

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.

Table of Contents

(c) 1. Purpose of the Project	16
(c) 2. Project Components and Scope	16
(c) 3. Indirect Support Functions	16
(c) 4. Operational Requirements	17
(c) 5. Environment of Care Requirements	18
(c) 5.A. Delivery of Care Model	
(c) 5.B. Patients, Visitors, Physicians and Staff Accommodation and Flow	
(c) 5.C. Building Infrastructure and Systems Design Criteria	19
Structural System	
Mechanical Systems	
Electrical Systems	
(c) 5.D. Physical Environment	20
(1) Light and views	
(2) Wayfinding	
(3) Control of Environment	
(4) Privacy and Confidentiality	
(5) Security	
(6) Architectural Details	
(7) Cultural Responsiveness	
(8) Views of, and Access to, Nature	
(c) 6. Architectural Space & Equipment Requirements	21
(c) 6.A. Space List	
<u>Med/Surg Patient Room</u>	
(c) 6.B.(1). Department Gross Square Footage (DGSF)	22
<u>Med/Surg Nursing Unit</u>	
(c) 6.B.(2). Building Gross Square Footage (BGSF)	23
(c) 7. Technology Requirements	24
(c) 8. Short- and Long-Term Planning Considerations	24

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

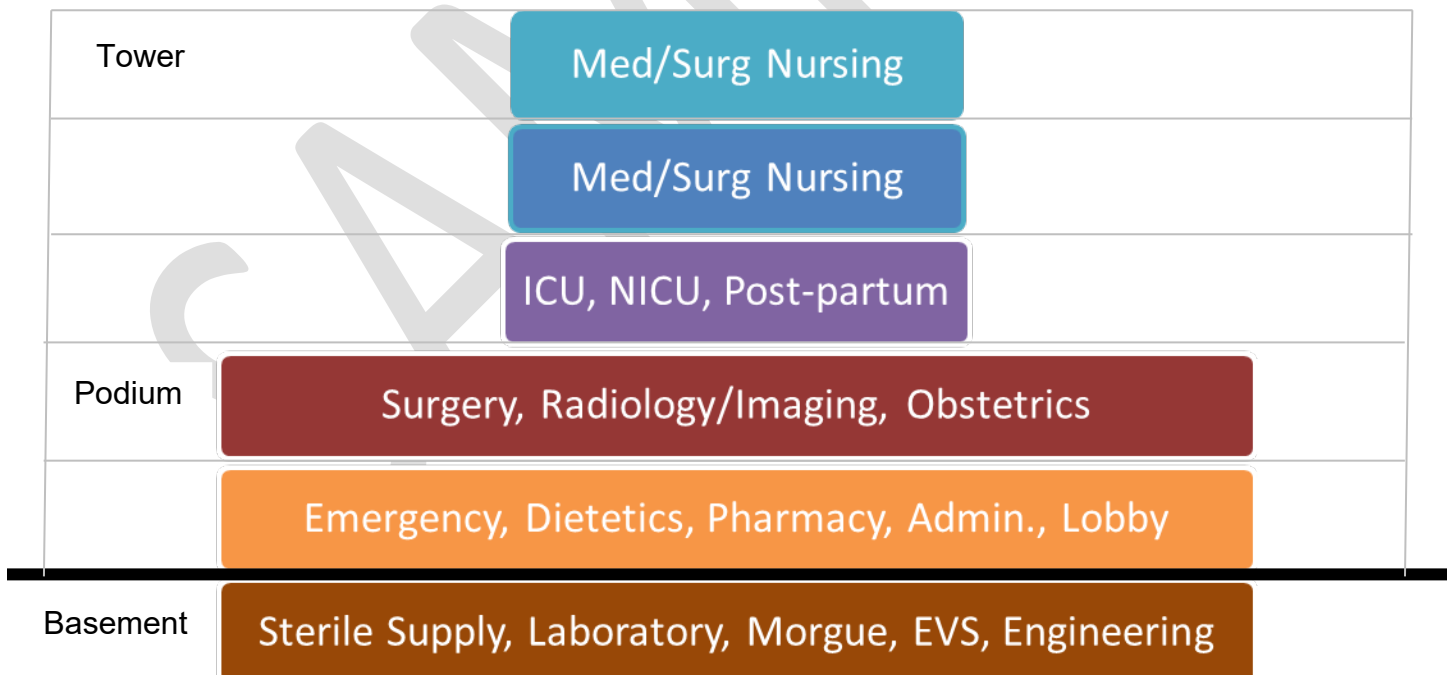
(c) 3. Indirect Support Functions. The hospital is expected to have a peak complement of roughly 362 staff members, estimated at 50% male and 50% female. They will be supported by central employee showering, dressing, and lockers, and by dedicated facilities for surgical service areas. Staff toilets 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.

