SECTION 00200 – REQUEST FOR PROPOSAL FOR NEW 40 BED HOSPITAL

REFERENCE NO:001-2022 PUBLICATION DATE: April 20th, 2021

1. SOLICITATION
The purpose of this RFP is to solicit proposals for the purposes of entering into a contract through competitive negotiations for the professional services of an Architectural / Engineering Firm, with experience in Design of Major Hospitals and Medical Centers.

2. PROJECT DESCRIPTION:
The A/E is responsible for the professional quality, technical accuracy, and coordination of all designs, drawings, specifications, cost estimates, needed studies (EA, EIA) other work or materials furnished, and other contracted services including those prepared by his consultants for a new fully functional 40 bed hospital (New 40 Bed Hospital).

3. RECEIPT OF PROPOSALS:
15 copies of the proposal shall be received by the Chief Procurement Officer LBJ Tropical medical Center, Pago Pago, American Samoa, 96799 no later than 2:00pm Friday May 20th, 2022.

4. DOCUMENT:
Architectural and Engineering Guide Documents may be examined at LBJ Tropical medical Center, in the village of Faga'alu, or maybe obtained on line upon request to the LBJ Tropical Medical Center Chief Engineer email sa.mavaega@lbj.as.

5. REQUIREMENT
Fifteen (15) or more years in the field of Architectural and Engineering for Hospitals and Medical Centers and previous experience in American Samoa.

6. RIGHT OF REFUSAL
LBJ Tropical Medical Center reserves the right to refuse any Proposal.

7. LBJ Tropical Medical Center reserves the right to waive any lawful informalities in the process as may be in the best interest of LBJ Tropical Medical Center.

APPROVED BY:_____
Chief Procurement Officer
LBJ Tropical Medical Center

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   15 copies of the qualification proposal shall be received by the Chief Procurement Officer LBJ Tropical Medical Center, Pago Pago, American Samoa, 96799 no later than 2:00pm Friday May 20th, 2022.

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APPROVED BY:_____

Chief Procurement Officer, LBJ Tropical Medical Center

**ARCHITECT/ENGINEER (A/E) GUIDE**
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END

**SECTION 00200 – REQUEST FOR PROPOSAL NEW 40 BED HOSPITAL**

**REFERENCE NO:001-2022**

## I INTRODUCTION

A. Introduction

1. See companion part of this RFP, titled “AMERICAN SAMOA – NEW HOSPITAL – TECHNICAL REQUIREMENTS”. These Technical Requirements are a part of this RFP.

2. This A/E guide is to be the basis for Architect/Engineering (A/E) Firms in preparation of their Qualification Proposal for preparing plans and specifications for a new 40 bed Specialty Hospital and Clinics at the current Tafuna Housing Compound. The design should accommodate future build-out to a consolidated 150 bed hospital on this campus. This publication is issued to inform Architect/Engineering Firms of the policies, general procedures and requirements of the American Samoa Government appertaining to professional services performed under architectural and engineering contracts, and to obtain quality contract documents. It is essential that all A/E personnel, associates, and consultants responsible for the preparation of construction documents (drawings, specifications and cost estimates), studies or other services, follow the procedures and instructions contained herein.

   Special emphasis is placed on the responsibilities of the A/E under the terms of the contract with the American Samoa Government. This information in contained in Section II. Other sections define the standards of design, detailed requirements, format, presentation and submittal of drawings, specifications, cost estimates, and other related documents. Sections IV through VII outline technical requirements for each discipline, and copies of these sections should be given to the appropriate design team member.

   This guideline defines the minimum requirements for each submission in the production of Pre-Design (PD), Concepts, Schematic Design (SD), Design Development (DD), and Construction Documents (CD). The design requirements are defined by the Scope of Work (SOW), as indicated in the Request for Proposal (RFP). This guideline is designed to give the A/E an understanding of what is required and what must be completed before the final construction documents are released for bidding. This guideline does not relieve the A/E of their professional responsibility to produce a correct, complete, and fully coordinated set of construction documents in accordance with the industry standard practices, the latest edition of the AIA Guidelines for Construction and Equipment of Hospitals and Healthcare Facilities, and American Samoa Government criteria.

3. This guide provides:

   a. Guidance for the development of design documents, specifications, and contract documents.
   b. Guidance on architectural and engineering design features.
   c. Guidance on submittals.
   d. Supplemental information.

   Our underlying philosophy is one of responsive, responsible, and defensible design for New 40 Bed Facility with a commitment to design principles and practices which are logical and conservative. The design shall produce facilities that are straightforward and businesslike. They must respond to the user needs, be representative of the Samoan culture, but reflect a responsible use of the funds available. They must be defensible in terms of scope, cost, and appearance. The design shall be:

Well planned
Effective in function
Appropriate in form and appearance
Cost-effective
Constructible
Adaptable and durable over time in the operating environment, giving proper weight to each of the above elements.

The proposed design solution for the 40 bed hospital and clinics shall indicate how future expansion to a 150 bed hospital will be accommodated.

Before beginning the design, the A/E should review current criteria, instructions and guide specifications provided by the American Samoa Government and make a thorough study of conditions at the site and requirements of the projects. If, after and analytical review, the A/E is of the opinion that the deviation from instructions from the American Samoa Government criteria or building codes, which are predominate in the local area. American Samoa Government encourages the A/E to use his ingenuity, talent and professional expertise to develop the best possible design for all the elements of the project with the constraints imposed. However, the use of untried concepts and materials for which no “track record” exists, is discouraged and will be rejected. Those projects, which in themselves are state-of-the-art, will be acceptable.

B. Definitions

| | |
|---|---|
| Boiler Plate | General Conditions; bidding forms; contract provisions and clauses; and other reprinted forms and text for inclusion in the contract documents that do not required editing by the A/E. |
| Submission Checklist | A checklist indicating the required actions to be completed for each submission. The respective checklist is to be filled out and certified by the A/E and included with the submission. Checklists are included in Appendix A. |
| Group I – Equipment | Fixed, built-in, attached, and installed equipment normally included in the construction contract. |
| Group II – Equipment | Major moveable equipment – items having a useful life of 5 years or more (Moveable equipment does not require attachment to the building or utility service, other than provided by an electrical plug or quick disconnect fitting. Examples include chairs, beds, bassinets, desks, computers and printers, network file servers, typewriters, system furniture, sphygmomanometers, microscopes, centrifuges, portable whirlpool units, exercise bars, refrigerators, and linen carts.) |
| Group III – Equipment | Minor moveable equipment – items having a useful life of less than 5 years (These items are of relatively small cost and size and lend themselves to on-site storage for replacement of lost or worn-out equipment. Examples include linens, blankets, gowns, wash basins, bed pans, pipettes, surgical instruments, silverware, and chinaware.) |

| | |
|---|---|
| Special Purpose | Group I, II, or III Technical, medical, or scientific equipment needed to operate a laboratory, a hospital, a clinic, a clinical research patient care unit, or equipment which is specific to a single purpose and not generally suitable for other purposes (Examples of such equipment include incubators, electric ovens, sterilizer, vacuum and pressure pumps, centrifuges, water baths, casework, sinks, shelves, patient headboards, and workbenches for microscopes. Special purpose equipment may be classified as either fixed or moveable equipment.) |
| Record Documents | An updated set of construction documents, specification and drawings, edited to show the actual work performed in comparison with the original specifications. |
| Record Drawings | An updated set of drawings approved and noted to show the differences between the actual and the work as originally proposed. |
| Record Specifications | An updated specification edited to show the actual work performed in comparison with the original specifications. |

C. Abbreviations

| | |
|---|---|
| ACI | American Concrete Institute |
| ADA | Americans with Disabilities Act |
| ADAAG | Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities |
| A/E | Architect/Engineer (The design, technical consulting firm engaged in professional architectural and/or engineering services.) |
| AIA | American Institute of Architects |
| AIA | Guidelines American Institute of Architects Guidelines for Construction and Equipment of Hospitals and Medical Facilities. |
| ANSI | American National Standards Institute |
| ASTM | American Society for Testing and Materials |
| BOCA | Building Officials and Code Administrators International, Inc. |
| CAD | Computer-Aided Design |
| CAD | Layers American Institute of Architects CAD Layer Guidelines |
| CD | Construction Documents (includes drawings and specifications) |
| CPO | Chief Procurement Officer |
| CPOTR | Chief Procurement Officer's Technical Representative |
| CSI | Construction Specifications Institute |

| | |
|---|---|
| CVS | Certified Valve Specialist |
| DD | Design Development |
| DOE | Department of Energy |
| EPA | Environmental Protection Agency |
| ICC | International Code Council |
| IES | Illuminating Engineering Society |
| LBJTMC | LBJ Tropical Medical Center |
| LSC | Life Safety Code (NFPA 101) |
| M&O | Maintenance and Operation |
| M&M | Medicare/Medicaid |
| NEBB | National Environmental Balancing Bureau |
| NEC | National Electrical Code |
| NEMA | National Electrical Manufacturers Association |
| NESC | National Electrical Safety Code |
| NFPA | National Fire Protection Association |
| NIH | National Institutes of Health |
| NIST | National Institute for Standards and Technology |
| NSF | National Sanitation Foundation |
| O&M | Operation and Maintenance |
| PD | Pre-Design |
| PM | Project Manager |
| PO | Project Officer |
| RFP | Request for Proposal |
| SD | Schematic Design |
| SOW | Scope of Work |
| STC | Sound Transmission Coefficient |
| UFAS | Uniform Federal Accessibility Standards |
| UL | Underwriters Laboratories, Inc. |

VE Value Engineering

## II. SCOPE OF WORK AND RESPONSIBILITIES OF THE A/E

A. Quality Control and Reviews

1. The A/E is responsible for the professional quality, technical accuracy, and coordination of all designs, drawings, specifications, cost estimates, needed studies (EA, EIA) other work or materials furnished, and other contracted services including those prepared by his consultants for the design of a New 40 Bed Hospital at the Tafuna Housing Compound.

2. The A/E is responsible for designing the facility for the lowest total cost including original construction cost and accumulated maintenance and operating cost for the duration of the design life.

3. The A/E's work shall be subject to the American Samoa Government oversight, direction, control, and approval.

4. American Samoa Government reviews are to assure all programs, statutory and regulatory provisions are included or met, the review is not intended to indicate a complete or detailed check of all documents, calculations, codes, etc. American Samoa Government American Samoa Government review does not relieve the A/E of any responsibility for checking their own work; verifying existing conditions, complying with the codes, standards, and the Program of Requirements (POR); and producing a complete coordinated set of documents. It will be the responsibility of the A/E, acting in a professional capacity, to ensure the accuracy, completeness and correctness of the cost estimate and all engineering concepts and details of the work, including the coordination of the various architectural, structural, mechanical, electrical, and other subdivisions thereof with each other and with the specifications.

5. Reviews and approvals will be provided, in part, by the American Samoa Government Agencies. All review comments will be coordinated through LBJTMC Chief Engineer. Changes will be incorporated in the design documents before work on the next design submission begins. Refer to Chapter VII, Section G for additional information on review.

B. A/E Project Manager

The A/E shall designate a Project Manager (PM). The A/E PM shall be familiar with the requirements in the A/E PM will provide necessary design guidance for the successful completion of this work and coordinate with the assigned American Samoa Team.

C. Document Distribution

The A/E shall distribute documents as required in the contract.

D. Scope Changes

Any proposed deviation from the project SOW must be reviewed with the Chief Procurement Officer's Technical Representative (CPOTR) and approved by the Chief Procurement Officer (CPO) before any action can take place. When major changes in the SOW are required, appropriate contract modifications will be negotiated with the A/E by the minor changes within the general project scope are required, the A/E will make the adjustments when directed to by the CPO or his Technical Representative.

E. Document Ownership

All tracings, designs, specifications, notes, computer aided design (CAD) files, and other related work shall become American Samoa Government property.

F. Errors and Negligent Performance

The A/E shall correct or revise any errors or deficiencies in designs, drawings, specifications, estimates, and other services without additional compensation. The A/E shall remain liable (in accordance with applicable law) for all damage caused by the A/E's (or its consultants') negligent performance of any of the services furnished under the A/E's contract.

Design errors or omissions resulting in damages or extra cost to the American Samoa Government will be evaluated for potential A/E financial liability. If the American Samoa Government determines the A/E is liable for a design deficiency, the CPO will notify the A/E. Reimbursement of costs incurred by American Samoa Government resulting from A/E's errors or omissions, or its negligent performance, or breach of contractual duties will be actively pursued.

## III. GENERAL DESIGN REQUIREMENTS

A. General Requirements

In all design projects, the primary source of design criteria will be the latest edition of the AIA Guidelines, and applicable current Health Care codes and
standards such as JCAHO and VA Hospital Health Care Facilities.\

B. A/E Site Investigation

It is the A/E's responsibility to visit the site, inspect the location of the work, become acquainted with all local conditions, verify and identify all pertinent existing conditions, review existing drawings, and consul with the American Samoa Government administration and facility personnel. The A/E shall obtain necessary licenses and permits, and comply with all applicable laws, codes and regulations in connection with this investigation and shall be responsible for all damages to persons or property that may occur. Before starting the work, it is the responsibility of the A/E to visit the site and inspect the locations of the work and to become acquainted with all pertinent local conditions.

C. Codes and Standards

See attached document, "Technical Scope of Work".

D. Value Engineering

It is the A/E's responsibility to use Value Engineering and life cycle principles throughout the design phase of the project, thereby making efficient and effective use of the construction and operational budgets. Depending on the size of a project, American Samoa Government may require a formal value engineering (VE) study. A formal VE study can be accomplished by a separate VE consulting firm under contract with the American Samoa Government or through the A/E contract. The A/E will be required to brief the VE firm about the project requirements and design concepts, provide copies of design documents to the VE firm, and review and comment on the VE's recommendations. The A/E shall modify the construction documents to incorporate all accepted VE's recommendations.

E. Value Engineering Study

A consultant independent of the A/E is required to conduct the VE studies. The VE team will be led by a Certified Value Specialist (CVS) registered with the Society of American Value Engineers (SAVE). VE team members are required to have, at a minimum, experience in health care and must have participated in related VE studies previously. All disciplines applicable to the project at each phase shall be represented on the team.

The A/E will not be a team member for the VE study. The A/Es only involvement in the study will be to provide information to the VE team and to attend the oral presentation.

The VE team will give an oral presentation of the team study results at the end of the study. Each VE study will be documented in report format and will contain the following:

1. A description of differences between the existing and proposed design, comparison of the advantages and disadvantages of each, justification when an item's function is altered, and changes affecting system facility requirements. This may include but is not limited to sketches, calculation, models, etc.

2. Lists and analyses of design criteria or specifications that must change if the VE study item is accepted.

3. A separate detailed estimate of the impact on project costs for each VE study item.

4. A description and estimate of costs the American Samoa Government may incur in implementing the VE study item, such as design change costs and test and evaluation costs.

5. A prediction of any effects the proposed changes have on life-cycle costs and energy savings. All cost comparisons shall use a 30-year building life as a guideline. The discount rate shall be based on the composite yield on all outstanding T-Bonds neither due nor callable in less than ten years as reported by the Federal Reserve Board in statistical release H.15. All cost analyses shall use the current dollar or present worth approach. If other methods or assumptions are used, proper justification shall be included with the VE study.

6. The effect the VE study item will have on the design or construction schedule.

## IV DRAWING PREPARATION

A. Drawing Format

1. Sheet Size: All contract drawings shall be uniform in size. The standard sheet size shall be ARCH E1, 30" x 42".

2. Match Lines: Floor plans requiring division onto more than one sheet shall be provided with match lines. These shall be cross-referenced on each sheet.

3. Key Plan: Projects requiring more than one sheet for each floor plan shall include a key plan on each floor plan sheet. The key plan shall show the location of the partial floor plan in relation to the whole floor plan. The key plan shall be located near the title block and oriented to match the floor plan. All partial floor plans shall be oriented the same direction on the sheets.

4. Standard Details: Reference details that are typical and apply to the specific project are to be incorporated into the drawings by the computer-aided design (CAD) equipment. However, such standard details must be applicable to the specific project.

5. Quality of Drawings: All drawings submitted for review shall represent the best professional quality of graphic presentation. Drawings shall be legible, accurate, and properly coordinated. Final drawings shall be in CAD format with layers based upon National Cad Standards or AIA Guidelines. If, in LBJTMC's opinion, the quality of the drawings does not meet these requirements, the drawings will not be accepted.

6. Placement of Drawings on Sheets:

    a. General: Drawings should be arranged on sheets with economical use of space and without crowding or overlapping.
    b. Combination of Drawings: Different categories of drawings may be combined. Categories should be separated from interior details if both are shown on the same sheet. Similarly, plans should be separated from elevations.
    c. Floor Plans: One or more floor plans may be placed on a single sheet depending on the size of the project. If the entire project is shown on one sheet or if the plans elevations are drawn on the same sheet, the plans should be placed at the bottom of the sheet.
    d. Elevations and Sections: Several elevations and sections may be placed on one sheet as long as they remain legible. When more than one sheet is used, the elevation showing the main entrance should be placed on the first sheet.

7. Floor and Roof Plans:

    a. Scale: The scale selected shall allow all necessary information to be shown clearly. Select the scale to clearly indicate the intent of the drawings and details.
    b. Name of Spaces: On the floor plan in the center of each space, the name and number for the space should appear and be underlined.

        (1) If the space is too small for space name and number, they should be placed in a clear area outside the space with an arrow pointing to the space.

        (2) On mechanical and electrical floor plans, names may be omitted from the spaces to allow clarity of utility systems. Names should then be placed in schedules located adjacent to the plans.

B. Space Identification Numbers

Unique identification numbers shall be assigned in the SD phase. All design spaces shall be identified with a departmental identifier and sequential POR number. No space number shall be duplicated. (i.e., 11-01 where 11 is for the Acute Care Nursing department and 01 is the first room/space in the POR space allocation list for the Acute Care Nursing department. 21-01 where 21 is the Laboratory department and 01 is the first room/space listed in the POR space allocation list for the laboratory department.) This numbering system will be replaced with the "Facility Room Numbers" after the DD phase documents are approved.

C. Facility Room Numbers

All room/spaces shall be numbered with a floor identifier (if required), a corridor/departmental identifier, and a sequential room number. The first digit or letter indicating the floor level (B101, 1101, 2101, P101, etc.), the second digit indicating the corridor or department, and the third indicating a sequential room number. When there are more than nine departments a fourth digit is to be used. No room number shall be duplicated. All rooms with access to a building or departmental corridor shall only have a numerical identifier. Rooms accessed through another room shall have an alpha character appended to the main room number (i.e., Patient Bedroom numbered 1101, the interior bath would be 1101a.) Room numbering shall follow a logical progression (way finding) on each floor. Space numbers shall be assigned to stairs, elevator,

dumbwaiters, escalators, and major duct shafts. The same space number shall be repeated on each floor (Stair No. 1, Elevator No. 1, etc.). These room numbers shall not be assigned until after the floor plan is fixed (after the DD phase is approved).

D. Title Blocks and Borders

Title Block: The American Samoa Government standard title block (Appendix C) shall be used, unless otherwise noted in the SOW.

E. Drawing Titles and Scales

Each drawing (floor plan, roof plan elevation, section, detail, etc.) shall have a title. Directly under the drawing title locate the drawing scale. (Example: SCALE 1/8”/ft. Also, for each plan drawing, place a graphic scale under the title in addition to the scale. All site, floor, and roof plans shall have a project North Arrow.

F. Abbreviations and Symbol

Abbreviations and symbols for project documents shall conform to current industry standards. Legends for abbreviations and symbols shall be included in the construction documents and shall be consistent throughout the documents.

G. General Notes and Key Notes

All general (sheet) notes and key notes placed on a sheet of drawings shall be edited and apply to that sheet.

H. Quality Control Review

The A/E shall perform a quality control review of all drawings before each submittal. Reviews for technical accuracy, coordination of work within each discipline, coordination of work among disciplines, and coordination between drawings and specifications shall be included. When required in the SOW, the A/E shall provide a red-lined check set of drawings as evidence that this review has been accomplished. Refer to paragraph II-A.

I. Drawing Numbers

Numbering: The standard drawing numbering system is as follows (Optional drawing numbering systems may be submitted to LBJTMC for approval)/

| | | |
|---|---|---|
| 1. | Civil (Site) | C – 1, C – 2, etc. |
| 2. | Landscaping | L – 1, L – 2, etc. |
| 3. | Architectural | A – 1, A – 2, etc. |
| 4. | Structural | S – 1, S – 2, etc. |
| 5. | Mechanical | M – 1, M – 2, etc. |
| 6. | Plumbing | P – 1, P – 2, etc. |
| 7. | Electrical | E – 1, E – 2, etc. |
| 8. | Fire Protection | FP – 1, FP – 2, etc. |

Additional sections (e.g., demolition, site utilities, kitchen equipment, and laboratory furniture) may be added as warranted by specific projects.

J. A/E Certification and Signatures

The design of architectural, civil, structural, and mechanical electrical, or other engineering features of the work shall be accomplished, reviewed, and approved by registered architects or engineers. The architect or engineer shall be registered to practice their respective disciplines in a state or possession of the United States, Puerto Rico, or the District of Columbia.

In geographic areas of seismic level three or higher and permafrost activity, specific state licensing is required to ensure knowledge of these particular issues for responsible and adequate system design.

K. Drawing Changes

All drawing changes shall be coordinated and made in the original CAD application. When changes are made to the originals appropriate change symbols must be used to indicate the changes. The “Revision” section of the title block on the sheet is to be completed with the required information, symbols, signatures, and dates.

L. Record Drawings

When the contract option for Record Drawings is accepted, the A/E shall obtain the marked-up red-lined documents from the construction contractor when construction is complete. The A/E is to update the original construction documents (including the CAD files). The update is to include all amendments and modifications issued. When shop drawings are included, record a cross-reference at the corresponding location on the contract drawings. After the documents are updated, they are to be marked “RECORD DRAWINGS” and dated. The record documents are to be turned over to the CPOTR within 30 days after completion of the construction.

## V. SPECIFICATION PREPARATION

A. Specification Format

1. The project specifications shall be based on the Construction Specifications Institute (CSI), MasterFormat.

2. Contract specifications shall be based upon materials and performance characteristics established by the American National Standards Institute (ANSI), the American Concrete Institute (ACI), the American Society for Testing and Materials (ASTM), and other Government and industry standards. All references shall be the latest edition.

B. Boiler Plate

Boiler Plate documents (bidding documents) will be provided by LBJTMC for incorporation by the A/E into the specifications. The construction documents for each project are to be coordinated with the Boiler Plate by the A/E. The Boiler Plate includes general conditions, bidding forms, and other preprinted forms and text for inclusion in the contract documents.

C. Coordination of Specifications and Drawings

The contract drawings and specifications shall be coordinated for respective functions. Specifications shall include tests, materials, referenced standards, shop drawings, descriptive literature, samples, certifications, performance requirements, descriptive characteristics, finishes, workmanship, installations, and related work.

D. Cover Sheet

The A/E shall provide covers with the American Samoa Government approved design for each volume of specifications.

E. Bid Items

The A/E shall coordinate all bid items and the bid schedule with the American Samoa Government.

F. Quality Control Reviews

The A/E shall perform a quality control review of all specifications before each submittal. Reviews for technical accuracy, coordination of work within each discipline, coordination of work among disciplines, and coordination between drawings and specifications shall be included.

G. Proprietary, Restrictive, or Approved Equal Specifications

1. Whenever possible, ensure that references in specifications are to widely recognized standards or specifications promulgated by governments, industries, or technical societies.

2. Trade names and proprietary systems and designations may be referenced to establish a “standard of quality”, noting at least three trade names. Whether or not trade names are used, specifications must include a complete description or listing of all salient features.

3. Specifications shall be developed to ensure competitive bidding without proprietary (sole source) restrictions in accordance with FAR Parts 10-11 except where proprietary, sole source procurement is directed by the CO. When identification of material or equipment by manufacture’s name, trade name, or catalog number is unavoidable, a minimum of three acceptable brands should be listed and the essential physical and functional characteristics require should be set forth.

4. Proprietary, sole source procurement is allowed in specific situations, only if directed by the CO.

H. Selection of Materials

Selection of materials and procedures shall be based on project location, design requirements, cost analysis, and availability. Readily available material and equipment should be specified whenever possible.

I. Testing

1. HVAC Testing, Adjusting, and Balancing.

    a. Testing, Adjusting, and Balancing services shall be performed by an independent sub-contractor.
    b. System Testing, Adjusting, and Balancing shall be accomplished before final inspection and shall include: air, heating water, domestic water, chilled water, medium or high temperature hot water, boiler combustion, incinerator combustion, steam, distilled water, and deionize water.
    c. The balancing process shall include the adjustment of all equipment within the system such as air terminal boxes, coils of all types, heat converters, pumps, fans, unit heaters, and air handling units.
    d. Before any testing or balancing can be performed, all systems must be complete. All controls must be installed and operational.

2. Other Systems

    a. Testing of specialized systems, such as medical gases, shall be in accordance with appropriate codes and standards.
    b. Material testing shall be in accordance with approved standards.

J. Record Specifications

When the contract option for Record Specifications is accepted, the A/E shall obtain the marked up red-line specifications from the construction contractor when construction is complete. The A/E shall update the original specifications to show the actual installation. The update is to include all amendments and modifications issued. Particular attention shall be given to substitutions, selection of options, and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. After the documents are updated, they are to be marked “RECORD SPECIFICATIONS” and dated. The record documents are to be turned over to the CPO within 30 days after completion of the construction.

K. Project Manual

The A/E shall include a section in the specifications that instructs the construction contractor to provide the following information in three binders. The binders are to be a maximum of 76 mm thick. The information is to be organized in sections and tabbed. The manuals are to be submitted to the American Samoa Government prior to final payment. When the contract option for “RECORD SPECIFICATIONS” is accepted, the A/E shall obtain the manuals from the construction contractor and submit them with the “RECORD SPECIFICATIONS” within thirty days after completion of the construction. The project manual shall include the following.

1. Record product Data: One copy of each product data submittal shall be marked to show significant variations in actual work performed in comparison with information submitted. Include variations in products delivered to the site, and variations from the manufacturer’s installation instructions and recommendations.

2. Record Sample Submitted: Samples of material used for record purposes.

3. Maintenance Manuals: Operation and maintenance date that includes the following information:

    a. Copies of warranties
    b. Emergency instructions
    c. Recommended maintenance cycles
    d. Inspection procedures
    e. Fixture lamping schedule
    f. Spare parts list
    g. Wiring diagrams
    h. Shop drawings and product data

L. User Manual

Prior to project completion, the A/E shall prepare a user manual that will explain how the new health facility is intended to be operated. The manual shall address the “use” or functional organization of the health facility and explain how to use the health facility in simple language. Major considerations in planning, layout, and design are highlighted. Significant design features, cultural aspects, major pieces of equipment, and potentials for flexibility and expansion are to be made clear.

The manual is intended for all staff members working within the health facility. Since the informational need will vary among staff, the manual will provide information on the functions and system at different levels of detail. The manual also needs to be flexible for both its day-to-day use and for the addition of updated material as it is developed. This manual is not an operation and maintenance (O&M) manual. The O&M manual is covered in “K. Project Manual” above.

The manual shall include, but not limited to the following topics: introduction/executive summary; an overview of the facility design and operational concept; building circulation/individual department review; HVAC systems; plumbing systems; electrical systems; fire protection systems; communication systems; site design; energy conservation; code conformance/waivers; signage/way finding; and any supplemental information.

M. Utility Marking

The following color codes are be used for utility piping and physical hazards: (1) “Piping-American National Standards Institute – A13.1, Scheme for Identification of Piping Systems;” (2) “Medical Gases Signage – National Fire Protection Association – 99, Health Pamphlet C-9, Standard Color Marking of Compressed Gas Cylinders intended for Medical Use;” and (4) “Physical Hazards-Occupational Safety and Health Act – 29 CFR 1910.44, Safety Color Code for Marking Physical Hazards.”

## VI. COST ESTIMATE PREPARATION

A. General Requirements

1. The A/E shall be responsible for completing the design within the estimated construction contract price (construction budget). Any changes that may be necessary to

bring construction costs within the available funds are not reimbursable unless the cost of proposed construction is affected by events beyond the A/E ‘s control. The A/E shall devote sufficient time and attention to assure that the cost estimates are adequate and accurate. Cost estimates shall be submitted at the time as the drawing submittals.

2. Cost estimates shall include but not limited to the following: general conditions, site development, building cost, fixed equipment, construction management, and contingency funds as outlined in the estimate format below. Direct costs (labor, materials, equipment rentals, etc.) should be shown separately from indirect costs (overhead, profit, bonds, taxes, insurances, etc.)

3. All cost estimates shall be developed based on the Constructions Specifications Institute (CSI) MASTERFORMAT”.

The A/E shall submit a cost with the drawing at each submittal. The estimate shall show the estimated cost of constructions that would be expected if bids were received from a construction contractor, on the same date as the submittal. The level of details for this estimate shall be consistent with the completeness of the drawing submitted. If a construction element is shown, it must be priced: if it shown in detail, it must be priced in detail. For detailed elements, “lump sum” or “allowances” will not be accepted.

B. Estimate Format

Pre-Design/Concepts Estimate: this is a lump sum budget estimate (square ft. cost) based on the SOW.

Schematic design sketches and documents and shall include the major components (i.e., site building, and fixed equipment). The estimate is to within 3 percent of the construction budget and shall include a 10 percent design contingency fund for any other special feature not included in the above heading but incorporated in the design of the facility.

Design Development Estimated: this estimated (square ft. costs) shall be based on design development drawing and documents and shall be prepared using the cost of major project components (i.e., site, building, plumbing, heating and air conditioning, electrical, outside utilities, fixed and movable equipment). The estimate is to be within 3 percent of the construction budget and shall include an 8 percent design contingency.

Intermediate Construction Document Estimates: This estimated shall be based on intermediate construction drawings and documents. It shall be prepared quantity takeoffs by CSI format for the complete project. The estimate shall be divided into the standard sixteen divisions. It should be recognized that the cost breakdown for electrical and mechanical feature will be commensurate with the design status. Lump-sum prices are to be avoided. The estimate must not exceed the construction budget and shall include a 5 percent design contingency fund. Special features costs incorporated in the facility design are to be included in the estimate as separated line items.

Final Construction Documents Estimate: This estimate shall be based on the final construction documents. No lump-sum figure shall be permitted. This estimated will be considered the “LBJTMC Estimate” after it has been reviewed and accepted by LBJTMC. The estimated shall not exceed the construction budget and shall not contain any design contingency.

## VII. SUBMISSION OF DRAWINGS SPECIFICATIONS, AND COST ESTIMATES

A. General Requirements for Submission of Drawing, Specifications, and Cost Estimates

1. The number of submittal stages and the number of copies required for each submittal are specified in the A/E contract or the A/E delivery order.

2. Technical specification shall conform to CSI format. The specifications shall be uniformly developed in all divisions and sections and shall thoroughly describe all materials, equipment, process, system, etc. Multiple volumes may be used if necessary. Performance specification will not be allowed without specific approval of LBJTMC.

3. Construction document shall be coordinated with all furnishings, equipment, and communication systems.

4. Construction documents drawing shall be laid out and drafted in a manner that is suitable for reduction to ½ size sheet size ARCH 2, 12x18(350 x 547).

5. All construction documents shall be reviewed, signed, sealed, and dated by a professional architect or engineer with respect to their specific field of registration.

6. Provide large scale drawing of showers, toilet rooms, laboratories, utility corridors, mechanical rooms, and all other areas that are too congested to be clearly understood at a smaller scale.

7. Mechanical Documents – See Technical Requirements.

8. Electrical Documents – See Technical Requirements.

B. Pre-Design Submittal:
This phase includes all works by the A/E before the Concepts Phase. It shall include the following applicable tasks.

1. Program Verification: Review and compare the PJD, POR, SSER, SOS, contract, and environmental criteria. Summarize the review in a written report and list all questions and unresolved issues.
2. Site Analysis: Prepared a rough sketch to show the character of the site and the surrounding area. The sketch shall show all observations, site condition and environmental issues that will affect the project development.

    a. Prepared the Site Analysis using the site survey and local map, city map, county map, and or United States Geological Survey map, as required. Show general topographic survey information such as boundaries, grades, roads, walks, water features, structures, tree masses, major utility lines, and property lines.
    b. Prepared additional sketches or overlays, at a scale of 1”=80’ or smaller, to show condition outside the survey area that will affect the project development.

3. Survey: Review and document existing conditions to establish the basis for work during the design stages.

a. Obtain and filed verify Record Drawings or other drawings of existing structures, if available.
    1. Investigate and document the condition of existing structures during the field survey.
    2. Make or correct record drawings (include photographs if needed).
b. Document in a pre-design survey report all finding regarding the conditions of the existing structures or system in a format that can be reproduced readily.

4. Report Format: Bind results in a booklet with a tab for each of the above items.

C. Concepts Submittal:

The purpose of concepts is to investigate alternative site layouts, building organizations, and building massing arrangements.

1. Conduct work session with the American Samoa Government and the client agencies. During the work session the A/E is to note the client agencies' concern, discuss the interdepartmental relationships, review the site constraints, and the PJD and POR program, and departmental concern among the A/E, the client agencies, and LBJTMC.

2. Site Layout
    a. Examine alternative schemes for site layouts. The alternatives should include major site features such as buildings, building entrances, recreational areas, yards, walks, drives, loading dock, emergency drop-off, emergency entrance, fuel storage tanks, staff and visitors parking, etc. unless directed otherwise, develop three schemes.
    b. Show location of existing utility services, prospective connection methods, and access routes. Coordinate with the building concepts described below.
3. Incorporate conceptual design activities with the site planning work described above. Examine the facility building plan and massing arrangement alternatives. Space planning shall be done at DGA block scale. Identify alternative for foundation, structural, mechanical systems, and their impact on architectural features. Show alternative for foundations, framing, and building system distribution spaces in simple wall and building sections. Integrate concepts value engineering and energy conservation recommendations.

