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A/E Submission Requirements for VA Medical Center Major New Facilities, Additions & Renovations

Program Guide PG 18-15 Volume B

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Cover image: Rendering of the Orlando VA Medical Center, Orlando, Fla., by RLF Architecture Engineering Interiors.

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FOREWORD

This document states the minimum submission requirements in the production of Pre-Design, Schematic Design, Design Development, and Construction Documents for Major VA New Facilities, Major Additions, & Major Renovations for Medical Center Projects. It will give VA reviewers and the A/E a clear understanding of what is required of the A/E at each stage of design.

This document does not relieve the A/E of their professional responsibility to produce a correct, complete, and fully coordinated set of construction documents.

VA considers originality and imaginative design as an essential part of the A/E's responsibility. A total environmental approach is a necessity. Proposed options must illustrate a plan that is patient-centered, functional, and aesthetically appropriate for the type of medical service being provided.

Lloyd H. Siegel
Director, Strategic Management Office

July 9, 2013
Update to PG 18-15, Volume B dated October 2010

1. Page 7, I.7. Delete and replace with:

Project reviews shall be conducted by Consulting Support Service and the Office of Facilities Pla nning in Central Office for the following submissions:

- Pre-Negotiation Design Kickoff Meeting
- Concept Selection
- Schematic Design 2 (SD2)
- Design Development 1 (DD1)

The CPM group within Consulting Support Service shall review all SD, DD, submissions, Construction Documents, CPM schedules, and monthly updates throughout the project development and construction.

2. Page 8, I.8. Replace the first sentence with: The Associate Executive Director, Office of Operations will coordinate an executive overview presentation for the Under Secretary for Health or representative. At the conclusion of the presentation the Under Secretary for Health or representative will be asked to certify that the project fulfills the scope of work.

3. Page 11, III.A.11-delete the portion of the sentence that reads “unless otherwise directed by VA PM.” Add the following sentence: An executive briefing at VACO will be conducted for the major VACO offices to obtain their approval and concurrence on the submitted concept.

/S/
Lloyd H. Siegel
Associate Executive Director, Office of Facilities Planning

A/E SUBMISSION REQUIREMENTS FOR VA MEDICAL CENTER MAJOR NEW FACILITIES, ADDITIONS & RENOVATIONS

Contents

I. GENERAL **7**

II. PRE-NEGOTIATION PROJECT TEAM KICKOFF MEETING (VA AND A/E TEAM) 9

III. PRE-DESIGN **10**
A. GENERAL 10
B. SITE ASSESSMENT/EXISTING CONDITIONS 11
C. CONCEPTUAL DESIGN 13

IV. SCHEMATIC DESIGN **16**
A. GENERAL 16
B. SCHEMATIC DESIGN1 [SD1] 16
C. SCHEMATIC DESIGN2 [SD2] 26

V. DESIGN DEVELOPMENT **37**
A. GENERAL 37
B. DESIGN DEVELOPMENT1 [DD1] 37
C. DESIGN DEVELOPMENT2 [DD2] 50

VI. CONSTRUCTION DOCUMENTS **63**
A. GENERAL 63
B. CONSTRUCTION DOCUMENTS1 [CD1] 63
C. CONSTRUCTION DOCUMENTS2 [CD2] 75

VII. DISTRIBUTION OF A/E MATERIALS **78**

A/E SUBMISSION REQUIREMENTS FOR VA MAJOR PROJECTS (NEW FACILITIES, ADDITIONS & RENOVATIONS)

I. GENERAL

1. This document contains minimum submission requirements for the design phase of the major project.

2. The Department of Veterans Affairs (VA) may contract for any portion of a design: Pre-Design, Schematic Design, Design Development, Construction Documents, or a combination of these.

3. The A/E is responsible for producing the Basis of Design (BOD) reports, which provide the descriptive information necessary to evaluate the proposed project from a technical perspective. The BOD addresses technical issues and the A/E's design decisions, assumptions, and methods. The A/E also is responsible for producing a complete set of drawings, calculations, sample boards, specifications, equipment catalog cuts, performance curves, dimensions, and capacity ratings, all in accordance with VA criteria. The A/E shall be responsible for obtaining and using all VA design criteria and information included or linked on the VA Office of Construction & Facilities Management (CFM) Technical Information Library (TIL) website.

4. CFM shall be responsible for reviewing and commenting on all design submissions within 30 calendar days of receipt. VA may engage the services of peer reviewers to review the submissions and a value engineering review may be performed at each review stage. (Peer reviewers' comments shall be entered into the DrChecks$_{sm}$ system three working days prior to review; VA comments shall be entered in DrChecks five working days after the review.) The A/E shall not move forward into the next design phase until all changes based on the review have been entered into the DrChecks electronic reviewing system and approved by the VA Project Manager (PM).

5. The A/E shall provide individually packaged submissions to each unit specified in the "Distribution of Submission Materials" section. The A/E shall submit the Medical Center's and the Regional Fire, Safety Engineer's, and Peer Review packages directly. (On some projects, as directed by the VA PM, submissions for Asbestos Abatement and Commissioning also shall be the responsibility of the A/E.)

6. There are one Conceptual (C) submission, two Schematic Design (SD1 & SD2) submissions, two Design Development (DD1 & DD2) submissions, and two Construction Document (CD1 and CD2) submissions described in this document. At each submission, all material shall be dated, and presented on VA standard size drawings that are appropriately labeled, for example, "CONCEPTUAL," "SCHEMATIC DESIGN-SD1 SUBMISSION", "SCHEMATIC DESIGN-SD2 SUBMISSION", in large block letters above or beside the VA standard drawing title block. In each submission, the A/E shall incorporate the corrections, adjustments, and changes made by VA at the previous review.

7. Project Reviews shall be conducted by Consulting Support Service, *the Office of Facilities Planning*, and Project Managers in the Central Office for the following submissions:

    - Pre-Negotiation Design Kickoff Meeting
    - *Concept Selection*
    - Schematic Design 2 (SD2)
    - Design Development 1 (DD1).

The CPM group within Consulting Support Service shall review all SD, DD submissions, Construction Documents, CPM schedules, and monthly updates throughout the project development and construction.

8. *The Associate Executive Director, Office of Operations will coordinate an executive overview presentation for the Under Secretary for Health or representative. At the conclusion of the presentation the Undersecretary for Health or representative will be asked to certify that the project submittal fulfills the stated project scope*. Executive presentations shall utilize appropriate visual communication tools and/or equipment to facilitate a full understanding of the design elements by the attendees.

II. PRE-NEGOTIATION PROJECT TEAM KICKOFF MEETING (VA AND A/E)

After A/E selection, but prior to fee negotiations, the A/E shall attend a technical meeting at VA Central Office (VACO) with the Construction and Facilities Management (CFM) staff, Veterans Integrated Service Network (VISN), and VA Medical Center (VAMC) representatives, to clarify project design intent (project goals), scope, schedule, and specific requirements based on VA needs and criteria. Individual roles, responsibilities, points of contact, project objectives, and technical guidance shall be established.

The VA PM shall lead this meeting, and shall remain as lead throughout project development. The PM serves as the liaison between the A/E and VA Medical Center, VISN, and CFM staffs. It is the PM's responsibility to keep the project on schedule and within budget, with no change in scope beyond refinement unless dictated by changing needs.

As appropriate, and to the extent the information is available, VA shall make available the following:

a. Current Facility Master Plan.
b. Narrative and/or graphic description of existing building and site conditions.
c. Requirements for space planning, as determined by Space and Equipment Planning System (SEPS).
d. Seismic Evaluation reports to include but not limited to: seismic site evaluation, seismic vulnerability study summary, seismic strengthening study summary, subsurface investigation reports, and record structural drawings.
e. Utility studies.
f. Major existing medical equipment to be relocated/reused.
g. Required Vertical and/or Horizontal Expansion capabilities.
h. Environmental assessment/NEPA report and historical site assessment reports.

The VA PM shall advise the A/E regarding potential special studies that may be required, together with all Federal Mandates and VA criteria. The need to complete all special studies shall be discussed and agreed upon during Pre-Negotiation Design Team Kickoff Meeting. Special studies may include but are not limited to:

a. Boundary survey.
b. Topographic survey.
c. Site utility survey.
d. Geotechnical investigation.
e. Parking and Traffic circulation study (pedestrian and vehicular).
f. Historical analysis.
g. Environmental survey.
h. Automatic Elevator and Transport System study.

Functional and space programs shall be developed using VA Space and Equipment Planning System (VA-SEPS). This information shall be provided by VA, or prepared by the A/E with VA assistance as a special study**.**

After the Pre-Negotiation Project Team Kickoff Meeting but prior to preparation of the fee proposal, the A/E shall provide the VA PM with lists of the design and construction standards and requirements for each technical discipline that was discussed and agreed upon in the meeting.

III. PRE-DESIGN PHASE

A. GENERAL

The purpose of the Pre-Design phase is to align project goals with major project parameters of functional and physical design program, quality, cost, and schedule. As a result of the Pre-Design Phase, VA shall select one of the proposed conceptual designs, depicting the general massing and site location of the facilities for further development.

1. Pre-Design services include site assessment and conceptual planning and design. Additional studies may be required to verify existing conditions to resolve proposed programming issues. Special studies shall be handled on a case-by-case basis with the approval of the VA PM.

2. Functional and space programs shall be developed using VA Space and Equipment Planning System (VA-SEPS). This information shall be provided by VA, or must be prepared by the A/E with VA assistance as a special study**.**

3. An Integrated Design Process (IDP) shall be led by a VA PM with the A/E working closely with the Contracting Officer and other CFM staff (planners, technical experts, estimators) as needed. Users shall be represented by VAMC Chief Engineer or designated Facility Executive, VISN Director, Construction Manager, and subject matter experts (SMEs), as needed. During Pre-Design, the IDP team shall develop programming considerations, need for the project based on quantifiable requirements for space, and budgetary capacity. The A/E shall develop a Preliminary Integrated Design Process Plan.

4. VA requires that Building Information Model (BIM) authoring tools be used as the A/E's software for all major construction and renovation projects. During the Pre-Design phase, the A/E shall submit a report of the team's BIM goals and objectives, plus an itemization of BIM analysis tools applicable to the project.

5. Based on VA's requirements, the A/E shall submit a Basis of Design Sustainability (BODS) report documenting the project's sustainability goals in terms of energy and energy use, water and water use reduction, and indoor air quality and greenhouse gas emission reduction targets. The A/E also shall submit the project registration information for the A/E-selected third-party rating system**.**

6. Conceptual designs developed during the Pre-Design phase shall identify alternative solutions determined by scope and intent of the project. Development of alternatives shall be an interactive process between the A/E, CFM, and the VA Medical Center staff, with the PM leading the process to produce a narrative and graphic description of design alternatives.

7. Site, structures, vehicular and pedestrian circulation, open and screened areas, and their relationships to each other shall be combined to produce a plan that is functional and aesthetically appropriate to the type of medical service and patient profiles.

8. The A/E shall submit a market study to identify factors that are likely to influence construction cost, including anticipated future bidding conditions and an estimate of probable cost escalation through duration of project.

9. Based on discussions with the contracting officer, project manager, and CFM environmental engineer during the Pre-Negotiation Project Team Kickoff Meeting, the A/E shall validate a plan, if needed, to comply with the National Environmental Policy Act.

10. Based on discussions with the contracting officer, project manager, and VA cultural resources management officer during the Pre-Negotiation Design Team Kickoff Meeting, the A/E shall validate a plan, if required, for evaluating historic preservation concerns for compliance with Section 106 of the National Historic Preservation Act.

11. The Conceptual Design review shall be conducted at the VA Central Office unless otherwise directed by the VA PM.

B. SITE ASSESSMENT/EXISTING CONDITIONS

1. SITE

Submit:

a. Site analysis of surrounding site considerations that may impact design and cost of project development , including but not limited to: surrounding land uses, mass transit routes, and utilities, zoning ordinances, easements, aircraft flight patterns, flood hazards, wetlands, topography, and biological and other environmental considerations.
b. Site analysis of onsite considerations that may impact design and cost of project development including but not limited to: Site access/circulation, ingress/egress by pedestrians (including persons with disabilities), passenger vehicles, delivery vehicles, emergency vehicles, and mass transit, if applicable as well as building access for fire apparatus, site security requirements, etc.
c. Existing and proposed number of parking spaces (full and compact), accessible parking spaces, and handicapped van parking spaces for surface and structured parking allotment.
d. Documentation of the 100-year floodplain and all other soil conditions.
e. Investigation of the conditions and capacities of the existing storm water management system. Review of local, state, and federal storm water regulations, and third-party sustainability storm water design requirements, when required. Perform a preliminary drainage analysis of existing and proposed site conditions to assess potential options for storm water management strategies. Generally locate areas where storm water storage facilities shall be, if needed.
f. Identify all conditions that will influence project schedule, including:
   - Site conditions that require mitigation
   - Availability of utilities, roadways, etc.
   - Approvals from regulatory agencies (historic, environmental, etc.)

2. ARCHITECTURAL

Submit:

a. Using the Building Information Model (BIM):
   - Gross area of each department, building total, and volume schedule from the model, with spaces designated as new construction or renovation.
   - Preliminary energy model summary results for comparison of solar loading among options. Refer to HVAC for specifics on the energy model.
   - Verification that SEPS space and medical equipment data matches the Program for Design and method to move data into BIM software. Assure that provisions are made to include data outlined in the VA BIM Guide in model development as required.
   - Minimum of three 3D-massing views for each of the three options being developed.

3. CRITICAL PATH METHOD

Identify conditions that shall influence project schedule, including:

- Site conditions that require mitigation.
- Availability of utilities and roadways.
- Approvals from regulatory agencies (historic, environmental, and others, as required).

4. SUSTAINABILITY

Submit:

a. Annual energy analyses for the purpose of optimizing the orientation and massing of buildings in conceptual schemes.
b. Project sustainability goals with respect to renewable energy and energy-use intensity, and water use and water use reduction, pertaining to the selected third party certification level and all applicable VA guidelines and project directives. Present the existing building annual energy-use

intensity and annual site energy use in both tabular and graphical form by end use (where available).

c. Project sustainability goals with respect to indoor air quality and greenhouse gas emission reduction targets pertaining to both the selected third-party certification level and all applicable VA guidelines and project directives.

5. UTILITIES

Submit:

a. Investigation of conditions and capacity of existing utilities to service the project's needs, including description of needed improvements, and description of needed off-site utility improvements, where required. Include fuel gas, oxygen, and water sources; disposal methods of sewage and storm water; and proposed fuel gas, water, irrigation, sanitary sewage, and storm water systems.

b. Determination of whether water or sewage treatment, pumping, and storage are necessary. Indicate if existing utilities and equipment can be used for this project.

c. Report on existing waste disposal process, including make, model, size, age, performance capability, and remaining service life for all equipment. Recommend tests as appropriate to determine remaining service life of the system.

d. Description of existing and proposed electrical utilities. Evaluate electric utility service type and reliability, as well as redundancy and generation requirements from electric utility and existing emergency and standby power, including back-up and space capacity requirements.

f. Report on existing fire alarm system to be modernized and/or the base loop system to which the new construction shall interface. Include discussion of the existing systems and proposed options

g. Evaluation of the capability of the existing incinerator facilities to accept the additional quantities. and types of waste material. Recommend tests as appropriate to determine capacity of the system. Estimate the types and potential quantities of waste that would be generated by the new facility.

h. Description and evaluation of the existing steam distribution facilities. Include documentation of existing system steam generating capacity (in summer and winter seasons), types of condensate return systems (for example, pumped, gravity, and vacuum).

i. Survey of existing telecommunications systems and information.

6. HEATING, VENTILATING & AIR CONDITIONING

Submit:

a. Survey of condition and availability of the spare capacity of the existing systems such as chilled water, hot water, and steam. Provide specific recommendations for meeting the needs of the project, including new and existing buildings functioning simultaneously.

b. Assessment of condition of existing underground utilities and recommendations for relocation and/or replacement. Provide specific recommendations for meeting the needs of the project. Include the extent of demolition and phasing, if required.

7. SECURITY (PHYSICAL)

Submit:

a. Identification of available backup/redundancy of utilities (power, communications, domestic and fire protection water, natural gas, and emergency power fuel).

b. Topographic, boundary, and utility survey data.

c. Determination of Mission Critical or Life Safety requirements. Obtain CFM approval in writing to any exception to the Physical Security Design Manual.

C. CONCEPTUAL DESIGN (C)

Unless otherwise directed by the VA PM, the A/E shall develop a minimum of three design concepts. The A/E, using an integrated design process, shall refine these alternatives to create functionally viable alternative design solutions, based on continuing deliberations with VA medical center staff and CFM staff. The VA PM acts as a liaison between VA and the A/E. VA shall select the final concept and identify the approved scope to be developed in Schematic Design1.

Each conceptual design shall address the following:

1. SITE
Submit conceptual plans with Basis of Design narrative for site access, vehicular circulation, physical security standoffs, barriers, parking, and other security elements; and items of environmental and historical significance.

2. ARCHITECTURAL

a. Submit Basis of Design (BOD) report including:
   - Narrative establishing users' vision, goals, and objectives
   - Programming considerations, including:
     - Caseload data as basis for space program determined by SEPS on a departmental basis
     - Functional (medical) and physical design program
     - Adjacency matrix for major services
     - Code analysis to identify design parameters
     - Implementation strategies and phasing considerations

b. Develop concept assessments including:
   - Massing studies - one for each concept
   - Assessment of impact on existing facilities
   - Opportunities for vertical and horizontal expansion
   - Concise narrative and graphic illustration of each concept with a comparison of features related to cost, impact of construction on operations, duration of construction, and advantages and disadvantages of each. Include a rating scale and score sheet for comparison of alternatives

3. COST ESTIMATING
Submit:
   - Order of magnitude cost estimate for each concept –WBS II Level 1 estimate
   - Method for successful transfer of VA SEPS data for space and medical equipment for BIM use

4. CRITICAL PATH METHOD
Reports:
Submit Basis of Design (BOD) report including:

a. Programming considerations and an outline of phasing requirements including
   - Anticipated overall construction schedule
   - Considerations that influence phasing
   - Anticipated duration of each phase of construction
   - Narrative establishing users' vision, goals, and desired image

b. Concept assessments including:
   - Qualifications for analysis and CPM consultants for approval by VA
   - Project risk analysis
     - Anticipated design and construction schedules
     - Major milestones in design, procurement, and construction schedules
     - Technologies
     - Cost
   - Recommendations for mitigation of major risks
   - Concise narrative describing integration of existing and new work

5. SUSTAINABILITY
Develop concept assessments including:

a. Graphic presentation of the results of the site climate analysis (wind, water, solar, temperature, humidity).

b. Determination of the technical and economic viability of using renewable energy sources. At a minimum, consider solar, wind, geothermal, geothermal heat pump, biomass, and biogas.
c. Analysis of how best to use daylighting.
d. Analysis of each proposed alternative with respect to overall project sustainability goals related to Green Globes or LEED certification.
    - Green Globes (if chosen): Provide the rating category for the project and the input data for the project initiation, site analysis, and programming phases. Establish and document the input parameters and assumptions for performing a Life Cycle Cost Assessment (LCA)
    - LEED (if chosen). Document the particular rating system (for example, Existing Buildings or New Buildings) to be used and the level of certification (the required minimum level of certification is LEED Silver). Provide a completed preliminary LEED score card to indicate where points are anticipated. Briefly discuss why or why not certain points are achievable

6. UTILITIES

Submit:

a. Determination of automatic transport systems that convey people and materials-- elevators, escalators, pneumatic tube systems, lifts, dumbwaiters, automatic guided vehicles (AGV), and electric track vehicles (ETV), as well as robotic systems that convey goods. (Further information required on drawings shall be shown on drawings of appropriate discipline.)
b. Determination of water pressure and requirements for fire pump(s).
c. Estimate of existing loads for outside steam distribution.
d. Explanation of how steam generating and distribution systems shall accommodate additional loads and what additional equipment is needed to make the new facility fully operational.
e. Recommendations for tests to assess remaining service life of existing steam distribution systems.
f. Estimated sizes of the proposed main fire lines and proposed location of connections to site utility.
g. Alternatives for waste disposal, including incineration of all waste, incineration of portions of the waste (such as pathological) and off-site disposal of the remainder, off-site disposal of all waste, and alternative technologies for waste sanitation, processing, and disposal.
h. List of incineration system equipment alternatives that shall be evaluated. Typical alternatives include types of waste feeding systems, provision for automatic ash removal, batch or automatic feed type incinerator.
i. Discussion of alternative types of steam generation and distribution systems that may be evaluated. Alternatives may include factory fabricated, pre-engineered systems, shallow trench systems, direct-burial, and tunnels.
j. Assessment of the feasibility of including a cogeneration system.

7. HVAC

Submit:

- Concept assessments including the existing building energy and resource consumption baseline. (For new buildings, document the existing inventory baseline.) Include investigation of the use of high-efficiency, low-pressure hot water boilers for heating application.
- Explanation of how existing chilled water generation and distribution systems will accommodate additional loads and what additional equipment is needed to make the new facility fully operational. Explain what the anticipated new cooling loads are and how they were calculated. Explain needed plant expansion and how it shall be accomplished. Discuss alternative ways to meet the increased demand and what type of energy-saving measures will be examined in the Schematic Design phase.

8. SECURITY (PHYSICAL)

Submit:

a. Basis of Design (BOD) report including verification that a qualified Security Specialist and Structural Blast Specialist shall be retained by the A/E. The conceptual design shall address the physical security requirements as defined in VA guidelines.
b. Concept assessments including applicable Crime Prevention Through Environmental Design (CPTED) principles.

IV. SCHEMATIC DESIGN

A. GENERAL

The Schematic Design phase documents are developed for the VA-selected concept approved in the Pre-Design phase. Schematic Design further develops the concept plan to a level of detail that includes specific functional and adjacency requirements and establishes the aesthetics of the design.

