



**SUBJECT**

Functional Program

**PIN: 57**

**Effective: 3/10/2014**



**PURPOSE**

Architectural programming began when architecture began. Structures have always been based on programs. The “Functional Program” is the problem statement used to define the intent of the project and the criteria necessary to develop the design solution. Programming is defined as *“the process of leading to a statement of an architectural problem and the requirements to be met in formulating a solution. Programming is a problem seeking process and therefore seeks to identify the problem that the design process must solve.”* (AIA/NCARB 1987)

Programmatic information includes definition of the facility users (including types and number), the activities or services provided in the facility, and the required space, equipment and any spatial adjacencies needed to support those activities to allow them to function properly. Basic and Supplemental Services provided in health care facilities in California are regulated by the California Department of Public Health (CDPH). These requirements are consequently reflected in the California Building Standards Code (CBSC) and include minimum required Service Spaces and the minimum functional areas, spatial and equipment requirements within each of these Service Spaces. With the intent that the completed facility be licensed by CDPH to operate in California, a functional program should not include programmatic criteria that is contrary to minimum code requirements in the CBSC.

This Policy Intent Notice (PIN) provides guidelines for the preparation and use of the functional program required under California Administrative Code (CAC) Section 7-119. Since the structure and content of functional programs vary considerably from owner to owner and from project to project, the CAC provides a standardized structure and identifies required content for use as an effective reference document during review of the project application documents. This PIN addresses the submittal requirements outlined in CAC Section 7-119 and clarifies the intended use of this document during OSHPD review of the project.

**BACKGROUND**

OSHPD is authorized and mandated to develop and enforce regulations for the construction of hospitals, skilled nursing facilities, and intermediate care facilities. OSHPD reviews projects for compliance with minimum code requirements and assesses the varying approaches facilities take in providing health care to meet the intent of the CBSC.

Various facilities provide health care in different ways and the provision of health care by any one facility might evolve over time. The functional program requirement is intended to result in an effective document to identify the intent of the project's design solution and the appropriate standards to apply during the review process. It also presents an opportunity to consider emerging concepts and techniques, and to anticipate when a Program Flexibility might be necessary from CDPH. The following code sections provide for program flexibility:

California Administrative Code Section 7-104

*The provisions of the California Building Standards Code (CBSC) are not intended to prevent the use of any alternate method of compliance not specifically prescribed by the CBSC, provided written approval for such alternate method has been granted by the Office. Alternate methods include Alternate Means of Protection, Alternate Method of Compliance, Alternative System, designs required by regulations to be specifically approved by the enforcing agency, and Program Flexibility.*

California Building Code Section 1224.2, Exception 2

*The provisions of this section do not prohibit the use of alternate space utilization, new concepts of design, treatment techniques, equipment and alternate finish materials provided the intent of this section is accommodated and written approval for such alternative is granted by the enforcing agency. Written substantiating evidence in support of the alternate and a written request for consideration shall be submitted to the enforcing agency.*

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**POLICY**

The functional program is to be used as a "reference document" during OSHPD review of a health facility project. While there is a requirement for health facilities to prepare and submit a functional program, it is not a part of the construction documents and is not subject to approval by OSHPD.

The functional program is required to include various spatial and equipment requirements. Final room sizes, minimum clear dimensions of rooms or spaces, required fixtures, and the functional adjacencies shown in the final construction documents must comply with the requirements provided under California Building Code (CBC) Sections 1224, 1225 and 1226. This compliance is enforced regardless of what is shown in the functional program, unless the design solution is supported by a Program Flexibility from CDPH and an Alternative Method of Compliance (AMC) approved by OSHPD.

California Administrative Code Section 7-119 (a)

*... The [functional program] requirement applies to all scopes and disciplines of the project that affect patient care directly or indirectly, by means of new construction, additions, or modifications to specific hospital departmental functions which form an integral part of the facility.*

The functional program requirement does not apply to: projects that only involve seismic retrofit projects for compliance with SB 1953; SB 1838 projects; AB 2632 projects; equipment replacement; fire and life safety or accessibility upgrades; and renovations that will not change the occupancy, function or use of existing space. A change in function is a change in activity or service provided within the project limits that does not change the use, specific use, or occupancy. A change in function generally results in the application of a different code sub-section under CBC Sections 1224, 1225 or 1226, than that of the previous function associated with any space or area within the project. Projects that are excluded or exempt from review, projects of limited scope eligible for field review or expedited review, and projects under an annual building permit, as described in the Field Review, Exempt, and Expedited Review (FREER) Manual are not subject to the functional program requirement of CAC Section 7-119.

## PROCEDURE

The Functional Program is divided into two sections: the “**Executive Summary**” covered by CAC Section 7-119 (b) and the “**Functional Program Detail**” covered by CAC Section 7-119 (c). Refer to the following code sections and discussion of intent:

### EXECUTIVE SUMMARY

#### **CAC 7-119. Functional Program**

**(b) Functional Program executive summary.** *An executive summary of the key elements of the functional program shall be provided and, at a minimum, shall include the following narrative:*

##### **1. Purpose of the project.**

- A. The narrative shall describe the services to be provided, expanded, or eliminated by the proposed project.*
- B. The narrative shall describe the intent of the project and how the proposed modifications will address the intent.*

**Intent:** This opening statement is only a part of the executive summary and only needs to describe the overall intent of the project. If the project is a new hospital or skilled nursing facility, it should include any supplemental services, beyond the basic services, to be provided and the **total licensed bed count anticipated**. If the project is a renovation, include any change in services provided and/or in licensed bed count.

##### **2. Project type and size.**

- A. The type of health care facility(ies) proposed for the project shall be identified as defined by the California Building Code.*
- B. Project size in square footage (new construction and renovation) and number of stories shall be provided.*

**Intent:** This is simply the identification of the health care facility type (i.e. general acute-care hospital, acute psychiatric hospital, etc.) and the project type (i.e. a renovation, addition, or new construction). The overall anticipated Building Gross Square Footage (BGSF) brought forward from the functional program detail (in response to CAC Section 7-119 (c) 6.B.2) should be used for new projects and the overall area of work should be used for renovation projects. This information may be included in any paragraph(s) in response to CAC Section 7-119 (b) 1 above, or in a separate table format.