4. Building Organization and Massing: The building concepts are to show the most desirable general organization of the project, both internally and on the site.
    a. Provide the following:
        (1) Interdepartmental proximity diagrams.
        (2) Existing functional diagram
        (3) Locations and types of building access.
        (4) Other drawings as directed
    b. Present at least three general plan alternative concepts, one for each site layout.
    c. Provide supporting alternative sub concepts for framing, vertical development, mechanical systems, and electrical systems. Provide preliminary cost data, including operation and maintenance cost implications for each alternative presented.
    d. Provide relevant cost estimate information.

e. Provide a brief written analysis of all planning and systems concepts and recommend a general overall approach to the next phase, schematics design. Carefully consider consequences for all major building service systems.

5. After the Concepts Submittal review make a record drawing of the final Site Layout and Building organization and Massing plan and submit.

D. Schematic Design Submittal

The purpose of the schematic design to establish the size, shape general construction (framing System and building envelope), general mechanical and electrical systems, and room by room Layout. This submittal represents approximately 10 percent of the design phase.

1. Integrate all preceding design efforts and all design –related special studies.

2. Conduct work session with LBJTMC and the client agencies. Meet with the assigned staff to review the circulation with the departments, the types of spaces, and the interdepartmental relationship developed in the concepts phase. The work sessions are intended to develop a level of understanding of circulation and type of spaces within the departments, and special concern the clients agencies may have concerning the departments.

3. Refine the approved conceptual design. Establish the preferred building scheme, integrating a workable structure. Develop the floor plan to include all rooms listed in the POR. Define all general assemblies, material, and floor plans to show all walls with double lines. Show general building dimensions (horizontal and vertical).

4. Verify capacity of scheme to accommodate all supporting systems and equipment. Establish general concepts of type, location, and distribution of mechanical and electrical systems. Provide preliminary calculations for structural, mechanical, and electrical systems.

5. Specific Requirements
   a. Provide a narrative of the design though process.
   b. Provide an outline technical specification.
   c. Note the name or function, space identification number (refer IV.B) and the net area in each individual room or space.
   d. Provide a relevant and updated cost estimate.

6. Drawings
   a. Provide plans, elevation and building sections at minimum 1/8”=1’-0’ minimum. Provide typical wall sections at scale required to show information clearly.
   b. Provide a site plan, floor plans, a roof plan, elevation, and longitudinal and transverse sections.
   c. Verify that each space in the POR space schedule and POR functional diagrams are shown on the drawings.
   d. Show entrances, circulation areas, stairs, elevators, mechanical equipment space, electrical equipment, toilet rooms, stacks, and wire closets.
   e. Show all required smoke and or fire partitions on the floor plans.

f. Show typical window arrangement and exterior materials.
g. Provide sections through the building in both the longitudinal and transverse direction. All major rooms are to be shown and labeled (abbreviated if necessary), with floor-to-floor dimensions noted.
h. Designate the floor that is approximately on the same level as the main entrance as the “first floor”. If the site slope downward from the main entrance area, and one or more secondary entrances are below the first floor, designate that level the “ground floor”.
i. Indicate plan or possible future building expansions by dotted outlines on the plans and elevations. They shall be noted with the words “future expansion”
j. Mechanical: Indicate chilled water loads and location for connection to existing chilled water system. Indicate location of new chilled water air handlers.
k. Electrical: Indicate space allotments for equipment/mechanical equipment loads

E. Design Development Submittal

The purpose of the design development (DD) submittal is to describe the size and character of the Project in detail from the owner’s point of view and confirm that all engineering requirements can be accommodated in the final design. This submittal constitutes approximately 35 percent of the design phase.

1. Integrate all preceding design efforts and all design related special studies.

2. Refined the approved schematic design documents. All interior and exterior systems and materials that the medical staff and patients will use, encounter, see, hear, or be dependent on for their safety must be identified.

3. Provide general and detailed floor plans, exterior elevations, and major building sections at 1/8”=”-O”. Provide all major types of wall sections at a larger scale.

4. Conduct work sessions with the LBJTMC and the client agencies.
   a. Meet with the client agencies to develop detailed locations and connections for all related Groups 1 and Group 2 equipment, telephone equipment, layout of cabinets elevations (door, drawers, height, shelves, etc.), function of door hardware finishes, location of power and communication requirements, location and type of lighting refine room and departmental circulation etc.
   b. Revised architectural floor plans and interior elevations at ¼”=1”-0.
   c. Meet with client agencies for final approval of each area or department before completing the DD submittal.
5. Provide all design specialty services needed for a complete facility design including radiation shielding, incineration, trash disposal, medical gas storage and dispensing (includes dental), and all storage and internal transportation devices.

6. Show calculations for anticipated energy usage that comply with annual Energy use Budget.

7. Provide project outline specifications in development draft form. The sections are to be formatted into three parts:
   a. Preliminary statement of all major systems.

b. Materials
c. Type of major equipment components.

8. Provide a relevant and updated Cost Estimate.

9. Site plan: Provide a well detailed site plan showing the location and size of the facility and facility-support systems. The following note shall appear on the site plan. “BASED ON THE TOPOGRAPHIC SURVEY DATED_____”.

10. Floor plans (Provide the following information)
    a. Floor plan indicates wall thickness, door swings, and door sizes.
    b. Each room or space shall be identified by name (abbreviated when necessary) and number. Refer to IV.C for room name and number requirements.
    c. Material of all partitions shall be indicated by either symbol or note to agree with those materials described in the supporting data.
    d. Floor plans shall include section lines location of longitudinal and transverse sections.
    e. Precisely locate and size vertical structural members and rough size horizontal members to assure that there are no conflicts with other systems.

11. Fire Protection: Provide drawings showing all protection features for the project site and for each floor of the building reflecting NFPA 101: Life Safety Code “requirement and a written description of assemblies and materials. Plans are to be minimum 1/8”=1’0”.

12. Elevations: Provide elevation with the major features and material noted directly on the elevations. This shall be in generalities such as brick, stone granite, architectural cast concrete, bronze, aluminum, etc. Terminology and materials must agree with the supporting date submitted.

13. Longitudinal and Transverse Sections: Provide at least one longitudinal and one transverse section through the major portion of the building shall be included. All major rooms exposed by the section shall be shown and identified by name. Complete floor to floor dimension from the lowest floor to the roof shall be indicated. Ceiling heights throughout the building shall be indicated.

14. Wall Sections: Provide one wall section cut on a line through windows and another on a line through the wall proper. A partial elevation and plan section shall be on the same sheet at the same scale. This is required for all substantial variation in wall design. The purpose of these sections is to delineate the fundamental concepts of the proposed exterior wall design.

15. Design of Special Areas: Provide preliminary design sketches, including ¼”=1’-0” scale plans, interior elevation, reflected ceiling plans of lobbies, auditorium, kitchens, laboratories, and other areas which are to be given special architectural treatment. Floor plans at ¼”=1’-0 scale shall be started during this phase. They shall show case work and equipment layouts.

16. Possible future expansion shall be indicated by dotted outlines on the plans and elevations. It shall be noted with the words “future expansion”.

17. Perspective CAD Sketch and Rendered Perspective: Provide a block model, a line perspective sketch, and a rendered perspective of the building(s).

    a. The perspective CAD sketch shall show the desire appearance of the building. The sketch shall be approved by the CPO before the rendered perspective is begun.
    b. The A/E shall proceed with the rendering after approval of the DD drawings and the perspective sketch. The rendering shall be done by a professional renderer shall produce and artistic work of high quality observing the following requirements:
        (1) Medium: Rendering shall be in color suitable for photographic reproduction. The environment of the building as it will exist after completion of construction shall be portrayed. Emphasis shall be given to the building instead of its surroundings.
        (2) Scale and Materials Indication: Human figures shall be placed at or near the main entrance to establish the scale of the building. The extent to which the materials are indicated may be left to the A/E's judgement.
        (3) Other: The rendering shall be a minimum of 20x16 inches exclusive of mat. It shall be provided with mat, frame and non-reflective glass. Color photographic reproductions of the rendering are a part of the A/E contract.

18. Coordinated design development with any value engineering proposal and energy conservation recommendations.

19. Plumbing: Provide the following information:

    a. Location and size of existing utilities and service connection to building(s).
    b. Location and arrangements of all major equipment.
    c. Preliminary calculations for determining sizes and types of plumbing, process equipment and systems.
    d. Plumbing layout of typical toilet rooms including drainage and venting systems.
    e. Schematic diagrams showing completed drainage, venting, and water systems. Include process services, if any.

20. HVAC: Particular attention should be given to insure that the layout suit the modular space arrangement of the building. Provide the following information:
    a. Location and arrangement of all major equipment.
    b. Block load air conditioning calculations for peak time of day.
    c. Economic analysis to show comparative costs and recommendation for refrigeration plant.
    d. Economic justification should be provided if a high velocity duct distribution system is proposed.
    e. Single line layout of ventilating and air conditioning duct work to indicate number of zones, types of system (i.e. high or low pressure, multi zone etc.) and extent of each system. Elevator machine room ventilation shall be included.
    f. Complete sequence of operation and schematic temperature control diagrams.
    g. Schematic flow diagrams for air handling equipment, condensing water, and chilled water.
    h. Air outlet location for typical areas.
    i. Location of cooling tower including a method for screening from view.

j. Room names and numbers.

21. Electrical (provide the following information)
    a. Location of services and major equipment components.
    b. Lighting layouts areas with supporting preliminary calculations.
    c. Fire detection and alarm system devices.
    d. One line of diagram of power distribution scheme.
    e. Outline specifications.
    f. Room names and numbers.

22. Provide cut sheets for proposed fixtures, receptacles, etc.

F. Construction Document Submittals.

1. General
   The Construction Documents (CD) drawings and related documents shall be submitted for review and approval in three stages:

   65% CD SUBMITTAL
   100% CD SUBMITTAL
   FINAL CD SUBMITTAL

   a. Drawing Preparation: Each sheet of drawing must show the name, number, and location of the project.
   b. Component: The drawing will include:
      (1) A cover or index sheet
      (2) Site survey and soil boring data
      (3) Site Utilities
      (4) Site work
      (5) Architectural Floor and Roof Plans (A separate plan must be drawn for each floor, basement, mezzanine and penthouse level).
      (6) Exterior Elevations
      (7) Longitudinal and Transverse Building Sections
      (8) Reflecting Ceiling Plans
      (9) Architectural schedules (Finish, Door, window etc.)
      (10) Exterior and interior details
      (11) Structural drawing, schedules and details
      (12) Mechanical drawing, schedules and details
      (13) Electrical drawing, schedules and details
      (14) Landscaping and Planting Drawings
      (15) Additional drawing (e.g Demolition ,kitchen Equipment, etc.) as warranted by the project.
   c. Elevation and Sections:
      (1) Scale shall be the same as used for the floor plans.
      (2) The extent of each building materials used shall be indicated clearly on the elevations.
      (3) Cutting Plane for Longitudinal and Transverse section: A place shall be chosen which cuts through the most important spaces and reveals the maximum number of different construction condition. In addition to

complete sections, other complete or fragmentary sections need for clarity shall be shown. The planes through which the longitudinal and transverse sections have been taken shall be indicated on the related floor plans.

d. Exterior Details: Provide all details necessary to explain fully the exterior architectural work and how it connects to the structural work. Head, jamb and sill details of exterior door or window opening are required as well as exterior wall sections at openings and between openings. Other necessary architectural features shall also be detailed.

e. Wall Sections: Complete wall sections of all unique condition are required. They shall show each type of wall construction from the top member to the lowest floor level (including the footing).

(1) Anchor details for stone, brick and other masonry shall be checked for structural adequacy by structural engineers.

(2) Section shall be developed to the extent necessary to show roofing and flashing details under all conditions.

f. Details: Details shall be drawn at a scale sufficient to indicate the desired arrangements of materials.

(1) Standard details may be used as an integral part of the drawings; however they must be tailored to fit the specific project.

(2) In case of differences between small and large scale drawings, the large scale drawing shall govern.

(3) All details shall be appropriately cross-referenced to the plans. When a scale drawing of a major elements is made, it shall be referenced on the floor plans.

g. Schedules: Since construction contract clauses of the specifications state that schedules on drawing shall take precedence over any conflict notations on the drawings, it is important that schedules be accurately prepared to ensure that the desired finishes and materials are obtained. The following schedules shall be provided: Interior finish schedule, Interior and Exterior color schedule, Door schedule, Window schedule, Equipment schedule, and schedule to supplement detail drawings.

h. Materials: Materials legend showing cross hatching examples and corresponding materials shall be provided.

(1) On areas of drawing where cross hatching is needed to indicate materials, only enough area to show the type and extent of the materials need be cross hatched.

(2) Where cross hatching is used to indicate the extent or scope of new work (as opposed to existing work), the entire area of the new work shall be cross hatched.

i. General Notes; General notes for each category of drawing shall be place on the first sheet of each series, preferably above the title block. These notes should be kept to a minimum. They may be referred to on other sheets in the same or other series are necessary without repetition. Notes should be clear, concise, and non-repetitive. They should complement and amplify the drawing and specifications.

(1) Notes shall be directed only to the General Contractor. The A/E shall not put any notation or statement on the drawing indicting or designating portions of the work to be done by a specific contractor or trade.

(2) Consistency of Nomenclature: In order to guard against conflicts over ambiguous terms and statement, the term used in drawing and specifications shall be identical. The A/E shall refer to the POR and design data for proper terms for rooms, spaces or portion of structures.

j. Coordination of Construction Documents: All construction documents shall be coordinated to ensure coverage and to eliminate contradictions. Special care shall be taken to coordinate the architectural drawings and specifications with the structural, mechanical and electrical drawings and specifications.

k. Accessibility Mechanical and Electrical Equipments: The A/E shall ensure that the design is coordinate to provide clearance around all machines and equipment for the installation and removal of parts. Door or window openings, removal panels, corridor sizes and location and floor or roof load capacities shall be design so that the equipment can be removed without structural changes to the building.

G. 65 Percent Construction Document Submittal:

1. General: The 65 percent construction documents shall be in accordance with the approved Design Development Submittal, the approved POR and the written documents made during the Design Development Review. They are then reviewed by LBJTMC to guard against scope expansion or change in design or materials that may increase cost above the authorized funds.

2. Drawing and specifications must be defined the size, configuration, materials and complexity of construction; the type of quantity of Group 1 equipment; and scope and complexity of all systems. Provide major groups of construction details, schedules and diagrams and a written report on building construction cost and energy budget status. Identify all systems for which performance specifications are being considered.

3. Drawing shall be at final work drawing scale. Each detail section or elevation shall be identified by a title. All drawings submitted shall be identified by a drawing number, date and identification of submittal.

4. Drawings not specifically required to be complete at this stage but are required to prepare a detailed cost estimated may be submitted in a partially complete state.

5. Landscape Plan: The A/E is responsible for retaining a qualified landscape, when required by the SOW, to develop a landscape plan for submission.

6. Floor Plans: A plan of each floor level at 1/8”=’-0 scale is required. Plans shall be complete, showing materials, dimension, rooms names and numbers, finishes, ceiling heights, door types, materials and sizes and any fire retardant walls, partition and doors. Those area which are complex and/or require fixed fixture or equipment layout shall be drawn at ¼”=1’-0 ‘scale.

7. Roof Plans: A complete roof plan, including details of flashing and drains, is required.
   a. Roofs shall be sloped at not less than 3’ per foot. Patterns of slope to drains shall be shown on the roof plan.

b. Elevation showing high and low points on the roof shall be included on the drawings.

8. Elevation Section: A complete election of each side of the building, at least one complete longitudinal section and one complete transverse section through the building are required. The elevation section shall include notes to indicate materials that are specified.

9. Exterior Wall Details: A typical wall section for each type of wall construction is required. Wall section must be complete and show materials, dimension, structural bonding and anchoring systems. Windows, door and flashings.
    a. If architectural cast concrete (stone) panels are used, all reinforcing required for typical panels shall be indicated.
    b. Provide 3”=1’0” scale details of all anchor required to secure the exterior facing to the structure and the header, jamb and sill conditions for all opening in exterior walls.

10. Interior Details:
    a. Interior elevations are required for those spaces that required fixed fixture or equipment, or where elevations are necessary to show the extent of wall material. Elevation shall be drawn at 1/4'"=1’-0: scale and shall indicate the design, materials, and major dimensions.
    b. Partial floor plans at ¼:=1’-0” scale and shall indicated the design, materials, and major dimensions.
    c. Reflected ceiling plans shall show the extent of materials and the coordination of architectural, mechanical and electrical items.
    d. Explanatory section at ½”-0”, 1”-0. Or 3”=1’-0” scale should be included where necessary to show the design of an element.
    e. The drawings shall show all necessary details for special areas shown on the DD design. There shall be sufficient details to approval by agency.

11. Elevators, Escalator, Dumbwaiters and Materials Handling Equipment: The following items are required:
    a. Plans at ¼=1’-0’ scale of elevator (showing floor served); typical floors in blind portions of hoist way, if any: elevators pits: secondary levels, and machine rooms having access. Plans shall include platform size, counterweight space, door space and clearance dimensions.
    b. Section at ¼”1’-0” scale through elevator hoist ways, pits, secondary levels, and machine room (run dimension shall also be shown).
    c. Detail showing elevator hoist way vents when serving four or more floors.
    d. Details of trolley beams, trap doors, or other provision for removal of components of elevator equipment from elevator machine rooms.
    e. Details of supports for elevator machine beams, elevator dead end hitch beams and escalator trusses (Elevator machine and hitch beams shall rest on their support beams, rather than frame into the support beams.
    f. Elevation of elevator entrances at typical and non-typical floor (signal fixtures, elevation of elevator starters, indicator and control panel shall be shown).
    g. Details of special elevator cabs and special hoist way entrances where applicable.

h. Plans and section showing clearances at ¼”=1’-0” for escalator, dumbwaiters, adjustable loading ramps, scales and conveyors.
i. Diagrammatic layout of materials handling systems.
j. Details at appropriate scale of power operated doors (pedestrian and vehicular), control systems and space for door operators.

12. Schedules: It is most important that they be closely coordinated with project specification and that the nomenclature is identical. The following schedules are required.
    a. Interior Finish Schedule: List every material which is expose in each space (including unfinished walls or undersides of structural slabs). The word “exposed” shall not be used instead used the name of the material. For each space this schedule shall be identify the room number, room name, substrate, materials and finish of floor, base each wall (i.e. north, east, south and west) ceiling height and space remarks.
    b. Interior and Exterior Color Scheduled (place on the last sheet in the series of schedule sheets): This schedule shall identify the room name/number, materials, color and other pertinent information. Colors, textures and finishes of specific manufactures may be used in this schedule or the finish schedule. A note shall be included stating that a manufactures name is not intended to limit competition.
    c. Door Schedule: Include all doors by door number, room number, frame materials and details, door materials and elevation, size of door, glazing and other openings and hardware set. The schedule shall refer to detail drawings of jambs and head conditions.
    d. Window Schedule: Indicate all window sizes, location of opening units and type of glazing used in each window.

13. Interior Perspective CAD Sketch:
    General: A preliminary line perspective depicting a proposed typical interior view perspective shall be provided.

    The interior perspective CAD sketch shall be submitted with the 65 percent construction documents. The interior perspective sketch will clearly define the proposed interior material and overall quality of the major public interior spaces. An eye level perspective of the main public lobby/waiting area, reception desk and major pedestrian circulation routes are the preferred perspective views. The sketches shall be approved by the Contracting Officer before the rendered perspective are developed.

14. Preliminary Color boards: Submit Color Boards in the specified quantities in a standard three-ring binder. Samples will be presented of all major building interior and exterior finishes. Fold outs may be up to 36 x24 inches a long as the refold within the standard binder configuration. Actual materials samples shall be displayed showing color, texture, pattern, finish, thickness etc., for all appearances related items where choices exist. These samples shall be large enough to indicate true pattern. Samples shall be organized by colors schemes with a separate sample group for each scheme. The scheme shall be coordinated with elevations for the exterior and by rooms names/numbers shown on the architectural floor plans for the interior. Materials and colors shall be labeled by manufactures, source and product description for color and patterns.

15. Preliminary Specification: Specification shall be prepared by the A/E to substantiated form, arrangement, and procedures for development of all sections. The preliminary specifications shall include all technical sections prepared with headings that illustrate broad scope contents. Specification shall be complete, edited for project, and in final format.

16. Provide an updated cost estimate.

17. Mechanical:

    a. All system details, equipment piping hookup details, piping riser diagrams, controls and equipment schedules shall be shown. In addition to the drawings, calculation and specification, the following shall be included.
    b. Plumbing:
        (1) Layouts of typical toilet rooms and location of all plumbing equipment in mechanical equipment rooms.
        (2) Layout of special spaces such as kill tanks rooms and elevator pump rooms.
        (3) Typical riser diagrams for water, soil, waste and vent piping.
        (4) System supply piping layout for all standpipe hose systems and sprinkler systems showing hazards and zoning.
        (5) Layout of all fuel systems such as propane, natural gas, fuel oils and solid fuels showing location of storage tanks or other storage areas, all safety and fire precautions.
        (6) Layouts of all medical and non-medical gas and other systems such as: oxygen, nitrous oxygen, compressed air, vacuum, nitrogen, hydrogen, acetylene, argon, etc., and other system including softened water, deionized water, laboratory water, non-portable water, feed water, ethylene glycol solution and their feed piping tank age and other appurtenances as required.

    c. HVAC:
        (1) Flow diagrams for chilled water, condenser water, refrigerant with typical riser diagrams for chilled water.
        (2) Preliminary sequences of operation and automatic temperature control diagram.
        (3) Ductwork layout for typical fan rooms and typical areas.
        (4) Equipment rooms layout developed to extent the showing clearances for access and showing trolley beams provided for maintenance.
        (5) Preliminary riser diagrams and equipment schedules.
        (6) Calculations, riser diagrams, and special systems.
        (7) Preliminary load calculations.

    d. Electrical:
        (1) Lighting layout for all areas with final lighting calculations.
        (2) Fixture cuts.
        (3) Equipment rooms layouts to show clearances and accessibility.
        (4) Preliminary riser diagrams and panel schedules.
        (5) Routine outlets and equipment with associated branch circuit wiring.

(6) Preliminary load calculations.

H. American Samoa Government Review Comments

1. At the completion of each phase, the A/E shall submit the required materials and documents for review. Reviews shall be for overall design concept and adherence to the SOS and previously approved submissions. After receiving complete submittal, including the “Certified Submission Checklist” for the respective submittal phase, and verification by the CPOTR that the submission is complete, the review period will start. Written comments will be returned to the A/E as stipulated in the A/E contract.
2. The American Samoa Government reviews is not intended to provide a complete or detailed check of all drawings. It does not in any way relieve the A/E of the responsibility for checking all work; verifying compliance with codes, standards, and SOS; and producing a complete, coordinated set of documents.
3. After review of any submittal, CPOTR may require changes to the drawings. The A/E shall make these changes before completion of the next submittal and is responsible for the follow-through on each drawing of all comments made on a submittal.
4. The A/E shall submit a written response to the American Samoa Government review comments after each submittal or other documents. The response shall address each comment. Comments requiring additional details, sections, notes, or cross references to make the drawings more understandable shall be incorporated. If for any reason the A/E believes that a comment cannot be complied with, the A/E shall explain this in a written response.
5. The A/E shall not proceed to the next phase until written approval or approval contingent upon the noted changes is received from CPOTR.

6. All written LBJTMC review comments shall be resolved and incorporated. The updated drawings and specifications will become the final construction documents. These documents shall be signed, sealed, and dated by the professional architect or engineer with respect to the specific field of registration.

I. 100 Percent Construction Documents Submittal:

1. General: When contract documents are 100% complete, they shall be submitted to the agency for review. This includes all architectural and engineering drawings and specification necessary for bidding and requires calculations. All components shall be accurate and coordinate among disciplines.
2. Cover Sheet and Index: A cover sheet and index sheet of same size as the drawing must be provided. The A/E shall provide covers with an approved design for the drawings and specification. All drawings in the 100% documents shall be listed by numbers, title and in numerical sequence. Titles and numbers listed in the index must be identical to those shown in each title block.
3. Topographic Survey: This survey shall be inserted as the first drawing following the index sheet.
4. Site and Grading plans: These plans show all of the site and must establish grading and project limits. They must also indicate approach roads, relationship to other building on the site, etc. Where practical, the building on the site plan should be oriented the same as the floor plans so that the entrance faces the same side of the sheet on all plans.

a. Recommended scales for the submittal are 1/16”=1’-0” to 1”=40’ provided that uniform sheet size can be maintained. Areas of complex design shall be shown in details, 1/16”=1’-0”. These scales of the topographic or boundary survey shall be used if it permits and adequate explanation of the work.
b. Multiple Building: For project comprising several building and road system, the site plan and the grading plan may be divided into sectional sheets to keep within the established sheet size.
c. Road Curve Data: Road curve data, vertical curve data, and other related elements concerning the locations and layout of the work shall be shown on the site plan.
d. Contours and Grading: The contour of existing topography, new grading and other data concerning the grading shall be shown whenever necessary to explain detail of grading or changes in grade.
e. Demolition and Site Clearing: If this cannot be shown on the site plan, a separate plan shall be furnished. The extent of the work shall be indicated and noted, including removal of existing buildings, filling of old foundations, removal of trees, erosion control, etc.
f. Details shall be incorporated on the drawings.

5. Additional Specific Requirements for All Drawings:
   a. Plans; If floor plans are drawn at 1/8”=1’-0” scale plans are required to show spaces that need special architectural treatment.
   b. Interior Elevations: These are generally submitted at ¼”=1’-0” scale.
   c. Details: Portion of interior plans and elevations may need to be enlarge to ½”=1’-0”=1’-0” or 3”=1”-0” scale to indicate the contract requirements adequately. Window and door frame details shall be drawn at 1”=1’-0” or 3”=1’-0” scale.
   d. Toilets: If floor plans are 1/8”=1’-0” scale or smaller, additional toilet plans shall be furnished at ¼”=1’-0” scale to indicate fixture enclosure location and provide other necessary information. Toilet room elevations are required only when all necessary information cannot be shown on the plans.
   e. Stairs: Stair shall be laid out fully at ¼”=1’-0” scale. All dimension and necessary enlarged details shall be provided.

6. Building Sign: If permanent building sign is required, a spacing diagram and details for the title letters in the sign shall be included.

J. Final Construction Document Submittal:

Provide the following for review and approval:

1. Complete construction documents.

2. Technical specifications – digital files in Word format.

3. Drawings – Full-size transparencies and computer disks or CD’s in Auto CAD format.

4. Provide a cost estimate: Refer to Chapter VI.

5. Copies of all engineering calculations, including final energy budget status.

6. Formally concluded project review comment file.

7. Copies of all other reports and studies required by this contract.

8. Provide final Space Programming Report.

9. Construction Sign: The layout and sign information (provided by LBJTMC) shall be approved by LBJTMC. The construction sign location shall be shown on the site plan. The layout and lettering details of this sign shall be on the plans. The A/E may include the names of the principal consultants.

10. Specifications: Complete specifications shall be prepared or submittal to the Contracting Officer. Specifications shall be complete, edited for the project, edited for the project, and in final format.

11. Provide a final Cost Estimate.

12. Final Exterior and Interior Perspective Renderings: Upon approval of the preliminary exterior and interior perspective sketches, the A/E shall proceed with final renderings. The renderings shall be done by a professional who shall produce a graphic work of high quality observing the following requirements:

    a. Renderings shall be in color and in any medium suitable for photographic reproduction.

    b. The original color rendering and (4) color copies will be required.

13. Final Color Boards: All changes resulting from the review of the preliminary color boards shall be incorporated in the 100 percent submission. This submission shall be complete with all originally approved and new materials presented in a single revised package.

14. Mechanical:

    a. Complete Drawings.

    b. Final calculations including all HVAC, plumbing, fire protection, and special purpose calculations. HVAC calculations shall include:

        (1) Final block loads for heating, cooling, and ventilating.

        (2) Individual room loads.

    c. Proposed equipment selection with model number, pump curves, and fan curves with selections indicated.

    d. Plumbing Fixture unit calculations and all sewer invert elevations.

15. Electrical:

    a. Complete Drawings.

    b. Final load calculations.

## VIII. BIDDING

A. Printing and Distribution:
Print and distribute the Bidding Documents (or amendments, when applicable) to the Plan Rooms in the area and to prospective bidders as directed by the CPO. The bidding documents should be numbered, and a log maintained to show which bidder or plan room received what numbered bid documents. The direction will be by telephone from the CPO with a follow up letter. The A/E does not accept deposits. All prospective bidders who visit or call the A/E shall be advised to write or call the CPO to request the bidding documents. The CPO will advise the prospective bidder about the deposit and advise the A/E to distribute documents.

a. The numbers of set to be printed and distributed will be determined during negotiations.

b. In the event prospective bidders call the A/E for interpretation of the plans and specifications (technical question) or contractual questions, the A/E shall refer the bidder to the CPOTR or CPO. If the interpretation is considered is pertinent to the project, the necessary amendment shall be prepared by the A/E and issued by the CPO. If the interpretation required drawings and specification changes, the A/E shall complete and furnish them to the CPO (If the work involved by the A/E was due to A/E error, this task shall be accomplished by the A/E at no cost, including mailing of amendment).

c. Notify the CPO in writing that the solicitation documents have been mailed to respective bidders. This written notification shall be furnished within seven (7) calendar days of the mailing. The notification shall include the name and address of contractors and the date that the solicitations shall include the name and address of contractors and the date that the solicitations were mailed. The mailing date shall be the date directed by the CPO.

B. If a pre-bid conference is held, the A/E shall attend, either in person or via remote digital conference call. The A/E shall take notes and furnish a written report of items discussed. This written report shall be furnished to the CPO within seven (7) calendar days after the pre bid conference.

C. Perform Post Bid Analysis:

Final cost estimates that are over or under the apparent low responsive bid by more than 15% will require post bid analysis by the A/E to determine the reasons for the variance. The A/E shall submit a written response to the CPO within seven (7) days after date of request. The response shall identify specific areas of variances and the reason for the variance. The response shall include a recommendation to either award or reject the bid with full rationale to support the Analysis.

## IX. APPENDIX A

### A. Submittal Requirements

Interested firms shall submit their proposals electronically and deliver ten (10) hard copies, in 8 ½" x 11" format, of their response in binders (pages must lay flat) in accordance with this RFP. 11" x 17" pages may be used as long as they are folded to 8 ½" x 11". The following qualifying data shall be submitted for evaluation purposes in the following order and categories:

1. Cover letter (no more than one page), with answers to the questions in the remaining sections of this RFQ including sketches.

2. Organization and Qualifications

    a. Describe your firm's experience and qualifications relevant to this Project (no more than two pages). Cite similar projects that you have finished within the last five years. Projects should be associated with a health care facility and approximately the same size.
    b. Describe what your firm's contribution will be to future care facility design, what innovations you propose to explore with the client, and what distinguishes your firm from others (no more than one page).
    c. Describe your proposed major sub-consultants (MEP, civil, structural, landscape, interiors, and medical equipment planning), whether they have worked with your firm in the past, and their related experiences for this Project. Cite similar projects that they have finished within the last five years.
    d. Describe the firm's current workload and ability to take on and complete this Project. Provide a schedule of major projects currently in design, projects currently in construction, and staff workload projections (no more than one page).
    e. Describe your firm's Quality Assurance, Quality Control program during all phases of the Project including Construction Administration (no more than one page).

3. Project Approach

    a. Describe your project delivery approach and note pertinent innovations you plan to employ during all phases. This should include Owner, Contractor and Agency engagement and other topics you deem important. Include your experience with, and approach to, working with numerous, highly engaged client stakeholders (leadership, departments, and combined groups), during project design phases.
    b. Explain your plan to build consensus and effectively work with client and community representatives while meeting or exceeding the Project schedule milestones (no more than two pages).
    c. Highlight how you will meet the Owner's requirements (no more than one page) and how you propose to integrate building and healthcare technology into the Project design.
    d. Describe your proposed BIM documentation strategy, and how you intend to work with the Contractor for Pre-Construction Services to develop a BIM execution plan for the Project (no more than one page).

4. Design and Project Services Schedule:

    a. Provide your proposed Project work plan with activities and schedule dates that reflects your delivery strategy, client and agency engagement meeting structure (no more than two pages).
    b. Based on the attached Departmental Space Summary, please provide a range for a Probable Cost Estimate for the project.

5. Proposed Fees and Compensation:

    a. Describe your typical approach to structuring Fees and Reimbursable Expenses for professional design services. Illustrate the anticipated range in compensation services based on the Scope of Work outlined. Please include a breakdown of fees by percentage for each major milestone.
    b. Provide hourly rates for all personnel involved.
    c. Provide a complete project budget for any and all services required to complete the project. Make recommendations based on LBJTMC's best financial interests on how best to procure services not performed by the selected firm (i.e .surveys, borings, engineering services, traffic studies, etc). Include the percentage of administration fee added to such services.

6. Expertise/References

    a. Provide, resumes which describe the experience for key individuals assigned to this Project. The persons having substantive tasks or responsibilities must have a minimum of five (5) years-experience with inpatient facilities or comparable projects.

7. Basis Selection: The evaluation team will strongly consider the following factors when evaluation the submittal:

    a. Related Experience of the Team
    General and specific project related experience of the management and staff team members, including technical support. Special interest in projects of similar nature, size and complexity.
    b. Related Experience of the Firm
    Successful completion of similar assignments with previous projects comparable in design, scope and complexity.
    c. Previous working experience In American Samoa.
    d. Scheduling - Description of scheduling procedures describing methodology for effectively managing.