General requirements

1. A Project Management Plan shall be developed by the Integrated Project Team, led by the VA PM.
2. Drawings shall have graphic scales, north arrow (either true north or plan north; orientation shall be consistent throughout drawings of similar subject), title block, and key plan. Each drawing, booklet, and other supporting submittals including cover sheets shall be clearly and consistently identified throughout the design process with the project title, location, building, phase, section, and segment.
3. All submitted documents shall be updated as per written responses in DrChecks$_{sm}$ electronic reviewing system to reflect review comments from previous phase and further development. The A/E shall verify that all changes based on the review of the previous phase have been entered into DrChecks and approved by the VA PM.
4. Completed quality control checklists shall be submitted, including discipline-specific VA checklists for the Schematic phase.
5. Specifications shall be prepared using VA Master Construction Specifications. Submissions shall show changes to master by using the "Track Changes" function. Each submission shall indicate changes from previous submission, not all changes to the master. Specifications submitted at the end of each phase (not for each review) shall include all changes.
6. Dimensions shall be provided in soft metric (S.I.) units followed by English units, unless otherwise specified by the Project Manager.
7. The A/E shall submit minutes of meetings with VA and VA's other contractors, as well as for A/E coordination meetings.

B. SCHEMATIC DESIGN1 [SD1]

The purpose of Schematic Design1 is to develop the concept selected by VA in Pre-Design.

1. ARCHITECTURAL

Reports:

Submit the updated Basis of Design (BOD) report including:

a. Preliminary phasing narrative (with preliminary phasing plans for site and building development.
b. Types and quantity of major medical equipment to be accommodated (e.g.: linear accelerator, imaging, laundry, food service, for example).
c. Preliminary LEED or Green Globe checklist to establish basis for sustainability rating. (See *Section 25.Sustainability*).
d. Summary of building features in tabular form: building height, gross area by floor and department and building total, number of patient rooms and beds by floor, and construction type.
e. Special construction requirements, such as radiation shielding.
f. Physical Security requirements.

Drawings

Submit:

a. Cover Sheet with project name and address, VA project number, location map, signature block, name and address of VA, architect, engineers, and other consultants.
b. Project Data Sheet with index of drawings, legend of abbreviations and symbols, and code analysis.
c. Room Data Sheets for each typical room in the project as outlined in DD1.

d. Conceptual site plans (minimum of two) with building location, parking, pedestrian and vehicular circulation, emergency vehicle access, loading docks, and all other major landforms and site features.
e. Block plans for each floor of the building, including interstitial floors, showing internal organization of each department, vertical and horizontal circulation, location of mechanical and electrical equipment rooms, utility shafts, patient and staff entrances, receiving/shipping, and location of section cuts (min. 1:200 (1/16"=1'-0")). Include overall building dimensions.
f. Conceptual floor plans showing departmental adjacencies and major circulation routes. Within each department/function boundary, show gross square footage.
g. Building elevations with fenestration, penthouses, materials, finish-floor elevations, floor-to-floor heights, location of grade at building, overall building height, and location of section cuts (min. 1:200 (1/16"=1'-0")).
h. Minimum of two building sections through major portions of building (min. 1:200 (1/16"=1'-0")).

2. ASBESTOS ABATEMENT
No submission required.

3. AUTOMATIC ELEVATOR AND TRANSPORT SYSTEM
Reports
a. For New Facilities, submit:
- Elevator study to determine required number, size, location/distribution, and speed of elevators.
- Feasibility study to determine appropriateness and type of automated delivery (automatic guided vehicles (AGV) and electric track vehicles (ETV)) systems
- Determination of the number and type of vertical transport devices required for materials handling (for example, supplies, soiled utilities, clean utilities, and food service). Identify devices that shall be dedicated to specific use such as elevators restricted to food service or those that may be used only for transport to and from a rooftop helipad
- Determination of pneumatic tube system requirements and departments/locations to be served
- Feasibility study to determine need for escalators

b. For Existing Facilities, submit:
- Location, size, capacity, and speed of additional elevators
- For automated delivery systems, identify products and materials to be delivered (mail, office supplies, and medical records). Describe proposed routes, service areas, and type of system (AGV, ETV, or other) to be used
- Location, size, capacity, and speed of new lifts and dumbwaiters
- Location and size of new escalators

c. Narrative summarizing the data and recommendations developed from the studies described above.

Calculations
Submit as required for all studies described above.

Drawings
Submit floor plans (min. 1:200 (1/16”=1’-0”) indicating location of proposed and existing automatic transport devices and systems. Indicate proposed routes for automated delivery systems.

4. BUILDING INFORMATION MODEL (BIM)
Submit the following information derived from the building information model for advancement of the design or verification of the model:
a. Updated BMP (BIM Management Plan) for the project.
b. Example for verification of data coding, as outlined in VA BIM guidelines.
c. BIM geographical location benchmark.

5. COMMISSIONING

Reports

Submit:

a. Identification of full commissioning team and team organization. Include team member roles and responsibilities, and lines of communication.
b. Basis of Design report describing VA's Project Requirements (OPR), design narrative, and sustainability goals (LEED or Green Globes certification level). (See *Section 25. Sustainability*.)
c. Draft Commissioning Plan. Identify all systems, components, and features to be commissioned. Include required documentation and schedule for implementation.
   - Identify major concerns that could affect operations, maintenance or testing
   - Identify discrepancies between OPR and Design Narrative
   - Update design schedule and major milestones
d. Preliminary Design Phase Commissioning Issues Log.

6. COST ESTIMATING

Reports

Submit:

a. WBS II Level 2 estimate.
b. Cost model based on project limitation of construction cost (cost target for construction).
c. Budget tracking by phase.
d. Separate computations for site, each building, new work, and renovations.
e. Building net and gross area computations for new construction and renovations.
f. Project Data Sheets 1 and 2 (refer to VA cost estimating guidelines).
g. Updated market survey.

7. CRITICAL PATH METHOD (CPM)

Reports

Submit the updated narrative Basis of Design (BOD) report including:

a. Project Master Schedule that identifies major design activities, procurement phase activities and construction phasing sequence with major milestones, and VAMC overlapping activation phase.
b. Detailed design schedule identifying major activities, submissions, participants, and milestones including Bid and Award, Show activities for each primary design discipline. At a minimum, include architectural, structural, mechanical, electrical, fire protection and life safety, plumbing, civil, and physical security. This schedule shall be in cost-loaded CPM format with interrelationships. between activities and shall also be used as a basis for monthly payments to the A/E.
c. Schedule Risk Analysis based on CPM for detailed design and anticipated overall construction schedule. Analysis shall identify schedule risk areas and recommend actions to mitigate risk. Submit a risk analysis in format form for the VA approval.
d. Phasing narrative.
e. Phasing plans on reduced site plans.
f. Phasing diagram.
g. Phases marked on full size drawings for VA review.
h. Written list of systems divided by technical discipline, including temporary systems by phase.

In addition to updating information, each successive submission of Master Schedule, Design Schedule, and Risk Analysis shall provide an increased level of detail. Project Master Schedule and Design Schedule shall be produced using a computer program (preferably Primavera P6) acceptable to VA and submitted as electronic files.

8. ELECTRICAL

Reports

Submit the updated Basis of Design (BOD) report, including:

a. Electrical design approach proposed in narrative form. Determine whether the existing site utility service and distribution, switchgear, primary feeders, power transformers, and distribution equipment are adequate for the new loads for normal, stand-by, and essential electrical systems.

b. Detailed description of the extent of new utility company work (if required). Provide copies of all correspondence and minutes of meetings with all utility company representatives.
c. Description of physical security requirements and implementation into electrical design.
d. Requirements for uninterruptible power system (UPS).

Calculations
Submit:
a. Existing peak demand readings at point of connection to serve new equipment/building.
b. Calculations to support preliminary mechanical equipment sizing and ratings, using square foot demand loads for lighting, general equipment, and approximate mechanical equipment loads for mechanical system equipment/elevators.
c. Loads associated with essential electrical system and/or stand-by electrical power system to determine preliminary emergency and/or stand-by electrical power generation capacity required to support the building electrical power requirements.
d. Requirements for emergency power and UPS.

Drawings
Submit:
a. Project site plan showing impact of proposed new work on the existing site and distribution, indicating new and existing locations of incoming utility electrical power service, underground electrical vaults, manholes, duct banks, and utility tunnels. Show major electrical work with respect to locations of substations and transformers.
b. Proposed, conceptual one-line diagram for medium voltage (below 69kV) and low voltage (below 600V) electrical power distribution system. One-line diagram shall show major normal, essential electrical, and standby electrical system, main electrical components, and the correlation between the systems.
c. Plans showing locations of main electrical areas, such as main electrical switchgear, main electrical vaults, generator rooms, and/or energy center and indicating their approximate dimensions. On the plans, show outlines of major electrical equipment items in these rooms and outlines of minimum working clearance as required by the applicable *National Electrical Code*.

9. ENVIRONMENTAL IMPACT
Reports
Notify VA contracting officer immediately upon discovery of any environmental or site data that may warrant investigation.

10. EQUIPMENT
No submission is required.

11. FIRE PROTECTION
Reports
Submit the updated Basis of Design (BOD) report including:
a. Survey and description of the existing fire alarm system in the building to be modernized and/or the base loop system to which the new construction shall interface.
b. Description of proposed options for new systems.
c. Description of building construction, building fire and smoke separation, fire sprinkler/standpipe systems, size of fire pumps (if required), water supply available/maximum demand, water flow testing results, fire alarm systems, and kitchen extinguishing systems. Indicate NFPA 220 and IBC fire resistive rating of the building, NFPA 101 occupancy type, and fire protection code analysis to assess compliance with NFPA 101.

Calculations
Submit calculations to size fire pumps (when required), water supply available/maximum demand, and water flow testing results raw data.

Drawings

Indicate the estimated sizes of the proposed main fire lines and propose the location of connections to site utility.

12. HEATING, VENTILATING & AIR CONDITIONING

Reports

Submit the updated Basis of Design (BOD) report including:

a. Condition and availability of the spare capacity of the existing systems, such as chilled water, hot water, and steam. Submit specific recommendations for meeting the HVAC needs of the project.
b. Description of the tentative zoning of the spaces, including those proposed with dedicated HVAC systems. Describe the locations of the equipment serving each zone, focusing on the serviceability and maintainability of each major piece of equipment.
c. Engineering criteria and rationale used for selecting three different types of HVAC systems for the life cycle cost analysis for each system. Coordinate with the VA HVAC Design Manual wherein the restrictions on the system type and the capacity limitations are outlined. Include all zone level and space level assumptions and parameters to be used in the analysis. Computerized analysis shall be prepared by using either a public domain program or the privately developed software programs. Submit the name and version of the program used for computerized analysis. (Prior approval by VA is required for the use of private programs, as opposed to public domain programs.)
d. Energy conservation measures proposed to be used in the HVAC system design and the life cycle cost analysis. Refer to VA guidelines for the mandated energy conservation requirements and energy consumption goals. State the logic and criteria for selecting each conservation measure.
e. Description of physical security requirements and implementation into HVAC design alternatives.
f. Coordination of the metering requirements with the ongoing activities at the existing facilities and provide a brief description of the scope of work and extent of coordination involved.

Calculations

Submit:

a. Estimated heating and cooling requirements of the existing and/or new buildings based on the gross square feet area of each unique function space, such as patient bedrooms wing, animal research area, laboratories, and offices. (Coordinate the estimated preliminary steam demand with *Section 23. Steam Generation*.)
b. 8,760-hour basis energy analyses for the sole purpose of optimizing the orientation and massing schemes being considered. Envelope and glazing are optimized; all other variables (occupancy, regulated and unregulated loads) in the energy model shall remain fixed for all schemes at this design phase submittal.
c. Describe the potential impact of hurricanes on the HVAC equipment (in hurricane zones).

Drawings

Submit single-line air and water flow diagrams of heating plants, cooling plants, air-handling processes, and zone level (not space level) air and water distribution for the proposed options.

13. HISTORIC PRESERVATION

Reports

a. Comply with contractual agreements for Schematic Design1, when required, as developed with the contracting officer, project manager, and VA cultural resources management officer.
b. Notify VA contracting officer immediately upon discovery of any historical or archeological data that may warrant investigation.

14. INCINERATION/WASTE DISPOSAL SYSTEMS

Reports

Submit the updated narrative Basis of Design (BOD) report including:

a. Existing systems process and the determination of the remaining service life of the system.
b. Accurate determination of existing types and quantities of waste. Provide verification of the accuracy.

c. Evaluation of the capability of the existing incinerator facilities to accept the additional quantities and types of waste material.
d. Analysis of viable alternatives for waste disposal and recommended solution. Give rationale for the selection or rejection of alternatives.
e. Emissions regulations and types of emissions controls required.

Calculations
Submit:
a. Updated estimate of the types and quantities of waste that shall be generated by the new facility.
b. Life cycle cost analysis on the alternatives for waste disposal. Compare the alternatives, present test results on existing systems (if applicable), evaluate all other relevant issues, and make recommendations.

Drawings
Submit site plan indicating alternatives for locating an incinerator system. Indicate the location of the existing incinerator, if applicable.

15. INTEGRATED DESIGN
Reports
Submit the updated Basis of Design (BOD) report including:
a. Integrated Project Team (IPT) directory: List of team members, contact information, roles, and responsibilities. Include as appropriate: VA's representatives/stakeholders, A/E, commissioning agent, designated subcontractors, community representatives, regulatory agencies, and consultants for specialties such as traffic, geotechnical, environmental, automatic transportation, blast, and historic preservation.
b. Project Management Plan (PMP): The IPT is responsible for developing the PMP as defined by the Project Management Institute. The plan addresses Scope/Requirements Management Plan, Schedule Management Plan, Schedule Management Plan, Cost Management Plan, Communications Management Plan, Process Improvement Plan, Staffing Management Plan, Quality Management Plan, and Risk Management Plan. Generally, the PMP shall cover functionality, budgetary, aesthetic, sustainability, security, schedule, procurement method, and related requirements.
c. Design Objectives: Accessibility, aesthetics, cost effectiveness, functional and space requirements, environmental quality, security, sustainability, and, where appropriate, historic preservation.
d. Standards for document preparation. Integration of disciplines through building information modeling (BIM).
e. Updated Preliminary IDP Plan.
f. Shared services agreements with other facilities. (This could include utilities, medical services, or other.)

16. INTERIOR DESIGN
Reports
Submit the updated Basis of Design (BOD) report including:
a. Narrative describing concept for interiors.
b. Signage and wayfinding concept.

17. PLUMBING
Reports
Submit the updated Basis of Design (BOD) report including:
a. Preliminary feasibility study of existing utilities (i.e. storm drainage, sanitary sewer, fire, water services, gas, and others), where applicable. Investigate the conditions and available capacity of existing utilities to service the project’s needs; determine if improvements are needed; and describe the extent of off-site utility improvements, where required. Provide descriptions of the existing and proposed utilities: fuel gas, oxygen, and water sources, sewage disposal systems, irrigation, and water services. Indicate if water or sewage treatment, pumping, and storage are necessary. Indicate if existing utilities and equipment can be used for this project.

b. Water analysis, including pH, total hardness as $CaCO_3$, and total dissolved solids.
c. Explanation and technical backup information as to how the project shall meet the project goal for hot water generation using renewable solar energy.
d. Potable water baseline and the required reduction target. Define strategies to achieve the reduction goals.
e. Graphical representation of energy and water usage savings with reference to the contributing technologies and their weighted contributions.

Calculations
Submit:
a. Approximate sizes of new equipment.
b. Potable water baseline and reduced consumption calculations.
c. Calculations to support the strategies to achieve the water consumption and energy reduction goals.

Drawings
Submit:
a. Plans indicating all existing, abandoned, and proposed utilities listed above. Provide approximate size of proposed utilities. Locate roughly where sewage treatment facilities (if required), pump stations, and/or areas of lawn irrigation shall be located.
b. Riser diagrams for the proposed options.
c. Types and sizes existing, abandoned, and proposed utilities listed above.
d. Approximate location of treatment facilities and storage facilities (when required). Indicate any areas of specialty systems, such as irrigation.

18. SECURITY (PHYSICAL)
Reports
Submit the updated Basis of Design (BOD) report including:
a. Definition of Continuity of Operations Plan (COOP) requirements, progressive collapse requirements and design approaches, building envelope blast requirements, and perimeter barrier requirements.
b. Description of the basis for physical security requirements and an overview of the provisions to be implemented. Include setbacks, building envelope, structural system, monitoring, intrusion detection, and other systems that must be considered to develop a plan and a budget estimate. Also include special construction requirements such as lead, electromagnetic, and RF shielding, pneumatic tube systems, automated materials handling systems, security requirements for pharmacy, designated COOP facilities, and Security Operations Center.
c. Identification and location of primary and backup utility sources for water, power, emergency power, fuel, communications, and sewer.

19. SITE DEVELOPMENT/UTILITIES
Reports:
Submit the updated Basis of Design (BOD) report including:
a. Detailed analysis of the site in relation to the surrounding community, including, for example, mass transit routes and utilities.
b. Phasing analysis to determine impacts of project construction on maintaining hospital routine, ingress/egress of pedestrians and traffic flows, transportation and storage of construction materials, mitigation of air and noise pollution, sequencing of new conflicts, and areas of future construction.
c. Identification of floodplains and wetlands.
d. Sediment and erosion control requirements.
e. Stormwater management requirements and intended methods of implementation.

Drawings
Submit:
a. Circulation plan showing ingress/egress to the site by pedestrians (including persons with disabilities), cars, trucks, emergency vehicles, and mass transit traffic.

b. Site plan showing proposed structures, equipment at grade, and the other scope requirements including site preparation and demolition. Show expansion potential. Indicate first floor elevations for each proposed structure and spot elevations at critical locations; e.g., structure corners, entrances, intersections, and critical floor and grade elevations.
c. "Site security" diagram indicating all of the physical security elements being implemented into the site design including standoff distances, barriers, access control, and vehicle stacking. (min. scale 1:1200 (1”=100’)). Coordinate with *Section 18. Security.*
d. Site review checklist.

20. SPACE PLANNING
Reports
Submit an updated narrative Basis of Design (BOD) report including:
a. Verification that SEPS program is used as a basis for design.
b. Summary of space by function with net areas, gross area, and net-to-gross ratio by department, net-to-gross ratio for building, and all variations from VA standards. Submit in tabular form with subtotal for each department and common areas such as lobbies, service areas, cafeteria, and canteen.
c. Departmental area tabulations derived from BIM model, as required in *Section 4. Building Information Model.*

21. SPECIFICATIONS
Submit Table of Contents of applicable Specification Sections.

22. STEAM DISTRIBUTION (OUTSIDE)
Reports
Submit the updated Basis of Design (BOD) report including:
a. Description and evaluation of existing steam distribution facilities that are involved in the project.
b. Estimate of the remaining service life for all steam and condensate systems.
c. Information on existing system steam pressures, types of condensate return systems (pumped gravity, vacuum).
d. Documentation of existing loads with supporting data.
e. Analysis of capabilities of existing systems to accommodate additional loads.
f. Evaluation of alternative distribution types and recommendations for the type of steam distribution system to be implemented. Provide rationale for selection or rejection of each steam distribution system.
g. Information on proposed system steam pressures, types of condensate return systems (pumped, gravity, vacuum), and line sizes.
h. Rationale for proposed location for new steam distribution systems.

Calculations
Submit estimated steam and condensate loads to be carried by the systems.

Drawings
Indicate locations of existing steam distribution systems that may be affected by the project, alternate new locations, and recommended new location.

23. STEAM GENERATION
Reports
Submit the updated Basis of Design (BOD) report including:
a. Description of viable alternatives for generating steam. Alternatives normally include: new steam plant, use of existing steam generation facilities if there is sufficient additional capacity, modification of existing steam generating facilities, or purchase of steam. Consider hot water generation. Submit rationale for the selection or rejection of the alternatives.
b. Evaluation of the capability of existing steam generating facilities to accept the increased loads. If a significant load increase is expected, submit a complete description of the existing steam generating facilities. Include makes, models, sizes, ages, performance capabilities, and remaining

service life of all equipment and systems. Recommend tests, as appropriate, to determine remaining service life and capacity of major equipment and piping.

c. When a new steam generating facility is an alternative, identification of the types of fuels that are to be evaluated. Submit rationale for selection or rejection of any of the listed fuels.
d. List of the steam plant equipment alternatives that shall be evaluated. Typical alternatives include fire tube and water tube boilers, types of heat recovery equipment, and types of pumps.
e. Metering requirements coordinated with the ongoing activities at the existing facilities, and provide a brief description of the scope of work and extent of coordination involved.

Calculations

Submit:

a. Estimations of peak steam demands for the new facilities and any change in existing steam demands,
b. Accurate determination of existing maximum and minimum summer and winter steam demands and total annual production, if a steam plant exists. Submit a verification of the accuracy. Include a graph showing the relationship between outside temperature and winter steam demands.

Drawings

Submit:

a. Location of the existing steam plant and alternative locations of new or expanded steam generating facilities, as applicable. Show outside fuel related storage and handling facilities.
b. Location of alternative arrangements of the equipment within the proposed steam plants.
c. Single-line flow diagrams for the proposed options.

24. STRUCTURAL

Reports

Submit the updated Basis of Design (BOD) report including:

a. Detailed listing of all applicable codes, design criteria, and national standards affecting the design to ensure that the proposed design complies with applicable regulations, codes, and standards referenced in VA handbooks, design manuals, and standards.. Include title, year and publishing organization for each code/standard indicated. Provide description of Structural Design Loading Information (include criteria and reference source.) List all load combinations that shall be used and their source.
b. Description of Building Structural Performance Design Criteria.
c. Recommendations for foundation system and, where necessary, mitigation of groundwater penetration.
d. Program to perform subsurface exploration and laboratory testing in the area of any proposed construction. Explain technical issues to be resolved, field and laboratory methods to be used, estimated number and depths of borings and other field methods, estimated laboratory testing, and reporting methods.
e. Detailed work plan, which shall include the results of previous investigations relevant to the project.