### **3. Construction type/occupancy and building systems.**

**A. New Construction.** *If the project is new construction that is not dependent on or attached to an existing structure, the following shall be provided:*

- (1) *A description of construction type(s) for the proposed project.*
- (2) *A description of proposed occupancy(ies) and, if applicable, existing occupancy(ies).*
- (3) *A description of proposed engineering systems.*
- (4) *A description of proposed fire protection systems.*

**Intent: If the project is new construction:** The description of construction type must be associated with one of those listed in CBC Chapter 6 (i.e. Type I-A or –B, Type II-A or –B, Type III-A or –B, Type IV, or Type V-A or –B). This identification should be the least restrictive type that can support the overall area (BGSF) and proposed height as allowed in CBC Table 503. The description of occupancy(ies) must be associated with one or more of the Occupancy Groups listed in CBC Chapter 3 (e.g. A-2, B, H-3, I-2, I-2.1, S, etc.). The structural system; heating, cooling and hot-water systems; and electrical system descriptions can be a sentence or two summarizing the discussions under Section (c).5.C in the Functional Program Detail. If an automatic sprinkler system is required, compliance with NFPA 13 and CBC Chapter 9 should be discussed.

**B. Renovation.** *For a project that is a renovation of, or addition to, an existing building, the following shall be included in the project narrative:*

- (1) *A description of the existing construction type and the construction type for any proposed renovations or additions shall be described.*
- (2) *A general description of existing engineering systems serving the area of the building affected by the proposed project and how these systems will be modified, extended, augmented, or replaced by the proposed project.*
- (3) *A general description of existing fire protection systems serving the area of the building affected by the proposed project and how these systems will be modified, extended, augmented, or replaced by the proposed project.*

**Intent: If the project is an addition or renovation:** The intent of the description of Construction Type and Occupancy Group is similar to that for (b) 3.A above, although these may already be existing and established in a renovation of an existing building. Clearly identify any change in Occupancy Group. Describe the existing and any new structural system. Describe the extension and/or modification of the existing HVAC, plumbing, electrical, and fire protection systems necessary to serve the project. Include descriptions similar to those required under (b) 3.A above.

## FUNCTIONAL PROGRAM DETAIL

### **CAC 7-119. Functional Program**

**(c) Functional program content.** *The functional program for the project shall include the following:*

**1. Purpose of the project.** *The physical, environmental, or operational factors, or combination thereof, driving the need for the project and how the completed project will address these issues shall be described.*

**Intent:** This description should be more comprehensive than the description provided in the executive summary. For new construction this may be in response to a demographic shift in population in the region, it may be in response to an internal operational change in the provision of health care, or it may be in response to the age of an existing facility and limited remaining useful life expectancy weighed against continuing maintenance and capital improvement costs. Renovation projects may also be in response to demographic changes in the population served, a response to advances in medical techniques and/or technology, or even a need to revitalize or re-purpose certain portions of an aging facility.

**2. Project components and scope.**

*A. The department(s) affected by the project shall be identified.*

*B. The services and project components required for the completed project to function as intended shall be described.*

**Intent:** All departments associated with the project must be identified using the same terminology associated with Basic and Supplemental Services as used in the CBC (e.g. nursing, surgery, PACU, clinical laboratory, etc.). For renovation/expansion projects that include services, such as Surgery, that are dependent upon other service spaces to function, the supporting services (e.g. PACU, central sterile supply, etc.) must also be addressed regarding their ability to support any increase in volume of service.

**3. Indirect support functions.** *The increased (or decreased) demands throughout, workloads, staffing requirements, etc., imposed on support functions affected by the project shall be described. (These functions may or may not reside adjacent to or in the same building or facility with the project.)*

**Intent:** Staffing of each department must be identified relative to peak shift to provide adequate support in compliance with California Plumbing Code (CPC) Table 4-2 and Table 4-3. Generally, one water closet shall be provided for every 15 staff members (segregated male and female). Some departments may share toilet facilities for staff with other compatible departments under certain conditions, while other departments may be required to have dedicated staff toilets within the department. Any increase or decrease in staffing associated with a renovation or addition project must be clearly identified.

**4. Operational requirements.** *The operational requirements, which include but are not limited to the following, shall be described:*

- A. *Projected operational use and demand loading for affected departments and/or project components.*
- B. *Relevant operational circulation patterns, including staff, family/visitor, and materials movement.*
- C. *Departmental operational relationships and required adjacencies.*

**Intent:** While essential in the development of a useful functional program, operational requirements are not generally regulated by the CBSC. There are, however, a few circulation and adjacency requirements that must be enforced. For example: a Med Prep room in a Nursing Unit shall be accessible from, and under the control of, the Nursing Station; the PACU recovery room shall be provided with at least one door leading directly into the Surgical Service Space; each fluoroscopy room and each ultrasound room shall have an adjoining patient toilet room that is directly accessible from the procedure room; and dietetic waste storage shall have direct access to the facility's waste collection and disposal facilities. Refer to related discussion under (c) 5.B.

**5. Environment of care requirements.** *The functional program shall describe the functional requirements and relationships between the following environment of care components and key elements of the physical environment:*

**A. Delivery of care model (concepts).** *This shall include:*

- (1) *A description of the delivery of care model, including any unique features.*
- (2) *A description of the physical elements and key functional relationships necessary to support the intended delivery of care model.*

**Intent:** Examples of delivery of care models include patient-focused care, family-centered care, and community-centered care. As an example, a skilled nursing facility may provide care under the traditional Medical Model or under the Household Model. OSHPD review will then apply the requirements under CBC Section 1225.1 through 1225.4 and either the requirements of Section 1225.5.1 or 1225.5.2, and any optional services under Section 1225.6.

**B. Patients, visitors, physicians, and staff accommodation and flow.** *Design criteria for the following shall be described:*

- (1) *The physical environment necessary to accommodate facility users and administration of the delivery of care model.*
- (2) *The physical environment (including travel paths, desired amenities and separation of users and workflow) necessary to create operational efficiencies and facilitate ease of use by patients, families, visitors, staff, and physicians.*

**Intent:** Some separation and/or control of circulation flow of visitors, patients and staff is regulated by the CBSC. For example, public access to outpatient services may not traverse inpatient care areas such as nursing units; separation of elevators into patient,

visitor, and service uses may be required, dependent upon the size of the facility; internal circulation within the surgical service space shall be controlled to prevent nonrelated traffic through the service space; circulation to, and around, an MRI scanner room shall be controlled to restrict areas within the magnetic field; patient food preparation areas, in the dietetic service area, shall be directly accessible to the entry for food supply deliveries and removal of kitchen wastes, interior transportation, storage, etc., without traversing patient or public circulation; and food preparation, service and storage shall be inaccessible to non-dietetic service staff.

