JOHN PETER SMITH HOSPITAL

01

FUNCTIONAL AND SPACE PROGRAM, VOLUME 1:

Functional and Space Program

OCTOBER 2014

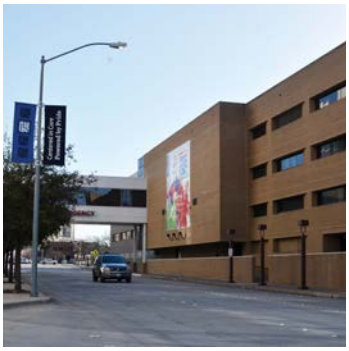

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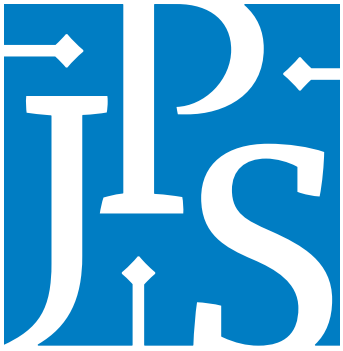
Table of Contents



CHAPTER 1:

Executive Summary

Impetus for Action

JPS Health Network, the public hospital district for Tarrant County, Texas, is writing the next chapter in its 108-year history. The hospital system continues its mission of serving its community within the context of a growing county population, a changing health care market nationally, and a shifting regulatory environment. Within this context, JPS' current facilities face challenges. Overall, the age, aesthetics, and usability of the facilities do not promote patient or staff satisfaction.

JPS has been working on facility decisions since 2010. A Strategic Facilities Utilization Plan (FUP), originally completed in 2010 and updated in 2013, recommended new construction projects including a new inpatient bed tower and renovation projects for the Main Hospital and Pavilion, two existing components that comprise the majority of Main Campus. The recommendations were based on demographic projections, stakeholder interviews, and health care industry best practices. The FUP serves as the foundational document for making further facility decisions.

The driving force behind this particular project—the Functional and Space Program—is to identify and define physical facility improvements needed today and in the future, enabling JPS to continue to serve its mission, respond to a changing demographic, and pursue health care excellence. This project further refines and adds more detail to the FUP.

Three questions served as a guide for this project:

- Why are we evaluating facilities?
- What are we going to recommend to correct facility and operational issues?
- How much will it cost?

This project is the next chapter in JPS's process of addressing its facilities needs. In one regard, this project is the hinge point between master planning of the entire campus and the design and construction of individual building projects. The flow of a facility design—from conception to completion—can be outlined in eight steps:

1. Strategic Plan
2. Master Facilities Plan
3. Functional & Space Programming
4. Schematic Design
5. Design Development
6. Construction Documents
7. Construction and Construction Administration
8. Commissioning and Move-In (Occupancy)

Scope of Work

Broaddus, a project management, planning, and preconstruction services firm, was engaged by JPS to create the functional and space program and generate cost estimates for the program. Broaddus partnered with Blue Cottage Consulting, a distinguished health care facility and operations consultant, to provide programming services for JPS. Together, the Broaddus-Blue Cottage team led the process.

The identification and definition of facility needs is the primary goal of this project. In order to reach this goal, there are seven elements within the scope of work:

1. Conduct review/update of the existing demographic data
2. Develop the following data for each room and space in the proposed facility:
    - Functional narrative describing recommended building departments
    - Total area of the department
    - Room-by-room breakdown of each department including room size, dimension, capacity
    - List of medical equipment/furniture/information technology needs
    - Utility requirements
    - Finishes and architectural quality
3. Develop room layouts for spaces included in the program that reflect contemporary health care design best practices
4. Identify building systems
    - Functional narratives for mechanical, electrical, plumbing, civil, data communication systems
5. Develop conceptual site plan diagram for the Main Campus that "test-fit" the space program onto the reality of the existing site
6. Develop a conceptual cost estimate and project implementation schedule

In accordance with the scope of work, this final document is organized into three volumes:

- Volume 1: Functional and Space Program (includes executive summary, space program, functional narratives, cost estimate, project schedule)
- Volume 2: Room Data Sheets
- Volume 3: Equipment List

Planning Context

National Perspective

Several key macro trends are shaping the future of health care in the United States. The Patient Protection and Affordable Care Act, enacted into law in 2010, has set into motion several initiatives to re-orient the focus of health care providers to adopt a low cost, high value mindset. In addition, an increasing share of the financial burden is being born by patients via higher co-pays, higher deductible health plans, which is affecting how they think about using health care and where they receive their care. Technology advancements and reimbursement models continue to push what had been traditionally inpatient care to an outpatient care environment. However, the baby boomer population is getting older and the overall age of the population continues to increase, which will drive demand for health care services across the care continuum. It will be critically important for JPS to enhance relationships with other providers to develop its system to accommodate the full continuum of care and to ensure patient care transitions are seamless and coordinated for maximum impact on the health of the patient, community.