25. SUSTAINABILITY

Reports

Submit the updated Basis of Design (BOD) report including:

a. Summary of the results and conclusions of the final site selection analysis with respect to sustainability criteria outlined as part of the Pre-Design phase.
b. Graphical representation (pie or bar chart) and description comparing various water-use reduction strategies to achieve the reduction goals and mandated water-use reduction requirements as part of the selected third-party rating system and VA sustainability guidelines. Coordinate the reporting with the results from the plumbing and site/civil storm water analysis to provide the potable water baseline and the required reduction target. Define strategies.
c. Graphical comparison (pie or bar chart) of the energy use intensity and energy consumption by end use for HVAC and lighting concepts evaluated as part of the SD1 phase. The summary should illustrate how the mandated energy conservation requirements, energy consumption and lighting design goals in VA design manuals and VA sustainability guidelines for the overall project

are being achieved. Coordinate the reporting with the results from the energy and lighting analysis conducted as part of the mechanical and electrical/lighting systems evaluation.

d. Graphical (pie or bar chart) summary of the preliminary results and conclusions of the Indoor Environmental Quality (IEQ) impact of each of the HVAC concepts. In addition, provide a graphical representation of Green House Gas (GHG) emissions for the selected concepts as they relate to VA mandates.
e. Summary assessment and preliminary estimate of renewable energy capacity as part of the SD1 concept evaluations relative to VA mandates and third-party sustainability goals. Renewable energy to be included in the assessment should include solar thermal, solar PV, wind, and geothermal. Coordinate with the plumbing submission and submit as needed the explanation and technical backup information regarding how the project shall meet the project goal for hot water generation using renewable solar energy.

Calculations

Submit:

a. Preliminary water use reduction calculations based on third-party and VA guidelines. Coordinate calculation submission for the potable water baseline and reduced consumption calculations with the plumbing engineer. Coordinate calculation submissions with the plumbing engineer to support the strategies to achieve the water reduction goals.
b. Preliminary renewable energy calculations. Coordinate calculation submissions with the mechanical and electrical trades.

Green Globes (if applicable)

Reports

Provide as part of the narrative Basis of Design Sustainability (BODS) report the following as it pertains to third-party Green Globes Certification, including:

a. Rating category under which the project shall be certified and submit the final input data for the project initiation, site analysis, and programming phases.
b. Final input parameters and assumptions for performing the Life Cycle Cost Assessment (LCA).

LEED (if applicable)

Reports

As part of the updated Basis of Design Sustainability (BODS) report, submit third-party LEED Certification preliminary LEED scorecard. Indicate where points are anticipated and provide a brief discussion describing why certain points are or are not achievable.

26. TELECOMMUNICATIONS

Reports

Submit the updated Basis of Design (BOD) report including:

a. Assessment of whether the existing telecommunications services are adequate for project needs.
b. Description of the extent of utility company work required. Include copies of all correspondence and minutes of meetings with all utility company's representatives.

Drawings

Submit:

a. Location of incoming telecommunications services, manholes, and duct lines on the project site plan.
b. Conceptual telecommunications riser diagrams.
c. Provision for all telecommunications spaces on the Architectural drawings. (Telecommunications closets must stack vertically.)

C. SCHEMATIC DESIGN2 [SD2]

The purpose of Schematic Design2 is to further refine the solution developed in Schematic Design1, and to validate that project goals and parameters are reflected in the design, which is further developed at a room-by-room level of detail.

1. ARCHITECTURAL

Reports

Submit the updated Basis of Design (BOD) report including:

a. Phasing narrative.
b. Potential alternates for bidding development. The value of the alternates shall represent approximately 10% of the construction budget and determine if they shall be additive or deductive alternates.
c. Vertical and horizontal expansion opportunities.

Drawings

Submit:

a. Dimensions for overall building, column centerlines, and critical building components and features
b. Floor plans for each floor penthouses, interstitial spaces, pipe basements, and service areas (min. 1:200 (1/16"=1'-0"), 1:100 (1/8"=1'-0") preferred). Show room names, numbers, net area, columns and column grid, windows, and major building and medical equipment. Identify limits of each department or service. Locate expansion joints, seismic joints, vertical circulation, mechanical rooms, electrical rooms and closets, data closets, and vertical shafts.
c. Demolition floor plans (min. 1:100 (1/8"=1'-0")).
d. Preliminary major medical equipment schedule by room type.
e. Phasing plan and narrative with preliminary Interim Life Safety Measures (ISLM) and Infection Control Risk Assessment (ICRA) drawings for renovation areas only (min. 1:200 (1/16"=1'-0"))
f. Life safety plans showing means of egress, capacity, population, smoke compartments, fire walls, and horizontal exits (min. 1:200 (1/16"=1'-0")).
g. Large scale plans of patient rooms, nursing units, operating rooms, procedure rooms, and other rooms with complex requirements. (min. 1:50 (1/4"=1'-0")).
h. Building elevations with fenestration, penthouses, materials, finish floor elevations, floor-to-floor heights, overall building height, adjacent grades, column centerlines, and section cut indications. (min. 1:100 (1/8"=1'-0")).
i. Building sections through major portions of building (min. 1:50 (1/4"=1'-0")). With location of section cuts identified on plans and elevations.
j. Interior elevations showing medical gases, power, data, communications, equipment, and other built-in items (min. 1:50 (1/4"=1'-0")).

2. ASBESTOS ABATEMENT

Where project scope involves known or suspected asbestos material, submit:

Reports

Submit an asbestos assessment report (see VA guidelines for asbestos abatement) prepared by the industrial hygiene consultant and include:

a. Summary of results of review of building records.
b. Summary of results of interviews with station personnel.
c. Whether any materials used in the building construction are known to contain asbestos. (Some trade name materials are known to contain asbestos and should be identified.)
d. Report on inspection of the building to determine location and condition of asbestos materials.
e. Sampling strategy that shall yield statistically viable conclusion on the extent of asbestos present.
f. Name and location of the laboratory qualified for sample analysis that the Professional Industrial Hygienist intends to use.

3. AUTOMATIC ELEVATOR AND TRANSPORT SYSTEM

Reports

Submit:

a. Updated reports to incorporate new or updated data.
b. Platform size, capacity, and speed for elevators, lifts, and dumbwaiters.

Calculations

Submit as required for all studies described above.

Drawings

Submit:

a. Floor plans (min. 1:200 (1/16”=1’-0”) indicating location of proposed and existing automatic transport devices and systems. Indicate proposed routes for automated delivery systems.
b. Location of machine and equipment rooms for elevators, lifts, and elevators. Indicate minimum dimensions.
c. Location of pneumatic tube stations. Prepare matrix indicating locations of stations that are to be connected. (Example: Pharmacy shall not need connection to Supply, Processing and Distribution (SPD).)

4 BUILDING INFORMATION MODEL

Submit the BIM 3D capability as a communication tool with medical staff and other stakeholders to communicate design vision, medical functionality, and patient experience.

Reports

Update the BMP (BIM Management Plan).

Drawings

For review of functionality, submit un-rendered, 3D views of the following: building entrances, nurse station sightlines for corridor monitoring, special building features, healing gardens, patient care room and equipment clearances, mechanical spaces where clearances are critical, and any other area where 3D drawings would be useful to present design ideas, educate, and resolve conflicts.

5. COMMISSIONING

Reports

Submit:

a. Updated Basis of Design report coordinated with VA’s Project Requirements and list of systems, components, and features to be commissioned.
b. Design Phase Commissioning Plan in its final form.
c. Updated Design Phase Commissioning Issues Log with proposed resolution/mitigation. Incorporate into DrChecks$_{sm}$.
    - Identify major concerns that could affect operations, maintenance, or testing
    - Identify discrepancies between OPR and design narrative
    - Update design schedule and key milestones
    - Update roster of Commissioning Team members
d. Coordination Matrix for Commissioning Agent and A/E.

6. COST ESTIMATING

Reports

Submit:

a. WBS II Level 2 estimate.
b. Cost model budget tracking.
c. Budget tracking by phase.
d. Separate computations for site, each building, new work, renovations, and alternates.
e. Building net and gross area computations for new construction and renovations.
f. Project Data Sheets 1 and 2 (refer to VA cost estimating guidelines).
g. Market survey.

7. CRITICAL PATH METHOD (CPM)

Reports

Submit the updated Basis of Design (BOD) report including:

a. Updated Project Master Schedule.
b. Updated Detailed Design Schedule.
c. Updated Schedule Risk Analysis.
d. Phasing narrative.
e. Phasing plans on reduced site plans.
f. Phasing diagram.
g. Phases marked on full size drawings for VA review.
h. Written list of systems, including temporary systems by phase and separated by technical discipline.

8. ELECTRICAL

Reports

Submit the updated Basis of Design (BOD) report including:

a. Basic assumptions and points of interconnection with the existing electrical power distribution systems. Submit a statement describing the impact of the new construction work to the existing electrical power distribution systems.
b. Present demand load (medium voltage switchgear and primary feeder) and projected additional load of new construction.
c. Two design options (campus and building level) for the electrical power distribution systems and a list of advantages and disadvantages for each. Include description of physical security requirements and implementation into electrical design alternatives.
d. Descriptions of the electrical design approaches for the specialty areas (including but not limited to X-rays Rooms, Intensive Care Units and Operating Room Suites) that shall be submitted for DD1.
e. Method by which fault current, protective device coordination, arc flash, generator sizing, load, feeder and equipment sizing, voltage drop, harmonic distortion, lightning protection risk analysis, and lighting calculations.
f. Report of the life cycle cost analyses for major electrical distribution system equipment options and lighting systems options. Indicate the recommended design and equipment.

Calculations

Submit:

a. Updated demand calculations to reflect decisions concluded in the SD1 phase development.
b. Block area demand calculations based on area function for lighting and power, both normal and essential loads to establish closet equipment sizes and ratings.
c. Updated mechanical equipment loads for mechanical system equipment and elevators.
d. Updated critical electrical system and/or stand-by electrical power system loads to determine emergency and/or stand-by generation capacity required to support the building electrical power requirements.
e. Complete life cycle cost analyses for major electrical equipment and lighting systems.

Drawings

Submit:

a. Two proposed lighting schemes for special areas such as: main entrances/lobbies, public/visitor waiting areas, elevator lobbies, public/visitor corridors, canteen, atrium and skylights, director/administrator office, library, chapel, day room, and nurse station. Vary each scheme in concept and materials such as fixture layout, fixture type, lamps, louvers, and reflectors. Include requirements of applicable physical security standards.
b. Updated drawings including:
    - Indication of area functions and location, room titles, location and dimensions of electrical equipment rooms and electrical closets on drawings. Show all electrical power distribution equipment to scale. Include means and clearances for installation, maintenance, and operation of equipment
    - Electrical rooms and/or closets shown stacked vertically on plans.

- Plan(s) showing existing and proposed new underground work for electrical power distribution system
- Preliminary demolition drawings, indicating scope of work for demolition, spaces to be made available from demolition, and construction phasing impacts of demolition
- Concise, conceptual one-line and riser diagrams of the proposed normal, essential and standby electrical power distribution systems. The one-line diagram shall show the entire electrical power distribution system, incoming utility, medium electrical power, main switchgears, main switchboards, and transformers. Riser diagram shall include switchgear, transformers and low voltage main and/or distribution panels, branch panels, and representative methods of feeding 277/480-volt and 120/208-volt normal and essential electrical power/stand-by electrical power panels. Indicate ratings and locations of existing electrical devices to be reused

9. ENVIRONMENTAL IMPACT

Notify VA contracting officer immediately upon discovery of any environmental or site data that may warrant investigation.

10. EQUIPMENT

No submission is required.

11. FIRE PROTECTION

Reports

Submit the updated Basis of Design (BOD) report including:

a. Description of the existing fire alarm system in the building to be modernized and/or the base loop system to which the new construction shall interface.
b. Description of type, features, age, reliability, compliance with present day codes, capacity, zoning, supervision, control panel and power supplies, initiating devices and circuits, and auxiliary functions for existing fire alarm system. Indicate manufacturer, model number, voltage, and wiring style of existing alarm systems and devices. Provide recommendations for the proposed fire alarm work.
c. Description of proposed options for new systems.
d. Description of building construction, building fire and smoke separation, fire sprinkler/standpipe systems, size of fire pumps, water supply available/maximum demand, water flow testing results, fire alarm systems, and kitchen extinguishing systems. Indicate NFPA 220 and IBC fire resistive rating of the building, NFPA 101 occupancy type, and fire protection code analysis to access compliance with NFPA 101.

Calculations

Submit:

a. Updated calculations to size fire pumps, water supply available/maximum demand, and water flow testing results raw data.
b. Exit calculations for each floor that justify the number of exits provided.

Drawings

Submit:

a. Estimated sizes of the proposed main fire lines and propose the location of connections to site utility.
b. Sprinkler, fire alarm, and smoke zones at a legible scale that shall show an entire floor per drawing, using VA standard symbols.
c. Existing areas that are completely sprinklered, location of building water supply, interior sprinkler supply lines, standpipes, fire extinguisher cabinets, exit paths from each zone, distances to the stair, and the occupancy of each area.

12. HEATING, VENTILATING & AIR CONDITIONING

Reports

Submit the updated narrative Basis of Design (BOD) report including:

a. Description of the heating, ventilating, and air conditioning (HVAC) systems and equipment for each functional space.
b. Report on the envelope and glazing properties identifying further energy use reductions necessary to achieve the federally mandated energy consumption targets.
c. Description of the mechanical sequences of operation and the operational parameters represented by the energy model.
d. Summary of the life cycle cost analysis with specific recommendations.

Calculations
Submit:
a. Updated energy analysis, including VA-mandated energy conservation measures. Optimize envelope and glazing properties and identify further energy-use reductions necessary to achieve the federally mandated energy consumption target. State all occupancy, regulated and unregulated load assumptions, and schedule parameters used in the analysis. State all modeled system operational characteristics. Supply air fan selection shall mandate multiple fan selections in which single and/or multiple plenum fans are compared with the conventional housed fans. Computerized selections showing project-specific sound power levels, power input, and overall dimensions shall be submitted for VA review and approval.
b. Complete life cycle cost analysis with specific recommendations and full back-up data. State the heating and cooling capacities of each functional area used in the life cycle cost analysis. State the block cooling and heating loads for each new and/or existing building.
c. VA-mandated dispersion analysis.
d. VA-mandated acoustic analysis.

Drawings
Submit updated drawings showing:
a. Air and water flow diagrams for the existing systems and proposed options.
b. Tentative locations and sizes of all mechanical equipment rooms and principal vertical shafts.
c. Block layout of major pieces of equipment in each mechanical equipment room.
d. Outside air, exhaust air, and relief air louvers. Resolve various items affecting louver location, considering other factors such as visibility, historical considerations, wind direction, noise, physical security requirements, hurricane and storms, and health hazard odors caused by short circuiting of air from exhaust from kitchen exhaust, fume hoods, isolation room exhaust, emergency generators, and truck waiting areas, to intake.

13. HISTORIC PRESERVATION
Reports
a. Comply with contractual agreements for Schematic Design 2, as developed with the contracting officer, project manager, and VA cultural resources management officer.
b. Notify VA contracting officer immediately upon discovery of any historical or archeological data that may warrant investigation.

14. INCINERATION/WASTE DISPOSAL SYSTEMS
Reports
Submit the updated Basis of Design (BOD) report including updated description of the systems and equipment being applied.

Calculations
Submit:
a. Equipment sizing.
b. Updated demand calculations to reflect decisions concluded in the SD1 phase development.

Drawings
Submit:
a. Updated Site plan showing alternative new plant locations and location of existing plant.

b. Plan view layout of new system or modification to existing system showing locations of major equipment.

15. INTEGRATED DESIGN

Reports

Submit the updated Basis of Design (BOD) report including:

a. Updated Team Directory notifying VA of changes for approval.
b. Refined Project Management Plan. Changes are coordinated with the VA PM, who is responsible for leading the IPT.
c. Updated Team Directory and Project Management Plan.

16. INTERIOR DESIGN

Reports

Submit the updated Basis of Design (BOD) report including:

a. Narrative describing interior design concept, how it meets the needs of the users and the facility, and budget considerations. Discuss appropriateness of material and color selections, how they address patient needs, how they relate to the overall building design, and their appropriateness for the geographical location of the facility. Note all deviations from PG 18-14.
b. Finishes for typical rooms with preliminary color selections and environmentally sustainable qualities. Notify VA of proposed deviations from PG 18-14.
c. Provide signage/wayfinding concept.
d. Catalog cuts for proposed signage system.

Drawings

Submit floor plans and sketches indicating finishes, signage, and wayfinding features.

17. PLUMBING

Reports

Submit the updated Basis of Design (BOD) report including: domestic (hot and cold) water, sanitary, storm, medical gasses, domestic hot water generation system narratives with justification for system selection and potential use of solar energy. Coordinate with municipal utilities to verify that needed capacity is available.

Calculations

Submit:

a. Updated calculations for sizing equipment.
b. Potable water baseline and update the reduced consumption calculations.
c. Updated calculations to support the strategies to achieve the water consumption and energy reduction goals. If potable water is being used to reduce energy, provide information regarding the use of life cycle cost effective water conservation measures to achieve the energy reduction.
d. Report on types and number of products that are water-efficient.
e. Outdoor water consumption calculations for exterior water usage and recycling. Show plans to reduce water usage for landscaping by choosing plant materials that do not require on-going irrigation; where irrigation is required by specifying low irrigation strategies and recycling where appropriate.

Drawings

Submit:

a. Preliminary layout of new utilities as they relate to sanitary, storm, and water.
b. Flow diagrams of domestic water and medical gasses.
c. 1:100 (1/8-inch) scale drawings indicating room names, locations of existing and new equipment, and plumbing fixtures using VA fixture numbers. Indicate interface of new systems with existing. Show location of air compressors, vacuum pumps, sewage ejectors, domestic water heaters and main risers.
d. Plans showing incoming and leaving building services. Obtain data from medical center staff and indicate water pressure and flow at two fire hydrants serving each building in project and depth of cover for new water and fuel gas mains.

e. Location of grease traps, radioactive and chemical waste, and waste recovery systems.
f. Where wells are required for a water source, install test well and obtain water analysis and expected yield in gallons per minute.

18. SECURITY (PHYSICAL)

Reports

Submit the updated Basis of Design (BOD) report including a physical security narrative, completed by a qualified Security Specialist and a qualified Structural Blast Specialist, identifying the facility's classification as a Life Safety Protected or Mission Critical facility. Report shall include:

a. Description of the overall proposed physical security approach and the building and site design elements being included for compliance to the applicable physical security standard.
b. Subsections corresponding to each of the chapters in VA physical security standards (e.g. site considerations, building entrances and exits, functional areas, and building envelope).
c. For physical security requirements resulting in structural or exterior envelope hardening for blast loads or progressive collapse, indication of the proposed methodology, and software to be used.

Drawings

Submit:

a. Site Plan (min. 1:1200 (1"=100')) showing:
    - Perimeter fence
    - Location of vehicle access points
    - Type of access control procedures and devices
    - Location of active and passive barriers
    - Vehicular circulation and parking
    - Site lighting

b. Floor Plans (min. 1:100 (1/8"=1'-0")) showing:
    - Public entrances and lobbies
    - Staff entrances
    - Security operations and control center
    - Child-care center, main computer room, COOP site, emergency generator room, central utility plant, loading dock and service entrances, research laboratories, and vivaria

19. SITE DEVELOPMENT/UTILITIES

Reports

Submit the updated Basis of Design (BOD) report including:

a. Discussion of physical security elements being included in the site layout design.
b. Phasing analysis of sequencing construction activities to avoid conflicts with the routine medical center operation.
c. Criteria and proposed boring locations plan for a subsurface investigation program to be used for road, parking, and other paving design, where applicable.
d. Proposed boring locations shall be coordinated with boring program for buildings. (See *Section 24. Structural* for requirements.)
e. Feasible storm water management strategies based on SD1 layout revisions. Some strategies require more land consumption than others and may require coordination with landscape architect. Preliminary computations and design criteria shall adhere with local, state, and federal guidelines for storm water management practices, where applicable.
f. Proposed storm water management practices. Include infiltration practices, conduct percolation tests to check soil conditions.
g. Site review checklist.

Drawings

Submit:

a. Updated VA-selected alternative or the VA-provided concept plan. Submit the topographic, utility, and landscape surveys. Submit proposed building locations, demolition, proposed sidewalks and

roads, parking, entrances and exits, and all mechanical and electrical components on grade (with circulation patterns).

b. Grading plans of all proposed construction. Show spot grades at structure corners, entrances, and intersections. Provide first floor elevations for structures and equipment pads. Show erosion control and drainage, storm water pollution prevention plan, staging areas, construction access and parking, and stockpile areas for earth and materials.
c. Landscape drawings showing plant groupings and a list of proposed plant materials. The plants selected must be native to the site climatic zone. Delineate irrigation limits.

20. SPACE PLANNING

Reports

Submit the updated Basis of Design (BOD) report including updated summary of space by function with net areas, gross area, and net:gross ratio by department, net: gross ratio for building, and all variation from VA standards. Include unassigned space, shell space, circulation (horizontal and vertical), and space for future expansion. Indicate variance from approved space program and provide explanation for each variance.

Calculations

Submit net and gross areas by department.

Drawings

Refer to *Section 1.Architectural* and *Section 4. Building Information Modeling* for requirements.

21. SPECIFICATIONS

Submit:

a. List of sections including those that shall be written by A/E for the project.
b. A few sample specification sections, such as building exterior materials and typical interior materials, using the “Track Changes” function.

22. STEAM DISTRIBUTION (OUTSIDE)

Reports

Submit the updated Basis of Design (BOD) report including:

a. Life cycle cost analysis for alternative types of steam distribution systems and alternative routings of the systems. Analyze the test results on existing systems (where applicable). Evaluate the alternatives, consider all other relevant issues, and make recommendations.
b. Tests performed on soil conditions related to classification of underground factory-fabricated pre-engineered systems, if used.