**C. Building infrastructure and systems design criteria.** *Design criteria for the physical environment necessary to support organizational, technological and building systems that facilitate the delivery of care model shall be described.*

**Intent:** This discussion is a little more comprehensive than the paragraph or two provided in the executive summary. It should include a “Basis-of-Design” discussion of the proposed structural engineering system(s), the Heating Ventilating and Air-Conditioning system (including the heating plant and the distribution system), an overview of the plumbing system (including on-site water storage and waste holding) and an overview of the electrical system (including the essential electrical system, alternate power source and on-site fuel supply). If other special systems are anticipated such as a solar photo-voltaic supplement to the primary electrical source, they should be discussed here as well.

**D. Physical environment.** *Descriptions of and/or design criteria for the following shall be provided:*

- (1) *Light and views – How the use and availability of natural light, illumination, and views are to be considered in the design of the physical environment.*
- (2) *Wayfinding.*
- (3) *Control of environment – How, by what means, and to what extent users of the finished project are able to control their environment.*
- (4) *Privacy and confidentiality – How the privacy and confidentiality of the users of the finished project are to be protected.*
- (5) *Security – How the safety and security of patients or residents, staff, and visitors shall be addressed in the overall planning of the facility consistent with the functional program.*
- (6) *Architectural details, surfaces, and furnishing characteristics and criteria.*
- (7) *Cultural responsiveness – How the project addresses and/or responds to local or regional cultural considerations.*
- (8) *Views of, and access to, nature.*

**Intent:** The functional program may identify criteria that are more definitive and more restrictive than minimum code requirements; however, OSHPD plan review will enforce compliance with the CBSC and not check the construction documents against the program requirements. As an example, day-lighting of patient bedrooms shall comply with CBC Section 1224.4.9, as a minimum, whether the program requires a different amount or not.

The health facility may include Infection Control standards in the functional program to limit transmission of waterborne and airborne nosocomial disease. This may include: the provision of sub-sterile spaces to buffer sterile environments; provision of convenient handwashing and surgical scrub stations; gowning areas; minimization of “clean” and “dirty” cross traffic; provision of airborne infection isolation and protective environment rooms; directional airflow control, filtration and exhaust; environmental temperature and relative humidity control in critical care spaces; and hard, easily sanitized surfaces that do not harbor contaminants or foster growth of organic material. OSHPD review is limited to compliance with relevant articles, chapters, and sections of the CEC, CMC, CPC, and the various requirements in CBC Sections 1224, 1225 and 1226. Any AMCs anticipated should be clearly identified and discussed.

## **6. Architectural space and equipment requirements.**

### **A. Space list.**

- (1) *The functional program shall contain a list organized by department or other appropriate functional unity that shows each room in the proposed project, indicating its size by gross floor area and clear floor area.*
- (2) *The space list shall indicate the spaces to which the following components, if required, are assigned:*
  - a) *Fixed and moveable medical equipment.*
  - b) *Furnishings and fixtures.*
  - c) *Technology provisions.*

**Intent:** The space list must include all the required spaces identified under each of the relevant Basic and Supplemental Services included in CBC Sections 1224, 1225, and 1226. The list shall be organized using the same department/service areas provided in (c) 2.A above. OSHPD will review the project for compliance with the required spaces including any associated clear floor area, built-in components and fixtures. Clear floor area will be enforced as defined in CBC Section 1224.3 and not include area occupied by cabinets, built-in shelves, lockers, wardrobes, alcoves, toilet rooms, anterooms, or vestibules. Gross floor area will need to be adjusted to include areas excluded in the clear floor area. Furnishings and fixtures include medical equipment (e.g. diagnostic/imaging equipment, CT, PET, MRI, etc.). Spaces/rooms provided in addition to the minimum spaces required must have sufficient information to assess their use and relationship to the department/service space. Presentation of room requirements may be in the form of room data sheets or as a comprehensive table, dependent upon facility practices and the scope/nature of the project.

### **B. Area.**

- (1) *Gross floor area for the project shall be aggregated by department, and appropriate multiplying factors shall be applied to reflect circulation and wall thicknesses within the department or functional area. This result shall be referred to as department gross square footage (DGSF).*
- (2) *DGSF for the project shall be aggregated, and appropriate multiplying factors shall be applied to reflect inter-departmental circulation, exterior wall thickness, engineering spaces, general storage spaces, vertical circulation, and any other areas not included within the intra-department calculations.*



*This result shall be referred to as building gross square footage (BGSF) and shall reflect the overall size of the project.*

**Intent:** Department/service space areas must be contiguous and include internal circulation to access each of the rooms/spaces associated with it. This includes toilet facilities required to be within the department/service area and/or any toilet facilities distributed to the department/service space intended to be shared with other compatible departments/service spaces. **Department Gross Square Footage** (DGSF) should be included in the executive summary for renovation or addition projects.

**Building Gross Square Footage** (BGSF) must include all of the department DGSFs plus the inter-departmental circulation/corridor system required by CBC Section 1224.4.7.5, public lobby, public restrooms, and general support areas and systems for a complete health facility building. The BGSF should be included in the executive summary for new building projects.

**7. Technology requirements.** *Technology systems for the project shall be identified to serve as a basis for project coordination and budgeting.*

- A. Any technology systems integration strategy shall be defined.*
- B. Department and room specific detail for system and device deployment shall be developed.*

**Intent:** Technology systems include computers-on-wheels (COWs), Electronic Medical Record Systems (EMRs), wireless nurse call systems, etc. Generally these are considered “common use” systems and shall be made accessible if mounted/secured to the building.

**8. Short- and long-term planning considerations.** *A statement addressing accommodations for the following, as appropriate for the project shall be included:*

- A. Future growth.*
- B. Impact on existing adjacent facilities.*
- C. Impact on existing operations and departments*
- D. Flexibility*

**Intent:** A new facility may include the provision for future construction. This should be clearly identified as short-term or long-term timelines. Impact on circulation, infrastructure, and utilities must be identified and discussed. “Shelled” space planned, but intended to be built-out at some time in the future, must be clearly identified as to its future use and how that use will be supported. For example, if a floor of a patient bed tower is “shelled” for future Med/Surg nursing units, the number of beds must be identified and support for future build-out must include adequate General Storage at 20 square feet per bed, dietary storage per CBC Section 1224.20.2.3, adequate capacity for the air-handling unit, adequate capacity for normal and essential electrical system power, and adequate capacity for the on-site supply of water and holding tanks for sewage and liquid waste.

