Section 1005)	LIFE SAFETY (Table 7.2.2.2 7.2.1.1)	PROVIDED
Egress Width at Stairs:	(1005.3.1)	_____	_____	_____
Egress Width at Doors:	(1005.3.2)	_____	_____	_____
Egress Width at Corridors:	(1005.3.2)	_____	_____	_____

7) OCCUPANCY LOADS AND EGRESS REQUIREMENTS:

Location (Spaces): _____
Area in Square Feet: _____
Maximum Floor Area Allowance
Per Occupant (Table 1004.1.2): _____
Egress Width Required (Section 1005): _____
Egress Width Provided (in inches): _____
Number of Exits Required (Sec 1006.3.1): _____
Number of Exits Provided: _____

8) FIRE PROTECTION SYSTEM REQUIREMENTS:

	IBC	System Req. (Yes/No)	IBC 2015	NFPA 101-2015 (Ch. 8)
Automatic Sprinklers	(Sec. 903)	_____	_____	_____
Fire Extinguishing System	(Sec. 904)	_____	_____	_____
Standpipe System	(Sec. 905)	_____	_____	_____
Portable Fire Extinguishers	(Sec. 906)	_____	_____	_____
Fire alarm System	(Sec. 907)	_____	_____	_____
Emergency Alarm System	(Sec. 908)	_____	_____	_____
Smoke Control System	(Sec. 909)	_____	_____	_____
Smoke and Heat Vents	(Sec. 910)	_____	_____	_____
Fire Command Center	(Sec. 911)	_____	_____	_____
Fire Dept. Connection	(Sec. 912)	_____	_____	_____
Fire Pumps	(Sec. 913)	_____	_____	_____
Emergency Safety Factor	(Sec. 914)	_____	_____	_____
Carbon Monoxide Detection	(Sec. 915)	_____	_____	_____

9) MAXIMUM DEAD END DISTANCE:

Use Group : _____
IBC - 2015 (Table 1020.4) : _____
NFPA – 2015 : _____

10) INTERIOR FINISH REQUIREMENTS:

	Class	Flame Spread	Smoke Development
IBC- 2015 (Table - 803.11)	_____	_____	_____
NFPA - 2015 (Chapter 10)	_____	_____	_____

11) MAXIMUM TRAVEL DISTANCE TO EXIT:

Actual: Show on Life Safety Plan

	IBC – 2015 (Table - 1017.2)	NFPA – 2015 (Sec 7.6.1)
Allowable:	_____	_____

12) MINIMUM CORRIDOR WIDTH REQUIREMENTS:

Occupancy (Table 1020.2)	Width	IBC Reference	NFPA-101 Reference
_____	_____	_____	_____

CORRIDOR FIRE RESISTANCE RATING (Table 1020.1)

Occupancy Load	Fire Resistance Rating (Sprinkler)	Fire Resistance Rating (Non-Sprinkler)
_____	_____	_____

13) PANIC HARDWARE:

Location	**Required**	**IBC - 2015 (1010.1.10)**	**NFPA – 101 2015 (7.2.1.7)**
_____	_____	_____	_____

14) STAIR DATA:

	IBC 2015	**NFPA-101 2015 (Table 7.2.2.2.1.1)**
Stair Width (Section 1009.3)	_____	_____
Capacity	_____	_____
Rated Enclosure (Section 1023.2)	_____	_____

15) AREA OF REFUGE: **(Section 1009.6)** **(NFPA SEC 7.2.12)** **Yes** _____ **No** _____

16) **ELEVATOR :** **IBC 2015** **NFPA 2015** **ASME A17.1 2013**

17) BUILDING FIRE RATINGS:

	IBC 2015 (Table 601- 602)	NFPA–101 2015 (Table 8.3.4.2)
STRUCTURAL FRAME Including Columns, Girders, Trusses	_____	_____
EXTERIOR BEARING WALL	_____	_____
EXTERIOR NON-BEARING WALL	_____	_____
INTERIOR BEARING WALL	_____	_____
INTERIOR NON-BEARING WALL	_____	_____
FLOOR CONSTRUCTION Including Supporting Beams and Joists	_____	_____
ROOF CONSTRUCTION Including Supporting Beams and Joists	_____	_____
FIRE WALLS - USE GROUP Fire Barrier Assemblies (Table 707.3.10) Fire Resistance Rating (Table 706.4)	_____	_____
VERTICAL EXIT ENCLOSURES Fire Resistance Rating (IBC Section 1023.2 NFPA - 2015 Table 8.3.4.2)	_____	_____
SHAFTS AND ELEVATOR HOIST WAYS Fire Resistance Rating (IBC Section 712 & 713, NFPA - 2015 Table 8.3.4.2)	_____	_____
EXIT PASSAGEWAY (Sec 1024)	_____	_____
SMOKE BARRIER (Sec 709)	_____	_____
EXIT PASSAGEWAY (Sec 1024)	_____	_____