Calculations

Submit:

a. Updated demand calculations to reflect decisions concluded in the SD1 phase development.
b. Estimate of steam and condensate loads that shall be imposed on new or existing distribution facilities.
c. Calculations of pipe sizing.

Drawings

Submit updated drawings showing site plans of new steam distribution systems and existing systems affected by the project. Use site survey to determine the location of other utilities along proposed routes.

23. STEAM GENERATION

Reports

Submit the updated Basis of Design (BOD) report including:

a. Combined new (estimated) and existing steam loads, including maximum and minimum summer and winter demands and total annual production. Provide breakdown of new steam loads into categories of end use, such as building heating, humidification, reheat, domestic hot water, sterilization, line losses, kitchen, and laundry.

Calculations
Submit:

a. Life cycle cost analysis of the steam supply alternatives, including fuel selection. Include analysis of alternative plant locations. Compare the alternatives, present test results on existing equipment and systems, evaluate all other relevant issues, and make recommendations.
b. Life cycle cost analysis for alternatives types of equipment to be applied and for heat-recovery alternatives.
c. Data on emissions regulations and the methods for compliance.
d. Initial selection of major equipment and preliminary calculations of equipment sizing.

Drawings
Submit:

a. Site plan showing alternative new plant locations and location of existing plant.
b. Plan layouts of alternatives for new plant or modification to existing plant, showing location of equipment and personnel facilities.
c. Single-line flow diagrams of all systems, feed water, steam, and condensate.

24. STRUCTURAL
Submit the updated Basis of Design (BOD) report including:

a. Written description of the basic structural systems to be used on the project (foundations, substructure, superstructure, and lateral force resisting system). Include a short description of other options that were investigated for each system and why they were not chosen. Provide enough detail to describe the system fully to an experienced engineer for review purposes.
b. Comparative description, with sketches and supporting calculations, of at least three structural systems for typical buildings or wings, as deemed appropriate. (When only one structural system is possible, submit explanation and only that structural system.)
   - Describe each type of construction proposed and reasons therefore, including the structural framing system. (The structural design should be carried to the point where the total framing systems are determined and a realistic cost estimate can be made.)

c. Structural material information:
   - Concrete: Basic material properties for concrete to be used, including compressive strength, entrained air content, maximum aggregate size, allowable water/cement ratio, unit weight or aggregate type, and anticipated admixtures
   - Structural Steel: ASTM material designation for the steel to be used for each of the following items: steel columns, steel beams, base plates, built-up beams or girders, steel truss chord members, and lateral bracing system. Itemize by American Institute of Steel Construction (AISC) shape as applicable, including material types and sizes
   - Steel Deck: Basic information on the anticipated steel decking to be used, including profile and depth, ASTM material designation, span condition, finishes and coatings, and method of attachment
   - Masonry: ASTM International (ASTM) designations for typical Concrete Masonry Units (CMU) to be used
   - Wood and Engineered Wood Products: Grade and species for all anticipated wood framing products
d. Description of the design philosophy to limit the spread of damage from an extraordinary event.
e. Summary of the code analysis for each applicable code or standard.
f. Structural review checklist.
g. Two copies of completed Geotechnical Report. A draft report, for review and comment, shall be submitted for approval. The final report shall include resolution of all comments. Investigation methods shall be tailored to the needs of the specific project. Ground water conditions shall be investigated for each project, including significant excavations greater than 15 feet. This shall include the installation and monitoring of observation wells. When required, monitoring shall continue for at least six months to give an indication of seasonal fluctuation. The coordinates (northing, easting, elevation) of each boring or survey line shall be reported. Boring logs shall

include soil descriptions, blow counts, and all other relevant information. Refusal and its relation to top of rock shall be carefully explained and correlated to seismic refraction survey if performed. Geophysical testing and evaluation shall be included where appropriate.

h. Recommendations for foundation system and, if necessary, mitigation of groundwater penetration.
i. Indication of whether special geotechnical investigation procedures, e.g. Shear Wave Velocity Measurements and/or Site Specific Study, shall be required for the determination of the more accurate Site Class required to assign Seismic Design Category**.**

Drawings

Provide drawings of the preferred structural system at the smallest scale that can clearly illustrate the concept (e.g., 1:200 (1/16" =1'0") for larger buildings and 1:100 (1/8"=1'-0") for smaller buildings).The A/E and VA team leader need to concur on drawing scale for the submission.

Submit:

a. Foundation system including walls, footing, and pile locations.
b. Floor and roof framing system, including column, beam, and girder locations. Indicate lateral bracing system on the layout.

25. SUSTAINABILITY

Reports

Submit the updated Basis of Design (BOD) including:

a. Description of the water-use reduction strategies selected for the project, including preliminary life cycle cost analysis and how they achieve the reduction goals and mandated water-use reduction requirements as part of the selected third-party rating system and VA sustainability guidelines. Coordinate the reporting with the plumbing and site/civil storm water analysis to provide a graphical representation (pie or bar chart) by end use of the potable water baseline versus the required reduction target and the selected strategies.
b. Summary of the energy-use intensity and energy consumption by end use and the life cycle cost for the selected HVAC and lighting concepts. Coordinate the reporting with the results from the energy and lighting system analysis conducted as part of the mechanical and electrical/lighting systems evaluation. The summary should graphically illustrate (pie or bar chart) how the mandated energy conservation requirements, energy consumption, and lighting goals in VA design manuals, VA sustainability guidelines, and for the overall project are being achieved.
c. Preliminary summary of the Indoor Environmental Quality (IEQ) aspects of the selected concept. Provide a description and graphical representation of how VA and third-party sustainability system GHG emission reduction or elimination requirements for the selected concept are achieved.
d. Summary and estimate of renewable energy capacity as part of the SD1 concept evaluations and as they relate to VA mandates and third-party sustainability goals. Renewable energy to be included in the assessment must include solar thermal, solar PV, wind, and geothermal. Also, coordinate with the plumbing submission and submit as needed the explanation and technical backup information as to how the project shall meet the project goal for hot-water generation utilizing renewable solar energy.

Calculations

Submit:

a. Water-use reduction calculations based on third-party and VA guidelines. Coordinate calculation submission for the potable water baseline and reduced consumption calculations with the plumbing engineer. Coordinate calculation submissions with the plumbing engineer to support the strategies to achieve the water reduction goals.
b. Preliminary GHG emissions reduction calculations supporting VA mandates.
c. Preliminary renewable energy calculations. Coordinate calculation submissions with the mechanical and electrical trades.

GREEN GLOBES (if applicable)

Reports

Provide as part of the narrative Basis of Design Sustainability (BODS) report the following as it pertains to third-party Green Globes certification.

a. Final input data for the project initiation, site analysis, and programming phases.
b. Final input parameters and assumptions for performing the Life Cycle Cost Assessment (LCA).

LEED (if applicable)
Reports
As a part of the Basis of Design Sustainability (BODS) report the following as it pertains to third-party LEED certification, submit a completed preliminary LEED score card. The score card should indicate where points are anticipated and a brief discussion should be provided describing why or why not certain points are not achievable.

26. TELECOMMUNICATIONS
Reports
Submit the updated Basis of Design (BOD) report including:

a. Narrative describing the design, including basic assumptions, compatibility with existing equipment, and points of interconnection with the existing telecommunications systems.
b. Statement of the impact of the new construction to the existing telecommunications systems.
c. Copies of all correspondence and minutes of meetings with utility company representatives.

Drawings
Submit:

a. Room titles, area functions, location, and sizes of main computer and telephone rooms and telecommunications closets.
b. All major telecommunications equipment at scale. Include means and clearances for installation, maintenance, and removal/replacement of equipment.
c. Sheet for telecommunications symbols, notes and abbreviations.
d. Site plan showing existing and proposed telecommunications systems associated with the new construction.
e. Updated conceptual diagram of the proposed telecommunications systems.

V. DESIGN DEVELOPMENT

A. GENERAL

The final approved Schematic Design2 Documents shall be the basis for the Design Development phase. Any changes from SD2 documents must be approved by VA Project Manager prior to proceeding with the Design Development documents. All documents shall be reviewed for functional and aesthetic relationships. The result of this phase shall be a set of design documents defined to the point that no further functional decisions are required.

General requirements

1. Drawings shall have graphic scales, north arrow (either true north or plan north; consistent for similar plan types), and key plan clearly identifying the drawing component within the overall plan.
2. Each submission shall build on previous submission. Drawings required by previous submission shall be included in subsequent submission whether or not specifically identified as a requirement.
3. Submit all previous comments from VA and peer reviewers. All comments shall be resolved before moving into the next submission stage. For major issues, A/E must respond to comments with written resolution; i.e., responding to important comments simply with “agreed” or “disagreed” is not acceptable. Any deviation from VA criteria shall be identified, justified, and documented with VA’s approval.
4. All previously submitted documents shall be updated with written responses to reflect review comments and further development. The A/E shall verify that all changes based on the review of the previous phase have been entered into the DrChecks$_{sm}$ electronic reviewing system and approved by the VA Project Manager.
5. Specifications shall be prepared using VA Master Construction Specifications. Submissions shall show changes to master by using "Track Changes" function. Each submission shall indicate changes from previous submission, not all changes to master. The final submission shall not show changes.
6. Dimensions shall be provided in soft metric (S.I.) units followed by English units, unless otherwise specified by the VA Project Manager.
7. All previously submitted documents shall be updated to reflect review comments and further development.
8. The A/E shall submit minutes of meetings with VA, VA's other contractors, and A/E coordination meetings.

B. DESIGN DEVELOPMENT 1 [DD1]

The purpose of Design Development1 is to add an increased level of detail for all aspects of the project to further define the design. During Design Development1, the team refines visualization of the project to communicate the character of interior and exterior space.

1. ARCHITECTURAL

Reports

Submit:

a. Alternates and include written description. Continue cost evaluation
b. Updated Room Data Sheets for typical room types in the project that include:
    - Minimum room dimensions and clearances
    - Minimum door size, vision panel, and hardware function
    - Fire ratings
    - Casework configuration, construction requirements, and location
    - Utilities (quantity and location): normal power, emergency power, isolated power, UPS, lighting, plumbing fixtures and controls, medical gases, data connections, communications (telephone, nurse call, PA, intercom), HVAC criteria and controls, air filtration and circulation
    - Equipment (fixed and movable) with rough-in requirements. Identify who furnishes and who installs each piece

- Fixtures and furniture to be accommodated, whether or not part of the contract
- Special features such as humidity control, eye wash, shielding
- Locker quantities and type
- Acoustic separation
- Finishes

c. Equipment catalog cuts.

Drawings

Submit:

a. Updated floor plans to include each floor, penthouses, interstitial spaces, pipe basements, and service areas (min. 1:100 (1/8"=1'-0")). Show room names and numbers, door numbers, net area of each room, column grid, columns, windows, interior vision panels, millwork, casework, plumbing fixtures, and major and fixed equipment. Show proposed future expansion. Coordinate with *Section 3. Automatic Transport.*
b. Demolition floor and ceiling plans for areas to be renovated and areas below where work in space below is required (min. 1:100 (1/8"=1'-0")) with finish schedule and partition types.
c. Equipment plan (min. 1:100 (1/8"=1'-0")) and schedule with rough-in requirements. Identify relocated equipment, who furnishes new equipment, and who installs equipment.
d. Enlarged floor plans (min. 1:50 (1/4"=1'-0")) for typical rooms.
e. Interim Life Safety Measures (ISLM) and Infection Control Risk Assessment (ICRA) drawings (min. 1:200 (1/16"=1'-0")).
f. Life safety plans showing means of egress, capacity, population, path of travel, travel distances, fire rated partitions, smoke barriers, exit signs, and fire extinguishers (min. 1:200 (1/16"=1'-0")).
g. Building elevations with fenestration, penthouses, materials, finish floor elevations, floor-to-floor heights, overall building height, window and louver types, entrances, canopies, and adjacent grades (min. 1:100 (1/8"=1'-0")). Include separate elevations indicating base building with expansion shown on floor plans.
h. Building elevations of complex areas (min. 1:50 (1/4"=1'-0")).
i. Building sections (min. 1:100 (1/8"=1'-0")).
j. Typical wall sections (min. 1:15 (3/4"=1'-0")).
k. Interior elevations showing medical gases, power, data, communications, millwork, casework, equipment and other built-in items (min. 1:50 (1/4"=1'-0")).
l. Partition type details (min. 1:10 (1"=1'-0")).
m. Reflected ceiling plans (architectural only) (min. 1:100 (1/8"=1'-0")).
n. Finish schedule.
o. Develop alternates in narratives and estimates.

2. ASBESTOS ABATEMENT

Where asbestos abatement is required, submit:

Reports

Submit substantially complete assessment report in accordance with VA design manuals.

Drawings

Submit asbestos abatement drawings.

3. AUTOMATIC ELEVATOR AND TRANSPORT SYSTEM

Reports

Submit:

a. Updated reports to incorporate new or updated data, if design criteria have changed since SD2 submission.
b. Design requirements for equipment such as structural loads (horizontal and vertical), power requirements, heating and cooling loads, special ventilation, emergency power or operation requirements.

Calculations

Submit as required for all studies described above.

Drawings
Submit:

a. Floor plans (min. 1:100 (⅛"=1'-0") drawings of the transport systems, including elevators, pneumatic tubes, escalators, cart lifts, dumbwaiters, automatic guided vehicles (AGV), and electric track vehicles (ETV). Indicate tracking, piping, battery charging areas, blower rooms, queuing areas, cart holding areas, cart washer, central control area, and floor or wall recessed transport control units. Indicate architectural features in areas to be used for these systems.
b. Location of machine and equipment rooms for elevators, lifts, and elevators. Indicate minimum dimensions, ventilation, and power requirements.
c. Minimum dimensions for hoistways.
d. Location of pneumatic tube stations. Update matrix indicating stations that are to be connected location of pneumatic tube stations.

4. BUILDING INFORMATION MODEL (BIM)

Submit the following updated information derived from the building information model for advancement of the design or verification of the model:

Reports
Submit:

a. Updated BMP (BIM Management Plan) with added input from the Constructor (if one is under contract).
b. Level of Detail Matrix for model elements across all trades consistent with direction set at BIM kickoff meeting.
c. Clash detection results for major vertical and/or horizontal mains and select repetitive spaces. Identify known pinch points for further clash sessions.

Calculations
Submit:

a. Full Room Schedule showing space naming and coding as defined by VA guidelines.
b. Updated energy model and submit status toward energy goal.
c. Updated gross area and departmental area schedules and graphics.

Drawings
Submit:

a. Updated 3D views from SD2 submission.
b. Submit floor plans color-coded by functional area.
c. Legend showing example Door and Wall families, indicating types.
d. Legend showing example Room Finishes for typical rooms and key public areas.

5. COMMISSIONING
Reports
Submit:

a. Updated Design Narrative.
b. Updated Design Phase Commissioning Plan.
c. Updated Design Phase Commissioning Log with proposed resolution/mitigation. Incorporate into DrChecks$_{sm.}$
   - Identify major concerns that could affect operations, maintenance or testing
   - Identify discrepancies between Owner's Project Requirements (OPR) and Design Narrative
   - Update design schedule and key milestones
   - Update roster of Commissioning Team members
d. Coordination Matrix for Commissioning Agent and the A/E
e. Draft Construction Phase Commissioning Plan, including systems to be commissioned, an outline of construction phase roles and responsibilities, and an outline of required system documentation requirements.

6. COST ESTIMATING

Reports

Submit:

a. WBS II Level 3 estimate.
b. Cost model budget tracking.
c. Budget tracking by phase.
d. Separate computations for site, each building, new work, renovations, and alternates
e. Building net and gross area computations for new construction and renovations.
f. Project Data Sheets 1 and 2 (refer to VA cost estimating guidelines).
g. Market survey.

7. CRITICAL PATH METHOD (CPM)

Update information shown on Master Schedule, Design Schedule, and Risk Analysis and provide an increased level of detail for each.

Reports

Submit an updated narrative Basis of Design (BOD) report including:

a. Updated Project Master Schedule.
b. Updated Detailed Design Schedule.
c. Updated Schedule Risk Analysis.
d. Identification of anticipated midpoint of construction and escalation factors in determining construction cost. (Coordinate with *Section 6. Cost Estimating.)*
e. Updated Phasing narrative.
f. Updated Phasing plans on reduced site plans.
g. Updated Phasing diagram.
h. Phases marked on full size drawings for VA review.
i. Written list of systems, including temporary systems by phase, and separated by technical discipline.

8. ELECTRICAL

Reports

Submit the updated Basis of Design (BOD) report including:

a. Previous submission documents modified to meet the utility company's requirements. Update the written summary of proposed electrical service/methods/equipment based on discussions and agreements with the electrical utility.
b. Coordination of electrical requirements on room data sheets. (See *Section 1. Architectural.*)
c. Major equipment cut sheets for primary and secondary electrical distribution systems.

Calculations

Submit:

a. Updated demand and connected load calculations to reflect project's development.
b. Estimated connected loads based on panel schedules for each area function's lighting and power, normal and essential electrical systems.
c. Updated mechanical motor loads for mechanical system equipment and elevators
d. Panel and switchboard schedules for load analysis.
e. Generator selection calculation based upon input loads by Automatic Transfer Switch (ATS) system, load steps. Apply seasonal demands to narrow down the generation capacity of the essential power system.
f. Preliminary or sample calculations for fault current, protective device coordination, arc flash, generator sizing, load, feeder and equipment sizing, voltage drop, harmonic distortion, lightning protection risk analysis, and lighting.
g. Uninterruptible Power Supply (UPS) load requirements.

Drawings

Submit updated drawings:

a. Updated area functions and location, room titles, location, and dimensions of electrical equipment rooms and electrical closets on drawings. Show all electrical power distribution equipment to scale. Include means and clearances for installation, maintenance, and operation of equipment
b. Coordinated raceway requirements with telecommunications for signal system floor plans. Include nurse call, telephone, MATV, CCTV, radio, and public address systems.
c. Final locations of primary distribution switchgear/switchboard, engine-generator sets, unit substations, pad mounted transformers, manholes and all other major items drawn to scale. Include clearance and removal paths for equipment.
d. Reconnection of existing to new equipment on plans.
e. Electrical equipment (for example, panelboards and transformers) to be installed in proposed electrical closets based on the preliminary riser diagram.
f. Updated one-line and riser diagrams of the normal electrical power distribution system, stand-by power, and the essential electrical systems. Locate and all equipment .
g. Updated demolition plans to indicate the complete electrical work in all areas to be renovated. If an entire wing or area is completely demolished, provide a reference note to the architectural demolition drawings.
h. 1:100 (1/8” = 1’-0”) scale floor plans that shall show typical power, signal, and lighting layouts for typical rooms.
j. All circuitry of branch circuits including receptacles, lighting, and power for one major representative area for each function, such as nursing wing, pharmacy, dental suite, and laboratory suite.

9. ENVIRONMENTAL IMPACT

Notify VA Project Manager immediately upon discovery of any environmental or site data that may warrant investigation.

10. EQUIPMENT

Reports

Submit:

a. Full medical and office equipment list for VA Medical Center approval.
b. Updated project Equipment List in Excel format.

11. FIRE PROTECTION

Reports

Submit the updated Basis of Design (BOD) report including:

a. Integration of new fire alarm system with existing system and other systems in the facility.
b. Operation of smoke evacuation system where such a system is required.

Calculations

Update calculations to reflect comments from SD2 and evolved design.

Drawings

Submit:

a. List of edited VA standard symbols, abbreviations, and standard details.
b. Room names, room numbers, door locations and swings, smoke- and fire-rated partitions, and sprinkler/standpipe risers to floor plans. Identify psychiatric areas requiring institutional-type heads on the drawings.
c. Fire alarm risers showing new equipment and/or necessary changes if modification to the existing system is required. Include recommendations if certain requirements of VA criteria might be waived to allow existing equipment to be reused.
d. Fire- and smoke-control aspects of the HVAC system design on the floor plans. Show duct-mounted smoke dampers, smoke detectors, and fire dampers. Include a written description of the smoke-control features. Describe each designated smoke zone and its interaction with the HVAC systems.
e. Estimated capacities of proposed air-handling units in cubic meters (cubic feet) per minute.
f. Location of fire extinguishers and fire hose cabinets.
g. Fireproofing of structural members where applicable.

12. HEATING, VENTILATING & AIR CONDITIONING

Reports

Submit the updated Basis of Design (BOD) report including:

a. List of systems designed to incorporate energy conservation, renewable energy use, and the use of recycled materials and media. Identify specific systems and include a short description of methods and means to accomplish each of these goals.
b. Coordination of HVAC requirements on room data sheets (see *Section 1. Architectural*).
c. Coordination with the Architect and equipment specialists to accommodate specified sterilizing equipment. (Any request for deviation from HVAC design criteria must be approved by VA and occur no later than the design development stage).
d. Description of the interaction between the existing HVAC systems and the new requirements. State the impact on the existing HVAC systems and the project cost. (Examples include: additional Testing, Adjusting, and Balancing effort, replacement of components, suspended ceiling, painting, and fixtures.)
e. Description of seismic criteria (if applicable) on the HVAC systems.
f. Description of the possibility of using the existing central Engineering Control Center (ECC) for the automatic temperature control requirements of the new project. Address the key issues of the available spare capacity and open-protocol BACnet compatibility.
g. Description of the mechanical sequences of operation. State that the energy model represents these operational parameters and uses actual equipment performance curves from the design selections (mechanical, plumbing, and lighting).

