UNIVERSITY of MARYLAND
BALTIMORE

Administration & Finance

Design and Construction

Procedure Manual for Professional Architectural / Engineering Services for UMB Construction and Service Center Projects

2026 Edition

04/17/2026:
Changes made since last revision:

1. Reorganized contents.
2. Replaced reference from Prime Consultant to A/E
3. Changed requirements for number of paper submission sets.
4. Updated digital file requirements
5. Updated Flood Plain Management policy to reference current State requirements.
6. Updated Standards of Ethical Conduct to reference current State requirements.
7. Updated Reforestation Procedures by reference to Maryland Natural Resources Article.
8. Removed earthquake design requirements already included in International Building Code.
9. Updated Chesapeake Bay Critical Area Policy by reference to Maryland Department of Natural Resources.
10. Life Cycle Cost Analysis Procedure has been removed and incorporated as a separate reference file.
11. Forms have been removed from this document. Forms are referenced and located on the UMB website

Table of Contents

Chapter One - General Requirements

1. General

1.1 This Procedure 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 the construction, alteration or renovation of University buildings. It is intended that the procedures outlined herein shall be followed to the fullest extent practicable for other University improvements such as special structures, roads, utilities, site improvements, etc.

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

2. Incorporation by Reference

2.1 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.

3. Supersedure

3.1 This edition of the A/E Procedures Manual supersedes all previously issued editions.

4. Professional Services:

4.1 A/E Services: The Architect/Engineer (A/E) assigned by contract to a given project shall provide, complete and adequate in every detail, the professional services described in the Standard Form of Agreement with Architects/Engineers. A/E services may include some or all of the following services:

a. Programming Study and Interior Design Services:

(1) Capital Project Program - Part I

(2) Capital Project Program - Part II

(3) Feasibility Study

(4) Space Planning

(5) Engineering Report

(6) Interior Design

b. Design Phase Services:

(1) Concept Design Phase

(2) Schematic Design Phase

(3) Design Development Phase

(4) Construction Documents Phase

c. Bidding and Construction Services:

(1) Bidding Support

(2) Construction Administration Services

(3) Post Construction Survey

5. University Project Number:

   5.1 Assignment: At the Project Initiation Conference the A/E will be provided with the University project number. This number shall be used on all correspondence, drawings, specifications, estimates, shop drawings, and all other matters relative to the project.

6. Program And Design Criteria:

   6.1 Program: The program as delivered to the A/E shall be considered firm as to the scope of the project. Only the University has authority to alter the program. All changes to the Program shall be in writing.

   6.2 Design Criteria: All University improvements shall be planned, designed and constructed to be attractive, functional, and cost effective with an efficient utilization of space and energy. The design must be economical to construct, operate and maintain. Specific design considerations shall include, but are not limited to the following:

      a. Objective: It is the objective of the University to achieve effective life cycle costs by application of sound economic and technical analysis by the A/E.

      b. Building Design: Buildings shall be designed as sound structures of conventional shapes which avoid extraneous features and excessive perimeter walls. Special attention shall be given to the economics and interrelationship of architectural, structural, mechanical and electrical systems.

      c. University Design Standards: The design shall be performed in conformance with the latest editions of all University Architectural and Engineering Design Standards and Master Planning Documents in effect for the applicable University campus.

      d. The A/E shall incorporate the Campus Green Building Policies in the development of the project design. The A/E shall refer to the A/E Design Standards for the applicable campus.

7. Energy Conservation:

   7.1 Energy Conservation and Green Building Design: The A/E design shall be in accordance with the requirements of the University Architectural & Engineering Design Standards and good architectural and engineering practice to analyze and include all economically feasible or mandated energy conservation, sustainable, and green building design features, including those required for LEED Certification.

8. Green Building Policy:

   8.1 Green Building Coordinator:

      a. The primary design A/E consultant shall designate an individual to serve as the Green Building Coordinator (GBC) for the project. The GBC may be a member of the primary firm, a consulting individual, or a firm licensed to practice architecture or engineering in the State of Maryland.

      b. The GBC shall be responsible for facilitating and coordinating all related high performance green building activities and shall have ether performed previous LEED™ System certifications or shall adequately demonstrate the knowledge necessary to perform the work necessary to obtain a LEED™ Certification. The GBC must be approved by the State during the Architectural and Engineering (A/E) services selection process.

8.2 Green Building Pre-Design Meeting:

a. The design consultant's GBC shall conduct a green building pre-design meeting with all consultant team members, the University project manager, and members of the using Agency team to establish the direction and scope of green building principles, including construction and maintenance procedures, to be employed in this project to attain LEED™ certification.

b. These principles shall be recorded in writing as the "Green Building Plan" (GBP).

8.3 Green Building Plan (GBP):

a. Submit updated GBP for review at each design phase to track any changes, modifications, or additions.

b. Follow the LEED™ Green Building Rating System format.

c. Include all official LEED™ interpretations in this section.

d. The plan may be used as the framework for the official submission to the USGBC for certification.

8.4 The design of all projects required to be LEED™ Silver or higher certified shall employ an integrated design approach.

8.5 Green Building Operations and Maintenance Manual:

a. Develop and provide a "Green Building Operations and Maintenance Manual" outlining operation and maintenance procedures and schedules for all materials and systems that contribute to the LEED™ Sliver rating.

b. This manual shall be provided in addition to the usual submission of operating and maintenance manuals and shall focus on system maintenance required to keep green features operating as intended.

c. The intent is to provide system maintenance guidelines as opposed to procedures for maintaining individual pieces of equipment as provided in the equipment operating and maintenance manuals.

d. Submission Schedule:

(1) 50% Construction Documents (CD) phase for review

(2) 100% CD submission

(3) Closeout.

e. The design consultant shall identify and provide the University project manager with a written account of any conflicts between program requirements and other requirements of the State or the project program.

f. Schedule items shall be organized in a one-year calendar format.

g. Collect information throughout the project to simplify the effort during Closeout.

h. Examples of the types of information to be provided include, but are not limited to, the following:

(1) Recommendations on periodic duct inspection or cleaning as well as HVAC filter changes to maintain indoor air quality (IAQ).

(2) Recommended "green" cleaning products and materials and cleaning schedules for finishes (especially for "green materials") considering IAQ and extending the life of the material.

(3) Information on minimum paint reflectance for repainting interior area using reflected day lighting.

(4) A list of the low VOC paint, sealant and other products and the colors used including specific manufacturer's name and product description.

(5) Schedule recommendations for cleaning of glass and light shelves to maintain reflectance and light transmission for daily lighting systems.

(6) Operation recommendations for HVAC systems as described in the construction documents, approved ATC submittal, and confirmed in the commissioning report.

(7) A schedule for inspecting and cleaning walk-off mat recesses to maintain IAQ.

(8) Recommendations for eco-friendly pest control.

(9) Maintenance recommendations for green roof vegetation.

(10) Provide a list of local sources for recycling used material such as carpet, ceiling panels, and drywall.

(11) Provide a list of the recyclable materials used in the building.

(12) Provide a list of the manufacturers and suppliers of all "green" materials used in the building.

(13) Provide a list of sources of recycled paper products (toilet paper and paper towels) and eco-friendly cleaning products.

(14) Provide a simple list of instructions for building occupants emphasizing the use of the building's green features such as the purpose of walk-off mats and how to use composting toilets, as well as simple instructions for turning out lights, locations of recycling stations, use of individual HVAC controls, water use reduction methods and other green practices.

8.6 LEED Documentation:

a. The design consultant's GBC shall develop and submit all documentation necessary to the U.S. Green Building Council's LEED™ Program for certification of the project for the LEED™ Silver or higher rating.

b. Registration:

(1) Typically, the project shall be registered with LEED™ at the start of the design.

(2) All projects shall be registered under the University of Maryland's U.S. Green Building Council membership.

c. Submit final LEED™ certification documentation at construction completion.

d. Cost:

(1) Include the cost of registering the project with LEED™ as well as a reasonable cost for LEED™ interpretations and consultation in the consultant's price proposal.

e. Deliverables:

(1) Complete LEED™ submission package files with all relevant documentation

(2) Complete copy of the energy modeling software program and all data used to model the final building design and systems

(3) Submit data in a format that will allow the university to run simulations on the building and to conduct what-if scenarios with the building systems.

8.7 018113 Sustainable Design Requirements Specifications

a. Provide a separate specification section which calls attention to special construction issues related to high performance green buildings and the LEED™ rating.

b. Include requirements for construction materials, construction recycling, special demolition considerations, and potential special construction sequencing issues.

c. This section is in addition to the standard specification sections and is intended to clearly call these special issues to the attention of the contractor during the bidding phase.

8.8 Final Submissions:

a. LEED Projects:

(1) Final LEED™ Certification Submission, stamped and signed with A/E's license stamp

(2) Official LEED™ Certificate

(3) Final Green Building Plan

(4) Green Building Operations and Maintenance Manual.

b. Non-LEED Projects:

(1) Narrative report describing the high performance green elements of the projects.

(2) Use the LEED™ score sheet and provide a brief description for each available credit describing how that credit was addressed or an explanation of why it was not addressed.

9. Available Funds:

9.1 Design-to Budget: The project design-to budget, when established, is provided to the A/E during fee negotiations. This design-to budget is typically based on the available or expected construction funds for the program construction costs. It includes 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 design-to budget. The estimated construction cost of the A/E's design must not exceed the design-to budget throughout the design phases.

9.2 Exceeding the Design-to Budget: At any phase of design, if the A/E and/or CM determines that the program cannot be achieved within the design-to budget, the A/E or CM shall notify the University Project Manager in writing identifying the reasons for the additional cost, estimates of the additional cost and proposed alternatives that could be considered to bring the cost down to the design-to budget. Submissions of cost estimates that exceed the design-to budget, without proposed alternatives, will not be accepted by the University.

10. Coordination, Notification, And Correspondence:

10.1 Coordination: The University Project Manager assigned to the project will act as coordinator between the University representatives and the A/E.

10.2 Notification: The A/E shall coordinate with the University Project Manager well in advance to schedule all necessary meetings. The University Project Manager is responsible for notifying and scheduling all University representatives as needed. The University Project Manager will determine the location of all meetings.

10.3 Correspondence:

a. General: Throughout the project, all correspondence should be transmitted directly to the University Project Manager. Such information will be distributed as necessary by the University Project Manager within the University.

b. Design Submissions: The A/E is responsible for distributing drawings and specifications for review to the University Project Manager for distribution to all University representatives.

c. Project Number: Include the University Project Number on all drawings, specifications, contracts, shop drawings, transmittals and other such correspondence pertaining to the project.

10.4 Site Visit: The University Project Manager shall arrange site visits as requested.

11. Meeting Minutes:

11.1 Responsibility:

a. The A/E shall prepare agendas, chair the meetings, and prepare minutes of any and all conferences held relative to the project during the Schematic Design, Design Development and Construction Document Phases of the project.

11.2 Contents:

a. These minutes shall state all decisions reached and who made them. The original shall be addressed to the University Project Manager, with copies as required for all attendees and any other persons identified on the distributions list.

b. Minutes shall be distributed within five working days of the meeting.

11.3 Format of Minutes: Include the following information.

a. Cover Page:

(1) Project name

(2) UMB project number

(3) Design progress meeting number or other pertinent meeting description

(4) Time and date of meeting

(5) Project synopsis, including project start date and percent completion to date.

b. Statement of any items delaying the project

c. Old business

d. New business

e. Participants

f. Distribution list

g. Time and date of next meeting

12. Changes To The A/E Design Team:

12.1 A/E Design Team:

a. Once approved by the University, changes are not permitted on the design team unless written authorization is granted by UMB Construction and Facilities Strategic Acquisitions (CFSA)

12.2 A/E Team Changes:

a. The professional A/E team for the project shall be the same design team as stated in the A/E Technical Proposal unless a change is requested and approved in writing by the University in advance of any substitutions via the issuance of a contract amendment by UMB CFSA

12.3 A/E Design Team Release or Addition:

a. If it becomes necessary for a prime A/E firm to release a consultant firm or add a consultant firm to an approved design team, submit a written request and justification for this action to the University Project Manager.

b. Release: The request to release a consultant firm from the design team shall include the reasons why the firm is being released.

c. Addition: The request to add a consultant firm shall include information about the qualifications and experience of the proposed substitute firm.

d. Approval: When either a substitution or addition of a consultant firm is approved by the UMB CFSA the prime A/E firm will be notified in writing, authorizing the substitution or addition of a consultant firm.

e. Contract Modification: When a consultant firm is added to the approved A/E team, the UMB CFSA shall issue a contract modification to the prime A/E firm incorporating changes to the base contract.

12.4 Specialty Consultants – Independence Requirement:

a. Specialty Consultants, such as for telecommunications, building envelope, security, audio visual, and closed circuit television (CCTV), shall be independent and not employed as a representative of a system or equipment manufacturer intended for inclusion in the construction documents.

12.5 Sub-Consultant Contract Requirements: The A/E with whom the University has a direct contract shall negotiate the agreements with proposed sub-consultants so that the said sub-consultants are bound by the requirements of the A/E contract with the University and this manual.

13. Press Releases Policy

13.1 No A/E under contract with the University shall issue any press release or respond to any inquiries by any publication, including newspapers, concerning any University projects, without first clearing the text with the University Project Manager and obtaining written approval from the University.

14. Cost Estimates:

14.1 Budget Cost Estimate: Provide budget cost estimates as required by the A/E scope of work.

14.2 Construction Cost Estimate Submissions: Unless otherwise required by the project program, provide construction cost estimates at the following phases:

a. Concept Design Phase

b. Schematic Design Phase

c. Design Development Phase

14.3 Construction Cost Estimate Revisions:

a. We recommend developing professional detailed take-off estimates as soon as the drawings are sufficiently developed for realistic calculations.

b. Provide revision or restudy of the above estimates at no additional charge to the University when needed to keep the project within the budget, in coordination with value engineering efforts, or when original estimates are not realistic.

14.4 CM Construction Cost Estimate – A/E Requirements

a. Review: Review the 50% Construction Document estimates and any other estimates prepared and submitted by the construction manager.

b. Coordination:

(1) At start of design, confer with the CM to select the cost estimate format used by both parties

(2) Reconcile each estimate with the CM.

15. Value Engineering:

15.1 Definition: Value Engineering (VE) is an organized, systematic, and structured evaluation process used by a multidisciplinary team directed at analyzing the functions of systems, equipment, materials, and components of the building project for the purpose of achieving the essential functions at the lowest lifecycle cost consistent with required performance, quality, and safety. The focus is on improving value by identifying alternate design approaches to reliably accomplish each function in the least cost manner without sacrifice to performance, quality, and safety.

15.2 Implementation:

a. Perform value engineering at the completion of the Schematic Design and Design Development Phases for every project.

b. Additional VE efforts may be used as part of an effort to reduce the reconciled estimated construction cost to within the identified design-to budget.

c. The CM will compare the reconciled construction cost to the identified design-to budget at the completion of each subsequent Design Phase. The VE Procedure will continue if the cost exceeds the budget by more than 5 percent. The

University Project Manager will schedule additional VE meetings with the A/E and all other parties.

15.3 Value Engineering Procedure:

a. The VE Procedure shall be a collaborative effort by representatives of the University, the A/E Team, and the construction manager.

b. Identify all potential alternative design solutions, systems, and/or materials to increase value and reduce construction cost.

c. Analyze each potential alternative for applicability to the project.

15.4 A/E Responsibility:

a. Each member of the design team shall review the estimated cost of each line item in their respective disciplines and recommend alternative design solutions, systems, and/or materials to the University for consideration as potential cost reduction opportunities.

16. Life Cycle Cost Accounting

16.1 Life Cycle Cost Analysis:

a. A life cycle cost analysis (LCCA) shall be utilized for the evaluation and comparison of design alternatives identified during the Schematic Design Phase and shall be performed concurrent with the Design Development Phase.

b. See UMB Life Cycle Cost Analysis Procedure Manual for additional LCCA Requirements.

17. Codes, Regulations And Standards:

17.1 Develop construction documents in accordance with applicable codes, regulations and standards.

17.2 State Model Performance Codes: Latest adopted edition of Maryland's State Model Performance Codes for State Buildings,

a. the latest edition of the International Building Code (IBC) with modifications,

b. latest edition of the International Energy Conservation Code (IECC), and

c. latest edition of the Maryland Accessibility Code (MAC).

17.3 Fire and Life Safety Codes: Latest edition adopted of the State Fire Prevention Code (COMAR 29.06.01) which includes NFPA 101 Life Safety Code and references the NFPA National Fire Codes, latest edition.

a. Fire Marshal Interpretation: The A/E shall request a meeting early in the design process (no later than the DD Phase) with the Fire Marshall assigned to the University Campus where the work will be performed to discuss all relevant design issues and to obtain the Fire Marshall's interpretation of the applicable fire codes. (Resident designee for the State Fire Marshall)

17.4 Sprinkler Systems: Sprinkler Systems installed in new construction projects shall be in accordance with Public Safety, Title 9 of the Annotated Code of Maryland.