## B. Hospital Programming

**HOSPITAL PROGRAMMING**

| DEPARTMENT | Licensed Bed | DGSF |
|---|---|---|
| **Med/Surg Beds** (1 Unit of 32 beds) | 32 | 21,459 |
| **Intensive Care Unit (ICU)** (1 Unit of 8 beds) | 8 | 7,694 |
| **Orthopedics, Surgical Services** (2 O.R.'s; 1 Cath Lab) | | 10,434 |
| **Special Services Clinics** | | 4,400 |
| **Endoscopy** (1 Endo rm; 1 Bronch rm.) | | 1,907 |
| **Emergency Room** (8 Exams) | | 6,693 |

| | | |
|---|---|---|
| **Pharmacy** | | 2,035 |
| **Laboratory, Morgue** | | 8,535 |
| **Cardiology, Urology Imaging / Radiology** | | |
| (1 R&F, 1 RAD, 1 CT, 1 MRI, 1 US) | | 8,712 |
| **Oncology** (1 Linac, 1 PET/CT, 8 infusion stations) | | 9,714 |
| **Respiratory Therapy** | | 878 |
| **Security** | | 676 |
| **Food and Nutrition** (Dietary) | | 5,854 |
| **Sterile Processing** (SPD) | | 4,007 |
| **Admitting/ Registration** | | 1,846 |
| **Public Spaces** | | 1,599 |
| **Volunteers** (Gift Shop) | | 1,456 |
| **Administration** | | 3,660 |
| **Information Services** | | 1,424 |
| **HIM/ Telemedicine/ Library** | | 1,463 |
| **Communication** | | 377 |
| **General Building** (EVS, Laundry, Mail, Mat'ls Mgmnt) | | 9,504 |
| **Clinical Engineering** | | 767 |
| **Engineering/Facilities** | | 5,382 |
| **Facilities (Central Energy Plant)** | | 16,089 |
| **TOTAL DGSF** | | **136,565** |
| Primary Circulation @ | 12% | 16,388 |
| Mech'l/Elect @ | 5% | 6,828 |
| Ext Walls/Canopies@ | 3% | 4,097 |
| Stairs & Elevators @ 1,200 / floor | 2 | 2,400 |

| | | |
|---|---|---|
| **Total New 40 Bed Hospital Gross S.F.:** | | **166,278** |
| | **BGSF/BED** | 4,157 |
| **CLINICAL BUILDING** | | |
| **Clinics (12 Exam Rooms)** inclusive of outpatient | | 7,502 |
| **Dialysis Clinic (16 chairs)** | | 7,376 |
| **TOTAL DGSF** | | 14,878 |
| Primary Circulation @ | 12% | 1,785 |
| Mech'l/Elect @ | 5% | 744 |
| Ext Walls/Canopies@ | 3% | 446 |
| **Total New Clinic Building Gross S.F.:** | | **17,853** |
| | **TOTAL BGSF/BED** | 4,603 |

**Parking Requirements:**

| | | |
|---|---|---|
| Hospital: 3 spaces/bed: | 120 | |
| MOB: 5 spaces/1000 DGSF | 89 | |
| **Total # parking spaces:** | **209** | |
| Surface parking @350 SF/parking space: | **73,150** | SF |

END

**AMERICAN SAMOA – NEW 40 BED HOSPITAL**

**TECHNICAL REQUIREMENTS – TABLE OF CONTENTS**

**PUBLICATION DATE: April 20th, 2022**

END

# SECTION 1 DESIGN CONCEPTS

## 1.1 SUBMISSION WITH OFFER

The A/E shall submit design concept materials with other technical submittals in digital format and a minimum of two hard copy sets of drawings and specifications with the following minimum information.

Hard copies shall be printed on 8½" x 11" bond paper. Materials may be one-sided or double-sided at the A/E's option. Bind in one or more volumes as necessary. Identify each volume with A/E's information, solicitation number, and relevant details as necessary. Each set shall contain all volumes.

### 1.1.1 ARCHITECTURE/STRUCTURAL

Submit a narrative explaining the design concept including exterior design, interior finishes, and interior design concept. Describe overall design concept and relationship to site and context. Discuss preliminary concept for interiors and finishes.

Submit a narrative that clearly explains the engineering criteria and rationale used in selecting the proposed structural system. Describe proposed materials and approach to be used in design of foundations, vertical members, floor and roof systems, and lateral force resisting system. Indicate typical structural bay size.

### 1.1.2 SUSTAINABLE DESIGN AND ENERGY EFFICIENCY

Submit a checklist identifying targeted solutions to meet energy reduction goals.

### 1.1.3 FIRE PROTECTION

Submit a narrative explaining building construction type, building fire/smoke separation, fire sprinkler/standpipe systems, water supply available, fire flow/maximum demand, and hazard rating and fire alarm systems. Indicate IBC fire-resistive ratings of the building.

### 1.1.4 MECHANICAL

Submit a narrative that clearly states the engineering criteria and rationale used for selecting the type of HVAC system(s) and tentative zoning of the systems. State clearly all assumptions and parameters used in calculating heating and cooling loads, including the name of the program. Provide assessment and details of de-humidification capacity at air handlers, including estimated costs. Provide a list of the energy conservation measures proposed to be used in the HVAC system design. State clearly the logic and criteria used in selecting each conservation measure.

Provide a single-line schematic plan of HVAC zoning.

### 1.1.5 ELECTRICAL

Submit a narrative that clearly states the electrical power and lighting design approach, including basic assumptions and information regarding the local electrical utility company. Describe extent of utility company work if any is required.

Provide single-line drawings of the proposed Electrical System, including the Essential Electrical System.

### 1.1.6 STRUCTURED CABLING

Submit a narrative that clearly states the structured cabling design approach, including basic assumptions and information regarding the data, telephone and CATV/SATV backbone, and horizontal cabling within the guidelines. Describe the extent of outside plant connections, either to service provider connections, or if required, as extensions of existing systems.

### 1.1.7 SECURITY

Submit a narrative that clearly states the security intent and cabling design for access control, intrusion detection, and video surveillance, including basic assumptions and information regarding the topology and connectivity within the guidelines. Describe the extent of monitoring, recording, control, and retention of all equipment.

### 1.1.8 AUDIO VISUAL

Submit a narrative that clearly states the audio-visual intent and cabling design for the facility, including basic assumptions and information regarding the topology and connectivity within the guidelines. Describe the extent of digital signage, video projection, and sound.

### 1.1.9 SPECIAL SYSTEMS

Special systems may include but are not limited to the following:

- Nurse Call
- Public Address (PA)
- Intercommunication System (Intercom)
- Cable Television (CATV)
- Video Teleconference Systems (VTS)
- Overhead Paging Nurse Call System
- Patient Annunciator/Locator System
- Code Blue System Duress Alarm and Emergency Notification System
- Security Management and Control, and Centralized Police Security Management Systems (SMTS)
- Video Teleconference System (VTS)
- Security Surveillance Television (SSTV)
- Motion Intrusion Detector (MID)
- Motion Intrusion Detector (MID)
- Radio Paging System
- Video Teleconferencing System (VTEL)
- VA Satellite TV System
- Electronic Access and Door Control System

Submit a narrative that clearly states the special systems cabling design approach, including basic assumptions and information regarding the special systems backbone and horizontal cabling within the guidelines. Describe the extent of the special systems and connections for new installed equipment, or if required, for extension of existing systems.

### 1.1.10 PHYSICAL SECURITY MEASURES

Hospital facilities must comply with the requirements for Life Safety Protected (LSP) as defined in VA Physical Security Design Manual (PSDM). Submit a narrative describing physical security measures incorporated into the design. Include features related to both man-made and natural events. See Paragraph 0.

### 1.1.11 WATER DISTRIBUTION

Submit a narrative that clearly states the water distribution design approach, including basic assumptions and information regarding the local water utility. Describe the required demand including the fire flow, the availability to connect to the existing water distributions system, whether the existing system can meet the proposed demand, and the ability to provide a looped system. If the water utility cannot provide information that substantiates that the existing system can support the new structure(s), develop and determine alternate solution using above ground water storage tanks(s).

### 1.1.12 SANITARY SEWERAGE SYSTEM

Submit a narrative that discusses the sanitary sewer design approach. Discuss existing capacity in the downstream sewer system and proposed points of connection. Provide calculations substantiating the proposed flows to be generated from this site.

## 1.2 CALCULATIONS: SUBMISSION WITH PROPOSAL

Provide hard copies shall be printed on 8½" x 11" bond paper. Materials may be one-sided or double-sided at Offeror's option. Bind in one or more volumes as necessary. Identify each volume with Offeror's information, solicitation number, clinic name, and location. Each set shall contain all volumes.

### 1.2.1 AREA COMPUTATIONS

Submit key plans or diagrams to indicate methodology used to compute total gross area of the building and the total inside net area.

### 1.2.2 HVAC CALCULATIONS

Submit preliminary HVAC block load calculations for estimated heating and cooling requirements of the building (BTUH's per gross square foot per year), including dehumidification loads.

### 1.2.3 ELECTRICAL CALCULATIONS

Submit preliminary electrical square foot load calculations for both normal and emergency power use. Separate calculations into lighting, receptacles, and equipment power (for example, medical, radiology, elevator, and mechanical), with further breakdown for normal and emergency power.

# SECTION 2 TECHNICAL QUALITY

The technical quality factor includes the quality of the building design and systems, site development, and the overall design concept. The A/E is required to submit drawings, narratives, and calculations that address this factor and all of its sub-factors.

## 2.1 QUALITY OF BUILDING & DESIGN CONCEPT

The SEB (Source Evaluation Board) will evaluate the materials, systems, and design of the proposed building using the following factors.

**Architectural Concept**
This factor considers the interior functional and spatial relationships shown in the A/E's floor plans. The space offered shall be of shape and dimensions that will accommodate the space program and interior functional requirements of the Hospital. Consideration will be given to the number and size of floors, column placement, shape of footprint, circulation systems, and placement of mechanical, plumbing, and electrical service spaces. The SEB will reject buildings that are unsuitable in configuration for this project or that exceed the available space.

**Building Design**
The exterior design shall be subject to technical and aesthetic review and approval of the SEB. The building shall be new construction of permanent materials and shall be compatible with its surroundings. Acceptable facades include stone, marble, brick, stainless steel or aluminum curtain wall systems, or other permanent materials. Overall, the building must project a professional and aesthetically pleasing appearance. Site and building design shall present a clear and direct entry sequence for patients and visitors.

**Sustainable Design and Energy Efficiency**
The building envelope and systems will be evaluated for compliance with the requirements of this document. Drawings, specifications, calculations, and narrative(s) submitted will be evaluated for compliance with requirements for sustainable design and energy efficiency. Reasonable innovation in this area will be looked upon favorably.

**Quality of Construction Materials**
Construction materials and building equipment and systems will be evaluated with respect to their performance, durability, quality, and suitability for their intended use. All materials and building equipment and systems must meet or exceed the requirements of this RFP.

## 2.2 QUALITY OF SITE DEVELOPMENT

This factor considers the A/E's development of the site to accommodate the SEB's specific criteria, including the required setbacks; the ingresses and egresses to and from the main (public), emergency, staff entrances; loading dock and service entrances; accessible parking lots and walkways; traffic patterns to maximize the flow of vehicles to and from the main thoroughfare; and how the landscaping design fits the surrounding areas, adheres to the use of native plant species, and provides an aesthetically pleasing atmosphere.

## 2.3 SITE PHYSICAL SECURITY

A physical security plan will be provided that provides summary information used to describe safeguard and security programs and vulnerability and risk assessments to the facility. The plan's intent is to assist with management of facility program elements and resources related to threats and risks. Provide detailed information of facility security program, equipment, and strategies. Plan should include at a minimum:

- Definition of assumed threat against which the system is providing protection
- Risk assessment
- Assumptions and Conclusions
- Protection strategy
- Graded postures for increased threat conditions
- Implementing requirements and evidence files.

# SECTION 3 - GENERAL DESIGN CRITERIA

## 3.1 CODES

The A/E shall design and construct the building and site work in accordance with this solicitation, all applicable Federal regulations, local Building and Zoning Codes and ordinances, and applicable utility company requirements. The term "local building and zoning codes and ordinances," or similar text, shall be understood to mean the current codes and regulations as approved and administered by Authorities Having Jurisdiction (AHJ) at the project location at the time of permitting. Where there is a conflict between the various codes or standards, the most stringent shall apply.

## 3.2 CRITERIA FOR AMERICAN SAMOA FACILITIES

### 3.2.1 ADOPTED CODES, STANDARDS, AND GUIDELINES

American Samoa has adopted the following Codes, Standards, Guidelines, and all addenda as a minimum for all projects performed in the modernization, alteration, addition, or improvement of its real property and the construction of new structures. Applicable requirements have been incorporated in this Request for Bids.

| CODES / STANDARDS | EDITION |
|---|---|
| Guidelines for Design and Construction of Health Care Facilities – The Facility Guidelines Institute | 2018 |
| ANSI/ASHRAE Standard 62.1 – Ventilation for Acceptable Indoor Air Quality | 2019 |
| ANSI/ASHRAE Standard 90.1 – Energy Standard for Buildings except Low-Rise Residential Buildings | 2019 |
| ANSI/ASHRAE Standard 15 – Safety Standard for Refrigeration Systems | 2019 |
| ANSI/ASHRAE Standard 170 – Ventilation of Healthcare Facilities | 2021 |
| ANSI/ASHRAE Standard 55 - Thermal Environmental Conditions for Human Occupancy | 2020 |
| Americans with Disability Act - Standards for Accessible Design | 2010 |
| ASHRAE Handbook of Fundamentals | 2021 |
| ASHRAE Handbook of Refrigeration | 2018 |
| ASCE 7-22 Minimum Design Loads and Associated Criteria for Buildings and Other Structures | 2021 |
| ASHRAE Handbook of Applications | 2019 |
| ASHRAE Standard 188 – Legionellosis: Risk Management for Building Water Systems | 2018 |
| ASHRAE Handbook of Systems and Equipment | 2020 |
| ASME Boiler and Pressure Vessel Code | 2021 |
| ASME Code for Pressure Piping | 2017 |
| ASPE Data Book, Volume 1: Fundamentals of Plumbing Engineering | 2021 |
| ASPE Data Book, Volume 2: Plumbing Systems | 2018 |
| ASPE Data Book, Volume 3: Special Plumbing Systems | 2019 |
| Building Code Requirements for Reinforced Concrete, American Concrete Institute and Commentary (ACI 318) | 2019 |

| CODES / STANDARDS | EDITION |
|---|---|
| International Building Code (IBC) | 2018 |
| International Energy Conservation Code (IECC) | 2018 |
| International Fuel Gas Code (IFGC) | 2018 |
| International Mechanical Code (IMC) | 2018 |
| International Plumbing Code (IPC) | 2018 |
| Manual of Steel Construction, Load and Resistance Factor Design Specifications for Structural Steel Buildings, American Institute of Steel Construction (AISC) | 2017 |
| NFPA 101 – Life Safety Code | 2021 |
| NFPA 99 – Health Care Facilities Code | 2021 |
| All Remaining NFPA National Fire Codes with the exception of NFPA 5000 and NFPA 900 | Current as published in Jan. 2020 |
| NFPA 70 National Electrical Code | 2020 |
| Occupational Safety & Health Administration (OSHA) Standards (Healthcare) | 2021 |
| Safety Code for Elevators and Escalators, American Society of Mechanical Engineers (ASME) A 17.1 | 2019 |
| Safety Standard for Refrigeration Systems – ASHRAE Standard 15 | 2019 |
| SMACNA – HVAC Duct Construction Standards: Metal & Flexible | 2020, 4th Edition |
| SMACNA – HVAC Air Duct Leakage Test Manual | 2012 |
| US Pharmacopeia (USP 800) Pharmaceutical Handling of Hazardous Drugs | 2019 w/ updates |
| US Pharmacopeia (USP 797) Pharmaceutical Compounding-Sterile Preparations | 2019 w/ updates |
| Territory of American Samoa – Multi-Hazard Mitigation Plan | 2015 |
| VHA National CAD Standard Application Guide | 2006 |
| FAA document AC 150/5390-2C-Heliport Design | 2012 |

**Life Safety**
NFPA 101 primarily addresses life safety and fire protection features, while the IBC addresses a wide range of considerations, including, but not limited to, structural strength, seismic stability, sanitation, adequate light and ventilation, and energy conservation. This Building must meet the requirements of NFPA 101 and documents referenced by NFPA 101 in order to comply with the accreditation requirements of the Joint Commission. Therefore, designs shall comply with the requirements of NFPA 101 and documents referenced therein. Design features not addressed by NFPA 101 or documents referenced therein shall comply with the requirements of the IBC or other relevant Codes, Standards, or Guidelines.

**Mandatory Provisions for Energy Conservation**
Requirements for energy conservation are applicable to this facility.

**In addition to requirements elsewhere in this document, comply with applicable parts of the International Energy Conservation Code (IECC).**

**Commissioning:** Third Party Commissioning of all mechanical (HVAC) and other building systems shall be implemented to verify the intent of the design by inspecting and testing the

systems for compliance with the Drawings and Specifications. Details of this requirement shall be included within the A/E Specifications.

**UL Compliance**
Specifications & Construction Drawings shall require that all products, devices, equipment and systems, to be used on this facility, have a United Laboratories (UL) certification or similar U.S. recognized industry specific certification for the product, device, equipment or system. Certifications other than U.L. shall be vetted with the Owner for approval prior to finalization of the construction documents.

**Buy American Act**
Specifications shall require that all products, devices, equipment, supplies, and materials to be purchased outside of the Territory of American Samoa for this project comply with the provisions of the 1933 Buy American Act Provision 8303 “Contracts for Public Works” with a required domestic (U.S.) content of 55% as measured by cost till 2024 at which time the percentage shall increase to 60% till 2029 at which time the percentage shall increase to 65%. These percentages shall be increased as required to comply with modifications proposed by the Office of Management and Budget and approved by the U.S. Federal government.

**Life-Cycle Cost (LCC) Analysis (Requirements)**
The A/E shall evaluate alternate designs in order to identify the most energy efficient design that is life-cycle cost-effective. All readily available and reasonable energy conservation measures, with which the industry is generally familiar, should be considered and evaluated.

**Life-Cycle Cost Analysis (Methodology)**
LCC shall be performed in accordance with the procedure outlined by the Department of Energy (DOE) in the National Institute of Standards and Technology (NIST) Handbook 135 dated February 1996 (or the latest version) – Life-Cycle Costing Manual for the Federal Energy Management.

**Conflicts**
Should a conflict exist between various Codes, Standards, and Guidelines, the conflict shall be identified prior to submission of the A/E documents and brought to the attention of SEB for resolution.

**Building Information Modeling**
All structural (including bearing zones), architectural, mechanical (hvac, plumbing, hydronics, medical gases, fire sprinklers) and electrical (equipment, devices, lighting, cable trays and conduit racks) as well as improvements that will require spatial coordination for placement or will present a barrier to the installation of other assemblies or systems shall be developed with a common version of Autodesk’s Revit software 2021 or later.

(1) All equipment requiring service or access clearances shall have 3D volume boundaries depicting their service / access clearance limits and such limits shall be used to determine the placement and configurations of adjacent constructs such that service / access clearance can be achieved.

(2) All independent Revit models shall be linked into a Federated model for the performance of regular Navisworks clash analysis passes by the A/E team. Clashes shall be rectified after each pass by the A/E team in the BIM.

(3) All civil: topography, hardscapes, underground utilities and structures shall be modeled in Autodesk’s Civil 3D software 2021 or later. The digital 3D site topography, building pads, erosion controls and utility connection points to the building utilities which are slope critical shall be integrated with the Revit model to assure interfaces are coordinated.

(4) A digital copy of all Revit and Civil 3D files shall be delivered to the Owner at the time of Bid and upon completion of construction, with the later incorporating all ASI's and as-built changes to the construction into the digital files.

(5) Additional deliverables shall include AutoCAD files of all the construction documents at the time of Bid and upon completion of construction, with the later incorporating all ASI's and as-built changes to the construction into the digital files

### 3.2.2 SPECIAL BUILDING REQUIREMENTS

**Isolation Exam Rooms**

The A/E shall provide isolation exam rooms with the capability to treat undiagnosed patients who have symptoms of TB.

**Isolation Exam Room Certification**
The A/E shall specify that the Contractor is responsible for certification of isolation exam rooms and the associated cost of certification of rooms. The Testing and Balancing report shall serve as certification that isolation rooms are under negative pressure.

**Telecommunications/Special Systems Rooms**
Design, size and construction of telecommunications, data, and special systems rooms and spaces are indicated on the conceptual plans.

**Janitors Closets**
A minimum of (3) Janitors Closets per floor (JC) shall be provided for maintaining common areas in the building. Each JC shall contain a service sink with hot and cold water, ample space for storage of cleaning equipment, and shelving for cleaning materials and supplies. floor.

**Public Restrooms and Lounges**
Provide public toilets as required by code per population or as reasonably required.

All public and common use toilet rooms shall be accessible to the handicapped. Accessible toilet facilities shall be located along an accessible path of travel and have accessible fixtures, accessories, doors with automatic door openers, and adequate maneuvering clearances. Accessible toilet rooms shall be identified with the international symbol of accessibility. Water closets and urinals shall not be visible when the exterior room door is open.

Separate toilet facilities for men and women shall be provided on each occupied floor. The facilities must be located so that employees will not be required to travel more than 150 feet on one floor to reach the toilets.

Each toilet room shall have code required quantities of water closets enclosed with stall partitions and doors, urinals (in men's rooms), and lavatories with hot (set at 105 ˚F at the sink) and cold water.

Public restrooms that have three or more stalls shall be provided with one lighting fixture on an emergency circuit or one emergency battery lighting unit with dual head.

Restrooms shall comply with the principals of Universal Design with specific focus on persons of size:

- All toilets will be floor mounted, bariatric rated for a minimum of 1000 lbs.
- All non-ADA compliant toilet stalls shall be 40" inside clear with 36" wide doors.

- Where multi-user restrooms are located at least one ADA accessible gender-neutral restroom shall be provided with toilet, lavatory, urinal and associated accessories for handicap and assistive use.

A/E shall provide adequate space for the installation, operation, and maintenance of building service equipment. This includes office, shop, and storage space necessary for operation and maintenance of the building and grounds, including:

- Space for mechanical systems equipment.
- Space for plumbing systems equipment.
- Space for fire protection systems equipment.
- Space for electrical systems equipment.
- Space for telecommunications and special systems equipment (including telephone, data, alarm, security, and other systems).
- Space for building engineering control center
- Office, shop, and storage space for building management services.
- Space for grounds maintenance.

**Public Corridors and Entrance Lobbies**
A/E shall provide building entrance lobby as shown on conceptual plans.

**Shafts and Risers**
A/E shall provide shafts, chases, and risers necessary for distribution of building services or utilities.

## 3.3 PHYSICAL SECURITY AND NATURAL DISASTERS RESISTIVE DESIGN

The A/E shall include the following provisions for Site Considerations, Building Entrances and Exits, Building Envelope, Structural System, Utilities and Building Service, Building Systems, Security Systems, and Special Areas in the design and construction.

- Site shall be built-up to an elevation that will exceed the 1998 Corp of Engineers surge data for a 10-year (tsunami) event with appropriate erosion control measures for slope embankments.
- Wall barriers shall be erected to a height above the built-up pad that will exceed by 1’-0” the 1998 Corp of Engineers surge data for a 25-year (tsunami) event and be of sufficient strength to resist the anticipated hydrostatic pressures.
- The hospital shall be of a podium design utilizing a pad constructed parking garage that places the upper parking structure level 14’-0” above the building pad. The upper-level parking structure shall be enclosed by a 4’-0” high solid concrete wall.
- The facility design shall take into consideration the recommendations of the 2015 American Samoan Multi-Hazard Mitigation Plan.

### 3.3.1 SITE CONSIDERATIONS

**Site Access and Roads**
Separate entrances to the site shall be provided for patients and visitors, employees and staff, emergency, fire and service and delivery vehicles. Access roads for all vehicles shall allow for separate driveways to the building entrance, service yard or parking areas. Access roads from the entrances to parking for each vehicle type shall be separated but may be connected for maintenance and emergency vehicles through gates controlled by access cards.

Access roads shall be configured to prevent vehicles from attaining speeds in excess of 25 mph. Avoid any straight-line vehicular approaches to the facility.

**Vehicle Barriers**
Provide passive barriers adjacent to vulnerable perimeter fences, protection for site utility equipment, at building entrance, and other areas requiring additional protection from vehicles. Passive vehicle barrier shall be selected on the appropriateness of the architecture of the facility and specifics of the site and natural environment. Natural or man-made barriers may be used.

- Landscaping examples include berms, gullies, boulders, trees and other terrain.
- Hardscaping examples include benches and planters.
- Structural examples include walls, bollards and cables.

**Parking**

Parking and access for patients, visitors, and the persons transporting them to and from the hospital shall be as convenient as possible to the main entrance, subject to the requirements above. Parking and facility access shall comply with accessibility requirements.

Emergency entrance shall be provided with a small parking area for emergency patients and space for ambulances. Ambulances shall be permitted to approach the building directly and not be subjected to the distance requirements.

Vendors shall use the delivery vehicle entrance and service yard at the loading dock. Four (4) parking spaces shall be provided for vendors in the service yard.
Where employees share access with patients and visitors, the entrance to the employee parking shall be controlled by a card-actuated gate. Employee parking areas shall be monitored by SSTV. Emergency alert systems shall be provided in employee parking areas at no more than 1000 linear feet between devices.

**Helipad**
A heliport shall be provided in compliance with the provisions of FAA document AC 150/5390-2C-Heliport Design. The pad shall be located on the upper level of the parking garage.
Provide all required barriers, visual approach markings, clear approach and departure surfaces / flight vectors, signage, and lighting for: the landing area, landing direction, windsock and perimeter barrier.

### 3.3.2 BUILDING ENTRANCES AND EXITS

Public access to the facility should be restricted to a single entrance. The public entrance is to the main lobby of the facility. This entrance shall utilize a porte cochere (covered entrance) sufficient to permit drop-off with and without parking as well as a bypass lane. Staff entrances shall be located independently of main entrance lobbies and be convenient to staff parking. Design access from drop-off to lobby to prevent a straight line of travel. Provide sufficient size to accommodate several people with mobility aids.

Public access shall include a screening vestibule with sufficient space and power, telecommunications, and data connections for installation of access control and screening equipment. When screening devices are not permanently installed, provide secure storage in close proximity to their installation location.

Entrance doors to the lobby shall be visible to or monitored by security personnel. Access from the lobby to elevators, stairways, and corridors shall be controlled. Separate the public lobby from adjacent areas with partitions that extend to the underside of the floor above. Glazing in the lobby area shall be store front type laminated glass that is rated for projectile impact under 170 mph wind (hurricane / typhoon) conditions.

All exterior doors shall be electronic and capable of being remotely locked and unlocked from the reception desk in the main lobby. Secondary public entrance doors shall prevent unauthorized access. Staff entrance door hardware shall be electronic locks with card entry.

Means of egress doors that do not also function as entrances shall be provided with delayed action and alarmed emergency egress hardware. Delayed egress and alarmed exits shall comply with applicable codes and regulations. Means of egress shall not be obstructed by installation of security devices such as guard stations, screening equipment, or other security devices. Doors shall receive mechanical lock accessible from the exterior to prevent unauthorized entry.

Access for Emergency Responders: The Fire Command Center (FCC) and secure house key box for emergency responders shall be located near an entrance door. Box shall be used to house the access for mechanical and electronic lock sets. The entrance shall be controlled and monitored by Security Surveillance Television (SSTV).

SSTV cameras shall be provided to monitor activities in the lobbies of new and existing life-safety protected facilities and shall be located to provide views of approaching pedestrian and vehicular traffic, drop-off areas, building entrances, helipad, and departing pedestrian and vehicular traffic. Provide SSTV cameras at locations with alarmed exits (both interior and exterior of building), at loading docks, and other areas subject to pilferage. Install door status monitors at doors intended to be used only for emergency egress.

### 3.3.3 BUILDING ENVELOPE

Non-load bearing walls shall be designed to withstand the design level vehicle threat. Walls shall be able to accept the tributary loads transferred from glazed fenestration in addition to the design level pressures applied directly to their surface.

Façade fenestration shall be designed and constructed using debris mitigating materials such as laminated glass sufficient to resist 170 mph wind conditions. The glass shall be restrained within the mullions and the mullions shall be designed to accept the design level pressures. Curtain wall framing members shall span from slab to slab and shall not be attached directly to gravity load bearing elements (such as columns and shear walls) unless an advanced analysis of the load bearing element demonstrates it can accept the maximum forces of the members framing into it without compromising its load bearing capacity.

Roof structure shall be designed to withstand the design level vehicle threat taking into account the presence of parapets, the diffusion of blast waves, and the spatial extent of the roof surface.

Skylights shall be designed in response to the calculated peak pressures and impulses resulting from the design level vehicle threat. Skylight glass shall be restrained within the mullions and the mullions shall be designed to accept the design level pressures.

Penthouses enclosing mission-critical equipment shall be designed to resist the design level vehicle threat and to be consistent with the hardened intakes and exhausts.

### 3.3.4 STRUCTURAL SYSTEM

Structural systems shall be constructed to withstand the actual pressures and corresponding impulses produced by the design level vehicle threat and the design level satchel threat that may be delivered to loading docks, mailrooms, and lobbies prior to screening. The design shall provide a level of protection for which progressive collapse will not occur; the building damage will be economically repairable and the space in and around damaged area can be used and will be fully functional after cleanup and repairs.

### 3.3.5 BUILDING SYSTEMS

HVAC systems: locate major mechanical equipment above the ground floor in an area not subject to flooding. All air intakes shall be located so that they are protected from external sources of contamination. Locate the intakes away from publicly accessible areas, minimize obstructions near the intakes that might conceal a device, and use intrusion alarm sensors to monitor the intake areas.

- Locate all outdoor air intakes a minimum of 100 feet from areas where vehicles may be stopped with their engines running.

- Locate all outdoor air intakes a minimum of 30 feet above finish grade or on roof away from the roof line.

Maintain positive pressure in lobbies and entrance areas, and as required by ASHRAE 170.

Fire protection systems: fire sprinkler risers shall be either inside the building, or if outside the building, enclosed within a weatherproof fiberglass enclosure. If required, fire department hose connections located on the exterior of a building shall be secured in suitable enclosure that limits access to authorized personnel. Coordinate with the serving fire department.

### 3.3.6 SECURITY SYSTEMS

**Security Surveillance Television (SSTV):** The SSTV system design, installation, and use shall support the monitoring of building entrances, restricted areas, mission critical asset areas, alarm conditions, and shall support the visual identification and surveillance of persons, vehicles, assets, incidents, and other defined locations

**Intrusion Detection System (IDS):** The IDS system shall include motion detection, glass break, and door contact sensors, among other devices. These devices provide alternative methods to detect actual or attempted intrusion into protected areas through the use of alarm components, monitoring, and reporting systems

**Physical Access Control System (PACS):** The PACS system shall include, but not be limited to: card readers, keypads, biometrics, electromagnetic locks and strikes, and electronic security management system (SMS). PACS devices shall be used for the purpose of controlling access and monitoring building entrances, sensitive areas, mission critical asset areas, and alarm conditions from an access control perspective.

**Electronic Security Management System (SMS):** The SMS shall allow the configuration of an enrollment and badging, alarm monitoring, administrative, asset management, digital video management, intrusion detection, visitor enrollment, remote access level management, and integrated security workstations or any combination thereof

**Duress, Security Phones, and Intercom System (DSPI):** The DSPI system is used to provide security intercommunications for access control, emergency assistance, and identification of locations where persons under duress request a security response

### 3.3.7 SPECIAL AREAS

**General Design Criteria: Apply the following considerations in the layout and design of special areas within the hospital.**

**Agent Cashier:** The agent cashier shall be located with the transaction window opening to a lobby. There shall be no openings to the exterior of the building. The agent cashier space shall be accessed by a door to a corridor which is accessible only to employees of the facility. A duress alarm shall be provided in a location not visible to customers at the transaction window. A PACS Physical Access Control System shall be incorporated into the security component for the agent cashier.

**Telephone Equipment Room and Main Computer Room:** The Telephone Equipment Room and Main Computer Room shall be located not closer than 50 feet in any direction to main entrance lobbies, loading docks, and mailrooms, and in no case directly above or below such spaces. A PACS Physical Access Control System shall be incorporated into the security component.

**Emergency Generators:** The emergency generators and related switchgear may be located in a separate structure from the main building or within the main building. The generator room shall not be located at an elevation subject to flooding at any time, and therefore at or above the upper level of the parking structure. The generator room shall not be located closer than 50 feet of a loading dock/receiving area or mailroom, and shall not be located beneath such facilities. Areaways and louver openings serving the generator shall not open to the service yard for the loading dock. Entrances from the exterior shall not open to the loading dock service yard. A PACS Physical Access Control System shall be incorporated into the security component.

**Mailroom:** The mailroom may be located in the main building or in a separate structure on the site shared with loading dock, storage, and other non-critical functions. Mailrooms within the main building shall be located on an exterior wall. Mailrooms may be located immediately adjacent the following areas: service yard, trash containers, loading dock, freight elevators, and non-critical support areas. Mailrooms shall not be located adjacent to or within 50 feet of the following: Security Control Center or Police Command Center, emergency generators, UPS, main electrical switchgear, main utility service entrances, emergency egress from the main building, flammable liquids or gas storage, and outdoor air intakes. A PACS Physical Access Control System shall be incorporated into the security component.

Air serving the mailroom shall be 100% exhausted to the outside.

**Pharmacy:** Deliveries to and shipments from pharmacies may be via the main loading dock and service yard. Pharmacies shall not be immediately adjacent the loading dock or mailroom. A PACS Physical Access Control System shall be incorporated into the security component.