Calculations

Submit:

a. First version of the detailed zone heating and cooling load calculations and psychometric analysis for each zone. (Accompany these calculations with the architectural drawings 1:100 (1/8” = 1’0”) scale showing correlation between each zone boundary and the floor area and abbreviated/coded room numbers used with computer input data sheets) (Also submit the input manuals for the computer programs with indications of the capabilities and limitations of the programs. Submit a level of detail of the calculations consistent with the development of the architectural drawings.)
b. For air-handling units, heating and ventilating units, and exhaust air systems, estimate capacities in cubic meters (cubic feet) per minute, static pressure, and required fan-motor horsepower.
c. For the proposed chilled water plant, submit:
   - Quantity and type of chillers, capacity in tons of refrigeration, and the electrical requirements.
   - Pertinent data for the chilled water plant accessories, that is, chilled water and condenser water pumps, and cooling tower
   - Coordination of the cooling tower location with other disciplines
   - Sound/acoustic analysis to ensure that the noise generated by the chillers, condensers and condensing units, and cooling towers is in compliance with ASHRAE requirements
   - Dispersion analysis for the cooling towers and hazardous exhausts as required by VA design manuals
   - Specific recommendations for the design, even if these recommendations exceed OSHA and ASHRAE requirements
   - Provide back-up details of the chilled water optimization study and selected pumping arrangement
d. For the heating system, submit:
   - Total heating load based on the available information of the space heating requirements, domestic hot water load, humidification loads, and the equipment steam demand
   - Written description of the proposed zoning of the heating system indicating such features as distribution of ventilation load, perimeter heat load, and reheat load associated with air terminal units
e. Updated energy analysis with optimized envelope and glazing properties, and all reductions necessary to achieve the federally mandated energy consumption target. State all occupancy, regulated and unregulated load assumptions, and schedule parameters used in the analysis. State all modeled system operational characteristics. Use actual equipment performance curves from the design selections (mechanical, plumbing, and lighting).

f. Available preliminary electrical power (normal and emergency) data to the electrical discipline.

Drawings
Submit:

a. Applicable VA standard symbols and abbreviations.
b. 1:100 (1/8 inch) scale HVAC floor plans for typical areas showing the proposed routing of the main air distribution and piping layouts. Ductwork and piping may be shown in single line.
c. Fire and smoke partitions on HVAC floor plans. Show necessary smoke and fire dampers and smoke detectors on floor plans, per applicable NFPA codes. For buildings not equipped with quick response sprinklers, describe each designated smoke zone's interaction with the building's HVAC systems.
d. Equipment schedule for each major piece of equipment.
e. 1:50 (1/4 inch) scale floor plans of the typical mechanical equipment rooms (MERs) with at least two cross-sections, generally cut at right angles to each other, showing all floor and ceiling mounted equipment, major ductwork, and piping. Show all ductwork and piping, 6 inches in size and larger, in double line. On the cross-sections, show actual elevations of each HVAC component, rise and drop as required to co-exist with other interfering items of equipment and other building elements, such as, beams, lights, plumbing pipes, and cable trays In the MERs, show all miscellaneous equipment and systems, such as: heating and ventilating systems for the MERs and locations of the temperature control panels. Demonstrate clearances for access and maintenance with coil and tube pull spaces on the equipment layout.
f. Updated flow and riser diagrams for each type of the typical air handling systems, exhaust (general and special) systems, and all hydronic systems, such as: chilled water system, hot water system, steam system, and glycol heat recovery system. Submit existing capacities of these systems, where applicable, .and new estimated loads with pumping arrangement, and control valves for complete understanding of existing systems to be used or interfaced with the new systems.
g. Airflow relationship diagram indicating "clean" areas that are positively pressurized with respect to adjoining areas and the "dirty" areas that must be under negative pressure with respect to adjoining areas, limited to SPD, labs, ORs, vivaria, and isolation rooms.
h. Schematic control diagrams for each type of typical air and hydronic systems. Show control devices, such as thermostats, humidistats, flow-control valves, dampers, freezestats, operating and high-limit sensors for all air systems and fluids, smoke dampers, and duct detectors.

13. HISTORIC PRESERVATION
Reports

a. Comply with contractual agreements for Design Development1, as developed with the contracting officer, project manager, and VA cultural resources management officer.
b. Notify VA contracting officer immediately upon discovery of any historical or archeological data that may warrant investigation.

14. INCINERATION/WASTE DISPOSAL SYSTEMS
Reports
Submit an updated narrative Basis of Design (BOD) report.

Calculations
Submit:

a. Updated load calculations on the amount and types of waste and equipment sizing calculations. Submit all calculations.
b. Catalog cuts of two manufacturers for all equipment selections.
c. Emissions control devices.

Drawings
Submit updated drawings showing:

a. Final location of new incinerator system, or expansion to existing facility shown on site plan.
b. 1:50 (1/4 inch) scale plan views indicating major equipment.
c. 1:50 (1/4 inch) scale sections indicating major equipment.

15. INTEGRATED DESIGN

Reports

Submit a narrative Basis of Design (BOD) report including:

a. Updated Team Directory and Project Management Plan.
b. Plan for mitigation of challenges such as schedule delays, budget overruns, and scope changes.

16. INTERIOR DESIGN

Reports

Submit the updated of Design (BOD report, including:

a. Finish schedule.
b. Finish sample boards.
c. Furniture catalog cuts and materials samples.
d. Fully developed design for lobbies and other major public spaces. Submit rendered elevations, perspectives or other presentations to describe the materials, lighting, and appearance of those spaces.
e. Signage and wayfinding system, including examples of graphic program.
f. Concepts for color and material palettes.

Drawings

Submit:

a. Floor pattern plans (min. 1:100 (1/8"=1'-0")).
b. Wayfinding and signage plans (min. 1:100 (1/8"=1'-0")). Show floor and wall patterns, lighting, signage and other elements that shall assist users to reach their destination.

17. PLUMBING

Reports

Submit the updated Basis of Design (BOD) report including:

a. Coordination of plumbing/utilities requirements on room data sheets (see *Section 1, Architectural*).
b. Recommendations for installing insulation on the domestic water and horizontal storm drainage piping for the prevention of condensation.
c. Graphical representation of energy and water usage savings with reference to the contributing technologies and their weighted contributions.
d. Coordination with utility companies, where applicable.
e. Plumbing fixture catalog cuts.

Calculations

Submit:

a. Updated calculations for sizing all systems and equipment.
b. Updated calculations to support the strategies to achieve the water consumption and energy reduction goals.
c. Updated storm water computations, sizing calculations, and site analysis to comply with local, state, and federal regulations. Indicate methodology or software used.
d. Provide a fixture schedule and list of equipment requiring plumbing and gas connections.

Drawings

Submit:

a. Plumbing riser diagrams and 1:100 (1/8” = 1’0”) scale floor plans that shall be construction drawings. Identify new plumbing fixtures and existing plumbing fixtures that shall be affected by new construction. Identify new medical gas and laboratory gas outlets. Add new equipment using VA fixture numbering system.
b. Non-Patient Medical Air for Supply, Processing & Distribution Department (SPD): The use of a medical air system meant for patient care in SPD is not permitted under NFPA 99. Indicate an

NFPA 99C Level 3 medical air system for SPD that is separate from any patient care medical air system.

c. Roof drains, medical gases, backup water supply.

18. SECURITY (PHYSICAL)

Reports

Update the Basis of Design report, which includes a physical security narrative completed by a qualified Security Specialist and a qualified Structural Blast Specialist that identifies the facility's classification as a "Life Safety Protected" or "Mission Critical" facility. Include:

a. Description of the overall proposed physical security approach and the building and site design elements being included for compliance to the applicable Physical Security standard. Include design criteria for blast resistance, anti-ram device.
b. Coordination of security requirements on room data sheets (see *Section 1. Architectural*).
c. Subsections corresponding to each of the chapters of the Physical Security standard, (i.e., Site Considerations, Building Entrances and Exits, Functional Areas, and Building Envelope).
d. Proposed methodology and software to be used for physical security requirements resulting in structural or exterior envelope hardening for blast loads or progressive collapse,
e. Catalog cuts for proposed security equipment: CCTV, monitors, access control systems, and screening equipment.

Calculations

Calculate blast-loading environment and dynamic analyses of typical glazing, window framing, exterior envelope elements, vulnerable interior, and exterior structure.

Drawings

Submit:

a. Physical security plan showing location of security cameras, card readers, and screening equipment (min. 1:100 (1/8"=1'-0")).
b. Site Plan (min. 1:1200 (1"=100'))
    - Perimeter fence with pedestrian access points
    - Location of vehicle access points - private, public, commercial
    - Guard stations, vehicle barriers, inspection facilities, and vehicle stacking areas.
    - Site lighting
    - Camera locations
    - Landscaping
    - CPTED implementation plan
c. Floor Plans (min. 1:100 (1/8"=1'-0")):
    - Public entrances and lobbies
    - Staff entrances
    - Security operations center.
    - Agent cashier, cache, child care center, main computer room, COOP site, ED, emergency generator room, central energy plant, loading dock and service entrances, mail room, pharmacy, research laboratories, and vivaria
d. Design sketches reflecting blast hardening requirements for typical exterior envelope and structural elements.
e. Coordination with *Section 1. Architectural*, *Section 8. Electrical*, and *Section 19. Site Development*.

19. SITE DEVELOPMENT//UTILITIES

Reports

Submit the updated Basis of Design (BOD) report including:

a. Completed subsurface investigation report for road, parking, and other paving design, where applicable.
b. Site review checklist for Design Development1.

Drawings

Submit:

a. Site plans including demolition, locations of structures, parking, roads, service areas, walks, plazas, buffers/tree groupings, landscape screening, and other site/building features. Indicate locations of accessible parking spaces and number of handicapped accessible and van accessible parking spaces on site plan.
b. Grading plan including existing and proposed contours at 500-mm (2-foot) intervals of the entire area affected by the site work. Show spot elevations at structure corners, entrances, equipment pads, other critical areas, and floor elevations for all floors with direct access to grade.
c. Planting plan with list of suggested plant materials for various landscaping needs, such as, open area plazas, courts, atriums, entryways, and other various exterior/interior features. Indicate proposed materials to be used for each element. Show planting irrigation areas.
d. Topographic, boundary, utility, and landscape survey drawings prepared during the schematic design phase.
e. Plan showing all new and existing utilities (storm drainage, sanitary sewer, water, and gas) from building connections to mains. Coordinate with other trades (such as electric and communications) to avoid conflicts.
f. Rim and invert elevations for sewers, pipe lengths, size, and materials, where known. (See *Section 17. Plumbing*, for plumbing/utility requirements.)
g. Landscape plan showing site amenities.

20. SPACE PLANNING

Reports

Submit the updated narrative Basis of Design (BOD) report including an update of previously submitted summary of space by function with net areas, gross area, net:gross ratio by department, net:gross ratio for building, listing of deviations from approved VA SEPS space program, and justification for those deviations.

Calculations

Submit updated net and gross areas.

Drawings

Refer to *Section 1.Architectural* and *Section 4. Building Information Modeling* for requirements.

21. SPECIFICATIONS

Submit draft specifications for all disciplines using “Track Changes” function. Submit outline specifications for those sections that are written by the A/E.

2. STEAM DISTRIBUTION (OUTSIDE)

Reports

Submit the updated narrative Basis of Design (BOD) report, including test report on soil conditions related to classification of factory-fabricated pre-engineered underground systems.

Calculations

Submit:

a. Updated and refined load calculations for steam and condensate.
b. Updated and refined pipe sizing calculations.
c. Provide dispersion analysis for boilers
d. All calculations.

Drawings

Submit:

a. Site plan indicating:
    - Final location of distribution systems
    - Location of distribution systems. Include location of all manholes and pipe expansion devices
    - Overall dimensions and arrangement of major piping in trenches and tunnels
b. 1:50 (1/4” =1’0”) scale drawings of plan views and sections of manholes.

23. STEAM GENERATION

Reports

Submit the updated narrative Basis of Design (BOD) report.

Calculations

Submit:

a. Sizing of all major piping systems based on pipe sizing and pump selections for actual arrangement of the piping systems. Refine calculations. Submit catalog cuts of two manufacturers on all equipment selections.
b. Refined steam load and equipment sizing.
c. All major equipment, including boilers, pumps, heat recovery devices, tanks, and emissions control devices.

Drawings

Submit:

a. VA standard symbols, abbreviations, and standard details.
b. Plan views and sections of the steam plant showing major equipment, major piping systems, and personnel facilities.
c. Schematic flow diagrams of all piping systems.
d. Final location of new steam generating facilities on a site plan.
e. Equipment schedule for each major piece of equipment.

24. STRUCTURAL

Reports

Submit

a. The updated narrative Basis of Design report, including a description of how the DD1 documents address further developments in design characteristics; code compliance issues; and description of how the design meets or differs from the requirements of VA's Statement Of Work
b. Updated structural review checklist.
c. Structural material information:
    - Concrete
        - Potential for fly ash or other suitable cement replacement substitution
        - Concrete mixtures to be used for footings, foundations walls, slab on grade, elevated slabs, superstructure columns and beams, roof slabs. For rebar, identify bar and welded wire fabric requirements
        - ASTM material designation for the rebar to be used. Indicate the anticipated uses and locations for special rebar types (epoxy coated, galvanized, and high strength)
        - Floor flatness requirements
    - Structural Steel.
        - Type of anticipated structural steel connections
        - Diameter, ASTM material designation, and finish for the typical bolt assembly, including nuts, washers, and bolts
        - List of the locations where slip-critical bolts are anticipated. Submit the test method to be used to verify the bolt tension in the slip-critical connections
        - Anticipated type of moment connection
        - Project welding materials
        - Type of base plate/anchor rod assembly. Include material type and sizes
        - Priming/painting of steel members including materials, locations, and slip coefficients
    - Steel Deck
        - Required shoring
        - Deflection criteria to be considered
    - Masonry.
        - Various types of mortar to be used
        - Lintel materials, ties, and anchor
        - Masonry tolerances to be used
        - Hot and cold weather installation techniques to be used

- Wood and Engineered Wood Products
  - Engineering design requirements for engineered wood products
  - Typical spacing for framing members
  - Special treatment requirements (such as pressure treated and fire resistive)
  - Requirements for wood sheet goods (oriented strand board (OSB), plywood), thicknesses, and locations for use (roof deck, floor deck, exterior sheathing)

d. Description of the design philosophy to limit the spread of damage from an extraordinary event.
e. Provide written description of design philosophy for the design of progressive collapse due to natural or manmade disaster.

Calculations
Submit hand calculations for primary structural members and calculations supporting the drawings below.

Drawings
Submit:

a. 1:100 (1/8" = 1'0") scale drawings showing the selected structural systems. The drawings shall be appropriately advanced since the SD2 submission and coordinated with all disciplines.
b. Typical details showing relationship of structure with architectural and mechanical features, and new and existing construction features.
c. Updated list of the drawings, general notes, abbreviations, legends, key notes, symbol keys, key plans, column lines, north arrow, and coordinated backgrounds.
d. Coordinated drawings with respect to reference symbols, notes, abbreviations, specification sections, schedules, and other disciplines.
e. Foundation plans.

25. SUSTAINABILITY

Reports
Submit narrative Basis of Design Sustainability (BODS) report describing the proposed sustainability features of the project with following updates as required:

a. Description of the water-use reduction strategies selected for the project, including life cycle cost analysis and how they achieve the reduction goals and mandated water use reduction. requirements as part of the selected third-party rating system and VA sustainability guidelines. Coordinate reporting with the plumbing and site/civil storm water analysis to provide a graphical representation (pie or bar chart) by end use of the potable water baseline versus the required reduction target and the selected strategies.
b. Summary of the energy-use intensity and energy consumption by end use and the life cycle cost for the final selected HVAC and lighting concept. Coordinate the reporting with updated results from the energy and lighting analysis conducted as part of the mechanical and electrical/lighting systems. The update should graphically illustrate (pie or bar chart) how the mandated energy conservation requirements, energy consumption and lighting goals in the VA design manuals, VA sustainability guidelines, and for the overall project are being achieved.
c. Summary of the Indoor Environmental Quality (IEQ) aspects of the project. Update the description and graphical representation of how VA and third-party sustainability system requirements for GHG emission-reduction or -elimination for the selected concept are achieved.
d. Estimate of renewable energy capacity for solar thermal, solar PV, wind, and geothermal as they relate to VA mandates and third-party sustainability goals. Coordinate the update with the plumbing submission and submit as needed the final explanation and technical backup information as to how the project shall meet the project goal for hot water generation using renewable solar energy.

Calculations
Submit:

a. Updated water-use reduction calculations based on third-party and VA guidelines. Coordinate the update calculations for the potable water baseline and reduced consumption calculations with the plumbing engineer. Update the calculation submission with the plumbing engineer to support the strategies to achieve the water reduction goals.

b. Updated GHG-emissions reduction calculations supporting VA mandates.
c. Updated renewable energy calculations. Coordinate the update calculations with the mechanical and electrical trades.

GREEN GLOBES (if applicable)
Reports
Provide as part of the narrative Basis of Design Sustainability (BODS) report the following as it pertains to third party Green Globes certification:

Document and discuss the preliminary input and output from the Life Cycle Cost Assessment (LCA) for the selected concept.

Calculations
Submit the preliminary input and results of the Life Cycle Costs Assessment (LCA) calculations.

LEED (if applicable)
Reports
Provide as part of the narrative Basis of Design Sustainability (BODS) report the following as it pertains to third-party LEED certification. Submit:

a. Completed preliminary LEED score card. The score card should indicate where points are anticipated for design and construction phase. A brief discussion should be provided describing why or why not certain points are not achievable.
b. Assumptions for input into LEED template calculations for all attempted credits.

26. TELECOMMUNICATIONS
Reports
Submit the updated Basis of Design (BOD) report including a written summary of any conversations with the telecommunications utilities.

Drawings
Submit:

a. Telecom riser diagrams.
b. Locations of major equipment drawn to scale. Indicate equipment to be installed in the proposed main computer room, main telephone room, and telecommunications closets.
c. Demolition plans indicating the complete telecommunications work in all areas to be renovated. If an entire wing or area is completely demolished, provide a reference note to the architectural demolition drawings.
d. 1:100 (1/8” = 1’0”) scale floor plans that show typical telecommunications layouts for typical rooms.

C. DESIGN DEVELOPMENT2 [DD2]

The Design Development2 phase encompasses adding an increased level of detail for all aspects of the project to further define the design. Submissions at this stage must show coordination of trades and clarity of scope and design intent. The team refines visualization of the project to communicate the character of interior and exterior space and confirms that the design is on budget. All value engineering shall be completed by the end of this phase, and no functional changes are anticipated after the DD2 review.

1. ARCHITECTURAL

Reports

Submit:

a. Updated room sheets.
b. Medical equipment catalog cuts.
c. Updated and further developed alternates on drawings and in specifications with updated cost evaluation.

Drawings

Submit:

a. All previously submitted drawings updated to reflect review comments and further development
b. Floor plans updated from DD1 submission to include each floor, penthouses, interstitial spaces, pipe basements, and service areas (min. 1:100 (1/8"=1'-0")). Identify partition types, section cut locations, interior and exterior elevation locations, detail locations, and large scale plans. Include interior and exterior dimensions and general notes.
c. Interim Life Safety Measures (ISLM) and Infection Control Risk Assessment (ICRA) drawings (min. 1:200 (1/16"=1'-0")).
d. Demolition floor and ceiling plans for areas to be renovated and areas below where work in space below is required (min. 1:100 (1/8"=1'-0")) with finish schedule and partition types. Coordinate with phasing plans, ISLM, and ICRA.
e. Equipment plan (min. 1:100 (1/8"=1'-0")) with large scale (min. 1:50 (1/4"=1'-0")) for complex areas such as procedure rooms, operating rooms, imaging rooms, and radiation oncology rooms. Include equipment schedule showing rough-in requirements, who is responsible for furnishing each piece of equipment, and who is responsible for its installation.
f. Enlarged floor plans (min. 1:50 (1/4"=1'-0")) for Ambulatory Care (typical rooms and Emergency), Audiology and Speech Pathology, ADP, Canteen, Cardiovascular Lab, Chaplain Service, Coronary Intensive Care, Dental Service, Dialysis, EGG Lab, ENT Clinic, Eye Clinic, GU Clinic, Imaging (all types), Laundry and Linen Operation, MICU, Medical Media, Nuclear Medicine, Nursing Units (all), Orthopedic Brace Shop, Outpatient Psych, Pathology and Laboratory Medicine Service, Pharmacy, Prosthetics, Pulmonary Medicine, Research and Development, Rehabilitation Medicine (SPD), SICU, and Surgical Suite.
g. Phasing plans (min. 1:200 (1/16"=1'-0")). Include plan for each phase on each floor showing work to be accomplished during that phase, temporary installations, previously completed work, and existing areas to remain. Include a written description of activities for each phase on the drawings.
h. Life safety plans showing means of egress, capacity, population, path of travel, travel distances, common paths of travel, fire-rated partitions, smoke barriers, areas of smoke compartments, exit signs, fire extinguishers, fire hose cabinets, areas of refuge, and horizontal exits (min. 1:200 (1/16"=1'-0")). Coordinate with *Section 11. Fire Protection.*
i. Physical security plan showing location of security cameras, card readers, and screening equipment (min. 1:100 (1/8"=1'-0")) Coordinate with *Section 18. Security.*
j. Building elevations with fenestration, penthouses, materials, finish floor elevations, interstitial floors, floor-to-floor heights, overall building height, window and louver types, entrances, canopies, skylights, and adjacent grades (min. 1:100 (1/8"=1'-0")). Indicate locations of wall section cuts.
k. Building elevations of complex areas (min. 1:50 (1/4"=1'-0")).
l. Building sections (min. 1:50 (1/4"=1'-0")).
m. Wall sections (min. 1:15 (3/4"=1'-0")).

n. Construction details at scale large enough to clearly show components and assembly: windows, storefront, waterproofing, roof accessories, and equipment mounting and suspension shielding.
o. Interior elevations showing medical gases, power, data, communications, millwork, casework, equipment, and other built-in items (min. 1:50 (1/4"=1'-0")).
p. Partition type and fireproofing details (min. 1:10 (1"=1'-0")).
q. Reflected ceiling plans (architectural and M/E/P) (min. 1:100 (1/8"=1'-0")). Identify bulkheads, light fixtures, supply and return grilles, ceiling mounted equipment, exit lights, and other devices. Locate ceiling grid.
r. Door schedule with door and hollow metal frame details. Indicate door type, size, rating, material, glazing, security requirements, and hardware set.
s. Vertical transportation details for stairs, elevators, escalators, dumbwaiters, lifts, linen and trash chutes, and pneumatic tube stations. Plans at min. 1:50 (1/4"=1'-0"), sections at 1:15 (3/4"=1'-0"), min., and details as required to show installation, fire protection, and construction. Coordinate with *Section 3. Automatic Transport.*
t. Updated alternates. Continue to develop.