17.5 Accessibility: Latest adopted edition of the Regulations Governing Construction of Facilities for the Handicapped by the State of Maryland (COMAR 05.02.02),

a. inclusive of the Americans with Disabilities Act (ADA), Public Law 101-336, U.S. Dept. of Justice, 1991, specifications for making buildings accessible to and usable by American National Standard for Buildings and Facilities Providing Accessibility and Usability for Physically Handicapped People ANSI A117.1 - 1986,

b. Fair Housing Amendments Act (1988) or other Federal regulations.

c. Where the federal law is more restrictive than COMAR, federal law shall control.

17.6 Sediment Control and Storm Water Management: 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.

a. Chesapeake Bay Critical Area Criteria (COMAR Title 27).

b. Nontidal Wetlands (COMAR 26.17.04 & 26.23)

c. Wetlands (COMAR 26.24)

d. Reforestation Requirements (Article-Natural Resources; Sections 5-103 & 5-501 through 5-509 & 5-1601 through 5-1612; Annotated Code of Maryland and COMAR 08.19.04.)

17.7 Flood Plain: Management Regulations & Permits, Dept. of Natural Resources (COMAR 26.17.04), latest edition.

17.8 Water Resources: Other water resources rules and regulations of procedure as issued by the Dept. of the Environment (COMAR 26.08), latest edition.

17.9 Food Preparation:

a. Latest edition of Maryland State Department of Health Regulations for Eating and Drinking Establishments (COMAR 10.15.03) applies whenever food preparation or serving areas are included in the project.

b. These regulations shall be interpreted by the Maryland Dept. of Health and Mental Hygiene.

17.10 Elevators: Regulations Governing elevators, dumbwaiters, escalators and moving walks ANSI/ASME A17.1 or the latest edition, and other requirements of the State Department of Licensing and Regulation, Division of Labor and Industry (COMAR 09.12.81 through 09.12.83)

17.11 Lead Exposure:

a. Maryland Occupational Safety and Health Standards for occupational exposure to lead in construction work.

b. These regulations apply to occupational exposure to lead by every employee in construction work. (Occupational Safety and Health Standard 29 CFR 1926.62 with Maryland Amendments and COMAR 09.12.31)

17.12 Hazardous Waste: Maryland State Department of the Environment for disposal of controlled hazardous substances. These regulations establish standards for generators of hazardous waste. (COMAR 26.13.04.01)

17.13 Mechanical and Electrical Codes: Latest adopted editions of the IPC -International Plumbing Code , IMC – International Mechanical Code, National Electrical Code (NEC), and the National Fuel Gas Code (NFGC) ANSI Z223.1, NFPA 54.

17.14 Mechanical and Electrical Standards and Regulations: The following Standards and Regulations shall be referenced or implemented for design considerations not covered by the listed codes.

a. ASHRAE Standards,

b. Procedures for Implementation of Energy Conservation,

c. Maryland Department of Health Food Service Requirements,

d. SMACNA,

e. ASME,

f. Institute of Electrical and Electronics Engineers (IEEE),

g. Edison Electric Institute (EEI),

h. Electronic Industries Application (EIA),

i. Insulated Power Cable Engineers Association (IPCEA), and Certified Ballast Manufacturers Association (CBM),

j. American National Standards Institute (ANSI),

k. American Society of Mechanical Engineers (ASME),

l. American Concrete Institute (ACI),

m. Illuminating Engineering Society of North America (IES),

n. Rules and regulations of the Baltimore Gas and Electric Company,

o. ANSI/ASME Elevators and Escalators Safety Code A17.1 and

p. National Electrical Manufacturers Association (NEMA).

17.15 Test Laboratories:

a. Underwriters Laboratories, Inc. (UL), and/or Canadian Testing Laboratories (CTL).

b. Under certain conditions, with the written permission of the UMB electrical engineer, CTL may be acceptable.

17.16 Compliance with all regulations of local authorities having jurisdiction, and service district utility companies (electric, water, sewage) for work located on and off campus.

17.17 Maryland Historical Trust:

a. When a project includes Historic Lands and Structures, the project shall be in compliance with Article 83B, Sections 5-617 and 5-618 of the Annotated Code of Maryland. The Maryland Historical Trust (MHT) shall review capital projects affecting historic properties.

b. Notification:

(1) Early in the Design Phase (SD Phase) of the Project the University's Project Manager is responsible for notifying the MHT of the project.

(2) At that time, the University Project Manager shall schedule the necessary review meetings with MHT and the A/E. Other review groups may be included as indicated below:

a) Design Advisory Panel: For Projects Located in Baltimore City Involving Historic Structures, the Design Advisory Panel (DAP) shall also be invited to review project documents.

c. Presentations:

(1) The A/E shall be responsible for presenting the required project documents to the MHT for their review and comment.

d. MHT Assessment:

(1) Based on an Initial Assessment by the Maryland Historical Trust, a Phase I Archaeological Survey may be required.

(2) Findings during a Phase I Investigation may require a Phase II Archaeological Investigation.

18. Measurement Of Building Areas, Volume And Efficiency Factors:

18.1 Gross Area: The gross area of buildings shall be measured as follows:

a. Measurement: Measure from outside face of exterior wall to outside face of exterior wall.

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. (six (6) feet or more high)

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

(5) Mechanical space (six (6) feet or more high)

(6) Penthouse (stair, elevator, equipment, etc. six (6) feet or more high)

(7) Elevator machine room floor

(8) Fly gallery gridiron

(9) Pipe tunnels (six (6) feet or more high) under building and/or within ten (10) feet.

c. Half Areas: Include one-half (0.5) of the gross area of:

(1) Paved porch/terrace with roof

(2) Exterior covered balcony

(3) Entrance canopy over paving

(4) Areaways (six feet or more)

(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 overheads (no paved walkway beneath)

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

18.2 Net Area: The net area of buildings is defined and measured as follows:

a. Net Assignable Area: This is the sum of all floor areas of a building allotted to an occupant, including types of space functionally usable by an occupant. Measurement is between inner faces of walls and partitions or imaginary dividing lines of open areas.

(1) Examples:

a) Offices,
b) classrooms,
c) mail rooms,
d) conference rooms,
e) libraries,
f) file rooms,
g) storage pertaining to an occupant or program (not custodial or general storage),
h) seminar rooms,
i) laboratories (including balance, supply and preparation rooms, etc.),
j) lecture rooms,
k) auditoriums (including storage, dressing and preparation rooms, stage, etc.),
l) toilet and locker rooms (including shower rooms)

1) only when they are private and directly supporting a room function (e.g., for a patients room, examination room, gymnasium, kitchen, actor's dressing areas, student bedrooms or houseparent's apartment, etc.),

m) lounges (academic, dormitory, faculty, patient, etc.),
n) kitchen (including food storage areas, dining rooms, etc.),
o) athletic courts,
p) swimming pool,
q) dance and wrestling rooms,
r) rifle range,
s) library reading and stack areas (including processing, study, audio, micro-film and typing rooms, but excluding "phantom" corridors), etc.

1) "Phantom" corridors mean a circulation space not specifically defined by fixed or movable walls.

b. Non-assignable (supporting) Area: This is the total of all areas remaining after net assignable areas have been 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 store room, locker room, toilet and shower room, shop, etc.

(2) Circulation: Required for physical access to some subdivision or space, whether or not enclosed by partitions, e.g., corridors (access, public, service, including "phantom" corridors for large unpartitioned 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: To house mechanical 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.

18.3 Gross Volume:

a. Full Volumes: (for fully enclosed areas) For each portion of the building, multiply the gross area by the average height of that portion from the underside of its base floor slab (or underside of crawl space floor slab or top or ground if no slab exists) to the top of the finished roof. The height of enclosed space beneath plazas, etc. shall 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 a building, multiply one-half (1/2) of the gross area by the average height as follows:

(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 the base slab to the top of the enclosure walls or grating.

(5) Unenclosed Space Beneath Building (Stilt Design): From the top of the slab to underside of the ceiling, if there is any enclosed floor or crawl space beneath the open area. From the underside of the slab to the underside of the ceiling, it there is no enclosed floor or crawl space beneath the open area.

18.4 Tabulation: Tabulation of areas, volume and efficiency shall be prepared and furnished by the A/E as follows:

a. Itemize: Itemize tabulations for the following:

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

(2) Net Assignable Areas: Room by room.

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

(4) Efficiency Factors: Divide the gross area by the net assignable area.

a) Example: 49,209 SF gross area divided by 33,705 SF net assignable area = 1.46.

(5) Percent Efficient: Divide the net assignable area by the gross area and multiply by 100.

a) Example: 33,705 SF net assignable area divided by 49,209 SF gross area, multiplied by 100 = 68.5% efficient.

b. Building Efficiency Factors (Guidelines):

(1) Reference Facility Program Manual DBM/DGS Latest Edition Appendix V – Building Efficiency Factors – current edition May 2023.

c. The following criteria; for building efficiency factors has been adopted from the DGS Procedure Manual for Professional Services, July, 2003 Edition:

Building Type	Efficiency Factor Range	Mid-Point
Administration / Office	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%)	1.77 (56%)
Maintenance Shop	1.25 (80%) - 1.35 (75%)	1.30 (77%)

18.5 Submission of Areas, Volume and Efficiency:

a. Requirements: Submissions are required for all new buildings and additions: they may also be required for alterations and renovations.

b. Forms: Use UMB Summary-Areas, Volume & Efficiency Forms

c. Content: Submissions at each phase shall show not only the tabulations of that phase, but shall also show the tabulations of program and all prior phases, based on approved plans of the prior phases, on the same form.

d. Copies: Submit in triplicate to the University's Project Manager.

18.6 Submission Schedule:

a. The A/E shall submit current detailed tabulations of areas, volume and efficiency at the time of submission of plans for review, at each phase of submission of plans, initially, and at each submission of revised plans as follows:

(1) Concept Design Phase: On each architectural floor plan, the actual net assignable and the programmed net assignable area shall be noted for each programmed space.

(2) Schematic Design Phase: On each architectural floor plan, the actual net assignable and the programmed net assignable area shall be noted for each programmed space.

(3) Design Development Phase: On each architectural floor plan, the actual net assignable and the programmed net assignable area shall be noted for each programmed space.

(4) Construction Document Phases (50%, 95% and100%): On each architectural floor plan, the actual net assignable and the programmed net assignable area shall be noted for each programmed space.

(5) Other: As requested.

19. Sub-Surface Exploration And Evaluation:

19.1 Requirements:

a. The A/E shall plan and perform the subsurface exploration and evaluation and procure the information relative to the site and subsurface conditions relevant to the project requirements.

b. The data procured shall be adequate, correct and reasonably complete for the intended purposes of planning, design, quantity, and cost estimating, and determining the construction feasibility of the project.

c. The A/E shall make available the procured data relating to the site and subsurface information and evaluation to the University Project Manager prior to starting their functions of design, review, bidding, construction and inspection respectively.

19.2 Geotechnical Engineer:

a. The work of subsurface exploration and evaluation shall be performed under the direct guidance, direction, and control of the geotechnical engineer.

b. All submittals to the University relating to and including the results of the subsurface exploration, evaluation and recommendations shall bear the seal of the geotechnical engineer.

19.3 Exploratory Program:

a. During the Schematic Design Phase, submit the proposed Exploratory Program to the University Project Manager for review and approval.

b. The Exploratory Program shall include, but not be limited to the following:

(1) Scope: Understanding of the project and design considerations.

(2) Boring Plan: A layout of test borings/pits with reference to existing physical features and proposed locations of structures. Site plan of the project showing location of structures, grading, storm water management areas, and utilities may preferably be used to show the test locations.

(3) Program Description: Number, type, and estimated depths of test borings/pits or other investigative systems.

(4) Estimated Quantities: Estimated linear feet of earth borings and rock coring and types and estimated quantities of laboratory and field tests.

(5) Estimated Cost: Estimated cost for the subsurface exploration at the billing unit prices.

19.4 Utility Verification:

a. After approval of the Exploratory Program by the UMB Project Manager, the A/E shall conduct the subsurface investigation and evaluation.

b. Prior to starting field operations, A/E shall verify the presence and location of underground utilities with Miss Utility, Private Utility Locators, or University Utility Locators if applicable.

19.5 Geotechnical Report:

a. Upon completion of subsurface exploration and evaluation, submit the Geotechnical Report and any additional results, reports, supplements, revisions, modifications or clarifications developed subsequent to the original report.

b. The report shall address each of the following, as a minimum:

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

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

(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.

(4) Logs: Boring and test pit logs, with soil/ rock description, classification, and depth of character of fill, ground water observations made during the exploration.

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

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

(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. Provide recommendation's for corrections in case of questionable stability.

(8) Foundation Analyses: Foundation analyses and recommendations including the presentation of risk and cost effectiveness considerations.

(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.

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

(11) Site Evaluation: Relating to the 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 during construction. Effects of seasonal variations shall be noted.

(12) Potential Problems: Identify problems which may affect the cost of construction and/or cause delays, and furnish construction precautions and recommendations. Identify inspection, testing and quality control requirements during the construction.

(13) Storm Water Management Recommendations: Identify the type of storm water management facilities suitable for the site and design parameters to be used by site engineer for systems sizing.

20. Sediment And Erosion Control, And Storm Water Management:

20.1 Requirements:

a. It is required that review and approval be granted by the Maryland Department of the Environment (MDE), Sediment and Storm Water Administration (COMAR 26.17.01 and 26.17.02), for all projects in which existing earth surfaces are disturbed in the execution of the project or which on-site storm water management is required, to current limitations established by MDE.

b. Should a flooding hazard be present which cannot be alleviated by natural features, design controls and retention measures if required.

c. The A/E is responsible for submitting plans, specifications and computations with the Design Development and Construction Document submittals directly to MDE for review.

d. One copy of the transmittal letter with MDE’s signature acknowledging receipt shall be submitted to the University as part of DD submission to the University Project Manager.

20.2 Program:

a. Provide sediment and erosion control, and storm water management programs at all design phase submissions.

b. The final storm water management, sediment and erosion control plan(s) shall 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 Storm Water Administration.

20.3 Contract Documents:

a. Contract documents and storm water management construction shall be in accordance with the Sediment Control Regulations approved and adopted by the MDE.

b. No changes in these measures as shown in the contract documents may be approved by any person or agency other then MDE.

c. The A/E shall be responsible for revising contract documents for any changes required by MDE.

d. Certification: Contract drawings submitted to MDE for approval must contain both Engineer's and Developer's Certifications.

20.4 Reference Manual: Standards and Specifications for Soil Erosion and Sediment Control, latest edition can be obtained at:

a. https://mde.maryland.gov/programs/water/StormwaterManagementProgram/Pages/erosionsedimentcontrol.aspx

b. Maryland Department of the Environment, 1800 Washington Boulevard, Baltimore, Maryland 21230

21. Water And Sanitary Systems:

21.1 Requirements:

a. Comply with all the requirements of COMAR Title 09, Department of Licensing & Regulation, Subtitle 20, Board of Commissioners of Practical Plumbing and COMAR Title 26, Department of the Environment, Subtitle 04, Regulation of Water Supply, Sewage Disposal, and Solid Waste.

21.2 State Permits:

a. Obtain a Water & Sewage Construction Permit from the Applications and Permits Section, Water Management Administration, Department of the Environment in the following cases:

(1) When the project requires connections to water or sewer in excess of four hundred (400) linear feet and/or a new storage or treatment facility other than septic systems that discharge underground

21.3 Swimming Pools:

a. Where the project requires a design for a swimming pool, comply with all requirements of COMAR 10.17.01.

21.4 Water Appropriation:

a. When the project requires the withdrawal of either ground water or surface water, on either a temporary or permanent basis, the A/E shall be responsible for

complying with all permitting requirements and shall comply with COMAR 26.17.06, "Water Appropriation or Use".

21.5 Water Discharge:

a. When the project requires the discharge of water, on either a temporary or permanent basis, the A/E shall be responsible for complying with all necessary permits to satisfy the requirements of the National Pollution Discharge Elimination System (NPDES) established under the Federal Act B in accordance with the provisions and conditions of COMAR 26.08.01 – 26.08.04, "Water Pollution".

21.6 Utility Connections:

a. Application and Approvals: The A/E shall be responsible for making application to and obtaining from any and all local city and State regulatory agencies, those approvals necessary to make utility connections to available public, private or municipal water and sewer facilities to serve the site or to construct the necessary on-site sanitary facilities to support the building project in its entirety.

b. Utility Approval: Obtain the necessary approvals for connection from the utility owners. The A/E is responsible for coordination of the actual utility connection with the contractor's work schedule.

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

d. Payment:

(1) The University is responsible for actual payment of any local water and sewer charges or connection fees unless otherwise required.

(2) Direct the utility owner to invoice the University for said charges unless otherwise required, and copy the University Project Manager on all correspondence and telephone conference reports.

22. Presentation To The Architectural Review Board (ARB):

22.1 Architectural Review Board

a. The State Board of Architectural Review is in the Maryland Department of General Services.

b. There are seven board members who are appointed to four-year terms by the Governor upon recommendation of the Secretary of General Services and with Senate advice and consent.

c. Architectural designs and drawings for new State buildings or for the reconstruction or repair of existing ones are reviewed by the Board. The Board makes recommendations on how to make facilities functional and practical.

22.2 Requirements: The A/E is required to make presentations to the Board of Architectural Review at the Schematic/ Design Development Phase in connection with new buildings, building additions, and major renovations that alter the building exterior.