**Hospital Security and Holding Rooms:** shall be located on the first floor of the building adjacent to the highest potential trouble area, such as emergency or urgent care room, or lobby and shall be located to allow appropriate response and deployment to respond to a security related event. Holding room shall be located within or adjacent to the security room. When the security room is adjacent to or opens onto areas occupied by unscreened public,

such as lobbies, emergency rooms, and public corridors, construction, including partitions from slab to slab, doors, windows, and other openings separating the unit from such spaces, shall be 1-hour fire resistive. SSTV surveillance shall be provided of the entire room through an opening glazed with transparent polycarbonate in a steel frame firmly anchored to the wall. A PACS Physical Access Control System shall be incorporated into the security component.

**Records Storage:** Record storage rooms shall be located not nearer than 50 feet in any direction from main entrance lobbies, loading docks, and mailrooms and in no case directly above or below such spaces. A PACS Physical Access Control System shall be incorporated into the security component.

**Additional Security Requirements:**
Provide the following physical security measures or features for the spaces or areas listed below.

| SECURITY REQUIREMENTS for SPECIAL AREAS | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LOCATION** | **APPLICABLE REQUIREMENTS (X)** (See list below table) | | | | | | | | | | | | | |
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| Canteen Retail Store | X | | X | X | X | | | | | X | X | | | |
| Canteen Storage Room | X | | X | X | X | | | | | X | X | | | |
| Canteen Office | X | | X | X | X | | X | | | | X | | | |
| Agent Cashier | X | | X | X | X | | X | | | X | X | | | |
| Pharmacy and Supply Drug Storage Rooms | X | X | X | X | X | | | X | X | X | X | | X | |
| Pharmacy Dispensing Areas | X | | X | X | X | X | | | | X | | | | |
| Pharmacy Manufacturing Area | X | | X | X | X | | | | X | X | X | | | |
| Acquisition & Materiel Management (A&MM) (Supply Warehouse) | | X | X | X | X | | | | | | X | | | |
| Dental Precious Metal Storage | | | X | | X | | | | | | X | | | |
| Information Resources Management – DHCP | X | | X | X | X | | | | | X | X | | | |
| Main Telephone Equipment Room; Computer Room | X | | X | X | X | | | | | X | X | | | |
| Emergency Room and Treatment Rooms | | | | | | | | | | | | X | X | X |

**1: Windows**
Windows with sills less than 40 feet from the ground or the roof of a lower abutment, less than 25 feet from windows of an adjoining building, and accessible by a building ledge leading to windows of other floor rooms require security mesh screening. Stainless steel security mesh screening shall be equivalent to woven mesh 0.028" wire diameter alloy #304 stainless steel, and have a tensile strength of 800 pounds per lineal inch. Mesh shall be equivalent to 12 x 12 per inch with main and sub frames of 12-gauge carbon steel with baked enamel finish and internal key locking slide bolts. Security mesh screens are to be installed on inside of windows.

**2: Walls**
All walls or partitions for the designated room shall be constructed to resist forced entry.
Exterior walls of brick or masonry construction shall be acceptable. Metal stud walls shall be reinforced with security mesh to provide equivalent protection.

Interior partitions surrounding perimeter of Pharmacy may be solid 4-inch CMU with drywall on exposed surfaces or metal stud with security mesh.
Metal lath or plaster base is unacceptable as security mesh. Security mesh shall be flattened, expanded metal manufactured from high strength, low alloy steel and shall conform to ASTM F 1267, Type 11, Class 1, Mill finish. Mesh designation: 3/4 #13F; Mesh Design Size 0.923 x 2.10 inch; Mesh Opening Size 0.688 x 1.781 inch; 13 meshes per foot, 74% open area; Mesh Strand Width 0.106 inch; Mesh Strand Thickness 0.078 inch; Weight 0.75 pounds per square foot. Provide manufacturer's attachment clips and use recommended fasteners to secure mesh to wall framing.

**3: Doors and Locks**
Solid core wood or hollow steel door construction shall be 1-3/4" thick. Dutch or half doors are unacceptable. Hinge pins on door exterior (unsecured side) shall be non-removable type. Doors shall be set in hollow metal (steel) frames and fitted with mortise lock. All locking arrangements shall comply with NFPA 101 and shall require no more than one operation from the inside (in direction of egress) to unlock/unlatch the door regardless of the number of locks or latches.

Mortise lock shall have latch bolt and independent dead bolt (min ¾-inch throw). Latch bolt must be automatically locking on door closure; requiring re-entry to the room with key or lock combination and allowing egress from the room by use of an inside lever. Key outside or thumb turn inside shall retract or project the dead bolt. When dead bolt is projected, inside lever shall simultaneously retract latch bolt and dead bolt. Combinations or keys to locks will be restricted to service employees and combinations changed immediately on the termination or reassignment of an employee.

**4: Other Room Access Means**
Ceiling overhead areas which enable entry into a secure room from an unsecured room must be barricaded by the installation of a suitable partition or ceiling which deters "up and over" access. Ventilation grills on doors which exceed 96 square inches in area must be reinforced to prevent their removal from outside the room. All vents, ducts, and similar openings in excess of 96 square inches that enter or pass through the secure space shall be protected with either bars or grills. If one dimension of the duct measures less than six inches or duct is less than 96 square inches, bars are not required; however, all ducts must be treated to provide sufficient sound attenuation. If bars are used, they must be ½-inch diameter steel welded vertically and horizontally six (6) inches on center; if grills are used, they must be of 9-gauge expanded steel. Openings in construction above ceilings or below raised access floors shall be protected as above.

**5: Motion Intrusion Detectors**
An intrusion detection alarm system which detects entry into the room and which broadcasts a local alarm of sufficient volume to induce an illegal entrant to abandon a burglary attempt. Intrusion detectors must have the following essential features:

An internal, automatic charging DC standby power supply and a primary AC power operation.

A remote, key operated activation/deactivation switch installed outside the rooms and adjacent to the room entrance door frame.

An automatic reset capability following an intrusion detection.

A local alarm level of 80 dB (min) to 90 dB (max) up to 100 feet from the protected room.

An integral capability for the attachment of wiring for remote alarm and intrusion indicator equipment (visual or audio).

A low nuisance alarm susceptibility.

Intrusion detector equipment which operates on the principle of narrow beam interception, microwave, or photo electric eye is unacceptable.

**Installation Notes:**
A locally sounding alarm should not be installed in a room which is close to a cardiac care or other special treatment area where a loud alarm would have an injurious effect on patients.

Intrusion detector alarms will be remotely monitored by a commercial security alarm monitoring firm, a local police department, or a security office charged with building security.

The remoted alarms will be in addition to locally broadcast alarms in the protected areas.

**6: Pharmacy Dispensing Counter**
Partitions and windows of pharmacy dispensing counters shall be UL Level 3 ballistic construction and 15-minute forced entry construction, including partitions, doors, glazed openings, teller windows, and transaction trays.

**7: Agent Cashier Counter**
Partitions and teller windows facing the public corridor shall be UL Level 3 ballistic construction and 15-minute forced entry construction, including partitions, doors, glazed openings, teller windows, and transaction trays.

**8: Bulk Drug Storage Safes and Vaults**
Drugs classified as Schedule I,II or III controlled substances under the Controlled Substance Act of 1970 must be stored in safes or vaults which conform to the following specifications:

Safes will be GSA class 5 security containers weighing no less than 750 pounds. Due consideration shall be applied to the design of the floor system's live load capacity.

A/E shall design a Type II vault for the hospital. Size and location are to be determined by the Owner. Vault specifications are as follows:

**Type II Vault, Class 5:** Constructed of walls, floors, and ceilings of minimum of 8 inch reinforced concrete or other substantial masonry, reinforced vertically and horizontally with ½ inch steel rods tied 6 inches on center. Doors and day gates must meet GSA class 5 criteria. Vault ventilation and utility ports may not exceed **100** square inches in area.

**9: Bulk Drug Storage Cabinets**
Steel cabinet with adjustable shelving and built-in locking devices are required for the storage of bulk supplies of Schedule III to V controlled substances.

**10: Security Surveillance TV**
Security surveillance TV camera with motion detector feature on cameras and at monitor location.

**11: Special Key Control**
Room door lock keys and day lock combinations, where applicable, are Special Keys and are not mastered.

**12: Drug Cabinets**
Owner shall provide key locked, all steel cabinets to be firmly anchored in place are required for emergency room or treatment room storage of small quantities of controlled substances. Quantities and locations of drug cabinets shall be as listed in Schedule B.

**13: Refrigerators**
Owner furnished and installed. A/E specified. Shall be equipped with internal temperature monitoring with a low temp visual and auditory alarm on the unit and outputs for remote monitoring.

### 3.3.8 Natural Disasters Resistive Design

A/E shall include the following specific provisions for emergency utility services, emergency site access facilities, and resistive design of non-structural building elements. Where local Seismic Code is more stringent, comply with local code. Non-structural building elements include all components or systems that are not part of the building's structural system whether inside or outside, above or below grade. Non-structural elements of buildings include architectural, elevator and transport, mechanical, plumbing, and electrical elements.

### 3.3.9 Emergency Utilities

**Electric Power Services:**
Connect to the emergency generator(s).

### 3.3.10 Emergency Site Access

**Ground Transportation:**
Provide for emergency access to premises from two or more public roads.

Design on-site bridges, retaining walls, culverts, and other road structures, which conduct traffic, to comply with local seismic code requirements.

### 3.3.11 Seismic and Natural Disasters Resistive Design of Non-Structural Building Elements

**Definitions:**
Non-structural building elements include all components or systems that are not part of the building's structural system whether inside or outside, above or below grade. Non-structural elements of buildings include:

**Architectural Elements:** Facades that are not part of the structural system and its shear resistant elements; cornices, and other architectural projections and parapets that do not function structurally; glazing; nonbearing partitions; suspended ceilings; stairs isolated from the basic structure; cabinets; bookshelves; medical equipment; and storage racks.

**Electrical Elements:** Normal and emergency power and lighting systems; switchboards, panelboards, and transformers; emergency engine-generator sets and automatic transfer switches; motor controllers; elevator and transport systems; fire alarm systems; and telecommunication systems.

**Mechanical Elements:** Heating, ventilating, and air-conditioning systems; medical gas systems; plumbing systems; sprinkler systems; pneumatic systems; and mechanical and

structural elements for transport systems, i.e., elevators and dumbwaiters, including hoisting equipment and counterweights.

**Earthquake Resistive Design Requirements:**
Provide restraints, flexibility of service connections, and field reinforcements, or a combination of those provisions, for earthquake-resistive design provisions for non-structural elements of buildings. Design and detail restraint systems under supervision of a professional structural engineer registered in the United States. Clearly indicate all special seismic details for restraining non-structural elements on the construction drawings. Drawings shall be sealed by the structural engineer.

**Restraints:** Provide bolts, anchors, hangers, braces, and other restraining devices to limit earthquake-generated differential movements between non-structural elements and the building structure. Brace suspended items, including piping, conduit, ducts, and lighting fixtures in both directions to resist swaying and excessive movement.

**Flexibility:** Keep mechanical and electrical systems crossing building expansion or seismic joints to a minimum, and provide flexibility to allow for earthquake-generated differential movements. Where possible, restrict these crossings to lower stories. Where these systems must cross such joints, provide flexible joints, expansion loops, or other effective methods of incorporating flexibility. Allow for anticipated differential movement for sleeves and openings. Use flexible electrical raceways where connecting components would experience damaging relative movements.

**Field Reinforcement:** Reinforce all field fabricated non-structural elements of buildings and equipment to resist damage from earthquake-generated motions.

**Architectural Items at Seismic Joints:** At seismic joints, detail ceiling and wall construction to allow movement without damage. Do not cross seismic joints with suspended ceiling systems with lay-in tiles. Do not assume finishes in the vicinity of seismic joints to be sacrificial.

**Hurricane and Flood Resistive Design Requirements:**
Design and construct the hospital building and utilities to comply with local code requirements and to provide the following resistive features.

**Automatic Transport Systems:** Provide sump pump pit for portable storm water pump in elevator pit.

**Air Conditioning Systems:** If possible, avoid the installation of outdoor equipment such as: cooling towers, roof mounted fans, ventilators, and air-conditioning units on the roof. If exterior installation is necessary, properly secure equipment to withstand wind forces that comply with local codes. If there are no local codes, use wind velocities indicated in ASCE 7-05 or later version if available.

## 3.4 FIRE PROTECTION

A/E shall comply with applicable provisions of NFPA.

### 3.4.1 SITE CONSIDERATIONS

Provide access for emergency vehicles to buildings and additions. Design roads, fire lanes, and turn-arounds for the weight and turning radius of fire apparatus including the upper level

of the parking structure. Consult local fire department for fire apparatus requirements. At minimum, one of the long sides of every building shall be accessible to fire department equipment.

Barriers must be placed adjacent to vulnerable perimeter fences, protection for site utility equipment, at building entrance, and other areas requiring additional protection from vehicles.

**Parking:** Passenger vehicles shall not be parked or permitted to travel closer than 25 feet to any building on the facility.

### 3.4.2 BUILDING CONSTRUCTION

**Types of Construction**: Base the design on the construction type necessary to comply with code requirements for the most restrictive occupancy in the building in accordance with NFPA 101 and locally adopted codes and standards. Should a conflict exist between NFPA 101 requirements and locally adopted codes and standards, the more stringent requirement shall apply.

Consider separation distances to adjoining structures or hazards. Protect exterior walls and openings from exposure as required by Code. Locate combustible structures or structures that have combustible roof assemblies a minimum of 25 feet from the exposed building. Shelters or pavilions that are of masonry construction shall not be located within 10 feet of any building opening.

Roof coverings shall be approved or listed by a nationally recognized testing laboratory for compliance with UL standard 790 and be Class A minimum. Roof deck assemblies shall be FM Class I approved, or UL listed as Fire-Classified and UL-580 for hurricane conditions.

Consideration should be given to limiting the building height to circumvent the provisions of designing this facility as a high rise and to address limitations of the local fire service, available water pressure and seismic / hurricane resistance.

### 3.4.3 OCCUPANCY TYPE

Occupancy classifications are defined in NFPA 101 and as follows:

New Health Care Occupancy, NFPA 101, Chapter 18
Ambulatory Health Care Occupancy, NFPA 101, Chapter 20

### 3.4.4 MEANS OF EGRESS

All exits, stairs, corridors, aisles, and passageways shall comply with the latest edition of NFPA 101 ("Life Safety Code") and applicable U.S. adopted codes and standards for the occupancy classification. Should a conflict exist between NFPA 101 requirements and applicable U.S. codes and standards, the more stringent requirement shall apply. Corridors shall comply as follows:

Major corridors shall have a minimum width of 8 feet and departmental corridors shall have a minimum width of 6 feet.

### 3.4.5 FIRE PROTECTION IN HAZARDOUS AND HIGH HAZARD AREAS

Hazardous and high hazard areas within the hospital shall be protected as prescribed in NFPA 101, Life Safety Code and local building codes and ordinances. Areas identified as high

hazard shall be protected by not less than a minimum 1-hour fire enclosure with C-labeled doors and automatic sprinklers.

**Storage Rooms**
Storage rooms of 50 or more square feet net area shall be considered hazardous areas and comply with appropriate occupancy chapter requirements of NFPA 101.

Rooms containing medical records storage or moveable-aisle/mobile shelving shall be provided with automatic sprinkler protection and enclosed with a barrier having a one-hour fire resistance rating.

**Flammable and Combustible Storage**
Flammable and Combustible Liquid Storage shall comply with NFPA 30. Do not locate laboratories in basements. Provide adequate space for flammable and combustible liquid storage cabinets.

**Compressed Gas/Cryogenic Liquid Storage**
Location, construction, and arrangement of compressed medical gas storage areas shall comply with NFPA 99.

**Laboratories**
Laboratories using flammable or combustible liquids shall comply with NFPA 45.

## 3.5 ENVIRONMENTAL

### 3.5.1 INDOOR AIR QUALITY

Apply requirements of the 2019 ANSI/ASHRAE Standard 62, Ventilation for Acceptable Indoor Air Quality. This standard affects the way ventilation systems are designed and operated. Provide certification to the SEB that the building is in compliance with this standard

Materials that are used for interior design including wall and floor treatment shall emit low amounts of Volatile Organic Compounds.

### 3.5.2 ASBESTOS

Materials containing asbestos shall not be used. It shall be the responsibility of the A/E team to specify that asbestos-containing materials will not be used in the construction of the building, including, but not limited to, thermal insulation, surfacing material, floor tile, sheet vinyl, and fireproofing material shall include clauses to specifically exclude asbestos from the materials being used in the building.

## 3.6 ACCESSIBILITY STANDARDS

The design and, construction, of facilities shall comply with U.S. adopted codes and standards as referenced herein. In addition, all facilities must comply with the Architectural Barriers Act Accessibility Standards (ABA-AS).

The ABA-AS consists of Appendices C and D to 36 CFR Part 1191 (ABA Chapters 1 and 2, and Chapters 3 to 10) and is available from United States Access Board http://www.access-board.gov/.

The A/E team shall review with the Owner, which if any, of the modified ADA provisions in “A Barrier Free Design Guide PG18-13” shall be applicable for incorporation into this facility.

See https://www.cfm.va.gov/til/etc/dsBarrFree.pdf.

## 3.7 SUSTAINABLE DESIGN AND ENERGY EFFICIENCY

**LEED-HC® SILVER CERTIFICATION**

LEED-HC® Silver Certification is not required. The A/E team shall provide documentation that the design will meet specific goals, as indicated below. The target credits (based on LEED-HC®) are:

| | |
|---|---|
| Water Efficiency: | Credit 1 Water Efficient Landscaping, Reduce By 50% |
| Energy & Atmosphere: | Credit 3 Enhanced Commissioning |
| | |
| Indoor Environmental Quality: | Credit 2 Increased Ventilation |
| Indoor Environmental Quality: | Credit 3.2 Construction IAQ Management Plan – Before Occupancy |
| Innovation & Design: | Credit 2 LEED-HC® Accredited Professional |

| | |
|---|---|
| Water Efficiency | WEp1, Water Use Reduction |
| Energy & Atmosphere: | EAp1, Fundamental Commissioning of Building Energy Systems; EAp2, Minimum Energy Performance; and PR3, Fundamental Refrigerant Management |
| | |
| Indoor Environmental Quality: | EQp1, Minimum Indoor Air Quality Performance; EQp2, Environmental Tobacco Smoke (ETS) Control |

### 3.7.1 STRATEGIES

The A/E Team shall employ the following strategies.

**Employ Integrated Design Principles**
**Integrated Design**
Use a collaborative, integrated planning and design process that initiates and maintains an integrated project team in all stages of a project's planning and delivery.

Establish performance goals for siting, energy, water, materials, and indoor environmental quality along with other comprehensive design goals and ensure incorporation of these goals throughout the design and lifecycle of the building. Consider all stages of the building's lifecycle, including deconstruction.

**Commissioning**
Employ commissioning practices tailored to the size and complexity of the building and its system components in order to verify performance of building components and systems and help ensure that design requirements are met. This should include an experienced commissioning provider, inclusion of commissioning requirements in construction documents, a commissioning plan, verification of the installation and performance of systems to be commissioned, and a commissioning report. The systems to be commissioned include active and passive HVAC equipment and controls, plumbing systems, lighting and daylighting controls, domestic hot water systems, and onsite renewable energy systems.

Plumbing systems shall also be integrated into the commissioning plan. The commissioning plan shall define pressure test procedures for all pipe systems, shower or bathroom basin leakage tests, plumbing fixture carrier installation, plumbing fixture flow rate adjustment, system chlorination and flush, *Legionella* disinfection, booster pump package, backflow prevention devices tested by a third party and reports included in the final commissioning report, thermostatic mixing valves, vacuum system, medical air system, oral evacuation system, dental compressed air system, natural gas and fuel system, and special water systems.

NOTE: As part of the commissioning process, provide process flow diagram for both potable and process water flows, and provide a Hazard Analysis and Critical Control Point (HACCP) Plan to the ASG for approval in accordance with ASHRAE Standard 188, Prevention of Legionellosis Associated with Building Water Systems.

**Optimize Energy Performance**
**Energy Efficiency**
Establish a whole building performance target that takes into account the intended use, occupancy, operations, plug loads, other energy demands, and design to earn the Energy Star® targets for new construction. Reduce the energy use by the maximum attainable energy efficiency that is life cycle cost effective below a 2007 baseline building performance rating per the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., (ASHRAE) and the Illuminating Engineering Society of North America (IESNA) Standard 90.1-2019, Energy Standard for Buildings Except Low-Rise Residential. If available, use Energy Star and FEMP-designated Energy Efficient Products.

**Measurement and Verification**
Per the Energy Policy Act of 2005 (EPAct) Section 103, install building level utility meters in new major construction to track and continuously optimize performance. Per EISA Section 434, include meters for steam, where appropriate.

**Protect and Conserve Water**
**Indoor Water**
Employ strategies that in aggregate use a minimum of 20% less potable water than the indoor water use baseline calculated for the building, after meeting the EPAct 1992, and the International Plumbing Code 2018 fixture performance requirements. The installation of water meters is encouraged to allow for the management of water use during occupancy.

**Outdoor Water**
Landscape sprinklers are not required.

**Enhance Indoor Environmental Quality**
**Ventilation and Thermal Comfort**
Meet ASHRAE Standard 55-2020, Thermal Environmental Conditions for Human Occupancy, including continuous humidity control within established ranges per climate zone, and ASHRAE Standard 62.1-2019, Ventilation for Acceptable Indoor Air Quality.

**Moisture Control**
Establish and implement a moisture control strategy for controlling moisture flows and condensation to prevent building damage and mold contamination. Comply with criteria within ASHRAE 170.

**Daylighting**
Achieve a minimum of daylight factor of 2% (excluding all direct sunlight penetration) in 75% of all space occupied for critical visual tasks. Provide automatic dimming controls or accessible manual lighting controls, and appropriate glare control.

**Low-Emitting Materials**
Specify materials and products with low pollutant emissions, including adhesives, sealants, paints, carpet systems, and furnishings.

**Reduce Environmental Impact of Materials**
**Recycled Content**
For EPA-designated products, specify products meeting or exceeding EPA's recycled content recommendations. For other products, specify materials with recycled content such that the sum of postconsumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost) of the total value of the materials in the project. If EPA-designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them should be included in all solicitations relevant to construction, operation, maintenance of, or use in the building.

**Biobased Content**
For USDA-designated products, specify products meeting or exceeding USDA's biobased content recommendations. For other products, specify biobased products made from rapidly renewable resources and certified sustainable wood products. If these designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them should be included in all solicitations relevant to construction, operation, maintenance of, or use in the building.

**Environmentally Preferable Products**
Specify products, such as low-emitting materials or products containing no toxic metals, that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose.

# SECTION 4 SITE DESIGN CRITERIA

## 4.1 GENERAL

A licensed Civil Engineer shall develop the site design. A Landscape Architect, with an active U.S. registration, shall develop the landscape planting plans utilizing only native (on-island) plant species.

Design of site elements shall comply with the Architectural Barriers Act Accessibility Standards

Relative to the Site design and development the A/E team shall subcontract for the acquisition of Topographic & Cultural Survey, Electrical and Telecommunications Engineering, to include: telephone, data, cable television and special systems; Civil Engineering to include, but is not limited to: grading, hydrology, site utilities, erosion control, drainage and paving. Geotechnical reports, Landscape Architecture, and traffic engineering. The survey limits shall include a sufficient area to cover the complete site as determined by the American Samoan Government including sufficient offsite locations of existing adjacent man-made structures, buildings, roads, water ways, utilities, i.e., water, sewer, electric and telecommunications. Refer all vertical elevations to permanent benchmarks based on actual geodetic datum (not assumed datum). The site limits survey shall be submitted to the American Samoan Government (ASG) for confirmation of property limits. Adjustments to the survey boundaries will be as required by the ASG. Design work shall not commence until the survey boundary has been approved by the ASG.

Comply with applicable Federal, State, and municipal laws, regulations, and permits concerning design and construction controls for environmental protection of aesthetics, air, water, and land. All the following regulatory categories apply:

- Storm water permits, e.g., National Pollutant Discharge Elimination System (NPDES) permit program
- Pollution control and solid waste disposal
- Erosion control and protection of land resources
- Protection of landscape
- Protection of water resources, wetlands, and areas preserved for wildlife

## 4.2 SITE DEVELOPMENT

Use originality and imaginative design between site and structures, vehicular and pedestrian circulation, visual elements, and open and screened area. Produce a plan that has both functional and aesthetic relationships and accommodates all phased improvements such that the construction of subsequent phases will not shut-down on-going operations at the hospital.

Consider impacts to site encumbrances such as drainage, rock outcroppings, existing utilities, utility easements, abrupt changes in topography, and protected or mature salvageable vegetation.

### 4.2.1 SIGNALIZATION STUDY

The A/E team shall conduct a traffic study to determine need for traffic signals / signage at the primary hospital entrance and shall work with the ASG to design the off-site entry intersection and signage / signaling requirements.

### 4.2.2 STORM WATER

Consider impacts on existing natural and man-made storm water drainage patterns and systems. Designs should comply with provisions regarding the control of storm water as prescribed by the Federal Water Pollution Control Act, the Federal Flood Disaster Protection Act, and other Environmental Protection Agency (EPA) regulations that are implemented by U.S. Federal government and the ASG. Provide a Hydrology and Hydraulics analysis and report in support of the proposed design.

### 4.2.3 CIRCULATION

Provide separate circulation systems for vehicular service and patient/visitor traffic.

Provide a loop type driveway to the drop-off at the front entrance to the building with access to the parking areas. The drop-off shall have canopy cover designed to accommodate public bus and shuttle services.

Design patient exterior areas that are conveniently accessible from the building without vehicular crossings and are oriented to the most favorable site climatic conditions.

### 4.2.4 LOCATION OF BUILDING AND EQUIPMENT

Ensure that the building property line setbacks are consistent with adjacent structures and local codes.

When locating the proposed building, structures, and equipment, consider topography, adjacent facilities, utility access requirements, environmental impacts, and future development to produce a design that is functional and aesthetically successful.

Provide landscape planting, grading, architectural screening, or fencing of exterior utility, mechanical, and electrical equipment for patient and personnel protection.

### 4.2.5 PATIENT USE AREAS

Design patient exterior areas that are conveniently accessible from the building without vehicular crossings and are oriented to the most favorable site climatic conditions.

### 4.2.6 GRADING DESIGN

Coordinate surface grades with architectural, structural, and mechanical design to provide proper surface drainage.

Consult soil classification data in the subsurface investigation (geotechnical report) in support of drainage concepts proposed as part of the Hydraulics and Hydrology analysis.

Use contours at a maximum interval of 1 foot to show grading of the entire project site. Utilize spot elevations as control points. Finish grades at face of building shall be a minimum of 8” below finish floor, except where grade has to slope up to concrete pads or walks at building entrances. Show any temporary (construction period) or permanent erosion control.

| Condition | Maximum Slope | | Minimum Slope | | Preferred |
|---|---|---|---|---|---|
| Lawns | 25% | 4:1**a** | 2% | 50:1 | 2- 10% |
| Turf athletic area | 2% | 50:1 | 0.5% | 200:1 | 1% |
| Berms and mounds | 20% | 5:1 | 5% | 20:1 | |
| Mowed slopes | 25% | 4:1**a** | | | 20% |
| Planted slopes and beds | 10% | 10:1 | 0.5% | 200:1 | 3-5%**b** |
| Road crown | 3% | 33.3:1 | 2% | 50:1 | 2.5% |
| Roads, longitudinal* | 20% | 5:1 | 0.5% | 200:1 | 1-10% |
| Walks, longitudinal | 10% | 10:1 | 0.5% | 200:1 | 1-5% |
| Parking, longitudinal | 5% | 20:1 | 0.25% | 400:1 | 2-3% |

a. The maximum slope for mowing machinery is 25%.
b. Slopes over 6% or facing tidal watersheds / ocean should have erosion protection.
c. Accessible routes used by people with disabilities shall conform to the criteria as herein referenced.

**General**: Provide complete dimensioned layouts for vehicular and pedestrian pavement, structures, and other components of the site and landscape design. Establish control for the layout by a base control line with dimensions from this line. Small scope projects may use property lines for control. Larger projects require coordinates on a grid system.

### 4.2.7 DESIGN OF VEHICULAR AND PEDESTRIAN PAVEMENT

Design the pavement to reflect topography, soils, climate, local materials, function, and other requirements and specific situations. The Geotechnical Report shall address and recommend ground preparation and pavement section design for the site.

**Pavement Construction**
Design pavement sections of all roads, service areas, fire apparatus vehicle accessibility areas, motorcycle parking and parking areas for the maximum anticipated traffic loads and existing soil conditions.

Construct service areas for truck dock, bulk oxygen storage, loading docks, utility buildings, and similar facilities of reinforced concrete. Concrete pads for MRI and PET scanner shall be strengthened by use of non-ferrous materials such as fiberglass.

Principal roads and primary service roads shall include 12’-0” travel lanes for two-way traffic (24’-0” wide between faces of curbs). Secondary service roads shall be 12’-0” between faces of curbs. Consider two-way traffic lanes where possible. One-way traffic plans shall have a minimum width of 12’-0”. Provisions shall be made for the temporary landing of 40 foot length shipping containers for off-loading operations at the Hospital supplies receiving dock. Container count to be as prescribed by the Owner.

**Curbs and Gutter**
Design all roads with integral concrete curbs and gutters per local standards and specifications. Substitute free-standing or extruded curbs only when justified.

**Curb Radii**
The radii of curbs at road intersections should be 30'-0" preferred, 25'-0" minimum.

**Curb Access Ramps (Curb Cuts)**
Provide curb ramps to accommodate people with disabilities as well as lawnmowers.

**Pavement Marking and Signing**
Provide locations and details of pavement striping and signing for parking, roadways, crosswalks, accessible parking and routes, and other special areas.

**Pedestrian Pavement Construction**
Design walkways to provide clearly defined, unobstructed, direct routes through the site, interconnecting site and building entryways, curb ramps, parking areas, pedestrian landscaped features, such as open area plazas, courts, atriums, and other site elements.

Construct walks of concrete. Reinforce the concrete pavement if subbase conditions warrant. Where pedestrian and vehicular pavements meet, thicken the subbase material.

Pedestrian wearing course material may be rigid unit pavers (bricks, stone sets, concrete units, large paving slabs, etc.). To facilitate use by people with disabilities, design a rigid base of concrete or asphaltic concrete beneath pavers.

Walks should be at least 60" wide, except 96" minimum where abutting parking stalls.

Design walks to accommodate people with disabilities. Eliminate steps unless unavoidable.

### 4.2.8 ENTRANCES TO BUILDING

Coordinate work at entrances to buildings based on the requirements in the Architectural Criteria. Particular reference is made to complying with vertical clearances of buildings and canopies over roadways and vehicular access areas.

Provide access for ambulance entry.

### 4.2.9 TRUCK DOCK

Design adequate space for truck maneuverability and parking of facility equipment, including trash dumpsters. Provide wheel path diagram to support turning movements of facility parking equipment, delivery, and waste removal vehicles. Provide a masonry screen wall to shield the truck dock and approach to the loading dock from view from the front of the site.

### 4.2.10 PARKING FACILITIES

Develop sufficient new parking so that the total number of facility spaces will be as required by local codes or prescribed by the Owner and based on the total anticipated buildout of the site for all improvement phases. Parking spaces for physically disabled people (handicapped) shall be based on 6% of total provided spaces of which a minimum of 4 shall be van accessible spaces. Locate these parking spaces convenient to an entrance accessible by physically disabled people.

Provide a parking tabulation on the contract drawings indicating the total number of parking spaces with subtotals for standard spaces, accessible spaces, motorcycle spaces, and van accessible spaces. Locate accessible parking spaces convenient to an accessible building entrance.

Provide parking tabulations for motorcycle parking on the contract drawings. Indicate the total number of spaces provided, using a ratio of one parking space for every 60 auto spaces. Motorcycle parking spaces shall be 4.5 feet wide x 8 feet long.

Reference Paragraph 0 for Parking Site Security Considerations.

Parking at angles other than 90 degrees may be used only when justifiable. Owner approval is required for deviation. Acceptable dimensions for 90 degrees parking angle are as follows.

| | MINIMUM BAY WIDTH | MINIMUM STALL WIDTH |
|---|---|---|
| If cars overhang curbs on both sides | 62'<br>Stall Length 18'<br>Aisle Width 26' | 9'-0" |
| If cars overhang curbs on one side | 62'<br>Stall Length 18'<br>Aisle Width 26' | 9'-0" |
| If cars will not overhang either curb or will be parked in the center bumper to bumper | 62'<br>Stall Length 18'<br>Aisle Width 26' | 9'-0" |
| Accessible Spaces | | 8'-0" x 18'-0" w/ 5'-0" access aisle on one side |
| Accessible Van Spaces | | 8'-0" x 18'-0" w/ 8'-0" access aisle on both sides |
| Motorcycle Spaces | | 4.5' x 8' |

Patient and Visitor spaces shall be 9'-0" minimum width unless the Owner approves deviation.

### 4.2.11 EQUIPMENT PADS

Locate utility transformers, cooling towers, generators, generator fuel tanks, gaseous tank storage, PET scanner pad and other equipment pads away from patient and visitor entries and outdoor activity areas, preferably adjacent to service area. To prevent injury to patients and personnel, enclose pad area with vinyl coated chain link fencing. Barriers and fencing shall comply with the requirements of the serving electric utility, where applicable.

## 4.3 LANDSCAPING DESIGN

Integrate the landscape planting design with the overall design of the site. The landscape planting shall compliment the architecture, preserve designated site features, facilitate vehicular and pedestrian access, create open areas and vegetative screens, and consist of plant material that promotes sustainable designs.