**POLICY INTENT NOTICE (PIN)**

If flexible space is intended to accommodate varying levels of acuity, it should be clearly identified. OSHPD will review to the highest level of acuity to be accommodated unless a specific Program Flexibility and associated AMC can support an alternative approach.

The structure of Functional Program submittals should respond to the scope and nature of the project. A small interior remodeling might require a relatively short and simple functional program while a new General Acute Care Hospital will require a more comprehensive document.

Sample Functional Programs are provided as Appendices “A” and “B”. These are provided as illustrative examples of a Functional Program for a smaller project and one for a larger project to provide further clarification of the intent of the functional program requirements. Health care facilities may adapt these to suit the nature of their project or develop their own functional program for submission that addresses the intent of the requirements of CAC Section 7-119.

|                 |         |
|-----------------|---------|
| Original Signed | 3/10/14 |
| Paul Coleman    | Date    |

# APPENDIX A

## Southern City Hospital Surgical Department Remodel OSHPD Functional Program

**Facility Name:** Southern City Hospital      **Facility Number:** #12345      **Building Number:** BLD6789  
**Project Name:** Surgical Department Remodel

### Summary

**Project Summary:** Remodeling of the existing Surgical Department to relocate equipment storage and add an Operating Room  
**Project Size:** 1,200 SF of 12,800 DGSF      **# Stories:** 2<sup>nd</sup> Floor of an Existing 5-Story Bldg      **# Beds:** N/A  
**Construction Type:** Type I-B w/ Sprinkler System      **Occupancy:** Group I.2 – OR; and Incidental Group S – Equipment Storage Room

**(c) 1. Purpose of the Project:** The purpose of the project is to increase the capacity of the existing Surgical Department by adding a 4<sup>th</sup> staffed Operating Room (OR), in order to accommodate recent growth in the volume of scheduled procedures per week.

**(c) 2. Project Components and Scope:** The proposed remodeling is to utilize previously shelled space in the existing Surgical Department to facilitate the addition of a 4<sup>th</sup> OR. The OR is intended to be located in the area of an existing equipment storage room. The displaced equipment storage room will be relocated to the shelled space. The men's toilet room will be remodeled to add a water closet.

**(c) 3. Indirect Support Functions.** The project is to add an OR which will include a staff of 6 additional Full Time Equivalent (FTE) personnel that will result in a peak complement in the Surgery Department of roughly 32 staff members, estimated at 50% male and 50% female, where the current peak is 26 medical staff members. They will be supported by the existing showering, dressing, lockers, and toilets currently located within the Surgical Service area. There are currently two toilets in the women's locker/dressing area, and one toilet and one urinal in the men's locker/dressing area. The new complement of 16 male staff will require an additional toilet in the men's facilities to be fully compliant with the California Plumbing Code (CPC) table 4-3, and footnote 6.

**(c) 4. Operational Requirements.** The operating rooms are supported by the Post-Anesthesia Care Unit (PACU) located adjacent to the Surgical Department with direct access from the semi-restricted corridor system. There are currently headwalls for 8 recovery bays within the PACU, however only 6 beds are used at this time to support the 3 existing ORs. The 7<sup>th</sup> and 8<sup>th</sup> recovery bays will support the new OR. Nursing staff within the PACU will be increased by 1 FTE. The existing laundry and Central Sterile Supply can accommodate the new OR without any modification.

# APPENDIX A

## (c) 5. Environment of Care Requirements

**(c) 5.A. Delivery of Care Model.** The project is intended to provide for an increase in volume of existing standard surgical procedures. There is no intent to provide any new procedure types.

**(c) 5.B. Patients, Visitors, Physicians and Staff Accommodation and Flow.** User flow is already established within the Surgical Department. The location of the new OR is planned within the existing semi-restricted environment and on the existing controlled-access corridor system. The shelled space intended to become the surgical department equipment storage is also within the semi-restricted environment and on this same corridor system. The corridor system currently has direct access to the existing PACU, to the patient elevator lobby with access to the nursing units, and to the service elevator lobby with access to the laundry and Central Sterile Supply.

## (c) 5.C. Building Infrastructure and Systems Design Criteria.

**Structural System:** The existing structural system is a special steel moment frame system. Analysis indicates that the primary and secondary framing members will accept the vertical and lateral loads associated with the surgical lights/booms. Intermediate framing will be added to provide for attachment and distribution of loads back to the structural frame.

**Mechanical Systems:** The existing roof-mounted, constant-volume, air-handling unit (AHU) provides 100% outside air for the entire Surgery Department and was installed under the 2007 code. Tempering, damping, and humidification occur locally at each room. Laminar air flow will be provided in the new operating room. Supply air to the Surgical Department is distributed to the various rooms through pressure-independent constant air volume boxes (CAVs). Relief air is currently evacuated in an independent system. The AHU has sufficient capacity to accommodate the new OR. The air handler and relief fans are on the mechanical branch of the Essential Electrical System (EES). Fire/smoke dampers will be provided in the ducting above the new equipment storage room.

**Electrical Systems:** The hospital currently has a compliant segregated EES system. Power to the operating room will include (2) circuits on normal power and (12) circuits on the Critical Branch of the EES. The Critical Branch circuits will be fed by a new sub-panel off the existing floor critical branch panel which has adequate capacity to accommodate the new loads. Critical Care Area grounding/bonding is required at the operating room.

Lighting levels are to be based on IESNA standards and provide:

- 750 Foot Candles at OR surgery task lighting
- 100 Foot Candles at OR general lighting
- 30 Foot Candles at the equipment storage room

**Fire Protection System:** The existing fire sprinkler system will be modified to provide compliance with NFPA 13 and CBC Chapter 9 in the new OR and in the relocated equipment storage room.

# APPENDIX A

**(c) 5.D. Physical Environment.** The existing hospital building and building systems can accommodate this interior remodeling. The hospital is committed to continued reduction of nosocomial disease acquisition, and has established comprehensive Infection Control standards. These standards will be applied to operational protocols and to critical care area HVAC systems and interior finishes.