22.3 Schematic Design Presentation:

a. Schedule:

(1) The University Project Manager will schedule any of the A/E presentations before the Board of Architectural Review.

(2) The A/E will be notified of date and time of the board meeting.

(3) The A/E will be advised of the time limit for the presentation to the board.

b. Presentation:

(1) Provide an explanation of the program, the schematic design of the building, the site, and a simple block model and cost of the project.

(2) The Board of Architectural Review will consider this presentation as the Schematic Design Phase regardless of the state of development and shall make its comments and recommendations accordingly.

c. Considerations:

(1) The board will consider all factors affecting the project, including program, setting, adaptability of the master plan, and the architectural design.

(2) The board, in its comments and recommendations, will evaluate the functional and aesthetic aspects of the project design, and consider whether the project can be built economically, consistent with sound construction and minimum maintenance.

d. Recommendations:

(1) After considering the submission, the board shall discuss with the A/E the tentative recommendations of the board.

(2) The A/E will be given the opportunity to reply to the board's comments.

(3) The Board shall develop the final recommendation in the presence of the A/E.

(4) The A/E and University will take the ARB comments and recommendations into consideration at the Design Development Phase and respond as necessary.

(5) The University will then inform the ARB in writing of the University's intended design direction.

22.4 Minutes: The Board supplies written minutes which are sent to University.

22.5 Notice to Proceed:

a. The University Project Manager will advise the A/E and instruct them as to how they are to proceed.

23. A/E Responsibility for Contract Documents:

23.1 The approval of contract documents, which includes plans and specifications, by the University in no way relieves the A/E of their responsibility for:

a. The accuracy and completeness of such documents,

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

c. Compliance with standard of care governing the A/E performance.

24. Certification Of Contract Documents:

24.1 Include a Professional Certification on each drawing in the title block:

a. Professional Certifications: I certify that these documents were prepared or approved by me, and that I am a duly licensed architect/professional engineer under the laws of the State of Maryland, License Number, Expiration Date

24.2 Seal and Signature: All contract documents, drawings, specifications, etc., shall bear the seal and signature of the primary A/E and the seal and signature of each consultant to the primary A/E on drawings and specifications within their area of responsibility.

25. Payments For Professional Services:

25.1 Full and/or Partial Contract:

a. When the A/E has a full and/or partial services contract, payment requests shall be made per the A/E contract documents.

b. When the A/E has extra work on a not to exceed basis, payment requests shall be made in accordance with the A/E contract documents.

25.2 Payment Request: Bills may be presented at the beginning of each month covering the costs of service during the previous month. Furnish original and one copy.

25.3 Required Services: All services required under the A/E agreement must be provided prior to the University's approval of each phase as well as prior to the University's approval of A/E invoices for payment of applicable fees.

25.4 Final Payment:

a. Final payment of the A/E's Construction Administration Phase fee shall only be payable upon submission and University acceptance of the Record Drawings and all other remaining outstanding documentation or services.

b. Final payment of the A/E's Post construction Phase fee shall be payable upon submission of the Post Construction report.

Chapter Two - Pre-Construction Procedures

1. Pre-Design Conference:

1.1 Purpose: To initiate the project.

a. As soon as practicable after the A/E's contract with the University has been fully executed the University Project Manager will call a conference to initiate the project.

b. This meeting will include the A/E and its consultants, a representative(s) of the client, the University Design Review Team, and the University Project Manager.

1.2 Topics: At this meeting, the following will be furnished, made available, and/or reviewed with the A/E:

a. University Project Number

b. Program: The approved Project Program, if one was prepared for the project.

c. Hazardous Materials: Review the statements in the approved Project Program and/or other information addressing the presence or absence of lead-based paint, asbestos, PCB, and/or other materials that necessitate restricted handling.

d. Project Budget: Review the design-to budget for the project.

e. Project Drawings: Review project drawing distribution.

f. University Personnel: The names and titles of the University personnel involved with the project.

g. Available Information: All site, utility, topographic and master plan information as may be available (if additional information is required, it must be requested in writing by the A/E).

h. Site Visit:

(1) Date and authorization for site visit.

(2) The A/E must visit the site of the project and familiarize themselves fully with the use, operational conditions, and limitations of said site and perform sufficient field survey or obtain measurements and other information relative to existing conditions and improvements as provided in the project program.

i. Permits or other Regulatory/Municipal Requirements: Where required, include applicable Federal, State, or Local permits and/or requirements for MDE, BGE, Vicinity Energy, State Fire Marshal, NIH, or Baltimore City and local jurisdictions or other utilities.

j. Project Service Schedule: The project service schedule for all applicable A/E services shall be developed

k. Additional Information: Determine any additional information which the A/E may need to complete the project.

l. Special Policies: Any special University policies applicable to each phase of the project.

m. Available Data:

(1) In new construction and renovation, alteration and addition projects, such data as may be available on the existing facilities will be identified to the A/E.

(2) The A/E will be given access to the University Archive FTP site for the purpose of identifying and reviewing available documentation.

(3) The A/E must visit the site of the project and familiarize themselves fully with the use, operational conditions, and limitations of said site and perform sufficient field survey or obtain measurements and other information relative to existing conditions and improvements as provided in the project program.

n. Project Design Review Meetings:

(1) During the preparation of each Design Phase a series of design review meetings will be held with the University Project Manager, University Design Review Team, and the designated person(s) representing the users.

(2) At the completion of each Design Phase, a Review Conference for each Design Phase will be coordinated by the University Project Manager to review the progress of the project and provide comments to the A/E Design Team.

(3) Meetings will be scheduled at the conclusion of each design phase and as needed.

(4) The A/E shall prepare and distribute minutes of these meetings to the University Project Manager.

o. Cost Estimates:

(1) Budget Cost Estimates: Provide a budget cost estimate for all programs, studies, and space planning reports as required by the A/E scope of work.

(2) Construction Cost Estimates: A construction cost estimate shall be fully developed for each design phase. Total project cost figures shall include the costs escalated up to the anticipated midpoint of construction. The A/E shall not design for, or contemplate, funds being available in excess of those identified as the design-to budget by the University.

p. University Standards and Procedures References:

(1) University Procedure Manual for Professional Services

(2) University A/E Design Standards

(3) University Master Specifications

(4) Project Forms:

a) Summary of Areas-Volume-Efficiency,
b) Tabulation of Gross Area,
c) Summary of Net Assignable Areas,
d) Building Code Study Data,
e) Project Description Sheets with Instructions,
f) Request for Construction Document Change Form,
g) Engineer’s and Developer’s Certification Form,

(5) UMB Web Site: https://www.umaryland.edu/designandconstruction/

a) UMB Master Specifications,
b) A/E Design Standards Manual,
c) A/E Procedures Manual,
d) CAD Standard Drawing Templates and Cover Sheets,
e) CAD Detail Files
f) Project Forms

2. Project Service Schedule:

2.1 The project service schedule for all applicable A/E services shall include the following as a minimum:

2.2 Programming , Study and Interior Design

a. Capital Project Program - Part I:

(1) Meetings with the clients representatives

(2) A/E Submission

(3) University Review

(4) Meetings with A/E

(5) Final Submission

b. Capital Project Program - Part II:

(1) Meetings with the clients representatives

(2) A/E Submission

(3) University Review

(4) Meetings with A/E

(5) Final Submission

c. Feasibility Study:

(1) Meetings with the clients representatives

(2) A/E Submission

(3) University Review

(4) Meetings with A/E

(5) Final Submission

d. Space Planning:

(1) Meetings with the clients representatives

(2) A/E Submission

(3) University Review

(4) Meetings with A/E

(5) Final Submission

e. Engineering Study:

(1) Meetings with the clients representatives

(2) A/E Submission

(3) University Review

(4) Meetings with A/E

(5) Final Submission

f. Interior Design:

(1) Meetings with the clients representatives

(2) A/E Submission

(3) University Review

(4) Meetings with A/E

(5) Final Submission

2.3 Design Phase Services:

a. Concept Design Phase: Included when required by the Request for Proposal (RFP).

(1) Program Verification Phase and Meetings

(2) A/E Submission

(3) University Review

(4) Design Meetings with A/E

(5) Meetings with A/E and other parties to review cost estimate, and conduct Value Engineering sessions as needed.

b. Schematic Design Phase:

(1) Program Verification Phase and Meetings. When the RFP requires a Concept Design Phase, the Program Verification shall be included in that phase.

(2) A/E Submission

(3) University Review

(4) Design Review Meetings with A/E

(5) Meetings with A/E and other parties to review cost estimate, and conduct Value Engineering sessions as needed.

c. Design Development Phase:

(1) A/E Submission

(2) University Review

(3) Design Review Meetings with A/E

(4) Meetings with A/E and other parties to review cost estimate, and conduct Value Engineering sessions as needed.

2.4 Construction Documents Phase

a. 50% CD

(1) A/E Submission

(2) University Review

(3) Design Review Meetings with A/E

(4) Meetings with A/E and other parties to review cost estimate, and conduct Value Engineering sessions as needed.

b. 95% CD

(1) Submission

(2) University Review

(3) Design Review Meetings with A/E

(4) Meetings with A/E and other parties to review cost estimate, and conduct Value Engineering sessions as neede

c. 100% CD

(1) Submission

(2) University Review

(3) Design Review Meetings with A/E

(4) Meetings with A/E and other parties to review cost estimate, and conduct Value Engineering sessions as neede

2.5 Construction Phase

a. Bidding Support

b. Construction Administration

c. Post Construction Survey

3. Design Review –

3.1 Response to Comments:

a. Provide a written response to the University review, addressing each comment individually.

3.2 Project Design Review Meetings:

a. During the preparation of each Design Phase a series of design review meetings will be held with the University Project Manager, University Design Review Team, and the designated person(s) representing the users.

b. At the completion of each Design Phase a Review Conference for each Design Phase will be coordinated by the University Project Manager to review the progress of the project and provide comments to the A/E Design Team.

c. Meetings will be scheduled at the conclusion of each design phase and as needed.

d. The A/E shall prepare and distribute minutes of these meetings to the University Project Manager

Chapter Three - General Design Document Requirements

1. Responsibility

   1.1 Architect/Engineer (A/E) :

   a. The A/E is responsible for all aspects of the designs produced by the prime A/E firm and sub-consultant teams including but not limited to the verification and accuracy of all floor plans either created by the A/E or supplied by the University.

   b. When electronic files of existing buildings are supplied by the University for use by the design team, the A/E is responsible for verifying and updating the plans to ensure they are correct. Inaccurate plans are not acceptable.

   c. The A/E is responsible for coordination between disciplines during all phases of the design process. Address coordination issues identified during review by all appropriate disciplines and correct all issues in the next submission.

   d. The A/E is responsible for preparing the Division 01 specification sections.

2. Sign and Seal Drawings:

   2.1 Each consultant shall sign and seal a complete set of 100% bid documents for their discipline. Provide digital signature signed and sealed PDF drawing files.

3. Number of Paper Submission Sets:

   3.1 Prior to each submission, coordinate with the UMB Project Manager for required number of physical bound drawings and specifications in full or half size.

4. Digital Drawing Files:

   4.1 Provide the following:

   a. Design Submissions:

   (1) Provide PDF files for each submission

   (2) Bid Set: Provide a complete set of CAD files and PDF files for the 50 Bid document submissions. Bid set shall be electronically signed and sealed.

   b. Construction Administration Submissions: Provide updated PDF files as necessary during bidding and construction to incorporate any addenda and drawing changes to the construction documents.

   c. Record Drawing Submission: Provide a complete set of CAD files and PDF files of record drawings. Provide record final Revit model if one was generated for the project. Include all drawings for each discipline with all changes from the original bid set and all contractors as-built mark ups.

   d. File Submission Requirements: Electronic file requirements are listed in the University Architectural and Engineering Design Standards latest edition of the applicable campus

5. PDF Bookmarks

   5.1 Comply with requirements in UMB Standard Bookmarks for A/E Submissions.

6. Record Files

6.1 Provide a complete set of record files with the Record Drawing submission.

a. Include:

(1) Scopes of work

(2) Project specifications DOC and PDF files

(3) Cost estimates

(4) Studies

(5) A/E calculations

(6) Building and/or system analysis

(7) VE documentation, produced by the A/E team

7. Drawing Organization

7.1 CAD Drawings: Produce CAD (Computer-Aided Design)contract documents.

7.2 Standard Cover Sheets and Drawing Templates:

a. For UMB Projects use Standard Cover Sheets and Drawing Templates

b. For projects on non UMB Campuses use Cover Sheets and Drawing Templates as directed by UMB-PM.

c. Document all revisions to the bid drawings on full size sheets.

7.3 University Project Name: Show University Project number, building number, and Project Name in the drawing bottom right hand corner

7.4 Dates: Show submission dates on all drawings. After Bid Phase, show revision dates when applicable.

7.5 Drawing Scales:

a. Floor Plans, Elevations and Sections : 1/8” = 1’-0”

b. Partial floor plans: ¼” = 1’-0”

(1) toilet rooms,

(2) class rooms,

(3) mechanical equipment rooms,

(4) electrical equipment rooms,

(5) other specifically identified plans.

7.6 Graphic Scales:

a. Show a graphic scale on drawings of plans, details, sections, or elevations. If elements of different scales are on the same sheet, provide a graphic scale for each.

7.7 Key Plan: Provide a key plan for any partial floor plan drawing. A key plan is not required for a complete floor drawing.

7.8 Architectural and Engineering Data:

a. Architectural:

(1) Project Gross Area in square feet

(2) Net Assignable Area in net square feet.

(3) Code analysis:

a) list data for all applicable code references and COMAR References ,
b) federal accessibility standards,
c) building use/ construction classifications,
d) fire resistance ratings for

1) major building components,
2) all protected vertical openings,
3) all unprotected vertical openings,

e) fire protection systems,
f) maximum travel distances and dead end corridors with automatic sprinklers,
g) exit and exit access widths for sprinklered buildings,
h) special locking arrangements (if applicable),
i) roof access,
j) elevators,
k) smoke detection,
l) means of egress.

b. Structural:

(1) Design dead load, partition load and live load for each and every area of the building,

(2) Snow loads for roof areas

(3) Include allowances for additional loads due to mechanical equipment, piping, ceilings, and similar permanent installations where applicable.

(4) Design bearing value for all spread footings and caissons,

(5) Bearing load for all piles.

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

(7) Steel yield point strength for all reinforcing and structural steel.

c. Mechanical:

(1) Heating:

a) Total building heat loss (BTU/h)
b) Steam heating load (steam pounds/ hr)
c) ventilation load (BTU/h)
d) domestic hot water load (BTU)
e) indoor/outdoor temperature and humidity design conditions.
f) building gas consumption (cubic-feet / hr).

(2) Cooling:

a) Total building heat load (BTU/h)
b) Ventilation load (BTU/h) per hour,
c) indoor/outdoor temperature and humidity design conditions.

d. Plumbing:

(1) Total plumbing fixture unit counts for

a) sanitary,
b) domestic cold water,
c) domestic hot water

(2) domestic hot water consumption maximum demand (gph),

(3) maximum gas consumption for laboratory use. (cubic-feet/hr)

e. Electrical:

(1) Estimated load summary of the demand and connected electrical load for the normal power distribution system, with breakdowns for:

a) Lighting system,
b) Receptacles,
c) HVAC systems,
d) Other system identified by program

(2) Estimated load summary of the demand and connected electrical load for the emergency power distribution system, with breakdowns for:

a) loads for the emergency system,
b) legally required standby system
c) optional standby system

(3) Type and size of stand-by power unit(s) and its source.

f. Low Voltage Special Systems:

(1) System description and features for all special systems, including

a) telecommunications,
b) security,
c) fire alarm,
d) metering,
e) audio visual
f) CCTV.

7.9 Cover Sheet: Include:

a. University Logo

b. Name of Project

c. University Project Number

d. A/E Project Numbers

e. Location (full address as directed by the University)

f. Board of Public Works-Governor, Comptroller, Treasurer

g. Maryland General Assembly-Senate President, House Speaker

h. Names, addresses and phone numbers of all consulting firms

i. Sheet Index: Use *University Standard Sheet Numbers and Sheet Titles* for all projects

7.10 Title Block Information and Format

a. A/E Consultant Block: List each consultant, including title, address, telephone, and fax numbers.

b. Registration/Stamp Block: Architects' and engineers' digital signature and seal. by discipline

c. Project Title Block:

(1) University project number,

(2) A/E project number,

(3) Date

d. Sheet Title Block: Such as FIRST FLOOR PLAN, FINISH SCHEDULE,

e. Revision Block: List each revision for each drawing indicating revision number, date of revision and brief description.

f. Sheet Number Block:

(1) Sheet numbers shall be comprised of a discipline specific letter prefix followed by a three (3) digit number without being separated by spaces, periods, or dashes.

(2) Divide the sheets into groups according to disciplines

(3) Reference UMB Design Standards for construction document sheet numbers and order

g. Location of the Project: University name

h. Graphic Drawing Scale: such as 1/8” = 1’-0”

7.11 Site Plans

a. Scale 1”=40’-0” unless otherwise directed

b. Plans and specifications for excavation, retaining structures, dewatering, etc., where required, shall be included in the contract documents.