Select plants that are indigenous to the area, require little maintenance, and are disease and insect resistant. Select plant material that is nursery propagated from sources as close as practicable to the project area, that are indigenous to the area, locally available, low maintenance, and disease and insect resistant.

Do not select plants that are poisonous, highly aromatic, irritating, invasive or thorny. In parking and pedestrian areas avoid plants that drop fruit or sap. Locate plants so they do not interfere with driver or pedestrian visibility, circulation, and safety.

Plant bed outlines curvature shall have minimum radii of 3 feet. Design lawn areas to facilitate maintenance.

Provide metallic edging or concrete curbs around shrub beds (essential where Bermuda or similar grasses are grown).

Utilize ground cover on slopes steeper than 3:1, i.e., 3 feet to 1 foot.

Landscape sprinklers are not to be used.

## 4.4 SITE AMENITIES

### 4.4.1 FLAGPOLE

The A/E shall provide one (1) flagpole at a location to be approved by the Owner. Flagpole must extend at least 30 feet above the ground and shall be equipped with rope (external halyard) and one flag each. The Owner will provide the flags. This requirement will be waived if determined inappropriate by the ASG. Exterior lighting (two each light fixtures spaced a minimum of 20 feet apart, mounted on the building or at grade) shall be provided to illuminate the flags at night. Automatic dusk to dawn control for light fixtures shall be provided. Flagpole shall be located 100 ft from helipad landing / liftoff flight vectors

### 4.4.2 SMOKING SHELTERS

An exterior structure of approximately 150 square feet must be provided at the grade level parking structure below the main hospital entrance level for the purpose of providing shelter for patients, visitors, volunteers, and employees who wish to smoke. The structure shall be built away from and out of sight of the main hospital entrance or elevators into the hospital. The smoking shelter shall be architecturally compatible with the main structure and be oriented to the prevailing winds to prevent smoke from approaching or entering a hospital entrance, elevator, window, exterior non-smoking public gathering space or intake louver. The shelter must be at least 50 feet from any building entrance or elevator. The structure must be accessible to disabled persons. The structure must be naturally ventilated and shall be protected with an automatic fire sprinkler system. Provide suitable lighting for the smoking shelter; control with the other site lighting. Final location and quantity of shelters to be approved by the Owner.

### 4.4.3 CANOPIES AND COVERED WALKWAYS

Provide canopy at driveway at front entrance and covered walk leading to entry doors. Provide covered walkways from staff entrance to employee drop-off, and from building to ambulance pick-up. Provide cantilever canopy extending out over driveway at ambulance pick-up. Provide canopy at patient drop-off. Provide cantilever canopy at loading dock. Design of the covered walks shall be integrated with the building structure and architecture. Coordinate site lighting with walkways. Provide wet location rated fixtures below canopies and covered walks where necessary to maintain illumination levels for exterior walkways.

## 4.5 UTILITIES

### 4.5.1 WATER DISTRIBUTION SYSTEM

Design and construct system to provide adequate water service for maximum domestic and fire protection requirements.

Place isolation valves to provide control over reasonably sized areas. In addition, designate valves in fire hydrant branches and building service lines, near their connection to feeder mains.

Where reduced pressure backflow preventers are required, provide positive drainage.

Provide domestic water storage tank if required, due to either insufficient capacity or water pressure available on the site.

### 4.5.2 WATER SUPPLY FOR FIRE PROTECTION

Assess adequacy of the water supply. The Owner will verify the locations involved as well as the quality and accuracy of the data. Perform water supply flow testing as part of the A/E design effort.

Fire flows shall be available as required by NFPA 13 for the required occupancy classification. The fire protection design shall be sized for and make extension provisions for the anticipated future phase extensions of the system.

If used, provide capacity within the domestic water storage tank for fire reserve water as required by fire sprinkler design.

If a fire pump is necessary to supplement fire flow and pressure, size it to comply with NFPA 13 and 14.

Install the designed number of fire hydrants per code and the local authority having jurisdiction.

### 4.5.3 LAWN IRRIGATION SYSTEM

Lawn and landscaping sprinklers are not allowed.

### 4.5.4 SANITARY SEWERAGE SYSTEM

Design underground sanitary sewerage system, including building connections, manholes, clean-outs, cooling tower waste lines, and all appurtenances, in accordance with IPC and ASPE.

Combined waste/vent systems are not allowed. “Studor” type air admittance valves are not allowed.

Discharge cooling tower drains, overflows, and blow-down piping systems to the sanitary sewerage system. Provide air gaps to prevent cross connections between sewerage and water systems.

To the extent feasible, do not locate sewer pipes and manholes under pavement. Provide manholes at junctions, changes in direction, changes in slope, and changes in invert elevations of sewers 8 inch and above. Provide Clean-outs as required by IPC. Provide additional clean-outs if warranted due to site conditions. As much as possible, locate clean-outs outside the building in end of runs. Clean-outs shall always be located above the flood rim of fixtures.

Limit sanitary trunk sewers to not less than 8-inch diameter and sanitary sewer building connections to not less than 4-inch diameter. Establish sanitary sewer slopes to provide minimum velocity of 2 ft/s when pipe is flowing full; maximum slope shall be 9%.

Do not connect storm drainage system to sanitary sewerage systems.

If a lift station and pump are required, locate them outside of the building. If required, design sewage pumping system to discharge at maximum sewage flow rate with largest pump not operating. The sewage pump system shall be designed with redundancy in mind apply N+1 to the design.

### 4.5.5 STORM DRAINAGE SYSTEM

Design underground storm drawing systems, including drainage inlets (yard and curb), junction structures, manholes, open drainage channels and basins, dry wells, etc.

Comply with the requirements of off-site receptor of storm water. Retention will not be required as the storm drainage system will have direct access to the ocean. Coordinate off-site storm drainage design work with the Owner. Roof storage of storm water is not allowed.

Limit storm drainage piping to not less than 8-inch in diameter and building connections to not less than 4-inch in diameter. Establish storm piping slopes to provide minimum velocity of 2 ft/s when pipe is flowing full. Maximum storm drainage design velocity shall be in non-erosive range for specified pipe material.

Use engineering standard details for manholes, inlets, endwalls, and pipe cradles. Adjust master specifications as necessary.

Provide an adequate number of storm connections from each building.

Storm drainage system shall serve all areas under construction or affected by construction. Design storm drainage system and components based on storm frequency from local codes and methodologies. Comply with the requirements of off-site receptor of storm water. Do not connect storm drainage system to sanitary sewerage systems.

Do not drain outside building sub-soil drain tile to an interior sump pump. If a pump is required, locate it outside of the building.

### 4.5.6 GAS DISTRIBUTION SYSTEM

There is no Natural Gas system in American Samoa. Where required (kitchen, lab) propane system and piping shall be provided in accordance with the International Fuel Gas Code (IFGC).

### 4.5.7 ELECTRICAL SERVICE

Provide underground secondary-voltage electrical service from the serving electric utility. All requirements of the electric utility shall be met, including location of service source, above-ground and underground equipment locations, required easements and/or rights-of-access, above-ground equipment protection and screening requirements, location of required service disconnecting means and/or remote operation for service disconnecting means, as required by the local Authority Having Jurisdiction or utility, meter location and provisions for meter-reading access, co-location of service conductors in common trench with other utility services, and all other applicable requirements of the electric utility.

### 4.5.8 TELECOMMUNICATIONS SERVICES

Provide underground telephone service from the serving telephone provider. Sufficient capacity shall be provided at the Point of Presence (POP) for all telephone outlets identified in

this RFP, plus 50% spare capacity. Comply with all requirements of the telephone provider for cable installation, POP space and security requirements, and POP equipment and access provisions. All low-voltage underground cabling shall be installed in a partitioned 4-inch conduit with innerduct or approved equivalent and shall not share joint trenches with other incoming utilities.

## 4.6 EXTERIOR SIGNAGE

The A/E team shall design a complete exterior signage program to include identification, directional, informational, and regulatory signage. Signage not located on site shall comply with local municipality's codes and standards, except for monument sign. At each roadway entrance to the site furnish and install a sign, nominal size 18" X 24" on square bronze post, that reads, "NOTICE NO FIREARMS OR WEAPONS ALLOWED ON THIS PROPERTY 18 USC 930", to include universal NO WEAPONS logo. Furnish and install on the building wall adjacent to each building entrance, two (2) signs. One sign, nominal size 12" X 18", that states, "Firearms Prohibited". The second sign, nominal size 24" X 6", that states, "For Your Safety No Guns, Knives, or Other Weapons Allowed", to include universal NO WEAPONS logo. Careful consideration of the location of monument signs shall be taken to avoid sight triangle encroachment.

A/E team shall design a ground mounted, illuminated, horizontal monument sign to identify the Hospital main entrance. Provide foundations and electrical power as necessary. Base shall be concrete or masonry and shall be compatible with building design and landscaping scheme. Monument sign shall be a minimum of 5'-0" high x 12'-0" wide. Owner will furnish message content, and colors for the monument sign. Text layout by the Design Team. Graphic materials and installation method shall be as determined by the Owner.

A/E team shall design non-illuminated, wall mounted building identification signs of dimensional anodized aluminum letters and numerals with Owner's Logo. Letters and numerals shall be minimum 24 inches high. Logo shall be of design provided by Owner and shall be 56 inches high. Sign messages shall be as follows:

Facility Name: To be determined. Hospital logo shall precede facility name.

Address sign shall consist of numerals for the building street address.

Wall mounted building signs shall be prominently located to be visible from street approach in accordance with Owner approved building elevations.

## 4.7 FENCING

Design perimeter fencing. An ornamental picket fence, 8 feet in height, with a bronze finish, shall be required adjacent to the property line around the perimeter of the total site. Furnish motorized sliding gates that will provide full accessibility at all property entrances, with adjacent pedestrian swing gates minimum 48" clear width with self-closers. Motorized sliding gates shall be remotely operable from main reception desk, and security office. All gates shall have provisions for locking with a padlock and/or magnetic release. Fencing shall be Jerith Ornamental Aluminum fence, available from Hoover Fence Company, Industrial Style #202. Finish shall be baked on bronze. Main entry gate shall also have electronic lock with card swipe entry and in-ground sensor for exit. Concrete columns in fence line shall be spaced every 40 feet and at each corner, change of directions, and both sides of all vehicular gates.

The A/E shall specify an 8-foot high chain link fence around the perimeter of the site during construction for security and safety.

# SECTION 5 BUILDING DESIGN CRITERIA

## 5.1 GENERAL

The A/E team shall subcontract for the acquisition of building, Electrical and Telecommunications Engineering, to include: power, lighting, fire alarm, telephone, nurse call, audio-visual, data, cable television and special systems; Mechanical Engineering of: HVAC, plumbing, hydronics, medical gases, fire protection & controls. Structural Engineering for: parking structures, building, helipad, and seismic bracing of building systems. Interior Design, Medical Equipment Planner, Special Inspections Engineers and Class I & II drug vault design engineering.

## 5.2 STRUCTURAL

Structural design shall comply with International Building Codes, American Society of Civil Engineer (ASCE) Codes, American Institute of Steel Construction (AISC) Codes, and the American Concrete Institute (ACI). Structural members shall be of concrete, masonry, or steel.

### 5.2.1 FOUNDATIONS

The building foundation system shall be designed in accordance with the recommendations of the geotechnical report.

### 5.2.2 FLOOR LOADS

Minimum uniform basic design live loads shall conform to the International Building Codes as referenced herein and the locally adopted codes and as follows.

In order to provide a flexible design for occupancy changes in the future, generalized live load categories should be applied to large areas of the floor plate.

Where actual occupancy load requirements or concentrated equipment loads exceed the minimum uniform live loads, the areas in question shall be designed to meet the specific load conditions. These areas include, but are not limited to the following: MRI, Rotational chair in Audiology and audiometric sound suites in Audiology.

### 5.2.3 ROOF LOAD

Roof live loads shall be based on geographical location and local governing building code requirements; however, they shall not be less than 20 psf.

The Owner may install a rooftop mounted satellite system or other rooftop antennas for the building. The A/E Team shall provide a roof structure, which accommodates this system, and shall coordinate with Owner to provide the required structural mounting devices.

### 5.2.4 LATERAL FORCES

Design structures for lateral forces in accordance with local building code requirements for wind and seismic forces using importance factors for essential structures.

### 5.2.5 SPECIAL INSPECTIONS

The A/E Team shall comply with all third-party special inspection requirements of the local Authority Having Jurisdiction or as prescribed in the herein referenced codes & standards. The A/E Team shall specify the services of qualified, independent entities to provide special inspection services during construction. The A/E Team shall provide copies of the inspectors' reports to the Owner as evidence of compliance with Codes and the requirements of this solicitation.

## 5.3 ARCHITECTURAL

### 5.3.1 FOUNDATION DRAINAGE

Subsoil (foundation) drainage provides a means of removing water that may percolate to the footing level of a building foundation system. Reference the geotechnical report for specific percolation results. Provide a subsoil drainage system in accordance with site Hydrology and Hydraulics studies. Subsoil drains shall maintain a pitch as uniform as possible and shall drain to suitable outfall. No subsoil drainage piping shall traverse a building area to reach an outfall.

### 5.3.2 PATIENT ENTRANCES

Provide canopies over patient entrances to outpatient clinic. The canopies shall extend 2 feet beyond the curb lines to protect patients from inclement weather. To reduce the size and cost of canopies, locate the curb line near the entrance if compatible with other design considerations. Canopies shall be of the capacity to allow for vehicular traffic as drop off points. Provide a canopy over the loading/unloading zone at ambulance pickup with 13-foot vertical clearance from grade to underside of canopy. The canopy shall overhang the rear of the parked ambulance 4 feet.

### 5.3.3 AMBULANCE ENTRANCES

Provide ambulance entrance. Ambulance entrances shall include provisions for wheelchair and litter access.

Provide a canopy over the loading/unloading zone at ambulance entrance with 14-foot vertical clearance from grade to underside of canopy. The canopy shall overhang the rear of the parked ambulance 4 feet. The underside of the canopy shall be enclosed to prevent bird roosting and shall be designed for high winds in accordance with code requirements. Provide camera with sound under ambulance entrance canopy to monitor door at ambulance entrance for entrance by EMT and other authorized people. Camera (with audio) shall be connected to Security System.

### 5.3.4 LOADING DOCKS

A covered loading and receiving area shall be available in or adjacent to the building for the loading and unloading of equipment and supplies. The area shall be large enough to accommodate 2 semi-type and 1 two-ton van-type standard commercial trucks and shall provide adequate maneuvering space. Loading dock platforms shall be 4 feet above the driveway. Platforms shall have a minimum depth of 8 feet front to back or between dock lift/leveler and back wall. The surface of the concrete loading dock shall be sloped away from the building to preclude the possibility of water infiltration into the building. Provide a canopy over the platform with 14 feet of clearance from grade to the underside of the canopy. Provide

a stair or a ramp to the platform. Provide dock levelers and scissor lift. Provide electrical service and connections as required for complete installation.

Dock levelers shall be hydraulic with 25,000-pound capacity for recessed installation. Leveler platform shall be 8'-6" wide x 8'-0" deep.

Scissor lift shall be a stationary single type hydraulic dock (scissor) lift, 6,000 pound capacity, with 6'-0" wide x 8'-0" deep platform, designed for permanent recessed installation in a preformed concrete pit. Extend Canopy over loading dock out to cover dock lift. Dock lift shall comply with the following:

| | |
|---|---|
| Lowered Height: | 10" |
| Power Pack: | 5 HP remote |
| Piano Hinged Lip Size: | 72" Wide X 24" Long |
| Hinged Lip Type: | Spring assisted one piece |
| Safety Trip Bars: | Safety trip bars – four sides |
| Controls: | D39 Up-Travel NEMA 4X limit switch |
| | D42 Coil cord for push-button control – 20 ft. length |
| Safety Options: | C30 Safety indicator bars |
| | F20 Warning bell with volume control for up and down |
| | C28 Non-skid epoxy grit surface on deck |
| | C50 Interlock swing gates, double |
| | C34 Accordion safety skirting |
| Miscellaneous: | C25 Special alkyd enamel base paint |
| | C26 Rust inhibiting primer |
| | C27 Pit curb angles |
| | C39 Manual load lowering valve. |

### 5.3.5 CANOPIES OR COVERED WALKS

Provide canopies or covered walkways between buildings separated by exterior spaces. If canopies or covered walks extend over truck or bus traffic areas, provide 14 feet minimum vertical clearance for vehicular traffic.

Design and construct canopies, covered walks, eaves, and overhangs to eliminate nesting birds. Avoid ledges, offsets, and other features that could be nesting sites.

Canopies shall limit the amount of metals exposed to the elements. Exposed metals should be stainless steel or finished to resist tropical coastal environments. Ferrous metals protected by paint, galvanization or epoxy are not permitted.

### 5.3.6 ENCLOSURE SYSTEMS

Building envelope systems shall be designed with consideration for performance under local climactic conditions, appearance, durability, security, efficiency in construction, and maintenance and operating costs.

Design for heat loss or gain in accordance with energy criteria in this RFP. Provide vapor barriers at appropriate side of construction based on local climatic conditions.

Fire resistance of building envelope systems shall be as required by applicable codes for construction type and exposure.

**Exterior Walls**
Materials and colors shall be consistent with the overall design concept and structural requirements and provide the level of physical security required by this RFP. Walls shall be designed to prevent moisture penetration. Detail and construct moisture barriers, wall cavities and weeps, flashings, and other features as necessary to prevent damage to wall components or entry of moisture into building. Masonry parapet walls are potential sources of water penetration, unequal thermal expansion, additional structural loads, and increased costs. Proposed parapet walls must be justified by aesthetic, functional, or economic considerations.

Walls shall be designed by Structural Engineer. The weight of masonry curtain walls or veneer shall be supported by the structural frame at each floor.

Design walls for sound transmission control from external sources at sites near airports, freeways, or heavy city traffic.

**Fenestration**
The A/E Team shall provide fenestration (windows) consisting of fixed windows, or glazed storefront or curtain wall, including glazed entrance systems, consistent with the overall design concept. Size windows and select glazing and frame materials to meet the overall building envelope performance, climate / hurricane resistance, and sustainability requirements of this SFO.

Window sills/stools shall be a minimum of 18 inches above the finished floor.

Windows in examination and treatment rooms shall be designed to maintain patient privacy. Use clerestory windows, patterned or obscured glazing, or other methods as appropriate.

**Safety Glazing**
Glaze windows occurring in security exam rooms or security holding room with 7/16" thick laminated glass. Provide laminated glass for interior panes of double-glazed windows.

**Louvers and Screens**
Provide louvers in wall openings where required for ventilation. Design louvers and anchorage for wind loads in accordance with building codes. Louvers shall bear AMCA certified rating seals for air performance and water penetration ratings. Provide bird screens on mechanical ventilation supply and exhaust openings in exterior walls. Provide insect screens on the inside of louvered openings in exterior walls where there are no duct connections.

**Exterior Doors**
Entrance doors shall be automatic sliding anodized aluminum construction with safety glazing and shall comply with energy and sustainability requirements. Main Hospital Entry Doors shall be configured as a double entry door, creating a vestibule airlock with separate entry only / exit only vestibules.

Swinging exterior doors and frames, except entrance doors, shall be heavy duty, insulated, full flush, solid fiberglass construction. Exterior doors shall be weather-stripped, self-closing, and open outward. Door hardware shall comply with applicable portions of this solicitation. Provide latch guards and hinges with non-removable pins to deter tampering or unauthorized entry.
Doors for vehicular access, including doors to warehouse, spaces containing building service equipment, shall be overhead coiling doors. Nominal size of the door opening shall be 8’-0" wide x 10’-0” high. Doors shall be fully weather-stripped and include an electric operator and manual chain hoist operation. Doors shall be finished to resist coastal environment conditions.

Operator controls shall be located on the secure (interior) side of the opening and shall incorporate a cylinder lock. Provide safeties, including door edge sensors. Overhead door(s) shall not have vision lights. Provide for exterior operators that are key switched the same as the interior controls.

**Automatic Doors**
Design automatic doors to operate manually in event of power failure. Equip controls with safety devices for pedestrian protection. Provide door operator controls and equipment that are easily accessible for maintenance. Design automatic doors to open from both sides.

**Roofs**
Provide roofing systems to comply with building codes and fire resistance requirements. Design all roofs with slope to roof drains or gutters. Roofs shall not slope to level valleys but may have one-way slopes to gutters at gravel stop edges.

Size roof drains and overflow drains, scuppers, or gutters; and leaders or downspouts to comply with plumbing codes and to accommodate peak rainfall conditions in American Samoa. Locate drains at points of maximum deck deflection where possible. Coordinate roof drainage with site (storm) drainage. Where roof drain leaders do not connect directly to storm drains, provide scuppers under all sidewalks and flatwork to convey storm flow to site drainage system.

Design roofing systems (including anchorage of roof insulation to decks) for wind force resistance in accordance with Factory Mutual Global (FM-Global) Criteria:

- Loss Prevention Data 1-7, "Wind Forces on Buildings and Other Structures"
- Loss Prevention Data 1-28, "Insulated Steel Deck"
- Loss Prevention Data Technical Advisory Bulletin 1-29, "Loose-Laid Ballasted Roof Coverings"
- Loss Prevention Data 1-49, "Perimeter Flashing"

Use minimum 8-inch-high base flashing at walls and penetrations. Do not use pitch pockets or similar penetration seals. Where penetration is for conduit serving roof mounted equipment, route conduit through side of curb. At single pipe/conduit penetrations provide flashing devices consisting of spun aluminum base with neoprene caps. At multiple pipe/conduit penetrations provide prefabricated roof curb with sheet metal cap. Penetrations shall be routed through sides of curb.

The roof shall be maintained in a watertight condition at all mounting locations. Provide appropriate sized conduit sleeving and weatherproof box at roof end of conduit sleeve.

Shield roof-mounted equipment from view. Roof structures, such as penthouses and architectural screens, shall be compatible in appearance with the material, texture, color, and shape of the building.

Whenever mechanical equipment requiring periodic maintenance is installed on a roof, provide access to roof areas by industrial stair. Provide roof walkways with nonslip surfaces on access routes over roofs to mechanical equipment requiring recurrent maintenance. If the stair (or fixed ladder) is exterior to the building, provide means to prohibit unauthorized access to roof.

Design low slope roof systems in accordance with the recommendations of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual and this manual.

Acceptable low slope roof systems include but are not limited to the following roofing membranes with roof insulation:

- Bituminous built-up roofing systems
- Modified bituminous roofing systems
- Single-ply sheet roofing systems
- Fluid-applied roofing systems
- Decra metal shingle roof

Design low-slope roof systems with a positive slope a minimum of 1:24 (0.5 inch per foot) up to a maximum of 1:12 (1.0 inch per foot) to drains. Use tapered insulation, sloped structural systems, or level structural system with sloped fill to achieve the required slope.

**Clerestory Windows**
When provided, clerestory windows shall be self-supporting, aluminum framed style with fixed glazing. Lessor shall design, engineer, fabricate, and install skylights to meet building code requirements and as follows:

- Design for uniform live load of not less than 30 psf.
- Design for a concentrated load of not less than 250 lbs. applied to any framing member at a location that will produce the most severe stress or deflection.
- A one-third increase in the allowable stress for wind is acceptable where permitted by code but not in combination with any reduction applied to combined loads.
- Assume that compression flanges of flexural members receive effective lateral bracing only from anchors to the building structure and horizontal glazing bars or interior trim in contact on at least 50% of the member's total length.

Provide for expansion and contraction of metal skylight components resulting from an ambient temperature differential of not less than 120 ˚F.

## 5.4 EQUIPMENT

### 5.4.1 GENERAL

The A/E Team must include supporting construction, HVAC systems, utilities, and electrical distribution systems for Owner furnished equipment to be installed in the Hospital.

The A/E Team shall include provisions for necessary support and attachment of equipment items including, but not limited to, structural reinforcement of wall, floor or roof construction, and blocking or backing in walls and ceilings. Comply with equipment manufacturer's requirements for tolerances for supporting structure and surfaces.

The A/E Team shall provide HVAC systems necessary to supply and exhaust the clinical spaces, laboratories, and other areas that contain special equipment, including provisions for supply or exhaust connections directly to special equipment items when required for installation and/or operation of the equipment, as part of the rental consideration.

The A/E Team shall provide building equipment and utility systems including but not limited to piping, water treatment equipment, sanitary or laboratory waste systems, medical or laboratory gas, compressed air, and vacuum systems as required for the installation and operation of the special equipment items as part of the rental consideration.

The A/E Team shall provide electrical service necessary for special equipment items, including service from emergency source for designated items or locations, as part of the rental consideration.

The A/E Team shall include fees for a medical equipment planner to conduct end-user meetings to review Schedules B & F and to generate an equipment binder listing all Owner furnished equipment. Provide data sheets for each item that show information required for proper design of the building's infrastructure; i.e., heat load calculations, space layout requirements and proper utility sizing and connection locations. Data sheets shall be in a standard 3-ring binder, collated, with tabs for sections and an index.

The A/E Team will identify equipment sizes, weights and special requirements and make accommodations in the building structural systems for support, anchoring and seismic resistance. All equipment installation approaches including: elevators, doors, and corridors, shall be designed to permit the route of installation to accommodate the equipment crated dimensions and transport point load weights. Floor finishes shall be identified that will be damaged by the anticipated transport point loads and a surface protective shall be specified of sufficient thickness to prevent floor finish damage.

### 5.4.2 OWNER FURNISHED SPECIAL EQUIPMENT

The A/E Team shall submit lump-sum pricing with annual escalation provisions out to a period of 5 years for the purchase and installation of special equipment items specified in Schedule B for laboratory and clinic areas. The price for each item in Schedule B shall include only the direct costs of obtaining and installing the item.

Special equipment items shall be listed by room type for each functional area within the Hospital by the Medical Equipment Planner.

Special systems and equipment (including special electronic safety and security systems) applicable to the Hospital shall be listed separately.

Construction documents shall identify this equipment as being supplied by the Owner but installed / connected by the general contractor or equipment supplier specialist.

### 5.4.3 OWNER FURNISHED OWNER INSTALLED EQUIPMENT

The A/E Team shall coordinate with the Owner to identify and reference within the construction documents all Owner supplied & installed equipment.

The A/E Team shall list, by room type, for each functional area within the Hospital all Owner supplied & installed equipment.

The A/E Team shall identify all Owner supplied & installed equipment requiring connections to the building systems and make provisions for connection to those systems providing the required: connection type, size, capacity and service to enable the equipment to be installed, connected and made fully operational.

The A/E Team will identify any required service and operational clearances for Owner supplied & installed equipment and shall adjust the space design to make provisions for the required service and operational clearances.

## 5.5 MECHANICAL

### 5.5.1 INTRODUCTION

**General**
The A/E shall use the contents of this document to provide the design to install, test, adjust, balance, and commission the HVAC systems in a trouble-free working manner to provide comfort and safety to patients, staff, and visitors. The systems shall operate within the specified parameters.

**Equipment Location and Installation**
No HVAC equipment is permitted to be roof mounted. This includes Air-Handling Units, Cooling Towers, Chillers, DX Condensing Units, and Fans. Provide details for the installation of all HVAC Equipment, including supports, bracings, and other mounting devices to withstand seismic forces as required by the Codes and Standards. The design of the bracing and supports shall be certified by a registered professional structural engineer.

### 5.5.2 APPLICABLE CODES AND CRITERIA

See Paragraph 3.2.1, ADOPTED CODES, STANDARDS, AND GUIDELINES.

### 5.5.3 HVAC DESIGN CALCULATIONS

The HVAC Cooling Design calculations shall be based on the following parameters, as determined by American Samoa:
Outdoor Design Conditions: 91F DB, 82F WB.

These values are based upon evaluation of ASHRAE Handbook of Fundamentals published criteria (as outlined below), with modifications due to an evaluation of the differing conditions at specific locations on the island.

**ASHRAE published criteria for Outdoor Design Conditions**

**Cooling Mode – Air Handling Units)**
0.04%, Monthly Design Dry bulb and Mean Coincident Wet Bulb Temperatures.

**Heating Mode**
There is no Space Heating required in American Samoa, except for Terminal Unit reheat.

**Indoor Design Conditions**
Base the design on the parameters listed in ASHRAE 170 for Healthcare functional areas, and ASHRAE 62-1-2019 for non-Healthcare functional areas.

**Healthcare Functions**
- Surgery and Post Anesthesia Recovery Areas
- Radiology
- Diagnostic, Treatment, and Exam Rooms
- Labs
- Central Medical and Surgical Supply
- Waiting Areas

- SPS
- Isolation Rooms
- Other areas referenced in ASHRAE 170

**Non-Healthcare Functions**
Provide minimum 4 (total) air changes/hour for the following non-healthcare areas:

- Offices
- Classrooms
- Conference Rooms
- Entrance Lobby
- Lounge
- Circulation Spaces
- 70 ˚F @ 30% Relative Humidity (Heating Mode)
- 75 ˚F @ 50% Relative Humidity (Cooling Mode – RH is uncontrolled)

Reference: Outside air per ASHRAE 62-1-2019 (and all addenda) as well as ASHRAE 170 if applicable.

**Food Service**
- Kitchen
- 70 ˚F to 74 ˚F (Heating Mode)
- 82 ˚F to 84 ˚F (Cooling Mode)

- Dining Areas
- 70 ˚F @ 30% Relative Humidity (Heating Mode)
- 75 ˚F @ 50% Relative Humidity (Cooling Mode)
- (RH in cooling mode is uncontrolled)

**Unoccupied Mode**
Non-sensitive areas shall be provided with a night setback, 70 to 75 F.

**Heating and Cooling Capacities**
**General**
Using the methodology given in the latest edition of ASHRAE Handbook of Fundamentals, the Engineer shall provide computerized calculations showing computation of the cooling and heating capacities of the occupied spaces. The Engineer shall coordinate with the project-specific ancillaries – Latest Edition of ASHRAE Handbook of Applications (Health Care Facilities) and obtain such data as equipment load, exhaust air volume, pressurization requirements, and the required hours of the system operation per day to establish the cooling and heating capacities and system zoning.

**Calculation Details**
The computerized calculations shall show such entities as:

- Room-By-Room Peak Cooling and Heating Loads
- Room-By-Room Air Balance Sheets, showing supply, return, exhaust, make-up, and relief air volumes
- Zone cooling and heating loads (a zone is defined as a central cooling and heating apparatus serving a group of rooms)
- Psychometric Analysis

**System Losses**
The calculations shall include minimum 12% to the calculated load to account for:

- Fan Motor Heat
- Duct Heat Pick-Up
- Duct Leakage
- Assumed Safety Factor
- Reference: ASHRAE Handbook of Applications

### 5.5.4 HVAC SYSTEM SELECTION CRITERIA – AIR SIDE

**General**
Selection of the airside of the HVAC systems shall be based on the following:

- All-Air Systems
- Fan Coil Units (limited applications)
- The use of PTAC (Packaged Terminal Air Conditioners) and Terminal Heat Pumps is NOT permitted, except in particular cases (electric rooms, elevator equipment rooms, etc) where 24/7 air conditioning is required and chilled water is not available or desirable to use. These must be approved by the SEB on a case by case basis.

### 5.5.5 ALL-AIR SYSTEMS

**General**
Provide an all-air system, with dedicated 100% Outside Air (OA) Make-up Air Units (MAU) and Air Handling Units (AHU's) serving all bona fide healthcare areas of the hospital. .

The AHU's / MAU's shall be:

- ARI Certified
- Factory-Fabricated and Tested
- Modular Design with Solid Double-Wall Construction – no interior insulation
- Interior 304 stainless-steel lining
- Seismically rated
- Sound attenuators if required by the design
- Run-around Heat Pipe for humidity control without HHW or electric reheat

Provide IAQ (Indoor Air Quality), double-sloping drain pan to ensure immediate removal of condensate. Provide a Variable Air Volume system (VAV), utilizing Variable Frequency Drives (VFD's) for fan speed control on all AHU's and MAU's.

**Zoning**
Provide multiple air-handling units to ensure flexibility and energy efficiency. Capacity of a single air-handling unit shall not exceed 50,000 CFM. Provide dedicated air-handling units as required by ASHRAE 170 or as required for proper thermal control.

When the rooms of differing requirements are grouped together, the serving common air handling unit shall be selected to meet the most stringent room requirements as outlined in ASHRAE Standard 170-2021. These requirements are:

- Filtration Requirements (this includes the status of after-filters)
- Indoor Design Conditions (this includes temperature and relative humidity)
- Hours of Operation

## AHU and MAU Components and Specifications

### General

Provide complete and fully functional Air Handling Units (AHU's), and 100% OA Make-up Air Units (MAU's) in number and capacity as required by the design. All AHU's and MAU's shall be from a single manufacturer, who is currently and has been engaged in manufacturing and selling AHU's for at least a consecutive ten-year period. Each AHU and MAU shall be installed on a steel or concrete curb. Provide N+1 AHU's and MAU's for all critical applications, and coordinate specific design with the Owner.

### Filtration

Per ASHRAE 170.

### Humidification

In general, based upon 91F DB and 82F WB OA conditions, humidification is not generally required. If required, where building steam is available, use an unfired steam-to-steam generator to produce low-pressure clean steam for serving the unit-mounted or main supply air duct-mounted steam humidifiers. Use RO (Reverse Osmosis) water to produce clean steam. If required, and if building steam is not available, provide a propane-fired, stand-alone steam generator for the steam humidifier. Use of the electric, stand-alone steam generator should be considered as a last option.

### Dehumidification

Based upon the OA conditions of 91F DB / 82F WB, dehumidification at each AHU/MAU will be an important consideration of the design. Chilled water from the Central Plant shall be provided at 38F to aid in the dehumidification process. Reheat at the AHU's and MAU's shall be provided with non-electric and non-heating hot water systems. Consider both run-around heat-pipes and heat wheels. Heat pipes are generally considered superior due to the lack of moving parts and the eventual required replacement of the media in heat wheels.