	IBC-2015 (Table 601 - 602)	NFPA–101 2015 (Chapter - 8)
PROTECTIVE OPENING RATING	_____	_____
FIRE DOOR Fire Resistance Rating (Table 716.5)	_____	_____
FIRE WINDOWS Fire Resistance Rating (Table 716.6)	_____	_____
DRAFT STOPPING Concealed Spaces (Section 718)	_____	_____

18) MD HIGH PERFORMANCE BUILDING ACT:

New public construction and major renovation projects of 7,500 square feet or greater shall be designed to earn a LEED Silver Certification from the U. S. Green Building Council.

19) ENERGY CODE: **MARYLAND CLIMATE ZONE 4A**
EXCEPT GARRETT COUNTY 5A

BUILDING ENVELOPE REQUIREMENT

	Required 'U' Value U = 1/R	Required 'R' Value R = 1/U	Provided
Roofs			
Insulation entirely above deck	**U 0.032**	**R 30 CI (Cont Insul)**	_____
Metal Building	**U 0.035**	**R 19 + 11**	_____
Attic Insulation	**U 0.027**	**R 38**	_____
Walls			
Mass	**U 0.104**	**R 9.5 CI (Cont. Insul)**	_____
Metal Framed	**U 0.064**	**R 13 + R 7.5 CI**	_____
Metal Building	**U 0.052**	**R 13 + R 13 CI**	_____
Wood Framed	**U 0.064**	**R 13 + R 3.8 CI or R 20**	_____
Below Grade Wall	**U 0.119**	**R 7.5 CI**	_____

ATTACHMENT 10
BUILDING CODE STUDY DATA

	Required 'U' Value U = 1/R	Required 'R' Value R = 1/U	Provided
Joist Framing (steel or wood)	**U 0.033**	**R30**	
Slab on Grade			
Heated Slab	**F 0.65**	**R 15 for 24" below**	
Unheated Slab	**F 0.54**	**R 10 for 24" below**	
Doors			
Entrance Door	**U 0.77**	**R 1.29**	
Un-insulated Metal Door	**1.20**	**R 1.66**	
Insulated Metal Door	**0.60**		
Wood Door	**0.50**	**R 2.00**	
Windows			
Fixed Fenestration	**U 0.38**	**R 2.63**	
Operable Fenestration	**U 0.45**	**R 2.22**	
Sky Light	**U 0.50**	**R 2.0**	
Curb	**U 0.20**	**R 5.0**	
Minimum Roof Reflectance/Emittance			
(3 yr. Aged) Solar Reflectance	**0.55**		
(3 yr. Aged) Thermal Emittance	**0.75**		

END OF ATTACHMENT 10

ATTACHMENT 11a
Sheet Nomenclature

DISCIPLINE	DRAWING CODE	DESCRIPTION
General	G	Cover, Index, Abbreviations, Symbols, Staging & Safety Plans
Real Estate/Lease	R	Property Boundaries And Legal Descriptions
Civil	C	Legend
Civil	C	Site
Civil	C	Boring Log
Civil	C	Under Slab Drainage
Civil	C	Building Site Plan
Civil	C	Grading Plan
Civil	C	Utility Plan
Civil	C	Details, Elevations And Sections
Civil	C	Site Improvements
Civil	C	Structural Canopy Details
Civil	C	Layout, Grading, Draining and Landscaping
Civil	C	Structural Details
Demolition	D	Removal of Existing Construction
Hazardous Materials	H	Hazardous Materials
Landscaping	L	Legend, Symbols and Abbreviations
Landscaping	L	Irrigation Plan
Landscaping	L	Planting
Landscaping	L	Irrigation and Planting Details
Architectural	A	Legend, Symbols and Abbreviations
Architectural	A	Floor Plan
Architectural	A	Reflected Ceiling Plan
Architectural	A	Roof Plan
Architectural	A	Elevations
Architectural	A	Sections
Architectural	A	Details
Architectural	A	Millwork
Architectural	A	Equipment
Architectural	A	Furniture
Interiors	I	Interior Building Elements
Information Tech.	IT	Information Technology
Structural	S	Legend, Symbols And Abbreviations
Structural	S	Structural Foundation Plan
Structural	S	Framing and Decking Plan
Structural	S	Roof Framing Plan