8. AutoCAD Protocol and Standards

8.1 The AutoCAD protocols and standards required by the University are defined in the campus Architectural and Engineering Design Standards, latest edition.

9. Floor Plans

9.1 Floor plans shall be double line. Show overall dimensions. Identify major rooms, areas or space by name, actual net square footage, and programmatic net square footage. For new construction projects, include a note below each floor plan indicating the approximate gross square feet and the net assignable square feet for each floor, including basements, mechanical floors, penthouses, etc. In the case of a multiple story building, provide a summary for the entire building on the first floor plan.

a. Building and Floor Plan Orientation: Provide a building orientation north arrow on site plans, floor plans, and partial floor plans. Use the same building and floor plan orientation for all disciplines.

b. Demolition Plans: Where demolition work is required, clearly show what work is to be removed and a reference provided to identify the proposed work for the

same area. If lead is identified, the demolition plan and related notes shall describe the location and refer to the specification section which shall specifically describe or give the necessary regulation for the removal and disposal of potential lead hazards.

c. Lettering Size: Shall be a minimum one eighth (1/8) inch high.

d. Line Work: All line work shall be of sufficient density to provide uniform reproduction and photographic quality. See the CAD standards in the University Design Standards for additional information.

e. Column Grids: Provide column lines and numbers, and use north arrow indications on floor plans, part plans, sections, elevations, details, mechanical /electrical system riser diagrams etc. Column grid lines shall extend horizontally, vertically and/or angular through the drawing components referenced above. Column designations and grids shall be uniform through the documents. See the CAD standards in the University Design Standards for additional information.

f. Section and Detail Symbols: Note the sheet location of the section or detail involved.

g. Key Plan: Where a portion of a plan appears on a sheet, provide a key plan that shows the location of that portion with respect to the other portions.

h. Room Title and Number: Show room title and number on all plans. Coordinate with the University; for the final room number and name assignments.

i. Delineation of Work: Carefully delineate all drawings to distinguish between new work, existing work to remain, and demolition work.

j. Partial Plans: Provide larger scale partial plan(s) for project areas such as assembly halls, toilet rooms, mechanical equipment rooms, electrical equipment rooms etc.

10. Elevations:

10.1 The design of the elevations shall define materials, coordination between materials and systems, and their placement. There shall be an elevation drawn for each building facade. The scale of the elevations shall not be less than one eighth (1/8) inches = one foot- zero (0) inches.

11. Sections:

11.1 Provide appropriate building sections necessary to show all sectional profiles of the building. There shall be at least two building sections taken perpendicular to each other through the main body of the building.

11.2 Provide detailed sections through all major architectural elements including walls, stairs, elevators, atria, skylights, auditoria etc.

12. Details

12.1 Details shall be at a large enough scale to illustrate all structural elements, construction materials, dimensions etc.

13. Reflected Ceiling Plans

13.1 Reflected ceiling plans are intended to coordinate the design intention of the various trades involved, and should clearly indicate the locations of all types of ceiling materials,

bulkheads, full height partitions, access doors, diffusers, grilles, sprinkler heads, lights, speakers and all other work.

14. Future Expansion

14.1 Indicate proposed future expansions (both vertical and horizontal) and planned future equipment shown as dotted lines on site plans, architectural floor plans, engineering floor plans, roof plans and in elevations and sections.

15. Specifications:

15.1 UMB Master Specifications:

a. Some University Campus's require the A/E to use their Master Specifications for their projects. UMB has developed a complete set of Master Specifications for Divisions 01, 21, 22, 23, 26, 27 and 28 and limited sections for Divisions 02, 11, 12 & 13. These sections shall be used for all UMB projects and are available through the Design and Construction Web Site.

15.2 Project Specifications:

a. The A/E shall review the University's Master Specification Table of Contents, select the appropriate specification sections for the project and edit the University's Master Specification Sections as indicated in the Design Standards. All project specification sections for each discipline shall include the standard UMB header and footer and the body and footer shall use Times New Roman, size 12 text. In Division 01, Specification Section "Submittal Procedures" include a "Comprehensive Project Submittal/Shop Drawing List". See "Design Phase Submission Requirements" for documentation submission requirements.

b. A/E Specifications: The A/E shall utilize their own specifications and/or other resources only in those cases where the University Master Specification does not include the required equipment, materials, or construction procedures to suit the current project. These specification sections must also meet the requirements indicated in paragraph 'b' above.

c. Specification Cover Sheet: The A/E shall use the UMB Standard Cover Sheet for the specifications. The cover sheet is available through the Design and Construction Web Site.

d. Table of Contents: All pages shall be complete, listing all division numbers and division titles as shown by CSI. After each division number and title, indicate the page numbers where the specification is to be found. If the project does not include any work in a specific division show "none" in the column of page numbers.

e. Specifications: PDF files: All specifications sections must be combined into a single file. For larger projects, up to four volumes may be used. Provide PDF bookmarks, one per specification section to match the Table of Contents.

f. Bound Specifications: All specification pages must be firmly and permanently bound together with binding tape to prevent the removal of a page without the possibility of detection. Specifications must be printed on both sides of paper.

g. A/E shall follow the University Master Specification numbering and three part section format.

h. Whenever brand name products are included at least three acceptable brands shall be named, if possible.

i. Hardware schedules are required in the specification. Hardware schedules shall be open to full competition except where proprietary cylinders or other hardware elements are required by the University. The A/E shall determine the requirements of the University for the Master Key System and special hardware requirements.

j. For large projects where the approval for some finishes requires a mockup for review and approval for final selection, clearly indicate that in the individual specification sections.

k. Reference shall be made to the General Conditions in the appropriate divisions of the specifications.

l. Instructions to Bidders: Intentionally omitted. This is the responsibility of either the University or the Construction Manager

Chapter Four - Program, Study, and Interior Design Service Requirements

1. General:

   1.1 Use Standard University Cover Sheets and Drawing Templates for drawings and bound reports.

2. Capital Project Program - Part I:

   2.1 Complete the Capital Project Program - Part I consistent with the terms of the A/E contract and include, as a minimum, the information indicated in the following paragraphs:

      a. Preface: Include a campus map identifying the project site.

      b. Introduction: Description of the vision for the project.

      c. Project Overview:

         (1) Description of the University Campus.

         (2) Project Summary

         (3) Table - existing campus NASF by room code.

      d. Project Justification:

         (1) Include a description of the existing conditions.

         (2) Identify projected figures for student enrollment, faculty and staff for both fulltime and part time populations over six (6) to sixteen (16) year time span.

         (3) Provide a summary of problems to be addressed by the project and their consequences potential alternatives and a preferred solution for the project.

      e. Project Scope: Description of the project site and the proposed construction.

   2.2 Meetings:

      a. The consultants shall attend meetings with University personnel representing the client, facilities management, public safety, etc. to review the requirements for the project and the project documents submitted in this phase.

   2.3 Responses:

      a. Consultants shall respond to review comments made by UMB representatives.

   2.4 Submission: Provide at least two bound documents to the University in addition to PDF files.

3. Capital Project Program - Part II:

   3.1 Complete the Capital Project Program - Part II consistent with the terms of the A/E contract and include, as a minimum, the information indicated in the following paragraphs:

      a. Instruction to the A/E:

         (1) Summary of the project,

         (2) A/E qualifications

         (3) Hazardous material statement

      b. Design Services:

(1) Include a general scope of work,

(2) identify basic design services,

(3) describe supplemental design services and supporting expert studies applicable to the project,

(4) summarize the drawing and document formats, and

(5) identify the information provided by the University.

c. Design Criteria:

(1) Summarize the requirements for codes, design standards, site development, architectural and structural designs, mechanical and electrical designs, and

(2) Identify the building operation and maintenance requirements.

d. Room Specifications:

(1) Summarize the building service requirements, and room specification sheets.

(2) Include a stacking diagram and a proposed program summary.

(3) Include space layouts for typical laboratory module and/or other specialized rooms, complete with all appropriate dimensions, locations of furniture, case work, and equipment.

e. Appendix:

(1) Building Code List,

(2) Project Consistency Report

(3) Environmental Assessment Form.

(4) 100-year floodplain determination - include source and map

3.2 Meetings:

a. The consultants shall attend meetings with University personnel representing the client, facilities management, public safety, etc. to review the requirements for the project and the project documents submitted in this phase

3.3 Responses:

a. Consultants shall respond to review comments made by UMB representatives.

3.4 Submission:

a. The A/E shall provide at least two bound documents to the University in addition to PDF files

4. Feasibility Study:

4.1 Complete the Feasibility Study consistent with the terms of the A/E contract and include, as a minimum, the information indicated in the following paragraphs:

a. Introduction:

(1) Include an introduction to the project and what the university expects to accomplish.

b. Executive Summary:

(1) Include a summary of the requirements for

a) a new project,
b) a renovation project,
c) an addition to an existing building or
d) a replacement of an existing building.

c. Existing Conditions:

(1) For new construction summarize the location and condition of the project site including the utilities.

(2) For renovation projects, addition to a building, or a replacement building summarize the conditions of the building including the architectural, structural, mechanical, electrical, plumbing, and safety elements.

d. Analysis:

(1) For new construction include a detailed analysis for each discipline.

(2) For renovation projects or an addition to a building include a detailed analysis of the existing systems and the anticipated modifications to each system.

e. Recommendations: When more than one design option is included in the study include the consultant's recommendation for each design option.

f. Cost Estimate: Include a summary of the cost estimate for the base design and any alternate designs.

g. Appendix:

(1) Include a detailed cost estimate spread sheet identifying the material and labor cost by units.

(2) Include any drawings on 11 x 17 sheets to support the study.

4.2 Meetings:

a. The consultants shall attend meetings with University personnel representing the client, facilities management, public safety, etc. to review the requirements for the project and the project documents submitted in this phase.

4.3 Responses:

a. Consultants shall respond to review comments made by UMB representatives.

4.4 Submission:

a. The A/E shall provide at least two bound documents to the University in addition to PDF files.

5. Space Planning:

5.1 Complete the Space Planning report consistent with the terms of the A/E contract and include, as a minimum, the information indicated in the following paragraphs:

a. Introduction: Include an introduction to the project and what the university expects to accomplish.

b. Executive Summary:

c. Existing Conditions: Identify existing conditions and how they may affect the project.

d. Analysis: Include the following:

(1) Program Verification: This service shall include a program verification element. The consultants shall attend meetings with University personnel representing the client, facilities management, public safety, etc. to review the requirements for the project.

e. Recommendations: Include the following:

(1) Planning Concepts: The consultants shall provide at least three (3) space planning concepts for the area, complete with all appropriate dimensions, locations of case work, furniture, and equipment.

f. Cost Estimate: Include a budget cost estimate for each space planning concept.

g. Appendix: Include the following:

5.2 Responses: Consultants shall respond to review comments made by UMB representatives.

5.3 Submission: The A/E shall provide at least two bound documents to the University in addition to PDF files.

6. Engineering Study:

6.1 Complete the Engineering Study consistent with the terms of the A/E contract and include, as a minimum, the information indicated in the following paragraphs:

a. Introduction: Include an introduction to the study and what the university expects to accomplish.

b. Executive Summary:

c. Include a summary of the requirements for

(1) a new project,

(2) a renovation project,

(3) an addition to an existing building or

(4) a replacement of an existing building.

d. Existing Conditions:

(1) For new construction summarize the location and condition of the project site including the utilities.

(2) For renovation projects, addition to a building, or a replacement building summarize the conditions of the building including the architectural, structural, mechanical, electrical, plumbing, and safety elements.

e. Analysis:

(1) For new construction include a detailed analysis for each discipline.

(2) For renovation projects or an addition to a building include a detailed analysis of the existing systems and the anticipated modifications to each system.

f. Recommendations: Include a summary of the proposed new systems and/or equipment in a base design and any recommended alternate designs.

g. Cost Estimate: The consultants shall submit a Budget Cost Estimate for this study.

h. Appendix:

(1) Life Cycle Cost Analysis Calculations supporting the systems and or equipment recommendations.

6.2 Meetings:

a. The consultants shall attend meetings with University personnel representing the client, facilities management, public safety, etc. to review the requirements for the project and the project documents submitted in this phase.

6.3 Responses:

a. Consultants shall respond to review comments made by UMB representatives.

7. Interior Design:

7.1 The Architect/Interior Designer shall complete the Interior Design consistent with the terms of the A/E contract and shall include, as a minimum, the information indicated in the following paragraphs:

a. Finished Materials:

(1) Include at least two material samples for finishes such as carpet, ceiling tile, wall tile, floor tile, window blinds, fabric for furniture, window drapes and wood panels.

b. Color Boards: Include a color board with at least two color samples for each finish.

c. Cost Estimate: The consultants shall submit a Budget Cost Estimate for the interior design.

7.2 Meetings:

a. The consultants shall attend meetings with University personnel representing the client, facilities management, public safety, etc. to review the requirements for the project and the project documents submitted in this phase.

7.3 Responses:

a. Consultants shall respond to review comments made by UMB representatives.

Chapter Five - Design Phase Submission Requirements:

1. General:

1.1 The submission requirements identified below and in the following paragraphs represent the minimum requirements the University expects from each discipline for each specific submission unless waived by the University Project Manager in writing.

a. Transmittal: Transmittal letter

b. MDE Transmittal: Copy of transmittal letter to MDE to verify the project has been submitted for MDE review where required for projects.

c. Cost Estimate: Complete cost estimate identifying the anticipated cost for each discipline

d. Tabulations: Updated Tabulations of Areas-Volume-Efficiency

e. Building Code Design Data Form: Building Code Design Data form.

f. Geotechnical Report: Complete Geotechnical Report.

g. Response to Comments: Provide a written response to the University review comments from the previous design submission, addressing each review comment individually.

h. Completed LEED™ check list.

1.2 University Standards for Documentation: All documentation shall use standard University Cover Sheets and Drawing Templates for drawings, specifications, and reports.

1.3 The A/E shall complete each Phase of the Project consistent with the terms of the A/E contract and shall include the submissions identified throughout the Procedure Manual.

1.4 At the end of each phase, consultants shall respond to review comments made by UMB representatives.

1.5 Program Verification: Program Verification Review occurs in one of the following Phases:

a. Concept Design Phase

b. Schematic Design Phase

1.6 Submission Requirements

a. If a submission phase is omitted, the next submission shall include any requirements from previous submissions unless the requirements for the current phase supersede them.

2. Concept Design Phase:

2.1 Architectural Submission:

a. Drawings: Include the following with appropriate drawing notations:

(1) Site Development Plan – Scale 1”=40’-0”

a) Include major proposed features

1) sidewalks,
2) roadways,
3) parking areas,
4) loading docks,
5) site amenities

(a) benches,
(b) planting beds,
(c) trash receptacles,

6) stairs in outdoor spaces,
7) existing and new grading,
8) contractor’s staging area,
9) project boundaries

b) Campus key plan

(2) Floor Plans - Scale 1/8”=1’-0”

a) Show functional relationship of major spaces
b) Note actual net assignable and programmed net assignable area for each programmed space.

(3) Elevations - Scale 1/8”=1’-0”

a) Show relationship of major elements in the vertical plane
b) Indicate massing of materials and fenestration

(4) Sections - Scale 1/8”=1’-0”

a) Show vertical relationship to grade and adjacent buildings,
b) Floor to floor heights
c) Major elements in the building and on the roof

(5) MDE Sediment and Stormwater Plan

b. Presentation

(1) Develop the plans, elevations, and sections as a model, a perspective, or a computer generated slide presentation to walk through the building.

c. Architectural Narrative :

(1) Describe the proposed design

(2) Identify Energy Conservation Features

(3) Area Analysis – Compare Total Net Area and Total Gross Area

a) Program -
b) Design,
c) Net Gross Area Deviation.

2.2 Structural Submission:

a. Structural Narrative:

(1) Describe proposed design.

(2) Describe structural system including the foundation.

(3) Provide a minimum of two design approaches.

2.3 Mechanical Submission:

a. Drawings:

(1) Site Plan – Scale 1"=40'-0"

a) Show existing major mechanical utility systems and new connections.

b. Mechanical Narrative:

(1) Describe each engineered system:

a) HVAC
b) Plumbing
c) Fire Protection
d) Other systems required by the program

(2) Provide a minimum of two design approaches for the HVAC Systems

(3) Identify Sustainable Design Features

(4) Identify Energy Conservation Features

2.4 Electrical Submission:

a. Drawings:

(1) Site Plan – Scale 1"=40'-0"

a) Show existing major electric and communication utility systems and new connections.

b. Electrical Narrative:

(1) Describe each engineered system:

a) Lighting
b) Power Distribution
c) Security
d) Fire Alarm
e) Telecommunication
f) Audio/Visual
g) Other systems required by the program

(2) Identify Energy Conservation Features

3. Program Verification:

3.1 A/E Submission: Include the following drawings and reports:

a. Area Analysis

(1) Submitted as a DOC or XLS file

b. Bubble diagrams and Stacking diagrams

(1) Show intended horizontal and vertical adjacencies.

3.2 The A/E, and appropriate consultants, will attend program verification meetings with University Representatives to review the program requirements.

3.3 University Representatives:

a. University Project Manager

b. University design team

c. Client representatives

3.4 Program Verification must be reconciled and approved by UMB before the design process can proceed to the next design phase.