**(c) 6.A. Architectural Space & Equipment Requirements.**

| Room                           | Architectural    |                | Arch Finish |                 |            | HVAC    |                  |         |                   |                   |                | Plumbing          |                     |                         |        | Medical Gas |                      |                  |                | Electrical  |        |      |        |              |                |                 |                   |            |   |
|--------------------------------|------------------|----------------|-------------|-----------------|------------|---------|------------------|---------|-------------------|-------------------|----------------|-------------------|---------------------|-------------------------|--------|-------------|----------------------|------------------|----------------|-------------|--------|------|--------|--------------|----------------|-----------------|-------------------|------------|---|
|                                | Gross Floor Area | Ceiling Height | Standard    | Semi-restricted | Restricted | Balance | Air Changes/Hour | 100% OA | Return Air System | Relief Air System | Exhaust System | Relative Humidity | Handwashing Fixture | Scrub Sink Outside Room | Toilet | Floor Drain | Other Plumb Fixtures | N <sub>2</sub> O | O <sub>2</sub> | Medical Air | Vacuum | WAGD | Normal | Equip System | Life Safety Br | Critical Branch | Grounding/Bonding | Nurse Call |   |
| <b>Surgical Department</b>     |                  |                |             |                 |            |         |                  |         |                   |                   |                |                   |                     |                         |        |             |                      |                  |                |             |        |      |        |              |                |                 |                   |            |   |
| Operating Room                 | 560              | 10'            |             |                 | X          | P       | 16               | X       |                   |                   | X              | 45%-55%           |                     | X                       |        | No          |                      | 1                | 2              | 2           | 2      | 1    | X      |              |                |                 | X                 | X          | E |
| Equipment Storage              | 440              | 10'            |             | X               |            | NR      | 2                | X       |                   |                   | X              |                   |                     |                         |        |             |                      |                  |                |             |        |      | X      |              |                | X               |                   |            |   |
| (E) Men's Toilet & Shower Room | (110)            | 10'            |             | X               |            | N       | 10               | X       |                   |                   | X              |                   |                     |                         | X      |             |                      |                  |                |             |        |      | X      |              | X              |                 |                   |            |   |
|                                |                  |                |             |                 |            |         |                  |         |                   |                   |                |                   |                     |                         |        |             |                      |                  |                |             |        |      |        |              |                |                 |                   |            |   |
|                                |                  |                |             |                 |            |         |                  |         |                   |                   |                |                   |                     |                         |        |             |                      |                  |                |             |        |      |        |              |                |                 |                   |            |   |

**(c) 6.B.(1). Department Gross Square Footage (DGSF).** Existing Surgical Department: 12,800 DGSF – No Change

**(c) 6.B.(2). Building Gross Square Footage (BGSF).** N/A

**(c) 7. Technology Requirements.** All admitting, accessing, recording, and filing of patient medical records are currently supported by an Electronic Medical Record System (EMR). The Surgical Department currently has secure EMR stations for access to patient records. An EMR station will be provided in the new OR. The staff emergency nurse call system will be coordinated with the master station at the semi-restricted area control station.

**(c) 8. Short- and Long-Term Planning Considerations.** In taking the remaining shelled space, this project completes the build-out of the Surgical Department.

# APPENDIX B

## City's Edge Hospital OSHPD Functional Program

Facility Name: City's Edge Hospital  
Facility Number: #12345  
Building Number: BLD6789  
Project Name: New Hospital Building

### Executive Summary

**Project Summary:** Complete new General Acute Care Hospital  
**Project Type:** New Construction  
**Project Size:** 385,000 BGSF      **# Stories:** 5 + Bsmt      **# Beds:** 250  
**Construction Type:** Type I-B with Full Fire Sprinkler System  
**Occupancy:** Group I.2 – Mixed Use with Group A.2, B, and S accessory occupancies, and an H.3 remote occupancy in a separate building.

**Project Description:** The purpose of the project is to provide expanded services for members in the eastern region of the County. In addition to the Basic Services, this hospital will be providing Intensive Care, Obstetrical Services with Neo-natal Intensive Care, an Emergency Department, limited Outpatient Surgery, and a Respiratory Therapy Department.

**Structural Systems:** The anticipated structural system is a special steel moment frame structure over a reinforced concrete basement.

**Mechanical Systems:** It is anticipated that the facility will include a Central Utility Plant with centralized boilers and chillers for hot water, chilled water, and steam distribution to the hospital building; and multiple roof-mounted air handlers provided at the hospital building.

**Electrical Systems:** The primary source utility service will be 12 KV power to a 600 Amp Main Service. Step-down service will be provided to multiple 1,200 Amp 277/480 VAC sub-stations. A three-branch Essential Electrical System will be supported by a 6 MW, 12 KV, on-site generator system.

**Fire Protection System:** This facility will be protected by a full fire sprinkler system in compliance with NFPA 13 and CBC Chapter 9.

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## Functional Program Detail

(c) 1. **Purpose of the Project:** The hospital system has elected to expand service coverage for members in East County with the development of a new general acute care hospital. Additional expansion space is also planned as a shelled floor to accommodate future growth.

(c) 2. **Project Components and Scope:** The proposed hospital is a General Acute Care Hospital with all the Basic Services and selected Supplemental Services as follows:

- Nursing Service – Medical/Surgical (90 initial beds plus 90 future beds in shelled space)
- Surgery Service – Inpatient w/ preoperative holding, general ORs, and interventional catheterization, and access to recovery for comprehensive perioperative service
- Anesthesia – Post-Anesthesia Care Unit (PACU) in support of the Surgery Service
- Clinical Laboratory – Basic urinalysis and blood work only
- Radiological/Imaging Service – Basic fluoroscopy, diagnostic angiography, CT, MRI, ultrasound and mammography
- Pharmaceutical Service – Comprehensive compounding including sterile intravenous solutions
- Dietetic Service – Food cart service for inpatients plus a cafeteria/dining room and vending for visitors and medical staff, food storage space includes shelled nursing beds
- Support Services – Administrative/admitting/records, public lobby and conference rooms, Central Sterile Supply, general storage includes space for shelled nursing beds, morgue/autopsy, employee dressing/lockers, housekeeping, and linen storage/holding for outside laundry service
- Intensive Care Units – 20-bed Critical Care (CCU) and a 20-bed Neo-natal Intensive Care (NICU) with lactation and infant formula spaces
- Obstetrical Facilities – Cesarean OR and delivery rooms, Labor/Delivery/Recovery (LDR), Postpartum – 30 beds, and newborn/well baby nursery
- Emergency Service – Basic Emergency Department w/ triage, exam rooms, trauma/cardiac room, and an airborne infection isolation room
- Respiratory Therapy Service – Inpatient & outpatient respiratory service department
- Outpatient Service – Limited outpatient surgery - general ORs and a gastrointestinal endoscopy procedure room with preoperative and recovery space

(c) 3. **Indirect Support Functions.** The hospital is expected to have a peak complement of roughly 362 staff members, estimated at 50% male and 50% female. They will be supported by central employee showering, dressing, and lockers, and by dedicated facilities for surgical service areas. Staff toilets are to be distributed by department at a ratio of 1:15 each for male and female employees. Each staff member will have a toilet within 200 feet of travel distance and on the same floor. See Department Summaries for staff counts.