ATTACHMENT 11a
Sheet Nomenclature

Structural	S	Structural Details
Structural	S	Structural Steel Grounding
Structural	S	Erection Drawings
Mechanical	M	Legend, Symbols And Abbreviations
Mechanical	M	Equipment Schedule
Mechanical	M	Elevations
Mechanical	M	Generator and Fan Room Plan
Mechanical	M	Chiller Room Plan
Mechanical	M	Mechanical Room Plan
Mechanical	M	Roof Plan
Mechanical	M	Sections and Details
Mechanical	M	Details
Mechanical	M	Hot and Cold Piping Diagrams
Mechanical	M	Miscellaneous
Mechanical	M	Steam Piping Systems
Mechanical - HVAC	M	Under Floor Plan
Mechanical - HVAC	M	Floor Plan (Room Area)
Mechanical - HVAC	M	Ceiling Plan
Plumbing	P	Legend, Symbols and Abbreviations
Plumbing	P	Foundation Plan
Plumbing	P	Piping Plan
Plumbing	P	Riser Diagram
Plumbing	P	Sanitary Riser Diagram
Plumbing	P	Storm Riser Diagram
Plumbing	P	Roof Drain System
Plumbing	P	Details
Electrical	E	Legend, Symbols and Abbreviations
Electrical	E	Single Line Diagrams
Electrical	E	First Floor Lighting Plan
Electrical	E	Power and Communications Plan
Electrical	E	Grounding Plan
Electrical	E	Security Plan
Electrical	E	Equipment
Electrical	E	Motor Control Schematics
Electrical	E	Miscellaneous
Electrical	E	Details
Electrical	E	Panel Schedules
Telecommunications	T	Legend, Symbols And Abbreviations

ATTACHMENT 11a
Sheet Nomenclature

Telecommunications	T	1st Floor Communications Plan
Telecommunications	T	Details
Telecommunications	T	Manhole and Cable Diagrams
Fire Protection	F	Legend, Symbols And Abbreviations
Fire Protection	F	Sprinkler System
Fire Protection	F	Fire Pump Location Plan
Fire Protection	F	Alarm Systems
Fire Protection	F	Fire Fighting Equipment
Fire Protection	F	Stand Pipe System
Z-Contractor	Z	Shop Drawings

ATTACHMENT 11b

CADD Line Widths and Colors – Pen Settings

Pen widths are specified for only the AutoCAD index colors. Colors 1-9 plot as solid lines, and colors 250-254 plot as screened lines. There is a pen table for both full size drawings and half-size drawings:

DGS Full Size.ctb

AutoCAD Color No.	Plotted Pen Width in Inches	Plotted Color	Plotted Line Width
1	0.010	Black	
2	0.012	Black	
3	0.014	Black	
4	0.020	Black	
5	0.024	Black	
6	0.031	Black	
7	0.007	Black	
8	0.005	Black	
9	0.047	Black	
250	0.010	Dark Grey	
251	0.010	Dark Grey	
252	0.010	Medium Grey	
253	0.010	Light Grey	
254	0.010	Light Grey	

Solid Lineweights

Screened Lineweights

DGS Half Size.ctb

AutoCAD Color No.	Plotted Pen Width in Inches	Plotted Color	Plotted Line Width
1	0.005	Black	
2	0.006	Black	
3	0.007	Black	
4	0.010	Black	
5	0.012	Black	
6	0.015	Black	
7	0.004	Black	
8	0.003	Black	
9	0.024	Black	
250	0.010	Dark Grey	
251	0.010	Dark Grey	
252	0.010	Medium Grey	
253	0.010	Light Grey	
254	0.010	Light Grey	

Solid Lineweights

Screened Lineweights

ATTACHMENT 12
SAMPLE DRAWING COVER SHEET

PROJECT TITLE
FACILITY
ADDRESS (Including County)
PROJECT No.
MDE No.