4. Schematic Design Phase:

4.1 General:

a. Incorporate all review comments from the Program Verification Phase.

b. Drawings may be partially complete unless noted otherwise.

4.2 Civil SD Submission:

a. Drawings:

(1) Site Plan – Scale 1"=40'-0"

a) New Building orientation
b) Show locations of existing buildings and structures, roads, walks, utilities, flood plains, wetlands and critical areas within two hundred (200) feet of the proposed structure and/or within the limits of the contract.
c) Existing and new utilities
d) Other proposed structures within the limit of contract,
e) Proposed site improvements, grading, access, parking areas, utilities, etc.
f) Where a master plan exists, show future buildings adjacent to the proposed project
g) North arrow.

(2) Concept MDE Sediment and Stormwater Plan

a) Show grading, drainage, planting, lighting, access, sediment and erosion control and storm water management
b) Comply with applicable MDE requirements.

4.3 Landscape SD Submission:

(1) Site Plan – Scale 1"=40'-0"

a) New Building orientation
b) Show locations of existing buildings and structures, roads, walks, utilities, flood plains, wetlands and critical areas within two hundred (200) feet of the proposed structure and/or within the limits of the contract.
c) Existing and new utilities
d) Other proposed structures within the limit of contract,
e) Proposed site improvements, grading, access, parking areas, utilities, etc.
f) Where a master plan exists, show future buildings adjacent to the proposed project
g) North arrow.

4.4 Architectural SD Submission:

a. Architectural Review Board Presentation

(1) Mount each drawing for presentation to the Architectural Review Board on a firm backing for display and review.

(2) Materials and methods of illustrating the schematic design phase are left to the A/E.

b. Drawings:

(1) Demolition plans.

(2) Site plan.

(3) Life safety floor plans.

(4) Floor plans, labeled “Floor plan as per program”.

a) Note actual net assignable and programmed net assignable area for each programmed space.

(5) Roof plans.

(6) Building elevations

a) Include mechanical louvers.
b) Provide one copy of exterior elevations in color indicating the materials and shadow lines for reveals.
c) All plans, elevations, and sections shall show adjoining buildings and their relationship to the new project.

(7) Building sections.

(8) Interior elevations.

(9) Photos of the project site, adjacent structures and surrounding area to document the nature and character of the environment.

c. Narrative

(1) Life Safety Code: complete preliminary building and Life Safety Code review for the project, identifying each code section reference.

(2) Description of architectural and site improvements.

(3) Conveying System Design - complete analysis of the elevator design and compliance for the project as required in the Architectural and Engineering Design Standards for the applicable campus.

d. Specifications

(1) Provide outline specification sections for major architectural elements such as exterior materials, window types, wall and roof construction and thermal insulation values.

e. Construction Cost Estimate

(1) Include a construction cost estimate as required by the A/E Contract.

f. Conveying System Design Requirements:

(1) Clearly indicate numerical designation of each elevator on floor plans (i.e.: elevator number 1, 2, 3, 4, etc., reading numerically from left to right facing the elevator bank from hallway or lobby.

(2) Where elevators with double entrances are used, numbering shall be sequenced as viewed from the entrance lobby.

(3) Remote elevators, such as service or special lifts, shall continue the sequence.

(4) Indicate the finished floor elevation of each landing served, elevator pit, machine room, and overhead clearances.

4.5 Structural SD Submission:

a. Drawings

(1) Foundation Plan

a) Show locations of footings, foundation walls, and other supports such as caissons as necessary to support the new building.

(2) Floor plan

a) Show proposed column grid spacing for the new building.

b. Narrative

(1) Describe proposed foundation and framing system based on program needs, geotechnical investigation and site utilization study.

(2) Describe alternatives if multiple foundation systems and framing systems are appropriate

a) Identify the benefit and risk aspects of each proposed system,
b) Provide budget estimates for each system.

c. Specifications

4.6 Mechanical SD Submission:

a. Drawings

(1) Site Plan

a) Coordinate with civil to ensure that all anticipated utility work is included on site plan.

(2) Floor Plans

a) Show major pipe and duct systems.
b) Major pipe systems may use single line representation.
c) Major duct systems, new and existing, including risers, twenty four (24) inches in width and larger shall be indicated double line with appropriate sizes indicated.
d) Duct systems less than twenty four (24) inches in width may be indicated as single line with appropriate sizes indicated.
e) Duct systems indicated for removal shall be indicated as single line with appropriate sizes indicated.

b. HVAC/Plumbing Narrative

(1) Describe existing and proposed mechanical systems based on engineering analysis and coordination with the University.

(2) Engineering analysis shall address

a) preliminary load calculations,
b) design criteria used, e.g. indoor/outdoor conditions, etc.,
c) domestic water demand,

d) impact on existing site utilities,
e) fuel analysis,
f) Calculations conducted to determine if domestic booster pumps or pressure reducing valves will be required
g) Preliminary equipment capacity and utility requirements.

(3) Provide justification for selection of specific HVAC systems including alternative system comparisons.

(4) Investigate and report on need for specific life-safety provisions, such as smoke exhaust systems,

(5) Describe fire protection requirements. Include:

a) Design data for fire suppression systems:

1) design criteria, type of system,
2) hazard classification,
3) water density,
4) size of hydraulic remote area,
5) inside/outside hose stream allowance,
6) maximum coverage area per sprinkler head, etc.

b) Municipal or Private water supply flow test data.
c) Calculations conducted to determine if a fire pump, storage tank, etc., would be required to meet fire suppression demand.

(6) Alternative Energy Sources:

a) Submit a narrative description and engineering analysis of alternative HVAC system concepts and energy sources.
b) Focus on the variety of systems that may be needed to meet the program's requirements and for securing a comfortable space environment.
c) Address considerations for implementation of energy conservation, individual space temperature control and major equipment selection.

(7) Describe HVAC and plumbing systems equipment and controls for all spaces in the building per the UMB Life Cycle Cost Analysis Procedure Manual.

a) Include provisions for implementation of energy conservation
b) Incorporate review comments from previous submissions and reflect further refinements.
c) See UMB Life Cycle Cost Analysis Procedure Manual for additional requirements.

4.7 Electrical SD Submission:

a. Drawings:

(1) Site Plan

a) Coordinate with civil to ensure that all anticipated utility work is included on site plan.
b) Emergency generator and fuel tank location.

c) Proposed location for entrance into the building of underground feeds for

1) power,
2) telephone,
3) data,
4) fiber optics,
5) fire alarm, and
6) security cabling

(2) Floor Plans

a) Electrical floor plan indicating single line representation of major systems.
b) Approximate size, preferred location and number of stacks of electrical/telephone/data distribution rooms.
c) Show and tag electrical equipment

(3) Riser Diagrams - Base one-line diagram

a) power,
b) fire alarm,
c) telephone
d) data cabling

b. Narrative

(1) Describe existing and proposed electrical systems, including audio visual systems, based on engineering analysis and coordination with the University.

(2) Engineering analysis shall address:

a) preliminary load calculations
b) design criteria used
c) estimated power requirements based on square feet.

(3) Identify intended systems and alternatives:

a) Source of power.
b) Source and interconnection of telephone, data, fiber optics, fire alarm, security, audio visual, and CCTV systems.
c) Locations of buildings from which underground cabling will be required for power, telephone, data, fire alarm, building management, security, etc.

5. Design Development Phase:

5.1 General:

a. Incorporate all review comments from the Program Verification Phase.

b. Submission shall represent 35% completion of the project design unless noted otherwise

c. Building Orientation shall be the same for each discipline

d. Room Numbers: Room numbering shall be consistent with the University space inventory system. Coordinate and finalize all room numbering with the University at this Design Phase.

e. Area Analysis Program Verification

(1) Submitted as a DOC or XLS file

f. Update Narrative incorporating review comments from previous submission and reflecting further refinements.

5.2 Civil DD Submission:

a. Drawings:

(1) Site Plan – Scale 1”=40’-0”

a) New building orientation,
b) Demolition of existing structures, walkways, utilities, trees etc,
c) New utilities and site improvements such as fencing, lighting etc.
d) Identify a minimum of four column grid reference points to coordinate utility locations on Plumbing and HVAC drawings.

1) These reference points shall remain fixed for all submissions.

(2) MDE Stormwater Management and Erosion/Sediment Control Plans

a) Meet all MDE requirements, including Engineer's Certification and University of Maryland Certification
b) Certification: Contract drawings submitted to MDE for approval must contain both Engineer’s and Developer’s Certifications.

b. Outline Specification:

(1) List planned specification sections

(2) List equipment and materials to be included in each section.

c. Narrative

(1) Update Narrative incorporating review comments from previous submission and reflecting further refinements.

5.3 Landscape DD Submission:

a. Drawings

(1) Site Plan – Scale 1”=40’-0”

b. Outline Specification:

(1) List planned specification sections

(2) List equipment and materials to be included in each section.

c. Narrative

(1) Update Narrative incorporating review comments from previous submission and reflecting further refinements.

5.4 Architectural DD Submission:

a. Drawings:

(1) Demolition plans - Complete.

(2) Landscape plans,

(3) Site plan,

(4) Civil plans,

(5) Foundation plans,

(6) Life safety floor plans,

(7) Floor plans,

a) Note actual net assignable and programmed net assignable area for each programmed space.

(8) Reflected ceiling plans,

(9) Building elevations,

(10) Building sections,

(11) Exterior Wall Sections

a) Identify all materials
b) Show locations of structural components and ceilings.

(12) Interior Wall/Partition Sections

a) Mechanical Rooms and Shafts

1) Show lights, ceilings, and beams, and space for pipes, ducts, cable trays and other utilities.

(13) Detail sections (wall sections etc.)

(14) Window schedule,

(15) Door schedule,

(16) Finish schedule,

(17) Details

a) window details,
b) roof details,
c) millwork details

(18) Roof plan,

(19) Typical lab plans

(20) Interior Elevations

b. Outline Specification:

(1) List planned specification sections

(2) List equipment and materials to be included in each section.

(3) Include major architectural finishes identified in the previous phase.

c. Narrative

(1) Update Narrative incorporating review comments from previous submission and reflecting further refinements.

(2) Life Safety Code:

a) Complete preliminary building and Life Safety Code review for the project,

b) Identify each code section reference.

(3) Area Analysis - Summary – Areas, Volume, and Efficiency

a) Submitted as a DOC or XLS file

(4) Basis of Design

a) Identify basis of design materials, methods, and systems including structural, architectural, mechanical and electrical disciplines, proposed for the project.

(5) Concrete Design:

a) Submit the criteria, materials and system intended to be used in the design of the concrete structural frame, floors, decks, stairs and roofing system. T

b) Address the durability of the structure relative to the intended use and environmental exposure, as well as requirements to sustain impact, fatigue, and vibration stresses.

c) If requested by UMB, the A/E team shall include a comparative construction cost estimate and construction schedule impact to justify use of a concrete frame.

d. Conveying System Design Submission:

(1) Provide plans and sections at 1/4” = 1’-0” scale

(2) Show each hoistway entrance and dimensions, clear shaft sizes, points of structural support for elevator work, and clearances in pits and overhead.

(3) Include general construction details required for development of construction documents and for accurate budget estimating,

(4) Include transfer reaction loads to the graphic column schedule in the structural design submission. Indicate the intended support and anchorage system for structural guide rails and sills, noting which part of the work is the responsibility of the elevator subcontractor.

(5) Indicate the general layout of equipment in machine rooms, showing crucial space limitations.

a) Do not design to accommodate only minimum equipment sizes and clearance requirements of a given manufacturer, since

equipment and clearances may vary between manufacturers, and open bidding of equipment must be possible.

b) Since actual field conditions often vary from "ideal" layouts and dimensions shown in manufacturers' literature, provide for reasonable clearances and working room.

(6) HVAC Equipment

a) Include necessary HVAC equipment to provide correct controlled environment for the Machine Room and computerized equipment.

b) Show equipment on mechanical drawings.

c) HVAC Controls connect to central campus control. .

(7) Coordination between disciplines

a) Provide information required for coordination with other design disciplines, including but not limited to:

1) preliminary power and control wiring requirements,
2) ventilation louvers clearly indicated on architectural elevations,
3) penthouse roof elevation, etc.

(8) Outline Specifications

a) Provide an outline specification of the equipment which supports the approved elevator traffic analysis, including speed, car capacity, hoistway opening configuration, etc.

b) Provide a completed checklist of drawing-specification coordination of elevator work with all affected trades, including structural, electrical, etc.

e. Post DD Submission:

(1) Interior Design Package: Prior to the 50% CD Phase

a) Submit an Interiors Presentation Package of the proposed materials and color schemes.

(2) Exterior Design Package: Prior to the 50% CD Phase

a) Submit an Exterior Presentation Package of the proposed materials and color schemes

(3) Renderings: By Completion of the 50% CD Phase.

a) Submit color perspective renderings, if required by the program or A/E contract,

(4) Computer Model: By Completion of the 50% CD Phase.

a) Submit a professionally prepared computer model, for use in public relations, if required by the program or A/E contract,

5.5 Structural DD Submission:

a. Drawings

(1) Provide structural plans with columns and framing including sizes of components.

(2) Indicate the steel to be used in the building frame, associating specific steels with specific members, including connections.

b. Outline Specification:

(1) List planned specification sections

(2) List equipment and materials to be included in each section.

c. Narrative

(1) Update Narrative incorporating review comments from previous submission and reflecting further refinements.

(2) As requested, the A/E shall explain the use of the particular steels and show reason why each is the most appropriate for the use. If the justification is financial, the A/E must include the appropriate comparative

5.6 Mechanical DD Submission:

a. Drawings

(1) Legend - abbreviations and symbols used

(2) Site Plan

a) Coordinate with civil to ensure that all anticipated utility work is included on site plan.

(3) HVAC Floor Plans:

a) Plans for each floor noting HVAC Equipment locations and types.

1) Show mechanical equipment with service access
2) Identify all equipment with equipment numbers.

b) Indicate routing of main pipe and duct distribution lines with preliminary sizes.

c) Utility Core Spaces –

1) Show pipe and duct risers and systems within core spaces
2) Show maintenance and service access including platforms and doors. Coordinate with architectural and structural plans.

(4) HVAC Schedules

a) Equipment Schedules with preliminary capacities.

(5) Plumbing Floor Plans:

a) Plans for each floor noting fixture locations and types.
b) Show main distribution lines with preliminary sizes.
c) Show general arrangement of all piping systems.
d) Show location of water, sanitary sewer, storm sewer and sprinkler services to the building.
e) Show location, sizes and types of water heaters/heat exchangers and flues if required.

f) Show location of backflow preventers, booster pumps or other mechanical equipment with proper maintenance clearance. Location of equipment should be coordinated with other disciplines.

(6) Plumbing Schedule

a) Preliminary fixture connection schedule.
b) Preliminary fixture unit counts and anticipated flow rates for sanitary, storm water, domestic hot and cold water systems.

(7) Fire Protection Floor Plans

a) Define each classification of occupancy and hazard of contents.
b) Identify type of fire detection, alarm and communications systems.
c) Identify design data for fire suppression systems: design criteria, type of system, hazard classification, water density, size of hydraulic remote area, inside/outside hose stream allowance, maximum coverage area per sprinkler head, etc.
d) Identify each type of automatic fire suppression system and where it is used.
e) Define and identify the area of each construction type.
f) Indicate the use of all building spaces (offices, auditorium, etc.).
g) Define and identify means of egress.
h) Provide capacity of means of egress, including travel distances.
i) Identify special hazard protection.
j) Show the number of occupants to be accommodated in each space.
k) Show location of fire walls, fire separation walls (including exit access corridor walls) and smoke partitions.

1) Distinguish new walls from existing walls.

l) Identify all fire-rated floor/ceiling and roof/ceiling assemblies.
m) Location of fire extinguishers.
n) Location and type of existing and new standpipes.

(8) Sections:

a) Identify areas on the floor plans where close coordination between structural and other disciplines is required to assure all work will fit in the available space.
b) Provide sections indicating elevations of structural elements, ceiling, floor slabs, mechanical components, sprinkler pipes, cable trays, conduits, and lighting fixtures.

b. Outline Specification:

(1) List planned specification sections

(2) List equipment and materials to be included in each section.

c. System Narrative:

(1) Update Narrative incorporating review comments from previous submission and reflecting further refinements.

(2) Energy code worksheet calculations.

d. Load Calculations:

(1) Provide a set of block load HVAC Calculations to support the proposed heating and cooling central plant size and major equipment selections such as chillers, cooling towers, AHU's, etc. Include all appropriate input data.

5.7 Electrical DD Submission:

a. Drawings

(1) Legend - abbreviations and symbols used

(2) Site Plan

(3) Floor Plans

a) Electrical/telephone/data room stacks and building entrance.
b) Emergency generator and fuel tank
c) Single line of the proposed location for the cable tray/ladder system for distribution of telephone/data/security systems.
d) Electrical devices.
e) Audio visual system equipment.

(4) Floor Plans – Lighting

a) Calculations to support the number and spacing of lighting fixtures to achieve IES lighting recommendations and compliance with energy conservation requirements. (watts per square foot for corridors, offices, labs, and other space types)

(5) Part Plans

a) Substation Electric Room
b) Emergency generator room
c) Electric rooms
d) Telephone/data rooms.