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**(c) 4. Operational Requirements.** The vertical and horizontal distribution of the various departments is to be in response to the respective departmental operational requirements. Wayfinding to specific nursing units is to be clear and simple. Areas that support visitors/families include departmental/floor waiting areas, restrooms, and flexible areas to accommodate child play. Public access will also be available to admitting, patient services, administration, the cafeteria, the pharmacy, education/conferencing, and the chapel. Outpatients are considered “public” until they are “received” by an outpatient department.

The Emergency Department shall have a dedicated patient elevator directly to the Surgery Department pre-op/holding area directly above it. A large family waiting area, with smaller private rooms, will serve the Surgery Service, Obstetrical Service with Labor/Delivery/Cesarean OR, Outpatient Surgery, Radiology/Imaging and Respiratory Therapy.

Vertical stacking also places Post-partum, NICU and ICU directly above the surgery floor, and general medical/surgical nursing units above that in the patient bed tower, accessed by the three segregated elevators and their respective lobbies. The Clinical Laboratory and Support Services including Central Sterile Supply, General Storage, Morgue/Autopsy, EVS/Employee Lockers, and Linen Holding are located in the basement along with Building Engineering accessed by the service elevator. A dedicated service elevator will be provided from Central Sterile Supply to the Emergency Department and to the Surgical Services floor.

## Vertical Stacking

|          |  |
|----------|--|
| Tower    | Med/Surg Nursing                                     |
|          | Med/Surg Nursing                                     |
|          | ICU, NICU, Post-partum                               |
| Podium   | Surgery, Radiology/Imaging, Obstetrics               |
|          | Emergency, Dietetics, Pharmacy, Admin., Lobby        |
| Basement | Sterile Supply, Laboratory, Morgue, EVS, Engineering |

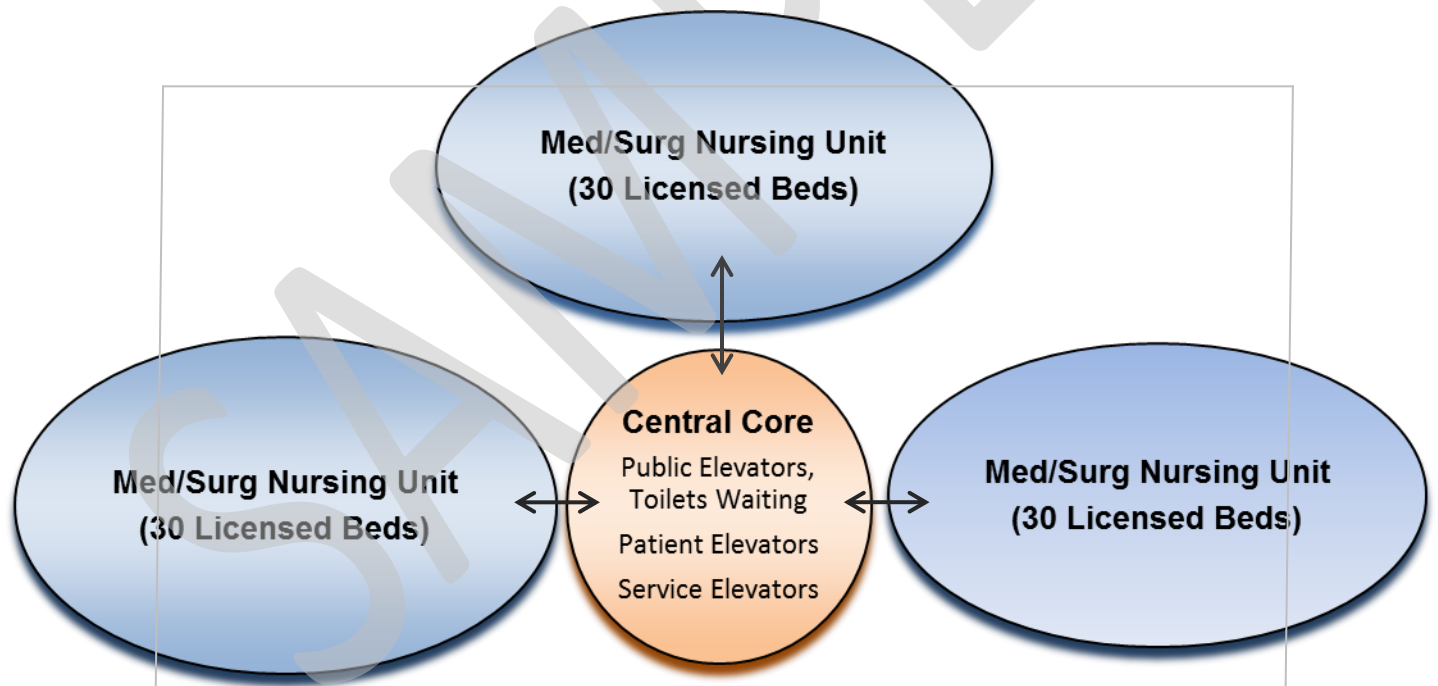
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## (c) 5. Environment of Care Requirements

**(c) 5.A. Delivery of Care Model.** The new hospital is intended to provide Family-Centered health care, preventive medical care, and educational outreach. Program elements include an Emergency Department, an Obstetrics Department, Outpatient Services, and educational conference facilities in direct support of this model of care.

**(c) 5.B. Patients, Visitors, Physicians and Staff Accommodation and Flow.** It is intended that visitor/family circulation will be independent from patient inter-departmental circulation. Visitor/family lobbies and waiting areas are to be in close proximity to the visitor vertical circulation and public elevator lobby. Outpatient services shall have access from the visitor/family/public corridor system to the outpatient waiting rooms. Services with both outpatients and inpatients should also have a separate access from the patient corridor system to a patient holding area. Patient and service elevator lobbies shall be separate and distinct from each other. Generally, circulation within each department is not considered public circulation and is dedicated to patients and staff, with the exception of nursing units where conditional accommodation of visitors/family is anticipated.

### Departmental Adjacencies



### Nursing Floor

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## (c) 5.C. Building Infrastructure and Systems Design Criteria.