### Variable Frequency Drives

Specify a variable frequency drive to be part of either the AHU Manufacturer or the Controls Contractor SOW.

### Air Terminal Units

Provide pressure-independent, DDC-controlled, variable air volume (VAV) and constant volume (CV) Terminal Units (TU's). Provide integral reheat coils using HHW for all TU's. Provide modulating control with hot water as the heating medium. Provide capability to adjust the air volume between the high and low limits either locally or by the DDC controls. Terminal units shall be of double galvanized steel wall construction with insulation between the panels. Provide 2" 1.0#/CF density external insulation for the TU casing, foil faced.

## Room Temperature Control

### General

A space is defined as individually-controlled when it is equipped with a dedicated air terminal unit controlled by a dedicated room temperature sensor. The temperature sensor shall be wall-mounted with adjustable set point.

### Individual Room Temperature Control

Provide individual room temperature control for the following spaces:

- Occupied Corner Spaces with two or more exposed perimeter walls
- Spaces listed below (Interior or Perimeter)
    - Conference Room
    - Laboratory

- Pharmacy
- Eye Clinic
- Minor Procedure Room
- Diagnostic and Treatment Room
- Classroom
- Entrance Lobby
- Break Rooms
- Dining Room
- Kitchen
- Clean Preparation and Storage Room
- Soiled or Decontamination Room
- Mail Room

**Zone Temperature Control – Perimeter Spaces**
A single terminal box can serve as many as three perimeter spaces if these spaces are located on the same exposure and have identical load characteristics, such as offices or examination rooms.

**Zone Temperature Control – Interior Spaces**
A single terminal box can serve as many as four interior spaces if these spaces have identical load characteristics, such as offices or examination rooms.

**Temperature Control – Interior and Perimeter Spaces**
A single terminal unit cannot serve perimeter and interior spaces, including circulation spaces.

**Temperature Control – Open Spaces**
Open spaces with exposed perimeter and interior spaces shall be divided into two sub-zones, perimeter and interior. Each sub-zone shall be served by a dedicated air terminal unit. Open spaces are defined as the spaces without floor to ceiling partitions.

**Air Distribution Arrangement**
Provide fully ducted supply, return, and exhaust air systems between the fans and inlets/outlets. Use of partial or common ducted return air arrangement is not acceptable. The use of the ceiling space between the structural ceiling and suspended ceiling space as a supply, return, or exhaust air plenum is not permitted.

**AHU Controls**
**General**
Provide a fully functional automatic control system to ensure comfort and energy efficiency from full load to part load conditions, with integral safety features to protect the occupants and equipment. Provide with full DDC Controls.

**System Components and Minimum Sequences**
Provide Variable Frequency Drives (VFD's), motorized control valves, automatic dampers, airflow measuring devices, a static pressure sensor, chilled-water flow meters, temperature, pressure, and humidity sensors, humidifiers, smoke detectors and smoke dampers, as required, to address such sequences as:

- Supply Air Temperature Control
- Fan Speed Control
- Provision of Minimum Outside Air from Full Load to Part Load
- System Start-Up
- Morning Warm-Up and Night Setback Cycles
- Smoke Detection
- Alarms

**Process and Instrumentation Diagram (P&ID)**
Provide complete P&ID indicating all AHU/MAU control components and control system logic.

### 5.5.6 FAN COIL UNITS

**General**
Consider the provision of a 2-pipe fan coil unit system for individual un-occupied spaces not required to be provided with an all-air system and not required to be provided with OA. Cooling only fan coil units are permitted, where year-round cooling is required for applications, such as elevator machine room, telephone room, and small and isolated computer rooms. Provide at least one fan coil unit for each room.

**Fan Coil Units – Type**
Fan coil units shall be double galvanized steel wall construction with insulation between the panels, and of the following types:

- Vertical Floor Mounted
- Horizontal Exposed

**Fan Coil Units Controls**
Provide modulating controls for the cooling coils.

### 5.5.7 REFRIGERATION SYSTEMS – CHILLED WATER AND DIRECT-EXPANSION (DX) SYSTEMS

- Provide ARI certified, air-cooled or water-cooled refrigeration units.
- Use EPA approved refrigerants (HFC-134a, HFC-410a, or HCFC-123).
- Use of HCFC-22 refrigerant is not permitted.

Provide multiple units (minimum two) to ensure flexibility and efficient part load operation. Use of reciprocating compressors is NOT permitted. Equipment efficiencies shall be in compliance with the DOE, FEMP program.

### 5.5.8 CHILLED WATER SYSTEMS

**General**
Capacity of a single air-cooled chiller shall not exceed 200 tons. Capacity of a single water-cooled chiller (Centrifugal or Rotary Screw) shall not exceed 1,250 tons. Provide multiple chillers to ensure reliability and efficient part load operation, in either an N+1 or N+0.5 configuration, as approved by the SEB. The chilled water system shall provide chilled water to all AHU's and MAU's.

**Chiller Controls**
Each chiller shall be equipped with a factory-installed and tested microprocessor for the safety and operating controls. The microprocessor shall be able to interface with the building DDC (Direct Digital Controls) controls with a BACNET open protocol arrangement. Upon a loss of communication with the DDC System, the factory provided chiller controls shall maintain operation and functionality.

**Chilled Water/Condenser Water Piping/Pumping System**
Provide a fully functional chilled-water piping and pumping system complete with accessories and devices, such as variable-speed drives, flowmeter, and temperature and pressure sensors. Selection of the piping and pumping arrangement shall be project-specific. Provide variable flow chilled-water pumping (variable primary or primary-secondary) system to ensure

energy efficient operation from full load to part load conditions. Chilled Water and Condenser Water Pumps shall be provided with 100% backup (N+1) capability.

**Cooling Tower**
**General**
Provide CTI-certified, corrosion-resistant, gravity-flow cooling tower(s) in induced-draft configuration to cool the condenser water. Towers shall be sized to provide 50% backup, in an N+0.5 capability.

**Cooling Tower Location**
Locate cooling tower to ensure that:

- Tower installation and noise is not objectionable and in compliance with the local ordinance. Provide low noise level fans and attenuators as required to meet the noise levels.

- Discharge from the cooling tower does not find its way into outside air intakes and open windows of the adjoining spaces to create a potential for the Legionellosis disease.

**Tower Accessories and Controls**
The cooling tower installation shall be accessible and complete with a walking platform and a ladder safety cage.

**Water Treatment**
Provide a complete and fully functional water treatment system using non-toxic chemicals approved by EPA and local authorities.

### 5.5.9 DIRECT-EXPANSION (DX) SYSTEMS

The use of DX systems, packaged or split-system, is limited to particular cases (electric rooms, elevator equipment rooms, etc.) where 24/7 air conditioning is required and chilled water is not available or desirable to use. These must be approved by the SEB on a case-by-case basis. DX systems shall be used in as 100% back-up system for the Pharmacy vault, telephone equipment room, and critical isolated computer rooms.

### 5.5.10 HEATING SYSTEMS

**General**
Provide heating hot water and/or steam boilers to meet the TU (Terminal Unit) reheat space heating and domestic hot water heating demand. Provide at least two boilers each of 50% capacity to ensure flexibility. Provide 100% back-up (N+1) for the circulating pumps.

**Selection Criteria**
Selection of steam and/or hot water boilers shall be based on the following:

- Total heating load
- Total steam demand for winter humidification, sterilizers, kitchen equipment
- Domestic hot water load
- Location of heating equipment according to the HHC
- Boiler system(s) shall be designed to be EXEMPT from and national or local AHJ requirements for “Stand-by Boiler Operator”

**Boiler Fuel Selection and Choice**

- Use #2 diesel oil.
- Provide complete fuel oil system, including boiler, vents, piping, day tank, controls, and all necessary appurtenances for a complete functional system.

**Hot Water Heating Piping/Pumping System**

- Provide a fully functional heating system complete with circulating pumps and insulated piping.
- Provide two-way modulating control valves to vary flow at part-load conditions.
- Provide variable speed drives for the hot water circulating pumps for sizes larger than 5.0 HP.

### 5.5.11 PIPING SYSTEMS – BASIC REQUIREMENTS

**Pipe Material**

Steel, ASTM A53, Grade B, seamless or ERW, schedule 40 for condenser water (inside buildings), chilled and heating hot water (>2”), and vent pipes.

Copper Water Tube (Option): ASTM B88, Type K or L, hard drawn. Soft drawn tubing, ¾-inch and larger may be used for run outs to for fan coil units.

CPVC, Schedule 80, ASTM F441/F441M, for condenser water outside buildings. Neither PVC nor CPVC is allowed for pressure systems inside any building.

Use steel or copper carrier prefabricated, insulated, with jacket for chilled water piping for underground applications.

**Chemical Feed Water for Condenser Water Treatment**: Chlorinated polyvinyl chloride (CPVC), Schedule 80.

**Minimum Pipe Size**

Minimum pipe size in all applications shall not be less than ¾-inch.

**Pipe Sizing**

Select pipe sizes based on the ASHRAE or ASPE recommendations and the need to provide an energy-efficient design.

**Piping Connections**

**Shutoff Valves**

Provide shutoff valves to isolate each piece of equipment, such as chillers, boilers, cooling tower, pumps, coils, air terminal units, and terminal heating units requiring isolation, service, and/or replacement.

Provide drain lines at low points and air vents at high points.

**Isolation Valves**

Provide zone isolation valves to control groups of equipment, by floor and by air handling unit system.

**Strainers**

Provide in-line strainers to protect equipment, such as cooling and heating coils and control valves.

**Check Valves**
Specify check valves on the pump discharge side with two pumps operating in parallel.

**Flexible Connectors**
Provide flexible connectors at the pump inlet and outlet connections.

**Water Treatment – Closed-Loop Systems**
Specify chemical shot feeder for the closed-loop chilled water and hot water systems.

**Water Treatment – Open-Loop Systems**
Specify water treatment chemical, pumps, tanks, and controllers for the control of algae, legionella, and scale.

**Piping Specialties**
Specify expansion tanks and air separators for the chilled water and hot water closed-loop systems.

**Make-Up Water Connections**
Specify make-up water connections with reduced pressure backflow preventer for the expansion tanks.

**Instruments**
Specify pressure gauges and thermometers at the pumps and coils and at the equipment requiring measurements of the pressures and temperatures.

### 5.5.12 AIR DISTRIBUTION SYSTEM

**Compliance**
All air distribution systems (supply, return, exhaust, relief, and outdoor air) shall be fabricated in accordance with SMACNA Standards.

**Duct Material**
Ductwork, casings, and accessories (e.g., volume dampers, turning vanes, elbows) shall be fabricated from galvanized sheet steel, ASTM A527, coating G90. As an optional material, aluminum sheets complying with ASTM B209, alloy 1100, 3003, 5052 can be used.

Use 18-gauge welded stainless steel ducts with liquid-tight continuous welds for all seams and joints for any "wet exhaust" systems. Wet exhaust systems are meant for dishwashers, cage washers, cart washers, scullery hoods, steam sterilizers, and ethylene oxide sterilizers.

For special exhaust systems serving fume hoods and biological safety cabinets, use welded stainless steel (ASTM A167, Class 302 or 304).

Use duct material in compliance with NFPA 96 and UL labeled for grease exhaust.

Use of fiberglass ducts, concrete ducts, and underground ducts is not permitted.

**Design Parameters**
**Minimum Duct Sizes**
- 8 inches x 6 inches for rectangular ducts
- 6 inches for round ducts

**Recommended Duct Velocities**
Select the duct velocities and limiting static pressure drops in accordance with ASHRAE and SMACNA requirements. The selection shall address such issues as the noise levels, energy conservation, and the prescribed limits on the total fan static pressure as specified in ASHRAE 90.1.

**Ductwork Accessories**
Indicate a manual volume damper at each low-pressure branch duct takeoff. Show all fire and smoke dampers and duct smoke detectors on the floor plans. Provide a Schedule on the Drawings listing every fire damper, every smoke damper, every duct smoke detector, including manufacturer, model, size, location, and any and all selection criteria.

**Air Outlets**
Provide anodized or epoxy coated or powder-coated supply, return, and exhaust air outlets and inlets to ensure uniform distribution of air and avoid spot cooling and dead-end spaces without circulation.

### 5.5.13 INSULATION

Specify duct and piping insulation as follows:

Note: Typically, Supply/Return/Exhaust Air ductwork and piping are specified to be insulated in accordance with ASHRAE Standard 90.1. Over the years, this system has proven insufficient to control humidity at the existing hospital on American Samoa.

Based upon field conditions experienced, specify the following systems:

a) Supply and return air ductwork to be insulated includes main and branch ducts to/from AHU discharge to TU's, from TU's to room supply outlets, **and the backplanes of ceiling outlets** to prevent condensation. This includes MAU discharge to AHU inlet plenum. To prevent condensation, insulate trapeze type supports and angle iron hangers that are in direct contact with metal duct

b) Insulate supply and return air ductwork with 2 separate layers of 1.5" thick, 1 lb. density (1PCF) fiberglass, un-installed "R" value 5.6, installed "R" Value 4.5, Johns Manville Microlite XG, or equal. First layer shall be unfaced. Second layer shall be same as first layer, but with FSK Aluminum Foil facing. Minimum permeance of facing to be 0.02 perms per ASTM E96.

c) Insulate exhaust air ductwork with 1 layer of 2.0" thick, 1 lb. density (1 PCF) fiberglass, uninstalled "R" value 6.0, installed "R" Value 7.4, Johns Manville Microlite XG, or equal. Insulation shall have FSK Aluminum Foil facing. Minimum permeance of facing to be 0.02 perms per ASTM E96.

a) Insulate chilled water piping with three (3) 1" thick layers, for a total thickness of 3". Elastomeric insulation for heating hot water piping shall be 1.5" thick, single layer. Each layer shall be applied with 100% coverage adhesive. The outer layer of elastomeric foam insulation shall be covered with JM Zeston PVC pipe covering with Flame and Smoke Developed ratings of <25 and <50.

### 5.5.14 DDC Controls

Specify an Automatic Temperature Control field monitoring and control system using field programmable microprocessor based units.

Base system on distributed system of fully intelligent, stand-alone controllers, operating in a multi-tasking, multi-user environment on token passing network, with central and remote hardware, software, and interconnecting wire and conduit.

Provide sequence of controls provided on drawings.

Include computer software and hardware, dynamic graphics, operator input/output devices, control units, local area networks (LAN), sensors, control devices, and actuators.

Include controls for variable air volume Terminal Units, reheat coils, fan coils, and all HVAC equipment.

Provide control systems consisting of thermostats, control valves, dampers and operators, indicating devices, interface equipment and other apparatus and accessories required to operate mechanical systems, and to perform functions specified.

Include installation and calibration, supervision, adjustments, and fine tuning necessary for complete and fully operational system.

All operator stations and field DDC control panels provided under this Section shall be native BACnet compatible such that gateway or translator devices are not required when connecting a BACnet device provided under this Specification to other native BACnet compatible devices. The DDC control system shall be BACnet compatible at the time of installation.

Native BACnet compatible as defined in this Section shall mean that the following hardware to hardware communications shall take place using the protocols and local area network (LAN) standards defined by ASHRAE STD 135 BACnet:

- Field DDC control panel to all other field DDC control panels.
- All field DDC control panels to all operator stations.
- Operator station to all other operator stations.
- Where an individual piece of HVAC equipment is specified to be BACnet compatible, for example a chiller or boiler, communication between said piece of equipment and the field DDC control panel shall be BACnet compatible as specified herein.

### 5.5.15 SPECIAL APPLICATIONS

**Provide ASHRAE 170 design criteria for the design of all Special Application areas, including:**

a) Isolation Exam Rooms

b) Clean/Sterile Storage

c) Soiled Storage

d) Restrooms/Housekeeping

**MISCELLANEOUS AREAS:**

The following areas shall have multiple independent air conditioning systems, comprised of:

1) a dedicated and thermostatically- controlled terminal unit, and
2) a split system cooling only air conditioner for use after normal operating hours and as a back-up system.

- Elevator Machine Room:
- Telephone Equipment Room (TER):
- Main Computer Room:

**General**
Provide design to serve the Radiology Suite. Coordination with the MRI vendor is critical, as the mechanical system requirements shall depend upon the actual make and model number. HVAC system shall be dedicated unless it can be connected to any other system without compromising the design parameters.

**Flammable and Combustible Liquids Storage Room**
Provide dedicated exhaust ventilation system to maintain the space under negative air balance. Select fan, motor, and ductwork to be suitable in materials and capacity for exhausting the particular chemicals that are stored in compliance with NFPA 30 (2021). Exhaust fan shall run continuously and shall be served from the emergency power circuit.

**Storage Rooms – General Utility**

- **Internal Storage Rooms:**
  ≤ 50 sq. ft. = No HVAC requirements.
  51-120 sq. ft. = Exhaust at rate of 0.5 CFM/sq. ft.
  ≥ 121 sq. ft. = Supply air from non-dedicated Terminal Unit at rate of 0.50 CFM/sq. ft. Exhaust from room at rate of 0.6 CFM/sq. ft. No temperature or humidity requirement.
- **Perimeter Storage Rooms:**
  Provide ventilation and cooling per the larger of a) same requirements as Internal Storage Rooms, or b) cooling load based upon load calculations.

**Laboratories**
Design HVAC systems to comply with NFPA 45 with 100% exhaust and negative air balance.

Provide dedicated exhaust systems for the fume hoods and Biological Safety Cabinets (BSC). Ductwork, fans, and motors shall be suitable to handle the chemicals. Exhaust from the hoods and BSC shall be discharged from the roof at appropriate velocity to ensure that contaminated air does not enter into outside air intakes and open windows.

**Fire Pump Rooms**
Specify ventilation NFPA 20 (2019). Provide dedicated and controlled equipment.

**Mechanical Equipment Rooms**
Provide outside air and refrigeration exhaust system with all required appurtenances and controls in accordance with ASHRAE 15-2019 and addenda. Provide dedicated AHU or Fan Coils with cooling capability as required per load calculations.

**Atrium Smoke Control**
If an atrium is part of the A/E design, a Registered Fire Protection Engineer shall design, stamp and sign the engineering drawings and calculations for the atrium smoke evacuation system in accordance with the IBC and NFPA 92B (2009). Design shall be coordinated with Architect and the SEB, as implementation of this system can significantly affect space planning. SEB approval for the final system design shall be obtained by the A/E and incorporated into the Submittal packages.

**RADIOLOGY**
**General**
Provide details of penetration of lead lining by the HVAC ductwork, that shall be coordinated with the equipment manufacturers.

**Inside Design Conditions**
Use ASHRAE Standard 170.

**Dedicated AC Unit**
Evaluate the need for a dedicated AC unit to meet the cooling demand of the equipment load due to computers and other equipment. Coordinate the heat dissipation with the equipment manufacturer.

**Air Distribution**
Coordinate air distribution with the raised floor where installed in specific rooms. Ensure supply of minimum ventilation room for the spaces cooled by 100% re-circulating AC unit. Maintain room air balance as recommended by ASHRAE Standard 170.

**General Exhaust Systems**
Ventilate spaces, such as toilets, janitor's closet, soiled utility rooms, and bathrooms, at the rate specified in ASHRAE Standard 62.1 and 170.

**Wet Exhaust System**
Provide dedicated wet exhaust system for washers in the kitchen, SPS (Surgical Processing and Supply), and Distribution / Logistics areas. Provide welded stainless-steel ductwork. Coordinate exhaust air volume with the equipment data.

**Vestibules**
Ventilate vestibule by maintaining positive air balance, i.e., supplying air without taking return air back.

**STAIRWELLS**
If the Hospital is classified as a high rise by IBC definition, provide design for stairwell pressurization as required by NFPA 92 (2015).

**Urgent Care and Radiology Waiting Rooms**
Design in accordance with ASHRAE 170.

**ENHANCED CARE / SPECIALITY TREATMENT AREAS**
The following areas require special HVAC systems as indicated below:

Operating Rooms
Procedure Rooms
Special Procedure Rooms
Treatment/Procedure Rooms
Bronchoscopy Rooms
Cystoscopy Rooms
Catheter Lab
Wound Care Rooms
Urology Treatment Rooms
Endoscopy Rooms
Isolation Rooms

**General**
Provide a dedicated terminal unit for each of these Enhanced Care/Specialty Treatment areas with minimum outside air change rates, total air change rates, and pressure relationships in accordance with ASHRAE 170. For areas listed above but not specifically listed in ASHRAE 170, provide design for the most similar ASHRAE 170 listed functional space.

**Air Distribution**
Provide Terminal Unit (TU) with hot water reheat and stainless-steel supply air ductwork downstream of (TU) filter bank. HEPA filter bank to be sized at maximum 300 feet/minute face velocity. Provide stainless steel supply and return registers.

**Temperature and Relative Humidity Trend LOG Data**
Provide capability of recording operating room temperature and humidity by DDC controls or by manual recorder.

**Energy Conservation Features**
Provide a Variable Frequency Drive (VFD) for the supply and return air fans on AHU's to operate at reduced air volume and compensate for the variation in the static pressure due to filter loading.

## 5.6 FIRE PROTECTION

### 5.6.1 FIRE EXTINGUISHERS

Specify portable fire extinguishers recessed in cabinets to be in accordance with NFPA 10 (2018), Standard for Portable Fire Extinguishers.

Recessed cabinets shall be provided in occupied areas. Size of the fire extinguisher cabinets shall be large enough to accommodate one each 15-pound ABC type extinguisher. Recessed cabinets shall be conspicuously marked and placed per latest NFPA 10 (2018). Locate additional fire extinguisher cabinets in elevator machine rooms and Mechanical Rooms.

### 5.6.2 FIXED FIRE EXTINGUISHING SYSTEMS

Specify fixed fire extinguishing systems in accordance with NFPA 96 (2021) for cooking operations producing grease laden vapors or smoke.

Fixed fire extinguishing systems shall be wet chemical and shall comply with UL300 in accordance with NFPA 17A (2021). Activation of the fixed fire extinguishing system shall shut down the power/fuel source to the cooking equipment and shall be connected to the fire alarm system.

### 5.6.3 AUTOMATIC SPRINKLER AND STANDPIPE SYSTEMS

Automatic sprinkler systems shall be installed in 100% of the building and any accessory buildings. Installation shall comply with NFPA 13 (2022)

In addition to the aforementioned criteria, the following requirements apply:

- CPVC Piping is not allowed.
- Fire Protection Piping shall be of Schedule 40 Steel.
- Smoke Zones shall match Zone Valve areas.

Sprinklers shall be installed throughout the building(s), including elevator machine rooms, walk-in freezers and cold rooms, telecommunications rooms, radiology and MRI suites, loading docks, electrical rooms and closets, audiometric booths, vaults, and generator rooms. Utilize FM200 type system or approved equivalent for Radiology and MRI suites, electrical room and closets, main data room, Pharmacy and generator rooms.
Provide a standpipe system as required by locally adopted codes and standards, NFPA 45 (2019), NFPA 1 (2018), or NFPA 101 (2021).

**Design**
The design shall comply with the requirements of NFPA 13 (2022) and NFPA 14 (2019). The automatic sprinkler system shall be hydraulically designed by any design approach allowed by NFPA 13. A minimum safety factor of 10% shall be provided in the hydraulic calculations. Pipe schedule systems may be used for extension of existing pipe schedule systems where water supply is adequate. Sprinkler systems shall be designed based on available water supply without fire pump operating, where possible.

**Installation**
The installation shall comply with the requirements of NFPA 13 (2022) and NFPA 14 (2019). Sprinklers shall be provided throughout the building. Standpipes shall be Class I hose connections.

Where necessary, provide a fire pump to supplement the fire flow and pressure. The installation of the fire pump shall comply with the requirements of NFPA 20 (2022). The fire pump shall be an electric motor driven, horizontal split case centrifugal type. The fire pump shall be provided with both a test header and flowmeter. Relief valves, if provided, shall be recirculated back to the suction side of the pump. Jockey pumps shall be rated for no less than 60 GPM [3.79 L/s]. Fire pumps shall start automatically at 10 psi below the jockey pump start pressure. Fire pumps shall be manually shut down.

Design wet pipe sprinkler systems. Do not use pre-action type systems.

Sprinkler densities shall comply with NFPA 13 (2022), except in rooms containing movable/mobile shelving (high density storage) where the density shall be Ordinary Hazard (Group 2).

Rooms containing bulk supply storage shall be classified as defined by NFPA 13 (2022). Do not use shelving which obstructs sprinkler water from penetrating down through racks.

Install quick response sprinklers (QRS) in all areas, except where specifically prohibited (e.g., high temperature areas as defined in NFPA 13, elevator shafts, or elevator machine rooms). On retrofit projects, replace existing standard sprinklers with QRS.

Install standard sprinklers with intermediate temperature rating 200 °F [93 °C] or higher in elevator shafts, elevator pits, and elevator machine rooms. Install sprinklers in elevator shafts and pits only where required by NFPA 13. (Comply with necessary power shutdown requirements.)

The installation of flow control (on/off) sprinkler heads is not permitted.

Provide Type L copper piping and non-ferrous sprinkler heads for all areas within Magnetic Resonance Imaging (MRI) suites.

Coordinate with architectural, mechanical and electrical work and show smoke zone boundaries, hazard classification, density, and other special requirements on drawings.

Coordinate sprinkler zones with fire or smoke (compartments) and fire alarm evacuation zones. Provide a flow switch, isolation valve, tamper switch, and pressure gauge for each zone. Notification shall comply with NFPA 72 (2019).

Determine and identify on drawings the location of fire pump, risers, all valves, fire department connections, drains, and points of connection with underground fire service main.

Provide seismic protection for all sprinkler systems in accordance with IBC.

## 5.7 PLUMBING

### 5.7.1 GENERAL

The A/E shall use the contents of this document to design and specify the install, test, adjust, balance, and commission the Plumbing systems in a trouble-free working manner to provide comfort and safety to the patients, staff, and visitors.

### 5.7.2 APPLICABLE CODES AND CRITERIA

See Paragraph 3.2.1, ADOPTED CODES, STANDARDS, AND GUIDELINES.

### 5.7.3 PLUMBING DESIGN SCOPE

The plumbing design scope includes the following systems.

**Water Distribution System**
Size the piping for the hot and cold-water systems per criteria specified in the IPC including backflow preventers, water hammer arrestors, and trap primers. Minimum pipe size shall be ¾".

Provide wall hydrants (a maximum of 200 feet apart at the building exterior perimeter) at loading docks and at building entrances, with a minimum of one wall hydrant on each exterior wall.

Maintain a minimum pressure of 35 PSI at the plumbing fixtures on the top floor. In minimum pressure calculations, use residual pressure at design flow. Monitor for diurnal pressure fluctuations experienced by the building water supply and modify starting pressures accordingly. Provide a pressure gauge on the top floor branch adjacent to the riser.

If provided, coordinate the electrical supply requirements with the electrical engineer for all electronic faucets and flush valves, trap primers, solenoid valves, pumps, alarm panels, and other appliances and equipment requiring electrical power.

**Domestic Hot Water System with Central Storage Tank**
Provide #2 diesel/oil hot water system with central storage tank, sized per ASPE. Comply with pertinent sections of ASHRAE 90.1-2007 for water heating equipment efficiencies and pipe insulation.

**Sewer/Vent/Waste Systems Inside Building**
Design sewer/vent/waste systems in accordance with IPC and ASPE. "Sovent" and similar type combination waste and vent systems are not allowed.

Unless required by local codes, floor drains shall not be installed in private or individual toilet rooms with a single water closet. Provide floor drains with trap primers in public toilet rooms containing two or more water closets, or a combination of one or more water closets and one or more urinals. Floor drains are required in bathrooms with showers.

Specify cleanouts according to the IPC. Identify all cleanouts on plans and riser diagrams. Do not locate cleanouts above ceilings or crawl spaces and provide additional cleanout at the "end of run" of all groups of fixtures. Wherever possible, extend cleanout to outside the building perimeter.

**Roof Drainage System**
Roof drains shall be sized per IPC with applicable local amendments. Coordinate connection of roof drainage piping to storm drain site piping. Point of connection of building roof drain piping to site piping is at 5'-0" outside the building perimeter.

**Sub-Soil Drainage Piping**
Sub-soil drainage piping for building structure is the responsibility of the site civil engineer.

**Interior Fuel Gas System**
Design in accordance with IFGC (2018), NFPA 54 (2018) as required and as modified by local codes.

**Medical Gas and Vacuum Systems**
Provide medical gases (Oxygen, Medical Air, Nitrous Oxide), and vacuum (Medical Vacuum and Waste Anesthetic Gas Disposal (WAGD)) systems and wall connections at locations as required per NFPA 101.

**Note**: Medical gas and vacuum systems as indicated below are minimums. Systems may be considerably more complex based upon facility requirements.

**Oxygen System:**

- Specify Oxygen system as defined in NFPA 99. Oxygen system shall be sized per ASPE.

- Oxygen piping mains shall be sized to allow the full build-out of the Hospital, to 150 beds.

**Medical Air System:**

- Specify duplex Medical Air system as defined in NFPA 99. Medical air system shall be sized per ASPE, with 100% redundancy of compressors. Air compressors shall be identical and of oil-free type.
- Medical Air piping mains shall be sized to allow the full build-out of the Hospital, to 150 beds.

**Medical Vacuum System**

- Specify duplex Medical Vacuum system as defined in NFPA 99. Medical vacuum system shall be sized per ASPE. Vacuum pumps shall be identically sized. System shall be designed at 15 inches Hg, with piping system not to exceed 3 inches Hg pressure drop from source to point of use. Minimum design flow rate for any pipe section is 4.0 SCFM.

- Medical Vacuum piping mains shall be sized to allow the full build-out of the Hospital, to 150 beds.

**Nitrous Oxide System**

- Specify an NFPA 99 compliant Category 1 Nitrous Oxide System, including station outlets, piping, fittings, valves, cabinets, cylinder manifolds, pressure regulators, and controls and alarms.

- Medical Air piping mains shall be sized to allow the full build-out of the Hospital, to 150 beds.

**Waste Anesthesia Gas Disposal (WAGD) System**
At locations where nitrous oxide or other anesthesia gas system is utilized, provide a WAGD system that complies with the following requirements:

- Provide an NFPA 99 compliant Category 1 Waste Aesthesia Gas Disposal (WAGD) system of the "Dedicated Vacuum Producer" type.

- Medical Vacuum piping mains shall be sized to allow the full build-out of the Hospital, to 150 beds.

**Laboratory/Shop Compressed Air Systems**
Specify simplex air compressor to serve equipment and a minimum of one outlet on each wall in shop areas.

**Seismic Restraint Systems**
Earthquake-resistive design for plumbing equipment and piping shall comply with the requirements of the International Building Code (IBC).

**Legionella Mitigation**
Comply with ASHRAE Standard 188 – Legionellosis: Risk Management for Building Water Systems, and ASHRAE Guideline 12-2020, Minimizing the Risk of Legionellosis Associated with Building Water Systems.

**Piping Design**
Provide means to easily remove and disinfect all outlet devices such as showerheads and faucets, etc. Utilize self-draining showerheads.

Provide a ¾" ball valve at the end of each piping section as a means to drain heated (above 140 °F [60 ˚C]) flushing hot water that will be used for initial and supplemental disinfection. Ball valve shall be within 50 feet of a floor sink, floor drain, sink, or lavatory.
Mix hot/cold water as near the showerhead as possible.

Eliminate all dead legs in the piping system.

Design domestic water piping system to facilitate future installation of a copper-silver ion generator system, as well as provide for Thermal Flushing as part of the Legionellosis eradication system.

### 5.7.4 PLUMBING FIXTURES, TRIM AND EQUIPMENT

Provide plumbing fixtures, trim and equipment as required by the IPC.

**Plumbing Fixtures**
Water closets, urinals, sinks and lavatories shall be vitreous china or stainless steel. Bariatric water closets shall be rated at 1,000 pound [454 kg] capacity. **Waterless urinals are not permitted**. Service sinks (mop sink/basin) shall be floor-mounted cast terrazzo, (a combination of Portland cement and grey marble chips).

**Plumbing Trim**
Faucets and showerheads shall be of chromed brass, monel, or stainless steel; plastic trim is not permitted. Faucets shall be laminar flow; **aerators are not permitted**. Electronic hands-free controls shall be provided at all hand washing sinks, lavatories and water closets.

**Plumbing Equipment**
Provide wall-hung, self-contained, electric wheelchair accessible water cooler.

Hot water re-circulation pump shall be all bronze, with timer-based controls.

## 5.8 ELECTRICAL

### 5.8.1 GENERAL

The new Hospital will be served from metered pad mounted utility power transformers located on site as close to the normal power electrical room as possible meeting minimum utility and NEC guidelines. The service shall be 480 / 277 volt, 3 phase, 4 wire. Step down transformers will be located in electrical rooms to provide 120-volt normal power to receptacles. Emergency power shall be provided from diesel powered emergency generation at 480 / 277 volts. For sizing of main distribution gear, emergency power equipment, plus all panels and transformers, loads shall sized for total connected load, without diversity, plus 25%. UPS shall be sized to support all critical loads which cannot have any power disruption. These loads shall be determined by the A/E in conjunction with the Owner.

The A/E shall design all the necessary electrical facilities for the project. It is expected that electrical systems will meet their primary objective of providing appropriate and reliable interior and exterior electrical, lighting, and auxiliary systems and services necessary to the safety and comfort to the veterans, employees, and visitors. In addition, the systems shall be safe, easily accessible for repairs and maintenance, and energy efficient.

### 5.8.2 CALCULATIONS

Prepare and submit calculations as required by the type of design work performed. Calculations shall justify lighting designs; size of each branch circuit and feeder conductor, overcurrent protective device, equipment bus, generator, transformer, etc., at all voltage levels; setting of each overcurrent protective device with adjustable characteristic; required PPE to meet arc flash energy levels; etc. The A/E shall submit the following calculations to the SEB: fault current calculations, protective device coordination study, arc flash calculations, load calculations, generator-set sizing calculations, voltage drop calculations, lightning protection system risk analysis, and lighting calculations.