(6) One Line Diagram

a) power systems showing sizes of feeders, transformers, distribution panels, switchboards, motor control centers and protection schemes.

b. Studies and Calculations

(1) Preliminary coordination, short circuit study and arc flash hazard analysis-calculations, and impedance diagram. Studies shall be revised as required during CD phase. Final report shall be submitted by contractor with proposed switchgear.

(2) Calculations: XLS or DOC files

a) Load and demand analysis
b) Load analysis for stand-by power system
c) Lighting power density compliance per latest revisions of ASHRAE/IES 90.1
d) Lightning risk assessment per NFPA 780, Appendix H

e) Voltage drops for all feeders

(3) Identify references for all applicable information used on studies and calculations.

c. Narrative:

(1) Sequence of Operation – Substation and Emergency Power

a) Substation Automatic Transfer for Emergency Power Systems
b) Approval required by the University's review engineer, University's Operations And Maintenance Department, and other authorities having jurisdiction.
c) BGE Protection Requirements

1) Describe compliance with BGE requirements for sequence used for synchronizing and parallel operation of the University generators with normal power

(2) Sequence of Operation

a) Fire Alarm System
b) Building Security
c) Card Access

(3) Approval required by the User, University's review engineer, University's Operations And Maintenance Department, University Fire Marshal, Public Safety Police Department and Environmental Health and Safety

(4) Audio visual equipment list.

6. 50 % Construction Document Phase:

6.1 Notice to Proceed

a. The A/E shall proceed with the preparation of construction documents (CD's) only upon receipt of written authorization by the University. Upon receipt of the notice to proceed, the A/E shall commence with the 50% Construction Document Phase.

6.2 General:

a. Incorporate all review comments from the Program Verification Phase.

b. Submission shall represent 50% completion of the project design unless noted otherwise

(1) All drawings should be started and well underway at this time with no drawings purposely omitted.

c. Tabulations of Areas - Volume - Efficiency

(1) Submitted as a DOC or XLS file

d. Mark review sets with "FOR REVIEW ONLY, NOT FOR CONSTRUCTION" or equivalent wording.

e. Room Numbers: Room numbers were finalized during DD Phase. Coordinate with university space inventory. Show room numbers on all interior plans across disciplines.

f. Specifications: For architectural and engineering specifications, the 50% CD Submission is considered a draft copy of the Final CD Specifications. Include the following:

(1) All specifications should be started at this time with no sections purposefully omitted

(2) Use UMB Specification sections edited for the project.

(3) Identify A/E edits and additions to UMB specification sections. Microsoft Word track changes is commonly used for this purpose.

(4) Where UMB Specifications do not exist, provide new specification sections.

g. Comprehensive Project Submittal List:

(1) Identify all products, materials and equipment in each division requiring a submittal/shop drawing.

(2) Identify special requirements for submittals needing concurrent review

(3) Identify complex submittals requiring extended initial review periods.

h. Alternates:

(1) When authorized by the University, add alternates are to be to be included in bids as may be considered necessary. Alternates shall be used to affect a change in the scope of the project or in the materials or methods specified.

(2) The following practices shall be followed by the A/E when specifying alternates.

a) Priorities: The A/E shall establish the priority in which alternates will be listed.
b) Add alternates, if accepted with the Base Bid, will be in the order listed on the bid form.
c) Alternates shall normally be all add in a given bid.

6.3 Civil 50% Submission:

a. Drawings:

(1) Site Plans – Scale 1”=40’-0”

a) Show all required utility work, including existing conditions, proposed systems, structures, equipment in sufficient detail to establish location, alignment, grade, inverts and impact on existing structures, systems or utilities.
b) Show all underground utilities.
c) Delineate extent of contractor responsibility
d) Show exterior electrical work including power and lighting.
e) Identify coordination reference points to coordinate utility locations on Plumbing and HVAC drawings matching previous submission.

(2) MDE Stormwater Management and Erosion/Sediment Control Plans

a) Meet all MDE requirements, including Engineer's Certification and University of Maryland Certification
b) Certification: Contract drawings submitted to MDE for approval must contain both Engineer’s and Developer’s Certifications.
c) Plans, Specifications, and Calculations

b. Specifications

(1) Provide full specifications with all edits shown.

c. Narrative

(1) Update Narrative incorporating review comments from previous submission and reflecting further refinements.

6.4 Landscape 50% Submission:

a. Drawings

(1) Site Plans – Scale 1”=40’-0”

b. Specifications

(1) Provide full specifications with all edits shown.

c. Narrative

(1) Update Narrative incorporating review comments from previous submission and reflecting further refinements.

6.5 Architectural 50% Submission:

a. Drawings:

(1) Demolition plans

(2) Landscape plans,

(3) Site plan,

(4) Civil plans,

(5) Foundation plans,

a) Dimensions for principal elements and placement of woodwork as necessary for further development of the project and for definitive cost estimating.
b) Extent, location and type of fire-retardant-treated material.
c) Extent, location and type of pressure-treated decay-resistant material, including specification of materials and fastenings for grounds, sills, etc. abutting masonry materials and/or in damp conditions.

(6) Life Safety Plans,

a) Applicable codes & standards (with appropriate editions noted).
b) Building information (height, number of stories, area, etc.).
c) Construction type classification from the International Building Code and the corresponding required structural fire ratings.
d) Maximum allowable building information based on construction type and occupancy (height, number of stories, area, etc.) along with any utilized increases.
e) Location and rating of all fire barriers.

1) Each type of barrier shall be marked with a different line-type.

f) Location and rating of smoke partitions and smoke barriers.

1) Each type of partition and barrier shall be marked with a different line type.

g) Occupancy classification for the building and each area, and the corresponding occupant load of all spaces based on the occupancy classifications and uses within the building.
h) Calculated egress capacities for each component of the means of egress, and the number of occupants using each component of the means of egress based on the calculated occupant load.
i) Indicate both the provided and required egress requirements (travel distance, common path of travel, dead end distance, exit separation, etc.).
j) Required fire protection systems (sprinklers, fire alarm, smoke control, etc.).
k) Location of exit signs.
l) Location of fire extinguishers.
m) Interior finish requirements.
n) Requirements for any special design situations (high-rise, control areas, atriums, and communicating spaces.

(7) Floor plans,

a) Note actual net assignable and programmed net assignable area for each programmed space.

(8) Reflected ceiling plans,

(9) Building elevations,

(10) Building sections,

(11) Exterior Wall Sections

a) Identify all materials
b) Show locations of structural components and ceilings.

(12) Interior Wall/Partition Sections

a) Mechanical Rooms and Shafts

1) Show lights, ceilings, and beams, and space for pipes, ducts, cable trays and other utilities.

(13) Detail sections (wall sections etc.)

(14) Window schedule,

(15) Door schedule,

(16) Interior Signage

a) Provide an interior signage package including appropriate sign for every room,
b) Building signage required by applicable codes: including stairwell signage, evacuation plan holders, and Area of Rescue Assistance sign holders.
c) Use UMB Standard sign details

(17) Finish schedule,

(18) Details

a) window details,
b) roof details,
c) millwork details

(19) Roof plan,

(20) Typical lab plans

(21) Interior Elevations

b. Specifications

(1) Provide full specifications with all edits shown.

c. Narrative

(1) Update Narrative incorporating review comments from previous submission and reflecting further refinements.

(2) Life Safety Code:

a) Complete preliminary building and Life Safety Code review for the project,
b) Identify each code section reference.

(3) Area Analysis - Summary – Areas, Volume, and Efficiency

a) Submitted as a DOC or XLS file

(4) Basis of Design

a) Identify basis of design materials, methods, and systems including structural, architectural, mechanical and electrical disciplines, proposed for the project.

(5) Concrete Design:

a) Submit the criteria, materials and system intended to be used in the design of the concrete structural frame, floors, decks, stairs and roofing system. T

b) Address the durability of the structure relative to the intended use and environmental exposure, as well as requirements to sustain impact, fatigue, and vibration stresses.

c) If requested by UMB, the A/E team shall include a comparative construction cost estimate and construction schedule impact to justify use of a concrete frame.

d. Conveying System Design Submission:

(1) Provide plans and sections at 1/4" = 1'-0" scale

(2) Include updates to plans submitted in DD Phase.

(3) Interior Elevations

a) Cab interiors shall indicate elevations of all four (4) walls,
b) Show handrails and other special details,
c) location for signal equipment,
d) lighting/ceiling layout,
e) emergency access panels and similar requirements.

(4) Submit colors and finishes, along with the building finishes to the University for review and approval.

(5) Electrical and Low Voltage Systems

a) Include wiring for telephone, CCTV, cameras, intercoms, and annunciation systems

b) Clearly show special devices in construction documents with specific notations for special wiring including conduit with pull line and appropriate pull boxes between any remote monitoring panels (life safety, lobby, fireman) to the controller. Wiring shall be a continuous run from the machine room.

(6) Elevator Trade Coordination

a) Indicate all items provided by the elevator subcontractor which impact other trades and scope of work specified in other divisions such as

1) Access doors and panels to hoistways, pits, and machine rooms,
2) Access ladder(s) to elevator pits, and machine rooms.

3) Buffer inspection platforms and ladders, which are necessary in extra deep pits.
4) Pit water proofing, water stopping and sumps.

(7) Specifications

a) Provide full specifications with all edits shown.

e. Product Data

(1) Provide a complete set of catalog cut sheets for each of the following specified products:

a) Door hardware.
b) Any other architectural products as requested by the University.

(2) Each product shall have a minimum of three specified manufacturers.

6.6 Structural 50% Submission:

a. Drawings

(1) Complete Set of Drawings

(2) Structural Column Schedule

a) Indicate floors, column marks, base plates, kip loads, total loads, floor elevations etc.

(3) Structural Beam Schedule

a) Indicate floors, beam marks, base, kip loads, total loads, floor and beam elevations, reinforcing stirrups, spacing, etc.

(4) Footing Schedule

a) Footing type, size, reinforcing etc.

b. Specifications

(1) Provide full specifications with all edits shown.

6.7 Mechanical 50% Submission:

a. Drawings

(1) Legend - symbols and abbreviations

(2) Building Performance Criteria

a) Complete building performance criteria as outlined in the University Design Standards

(3) Site Plan

a) Coordinate with civil to ensure that all anticipated utility work is included on site plan.

(4) HVAC Floor Plans: 1/8” = 1’-0” scale

a) Plans for each floor noting HVAC Equipment locations and types.

1) Show mechanical equipment with service access
2) Identify all equipment with equipment numbers.

b) Show all pipe and duct systems with sizes
c) Utility Core Spaces –

1) Show pipe and duct risers and systems within core spaces
2) Show maintenance and service access including platforms and doors. Coordinate with architectural and structural plans.

(5) Part Plans: ¼" 1'-0" scale

a) mechanical spaces,
b) toilet rooms
c) utility shafts.

(6) HVAC Pressurized Piping System Diagram Requirements:

a) Each pressurized piping system diagram shall include all equipment, associated with each system, located in the mechanical equipment rooms,

1) piping and pipe sizes,
2) manual isolation and drain valves,
3) BAS valves,
4) energy meters,
5) main floor branch piping and related valves for each floor,
6) equipment identifiers,
7) differential pressure valves
8) locations of temperature and pressure sensors.
9) Tages for BAS valves and equipment.

(7) HVAC Hydronic System Diagrams:

a) Hydronic System Diagrams shall include the following systems:

1) Chiller Water Systems (primary/secondary systems)
2) Condenser Water System
3) Energy Recovery (Glycol) System
4) Heating Hot Water Systems (primary/secondary systems)

(8) HVAC Steam Piping Systems:

a) The steam system diagram shall include the following:

1) Medium pressure (60psig) steam and condensate system.
2) Low pressure (5-20psig) steam and condensate system.
3) Steam relief system.
4) All major equipment located in the mechanical equipment rooms,
5) Steam pressure reducing station, piping and pipe sizes,
6) Manual isolation valves,
7) Energy meters, main floor branch piping and related valves for each floor, and equipment tags locations.

(9) HVAC Air System Diagram Requirements:

a) Each air system diagram shall include all major equipment located in the mechanical equipment rooms,

1) main duct systems and sizes,

2) isolation dampers,
3) main floor duct branches and related fire dampers,
4) equipment tags
5) locations of temperature and static pressure sensors.

(10) HVAC Air System Diagrams

a) Include the following systems:

1) 100% Outside Air System
2) Recirculating Air System
3) Stair Pressurization System
4) Elevator Shaft Pressure System
5) Atrium Smoke Evacuation System
6) General Exhaust Systems. (Laboratory areas, Toilet rooms, M/E rooms)
7) Fume Hood Exhaust Systems

(11) HVAC Details

(12) HVAC Schedules

(13) Plumbing Floor Plans:

a) Plans for each floor noting fixture locations and types.
b) Show main distribution lines with preliminary sizes.
c) Show general arrangement of all piping systems.
d) Show location of water, sanitary sewer, storm sewer and sprinkler services to the building.
e) Show location, sizes and types of water heaters/heat exchangers and flues if required.
f) Show location of backflow preventers, booster pumps or other mechanical equipment with proper maintenance clearance. Location of equipment should be coordinated with other disciplines.

(14) Plumbing System Diagram Requirements:

a) Each plumbing piping system diagram shall include all equipment associated with each system

1) piping and pipe sizes,
2) manual isolation and drain valves,
3) BAS valves,
4) flow meters,
5) main floor branch piping and related valves for each floor,
6) equipment identifiers,
7) differential pressure valves

(15) Plumbing System Diagrams:

a) Plumbing System Diagrams shall include the following systems:

1) Non Laboratory Sanitary System Riser Diagram
2) Laboratory Sanitary System Riser Diagram
3) Storm Water System Riser Diagram
4) Domestic Water System
5) Laboratory Water System

6) Laboratory Compressed Air System
7) Medical Compressed Air System
8) Laboratory Vacuum System
9) Medical Vacuum System
10) RO/DI Water System
11) Natural Gas System
12) Other Laboratory Gas Systems
13) Make up Water System for HVAC Systems
14) Gray Water Systems

(16) Plumbing Schedule

a) Fixture connection schedule.
b) Fixture unit counts and anticipated flow rates for sanitary, storm water, domestic hot and cold water systems.

(17) Fire Protection Floor Plans

a) Define each classification of occupancy and hazard of contents.
b) Identify type of fire detection, alarm and communications systems.
c) Identify design data for fire suppression systems: design criteria, type of system, hazard classification, water density, size of hydraulic remote area, inside/outside hose stream allowance, maximum coverage area per sprinkler head, etc.
d) Identify each type of automatic fire suppression system and where it is used.
e) Define and identify the area of each construction type.
f) Indicate the use of all building spaces (offices, auditorium, etc.).
g) Define and identify means of egress.
h) Provide capacity of means of egress, including travel distances.
i) Identify special hazard protection.
j) Show the number of occupants to be accommodated in each space.
k) Show location of fire walls, fire separation walls (including exit access corridor walls) and smoke partitions.

1) Distinguish new walls from existing walls.

l) Identify all fire-rated floor/ceiling and roof/ceiling assemblies.
m) Location of fire extinguishers.
n) Location and type of existing and new standpipes.

(18) Fire Protection System Diagram:

a) Diagram shall include the following:

1) Water service entrance to the building,
2) Fire pump,
3) Jockey pump,
4) Piping system through the roof level,
5) Branch piping and floor control valve for each floor,
6) Piping to the fire department test header, and fire department connection.
7) Forward flow test for the BFP.

(19) Mechanical Sections:

a) Identify areas on the floor plans where close coordination between structural and other disciplines is required to assure all work will fit in the available space.
b) Provide sections indicating elevations of structural elements, ceiling, floor slabs, mechanical components, sprinkler pipes, cable trays, conduits, and lighting fixtures.

b. Specifications

(1) Provide full specifications with all edits shown.

c. Product Data

(1) Provide a complete set of catalog cut sheets (from each manufacturer listed) for each of the following specified products:

a) Chillers.
b) Boilers, heat exchangers.
c) Cooling towers, and
d) Other major mechanical equipment identified by the University.

(2) Each product shall have a minimum of three (3) specified manufacturers who are capable of supplying the specified product.

d. Design Manual

(1) Provide a mechanical design manual including:

a) Room heating and cooling load calculations for every conditioned space.
b) Revised block load calculations, all input data for block loads and individual room load calculations.
c) Ductwork static pressure calculations.
d) Building/zone air balance diagrams.
e) Pipe sizing/pump head calculations.
f) Plumbing equipment sizing calculations.

6.8 Electrical 50% Submission:

(1) Provide site plan indicating all required utility work, including existing conditions, proposed systems, structures, equipment in sufficient detail to establish location, alignment, grade, inverts and impact on existing structures, systems or utilities.

(2) Provide a set of drawings representing a minimum of 50% completion indicating the locations of the mechanical and electrical equipment. Also include details, schedules, symbols and abbreviations. Building performance criteria as outlined in the University's Design Standards shall be completed and included at this phase. Architectural or other drawings may be used to show exact locations of electrical or lighting work, but on electrical drawings show complete requirements.