REQUIRED INFORMATION
LOCATION PER CONSULTANT CHOICE

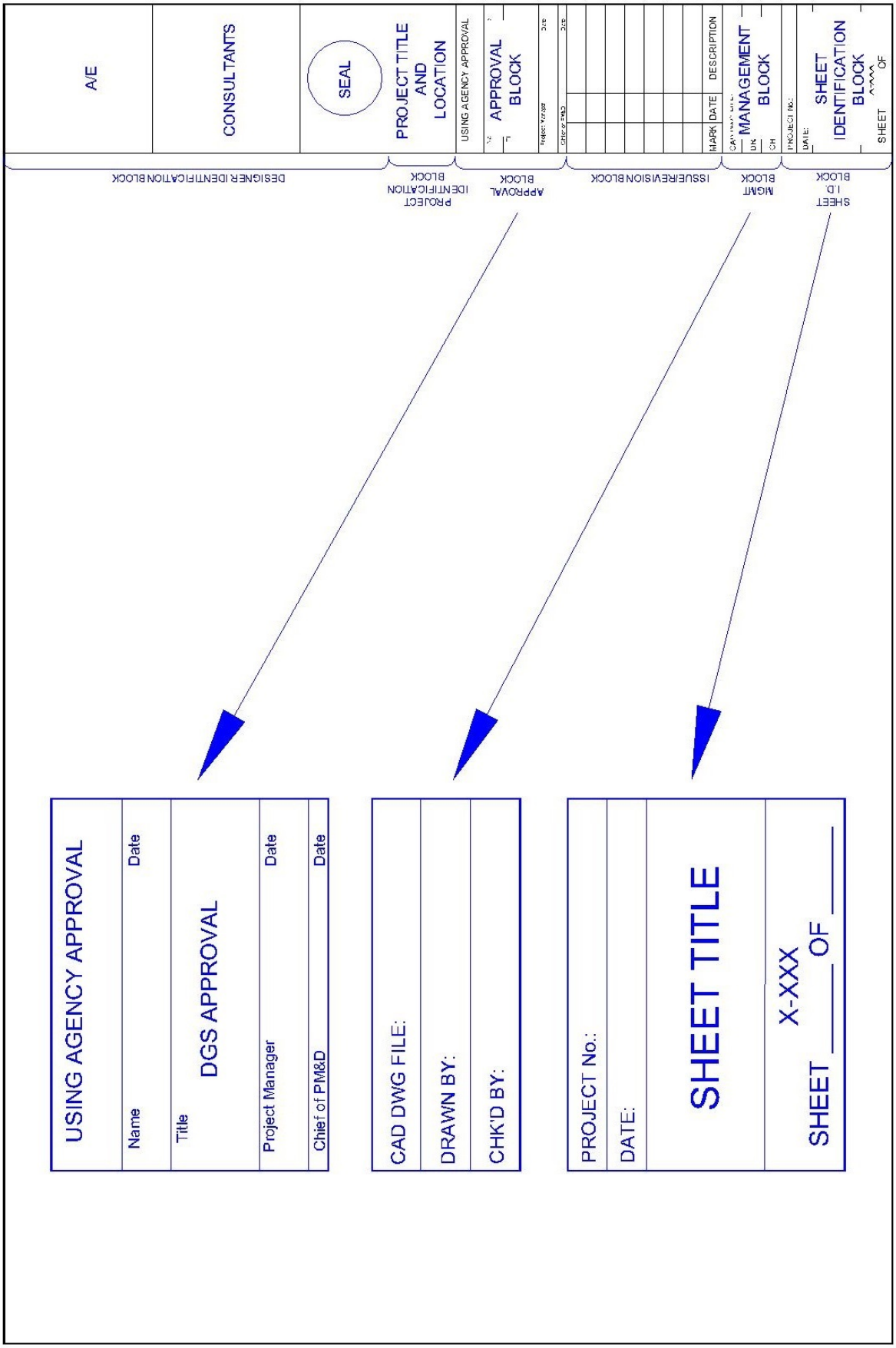
PROFESSIONAL CERTIFICATION STATEMENT (per Chapter 1, Paragraph 10)	LOCATION MAP	VICINITY MAP	A/E NAMES ADDRESSES	USING AGENCY & DEPARTMENT OF GENERAL SERVICES APPROVAL BLOCK	LIST OF DRAWINGS & APPLICABLE CODES