### 5.8.3 LIGHTING CALCULATIONS

Perform all lighting calculations based on illumination criteria per the IESNA Lighting Handbook, latest edition. Calculations shall include room name, room number, fixture type chosen for the room, required illumination level and color temperature, calculated illumination level, and all assumptions used.

Calculations for most interior spaces may be performed using the zonal cavity method. Perform and submit point-by-point calculations for areas of greater architectural or luminous sophistication. Calculations for exterior spaces, including parking structures, shall be point by point. Calculations shall demonstrate compliance with IECC energy requirements.

### 5.8.4 FIRE ALARM SYSTEMS

Fire alarm systems shall be provided as required by NFPA 101 or the locally adopted codes.

The fire alarm system shall be designed to meet the requirements of NFPA 72 and the local codes.

Locate the fire alarm control panel at the main entrance or at a 24-hour constantly attended location.

The fire alarm systems shall be digital addressable.

Fire alarm systems shall not be combined with other systems such as building automation, energy management, security, panic or duress alarms, etc. The fire alarm system may be used for mass notification, is applicable Codes and standards are met.

Visual fire alarm notification appliances shall be provided in mechanical rooms, public restrooms, publicly accessible areas such as corridors, auditoriums, cafeterias, assembly rooms, canteens, retail stores, and other publicly accessible rooms of more than 750 square feet of area.

The fire alarm system shall be monitored by a listed remote central station.

### 5.8.5 RACEWAYS AND WIRING

Specify all wiring to be installed in listed raceways. All wiring shall be copper. All circuits and branch circuits shall have a separate equipment grounding conductor of appropriate size per the NEC. No more than 3 branch circuits are allowed to run in one homerun.

### 5.8.6 LIGHTNING PROTECTION SYSTEM

The A/E shall perform risk analysis per NFPA 780, Annex L and provide a lightning protection system, where Nd>Nc. Submit calculations, including all assumptions. The A/E shall use the following fixed factors in the calculation: $C_2$= .5, $C_3$ = 2.0, $C_4$ = 3.0, $C_5$ = 5.0. Historical lightning strike data for American Samoa does not exist: use a $N_G$ = 8 (as based on the Vaisala document “Lightning Flash Density, flashes/sq. km/year, 1990-2004) for NFPA 780 calculations. All other factors shall be project specific.

### 5.8.7 RECEPTACLE CIRCUITS

No more than 6 receptacles shall be installed on a single circuit.

### 5.8.8 ESSENTIAL ELECTRICAL SYSTEM FOR THE HOSPITAL

The Hospital shall be fully backed by a standby electrical system using diesel engine-driven generator sets. It is permissible for the Standby Electrical System generator(s) to provide power to the Essential Electrical System, if the System, as a whole, meets the requirement of the NFPA 99, NFPA 110 and other applicable Codes.

Generator(s) used for the Standby Electrical System shall be rated as limited-running-time prime power. If separate from the Standby Electrical System generator(s), generators dedicated to the Essential Electrical System shall be rated as standby.

Specify main Above Ground Storage Tank (AST) on site to provide diesel fuel #2 capacity to provide (3) full days of generator running at 100 % capacity. Specify double wall “Day Tank” within generator building to connect directly to generator(s).

The Essential Electrical System (EES) for the Hospital shall comply with the Type 1 system as defined in NFPA 99, shall supply loads as defined in NFPA 70 and 99, and shall comply with the Joint Commission testing and reporting requirements.

### 5.8.9 EMERGENCY SYSTEM

The Emergency System shall comply with NFPA 70 and 99.

### 5.8.10 MULTIPLE UTILITY POWER SOURCES

Specify automatic transfer switch (ATS) to switch between the (2) powerplant feeds that provide power to the facility. The local utility will provide feeders from both the Tafuna and the Satala power plants to the ATS on the site.

### 5.8.11 ALTERNATE SOURCE OF POWER (TYPE 1 EES)

The alternate source of power shall be one or more diesel engine-driven generator sets. Specify fuel supply for 24 hours of operation. Provide physical space for one additional generator; paralleling switchgear shall be appropriately provisioned

### 5.8.12 COMMISSIONING

In addition to installation acceptance testing specified in NFPA 110, the Essential Electrical System shall be commissioned to ensure proper operation of individual components and the system as a whole. A commissioning plan shall be developed, specified, documented, and executed. The commissioning shall include, but is not limited to, all sources of power, paralleling switchgear, transfer switches, fueling systems and tank leak detection, interconnections to other systems, annunciators, load shedding, exercise functions, peak shaving, and communications pathways between equipment.

### 5.8.13 POWER MONITORING AND METERING

Power monitoring and metering are required to support energy use and conservations goals.

### 5.8.14 ELECTRICAL ROOMS AND CLOSETS

No telecommunications equipment, other than telecommunications outlets, shall be placed within electrical rooms. Provide appropriate construction for the type of transformer(s) installed. Electrical closets shall stack vertically, and shall not be further than 150 feet apart, to limit maximum 120V circuit length to approximately 75 feet.

Rooms that contain freestanding electrical equipment shall be sized so that sufficient space is provided to add one additional section to each unit of freestanding equipment. Provide extended pad space and spare conduits that will facilitate future installation of equipment and conductors. Spare space shall be indicated on drawings.

Rooms are to be cooled utilizing the base building system as required by heat load determined during design. Design conditions shall be 75 °F dry bulb temperature (cooling), with individual room temperature control.

### 5.8.15 ELECTRICAL EQUIPMENT SPARE CAPACITY

Each electrical distribution or branch circuit equipment item, inclusive of low-voltage service entrance equipment, distribution switchgear and switchboards, distribution panelboards, and branch circuit panelboards shall have not less than 25% spare electrical capacity.

### 5.8.16 ELECTRICAL EQUIPMENT INTERNAL PHYSICAL SPACE FOR FUTURE USE

Each electrical distribution or branch circuit equipment item shall have not less than 40% unused space for addition of future circuit breakers of similar sizes and types occasioned by the initial design. For equipment that consists of one or more vertical sections, at least one spare section shall be provided at a minimum, and for double-ended switchgear or switchboards the minimum spare section requirement shall apply to each side of the tie device. This requirement applies to the normal power electrical system, and each branch of the Essential Electrical System.

### 5.8.17 ELECTRICAL EQUIPMENT PHYSICAL SPACE FOR EXPANSION FOR FUTURE USE

Each electrical distribution equipment item shall have adjacent physical space for a(n) additional vertical section(s) in a quantity not less than 50% of the distribution sections in each equipment item. For example, a switchboard consisting of one main section and three distribution sections would require empty physical space for two additional distribution sections immediately adjacent to the provided distribution sections. The floor space thus reserved in the room or electrical equipment area is to remain open from the floor to the structural deck above. This requirement applies to the normal power electrical system, and each branch of the Essential Electrical System.

### 5.8.18 LIGHTING FIXTURES

All interior and exterior light fixtures shall be LED. Specialty areas or requirements may use light fixture types as necessary.

Select fixtures and light sources with long operating lives; which utilize controlling elements (lenses, louvers, reflectors, etc.) designed to provide the best utilization of emitted light at the task location; that are appropriate for the ambient temperature; and that are not prone to dirt accumulation. In high ceiling areas, locate fixtures for maintenance access or provide access for maintenance equipment.

Exterior lighting shall comply with energy requirements. Criteria recommended in the IESNA Guideline for Security Lighting for People, Property, and Public Spaces (latest edition) shall govern the lighting design. Exterior lighting shall be coordinated with physical security, SSTV, and landscaping requirements.

### 5.8.19 LIGHTING CONTROL

Energy consumption constraints dictate the installation of automatic lighting controls for both interior and exterior lighting. Select and design master and room-specific lighting control systems that comply with energy codes and requirements; that respond to daylight harvesting; that utilize the correct sensor and sensor location for the controlled space; that are compatible with the controlled fixtures; and that are responsive to the occupant’s desire not to feel "over-controlled."

## 5.9 TELECOMMUNICATIONS

### 5.9.1 INTRODUCTION

This section covers requirements for cable pathways and raceways, fiber optic and copper wiring and cables, and special telecommunications systems (hereinafter referred to as

"Special Systems"). Special Systems are identified as those telecommunications systems that are not telephone, data, or fire alarm (or related functions).

Cable pathways, wiring, and cables (both copper and fiber optic) make up the Telecommunications Infrastructure Plant (TIP) for the telephone, data, and Special Systems.

The A/E shall design rooms, closets, and supporting infrastructure in accordance with industry standard requirements, appropriate for a Hospital.

### 5.9.2 GENERAL

A complete and functional Telecommunications Infrastructure Plant (TIP) is required. The TIP shall at a minimum incorporate all telephone, data, and Special Systems cables.

### 5.9.3 DRAWINGS

The A/E shall clearly show the locations of telecommunications outlets, conduit runs, cable trays or wireways, equipment cabinets and/or racks, telecommunications rooms/backboards, terminal, junction, and/or pull boxes on the drawings.

The A/E shall clearly show the exterior and/or underground raceway system, including distances between buildings, manholes, and in-ground pull boxes.

All raceway sizes shall be indicated on the drawings.

Drawings must include a detailed riser diagram for all distribution systems, and the interfaces between systems.

### 5.9.4 WIRES AND CABLES

Specify the voice and data structured cabling system to be Category 6 cable and Category 6 termination hardware. Additionally, the system should be installed by a structured cabling contractor certified by the manufacturer to install the system and capable of offering the manufacturer’s system warranty.

### 5.9.5 SPECIAL SYSTEMS

**General**

Specify systems as determined by project requirements. Not all systems may be required, and not all required systems may be listed below.

**Nurse Call**

Specify nurse call and code blue system(s) as required and in accordance with NFPA 99 (2021).

**Public Address (PA)**

Specify public address and mass notification (PA) system(s) as required and as coordinated with the Owner.

**Cable TV (CATV)**

Specify Cable Television (CATV) systems for distribution of cable TV throughout the Hospital as required and as coordinated with the Owner.

**Security Surveillance Television (SSTV)**

Specify SSTV systems as required and as coordinated with the Owner.

**Electronic Access and Door Control**

Specify as required and as coordinated with the Owner.

**Motion Intrusion Detection**
Specify as required and as coordinated with the Owner.

**Overhead Paging System**
Specify as required and as coordinated with the Owner.

## 5.10 ELEVATORS/DUMBWAITER

The A/E Team shall provide two (2) minimum Passenger / Service elevators per bed tower as described below. Elevators shall conform to the requirements of the American Society of Mechanical Engineers A17.1, Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks; NFPA 70 (National Electrical Code). Elevators shall meet accessibility requirements.

Passenger / Service elevators platforms and entrance doors shall be of size and configuration specified to accommodate the specified hospital transport beds in addition to ambulance gurneys.

Passenger / Service elevator shall be minimum 5,000-pound capacity with 6'-8" wide by 8'-8" deep inside clear platform.

The entrance openings for passenger and service elevator doors shall be 48 inches wide by 84 inches high unless otherwise required to accommodate hospital transport beds and ambulance gurneys. Doors shall be single-speed center opening, or two-speed side slide.

Provide an autodial system with hands free operation which is activated by the emergency alarm switch or call button in main and auxiliary control panels. The system shall be designed to communicate to a location in the building staffed during all working hours, such as the security office or telephone operator. After working hours, the autodial system shall rollover to an emergency number.

The floor covering in the car shall be a non-slip, firm surface which permits easy movement of wheelchairs. Carpet of any kind is not acceptable.

**Emergency Power Operation:**
The control system for passenger and service elevators shall provide for the operation of at least one car per elevator bank upon failure of the normal power supply from the Essential Electrical System. Provide auxiliary equipment on elevator controllers, wiring between associated elevator controllers and wiring between elevator controllers and remote selector panel as required to permit the elevators to operate as detailed. Upon loss of normal power supply there shall be a delay before transferring to auxiliary power of 10 seconds minimum to 45 seconds maximum, the delay shall be accomplished through an adjustable timing device. Following this adjustable delay the associated elevators shall function as follows:

Selector switch, Automatic position:
Not more than one elevator at a time in each group shall be automatically selected and returned to the main floor, at normal speed, cycle its car and hoist way doors and shut down, with "Door Open" button remaining operable. As each elevator reaches the designated floor and shuts down, another elevator shall start and return to the designated floor. Elevators that have been manually removed from automatic service and are on independent service, fire service or medical emergency shall receive an automatic return signal. Elevators on inspection service or out of service shall not receive a signal. When an elevator is given a signal to return and it is unable to start its movement to the designated floor within 30 seconds it shall be by-

passed. When an elevator is by-passed, another elevator shall start and return. This process shall continue until all elevators have returned to the designated floor and shut down. Any elevator or elevators by-passed on initial return signal shall be signaled again.
When all cars in group have returned to designated floor, one elevator in each group shall be designated for automatic operation. Individual cars in each group shall restart at 5 second intervals.

Selector switch, Manual operation:
Selector switch shall be mechanically and electrically interlocked to prevent the selection of more than one elevator from operating on emergency power. The selector switch shall have positions marked with the number of each elevator controlled. It shall also have a position marked "Automatic". When the selector switch is set to the automatic position, the medical emergency service car, shall operate on emergency power operation, or if none, the last car arriving at the designated floor and be capable of functioning under all design features. Change in selection of elevators shall be by means of the selection switch and shall occur only when the previous selected elevator is stopped at the designated floor. The selector switch shall be locked out of operation when the system is in the normal mode of operation. Locate the selector switch above the hall push button station at the designated level in a NEMA 1B flush type enclosure furnished with a brushed finish stainless steel hinged door and frame. The door shall contain a tumbler type lock furnished with four keys. The enclosure faceplate shall be identified "Emergency Power Control" with 13 mm (1/2 in.) engraved letters filled with black paint. Selector switches for selecting the elevators shall be toggle type or rotary key switch. Provide pilot lights to indicate normal mode of operation, emergency power service available, and which elevator or elevators in each group is connected to auxiliary service.

Provide a permanently mounted, easy to read, instruction plate which shall include operating instructions for emergency power service and instructions for lamp test circuits.

Prior to the return of normal power an adjustable timed circuit shall be activated that will cause all cars to remain at a floor if already there or stop and remain at the next floor if in flight. Actual transfer of power from auxiliary power to normal building power shall take place after all cars are stopped at a floor with their doors open.

Car lighting circuits shall be connected to the auxiliary power panel.

# SECTION 6 INTERIOR CONSTRUCTION, FINISHES, AND INTERIOR DESIGN

## 6.1 GENERAL

### 6.1.1 SPACE PLANNING AND FUNCTIONAL LAYOUT

Space Planning and Functional layouts shall utilize FGI or industry current standards of practice for hospitals and outpatient services. Special consider shall be given to “persons of size” throughout the design.

Lessor shall provide accurate space layout drawings (floor plans) with offer and during design and construction document phases. Plans shall include sufficient information for the Government to compute the net area of each function (room), and to compute Building Gross Area and Net Usable Area in order to determine compliance with solicitation requirements.

### 6.1.2 ROOM NUMBERING

The A/E team shall use the room numbering system established by Owner in the conceptual plans on the design development and construction documents.

### 6.1.3 CIRCULATION SYSTEMS

The A/E team is responsible for the final design of horizontal and vertical circulation systems including building support space and common areas within the building during Design Development and shall integrate the design of circulation systems with building entrances, functional elements, wayfinding systems and signage

Circulation system components include entrances, lobbies, corridors, and vertical circulation (stairs and elevators).

### 6.1.4 FLOOR-TO-FLOOR HEIGHTS

Floor-to-floor heights shall be sufficient to maintain minimum ceiling heights of 9’-0” and to install mechanical and electrical systems above the ceiling in an interstitial service zone between the ceiling and the finished floor above of 10’-0”. A/E team is responsible for coordinating ceiling heights, structural members, space to install mechanical and electrical systems, and floor-to-floor heights

### 6.1.5 MATERIALS AND PRODUCTS FOR INTERIOR CONSTRUCTION AND FINISHES

**General**
The A/E team shall use materials and products for interior construction that are durable, non-toxic, do not degrade, do not give off dust particulates, odors or VOC’s, are easily cleanable, and resistant to moisture, mold, impact and fire. Materials shall be manufacturer’s or supplier’s regular production, first quality, and suitable for commercial use. Where materials or products are exposed and subject to staff or patient contact the materials or products shall be specifically designed and tested for use in healthcare facilities.

**Recycled Contents Products**
The A/E team shall comply to the extent feasible with the Resource Conservation and Recovery Act (RCRA), Section 6002, 1976 or LEED Silver limits regarding recycled content, whichever is greater. The A/E team shall use recycled content products as designated by the U.S. Environmental Protection Agency (EPA) in the Comprehensive Procurement Guidelines

(CPG), 40 CFR Part 247, and its accompanying Recovered Materials Advisory Notice (RMAN). The CPG lists the designated recycled content products. EPA also provides recommended levels of recycled content for these products. The list of designated products, EPA's recommendations, and lists of manufacturers and suppliers of the products can be found at the www.epa.gov/cpg/products.htm website.

**Environmentally Preferable Building Products and Materials**
The A/E team shall use environmentally preferable products and materials. The A/E team shall consider the life-cycle analysis of the product in addition to the initial cost.

In general, environmentally preferable products and materials do one or more of the following:

- Contain recycled material, are biobased, are rapidly renewable (10-year or shorter growth cycle) or have other positive environmental attributes.
- Minimize the consumption of resources, energy, and water.
- Prevent the creation of solid waste, air pollution, or water pollution.
- Promote the use of nontoxic substances and avoid toxic materials or processes.

The A/E team shall give preference to materials and products that are extracted and manufactured locally.

### 6.1.6 MENTAL HEALTH

Design and construct areas to be used by outpatient mental health functions to incorporate the following features.

- Minimize dead ends or blind spots in corridors.
- Maximize visibility from staff stations.
- Place doors in offices where staff will consult with patients so that either patient or staff can exit the room without having to pass by the other to get out. Based on layout, this tends to put the door more in the center of the room.

Patient toilet doors that are in-swinging shall be equipped with hardware that allows them to open out in an emergency.

**Glazing**: Use laminated (preferred) or tempered glazing materials for all interior and exterior glazed openings in mental health areas.

### 6.1.7 SEISMIC DESIGN

Nonstructural elements of buildings shall be designed and constructed to resist damage caused by earthquakes as required by herein referenced codes and as classified by FEMA as Seismic Zone 3 in the 2015 American Samoa Hazard Mitigation Plan, as well as the IBC and all referenced Codes and Standards within.

## 6.2 PARTITIONS

Non-bearing interior partitions shall be capable of supporting equipment and furnishings. For interior partition framing use minimum 3-5/8 inch, 20-gauge, galvanized metal studs ASTM

C645 with fasteners and accessories complying with ASTM C 754. Stud spacing shall be 16-inches on center maximum. For special requirements, use other sizes or systems as appropriate. Where pipe spaces are required, size partition framing thickness to conceal piping. Installation of metal studs shall comply with ASTM C754. Provide support required for equipment, furnishings, and work of other trades.

Use 5/8-inch-thick gypsum wallboard ASTM C1396, except for special conditions. Use fire resistant Type X or Type C wallboard ASTM C1396 in fire resistant rated assemblies. Use moisture resistant wallboard ASTM C620 at wet locations. Use impact resistant wallboard ASTM C1629 from the finished floor to 4'-0" aff. Provide accessories, fasteners, and finishing materials in accordance with ASTM C1047, C1002, and C840. Install and finish gypsum wallboard in accordance with ASTM C840. Use Level 4 finish with smooth finish for all occupied areas with paint finish. Provide Level 4 finish for surfaces to receive Type I vinyl wall coverings or ceramic tile. Provide Level 3 finish for surfaces to receive Type II vinyl wall coverings. Provide Level 2 finish in rooms or spaces for which no decorative finish is specified in Schedule E.

Provide fire and/or smoke rated partitions that comply with published UL, FM Global, or IBC designs.

Extend all layers of gypsum board, on both sides of studs, from floor to underside of structure above on the following partitions:

- Fire rated partitions
- Security partitions
- Smoke barriers
- Sound rated partitions
- Corridor partitions as required by building code
- Negative pressure rooms
- All restrooms
- Labs
- Electrical/data utility closets
- Public restrooms and Lounges
- Rooms containing drugs or sensitive contents as identified by the owner.

In other locations, extend gypsum board from floor to heights as follows:

- Not less than 4 inches above suspended acoustical ceilings

Use lead-lined gypsum wallboard for shielding of x-ray rooms.

## 6.3 INTERIOR DOORS

### 6.3.1 GENERAL

Provide Schedule for Doors and Hardware. Indicate sizes and types of doors required. Doors shall be of flush design.

Fire rated door and frame assemblies shall comply with NFPA 80.

Interior door frames shall be of a 45 degree 6" high "sanitary hospital stop" configuration. Reference "UL Subject 63 – Outline of Investigation for Fire Door Frames" for commentary

permitting terminated stops (7.23, 7.23.1, 7.4.3) on fire rated doors. Fire rated doors at elevator hoist ways and stairwells shall have full height stops.

Acoustical door and frame assemblies shall provide STC rating equal to or in excess of the enclosing wall STC rating. Submit certified test reports per ASTM E90.

All corridor-to-corridor doors shall have 100 sq. in. glass vision panels and shall swing in opposite directions from each other. Doors in fire partitions and smoke barriers shall have fire-rated glazing vision panels and be held open with electromagnetic holders, except doors which should remain closed for functional reasons.

**Interior Stairway Doors**: Provide interior stairway doors with passage latch sets having inside and outside door handles free at all times. Exceptions are where stairway doors are required to be locked to prevent entrance into and elopement from functional departments or areas. Locking shall comply with NFPA 101.

### 6.3.2 WOOD DOORS

Interior wood doors shall be solid core, 1-3/4 inch thick, with White Ash, Plain Sliced, Grade A face veneers for transparent finish.

Wood doors shall comply with Window and Door Manufacturer's Association (WDMA) I.S.1-A, Heavy Duty with Type II adhesives.

### 6.3.3 HOLLOW METAL DOORS

Hollow metal doors shall be 1-3/4 inch thick and comply with Standard Duty Doors per Steel Door Institute (SDI) A250.8, Level 1, Model 2; except:

- Stairwell doors shall comply with Heavy Duty Doors: SDI A250.8, Level 2, Model 2.
- Security doors (Type 36) shall comply with Extra Heavy Duty Doors SDI A250.8, Level 3, Model 2.
- Detention Doors (Type 22) shall comply with Extra Heavy Duty Doors SDI A250.8, Level 3, Model 2 with core type 'd' or 'f.'

### 6.3.4 HOLLOW METAL DOOR FRAMES

**Frames for Hollow Metal Doors**
Hollow metal door frames shall comply with Steel Door Institute (SDI) 250 for type and grade of doors required (Standard, Heavy Duty, or Extra Heavy Duty) and as follows. Frames shall be welded construction; knockdown frames are not allowed. Frames for openings larger than 48 inches wide and for doors specified to have automatic operators shall be minimum 14-gauge, fully welded.

**Frames for Wood Doors**
Hollow metal door frames shall be shop fabricated, pre-finished, site assembled steel frames. Provide fire rated assemblies where scheduled. Fabricate frames from cold rolled steel ASTM A1008, minimum 18-gauge; casings and trim minimum 20-gauge. Prepare frames for door hardware. Provide reinforcements for hardware specified.

Pre-finished frames shall not be used for sound rated doors. Provide frames complying with SDI 114.

Hollow metal door frames shall comply with Steel Door Institute (SDI) 250 for Heavy Duty, or Extra Heavy Duty, minimum gauge.

Frames for wood doors specified to have automatic operators and door openings greater than 48-inches wide shall comply with Steel Door Institute (SDI) 250; shall be welded construction; knockdown frames are not allowed; and shall be minimum 16 gauge.

### 6.3.5 FIBERGLASS DOORS AND FRAMES

Fiberglass doors shall be use on all exterior door conditions, except where aluminum assemblies are used, and be 1-3/4 inch thick molded fiberglass permanently bonded to the core with a UV resistant gel coat finish and comply with the Steel Door Institute (SDI) dimensions and standards.

Door panels shall have a molded fiberglass edge that is chemically welded to the door skins that will not peel, separate or delaminate.

Frames shall be FRP pultruded, and corners shall be mitered with no exposed fasteners. Provide additional reinforcement as required by the application, frequency of use, supporting assembly attachment and durability requirements. Stainless Steel frames are an acceptable alternative for fiberglass door installations.

Gel coat finish shall utilize premium resins applied with integrally molded glass fiber achieving a glass smooth finish.

Cores shall be non-CFC urethane foam for insulation, sound control and to inhibit mold and mildew growth.

Fire rated doors shall be UL tested and certified as applicable for:

- Neutral Pressure per “Standard for Fire Tests of Door Assemblies, UL 10B” and UL 305 “Standard for Safety Panic Hardware”
- Positive Pressure per Warnock-Hersey with UBC 7.2.1997 and UL 10c NFPA 252 for positive pressure fire rated doors.
- Smoke Density from Burning Test (ASTM D2843-99)
- Ignition Temperature Test (ASTM D1929-96)
- Rate and Extent of Burning Test (ASTM D635-03)

All hardware, accessories, trim and fasteners shall be stainless steel.

Door and Frames shall be tested and certified to comply with the following:

- Airblast Loading (ASTM F 1642-04)
- GSA test for Dynamic Overpressure Loadings (GSA-TS01-2003).
- Impact testing by Missile and Cyclic Pressure Differential Test (ASTM E1886)
- Large Missile Impact Test (ASTM E1996)
- Design Pressures from wind loads as determined by ASCE 7 for American Samoa
- Wind Load Testing of Windows and Doors by Static Air Pressure Difference (ASTM E330).
- Water Penetration Test (ASTM E331)
- Air Leakage Test by Air Pressure Differential (ASTM E283)
- Cycle Test – Acceptance criteria for physical endurance for steel doors, frames, frame anchors and hardware reinforcement (ANSI A250.4-2001)

### 6.3.6 AUTOMATIC DOORS

At a minimum, automatic door equipment shall comply with the requirements of Builders Hardware Manufacturers Association (BHMA) 156.10. Provide operators which will move the doors from the fully closed to fully opened position in five seconds maximum time interval, when speed adjustment is at maximum setting. Equipment shall conform to UL 325. Provide key operated power disconnect wall switch for each door installation. Automatic door operators and hardware shall be selected and sized appropriately for the door and frame, and for the type and frequency of traffic anticipated for the opening. Provide controls to open automatic doors from both sides. Equip controls with safety devices for pedestrian protection. Provide door operator controls and equipment that are easily accessible for maintenance.

Swing door operators shall be of institutional type, door panel size 2'-0" to 5'-0" width, weight not to exceed 600 pounds, electric operated for overhead mounting. Furnish metal mounting supports, brackets, and other accessories necessary for the installation of operators at the head of the door frames. The motor on automatic door operator shall be provided with an interlock so that the motor will not operate when doors are locked. Operators shall have checking mechanism providing cushioning action at last part of door travel, in both opening and closing cycle. Operators shall be capable of recycling doors instantaneously to fully open position from any point in the closing cycle when control switch is activated. Operators shall, when automatic power is interrupted or shut-off, permit doors to easily open manually without damage to automatic operator system.

Sliding doors shall have electric operators, conforming to BHMA A156.10 and the following. Assembly shall be single or bi-parting sliding doors as shown on conceptual drawings. Doors shall be opened by electric motor pulling door from closed to open position and shall stop door by electrically reducing voltage and stalling door against mechanical stop. System shall permit manual control of door in event of power failure. Opening and closing speeds shall be adjustable. In compliance with NFPA-101, all door panels shall allow "breakout" to the fully open position to provide instant egress at any point in the door’s movement.

Automatic doors shall be required at main entry(s), utilizing a vestibule configuration for interior/exterior environmental separation and configured or protected to prevent alignment with the prevailing wind(s) direction. Additional automatic doors as required by the Owner.

### 6.3.7 FINISH HARDWARE

Shall be rated for use in coastal environments and extreme wind conditions associated with hurricane events.

### 6.3.8 DOOR IDENTIFICATION

Special door identification for handicapped accessibility and hazard warning signs shall be installed at all necessary interior room doors. The forms and locations of door identification must comply with applicable U.S. codes and standards governing such signage. Doors leading into hazardous areas that might prove dangerous to a blind person shall be made quickly identifiable to the touch by knurling, roughening, or applying an abrasive coating to the surface of the knob, door handle, pull, or other hardware. Tactile warning indicators shall not be provided for emergency exit doors.

## 6.4 NOISE TRANSMISSION CONTROL

### 6.4.1 GENERAL

Provide sound-resistant construction at the rooms and areas listed in paragraphs below. Submit details of sound resistant construction with Second Design Development Submittal. Include test reports for designs or systems to be used. Construct partition, ceiling, and floor systems to provide necessary performance. Special attention shall be given to prevent possible flanking paths for noise transmission. Surrounding walls of source noise spaces and noise protected spaces shall be full height to the structure above and sheathed with acoustical gypsum wallboard, both sides and filled cavity noise attenuation materials full height. Verification of noise transmission control shall be included in building commissioning.

Sound damping in meditation rooms, quiet rooms, and similar areas shall be provided by finish materials shown for these areas in Schedule E, "Room Finishes, Door, & Hardware Schedule."

Where an area generating unusual noise or vibration is located adjacent to occupied spaces, the A/E Team shall obtain the services of a professional acoustical consultant to design the sound suppression measures required to produce a comfortable working environment in the adjacent spaces.

### 6.4.2 SOUND TRANSMISSION CLASS (STC)

The sound resistant enclosures (partitions, doors, duct system) of the spaces listed below shall be designed to suppress generated noise and provide a satisfactory degree of acoustical isolation for adjacent occupied spaces. This shall apply to all rooms in the facility. A minimum Sound Transmission Class (STC) rating of 55 shall be achieved.

A/C and other mechanical equipment rooms
Multipurpose Rooms
Group rooms
Kitchens and Dishwashing Areas
Auditoriums
Multipurpose Rooms
Mental Health Group Therapy rooms

## 6.5 X-RAY RADIATION SHIELDING AND RADIOGRAPHIC ROOMS

### 6.5.1 X-RAY RADIATION SHIELDING

**General**
Provide shielding against radiation from x-ray equipment. Obtain the services of a physicist approved by the American Board of Radiology in accordance with the appropriate standards and regulations of the National Council on Radiation Protection and Measurements to design and specify the level of radiation protection required.

State the prescribed shielding in terms of millimeters of lead or in inches of wall, ceiling, floor, and door construction of equivalent protection thickness. Post a certificate, stating the lead equivalent protection of each surface, in all rooms with radiation shielding.

**Lead Lined Doors and Frames**
Lead lining of frames, doors and other items occurring in partitions shall provide an x-ray absorption equivalent to that of partitions in which they occur.

**Lead Lined Wood Doors**

- Use flush veneered construction.
- Face veneers shall be same species and grade as used for other wood doors in the project.
- Construct doors of two separate solid wood cores with a single sheet of lead lining through center.
- Extend sheet lead lining to all door edges, providing x-ray absorption equal to partition in which door occurs.
- Fasten wood cores together with either countersunk steel bolts through lead with bolt heads and nuts covered with poured lead, or with poured lead dowels.
- Finish face of dowels and lead covering of bolt heads and nuts flush with wood cores.
- **Edge strips:** Use same species of wood as face veneer. Edge strips shall be minimum 1-1/2 inches at top edge, and 2-1/2 inches at bottom edge. Extend vertical edge strips full height of door and bevel 1/8-inch for each two inches of door thickness.

Hardware for lead lined doors shall be specifically designed for radiation shielded door and frame assemblies. Make total thickness of sheet lead used for lining hardware equivalent to thickness of sheet lead core of door.

### 6.5.2 DESIGN FOR RADIOGRAPHIC EQUIPMENT

Rooms containing radiographic equipment shall be designed for a generic installation system that can accept and accommodate all vendors' radiology equipment (DOD/VA Universal X-Ray (R-F) Room). Design and construct room(s) in accordance with requirements for radiation protection and to accommodate equipment, staff furnishings.

The structural support for overhead radiology equipment shall be designed such that movement of the radiology equipment ceiling-mounted support rails shall not exceed 0.2 in [5 mm] in any direction.

For a list of work items and materials required for the completion of rooms with radiographic equipment, refer to Schedules B and C of this solicitation.

### 6.5.3 SPECIAL X-RAY CONTROL ROOM REQUIREMENTS

Provide single pane viewing windows of conventional lead glass for x-ray control rooms. Where the control room projects into and is located near the corner of the diagnostic x-ray room, the projecting control room partition shall have a portion of wall angled toward the x-ray workspace. Locate the viewing window in this angled section.

To allow for clearance for x-ray tube crane travel, do not exceed a height of 7' 6" above the floor for that portion of the shielded partition of a control room which projects into a diagnostic x-ray room. Feed all electric service, located in or on the projecting control room partition, up from the floor or horizontally from the wall where the control room projects. Leave the space above the projecting control area clear to allow x-ray equipment to traverse.

## 6.6 INTERIOR FINISHES

### 6.6.1 GENERAL

Owner must review and approve room finishes and door hardware prior to start of final construction documents.

The Interior Design concept and materials, finishes, colors, patterns and textures must be approved by the Owner. Submit sample boards for review and approval by the Owner with 75% construction documents.

### 6.6.2 INTERIOR DESIGN CRITERIA

**Goal**
To provide a supportive interior environment that is conducive to healing both the patient's mind and body, is respectful of the public monies, promotes staff performance, and expresses progressive high-quality design.