2. ASBESTOS ABATEMENT

Where asbestos abatement is required, submit:

Drawings

Submit substantially complete asbestos abatement drawings in accordance with VA guidelines.

a. For each "Major Decontamination" area, show the limits of sealing off the location, quantities of asbestos material, arrangements for auxiliary rooms (for example, changing rooms and shower rooms), the engineering of the negative air systems, the path of asbestos transportation to the loading platform, and location and connection to required utilities.
b. For each "Minor Decontamination" area, show the exact location, type, and length of pipe element to be abated by the "Glove and Bag" approach and any other abatement features.

Calculations

Submit major and minor summary of the square meter (feet) of floor space for all abatement areas, the total linear and square meter (feet) of asbestos to be abated, and the total cost of abatement. Include in the cost estimate any cost for decontamination of equipment and fixtures.

3. AUTOMATIC ELEVATOR AND TRANSPORT SYSTEM

Reports

If design criteria have changed since DD1 submission, submit updated reports to incorporate new or updated criteria.

Calculations

Submit as required for studies described above.

Drawings

Submit:

a. Floor plans (min. 1:100 (1/8”=1’-0”) drawings of the transport systems, including elevators, pneumatic tubes, escalators, cart lifts, dumbwaiters, automatic guided vehicles (AGV), and electric track vehicles (ETV). Indicate tracking, piping, battery charging areas, blower rooms, queuing areas, cart holding areas, cart washer, central control area, and floor or wall recessed transport control units. Indicate architectural features in areas to be used for these systems.
b. Separate drawings for elevators, dumbwaiters, and other ATS systems. Show sizes, space requirements, and details of hoistway enclosures, pits, pit ladders, cabs, machine room access and railings, and entrances using larger scale than floor plans as necessary. Show dimensional locations of elevator cars, entrances, vents, and counterweights. Include sections through hoistways and penthouses.
c. Location of machine and equipment rooms for elevators, lifts, and elevators. Indicate dimensions, ventilation, hoist beams, and power requirements.
d. Size of machine beams and end reactions. Indicate location and detail of machine beam pockets. Show rail loadings and hydraulic elevator piston pit loads.

e. Locations of vents, electrical, and mechanical services.
f. Location of pneumatic tube stations.
g. Updated matrix indicating stations that are to be connected.

4 BUILDING INFORMATION MODEL

Submit the following updated information derived from the building information model for advancement of the design or verification of the model:

Reports

Submit:

a. Updated BMP (BIM Management Plan) with any modifications from DD1.
b. Updated Level of Detail Matrix for model elements.
c. Example of COBIE schedule in Excel for Rooms & Spaces and select MEP systems.
d. Updated clash detection results for major vertical and/or horizontal mains and repetitive areas. If previously clashed/resolved and no design changes have been made, the area may be omitted.
e. Clash detection schedule to be followed in CDs. (Refer to the BMP for details).

Calculations

Submit:

a. Full Room Schedule showing space naming and coding as defined by VA guidelines.
b. Updated energy model status for energy reduction goal.
c. Updated gross area and departmental area schedules and graphics from DD1.

Drawings

Submit:

a. Updated 3D views from DD1 submission.
b. Floor plans color-coded by functional area.
c. Legend showing example Door and Wall families, indicating types.
d. Legend showing example Room Finishes for typical rooms and key public areas.

5. COMMISSIONING

Reports

Submit:

a. Updated Design Narrative.
b. Updated Design Phase Commissioning Plan.
c. Updated Design Phase Commissioning Issues Log with proposed resolution/mitigation. Incorporate into DrChecks$_{sm}$.
   - Identify major concerns that could affect operations, maintenance, or testing
   - Identify discrepancies between OPR and Design Narrative
   - Update design schedule and key milestone
   - Update roster of Commissioning Team members
d. Coordination matrix for Commissioning Agent and the A/E.
e. Report on selected control system type, configuration, and capabilities together with key decisions about equipment and systems sequences of operation.
f. Review of technical sections of the specifications to coordinate O&M manual requirements.
g. Description of appropriate training and demonstration requirements for VA's personnel. Include complete list of all types of equipment/systems and what Training and Demonstration is required.
h. Updated Construction Phase elements of the Commissioning Plan, including systems to be commissioned, outline of construction phase roles and responsibilities, and outline of required system documentation requirements.

6. COST ESTIMATING

Submit :

a. WBS II Level 4 Estimate.
b. Cost model budget tracking.
c. Budget tracking by phase.

d. Separate computations for site, each building, new work, renovations, and alternates.
e. Building net and gross area computations for new construction and renovations.
f. Project Data Sheets 1 and 2 (refer to VA cost estimating guidelines).

7. CRITICAL PATH METHOD (CPM)

Reports

Submit the updated narrative Basis of Design (BOD) report including:

a. Updated Project Master Schedule with increased detail.
b. Updated Detailed Design Schedule with increased detail.
c. Updated Schedule Risk Analysis with increased detail in new risks and mitigation plan.
d. Updated Phasing narrative.
e. Updated Phasing diagram.
f. Written list of systems, including temporary systems by phase, and separated by technical discipline.

Drawings

Submit full-size contract drawings for the CPM phasing plans. (One drawing include reflect several reduced site plans.)

8. ELECTRICAL

Reports

Submit the updated narrative Basis of Design (BOD) report including copies of all correspondence and minutes of meetings with all utility company representatives.

Calculations

Submit:

a. Final load calculations based upon connected equipment schedules. Apply appropriate demands and diversities to reflect the equipment sizing selected.
b. Equipment and panel schedules to verify that equipment and feeders are sized per *National Electric Code* for lighting and power, normal and essential loads.
c. Final mechanical motor loads for mechanical and elevator power schedule.
d. Final generator sizing, including starting calculations to substantiate generator selection
e. Generator fuel storage requirements.
f. Fault current, protective device coordination, arc flash, voltage drop, harmonic distortion, and lighting calculations.
g. UPS load requirements.

Drawings

Submit:

a. Updated list of symbols and abbreviations.
b. Updated detailed electrical site plan.
c. Full set of floor plans showing locations of primary distribution switchgear, engine generator sets, unit substations, feeder routing plan and other major items of equipment. Submit 1:50 (1/4” = 1’0”) scale plans of all electrical closets with equipment and clearances for equipment drawn to scale
d. Indicated room titles and area functions on electrical floor plans. Show location of all equipment, lighting fixtures, outlets, and devices. Provide complete wiring of devices and equipment in specialty areas (radiology, office/exam, bed areas, ORs, and ICUs).
e. Finalized one-line and riser diagrams of the normal electrical power distribution system and the emergency power system. Locate, size, and identify all equipment. Show branch-circuit wiring of offices, exam rooms, patient rooms, and lab areas.
f. Detailed proposed phasing scheme of electrical work.

9. ENVIRONMENTAL IMPACT

Notify VA PM immediately upon discovery of any environmental or site data that may warrant investigation.

10. EQUIPMENT
Reports
Submit updated Activation Equipment List.

11. FIRE PROTECTION
Submit the updated narrative Basis of Design (BOD) report.

Calculations
Update calculations to reflect comments from DD1 and evolved design.

Drawings
Submit drawings for:

a. Sprinkler/Standpipe risers supply piping.
b. Terminations of sprinkler main and inspector test drain.
c. Sprinkler alarm valve(s) and water-flow and tamper switches.
d. Sprinkler system fire department connection.
e. Sprinkler design hazards per NFPA 13.
f. Fire extinguisher and fire hose cabinets.
g. Exit signs and emergency lighting.
h. Specific occupied areas *not* to be protected by automatic sprinklers.
i. Interconnection of HVAC system (dampers, fans) with duct smoke detectors and/or fire alarm system.
j. Interface of new and existing fire alarm system.
k. Fire control room.
l. Refer to *Section 1. Architectural*, *Section 8. Electrical*, and *Section 17. Plumbing*.

12. HEATING, VENTILATING & AIR CONDITIONING
Reports
Submit the updated narrative Basis of Design (BOD) report. Coordinate with the Architect and equipment specialists to accommodate sterilizing equipment, kitchen equipment, automatic cart washer, fume hoods, biological safety cabinets, radiology, and nuclear medicine equipment specified for the project. Present all VA-approved deviations from HVAC design criteria.

Calculations
Submit:

a. Final version of the room-by-room heating and cooling load calculations:
   - Ensure compliance with VA HVAC design requirements. These calculations shall be accompanied with the architectural drawings correlating each HVAC zone boundary and the floor area, and a room schedule correlating architectural room numbers and abbreviated/coded room numbers used with computer input data sheets. (Submit input manuals, if not submitted during DD1, for the computer programs with indications of the capabilities and limitations of the programs.)
   - Show derivation of all U-factors for building elements based on the actual building construction and published window data. The accuracy and the level of detail of the calculations shall be consistent with the development of the architectural drawings and include calculations for:
     - Peak zone-by-zone heating and cooling loads
     - Building block heating and cooling loads
     - Estimated steam consumption from all sources
     - Psychrometric chart for each air-handling unit showing cooling and heating coil condition and computation of humidification loads
     - Coil entering and leaving conditions and fan-motor heat gains for supply and return air fans
     - Room-by-room air balance sheet for each air-handling unit showing supply, return, exhaust, make-up, and transfer air quantities with the required air balance, that is, positive, negative, or zero with respect to adjoining spaces
     - Indoor and outdoor design temperatures

b. Excel spreadsheet for each air-handling system. Provide the details of supply, return, exhaust, make-up, and relief air, for each room. In addition, for each room provide area, height, volume, value of one air change per hour, actual calculated air changes per hour, and required minimum air changes per hour.
c. Complete engineering calculations and selection of major HVAC equipment, such as chillers, cooling tower, air-handling units, heating and ventilating units, return and exhaust fans, circulating pumps, and energy recovery equipment, heat exchangers, PRV stations, and humidification equipment.
d. Catalog cuts for all selected equipment.
e. Coordination with electrical, plumbing, and steam generation disciplines by compiling and distributing pertinent information, such as normal and emergency power requirements, steam consumption for all HVAC and kitchen/sterilizer equipment.
f. Updated sound/acoustic and dispersion analyses to ensure that the noise generated by the air-handling units and the fans comply with VA requirements and the design does not pose any potential for short-circuiting of air or health hazard due to emissions by cooling tower, emergency generator, or boilers.
g. Updated energy analysis to indicated and incorporate adjustments during this phase of design.
h. Metering requirements and provide the finite scope of work by a single line schematic diagram. showing components and the interface between numerous systems.

Drawings

Submit:

a. 1:100 (1/8’ = 1’0”) scale HVAC floor plans for all areas showing (at minimum) main supply, return, and exhaust air ductwork with sizes based on the updated calculations.
   - Illustrate duct and ceiling clearances, where ductwork crosses, with 1:50 (1/4’ = 1’0”) scale local sections. Show all ductwork, regardless of sizes and/or complexity of layout, in double line. Show 150 mm (6 inch) and larger piping in double line. Coordinate with *Section 8. Electrical*, *Section 11, Fire Protection*, and *Section 17. Plumbing*
   - Indicate individual room air distribution and temperature control arrangement for a representative sample of typical spaces, such as patient bedrooms, operating suite, laboratory areas, and conference rooms, on duct and piping layouts
   - Submit separate floor plan drawings for layouts of air distribution and piping systems Coordinate duct sizing criteria with VA requirements
b. Updated, 1:50 (1/4’ = 1’0”) scale, typical mechanical equipment room plans with resolution of review comments made during previous submission.
c. Updated typical schematic and riser diagrams for air-handling systems and hydronic systems by providing quantities and sizes to reflect the latest engineering calculations. Show locations of all exhaust fans. Show the locations of all major components, with respect to the building floor and each other.
d. Final demolition drawings indicating scope of work for demolition.
e. HVAC work associated with phasing plan. (The phasing plan should be reviewed and approved by the VA Medical Center, in consultation with the VA PM, to address and resolve such issues as vacating occupied spaces and creating swing spaces, scheduling utility shutdowns, and addressing parking and traffic disruptions).
f. Extent of the outside chilled water and condenser water piping. Indicate how the piping shall be laid in tunnels, trenches, or by direct burial. For the direct burial layout, show a profile of the relative elevations of the new pipes with the existing utilities and define the scope of work where necessary for re-routing existing utilities.
g. Updated control diagrams for each type of typical air and hydronic system used for development in previous submission by providing written description of the sequence of operation on the floor plans. Explain the function and role of each control device and describe the safety/alarms and normal operating controls of each system. Submit a schedule showing electrical control interlock of each component. Submit a single-line diagram of the direct digital control architecture.
h. Scope of work involved with the central Engineering Control Center (ECC). Indicate the planned capabilities, including features of energy management and conservation. Submit a point schedule for analog/digital input/outputs to be included in ECC.

13. HISTORIC PRESERVATION

a. Comply with contractual agreements for Design Development2 as developed with the contracting officer, project manager, and VA cultural resources management officer.
b. Notify VA contracting officer immediately upon discovery of any historical or archeological data that may warrant investigation.

14. INCINERATION/WASTE DISPOSAL SYSTEMS

Reports

Submit the updated narrative Basis of Design (BOD) report, including equipment selections.

Calculations

Submit all calculations, updated to support the selections indicated.

Drawings

Submit updated drawings showing:

a. Locations of all equipment and major piping on 1:50 (1/4” = 1’0”) scale plans and section.
b. Demolition work on 1:50 (1/4” = 1”0”) scale plans and sections.
c. Site plans.
d. Completed schedules and equipment lists.
e. All standards.
f. All details.

15. INTEGRATED DESIGN

Reports

Submit the updated Basis of Design (BOD) report including:

a. Updated Team Directory and Project Management Plan.
b. Plan for mitigation of challenges such as schedule delays, budget overruns, and scope changes.

16. INTERIOR DESIGN

Reports

Submit the updated of Design (BOD) report including:

a. Finish schedule.
b. Finish sample boards.
c. Furniture catalog cuts and materials samples.
d. Signage and wayfinding system.

Drawings

Submit:

a. Fully developed design for all spaces, including lobbies and other major public spaces. Submit rendered elevations, perspectives or other presentations to describe the materials, lighting, and appearance of those spaces.
b. Floor pattern plans (min. 1:100 (1/8"=1'-0")).
c. Updated wayfinding and signage plans (min. 1:100 (1/8"=1'-0")). Standard sign design with tactile and Braille text. Supplemental details at larger scale as necessary to fully describe system
d. Interior elevations for all spaces indicating finishes and color selections. See *Section 1. Architectural* requirements.
e. Details for millwork and features. Coordinate with *Section 1. Architectural* requirements.

17. PLUMBING

Reports

Submit the updated narrative Basis of Design (BOD) report including a Notice of Intent (NOI) application for any soil disturbing activities within the project site in accordance with the National Pollutant Discharge Elimination System (NPDES), where applicable.

Calculations

a. Updated calculations for sizing all systems and equipment.

b. Updated calculations to support the strategies to achieve the water consumption and energy reduction goals.
c. Provide final storm water computations, sizing calculation, and site analysis to comply with local, state, and federal regulations.

Drawings
Submit:
a. 1:00 (1/8" = 1'0") floor plans indicating plumbing requirements of previous review. Add plumbing piping; pipe sizes are required. Coordinate quantities with architect. Submit schedule for equipment on drawings.
b. 1:50 (1/4" = 1'0") plans showing location and sizing of new equipment.
c. System riser diagrams with calculations and equipment selections
d. Contract utility drawings at the same scale as required for site development and environmental drawings. Size mains at the building. Include:
   - Water (domestic and fire)
   - Fuel gas
   - Gasoline
   - Fuel oil
   - Storm drainage
   - Sanitary sewage systems
   - Hazardous waste containment
   - Reverse osmosis (R/O) water and other special piping systems
e. Sizing of water, fuel gas, and fuel oil piping.
f. Location and sizing of pumps, storage facilities, and treatment equipment.
g. Areas/zones of irrigation systems. Describe system design (automatic, manual, quick coupler, master, satellite or both controls).

18. SECURITY (PHYSICAL)
Reports
Submit the updated Basis of Design (BOD) report that includes a physical security narrative, completed by a qualified Security Specialist and a qualified Structural Blast Specialist, and identifies the facility's classification as a Life Safety Protected or Mission Critical facility and includes:
a. Catalog cuts for proposed security equipment: CCTV, monitors, access control systems, and screening equipment.
b. Connection matrix for security devices.
c. Description of the overall proposed physical security approach and the building and site design elements being included for compliance to the applicable physical security standard.
d. Subsections corresponding to each of the chapters of the physical security standard, (i.e., Site Considerations, Building Entrances and Exits, Functional Areas, and Building Envelope).
e. For physical security requirements resulting in structural or exterior envelope hardening for blast loads or progressive collapse, indicate the methodology and software to be used in the analysis.

Calculations
Submit refine blast-loading environment and dynamic analyses of typical glazing, window framing, exterior envelope elements, vulnerable interior, and exterior structure.

Drawings
Submit:
a. Physical security plan for each floor and site showing location of security cameras, card readers, and screening equipment (min. 1:100 (1/8"=1'-0")).
b. Updated design sketches reflecting blast hardening requirements for typical exterior envelope and structural elements.

19. SITE DEVELOPMENT/UTILITIES
Reports:
Submit:

a. Signage plan and signage schedule, substantially complete, with site locations, construction details, and sign face graphics.
b. Final Storm Water Pollution Prevention Plan (SWPPP) report, where applicable. Submit SWPPP, required drawings, and calculations to regulatory review agencies, if applicable.
c. Finalized storm water management practices with landscape architect and/or plumbing engineer, where applicable.

Drawings
Submit:
a. Topographic, boundary, utility, and landscape survey drawings.
b. Complete grading plans of the entire project, including large-scale drawings of major site elements. Include spot elevations at structure corners, entrances, other critical areas, and all first floor elevations. Show rim and invert elevations on all storm drainage structures. Show demolition, erosion, and sediment control as well as storm water management practices. If rock excavation is required for site grading, indicate quantity on grading plans.
c. Vertical profile and horizontal alignment for roads. Indicate all traversed utilities.
d. Large-scale plans, where necessary, of concrete or other paving joint patterns.
e. Layout plan, substantially complete, showing locations of buildings, inlets, equipment at grade, and landscape features. Include dimensioning of parking lots, service courts, and other major elements of the site design. Indicate contractor's staging area.
f. Site Plan and details, including:
    - Fence construction details
    - Guard station and vehicle barrier design
    - Location of cameras, access control and screening equipment
    - Site lighting
    - Vehicle barrier design
    - Landscaping
    - CPTED implementation plan. (Coordinate with *Section 18. Security*.)
g. Construction Details, including
    - Building envelope construction: skin, doors, and windows
    - Structural details
    - Partition types and construction details
    - Door hardware interface with security system
    - Guard positions
    - Screening equipment selection and location
h. Construction details for major site amenities, landscape components, utilities and storm water management practices.
i. Planting plan, substantially complete, with symbols showing location of all trees, shrubs, planting beds, and lawns. Provide a complete planting list and planting details with common name, genus and species, size/caliper, and special comments at a minimum. Check plants for suitability to the microclimate and availability. Indicate any areas to be irrigated.
j. Stormwater management plans.
k. Security features.
l. Utilities drawing showing incoming and outgoing with connections to mains; gas storage (oxygen, nitrogen, and propane) and protection; and fuel and water storage.

20. SPACE PLANNING
Reports
Submit the updated narrative Basis of Design (BOD) report including an update of previously submitted summary of space by function with net areas, gross area, net:gross ratio by department, net:gross ratio for building, listing of deviations from approved VA SEPS space program, and justification for those deviations.

Calculations
Submit updated net and gross areas.

Drawings

Refer to *Section 1.Architectural* and *Section 4. Building Information Modeling* for requirements.

21. SPECIFICATIONS
Submit:
a. Update of all previously submitted documents to reflect review comments and further development.
b. Final draft of specifications for all disciplines, including those written by the A/E for the project.

22. STEAM DISTRIBUTION (OUTSIDE)
Reports
Submit the updated Basis of Design (BOD) report.

Calculations
Submit:
a. Updated and refined calculations supporting the design. Submit all calculations.
b. Revised piping and equipment calculations as necessary.
c. Performance requirements for all steam traps.
d. Pipe stress calculations. Select the proper expansion facilities for piping in manholes, tunnels and trenches.

Drawings
Submit:
a. All steam distribution features on the site plans, including other underground utilities that cross the system.
b. Profile drawings of the systems showing all underground utilities.
c. Manhole, or concrete trench and tunnel drawings, indicating the basic piping layout and pipe supports in plans and sections.

23. STEAM GENERATION
Reports
Submit the updated Basis of Design (BOD) report.

Calculations
Submit:
a. Revised equipment and piping calculations as necessary.
b. Performance requirements for all control and regulating valves, flow meter systems, steam traps, and heating and ventilating systems.
c. Stress calculations on steam piping systems.

Drawings
Submit:
a. Locations of all equipment, major piping, and pipe supports in plans and sections. Show demolition work. Draw plans and sections at 1:50 (1/4” = 1’0”) scale.
b. Completed schedules, equipment lists, and site plans. Complete all schematic flow diagrams.
c. Schematic control diagrams for the burner management system and flame safeguard systems.