(3) Provide a minimum of six (6) plans for each floor as follows:

a) Lighting system plan.
b) Power system plan.
c) Fire alarm system plan.

d) Telecom and Tela data system plan.
e) Security and CCTV system plan.
f) Audio visual system plan.

(4) 50% Construction documents should be accurate and coordinated with other disciplines, showing sizes, locations, connections and detailing materials, equipment and methods so the contractors understand what is intended and can select and install equipment to satisfy the intended purpose.

(5) Provide an electronic PDF file of each applicable University master specification section, indicating the A/E's editing marks. Editing shall not be limited to the instructions included in each section but shall also include all deletions and additional sections for material and/or equipment specifications that may be required for the project.

a) When electrical high voltage work (over 600 volts) is required in construction of a project, the services of an independent high voltage electrical testing agency shall be utilized unless waved by the University Project Manager. The project specifications shall read as follows where appropriate: "The contractor shall coordinate and cooperate with an independent high voltage electrical testing and inspection agency under contract by the contractor for testing and inspection of all electrical high voltage components of the system prior to being energized." The costs of the testing and inspection services shall be paid direct by the contractor. Repeat testing costs caused by unacceptable test results and/or inspection findings shall be back charged to the contractor.

b) The following statement shall be included in the appropriate sections of the electrical specifications: "The contractor shall file for an independent inspection agency, and pay all fees associated with such filing, at the start of construction so that adequate rough-in inspections can be made during the course of work. An electrical inspection report from an independent (non-governmental) electrical inspection agency approved by the State of Maryland Fire Marshall must be submitted to the University prior to or with the final payment invoice. The inspection certificate shall be submitted in lieu of a city or municipal permit for electrical work performed on property belonging to the State of Maryland.

(6) Catalog Cut Sheets: Provide a complete set of catalog cut sheets for each of the following specified products, and any other major piece of electrical equipment as requested by the University. Each product shall have a minimum of three (3) specified manufacturers who are capable of supplying the specified product:

a) Medium voltage gear equipment
b) Switchgear – lighting and distribution panelboards, transformers
c) Generators and automatic transfer switches
d) Lighting fixtures and controls
e) Structured cabling

f) Lightning protection system
g) Access control system
h) Video surveillance system
i) Fire Alarm system

(7) Electrical Calculations: One copy of the following calculations are to be submitted with the 50% CD presentations. Review engineer can negate the need for some calculations listed below, or require more, based on the building/project type. All calculations are to be presented on an applicable form; all literature used in the determination of the calculations shall be referenced. Square foot calculations are not acceptable at this submission.

a) Load and demand analysis for normal systems
b) Load analysis for emergency power systems, including sizing calculations for emergency power equipment
c) Lighting power budget per latest revision of ASHRAE 90.1 and in compliance with the recommendations of IEEE.Short circuit analysis using ohmic or per-unit method depending on complexity of the system (Reference IEEE Transactions on Industry and General Applications, Vol. 3, Number 2, March/April 1967)
d) Voltage drop analysis for all feeders
e) Lightning protection calculation
f) Power factor correction
g) Lighting calculations (interior and exterior)
h) Pole classifications, guy vector diagrams and guy strength when overhead transmission systems are involved.

(8) Electrical Layouts: Indicate layouts on drawings to define specific requirements for each raceway, conductor, cable, outlet, wiring device, lighting fixture, switching arrangement, equipment item, etc.

(9) Symbols and Legends: Electrical symbols identifying the system components shall conform to IEEE standards; they may be supplemented by additional symbols, which shall be indicated on project drawings.

(10) Raceway Layouts: Indicate raceways required for each electrical system in their entirety on each floor plan; include specific identification of associated conductors or cables. Indicate branch circuits from outlet to outlet. Include switch legs, but associated home runs may be symbolically designated. Indicate feeders in their entirety from points of origin to termination; include all intermediate takeoffs, pull boxes, etc. Arrange raceways so they are not installed in elevator hoistways, duct spaces, stairwells, etc.

(11) Supplementary Diagrams: Include in drawings a one line diagram for each major electrical system, and a riser diagram for each electrical system; these shall include schedules and supplementary information that completely define the several systems. Electrical schedules required shall include each medium-voltage, and low-voltage switchgear assembly, transformer, motor control center, and panelboards that designates system characteristics, sizes and parameters for each

protective device and motor controlled, including current limiting fuses, circuit designation, equipment served, and the connected load.

(12) Equipment Rooms: Provide enlarged scale drawings for each room required for medium-voltage and low-voltage switchgear assemblies, and for transformers. Show auxiliary systems, equipment arrangement, grounding requirements, and DC and supervisory systems on drawings.

(13) Cross-References: Include in drawings suitable notes which cross-reference diagrams, schedules, symbol list, general notes, etc. with associated floor plans.

(14) Detail Drawings (as needed): Provide detail drawings, as described in subparagraphs. a) through c) below:

a) Service Entrance Profiles for Duct Bank: Communication duct bank and any others as required.

b) Front Elevations: Provide front elevations for each supervisory control panel motor control center and medium-voltage and low-voltage switchgear assembly. Provide front elevations for a typical transformer at each substation with the cabinet containing current transformer and secondary disconnecting switch. Provide front elevations for each type of services entrance, including the associated conduit bank and other significant details. Requirements shall be coordinated with utility companies. This is essential, as some require reinforced conduit bank construction for filled areas and a conduit bank support or saddle that must be cast in the building wall.

c) Enlarged Plans, Elevations, and Details: Provide enlarged plans, elevations, and details for each typical and special electric and telecommunications closets. This includes elevations to show routing in cabinets.

(15) One Line Diagrams: Delineate elevator control transfer scheme, control transformer arrangement, potential and current transformer ratings, device numbers indicated by ANSI, etc., on these diagrams or associated one line diagrams.

(16) Ground Diagram: Provide a system grounding diagram with the required layout also indicated on associated floor plans.

(17) Panel Boards: all panel boards shall be shown in full, denoting existing and new loads to be served along with associated KVA per breaker and panel. All existing information shall be noted but not limited to manufacturer, A/C ratings, main breaker, and frame size. When there is at least one full sheet of panel schedules, a representative matrix is required in the upper right corner for every reference.

(18) Consultants shall respond to review comments made by UMB representatives.

7. 95 % Construction Document Phase:

7.1 The A/E shall complete the 95% CD Phase of the project consistent with the terms of the A/E contract and shall represent 95% completion of the project design and shall include the submissions indicated in the following paragraphs. The A/E shall provide a tabulation document which represents the Tabulations of Areas - Volume - Efficiency. This document shall be submitted as an electronic file in either a DOC file format or in an "xls" spread sheet file format.

a. General: Upon receipt of the notice to proceed the A/E shall commence with the 95% Construction Document Phase.

(1) Drawings: At this phase of design, the A/E will mark review sets with "FOR REVIEW ONLY, NOT FOR CONSTRUCTION" or equivalent wording.

(2) Specifications: For architectural and engineering specifications, 95% CD Submission is defined as a 95% Copy of the Final CD Specifications. Include the following:

a) Comprehensive Project Submittal List: As part of the 95% specification submission, in UMB Master Specification Division 01, Specification Section "Submittal Procedures" include a comprehensive project submittal/shop drawing list for the entire project in Part 3 Execution. This list shall identify all products, materials and equipment in each division requiring a submittal/shop drawing. Indicate on Submittal List special requirements for submittals needing concurrent review, and identify complex submittals requiring extended initial review periods.

b. Civil 95% Submission:

(1) Provide a complete set of civil drawings, specifications, narratives, etc. incorporating all review comments from the 50% CD Phase.

c. Landscape 95 % Submission:

(1) Provide a complete set of landscape drawings, specifications, narratives, etc. incorporating all review comments from the 50% CD Phase.

d. Architectural 95% Submission:

(1) Provide a complete set of architectural drawings, specifications, narratives, etc. incorporating all review comments from the 50% CD Phase.

(2) All pertinent information necessary for the construction of the project shall be included at this submittal phase.

(3) All color selections shall be included at this submittal phase. All products specified shall list a minimum of three (3) manufacturers, and a color or finish shall be selected for each.

(4) If the University determines that a full size mockup of a major portion of the work will be required at the early stage of construction, provide direction in the drawings and/or specifications. The mockup(s) shall be specified as a submittal in the Submittal List.

(5) Samples and Mock-ups: Samples of veneers and finishes, and/or full-sized mock-ups, shall be furnished as necessary for review and prequalification purposes prior to incorporation into the 95%-complete construction specifications. Generally, mock-ups shall be installed at the University for review and may be maintained for quality control of the installed work.

(6) Interior Signage: Provide updated interior signage from the 50% submission.

(7) Life Safety Design: Provide updated design documents from the 50% submission.

(8) For Conveying System Design: Include the following information with this submission:

a) Checklist for drawing - specifications coordination listing all trades supporting or affected by elevator installation and operation.

b) Elevator drawings and specifications shall be complete. Details shall include elevator hoistway, hoistway entrances and frames; details of sills; head, transom and jambs; and cab details all clearly indicating relationship to and requirements of adjacent construction. Every door shall be equipped with a key access hole on each level. Elevation drawings should show hall doors on each level, lobby and upper floor call stations, and the layout and placement of the floor indicator panel located in the elevator lobby on the building entrance floor.

(9) Millwork and Casework: Indicate all profiles of jambs, trim, siding, and moldings (including special joinery), as well as construction details for all millwork and casework as necessary. In addition, they shall clearly indicate, and coordinate with, other relevant materials and structure as necessary for contracting of the work, and for preparation of shop drawings. The drawings shall include:

a) Special veneer matching, wood grain direction and plastic laminate pattern direction and splice locations (where not obvious from specification or detailing).

b) Documents shall coordinate the placement of such devices in the relevant trade drawings and specifications sufficiently for preparation of shop drawings and device rough-in.

c) If more than one grade is required, drawings or specifications must clearly indicate locations and extent of each grade to ensure that the required quality is provided.

e. Structural 95% Submission:

(1) Provide a complete set of structural drawings, specifications, narratives, etc. incorporating all review comments from the 50% CD Phase.

f. Mechanical 95% Submission:

(1) Provide a complete set of mechanical drawings, specifications, narratives, etc. incorporating all review comments from the 50% CD Phase.

(2) Provide a complete set of drawings including site plan, all floor plans, sections, one quarter (1/4) scale plans, details and schedules, incorporating all previous review comments. The drawings shall include a building load summary for HVAC and Plumbing including, but not limited to, the following:

a) Ventilation criteria, design conditions, total heating and cooling loads, fixture units, domestic hot and cold water demand and other, utilities and services required in the project.

b) In addition, substantiating data indicating coordination between the mechanical design team and other disciplines shall be submitted.

c) The use of prints of inter-discipline, composite floor plans with appropriate highlighting and annotations is an effective method.

d) All duct systems, new and existing, including risers, shall be indicated double line with appropriate sizes indicated.

e) Duct systems indicated for removal shall be indicated as double line with appropriate sizes indicated.

f) All piping systems on floor plans shall be indicated single line with appropriate sizes indicated.

g) On large scale mechanical equipment room plans, sections and elevations piping eight (8) inches and larger, including fittings and valves shall be indicated double line with appropriate sizes indicated.

h) Hangers and supports for large piping shall be indicated using the actual size and profile of the hanger method.

(3) Identify areas on the floor plans where close coordination between structural and other disciplines is required to assure all work will fit in the available space. Provide sections indicating elevations of structural elements, ceiling, floor slabs, mechanical components, sprinkler pipes, cable trays, conduit, and lighting fixtures.

(4) Identify Areas on the construction document that will require the contractor to prepare and submit coordinated drawings for review by the A/E and the University.

(5) Provide a mechanical design manual, as a electronic PDF file, which includes any additional room heating and cooling load calculations not provided in the 50% CD Phase, additional calculations supporting the selection of all mechanical equipment, and all revised calculations from previous submission.

(6) System Diagrams: The engineer shall include updated system diagrams as part of the 95% Submission. See 50% submission for diagram requirements.

(7) Provide an electronic PDF file of each specification section incorporating the editing indicated in the previous submission, and including the University's review comments from the previous submission. Include any additional material, and/or equipment specifications that may be required for the project not included in the previous submission.

g. Electrical 95% Submission:

(1) Provide a complete set of electrical drawings, specifications, narratives, etc. incorporating all review comments from the 50% CD Phase.

(2) Provide an electronic PDF file of each specification section incorporating all University's review comments from the previous submissions, and any additional material, and/or equipment specifications that may be required for the project not included in the previous submissions.

(3) Electrical Calculations: Provide one updated copy of all calculations, including the load information on the drawings electronically in PDF or "xl"file format.

(4) Electrical Coordination Study: At a minimum, this analysis shall encompass that segment of the distribution system between the origin of utility service and the first level of secondary distribution equipment, or where service is derived from an existing state-owned distribution system, between the existing primary distribution equipment and the first level of secondary distribution equipment. This study shall include set points for all adjustable protective devices.

(5) Arc Flash Hazard Analysis: Using the same scope as the Electrical Coordination Study, this analysis shall show, in tabulation form, the pertinent fault levels, trip delays and device opening times, equipment type, conductor gaps, working or approach distances, flash protection boundaries, incident energy, and Personal Protective Equipment (PPE) levels to be used when working on and around each piece of electrical equipment. This Arc Flash Hazard evaluation shall use the IEEE 1584-2002 method.

(6) Electrical Drawings: Should be essentially complete and coordinated by A/E. The drawings shall include all circuiting and wiring, details and schedules.

(7) Electrical and Communications drawings should show proper tie-ins with elevator work, including the following:

a) Power supply (generally 3-phase) of proper rating to and including fused disconnect in elevator machine room (for each elevator). Service should be through the disconnect to the controller.

b) Dedicated 120 volt circuit in machine room for each elevator controller.

c) Lighting and standard (120 volt) GFIC power outlets in each machine room and elevator pit.

d) Fire detection and alarm system connections to elevator controllers.

e) Transfer switch and selector panel for elevator operation on emergency power. Phase monitoring shall be included in all hydraulic and traction equipment.

f) All elevator machine rooms shall have emergency and normal lighting.

h. Consultants shall respond to review comments made by UMB representatives.

8. 100 % Construction Document Phase:

8.1 The A/E shall complete the 100% CD Phase of the project consistent with the terms of the A/E contract and shall represent 100% completion of the project design and shall include the submissions indicated in the following paragraphs. The A/E shall provide a tabulation document which represents the Tabulations of Areas - Volume - Efficiency. This document shall be submitted as an electronic file in either a DOC file format or in an "xls" spread sheet file format.

a. General: Upon receipt of the notice to proceed, the A/E shall commence with the 100% Construction Document Phase. When all previous review comments have been incorporated, the A/E shall request the University Project Manager to schedule a final review meeting with the appropriate Consultant(s) and the university personnel to review the 100% CDs. If additional corrections are required, the A/E shall proceed with the corrections to the CDs as directed by the University. When this submission has been approved by the university, the A/E shall submit construction documents as indicated below.

b. Construction Bid Documents Submission: Electronically submit the following files to the University Project Manager:

(1) Drawings: One Complete Set, Signed/Sealed in PDF file format from the bound CAD files.

(2) Drawings: One Complete Set, in "dwg" file format in ACAD in the latest version. Each "dwg" file must be a bound file using 'E' transmit feature. Unbound files will not be accepted.

(3) Specifications: One Complete Set, in DOC and PDF file formats. Include the following:

a) Comprehensive Project Submittal/Shop Drawing List: As part of the 100% specification submission, in UMB Master Specification Division 01, Specification Section "Submittal Procedures" Part 3 Execution" include the final comprehensive project submittal/shop drawing list for the entire project. This list shall identify all products, materials and equipment in each division requiring a submittal/shop drawing. Indicate on Submittal List special requirements for submittals needing concurrent review, and identify complex submittals requiring extended initial review periods. Generate the list using the eBuilder import format for the Excel spreadsheet provided by the Project Manager. As indicated in the following paragraph, this list will be provided to the successful bidder to generate the Construction Submittal Schedule.

b) Comprehensive Project Submittal/Shop Drawing List File: As part of the 100% bid documents the "Comprehensive Project Submittal/Shop Drawing List" shall be submitted as a separate "xls" file for the Contractor to use to create the project "Construction Submittal Schedule".

c) Bound Submission Requirements: See paragraph 2.3 for submission requirements for bound specifications and drawing sets.

c. Civil 100% Submission:

(1) This submission shall include the University's comments for the drawings, specifications, narratives, etc from the 95% Design Review Phase.

d. Landscape 100% Submission:

(1) This submission shall include the University's comments for the drawings, specifications, narratives, etc from the 95% Design Review Phase.

e. Architectural 100% Submission:

(1) This submission shall include the University's comments for the drawings, specifications, narratives, etc from the 95% Design Review Phase.

f. Structural 100% Submission:

(1) This submission shall include the University's comments for the drawings, specifications, narratives, etc from the 95% Design Review Phase.

g. Mechanical 100% Submission:

(1) This submission shall include the University's comments for the drawings, specifications, narratives, etc from the 95% Design Review Phase.

(2) Provide an electronic PDF file of engineering analysis addressing any reselection or revisions resulting from the 95% CD Phase review comments.