**Structural Systems:** The hospital building consists of three major structural components: a full basement; a two-story podium level; and three additional stories as a bed tower. The basement is a poured-in-place reinforced concrete structure including retaining walls, interior concrete columns, and a post-tensioned slab between the basement and the podium level. The podium and tower structures are special steel moment frames with composite decks. The podium (1<sup>st</sup> and 2<sup>nd</sup> floors) is 20% larger than the tower (3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> floors) with stacking columns.

The Site Class “D” and mapped ground acceleration and risk analysis result in an  $S_s=1.05$ ,  $S_{DS}=0.7$ ,  $MCE_R=1.05$  and a Seismic Design Category “E” for structures in Risk Category IV.  $I_e=1.5$ . A dual system with special moment frames is permitted with special reinforced concrete shear walls. The basement columns and walls will be supported on reinforced concrete spread footings founded in bedrock.

Terrain and building height result in Wind Exposure “C”. Basic wind speed = 120 mph (3 second gust). It is expected that the Main Wind-Force-Resisting System (MWFRS) may govern at the broad side of the structure. The podium and bed tower are considered a flexible enclosed simple diaphragm building.

**Mechanical Systems:** The Central Utility Plant includes centralized gas-fired boilers for hot water and steam (be provided to the sterilizers), and chillers for chilled water, with piped distribution to the hospital building. Multiple roof-mounted air handlers will provide supply air including 50% outside air. Tempering is to occur at local CAV boxes with individual thermostatic controls. Relief air and exhaust air will be evacuated in separate systems. All air handlers and exhaust fans will be on the mechanical branch of the EES.

Essential mechanical provisions are required for cooling, and relative humidity, for the trauma room on the first floor, all the surgical units (ORs and PACU) on the second floor, the ICU, NICU, and the well-baby nursery on the third floor. Laminar air flow will be provided in the operating rooms (all types). 100% exhaust will be provided for the infection isolation rooms with positive pressure in the anterooms.

**Electrical Systems:** The primary source utility service will be 12 KV power to a 600 Amp Main Service. Step-down service will be provided to multiple 1,200 Amp 277/480 VAC sub-stations. 6MW @ 12 KV will be provided for a three-branch Essential Electrical System supported by an on-site generator system including 24 hours of on-site fuel storage.

Critical Care Area grounding/bonding is required at: the Emergency Trauma/Cardiac room on the first floor; the diagnostic angiography laboratory, all the ORs, Delivery rooms, and the PACU beds on the second floor; and the ICU and NICU beds on the third floor.

Lighting levels are to be based on IESNA standards and provide:

- 750 Foot Candles at OR and Critical Care surgery task lighting
- 100 Foot Candles at OR general lighting and Critical Care handwashing
- 75 Foot Candles at Exam lighting and Central Sterile Supply
- 10-75 Foot Candles (variable) at recovery and ICU spaces
- 50 Foot Candles task lighting at Nurse Stations and Medicine Preparation
- 30 Foot Candles patient reading and general lighting at Nurse Stations

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(c) **5.D. Physical Environment.** The following elements are to guide design decisions:

- (1) **Light and views** – Patient room space requirements include additional window area, visitor/family waiting areas on each floor shall include abundant window area and incorporate the views of the rural lands to the east.
- (2) **Wayfinding** – General public/visitor/family circulation shall be as direct and simple as practical, include clear color-coded departmental and directional/route signage, and include menu boards at each floor lobby.
- (3) **Control of Environment** –Local control of temperature is to be available to most spaces through the use of CAV fan coil units. Each patient room will be controlled individually, within a 65°F to 75° range. Patient room lighting will include reading task lighting with controllable light level.
- (4) **Privacy and Confidentiality** – Segregated patient circulation from visitor/family circulation. Private conference rooms with sidelights will be available for confidential use by staff, patients and families, in various departments and in the waiting areas. The Electronic Medical Record (EMR) system includes security protocols to prevent misuse. See discussion under “Technology Requirements” in Section (c) 7.
- (5) **Security** – Security staff will also function as informational centers, with regular posts in the main lobby, the Emergency Department, the Surgery/Obstetrics lobby, ICU/Post-partum lobby and the well-baby nursery viewing area, and at the central nursing lobbies. Medical staff will be located at control points to enforce limited access to restricted and semi-restricted areas and corridors for infection control protocols and for family/patient/staff safety.
- (6) **Architectural Details** – Architectural finishes will respond to an enhanced focus on Infection Control as well as providing a soft ambiance in a sub-urban presentation.
- (7) **Cultural Responsiveness** – The economic demographic distribution is relatively homogeneous, and the ethnic backgrounds are quite diverse with no significant representation from any particular group.
- (8) **Views of, and Access to, Nature** – The campus is located at the eastern edge of the city and abuts the urban/rural boundary with pastoral views to the east.

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## (c) 6.A. Architectural Space & Equipment Requirements.

### Room Data Sheet

#### Med/Surg Patient Room

Single Occupancy - Accessible

Gross Floor Area: 366 sf (Bedroom and Toilet Room)

**Bedroom** - Clear Floor Area:136 sf Gross Floor Area: 288 sf

Bed: 40" x 96" Clearance: 48" at sides and foot of bed ("T" Shape maneuvering included in the clearances), 4'-wide door without closer

Built-in: Counter w/ Handwashing Station

Furnishings: Nightstand, Accessible Wardrobe, Sleeper Sofa, Visitor Chair, Flat Screen TV

Headwall: Nurse Call, Telephone, (4) Normal Power receptacles, (2) EES, (2) Med Air, (2) O<sub>2</sub>, (2) Vac, and wall-mounted Electronic Medical Record System (EMR)

Room to have an exterior exposure with 48 sf fixed window (36" sill) with blinds

Sheet vinyl floor w/ coved base, acoustical tile ceiling, 45 STC Patient Room to Patient Room

Lighting: General – 30 ft-candles @ 30" min, Task lighting on EES

Heating: 70°F - 75°F (60° EES), Cooling: 75° maximum

Ventilation: No Pressure Requirement, Min (2) Air Changes/Hr OSA, (6) Air Changes/Hr total (2) Filter Banks: (1) 30% & (1) 90%

**Toilet Room** - Gross Floor Area: 78 sf

Accessible Fixtures: Water Closet (w/ Bedpan hose), Roll-in Shower, Lavatory

Sheet vinyl floor with integral coved base, hard gypsum board ceiling, enamel paint