STATE OF MARYLAND

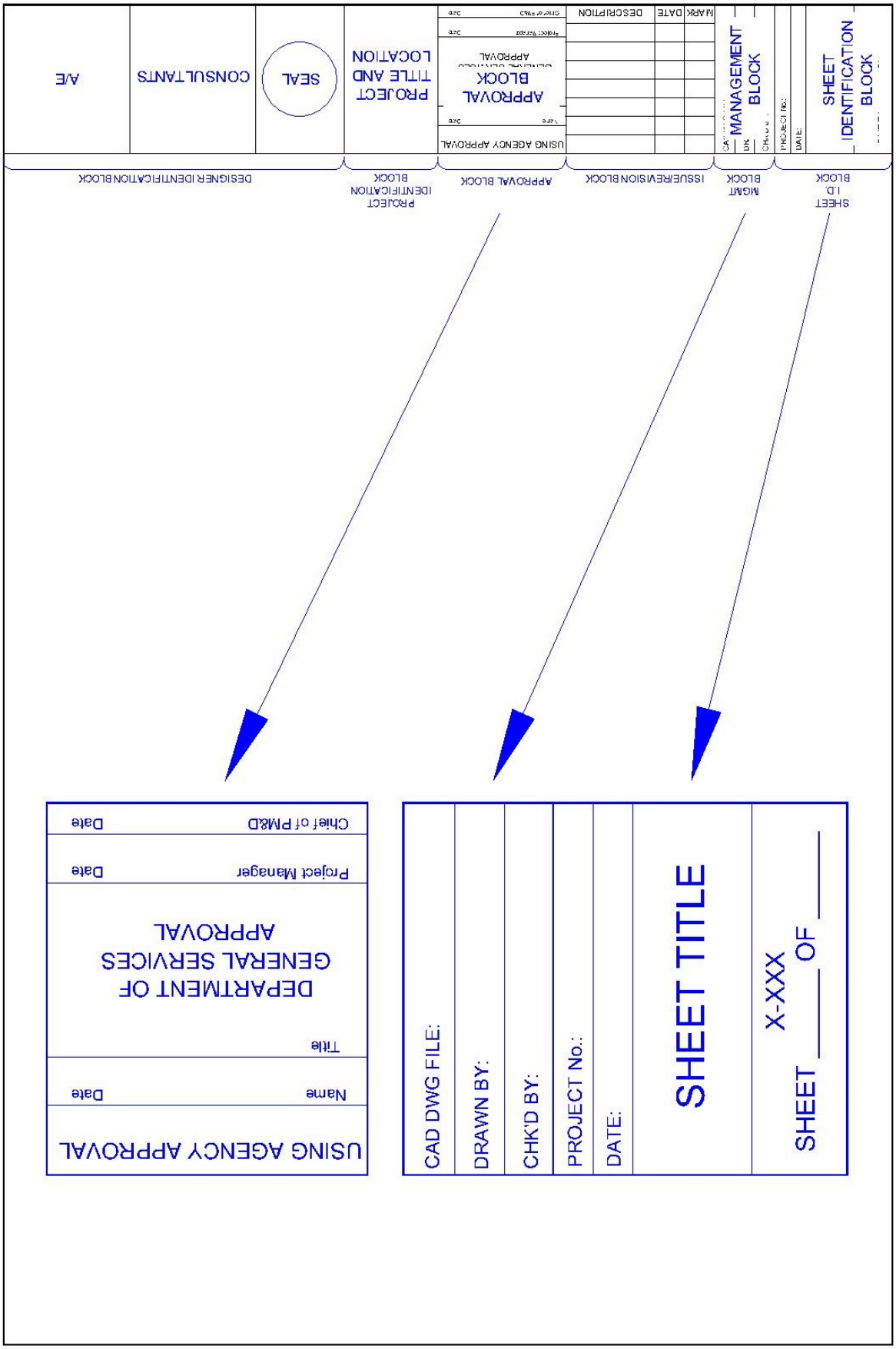
DEPARTMENT OF GENERAL SERVICES
[NAME], SECRETARY
301 WEST PRESTON STREET
BALTIMORE, MARYLAND 21201

BOARD OF PUBLIC WORKS
[NAME], GOVERNOR
[NAME], COMPTROLLER
[NAME], TREASURER

ATTACHMENT 12a
SAMPLE HORIZONTAL DRAWING SHEET



ATTACHMENT 12b
SAMPLE HORIZONTAL DRAWING SHEET



ATTACHMENT 13
PROJECT MANUAL COVER

SET NO. _____

PROJECT MANUAL FOR CONSTRUCTION OF

_____
(Building or Facility Name)

AT THE

_____
(Institution)

_____, _____ Maryland
(City) (County)

FOR THE DEPARTMENT OF

_____
(Agency)

DGS PROJECT NO. _____

MDE LOG-IN NO. _____

PROJECT CLASSIFICATION: _____

_____
(Date)

STATE OF MARYLAND

DEPARTMENT OF GENERAL SERVICES
(NAME), Secretary
301 West Preston Street
Baltimore, Maryland 21201