**Concept**
The design shall be based on a working knowledge of the profile and characteristics of the American Samoan people as a patient population and the distinct profile of the users of said facility and said project. Patients are often long-term, high repeaters with multi-medical problems. Each user group will reveal the degree of need for the design to address aging, physical and mental disabilities, abusiveness, loss of function and perceptual ability.

**Function**
Functional requirements dictate maintainable colors, textures, patterns, material selections, combination of materials, and installation techniques. Materials must be chosen for longevity and good appearance retention.

**Signage and Wayfinding**
A "wayfinding" process needs to be designed into every project. Patients, visitors, and staff need to know where they are, what their destination is, how to get there, and how to return to their origination point. Identification, personalization of occupied spaces, and orientation are all to be addressed in the design. Wayfinding is to be thought of broadly as building elements, color, texture, and pattern cues, as well as a coordinated set-up for separate contacted signage and artwork.

**Guidelines**
Design attention shall be given to all spaces. Areas which could initiate the design may be the lobby or administrative suite, but extensions of the same quality and variety are required for the corridors, staff areas, and patient areas. The design must offer a distinctive and clear lead for the planning and selecting of interior furnishings. Designs that narrow choices of procurement furnishings are inappropriate. A working understanding of the limits of government sources is to be considered. This consideration will produce a good environment for the furnishings.

Designs that use "lifetime of the building" materials in colors, patterns, and designs that transcend time are endorsed. Trendy colors and patterns are to be restricted to cycle replacement materials, such as paint and wall coverings.

## 6.7 CEILINGS

### 6.7.1 ACOUSTICAL CEILINGS

Ceiling suspension system shall be intermediate-duty system. Provide aluminum suspension system in kitchen.

Acoustical units shall be mineral fiber units that provide a noise reduction coefficient (NRC) of at least 0.55 and a ceiling attenuation class (CAC) rating of at least 33. Provide units with manufacturer's standard white painted finish, except provide membrane faced (mylar) units in kitchen and other locations scheduled for non-absorbent, scrubbable finish. Ceiling units shall have a flame-spread of 25 or less and a smoke development rating of 50 or less (ASTM E-84).

At spaces enclosed with non-full height partitions with STC rating of 45, provide mineral fiber acoustical units with a noise reduction coefficient (NRC) of at least 0.70 and a ceiling attenuation class (CAC) rating of at least 40.

### 6.7.2 CUBICLE CURTAIN TRACKS

Provide cubicle curtain tracks with carriers and hooks in exam rooms and other locations where patient privacy is required, or treatment is occurring.

Provide surface-mounted tracks of extruded aluminum, ASTM B221, alloy 6063, temper T5 or T6, channel shaped, with smooth inside raceway for curtain carriers. End stop connectors, ceiling flanges and other accessories shall be fabricated from the same material with the same finish as the tracks or from nylon.

## 6.8 FLOORING

Flooring material specifications and installation methods shall conform to the requirements of U.S. national standards governing surface prep and installation. Under floor concrete must be smooth and level and treated with a nano-colloidal silica spray equal to "Spray-Lock SCP" for moisture protection. Patching and leveling compounds containing gypsum are prohibited. When floor coverings are newly installed or changed, samples must be approved in advance by the Owner.

Unless other material is scheduled for a room or area, perimeter base shall be rubber or vinyl complying with ASTM F1861. Base shall be 1/8-inch thick, 4 inches high with molded top.

### 6.8.1 MEMBRANE WATERPROOFING AT INTERIOR FLOOR DRAINS

In addition to SCP moisture protection to the concrete subbase provide membrane waterproofing under floor finishes surrounding floor drains in areas subject to wet conditions to prevent water and moisture from penetrating the underlying floor slabs and damaging the finishes and contents of the rooms or spaces below. Attach the membrane waterproofing to the floor drain by a clamp, extend outward from the floor drain under the entire area of the surrounding floor finish surface or concrete topping which slopes toward the floor drain or which is subject to surface water, and carry up abutting vertical surfaces at least 3 in.

### 6.8.2 FLOOR SLAB DEPRESSIONS

Floor slab depressions are required in specific areas or rooms for the purpose of providing slopes in floors to:

- Direct water into drains.
- Provide for special floor finishes that require a setting bed.

Depress floor slabs at the following locations to maintain level floors. Ramp will not be allowed

- Roll-on weight scales
- Audiology booths
- Elevator Equipment Room
- SPS: Automatic cart wash
- Warehouse scale
- Dock levelers

It is the responsibility of the A/E team to ensure that depressions are provided to suit the actual finishes and equipment provided, and to satisfy the actual conditions required by the design. Construction documents shall provide a slab plan the clearly identifies, dimensions and detail references the limits of all floor slab depressions, slopes and drain locations. The A/E team shall confirm that all slopes can be achieved to the drain given the slab thickness and coordinate with the structural engineer on conditions where the resulting concrete cover may be insufficient and require additional structural reinforcing.

In addition to SCP moisture protection liquid applied water proofing shall be latex based water proofing membrane, ANSI A118.10; ready to use liquid latex compatible with Cement Backer Boards and tile setting mortars. Reinforcing fabric shall be alkali-resistant glass fiber. Final Performance shall be as follows in conformance with ANSI A118.10:

| | |
|---|---|
| Waterproofing ability (ASTM D 4068) | Conforms (no water penetration) |
| Seam strength and breaking strength (ASTM D751) | Conforms (no water penetration) |
| Seam strength and breaking strength (ASTM D751) | Conforms |
| Dimensional stability (ASTM D1204) | Conforms |
| Shear strength to ceramic tile (ASTM C482) | Conforms |
| Fungus and microorganism resistance (ASTM G21-96) | Conforms |

### 6.8.3 FLOORING, CERAMIC TILE

Unglazed ceramic mosaic tile shall be used in all toilets and other areas specified in Schedule E. Provide slab depressions, setting beds and waterproof membrane.

Comply with ANSI A137.1, Standard Grade, and as follows. Coefficient of friction, when tested in accordance with ASTM C1028, shall provide the following level of performance:

- Not less than 0.7 (wet condition) for bathing areas.
- Not less than 0.8 on ramps for wet and dry conditions.
- Not less than 0.6 for wet and dry conditions for other areas.

### 6.8.4 FLOORING, EPOXY

In addition to SCP moisture protection to the concrete subbase the A/E Design Team shall use epoxy floor coverings with integral epoxy wall bases in Emergency Rooms, Operating Rooms, Laboratories, Imaging Rooms, Kitchens, and rooms where Electrostatic Discharge must be eliminated.

Review with the Owner, for the approval to specify epoxy flooring, as an add alternate in other areas of the hospital, including but not limited to: Corridors, Clinics, Patient Rooms, Exam

Rooms, Nursing Stations, Entry and Waiting Areas and other areas subject to heavy foot / equipment traffic and bio-hazards.

Where epoxy flooring systems are installed the A/E Team shall:

- Specify the space required, slip resistance requirements.
- Shall specify impact / footfall absorbing characteristics for noise reduction and walking comfort.
- Shall denote patterns, colors, wayfinding, etc in the Interior Floor Finish construction drawings.

### 6.8.5 FLOORING, VINYL TILE AND SHEET VINYL

**Vinyl Composition Tile**
Vinyl composition floor tile (VCT) ASTM F1066, Composition 1, Class 2 (through pattern), 1/8-inch thick, 12 inches square, shall be provided at locations in Schedule E.

**Luxury Vinyl Tile**
Luxury Vinyl Tile (LVT) ASTM F 1700, Class III, Type B, Embossed Surface, 1/8-inch thick, plank flooring, shall be provided at locations indicated in Schedule E.

**Welded Seam Sheet Flooring**
Welded Seam Sheet Flooring (WSF) shall be provided at locations listed in Schedule E. Rooms to receive WSF shall have 6-inch integral cove base (flash coving). WSF shall conform to ASTM F1303 for sheet vinyl flooring, Type II, Grade 1, except for backing requirements. Flooring shall be homogeneous through full thickness; backed sheet flooring is not acceptable. Minimum nominal thickness is 0.08 in [2 mm]; minimum width, 6 feet [18 m]. Each color and pattern of sheet flooring shall be of same production run. Welding rod shall be product of floor covering manufacturer; color of welding rod shall match field color of sheet vinyl.

All vinyl products shall be installed over a concrete subbase prepared with “Spray-Lock SCP”

### 6.8.6 FLOORING, RUBBER

Rubber tile shall conform to ASTM F1344, Class 1, homogenous rubber tile, through mottled, 12 inches square, thick; color and pattern uniformly distributed throughout tile. Molded pattern wearing surface base thickness shall be 1/8-inch thick. Where rubber tile is used, provide tiles with a minimum of 90% post-consumer rubber.

Resilient treads shall conform to Fed. Spec. RR-T-650, Composition A, Type 2,-3/16 inch thick on wear surface tapering to 1/8-inch thick at riser end. Nosing shape shall conform to sub-tread nosing shape.

Sheet rubber flooring shall conform to ASTM F1344, F1859 or F1860, 36 inches wide, 1/8-inch thick, patterned face, material by the same manufacturer as the rubber treads, color and pattern to match treads. Provide rubber flooring made with a minimum of 90% consumer rubber where possible.

### 6.8.7 TERRAZZO TILE

Terrazzo tile units shall have chamfered face edges with ground and polished surface and shall conform to ASTM C14 and C293.

## 6.8.8 FLOORING, CARPET

**Carpet**
New broadloom carpet shall be used as floor covering only in areas approved by the Owner and shall be limited to non-public spaces such as private offices. The A/E team shall submit carpet samples and specifications for approval.

**Minimum Physical Characteristics**
Carpet shall be free of visual blemishes, streaks, poorly dyed areas, fuzzing of pile yarn, spots or stains, and other physical and manufacturing defects.

Carpet shall be manufacturer's standard construction commercial carpet:

Broadloom; maximum width to minimum use
Modular Tile: 24 in [600 mm] square tile.

Provide static control to permanently control static build up to less than 2.0 kV when tested at 20% relative humidity and 70 ˚F [21 ˚C] in accordance with AATCC 134.

**Pile Height**: Maximum 0.10 in [3.25 mm].

**Pile Fiber**: Nylon with recycled content 25% minimum branded (federally registered trademark).

**Pile Type**: Level Loop.

**Backing materials**: Manufacturer's unitary backing designed for glue-down installation using recovered materials.

**Appearance Retention Rating (ARR**): Carpet shall be tested and have the minimum 3.5-4.0 Severe ARR when tested in accordance with either the ASTM D 5252 (Hexapod) or ASTM D 5417 (Vettermann) test methods using the number of cycles for short- and long-term tests as specified.

**Tuft Bind**: Minimum force of 40 N (10 lb) required to pull a tuft or loop free from carpet backing. Test per ASTM D1335.

**Colorfastness to Crocking**: Dry and wet crocking and water bleed, comply with AATCC 165 Color Transference Chart for colors, minimum class 4 rating.

**Colorfastness to Ozone**: Comply with AATCC 129, minimum rating of 4 on the AATCC color transfer chart.

**Delamination Strength**: Minimum of 2.5 lb/inch between secondary backing.

**Flammability and Critical Radiant Flux Requirements**: Test Carpet in accordance with ASTM E 648: Class I: Not less than 0.45 watts per square centimeter.

**VOC Limits**: Use carpet that complies with the testing and product requirements of the Carpet and Rug Institute's Green Label Program.

**Installation**
Carpet shall be a direct glue down installation over a concrete sub-base prepared with "Spray-Lock SCP" following the manufacturer's instructions. All patterns and/or stripes shall match. A

seam layout plan shall be provided for broadloom to assure that seams are located out of major traffic patterns.

## 6.9 WALL COVERINGS

Walls shall be covered in accordance with a "Room Finish Schedule" or other requirements of this Solicitation.

### 6.9.1 CERAMIC WALL TILE

Ceramic wall tile shall be glazed tile. Ceramic tile at showers and wet locations shall be installed over 'RedGard' coated cement backer board.

Comply with ANSI A137.1, Standard Grade; cushion edges; matte glazing. Trim shapes shall conform to applicable requirements of adjoining floor and wall tile. Provide cove and bullnose shapes at planar transitions, and where required to complete tile work.

Cementitious backer units shall comply with ANSI A118.9.

**Vinyl Wallcovering (W)**
Vinyl wall covering shall **c**omply with CFFA-2575. Fungi-resistance rating shall be 0 in accordance with ASTM G21. Provide factory-applied clear delustered polyvinyl-fluoride (PVF) coating minimum ½ mil [0.0125 mm] thickness. Do not include PVF coating weight in minimum total weight. Fire hazard classification with PVF coating shall be Class A.
Type II (Medium Duty)

Adhesive shall be vermin and mildew resistant.

**Protective Wallcovering (WP)**

Wainscot of rigid PVC protective wall covering (WP) shall be installed on walls in corridors and other locations in accordance with Schedule E.

Provide rigid, embossed, impact-resistant protective wall covering of PVC plastic sheets or roll stock. Material shall have following minimum properties: Thickness: 0.060 inch; Roll Width: 48 inches; or Sheet Size: 48" x 96"; Flame/Smoke Ratings: ASTM E 84, Class A; Flame Spread 0-25; Smoke Developed 0-450. Provide accessories: color matched rigid vinyl moldings and trim; acrylic latex primer/sealer, and mildew-resistant adhesives and caulk. Materials shall be cadmium and mercury free.

## 6.10 PAINTING

**General**
Painting shall include field application of paints, stains, epoxies, and other coatings for surfaces and materials not supplied with factory finish or otherwise pre-finished. Painting includes shellacs, stains, varnishes, coatings specified, striping or markers, and identity markings.

**Products**
A/E shall specify best quality grade of the various types of painting materials and coatings as regularly manufactured by acceptable paint manufacturer. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.

A/E shall specify primers with pigment and vehicle recommended by topcoat manufacturer as compatible with substrate and finish coats specified. Use only thinners approved by the paint manufacture and use only within recommended limits.

A/E shall specify ready-mixed (including colors), except two component epoxies, polyurethanes, polyesters, paints having metallic powders packaged separately, and paints requiring specified additives.

Paint materials shall conform to the restrictions of the local Environmental and Toxic Control jurisdiction. Volatile Organic Compounds (VOC) content of paint materials shall not exceed local, state or district requirements. Lead-base paints shall not be used. Materials shall not contain asbestos, zinc-chromate, strontium-chromate, cadmium, mercury or mercury compounds, or free crystalline silica. Materials shall not contain any of the ACGIH-BKLT and ACGHI-DOC confirmed or suspected human carcinogens.

**Application**
Unless otherwise specified, apply paint in three coats: prime, body, and finish. When two coats applied to prime coat are the same, the first coat applied over primer is body coat and the second coat is the finish coat. Apply each coat evenly and cover substrate completely. Finish surfaces to show solid even color, free from runs, lumps, brushmarks, laps, holidays, or other defects.

**Paint Schedule**
Gypsum Wallboard, except where epoxy coating (SC) is required:

- 1 coat primer sealer applied prior to texturing
- 1 coat pigmented sealer/primer
- 2 coats acrylic latex enamel low luster

Gypsum Wallboard epoxy coating, (SC):

- 1 coat primer sealer
- 2 coats waterborne epoxy semi-gloss

Ferrous and Galvanized Metal:

- 1 coat vinyl acrylic primer or vinyl pre-wash primer (if not factory-primed)
- 2 coats acrylic latex enamel semi-gloss

Wood – Transparent Finish:

- Provide hand-wiped stained finish, water-based, clear acrylic, premium grade gloss and color as selected
- Stain
- 2 coats clear finish

## 6.11 HANDRAILS, WALL GUARDS AND CORNER GUARDS

Corner guards shall be stainless steel, conforming to ASTM A167, Type 302B. Extruded aluminum components shall conform to ASTM B221, Alloy 6063, Temper T5 or T6.

Handrails and Wall Guards shall be of resilient materials, extruded and injection molded acrylic vinyl or extruded polyvinyl chloride meeting following requirements:

- Minimum impact resistance of 2150 ft-lbs [200 Nm] (when tested in accordance with ASTM D256 (Izod impact, ft-lbs per inch notch).
- Class 1 fire rating when tested in accordance with ASTM E84, having a maximum flame spread of 25 and a smoke developed rating of 450 or less.
- shall be rated self-extinguishing when tested in accordance with ASTM D635
- Material shall be labeled and tested by Underwriters Laboratories or other approved independent testing laboratory.

Provide resilient materials with integral color.

### 6.11.1 HANDRAILS AND WALL GUARDS

Except in administrative areas, provide handrails and wall guards on both sides of all corridors. Provide chair rail at locations subject to chair contact at a height corresponding to the chair contact point. Provide continuous reinforcing in the wall attachment of handrails and bumper guards.

Handrail/Wall Guard Combination shall consist of snap-on covers of resilient material, , free-floated on a continuous, extruded aluminum retainer, anchored to wall at maximum 32 inches on center.

Wall Guards (Crash Rails) shall consist of snap-on covers of resilient material, free-floated over a continuous extruded aluminum retainer, anchored to wall at maximum 24 inches on center.

### 6.11.2 CORNER GUARDS

Stainless steel corner guards shall be fabricated of stainless steel. Stainless steel corner guards shall be surface mounted, with 3-inch wings and ¼-inch corner.

**Resilient and Corrosion Resisting Metal Guards**
Provide resilient or corrosion-resisting metal corner guards for the external corners of finished interior walls and columns in the paths of wheeled traffic as indicated below. Use integral (recessed) applied 48 inch high resilient-type corner guards on gypsum wall board walls. Use corrosion-resisting-metal corner guards on masonry or ceramic tile walls.

Corridors of:

- Ambulatory Care and Clinical Areas
- Warehouse and Receiving Areas

Areas of:

- Cart Storage
- Pharmacy
- Supply Processing and Distribution
- Food Preparation and Storage
- Service Elevator Lobbies
- Warehouse and Receiving

## 6.12 INTERIOR SIGNAGE

A/E team shall develop and submit a signage plan for review and approval by the Owner during design development. Interior signage systems shall include identification, directional, informational, and code required signage. All signage shall comply with accessibility standards.

## 6.13 BUILT-IN WORK

### 6.13.1 CASEWORK AND COUNTERTOPS

**Casework**
Casework shall be of the flush overlay design and, except as otherwise specified, be in conformance with AWI 1600, Modular Cabinets. Fabricate casework of plastic laminated covered marine grade plywood.

- Plastic laminate shall conform to NEMA LD-3
- Exposed vertical surfaces including both sides of cabinet doors, face frames and exposed sides shall be high pressure plastic laminate.
- Cabinet interiors and backing shall be clear sealed white ash veneer face of marine grade plywood.
- Cabinet shelving shall comply with NEMA, LD3.1 at a minimum: high pressure cabinet liner Type CLS (0.20), OR thermally fused melamine laminate.

Core materials shall be as follows:

- Shelving – High Density Particleboard up to 7/8 inch thick shall be Industrial Grade average 58.5-pound density particleboard, ANSI A 208.1, M-3.
- Cabinet – 1/2-inch-thick single sided white ash veneer Marine grade Plywood.
- Cabinet Doors - 3/4-inch-thick Marine grade Plywood

Edging materials shall be 1 mm PVC banding, machine applied, and 3 mm PVC banding, machine applied, and machine profiled to 1/8-inch radius.

Exposed hardware, except as otherwise specified, shall be satin-finished chromium-plated brass or nickel-plated brass.

Hinges shall be fabricated of chromium-plated steel. Hinges shall be heavy duty, full overlay / self-closing / concealed hinge with 110 degree opening angle with all required mounting hardware and adjustment screws for vertical and horizontal alignment. Doors 36 inches and more in height shall have three hinges, and doors less than 36 inches in height shall have two hinges. Each door shall close against two rubber bumpers.

Door catches shall be friction or magnetic type, fabricated with metal housing. Provide one catch for cabinet doors 48 inches high and under, and two for doors over 48 inches high.

Locks shall be cylinder type, 5 pin tumbler, cam style lock with strike. Acceptable locks for ¾-inch thick doors include: National #M2-3708-157 lock and National #M2-3709-100 with strike. Provide two keys for each lock. The name of the manufacturer, or trademark by which manufacturer can readily be identified, shall be legibly marked on each lock, the key change number shall be marked on the exposed face of lock, and also stamped on each key. Key change numbers shall provide sufficient information for replacement of the key by the manufacturer.

Drawer and door pulls shall match cabinet pulls.

Drawer slides shall be full extension, 150-pound load rated epoxy coated steel with nylon, ball bearing rollers, with positive stop both directions.

**Countertops**
**Solid Surface Material (SSM)**: Solid surface material shall be a homogenous filled solid polymer, not coated, laminated, or of a composite construction, and meeting ANSI Z124.3 and ANSI Z124.6 requirements.

**Flammability**: Flame Spread shall be 25 max. Smoke Developed shall be 25 max. Material thickness shall be as indicated on the drawings. Cast, 100 % acrylic solid polymer material shall be composed of acrylic polymer, mineral fillers, and pigments and shall meet the following minimum performance requirements:

| Property | Typical Result | Test |
|---|---|---|
| Tensile Strength | 6,000 PSI | ASTM D 638 |
| Tensile Modulus | 1.5 x $10^{-6}$ PSI | ASTM D 638 |
| Tensile Elongation | 0.4% min. | ASTM D 638 |
| Flexural Strength | 10,000 PSI | ASTM D 790 |
| Flexural Modulus | 1.2 x $10^{-6}$ PSI | ASTM D 790 |
| Hardness | >85 | Rockwell "M" Scale ASTM D 785 |
| Thermal Expansion | 3.02 x $10^{-5}$ in./in./°C | ASTM D 696 (1.80 x $10^{-5}$ in./in./°F) |
| Gloss (60° Gardner) | 5–75 (matte—highly polished) | ANSI Z124 |
| Light Resistance | (Xenon Arc) No effect | NEMA LD 3 Method 3.3 |
| Wear and Cleanability | Passes | ANSI Z124.3 & Z124.6 |
| Stain Resistance: Sheets | Passes | ANSI Z124.3 & Z124.6 |
| Fungus and Bacteria Resistance | Does not support microbial growth | ASTM G21&G22 |
| Boiling Water Resistance | No visible change | NEMA LD 3 |
| High Temperature Resistance | No change | NEMA LD 3 |
| Water Absorption | Long-term<br>0.6% (1⁄2")<br>0.8% (1⁄4") | ASTM D 570 |

Molded Resin Tops shall be non-glare epoxy resin or furan resin compounded and cured for minimum physical properties specified. Material shall be of uniform mixture throughout.

| | |
|---|---|
| Compressive strength | 200 MPa (30,000 PSI) |
| Flexural strength | 70 MPa (10,000 PSI) |
| Rockwell hardness | 105 |
| Water absorption, 14 hours (weight) | .01% |

Stainless Steel shall conform to ASTM A167, Type 304.

Sheet Steel shall conform to ASTM A366, cold rolled, Class 1 finish, stretcher leveled.

Hardwood and Granite countertops shall not be permitted.
Engineered (Quartz) Stone shall comply with the following ASTM standards:

- C97 - Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.
- C99 - Standard Test Method for Modulus of Rupture of Dimension Stone.
- C170 - Standard Test Method for Compressive Strength of Dimension Stone.
- C241 - Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic.
- C482 - Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement.
- C484 - Standard Test Method for Thermal Shock Resistance of Glazed Ceramic Tile.
- C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
- C648 - Standard Test Method for Breaking Strength of Ceramic Tile.
- C650 - Standard Test Method for Resistance of Ceramic Tile to Chemical Substances
- C672(M) - Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals.
- C880 - Standard Test Method for Flexural Strength of Dimension Stone.
- C1026 - Standard Test Method for Measuring the Resistance of Ceramic Tile to Freeze-Thaw Cycling.
- C1028 - Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
- E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

Engineered Stone shall be a composite of aggregate, resin and color pigments formed into flat slabs. Material shall have an integral anti-microbial additive.

Physical Characteristics

- Static coefficient of friction: 1.02 dry, 0.51 wet, tested to ASTM C1028.
- Water absorption: Maximum 0.03 percent, tested to ASTM C97.
- Compressive strength: Minimum 29,000 psi, tested to ASTM C170.
- Bond strength: Minimum 210 psi, tested to ASTM C482.
- Modulus of rupture: Minimum 6300 psi, tested to ASTM C99.
- Flexural strength: Minimum 5800 psi, tested to ASTM C880.
- Breaking strength: Minimum 480 lbf, tested to ASTM C648.
- Stain resistance: Not affected by 10 percent hydrochloric acid or 10 percent KOH, tested to ASTM C650.
- Thermal shock resistance: Pass 5 cycles, tested to ASTM C484.
- Abrasive index: 65-Ha = 25, tested to ASTM C241.
- Thermal expansion: 1.670 x 10-5 in/in/deg F, tested to ASTM C531.
- Deicing resistance: Rating of 0, tested to ASTM C672/C672M.
- Freeze/thaw resistance: 0 tiles at 15 cycles, tested to ASTM C1026.
- Flame spread rating: Class 1, tested to ASTM E84.

Adhesive for plastic laminate shall conform to FS A-A-1936. Adhesive for shop and field joints in Solid Surface Material (SSM) shall be a two-part adhesive kit to create permanent, inconspicuous, non-porous, hard seams and joints by chemical bond between solid polymer materials and components to create a monolithic appearance of the fabrication. Adhesive shall be approved by the solid polymer manufacturer. Adhesive shall be color-matched to the surfaces being bonded where solid-colored, solid polymer materials are being bonded together. The seam adhesive shall be clear or color-matched where particulate patterned, solid polymer materials are being bonded together.

Fasteners shall be studs, bolts, spaces, threaded rods with nuts, or screws suitable for materials being joined with metal splice plates, channels, or other supporting shapes.

### 6.13.2 COMPUTER WORKSTATIONS AND KEYBOARD TRAYS

Computer keyboard trays shall be provided at each sit-down height and standing height knee space in casework and at each Radiology room control station countertop.

### 6.13.3 LOCKERS AND SHELVING

Type(s), quantities, and locations of lockers and shelving shall be as required and defined by the Owner.

## 6.14 PLUMBING FIXTURES, TOILETS AND BATHS

### 6.14.1 TOILET PARTITIONS

Provide toilet partitions at all restrooms with multiple toilets. Room entrance screens that double as part of a toilet partition enclosure shall be of typical stud construction, from floor to ceiling. Do not use toilet stalls or divider partitions in single-user toilet rooms in which only a lavatory and water closet are provided.

Toilet Enclosures shall be ceiling hung. Reinforce panels to receive toilet tissue holders, grab bars, or other accessories specified. Upper pivots and lower hinges shall be adjustable to hold doors open 30 degrees. Latching devices and hinges for handicap compartments shall comply with accessibility requirements.

**Finish**: Solid phenolic or solid polyethylene: water resistant, graffiti resistant, non-absorbent, contain a minimum 30% post-consumer recycled plastic, Class C flame spread rating.

Urinal Screens shall be constructed to match toilet partitions. Stall layout at urinal shall match that required for toilets, except omit door. Comply with accessibility standards.

### 6.14.2 SHOWERS

Use solid surface panels of the greatest available width and extending full height to the ceiling for shower enclosures and partitions of contiguous areas. Warp finished floors of adjoining drying rooms or toilet rooms toward showers to assure drainage to the shower drain. Floor slopes in and around a shower shall not exceed 5%.

Construct all patient showers without curbs. In non-patient shower rooms, provide at least one shower stall without a curb.

### 6.14.3 TOILET AND SHOWER ACCESSORIES

A/E team shall delineate the types and locations of all toilet accessories for review and approval by the Owner and shall specify suitable backing and other preparation as necessary for items indicated to be secured to the intended substrate.

Toilet accessories shall be shop or factory assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation. Grind welded joints smooth. Fabricate units made of stainless-steel sheets with flat surfaces.

Stainless steel sheet shall conform to ASTM A167, Type 304. Stainless steel tubing shall conform to ASTM A269. Galvanized sheet steel shall conform to ASTM A653, G60.

Mirror glass shall be float glass, Type I, Class 1, Quality q2 (ASTM C 1036), with silvering, copper coating, and suitable protective organic coating to copper backing in accordance with FS DD-M-411.

Adhesive shall be two component epoxy type or contact type and waterproof. Fasteners, screws, and bolts shall be stainless steel or hot dip galvanized. Exposed fasteners shall be tamper-proof. Expansion shields shall be fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

Stainless steel shall have No. 4 satin brushed finish, unless otherwise noted. Chrome/Nickel Plating shall conform to ASTM B456, Type SC 2, satin finish, unless otherwise noted. Galvanizing for items other than sheet metal shall conform to ASTM A123, 1.25oz/sq yd.

## 6.15 WINDOW TREATMENTS

All exterior windows shall be equipped with window blinds or shades.

### 6.15.1 WINDOW BLINDS

Blinds may be aluminum or plastic vertical blinds, or horizontal blinds with aluminum slats of one inch width or less horizontal and no less than 4-inch width for vertical blinds. The window blinds must have non-corroding mechanisms and synthetic tapes.

## 6.16 HOLDING ROOM

Construct walls for holding room with 5/8-inch [15.88 mm] abuse-resistant GWB over security mesh on metal studs as specified for plaster finish. Metal lath or plaster base is unacceptable as security mesh. Security mesh shall be flattened, expanded metal manufactured from high strength, low alloy steel and shall conform to ASTM F 1267, Type 11, Class 1, Mill finish.

- **Mesh designation**: 3/4 #13F
- **Mesh Design Size**: 0.923 x 2.10 inch
- **Mesh Opening Size**: 0.688 x 1.781 inch
- 13 meshes per foot, 74% open area
- **Mesh Strand Width**: 0.106 inch
- **Mesh Strand Thickness**: 0.078 inch
- **Weight**: 0.75 pounds per square foot

Provide manufacturer's attachment clips and use recommended fasteners to secure mesh to wall framing.
The Holding Room should be contiguous with Security Operations Room and contain a shatterproof observation window in the door. The door shall open outward. The holding room shall not have exterior windows.

Provide one (1) each: motion detector, glass break module, and set of door contacts for holding room door. Locate alarm system keypad on the entrance side of the holding room door. Connect the alarm system for the holding room to the main building alarm system. Zone the alarm system so that the alarm for the holding room can be set and disarmed independent of the main building alarm system.

# SECTION 7 INSTRUCTIONS AND SUBMITTALS

## 7.1 NOTICE TO ARCHITECTS/ENGINEERS

The A/E must read all parts of this RFP. All forms required for offer are included in this document. Any additional information must be requested in writing.

## 7.2 DEVIATIONS

Submittals will be construed to be in full and complete compliance with this RFP unless the A/E describes any deviation in the offer. The SEB shall make decisions regarding deviations that cause the offer to be non-responsive.

## 7.3 DRAWINGS AND SPECIFICATIONS

The A/E shall submit drawings and specifications in digital format, and provide (2) hard copy sets of drawings and specifications with the following minimum information. Format and for hard copy submittal shall be as follows:

**Drawings**
Hard copies shall be black line prints on bond paper, full size (30" x 42"). Each set shall contain all sheets for all disciplines.

**Specifications**
Hard copies shall be printed on 8½" x 11" bond paper. Materials may be one-sided or double-sided copies. Each copy shall contain all sections. Organize and tab materials by discipline.

***NOTE 1*:** Failure to provide drawings and specifications in accordance with the requirements above may cause the offer to be deemed unacceptable and rejected accordingly.

***NOTE 2*:** The space programming provided by the Owner as a part of this RFP is intended to convey desired space use and areas of the program to be incorporated into the first phase of this improvement as well as subsequent phased improvements. It is the A/E's responsibility to design the building to comply with applicable Building Codes, Standards, and Ordinances and make provisions in the initial phase of construction to support the addition of subsequent phases of construction without a significant impact on the on-going operations of the hospital.

***NOTE 3*:** All drawings shall be prepared per VHA National CAD Standard Application Guide, available on the VA Technical Information Library (TIL) website. Drawings shall be on Architectural E-size sheets (30x42 inches). Title blocks shall identify the A/E and shall include RFP Name, Number, and Location. Drawings shall be organized by discipline and shall include the following minimum information:

### 7.3.1 SITE PLAN(S)

Minimum scale 1"=40' or per local jurisdictions standard requirements, whichever is greater. Plan(s) shall show all site and building demolition, and all site improvements including grading, exterior equipment location, parking, vehicle and pedestrian circulation, storm water retention, and landscaping. Indicate any relationship to flood plains, adjacent uses, and current zoning status.

Lessor shall identify potential issues as they pertain to the site complying with all Codes, Standards, and Ordinances.

### 7.3.2 FLOOR PLAN(S)

Submit, as a minimum, a double line layout for all floors, penthouses, and roof areas with double line exterior walls at a scale not less than 1/8 inch. Show all rooms, doors, corridors, basic column grid, assumed column sizes, expansion and seismic joint locations, mechanical, electrical, and telecommunications rooms, shafts, and (if applicable) all vertical circulation, i.e., stairs and elevators.

Identify each room or space with a space identification code or number.

Show the overall exterior dimensions, dimensions for building wings or offsets, and dimensions for column grids.

### 7.3.3 ELEVATIONS

Submit preliminary elevations of all facades showing massing, proposed fenestration, and the building relationship to finish grades. Show all significant building materials, any proposed roof top mechanical equipment, and architectural screens on the elevation drawings.

Provide a schematic section to define building configuration.

### 7.3.4 COLOR RENDERINGS

Submit a minimum of two (2) color renderings of perspective views to communicate the design concept and materials. Submit at least one exterior view illustrating building massing, exterior materials and colors, fenestration, and relationship to context. Submit at least one interior view to illustrate approach to the interior design concept, materials, colors, and integration with wayfinding.

Renderings may be prepared using the A/E's preferred media. Renderings shall be minimum 15" x 20". Submit renderings in an electronic format (pdf).

### 7.3.5 SPECIFICATIONS

Submit outline specifications for foundations, superstructure, exterior closure and building envelope systems, plumbing, fire protection, HVAC, electrical, and telecommunications systems.

END