Nurse Call – Bath Station w/ pull chord

100% Exhaust – Min (10) Air Changes/Hr

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(c) 6.B.(1). **Department Gross Square Footage (DGSF).** Internal Departmental Circulation multiplier = 25% - 8' Corridors,

## Med/Surg Nursing Unit

| <u>Area</u>  | <u>Room</u>                                     |
|--------------|---|
| 1,098        | (3) Accessible Patient Rooms @ 366 sf each      |
| 9,396        | (26) Non-accessible Patient Rooms @ 348 sf each |
| 430          | (1) Airborne Isolation Room w/ Anteroom         |
| 382          | Nurse Station                                   |
| 96           | Nurse/Supervisor Office                         |
| 80           | LVN Office                                      |
| 210          | Team Work Room                                  |
| 96           | Medication Preparation Room                     |
| 112          | (2) Staff Toilets @ 56 sf each                  |
| 210          | Multi-purpose Room                              |
| 92           | Clean Utility Room                              |
| 92           | Soiled Utility Room                             |
| 15           | Clean Linen Storage                             |
| 80           | Nourishment Area                                |
| 300          | Equipment Storage Room                          |
| 20           | Gurney/Wheelchair Storage                       |
| 56           | Common Patient Toilet Room                      |
| 20           | Emergency Equipment Storage                     |
| <u>15</u>    | Housekeeping Room                               |
| 12,800       | Subtotal  |
| <u>3,200</u> | Circulation – 8' Corridors (25%)                |
| 16,000       | Department Gross Square Footage ( <b>DGSF</b> ) |

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**(c) 6.B.(2). Building Gross Square Footage (BGSF).** Interdepartmental circulation/engineering/wall thickness multiplier = 20%,

| <u>Floor</u>    | <u>Floor Area</u> | <u>Floor Staff</u> | <u>Department</u>                             | <u>DGSF</u>   | <u>Beds</u> |    |
|-----------------|-------------------|--------------------|---|---------------|-------------|----|
| 5 <sup>th</sup> | 57,600            | 66                 | (3) @ 1,600 - Med/Surg Nursing Units          | 48,000        | 90          |    |
|                 |                   |                    | Circulation/engineering/wall thickness        | <u>9,600</u>  |             |    |
|                 |                   |                    |   | 57,600        |             |    |
| 4 <sup>th</sup> | 57,600            | 66                 | (3) @ 1,600 - Med/Surg Nursing Units          | 48,000        | 90          |    |
|                 |                   |                    | Circulation/engineering/wall thickness        | <u>9,600</u>  |             |    |
|                 |                   |                    |   | 57,600        |             |    |
| 3 <sup>rd</sup> | 57,600            | 56                 | Post-Partum Unit & Well Baby Nursery          | 18,000        | 30          |    |
|                 |                   |                    | NICU  | 15,000        |             | 20 |
|                 |                   |                    | ICU (Critical Care)                           | <u>15,000</u> |             | 20 |
|                 |                   |                    |   | 48,000        |             |    |
|                 |                   |                    | Circulation/engineering/wall thickness        | <u>9,600</u>  |             |    |
|                 |                   |                    |   | 57,600        |             |    |
| 2 <sup>nd</sup> | 72,000            | 82                 | Obstetrics – LDR, Cesarean, Delivery          | 20,000        |             |    |
|                 |                   |                    | Surgery                                       | 10,000        |             |    |
|                 |                   |                    | PACU  | 4,000         |             |    |
|                 |                   |                    | Radiology/Imaging                             | 10,000        |             |    |
|                 |                   |                    | Outpatient Surgery                            | 12,000        |             |    |
|                 |                   |                    | Respiratory Therapy                           | <u>4,000</u>  |             |    |
|                 |                   |                    |   | 60,000        |             |    |
|                 |                   |                    | Circulation/engineering/wall/thickness        | <u>12,000</u> |             |    |
|                 |                   |                    | 72,000  |               |             |    |
| 1 <sup>st</sup> | 76,800            | 60                 | Lobby/Patient Services/Administrative Offices | 22,000        |             |    |
|                 |                   |                    | Pharmacy                                      | 6,000         |             |    |
|                 |                   |                    | Dietetic Service/Kitchen/Cafeteria            | 20,000        |             |    |
|                 |                   |                    | Emergency Department                          | <u>16,000</u> |             |    |
|                 |                   |                    |   | 64,000        |             |    |
|                 |                   |                    | Circulation/engineering/wall thickness        | <u>12,800</u> |             |    |
|                 |                   |                    |   | 76,800        |             |    |
|                 | 3,400             |                    | LOX Yard                                      |               |             |    |
| Bsmnt           | 60,000            | 32                 | Clinical Laboratory                           | 6,000         |             |    |
|                 |                   |                    | Central Sterile Supply                        | 10,000        |             |    |
|                 |                   |                    | General Storage                               | 6,000         |             |    |
|                 |                   |                    | Morgue/Autopsy                                | 4,000         |             |    |
|                 |                   |                    | EVS/Employee Lockers                          | 12,000        |             |    |
|                 |                   |                    | Linen Holding                                 | 3,000         |             |    |
|                 |                   |                    | Building Engineering                          | <u>9,000</u>  |             |    |
|                 |                   |                    |   | 50,000        |             |    |
|                 |                   |                    | Circulation/engineering/wall thickness        | <u>10,000</u> |             |    |
|                 |                   |                    |   | 60,000        |             |    |
|                 | <u>385,000</u>    | <u>362</u>         |   |               | <u>250</u>  |    |
|                 | <b>(BGSF)</b>     | (Total Staff)      |   |               | (Beds)      |    |

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**(c) 7. Technology Requirements.** All admitting, accessing, recording, and filing of patient medical records will be supported by an Electronic Medical Record System (EMR). The server will be on the Critical Care Branch of the Essential Electrical System, with off-site data backup. Each hospital department will have secure EMR stations for access to patient records.

The nursing service units will also have wireless nurse call systems with hard-wired master stations at each nurses' station.

**(c) 8. Short- and Long-Term Planning Considerations.** The acute-care services have been sized for an evolving demand. The entire fifth floor is intended to be "shelled" at this time. The general and dietetic storage space, in the basement and on the first floor, associated with those future beds will be constructed at this time, but not stocked until the shelled space is built-out.

The Medical Foundation is intending to add a Medical Office Building to the campus in five years. Although a part of the hospital campus and served by the Central Utility Plant, it will be under the Local Jurisdiction.

SAMPLE