BOARD OF PUBLIC WORKS (Name),
(NAME), Governor
(NAME), Comptroller
(NAME), Treasurer

MINORITY BUSINESS ENTERPRISES ARE ENCOURAGED TO RESPOND TO THIS SOLICITATION

Architect/Engineer
Address

Mechanical/Electrical Engineer

Structural Engineer

(Note: All members of the design team shall be shown, e.g., Landscape Architect, Civil Engineer, Electrical Engineers, Food Service Consultant, etc.)

DEPARTMENT OF GENERAL SERVICES
OFFICE OF FACILITIES PLANNING, DESIGN AND CONSTRUCTION

WARRANTY INSPECTION REPORT

_____ **6 MONTHS** _____ **12 MONTHS** _____ **23 MONTHS**

DGS PROJECT NO.: _____

PROJECT TITLE: _____ **DATE:** _____

FACILITY: _____

CONTRACTOR: _____

ARCHITECT/ENGINEER: _____

INSTRUCTIONS: Use two number system for each item (1-1, 1-2, 2-1, 2-2, etc.). The first indicates the inspection sequence, the second indicates the item number. Repeat this system for each inspection. Do not change number if item is repeated.

ITEM: _____

_____

_____

_____

REMARKS/COMPLETED ITEMS FROM PREVIOUS REPORT: _____

_____

_____

_____

DGS Inspector: _____

Using Agency: _____

Architect/Engineer: _____

GLOSSARY

A/E	Architect/Engineer
ACI	American Concrete Institute
ADA	Americans with Disabilities Act
AHU	Air Handling Unit
AISC	American Institute of Steel Construction Manual
AITC	American Institute of Timber Construction
ANSI	American National Standards Institute
ARB	Architectural Review Board
ARMA	Asphalt Roofing Manufacturers' Association
ASHRAE	American Society of Heating, Refrigeration & Air Conditioning
ASME	American Society of Mechanical Engineers
CAC	Critical Area Commission
CAD	Computer-Aided Design
CADD	Computer-Aided Design and Drafting
CDs	Construction Documents
CEW	Cost Estimate Worksheet
CITS	Construction Inspection and Testing Service
CO	Change Order
COMAR	Code of Maryland Regulations
DBM	Department of Budget and Management
DDC	Direct Digital Control
DGS	Department of General Services
DLLR	Department of Labor, Licensing and Regulation
DNR	Department of Natural Resources
EMS	Energy Management System
FCU	Fan Coil Unit
FEMA	Federal Emergency Management Agency
FM	Factory Mutual System
GPSB	General Professional Selection Services Board
GSF	Gross Square Feet
GWB	Gypsum Wall Board
HP	Horsepower
HVAC	Heating, Ventilating and Air Conditioning
IBC	International Building Code
IEBC	International Existing Building Code
IECC	Institute of Electrical and Electronics Engineers
IECC	International Energy Conservation Code
IES	Illuminating Engineers Society
IESNA	Illuminating Engineering Society of North America
IMC	International Mechanical Code
IQC	Indefinite Quantity Contract
IRC	International Residential Code
KVA	Kilowatt Ampere (1000 volt amps)
LED	Light Emitting Diode

LEED	Leadership in Energy and Environmental Design
MAC	Maryland Accessibility Code
MBMA	Metal Building Manufacturers' Association
MCC	Maintenance Control Center
MDE	Maryland Department of the Environment
MEMA	Maryland Emergency Management Agency
NEC	National Electric Code
NFPA	National Fire Protection Agency
NICET	National Institute of Certification in Engineering Technology
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
NRCA	National Roofing Contractors' Association
NSPC	National Standard Plumbing Code
OFP	Office of Facilities Planning
PCC	Project Cost Center
PCO	Proposed Change Order
PWM	Pulse Width Modulation
QA	Quality Assurance
QC	Quality Control
RFI	Request for Information
RFP	Request for Proposal
SBR	Small Business Program
SMACNA	Sheet Metal and Air conditioning contractors National Association
USGBC	United States Green Building Council
VAV	Variable Air Volume
VFD	Variable Frequency Drive
VRF	Variable Refrigerant Flow