(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

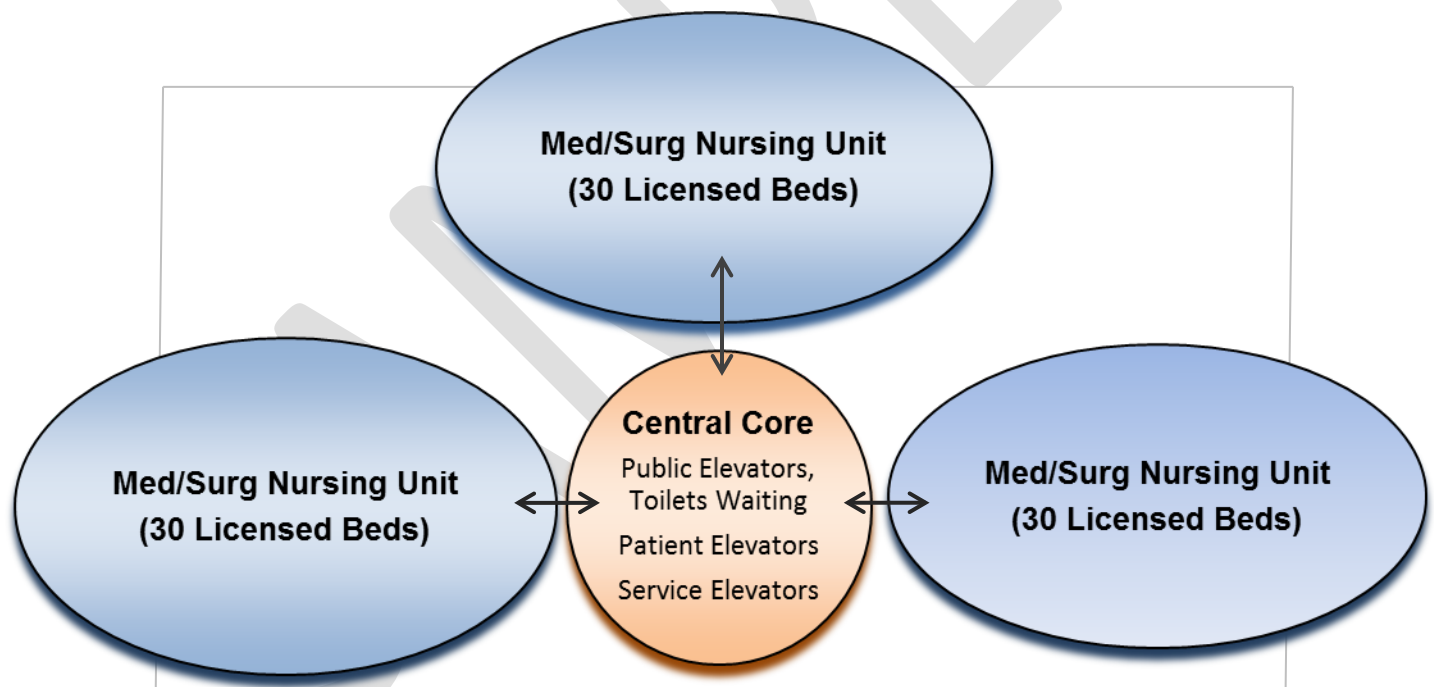


(c) 5. Environment of Care Requirements

(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

(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 (1st and 2nd floors) is 20% larger than the tower (3rd, 4th, and 5th 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

(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.

(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) O₂, (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

(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 (<u>DGSF</u>)

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

(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.