24. STRUCTURAL
Reports
Submit:
a. The updated Basis of Design Report.
b. Updated Structural Review Checklist.

Drawings
Submit updated and developed drawings, including:
a. Deep foundations.
    - Location of bearing strata
    - Number of piles, piers or sizes for caissons

- Pile, pier, or caisson cap size

b. Foundation system.
   - Wall and slab-on-grade thickness
   - Brick shelf locations
   - Slab-on-grade construction is shown
   - Footing steps and elevator pits are located
   - Waterproofing and water stop systems are defined, coordinated, and shown on the architectural drawings
   - Footing schedule is completed and shown on the drawings
c. All building expansion joints. Foundation wall and slab-on-grade construction and control joints are shown.
d. Concrete superstructure showing beams, columns, piers, and elevated slabs with locations and sizes/thicknesses, and reinforcing.
e. Structural steel superstructure, showing:
   - All columns and beams
   - Column sizes and orientation
   - Beam sizes.
   - Lateral bracing system
   - Connection moments, vertical, and lateral loads
   - Column schedule
   - Base plates and anchor bolts
   - Steel beam camber
   - Shear stud type and length
   - Approximate locations and support for major mechanical equipment. Identify and label equipment and weights over 1,000 lbs. on MEP drawings
f. Elevated slab-on-deck, including:
   - Slab thickness and typical reinforcing
   - Steel decking configuration, gauge, and orientation
   - Changes in top-of-slab elevation
   - Verification that thickness is coordinated with fire-rating requirements
   - Slab flatness requirements
g. Masonry systems, including:
   - Typical masonry thickness, reinforcing, and spacing requirements for loadbearing walls Assist the architect in reinforcing and spacing requirements for non-loadbearing walls shown on architectural drawings
   - Masonry seismic anchorage and lateral support requirements
   - Masonry bond beam requirements
h. Seismic design.
i. Progressive collapse prevention and blast load design.

Calculations

Submit calculations covering all parts of the structure and miscellaneous facilities. For computer-generated results, provide copies of computer input data and output summaries in user-friendly language, accompanied by diagrams that identify joints, members, and areas, according to the notations used in the data listings. Calculations shall include:

a. Gravity load and lateral load calculations for the majority of the framing members.
b. Foundation calculations.
c. Vibration calculations.
d. Calculations showing that the system is not vulnerable to progressive collapse.
e. Adequacy of existing structure, where applicable, to account for new functional loads or new criteria.
f. Seismic calculations.

25. SUSTAINABILITY

Reports

Submit the final Basis of Design Sustainability (BODS) report describing the final sustainability features of the project, including:

a. Final description of the water-use reduction strategies selected for the project including life cycle cost analysis and how they achieve the reduction goals and mandated water use reduction requirements as part of the selected third-party rating system and VA sustainability guidelines. Coordinate the reporting with the final plumbing and site/civil storm water analysis to provide a graphical representation (pie or bar chart) by end use of the potable water baseline versus the required reduction target and the selected strategies.
b. Final summary of the energy use intensity and energy consumption by end use and the life cycle cost for the final selected HVAC and lighting concept. Coordinate the reporting with the results from the energy analysis conducted as part of the mechanical systems evaluation and the lighting analysis conducted by the lighting/electrical engineer. The update should graphically illustrate (pie or bar chart) how the mandated energy conservation requirements and energy consumption goals in the VA design manuals, VA sustainability guidelines, and for the overall project are being achieved.
c. Final summary of the Indoor Environmental Quality (IEQ) aspects of the project. Submit the description and graphical representation of how requirements for VA and third-party sustainability system GHG emission-reduction or -elimination requirements for the selected concept are achieved.
d. Final renewable energy capacity for solar thermal, solar PV, wind, and geothermal as they relate to VA mandates and third-party sustainability goals. Coordinate with the plumbing submission and submit as needed the final explanation and technical backup information as to how the project shall meet the project goal for hot-water generation using renewable solar energy.

Calculations

Submit:

a. Final water-use reduction calculations based on third party and VA guidelines. Coordinate with calculations for the potable water baseline and reduced consumption calculations performed by the plumbing engineer.
b. Final GHG emissions-reduction calculations supporting VA mandates.
c. Final renewable energy calculations. Coordinate the update calculations with the mechanical and electrical trades.

GREEN GLOBES (if applicable)

Report

Provide as part of the Basis of Design Sustainability (BODS), report the following as it pertains to third-party Green Globes certification.

a. Preliminary input information for the Construction Documents Questionnaire and submit a preliminary copy of the Automatic Output Reports from the online GBI Assessment Tool.
b. Documentation and discussion of the input and output from the Life Cycle Cost Assessment (LCA) for the selected concept.

Calculations

Submit the input and results of the Life Cycle Costs Assessment (LCA) calculations.

LEED (if applicable)

Reports

As part of the Basis of Design Sustainability (BODS) report the following as it pertains to third-part LEED certification. Submit:

a. Updated preliminary LEED score card. The score card should indicate where points are anticipated for the design and construction phases. Provide a brief discussion of why or why not certain points are not achievable.
b. Documented input into LEED template calculations for all attempted credits.

Calculations

Submit preliminary template calculations as required for all credits being attempted.

26. TELECOMMUNICATIONS

Reports

Provide copies of all correspondence and minutes of meetings with utility company representatives.

Drawings

Submit:

a. Detailed telecommunications site plan.
b. Finalized one-line and riser diagrams of the normal electrical power and the emergency power distribution. Locate, size, and identify equipment Show typical branch circuit wiring of offices, exam rooms, patient rooms, and lab areas.
c. Full set of floor plans. Indicate room titles and area functions. Show locations of equipment, outlets, cable trays, and major interconnecting conduits.
d. Proposed phasing scheme for telecommunications work.

VI. CONSTRUCTION DOCUMENTS

A. GENERAL

1. The Construction Document phase involves the production of complete drawings, specifications, and other documents necessary for the bidding and construction of the project, prepared from the approved DD2 documents. Also included at this phase are the final cost estimate, the final phasing plan, and the construction schedule.

2. It is the A/E's responsibility to provide a quality set of documents. Related documents shall be complete, fully coordinated, and ready for reproduction for contract.

3. Prior to reproduction for issue for construction bids, make any changes to the documents identified as necessary during the review conference with VA Central Office.

General requirements

a. Drawings shall have graphic scale, north arrow (either true north or plan north; arrows must be consistent for similar plans), and key plan.
b. Each submission shall build on previous submission. Drawings required by previous submission shall be included in subsequent submission whether or not specifically identified as a requirement
c. Submit all previous comments from VA and peer reviewers. All comments shall be resolved. before moving into the next submission stage. For major issues, the A/E must respond to comments with written resolution; i.e., responding to important comments simply with "agreed" or "disagreed" is not acceptable. Any deviation from VA criteria shall be identified, justified, and documented with VA's approval.
d. All previously submitted documents shall be updated with written responses to reflect review comments and further development. The A/E shall verify that all changes based on the review of the previous phase have been entered into the DrChecks$_{sm}$ electronic reviewing system and approved by the VA Project Manager.
e. Specifications shall be prepared using VA Master Construction Specifications. Submissions shall show changes to master by using "Track Changes" function. Each submission shall indicate changes from previous submission, not all changes to master. The final submission shall not show changes.
f. Dimensions shall be provided in soft metric (S.I.) units followed by English units, unless otherwise specified by the VA project manager.
g. The A/E shall submit minutes of meetings with VA, VA's other contractors, and A/E coordination meetings.

B. CONSTRUCTION DOCUMENTS [CD1]

The purposes of the Construction Documents phase are to add the level of detail required for construction of the project, coordinate the trades, and clarify the project's scope and intent. This includes refinement of design details and specifications that the project can achieve its highest value and performance suitable for a 50+-year building.

1. ARCHITECTURAL

Reports

Submit the updated Basis of Design (BOD) report including:

a. Cost evaluation for alternates.
b. Equipment catalog cuts.

Drawings

Submit:

a. Complete drawings, fully coordinated with other disciplines and suitable for bidding and approval by Authorities Having Jurisdiction. The documents should be considered 100% complete with no additional coordination, information, drawings, or specifications required.

b. Updated floor plans from DD2 submission to include each floor, penthouses, interstitial spaces, pipe basements, and service areas (min. 1:100 (1/8"=1'-0")). Identify partition types, section cut locations, interior and exterior elevation locations, detail locations, and large scale plans. Include interior and exterior dimensions and general notes.
c. Demolition floor and ceiling plans for areas to be renovated and areas below where work in space below is required (min. 1:100 (1/8"=1'-0")) with finish schedule and partition types. Coordinate with phasing plans, Interim Life Safety Measures (ISLM) and Infection Control Risk Assessment (ICRA).
d. Equipment plan (min. 1:100 (1/8"=1'-0")) with large scale (min. 1:50 (1/4"=1'-0")) for complex areas such as procedure rooms, operating rooms, imaging rooms, and radiation oncology rooms. Include equipment schedule showing rough-in requirements, who responsible for furnishing each piece of equipment, and who is responsible for its installation.
e. Enlarged floor plans (min. 1:50 (1/4"=1'-0")) for Ambulatory Care (typical rooms and Emergency), Audiology and Speech Pathology, ADP, Canteen, Cardiovascular Lab, Chaplain Service, Coronary Intensive Care, Dental Service, Dialysis, EGG Lab, ENT Clinic, Eye Clinic, GU Clinic, Imaging (all types), Laundry and Linen Operation, MICU, Medical Media, Nuclear Medicine, Nursing Units (all), Orthopedic Brace Shop, Outpatient Psych, Pathology and Laboratory Medicine Service, Pharmacy, Prosthetics, Pulmonary Medicine, Research and Development, Rehabilitation Medicine, SPD, SICU, and Surgical Suite.
f. Phasing plans (min. 1:200 (1/16"=1'-0")). Submit plan for each phase on each floor showing work to be accomplished during that phase, temporary installations, previously completed work, and existing areas to remain. Include a written description of activities for each phase on the drawings
g. ISLM and ICRA drawings (min. 1:200 (1/16"=1'-0")).
h. Life safety plans showing means of egress, capacity, population, path of travel, travel distances, fire rated partitions, smoke barriers, exit signs, and fire extinguishers (min. 1:200 (1/16"=1'-0")) Coordinate with *Section 11. Fire Protection.*
i. Physical security plan showing location of security cameras, card readers, screening equipment (min. 1:100 (1/8"=1'-0")) Coordinate with *Section 18. Security.*
j. Building elevations with fenestration, penthouses, materials, finish floor elevations, floor-to-floor heights, overall building height, window and louver types, glazing materials, entrances, canopies, skylights, and adjacent grades (min. 1:100 (1/8"=1'-0")). Indicate locations of wall section cuts.
k. Building elevations of complex areas (min. 1:50 (1/4"=1'-0")).
l. Building sections (min. 1:50 (1/4"=1'-0")).
m. Wall sections (min. 1:15 (3/4"=1'-0")).
n. Construction details at a scale large enough to clearly show components and assembly: windows, storefront, waterproofing, roof accessories, equipment mounting and suspension, and shielding.
o. Interior elevations showing medical gases, power, data, communications, millwork, casework, equipment, and other built-in items (min. 1:50 (1/4"=1'-0")).
p. Partition type and fireproofing details (min. 1:10 (1"=1'-0")). Indicate sound attenuation and fire ratings. Identify UL or other acceptable testing agency design number.
q. Reflected ceiling plans (min. 1:100 (1/8"=1'-0")). Identify bulkheads, light fixtures, supply and return grilles, ceiling mounted equipment, exit lights, and other devices.
r. Door schedule with door and hollow metal frame details and threshold details Indicate door type, size, thickness, rating, material, glazing, security requirements, and hardware set.
s. Vertical transit details for stairs, elevators, lifts, escalators, dumbwaiters, linen and trash chutes, and pneumatic tube stations. Plans at 1:50 (1/4"=1'-0"), min., sections at 1:15 (3/4"=1'-0"), min. and details as required to show installation, fire protection, and construction. Coordinate with *Section 3. Automatic Transport.*
t. Completely developed alternates on drawings.

2. ASBESTOS ABATEMENT

Where asbestos abatement is required, submit:

Calculations

Submit a major and minor summary of the square feet of floor space for all abatement areas, the total linear and square feet of asbestos to be abated, and the total cost of abatement Include in the cost estimate any cost for decontamination of equipment and fixtures.

Drawings
Submit 100% complete asbestos abatement drawing including:

a. Restoration of the impacted building sub-systems as an integral part of the overall project design.
b. Integrated phasing of how the abatement and the general modification work shall be executed.

3. AUTOMATIC ELEVATOR AND TRANSPORT
Reports
Submit updated reports and narratives if design criteria have changed since the DD1 submission.

Calculations
Submit as required for reports described above.

Drawings
Submit:

a. Floor plans (min. 1:100 (1/8”=1’-0”) drawings of the transport systems, including elevators, pneumatic tubes, escalators, cart lifts, dumbwaiters, automatic guided vehicles (AGV), and electric track vehicles (ETV). Indicate tracking, piping, battery charging areas, blower rooms, queuing areas, cart holding areas, cart washer, central control area, and floor or wall recessed transport control units. Indicate architectural features in areas to be used for these systems.
b. Separate drawings for elevators, dumbwaiters, and other ATS systems. Show sizes, space requirements, and details of hoistway enclosures, pits, pit ladders, cabs, machine room access and railings, and entrances using larger scale than floor plans as necessary. Show dimensional locations of elevator cars, entrances, vents, and counterweights. Include sections through hoistways and penthouses.
c. Arrangement of equipment in machine and equipment rooms for elevators, lifts, escalators, pneumatic tubes, dumbwaiters, ETVs, and AGVs. Indicate minimum clearances, ventilation, hoist beams, and power requirements. Indicate size and locations of trap doors, hoist beams, and divider beams.
d. Size of machine beams and end reactions. Indicate location and detail of machine beam pockets. Show rail loadings and hydraulic elevator piston pit loads.
e. Complete details of hoistway entrances, sills, dumbwaiters, escalators, pneumatic tube stations, ETVs, and AGVs at scales large enough to describe construction and installation requirements
f. Locations of vents, electrical, and mechanical services.
g. Location of pneumatic tube stations. Update matrix indicating stations that are to be connected.
h. Details of track installation for ETVs.

Specifications
Include description of operating features and emergency operations, backup power requirements, and features that make automatic transport devices and equipment usable by and accessible to persons with disabilities.

4 BUILDING INFORMATION MODEL
Submit the following updated information derived from the building information model for advancement of the design or verification of the model:

Reports
Submit:

a. COBIE schedule in Excel for Rooms & Spaces and major MEP systems.
b. Final Level of Detail Matrix for model elements.
c. (VA and Constructor): Description of the clash detection process followed during design and assumptions on element tolerances, areas and elements that have been clashed. Identify any major conflicts discovered in the process and resolution result summary.

Calculations
Submit:

a. Full Room Schedule showing space naming and coding as defined by VA guidelines with SEPS data.
b. Updated building gross area and departmental area schedules and graphics from DD2.

Drawings
Submit:
a. Floor plans color-coded by functional area.
b. Digital copies of BIM model in native format and IFC format, as per the VA BIM Guide. Submit models as follows on DVD. Models shall be used for reference or as set out in the BMP:
   - Individual trades: Mechanical, Electrical, Plumbing, Fire Protection, and Structural
   - Combined: Architectural and Structural
c. Run Virtual Testing and Balancing from the design model to produce Air Balance Schedules required by *Section 12. HVAC*.

5. COMMISSIONING
Reports
Submit the updated narrative Basis of Design (BOD) report including Commissioning Agent's report of document review and statement indicating how each of the items in the report shall be or has been addressed. Include:
a. Updated Design Narrative.
b. Final Design Phase Commissioning Plan. Include revisions to Commissioning Team Members, Schedules. and other modifications required by the progress of the project.
c. Updated Design Phase Commissioning Issues Log with mitigation incorporated into DrChecks$_{sm}$. Verify that discrepancies between OPR and Design Narrative have been resolved.
d. Coordination Matrix for Commissioning Agent and A/E.
e. Final determination of control system type, configuration, and capabilities together with key decisions about equipment and systems sequences of operation.
f. Discussion of technical sections of the specifications to coordinate O&M Manual requirements.
g. Description of required training and demonstration requirements for VA's personnel. Include complete list of all types of equipment/systems and what training and demonstration is required.
h. Updated Construction Phase Commissioning Plan, including systems to be commissioned, an outline of construction phase roles and responsibilities, and an outline of required system documentation requirements.

Drawings
Submit documents fully coordinated with other disciplines and suitable for bidding and approval by Authorities Having Jurisdiction. The drawings should be considered 100% complete with no additional coordination or information required.

6. COST ESTIMATING
Reports
Submit:
a. WBS II Level 4 Estimate.
b. Cost model budget tracking.
c. Budget tracking by phase.
d. Separate computations for site, each building, new work, renovations, and alternates
e. Building net and gross area computations for new construction and renovations.
f. Project Data Sheets 1 and 2 (refer to VA cost estimating guidelines).

7. CRITICAL PATH METHOD (CPM)
Reports:
Submit the updated Basis of Design (BOD) report including:
a. Updated Project Master Schedule with increased detail.
b. Updated Schedule Risk Analysis identifying new risks and mitigation actions, particularly in construction areas.
c. Updated Phasing narrative.
d. Updated Phasing diagram.

e. Full-size contract drawings for the CPM phasing plans. (One drawing may include several reduced site plans.)
f. Written list of systems, including temporary systems by phase, and separated by technical discipline.

8. ELECTRICAL

Reports

Submit the updated narrative Basis of Design (BOD) report including:

a. Written approval by the utility company of the design of the electrical incoming service.
b. Copies of pertinent correspondence.

Calculations

Submit final:

a. Load calculations for record. Calculations should include review comment changes and incorporate final connected equipment schedule loads, demands, and diversities.
b. Updated equipment/panel schedules that represent loading.
c. Updated mechanical motor loads for mechanical and elevator power schedules.
d. Updated generator sizing, including starting calculations to substantiate generator selection.
e. Updated UPS load calculations and sizing.

Drawings

Submit:

a. 100% complete drawings, including complete legend symbol list, details, and schedules. Schedules include transformer, distribution switchboard, distribution panelboards, and branch-circuit panel board load schedules.
b. Coordinated drawings showing all new services to site and buildings; all new medium voltage cable installations; all manholes, ductbanks, transformers, roadway, parking, and grounds lighting; and the medium voltage service point on the electrical site plan.
c. Completed building electrical floor plans. Indicate all lighting and power circuit systems. Show motor protective devices, and controller and feeder sizes. Locate all panels, transformers, and other major electrical components.
d. Completed one-line and riser diagrams including quantity and sizing of all conduit, cables/conductors, ground wire, and equipment sizes. Indicate nominal transformer impedance voltage.
e. Transformers, panel boards, and feeders shown in respective positions.
f. Descriptions/names of all electrical power distribution equipment shown on plans and on one-line/riser diagrams.

9. ENVIRONMENTAL IMPACT

Reports

Notify VA contracting officer immediately upon discovery of any environmental or site data that may warrant investigation.

10. EQUIPMENT

11. FIRE PROTECTION

Reports

Submit the updated narrative Basis of Design (BOD) report.

Calculations

Submit finalized calculations to reflect comments from DD2 and evolved design.

Drawings

Submit 100% complete fire protection drawings, including:

a. Details of the fire pump system, including elevation and detail of fire pump.
b. Details of the stairwell sign indicating stairwell number, floor number, and upper and lower floor terminus of stairwell.

c. Interconnection of elevator controls with fire alarm system.
d. Interconnection of kitchen fire extinguishing and fire pump system to the fire alarm system.
e. Zoning of each fire alarm initiating device.
f. Single-line riser diagram for the fire alarm system.
g. Location and detail of enunciator panel.
h. Reference notes to HVAC drawings that indicate interconnection of the HVAC system (dampers, fans) with duct smoke detectors and/or fire alarm system.

12. HEATING, VENTILATING & AIR CONDITIONING

Reports

Submit the updated narrative Basis of Design (BOD) report including:

a. Updated energy modeling report. State that the energy model represents the operational parameters of all designed systems and uses actual equipment performance curves from the design selections (mechanical, plumbing, and lighting). Discuss any adjustments and their effects from the previous submittal.

Calculations

Submit complete and final energy and engineering calculations of all systems. In addition to room-by-room heating and cooling calculations, submit:

a. Final selection of all pumps with the pump head calculations based on the actual piping layout and takeoffs, and pressure drop through the equipment selected for the systems.
b. Final selection of all fans with the fan static pressure calculations based on the actual duct layouts and takeoffs, and static pressure drop through the equipment for the systems. (Detailed calculations are required even if variable speed drives are used.)
c. Sizing and selection of all expansion tanks based on the actual piping layout and volume computation.
d. Sizing and selection of all steam to hot water convertors and heat exchangers based on the flow requirement of each terminal unit, that is, duct-mounted reheat coil, box (air terminal unit). mounted reheat coil, unit heaters, convectors, finned tube radiators, and radiant ceiling panels.
e. Acoustic analysis of all systems and steps taken to ensure compliance with the specified noise levels.
f. Complete selection data, including catalog cuts and calculations for all HVAC equipment and drawings, showing all equipment schedules.
g. Complete coordination with equipment by providing utility connections, interface between the local controls and central engineering controls, trend log and recording requirements, and local and remote alarms.