(3) Identify areas on the floor plans where close coordination between structural and other disciplines is required to ensure all work will fit in the available space. Provide sections indicating elevations of structural elements, ceiling, floor slabs, mechanical components, sprinkler pipes, cable trays, conduit, and lighting fixtures.

(4) System Diagrams: The engineer shall include completed system diagrams as part of the 100% Submission as follows:

(5) Provide an electronic PDF file of each Specification Section incorporating all of the University's review comments from the previous submissions, and any additional material, and/or equipment specifications that may be required for the project not included in the previous submissions.

h. Electrical 100% Submission:

(1) This submission shall include the Universities comments for the drawings, specifications, narratives, etc from the 95% Design Review Phase.

(2) Provide an electronic PDF file of each Specification Section incorporating all of the University's review comments from the previous submissions, and any additional material, and / or equipment specifications that may be required for the project not included in the previous submissions.

Chapter Six - Construction Phase Procedures

1. Bidding Support

1.1 Bidding Support Procedures:

a. Exclusions from the A/E Contract: The following items are intentionally omitted from the A/E Contract. These items will be the responsibility of either the University or the Construction Manager (CM) if applicable.

(1) Invitations to Bid.

(2) Bid Advertisements.

(3) Contract (Bidding) Documents.

(4) Distribution of Contract Documents.

(5) Bid Date & Opening.

b. A/E Contract Obligations: The following items are to be included in the A/E Contract.

(1) Pre Bid Conference:

a) Attendance: A pre-bid conference will be conducted at the start of the bidding period. Representatives of the A/E consultant team familiar with all aspects of the construction documents shall attend the conference. The A/E representatives will be expected to discuss the general scope of work and answer specific technical questions regarding the construction documents.

(2) Addenda:

a) Interpretation: In response to questions from prospective bidders, the A/E shall interpret the contract documents during the bidding period. Interpretations shall be given by written instruction with sketches or drawings as necessary to the University for distribution to prospective bidders.

b) Preparation: The A/E shall prepare addenda as necessary during the bidding period and deliver to the University for distribution to prospective bidders not less than seven (7) working days prior to scheduled date of bid opening.

c) Scope Reviews: The A/E shall attend scope review meetings with prospective bidders as requested by the University.

2. Construction Administration Services

2.1 A/E Contract Exclusions and Obligations:

a. Exclusions from the A/E Contract: The following items are intentionally omitted from the A/E Contract. These items will be the responsibility of either the University, or the CM, if applicable.

(1) Contract Award.

(2) Scheduling Progress Meetings.

(3) Maintaining and Distributing Progress Meeting Minutes.

(4) Certificates of Payments: Review of monthly submittals.

b. A/E Contract Obligations: The following items are to be included in the A/E Contract:

(1) Construction Project Sign: Construction Project Signs are required for all new buildings. The A/E shall design one project sign per the University Design Standards.

(2) Meetings and Field Reports:

a) Work Initiation Conference and Progress Meetings:

1) Beginning with the work initiation conference, meetings shall be held a minimum of every two weeks during the construction phase. The A/E shall be required to have in attendance the A/E Project Manager and those members of the design team whose technical expertise is necessary to clarify or reconcile project difficulties.

2) Where additional special meetings or field inspection visits are deemed necessary by the University Project Manager to resolve construction issues, the appropriate A/E team representatives shall attend. The A/E shall issue appropriate documentation as needed to address and resolve the issue.

b) Field Reports:

1) Prepare and submit written reports summarizing observations, any clarifications, directions, reconciliation or results of field visits.

2) Include sufficient man hours of the various disciplines in construction phase services to provide this support on an on-call basis as needed.

3) No additional compensation shall be made to the A/E over and above the amounts included in the A/E fee unless the object of these events is outside the original contract scope.

(3) Materials and Colors Coordination:

a) In accordance with the approved Submittal Schedule from the Contractor, the A/E shall coordinate and approve final color selections for all submitted and approved materials, including but not limited to; brick panels, stone samples, concrete colors and textures, paint colors and all other finishes.

b) For large projects where the approval for some finishes requires a mockup for review and approval for final selection, clearly indicate that in the individual specification sections.

(4) Shop Drawings, Product Data, and Samples Review:

a) Submittal Schedule

1) The A/E shall review and approve the Contractor's Submittal Schedule submitted under the requirements of Division 01, Specification Section Submittal Procedures for completeness based on the Comprehensive Project Submittal/Shop Drawing List included in the construction documents. Special care shall be taken to coordinate submittals that require concurrent review (colors and finishes) and review the schedule for complex submittals that require additional Initial Review periods. The A/E shall confirm that the Submittal Schedule is provided in the proper format for uploading into eBuilder.

b) Submittal Review Notes:

1) The A/E shall review and mark all submittals, including shop drawings, product data, coordination drawings, samples, operation and maintenance manuals, and testing and balancing reports as appropriate, checking for conformance with information given and the design concept expressed in the Construction Documents.

2) The A/E may include review comments which are general in nature as a list incorporated just as after the Submittal Identification Form in the submittal, but specific comments shall be provided in the body of the submittal on each page where such specific comments apply.

3) At the conclusion of each review the A/E shall indicate the appropriate markings on the Submittal Identification Form in lieu of or in addition to affixing a review stamp to the submittal.

c) Review Duration:

1) The A/E initial review of Action Submittals shall be completed within two weeks or ten business days of receipt of submittal unless submittal has been clearly identified as requiring a longer review period in the approved Submittal Schedule. In the case where a longer review has been identified, the A/E shall complete their review within the agreed upon duration.

d) Informational Submittals:

1) The A/E shall acknowledge receipt of Informational Submittals within one week of receipt of submittal.

e) Submittal Action by A/E:

1) The A/E shall transmit a preliminarily reviewed submittal to the University within two weeks (or longer where agreed) through the eBuilder web-based software.
2) The A/E shall upload the reviewed submittal into eBuilder for review by the University.
3) The A/E shall indicate the appropriate eBuilder action code that coordinates with their markings on the Submittal Identification Form.
4) All submittals must follow the same procedure so that the top sheet is the Submittal Identification Form for all submittals for a project, and clearly identifies the A/E's action.

f) Coordination of the University's Review:

1) The University will review and return comments to the Architect within four business days.
2) The A/E shall review all the University comments and shall resolve any discrepancies promptly with the University prior to marking the submittal with final comments.
3) The A/E shall incorporate the University's review comments in the same color and format as their own so they act as the A/E's direction to the Contractor.

g) Transmission of Submittal to Contractor:

1) The Architect will distribute the final reviewed Submittal to the Contractor through the eBuilder web-based software, within the allocated time.

(5) Request for Construction Document Change (CDC):

a) The A/E shall use the UMB Standard CDC Form and provide CDCs in consecutive numbering order with sketches/drawings and/or written description and specifications to document the changes to the construction documents.
b) The A/E shall transmit all CDCs to the University Project Manager for their review and distribution to the CM.

(6) Requests for Information (RFIs):

a) The A/E shall respond to all RFIs in a timely manner, preferable within five working days or less, and provide clarifications as necessary in the RFI response or as a separate Change Bulletin.

b) The A/E shall transmit all RFI's to the University's Project Manager for review and distribution to the CM.

(7) Change Request and Change Orders:

a) The A/E shall review all contractor change order proposals as requested by the University Project Manager.

b) The change order request and/or change orders shall be reviewed for the cost value of the proposed work and to determine if the proposed work is not already covered by the current scope of work.

(8) Certificates of Payment: Percentage of Completion:

a) The Contractor's Project Manager and the University Project Manager will agree in draft form on the percentages of completion of the various segments of work.

b) The A/E shall participate in this effort as deemed necessary by the University Project Manager.

(9) Independent Construction Inspection and Testing:

a) When independent construction inspection and testing services are required in connection with the construction of a project, due to the value of the construction contract, such services will be provided by an independent inspection and testing firm under a separate contract with the contractor, CM, or the University as determined by the University.

b) The A/E shall monitor the contract with the contracted inspection and testing firm.

c) Contract monitoring shall consist of weekly review of test results and field inspection reports, and liaison with the independent construction inspection and testing representatives.

(10) Completion and Acceptance of Project:

a) Pre Final Inspection for Substantial Completion:

1) When the project or designated portion thereof is substantially complete the Contractor will notify the University Project Manager.

2) The A/E shall conduct a walk through to verify that the work is substantially complete. The entire portion of the project shall be inspected.

3) During the inspection, the A/E Team shall prepare a punch list of uncompleted or unsatisfactory work items owed to the project by the contract agreement.

4) If, in the opinion of the A/E and the University Project Manager, the project is ready for acceptance, the date of substantial completion

will be established and the warrantee period will begin.

b) Final Project Completion:

1) When all the defects and deficiencies have been corrected and verified by the University Project Manager, then the A/E shall review the work and report to the University that the punch list work has been completed.

(11) Record Documents:

a) Record Drawings:

Record Drawings are the final product of incorporating all Contractor Red Line As- Built information and all changes to the project as a result of CDCs, field conditions, etc.

1) The A/E shall acquire from the Contractor the marked up record set of drawings indicating the Red Line As- Built conditions of the project.
2) Using the contractor's Red Line As- Built drawings, the electronic files of the Construction Bid Documents shall be corrected to include all as-built conditions as recorded by the contractor and all changes to the project as a result of ASI's, change bulletins, field conditions, etc.
3) Acceptance of the "Record Drawings" shall be conditional upon University Project Manager's approval of materials, quality, completeness and accuracy. The University reserves the right to verify the "Record Drawings" accuracy prior to final acceptance and payment.
4) Record Drawings shall be turned over to the University Project Manager within four months of substantial completion of the project;
5) Final payment of the A/E's Phase V fee shall not be due until the "Record Drawings," electronic files and one complete set of the Contractor's "red line As Built" Drawings are submitted and approved by the University.

b) Record Specifications:

1) The A/E shall submit a record set of specifications that includes revisions to the bid specifications as a result of CDCs, field conditions, etc. and shall be called the Record Specifications.
2) Acceptance of the Record Specifications shall be conditional upon University Project Manager's approval of materials, quality, completeness and accuracy. The University reserves the right to

verify the "Record Specifications" accuracy prior to final acceptance and payment.

3) Record Specifications shall be turned over to the University Project Manager within four months of substantial completion of the project.

4) Final payment of the A/E's Phase V fee shall not be due until the "Record Specifications" electronic files are submitted and approved by the University.

c) Record Document Submission Formats:

1) The A/E shall submit all of the following:

(a) CAD Record Drawings: One complete set in DWG file format in ACAD latest edition. Each DWG file must be packaged using e-transmit and include contractors red line markups and all changes to the project as a result of CDCs, field conditions, etc.

(b) BIM Record Drawings: One complete set in RVT (BIM) file format modeled in 3 D. Each RVT (BIM) file must be packaged, using e-transmit and include contractors red line markups and all changes to the project as a result of ASIs, change bulletins, field conditions, etc.

(c) Adobe Record Drawings: One complete set, in PDF file format created from the record drawing ACAD files.

(d) Record Specifications: One complete set in DOC file format and must include all changes to the specifications as a result of CDCs, change orders, etc.

(e) Contractor’s Red Line As-Builts: Contractor’s Red line As-Built Prints: One complete set of prints with the contractor’s red line markups.

d) UMB Space Study Drawings:

1) The A/E shall update the UMB Space Plan for the project area as follows:

(a) Download the appropriate DWG File from the UMB FTP Site.

(b) Update the floor plan to match the new design. Updates shall be limited to replacing the existing walls, partitions and doors with. new walls, partitions and doors.

(c) Transmit the revised DWG File to the UMB – PM.

3. Post Construction Survey:

3.1 Site Visits:

a. Site Visits:

(1) During the two year warranty period, the A/E representative shall make a minimum of two site visits, one visit before the end of the first year and the second visit before the end of the second year, after acceptance of the project at times determined by the University Project Manager.

(2) These visits will be arranged by the University Project Manager and shall be in the presence of the client representative and other University representatives.

3.2 Site Reports:

a. The A/E shall provide a written report to the University Project Manager within seven (7) days after each site visit. This report will include all disciplines.

Chapter Seven - Policies

1. Flood Plain Management:

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

   1.2 Standards:

      a. All activities proposed within tidal and nontidal floodplains shall comply with Maryland Department of the Environment Floodplain Management requirements.

      b. Proposed activities located within nontidal floodplains are also subject to the provisions of Environment Article, Section ~~8~~ 5-803 Comprehensive Flood Management Program, Annotated Code of Maryland, and COMAR 26 Department of Environment 26.17.04 Construction on Nontidal Waters and Floodplains & 26.23 Nontidal Wetlands.

   1.3 Permits:

      a. For tidal and nontidal floodplains, permits shall be obtained from the Maryland Department of the Environment, and the Army Corps of Engineers (if applicable).

      b. Permits: Activities in the 100-year nontidal floodplain require Maryland State Waterway Construction Permits, and activities within 25 feet of or in nontidal wetlands require wetland permits from Water and Science Administration (WSA)/Maryland Department of the Environment.

2. Standards Of Ethical Conduct:

   2.1 Maryland Code of Regulations 01.01.2015.08 - Standards Of Conduct For Executive Branch Employees and Reporting Of Misconduct

   2.2 Conflict of interests:

      a. Employees shall not hold financial interests that conflict with the conscientious performance of duty.

      b. Employees shall not engage in outside employment or activities, including seeking or negotiating for employment, which conflict with official Government duties and responsibilities.

      c. A/E's providing professional services to the State should carefully note the foregoing standards and avoid any action in conflict therewith. Failure to comply with these standards may lead to termination and loss of contract for professional services.

3. Reforestation Procedures:

   3.1 Comply with all requirements of Maryland Natural Resources Article, Title 5 Forests and Parks, 5-103 Reforestation.

   3.2 Applicability: Total area of forest cut or cleared equals 1 acre or more.

   3.3 Consultation with Department of Natural Resources required before clearing or replanting forest land.

4. Chesapeake Bay Critical Area Policy:

4.1 Reference: Natural Resources Title 8. Waters Subtitle 18. Chesapeake and Atlantic Coastal Bays Critical Area Protection Program

4.2 Identify whether the project site is within the Chesapeake Critical Area as defined by the Maryland Department of Natural Resources.

4.3 Requirements: A/E's are required to incorporate the Chesapeake Critical Area and Wetlands Regulations administered by the Chesapeake Bay Critical Areas Commission, Department of Natural Resources, into the design of construction projects.

4.4 Critical Area Commission Approval: For projects which have received general approval from the Critical Area Commission (CAC), the A/E will be responsible for submitting Schematics, 50% and 95% Construction Documents (CD) to the CAC. In all instances, one copy of the transmittal letter acknowledging receipt by the CAC shall be submitted to the UMB Project Manager. The A/E shall provide two copies of CAC's letter, which indicates their approval of each phase of the proposed design, to the University.

4.5 Formal Presentation: The A/E may be required to make formal presentations to the CAC

Chapter Eight - References

1. General Requirements:

   1.1 A/E Requirements: When required by the University the Architect/Engineer (A/E) assigned by contract to a given project shall utilize the referenced forms and documents identified in previous Chapters.

   1.2 The listed forms and documents are available on the UMB Design and Construction website unless noted otherwise.

2. Forms:

   2.1 Forms: The following forms are modeled after the attachments in the DGS Procedure Manual, July, 2003 Edition

      a. Summary – Areas, Volume & Efficiency Form

      b. Tabulation of Gross Area Form

      c. Summary – Net Assignable Areas Form

      d. University Standard Construction Document Change Form

      e. Engineer's and Developer's Certification Form

      f. Building Code Study Data Forms

      g. Project Description Forms

      h. Directions for Completing the Project Description Forms

3. Reference Documents:

   3.1 University Standard Cover Sheets and Drawing List:

      a. Cover Sheet - Bound Documents: The University Standard Cover Sheet shall be used on all projects for all bound specifications, reports, studies etc. prepared by the A/E and submitted to UMB.

      b. Cover Sheet - Drawings: The University Standard Cover Sheet shall be used on all projects for all bound drawing sets prepared by the A/E and submitted to UMB.

      c. Standard Sheet Title and Drawing Number List: The University Standard Sheet Title and Drawing Number List shall be used on all projects for all bound drawing sets prepared by the A/E and submitted to UMB.

      d. UMB Standard Cover Sheets and Drawing Templates include:

         (1) 8 - 1/2 x 11 Cover Sheet & Drawing Templates

         (2) 11 x 17 Cover Sheet & Drawing Templates

         (3) 24 x 18 Cover Sheet & Drawing Templates

         (4) 24 x 36 Cover Sheet & Drawing Templates

         (5) 30 x 42 Cover Sheet & Drawing Templates

         (6) 30 x 48 Cover Sheet & Drawing Templates

         (7) The 8 - 1/2 x 11 and the 11 x 17 drawing templates shall only be used by the A/E to document revisions and/or additions to the

bid documents when full size revision sheets are not required to document the changes otherwise full-size sheets shall be used to document all revisions to the bid documents.

3.2 UMB Standard Sheet Numbers and Sheet Titles

3.3 UMB Standard Bookmarks for PDF File Submissions by Consultants

3.4 UMB Life Cycle Cost Analysis Procedure Manual

END OF UMB PROCEDURE MANUAL