Drawings

Submit 100% complete and coordinated drawings including:

a. Complete coordination with the architectural drawings (louvers, ceiling access panels, and reflected ceiling plans.) and structural drawings (operating weights of ceiling and floor mounted equipment, concrete and steel supports, and roof and floor openings).
b. HVAC floor plans for all areas showing all ductwork and piping at 1:100 (1/8 inch) scale. Include:
    - Ductwork and piping on separate drawings
    - Duct pressure classification on the floor plans for all air distribution systems. Identify the duct sections with demarcation symbols where the change in pressure rating takes place
    - All duct/pipe sizes and air/fluid quantities
    - Air quantities for each room and each air inlet/outlet, expressed in cubic meters (feet) per minute, and fluid quantity (where required) in liters per second (gallons per minute)
    - All volume dampers, fire dampers, smoke dampers, automatic control dampers, rises and drops in ductwork, and air inlets/outlets, on the air distribution floor plans
    - All piping specialties, such as expansion loops, anchors, valves, drip assemblies, and balancing fittings, on the piping floor plans and drain valves at low-points
    - All architectural room names and numbers
    - All smoke and smoke/fire barriers

c. HVAC floor plans for all mechanical equipment rooms, with at least two cross-sections taken at right angles to each other at 1:50 (1/4" = 1'0") scale. Show all equipment located on roof and/or grade. Coordinate to show the walking pads on the architectural drawings.
d. Updated smoke and fire partitions in HVAC floor plans as described in DD2.
e. Outside chilled water and condenser water distribution showing pipe sizes and insulation with plans, profile, sections, details, and all accessories, such as, anchors, expansion loops/joints, valves, manholes, capped and flanged connections, and the interface between the new and existing work. Show rerouting any utilities, cuttings of roads, pavements, and trees, as well as the extent of new and demolition work.
f. Automatic temperature control drawings. Show all duct detectors, control valves/dampers static pressure sensors, and differential pressure control assemblies, whose actual physical location is critical for the intended sequence of operation on floor plans. For projects involving a central Engineering Control Center (ECC), provide a point schedule with intended analog/digital input/outputs, graphics capabilities, and requirements of the other trades to be included in the ECC. Provide a riser diagram showing locations of all field data-gathering panels and their interface with the ECC. Show the actual location of the ECC and peripherals on floor plans. The written sequence of operation describing the role of each individually numbered device should be shown on the floor plans on the same drawing on which the control schematic diagram is shown. Do not write the sequence in the specifications. Each sequence should describe the start-up, capacity control, safeties, morning warm-up cycle where applicable, and night setback cycle where applicable.
g. Standard detail drawings. Edit VA details to suit the project. Include any special details deemed useful and necessary for the project.
h. HVAC demolition drawings showing the extent of demolition work. Indicate sizes of ductwork and piping to be dismantled. Show capacities and sizes of the existing equipment to be removed. Show points of connection, disconnection, blankoffs, and dead-end flanges with isolating valves. Coordinate demolition and restoration work with other disciplines. State the revised capacities of the existing systems affected by the demolition work together with additional efforts involved in testing, balancing, and adjusting them.
i. Previously submitted drawings with comments of the last review incorporated.

13. HISTORIC PRESERVATION
Reports

a. Comply with contractual agreements for Construction Documents1 developed with the contracting officer, project manager, and VA cultural resources management officer.
b. Notify VA contracting officer immediately upon discovery of any historical or archeological data that may warrant investigation.

14. INCINERATION/WASTE DISPOSAL SYSTEMS
Reports
Submit the updated narrative Basis of Design (BOD) report including discussion of the existing systems and proposed options with:

a. Verification that a check for changes in applicable emissions regulations that may affect the design or operation of the incineration system has been performed.
b. Verification that any design changes due to applicable emissions regulations changes have been used in the final design.

Calculations
Submit final load calculations that substantiate the design indicated on the drawings for record.

Drawings
Submit 100% complete and coordinated drawings. Include previously submitted drawings that have incorporated comments of the last review.

15. INTEGRATED DESIGN AND CONSTRUCTION
Reports
Submit the updated Basis of Design (BOD) report including:

a. Updated Team Directory and Project Management Plan.
b. Report confirming compliance with project goals including program, budget, sustainability, and security.

16. INTERIOR DESIGN
Reports
Submit the updated of Design (BOD) report including:
a. Finish sample boards with finishes, furniture and fabrics, all keyed to floor plans.
b. Furniture catalog cuts and materials samples.
c. Fully developed design for lobbies and other major public spaces. Submit rendered elevations, perspectives or other presentations to describe the materials, lighting, and appearance of those spaces.
d. Signage and wayfinding system.

Drawings
Submit:
a. Fully developed design for all spaces.
b. Complete construction drawings, fully coordinated with other disciplines and suitable for bidding and approval by Authorities Having Jurisdiction. The drawings should be considered 100% complete with no additional coordination or information required.
c. Floor pattern plans (min. 1:100 (1/8"=1'-0")).
d. Updated wayfinding and signage plans (min. 1:100 (1/8"=1'-0")). Standard sign design with tactile and Braille text. Supplemental details at larger scale as necessary to fully describe system.
e. Interior elevations for all spaces indicating finishes and color selections Coordinate with CD1 *Section 1. Architectural* requirements.
f. Details for millwork and features. Coordinate with *Section 1. Architectural* requirements.

17. PLUMBING
Reports
Submit the updated Basis of Design (BOD) including:
a. Graphical representation of energy and water usage savings with reference to the contributing technologies and their weighted contributions.
b. Written approval by utility companies or regulatory review agencies, where applicable.

Calculations
Submit:
a. Final calculations for sizing all systems and equipment.
b. Final calculations to support strategies to achieve the water consumption and energy reduction goals.

Drawings
Submit 100% complete and coordinated drawings including:
a. Legend, notes, and details.
b. Demolition plumbing floor plans shown at 1:100 (1/8” = 1’0”) scale.
c. All equipment shown and piping sized.
d. Sizes, rims, and invert elevations, pipe lengths, and materials of storm and sanitary sewer systems.
e. Irrigation system at the same scale as storm sewer drawings.
f. Finalized riser diagrams.
g. Profiles of storm and sanitary sewers.
h. Special systems: Medical gas, R/O water, connections to medical equipment, floor and roof drains, and overflow protection.

18. SECURITY (PHYSICAL)
Reports

Submit the updated Basis of Design (BOD) report including the 100-percent-complete physical security narrative, completed by a qualified Security Specialist and a qualified Structural Blast Specialist, which identifies the facility's classification as a Life Safety Protected or Mission Critical facility. Submit:

a. Updated description of the overall proposed physical security approach and the building and site design elements being included for compliance to the applicable Physical Security standard.
b. Subsections corresponding to each of the chapters of the Physical Security standard, (i.e., Site Considerations, Building Entrances and Exits, Functional Areas, and Building Envelope).
c. For physical security requirements resulting in structural or exterior envelope hardening for blast loads or progressive collapse, indicate the methodology and software for analyses.
d. Letter from the security specialists, affirming that they have performed a back-check to confirm that all the physical security elements have been incorporated into the Construction Documents.

Calculations
Submit 100% complete calculations, to include blast-loading environment and dynamic analyses of glazing, window framing, exterior envelope elements, vulnerable interior, and exterior structure. Calculations shall be stamped and sealed by a licensed Professional Engineer.

Drawings
Submit 100% complete construction documents reflecting blast hardening requirements for typical exterior envelope and structural elements.

19. SITE DEVELOPMENT/UTILITES
Reports
Submit a copy of approved Storm Water Pollution Prevention Plan (SWPPP)

Drawings
Submit:

a. 100% complete and coordinated site and landscape contract drawings. Expand the approved DD2 drawings to the level of detail necessary for construction.
b. Stormwater management drawings.

20. SPACE PLANNING
Reports
Submit the updated narrative Basis of Design (BOD) report including update of previously submitted summary of space by function with net areas, gross area, net:gross ratio by department, net:gross ratio for building, listing of deviations from approved VA SEPS space program, and justification for those deviations.

Calculations
Submit updated net and gross areas.

Drawings
Refer to *Section 1. Architectural* for requirements.

21. SPECIFICATIONS
Submit:

a. All technical disciplines the original VA Master Specification section drafts edited with the “Track Changes” function. Identify modifications, deletions and insertions. Assure the specification drafts have been edited and tailored in their application to represent accurate coordination between drawings and specifications and that proper provisions have been provided in specifications to include required submittals for the purposes of achieving the project’s LEED goals.
b. Documents fully coordinated with other disciplines and suitable for bidding and approval by Authorities Having Jurisdiction. The specifications should be considered 100% complete with no additional coordination or information required.

22. STEAM DISTRIBUTION (OUTSIDE)
Reports

Submit the updated Basis of Design (BOD) report.

Calculations
Submit final load calculations for record.

Drawings
Submit updated drawings showing:
a. Submit 100% complete and coordinated drawings.
b. Previously submitted drawings that have incorporated comments of the last review.

23. STEAM GENERATION
Reports
Submit the updated Basis of Design (BOD) report.

Calculations
Submit all finalized steam load calculations.

Drawings
Submit:
a. 100% complete and coordinated drawings and calculations. Include all control wiring diagrams for management of burning and flame safeguard systems.
b. Verification that a check for changes in applicable emissions regulations that may affect the design or operation of the steam plant has been performed and any necessary changes have been made to the final design.

24. STRUCTURAL
Reports
Submit an updated Basis of Design (BOD) report including final Structural Review Checklist.

Drawings
Submit updated and developed drawings provided at DD2 submission, complete and ready for bidding. Drawings shall be fully coordinated with all disciplines and ready for approval to bid.

a. Deep Foundation Drawings:
   - Final number and size of deep foundation members at each location. Indicate the design depth (tip or bottom of pile, pier or caisson elevation) of each deep foundation member for bidding purposes
   - Test pile, pier, or caisson locations
   - Completed pile, pier or caisson cap schedule including top of cap elevations, reinforcing, and anchorage
   - Tie-beam information including size, reinforcing, clearances and connection details to pile, pier or caisson caps

b. Concrete Foundation/Framing Drawings:
   - Typical details for concrete footings, beams, columns, slabs, and walls as required for the project; Include only details that apply to the scope of work
   - Completed concrete column, beam, pilaster, and footing schedules. Indicate information for concrete slab construction including:
     - Slab joint pattern for concrete slabs-on-grade
     - Slab thickness and top of slab elevations
     - Slab reinforcing including sizes, spacing, placement, and clearances
     - Typical slab construction details, including construction and control joint details, typical details at slab-column isolation joints, slab-wall joint details
     - Indicate all changes in slab elevations, including depressions and pits, and sump pits at the bottom of all elevator pits
     - Indicate all sloped slab locations with both beginning and ending slope elevations.
   - Continuous and isolated footings:
     - Footing sizes and locations

- Top of footing elevations
- Step-footing locations and the top of footing elevations at each step
- Footing reinforcing sizes, spacing, and clearances
- Required keyways and dowels

- Foundation walls:
  - Elevation at top of wall
  - Elevation at top of brick shelf or other supports
  - Elevation at beam pockets and changes in wall heights
  - Wall thickness and location to column lines
  - Wall reinforcing size, direction, spacing, and clearances
  - Integral pier or pilaster size, location, reinforcing, and elevation
  - Wall penetrations including size, locations, and additional reinforcing
  - Locations and details for embedded items such as connection plates or anchors
  - Coordinate with waterproofing and waterstop systems defined and shown on the architectural drawings

c. Steel Frame Drawings

- Steel framing member sizes. Include all shear stud and camber information for floor framing members
- Connection design loads including vertical reactions and design moments for moment connections
- Column orientation on framing plans
- Locations requiring the installation of slip-critical bolts
- Bridging and bracing member sizes, locations, and connections
- Metal decking sizes, span criteria, and direction
- Relevant typical details. Include only details that apply to the project
- Complete column schedule, including member sizes, splice locations and types, base plate sizes and orientation, and column loads and heights
- Anchor bolt sizes, hardware, and patter
- Non-typical or non-standard connection details.
- Dunnage and support steel members. Provide sizes and details
- Lintels (loose and attached) and support angles

d. Masonry Drawings:

- Typical masonry reinforcing and spacing requirements for load bearing walls. Assist the architect in reinforcing and spacing requirements for load non-bearing walls shown on architectural drawings
- Masonry seismic anchorage and lateral support requirements
- Masonry bond beam requirements

Calculations

Submit final calculations.

a. Incorporate all resolved comments and corrections of the DD2 Submittal. Include progressive collapse calculations in submittal. Coordinate with *Section 18. Security.*
b. Each calculation sheet shall be initialed and dated by the engineer(s) assigned as Design Checker(s) for that portion of the work. Final calculations shall be indexed, sealed, and signed by the engineer whose name appears on the Design Calculations index. Observe the following guidelines:
   - State assumptions and design criteria prior to the presentation of the calculations.
   - Individual calculations to verify sizes, bolts, and welds, shall be provided with all details.
   - Sketches used to describe the basis of calculations shall be drawn to approximate proportions.

25. SUSTAINABILITY

Reports

No submission required.

Calculations
Submit:

a. Final water use reduction calculations based on third-party and VA guidelines. Coordinate with calculations for the potable water baseline and reduced consumption calculations performed by the plumbing engineer.
b. Final GHG emissions reduction calculations supporting VA mandates.
c. Final renewable energy calculations.
d. Updated calculations coordinated with the mechanical and electrical trades.

Green Globes (if applicable)
Reports
Submit the following as it pertains to 3rd Party Green Globes Certification:

a. Final input information for the Construction Documents Questionnaire and submit a final copy of the Automatic Output Reports from the online GBI Assessment Tool.
b. Documentation and discussion of the final input and output from the Life Cycle Cost Assessment (LCA) for the selected concept.

Calculations
Submit the final input and results of the Life Cycle Costs Assessment (LCA) calculations.

LEED (if applicable)
Reports
Submit Construction Documents LEED score card. Indicate where points are achieved by the design and anticipated for construction and provide a brief discussion describing why or why not certain points are not achievable.

Calculations
Submit final LEED template calculations as required for all design level credits being attempted.

26. TELECOMMUNICATIONS
Reports
Submit:

a. Written approval by the telecommunications utility companies of the design for incoming services.
b. Copies of pertinent correspondence.

Drawings
Submit:

a. 100% complete drawings, including complete legend symbol list, details, and schedules.
b. All new telecommunications services to site and buildings, all new fiber and copper cabling installations, all manholes and ductbanks.
c. Complete telecommunications riser diagrams.
d. Complete building telecommunications floor plans

C. CONSTRUCTION DOCUMENTS [CD2]

The A/E shall revise and update all CD1 submissions based on VA review comments.

General

a. Drawings shall have graphic scale, north arrow (either true north or plan north), and key plan.
b. Each submission shall build on previous submission. Drawings required by previous submission shall be included in subsequent submission whether or not specifically identified as a requirement.
c. Specifications shall be prepared using VA Master Construction Specifications. Submissions shall show changes to master by using "Track Changes" function. The CD2 submission shall not show changes.
d. Dimensions shall be provided in soft metric (S.I.) units followed by English units, unless otherwise specified by the VA project manager.

Reports

Submit:

a. Written responses to review comments from previous submission.
b. All previously submitted documents updated to reflect review comments CD1 review comments.
c. Final summary of space by function with net areas, gross area, net:gross ratio by department, net:gross ratio for building, listing of deviations from approved VA SEPS space program, and justification for those deviations.
d. Final WBS II Level 4 Cost Estimate incorporating all changes to CD1 documents. Submit final Project Data Sheets 1 and 2 (refer to VA cost estimating guidelines).

Drawings

Submit:

a. All previously submitted drawings updated to reflect review comments from CD1.
b. Final architectural drawings signed and sealed by an architect registered in the jurisdiction where the project is to be built
c. Sign-off by designated VA representatives.

Specifications

a. Update all previously submitted documents to reflect review comments CD1 review comments.
b. Provide Final Project Manual with signature and seal of architect of record on the cover.

VII. DISTRIBUTION OF A/E MATERIALS

SYMBOL IDENTIFICATION OF CONTRACT DRAWINGS:

AS – Architectural Drawings
HA – Asbestos Removal Drawings
BI – Boring Log Drawings
ES – Electrical Drawings
FA – Fire Protection Drawings
MH – Heating, Ventilating, and Air Conditioning Drawings
PL – Plumbing Drawings
GS – Site Development
CU – Sanitary, Irrigation, and Utility Drawings
MU – Steam Distribution Drawings
MP – Steam Generation Drawings
SS – Structural Drawings
EN – Environmental Drawings
PS – Physical Security narrative and calculations.

DEFINITIONS:

1. **Complete Set of Documents (CSD**: One complete set of documents consists one full size set of drawings, print copies (letter-size bond paper) of any reports, calculations and related data and edited specifications when required.
2. **Complete Half Size Set of Documents (CHSD)**: Complete half-size set consists of one full half size set of drawings, print copies (letter size bond paper) of any reports, calculations, and related data and edited specifications when required.
3. **Complete Half Size Set of Drawings (CHSDr)**: Complete half size set of drawings bound into sets in order of their classification symbol.
4. **CD/DVD of Support Documents (CD/DVD)**: Reports, calculations, and any related data and edited specifications in electronic format when required. All documents shall be in PDF format.
5. **Cost Estimate (CE)**: A CD/DVD of complete half-size set of drawings and an electronic copy of the Cost Estimate and Market Survey.

GENERAL NOTES:

1. Submit all materials, packaged and marked to every office identified below.
2. Reports, calculations, estimates, and other related data, including edited specifications, can also be e-mailed when directed by the project manager to all offices identified below.
3. The project manager shall be responsible for confirming the addresses of the offices where the deliverables shall be mailed. Following offices are identified in the distribution charts who review the deliverables.
   a. Project Manager (field office)
   b. Program Management (VACO)
   c. Program Management (Regional)
   d. Regional Contracting Officer
   e. Peer Reviewer (includes Interior Design)
   f. Regional Fire & Safety
   g. VACO (Consulting Support Service, Planning Office; Cost Estimating; BIM; Physical Security, Energy Management)
   h. Dan Colagrande
   i. VA Medical Center
   j. VISN
   k. Construction Manager

l. Commissioning Consultant
m. Telecommunications
n. PVA (special projects such as SCI, Polytrauma).

4. Identify each submission package including every CD/DVD with station number, project number, and date.
5. Dan Colagrande shall receive one (1) half-size set of Architectural, Site (including Landscape) and Space Planning documents and one (1) CD/DVD only mailed directly to:
   Daniel Colagrande
   2730 Coulterville Road
   White Oak, PA 15131.

See separate attachment of the revised matrix for distribution of materials.

DISTRIBUTION OF A/E DELIVERABLES

CFM OFFICE	PROJECT MANAGEMENT									(VACO) CONSULTING SUPPORT							
DEPARTMENT WITHIN CFM OFFICE	REGIONAL PROGRAM MANAGEMENT (PM)	VACO PROGRAM MANAGEMENT (PM)	PM FIELD OFFICE	REGIONAL CONTRACTING OFFICER	SPECIAL PROJECTS SCI; POLYTRAUMA	PEER REVIEWER	TELECOMMUNICATION SERVICE	CONSTRUCTION MANAGER	FRIE & SAFTEY REGIONAL	FACILITIES QUALITY OFFICE	CSS VACO (00CFM3A)	COST ESTIMATING	PLANNING	DAN COLAGRANDE	COMMISSIONING CONSULTANT	VA MEDICAL CENTER (VAMC)	VISN
PROJECT STAGE	REQUIRED TYPE AND AMOUNT OF DOCUMENTS																
CONCEPTUAL DESIGN: INCLUDES PRE-DESIGN	1 CHSD 1 CD-DVD	1 CHSD 1 CD-DVD	1 CHSD 1 CD-DVD	N/A	AR	1 CHSDr 1 CD-DVD	N/A	AR	N/A	2 CHSDr 1 CD-DVD	6CHSD 1 CD- DVD	1 CHSDr 1 CE	2 CHSD 1 CD-DVD	SEE NOTE #5	1 CHSD 1 CD-DVD	3 CHSD 3 CD-DVD	1 CHSD 1 CD-DVD
SCHEMATIC DESIGN: SUB 1	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
SCHEMATIC DESIGN: SUB 2							↓		↓				↓				
DESIGN DEVELOPMENT: SUBMISSION 1	↓	↓	↓	↓	↓	↓	1 CSD 1 CD-DVD	↓	1 CHSD 1 CD-DVD	↓	↓	↓	1 CHSD 1 CD-DVD	↓	↓	↓	↓
DESIGN DEVELOPMENT: SUBMISSION 2	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	2 CHSD 1 CD-DVD	↓	↓	↓	↓	↓	↓
CONSTRUCTION DOC: SUB 1	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		↓	↓	↓	↓
CONSTRUCTION DOCS: SUB 2	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		↓	↓	↓	↓
BID DOCUMENTS	↓	↓	↓	1 CHSD 1 CD-DVD	↓	↓	↓	↓	↓	↓	↓	↓		↓	↓	↓	↓

NOTES

1.) CSD- COMPLETE SET OF DOCUMENTS; CHSD- COMPLETE HALF SIZE SET OF DOCUMENTS; CHSDr- COMPLETE HALF SIZE SET OF DRAWINGS; CE- COST ESTIMATE DOCUMENT; CD / DVD- COMPACT DISC / DIGITAL VIDEO DISC ; AR- AS REQUIRED; N/A- NOT APPLICABLE. FOR MORE INFORMATION SEE DEFINITIONS AND GENERAL NOTES.

2.) PROJECT A/E WILL MAIL THE DELIVERABLES TO: DAN COLAGRANDE; PROJECT MANAGEMENT; CONSULTING SUPPORT SERVICE; COMISSIONING CONSULTANT; VAMC; VISN AND NOTIFY THE PROJECT MANAGER ACCORDINGLY.

3.) IN ALL CASES THE PROJECT MANAGER WILL SEND THE DELIVERABLES TO: REGIONAL CONTRACTING OFFICER, PEER REVIEWER, TELECOMMUNICATION SERVICE, CONSTRUCTION MANAGEMENT, REGIONAL & VACO PROGRAM MANAGEMENT OFFICE AND REGIONAL FIRE & SAFTEY. IN ADDITION THE PROJECT MANAGER WILL DETERMINE THE REQUIREMENTS FOR SPECIAL PROJECTS SUCH AS SCI,POLYTRAUMA ETC.

4.) UPON RECEIVING THE DELIVERABLES FROM THE A/E, THE CONSULTING SUPPORT SERVICE WILL DELIVER THE DOCUMENTS TO COST ESTIMATING, PLANNING, FACILITIES QUALITY OFFICE, AND INTERIOR DESIGN.

5.) ONE HALF SIZE ARCHITECTURAL, SITE (INCLUDING LANDSCAPING), SPACE PLANNING DOCUMENTS AND ONE CD-DVD.