Local Perspective

Locally, demand for health care is on the rise. Tarrant County will add approximately 300,000 people over the next decade (over 15% growth). The 65+ age cohort, which is a high utilizer of health care, will grow by approximately 30%. As the population increases, the uninsured ranks continue to grow. The number of uninsured people in Tarrant County is currently 386,000, or 24% of the total population – one of the highest rates in Texas. As other health care providers in the market continue to improve their facility resources, insured patients

are choosing to receive care at non-JPS facilities. Lastly, as JPS pursues collaborative partnerships with the University of North Texas and others to explore opportunities to increase the range of services and quality of care for the community, it's critically important to ensure the facility resources and processes support these initiatives.

Within this broader context, the demand for ambulatory services on the JPS main campus is increasing, however, these services are fragmented and not conducive to team-based care delivery or a satisfying patient experience. Hospital beds are split by Main Street, requiring significant patient transport resources. Behavioral health services are split on both-ends of the campus, again, fragmenting care delivery for these patients. Compound the organizational challenges with the fact that capacity utilization is high and the facilities are aged. Inpatient bed utilization is high, which creates bottlenecks in other areas of the hospital. Inpatient nursing units are outdated (semiprivate rooms, lack of support space, etc.), which doesn't support contemporary care models and technology. The Emergency Department (ED) is often full. Lack of appropriate support space and organization of resources in the ED creates challenges for the care team. Women's and newborn services lack clear access, appropriate support and adequate facilities to be competitive in the market. The ambulatory care clinics and urgent care are in undersized and outdated layouts. Overall, the age, aesthetics and usability of the facilities do not promote patient or staff satisfaction compared to others in the market.

Emerging Partnership

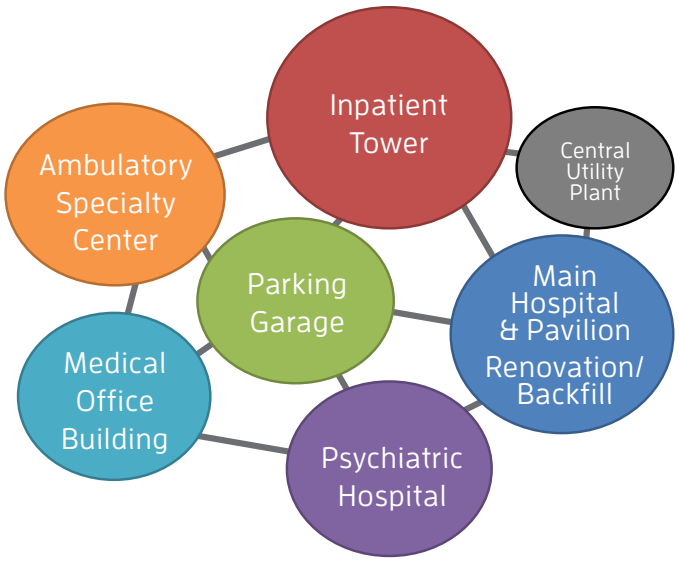
In June of 2014, JPS Health Network and the University of North Texas Health Science Center (UNTHSC) began formal discussions regarding the creation of a new physician practice group, a major step in strengthening the relationship between the county's largest teaching hospital and its only medical school and academic medical center. Such an arrangement provides a unique opportunity to enhance health care delivery in Tarrant County, while also developing new models of efficiency and accountability. While this arrangement has the potential to create dynamic new health care delivery models and specialty services not yet realized, the dynamic nature of the ongoing discussions makes final outcomes unpredictable. This study takes into consideration the evolving nature of the JPS/UNTHSC relationship and incorporates flexibility to address a variety of outcomes ranging from accommodating patient room layouts that comply with best practices in teaching hospitals, to expansion space for future programs yet defined, to a potential opportunity for an office facility that could accommodate office and clinical space for physicians.

Program Summary

This project recommends seven facility components—or project "bundles"—to improve the operation and functionality of Main Campus. The program identifies 1.34 million gross square feet (gsf) of new construction and renovation projects dedicated to hospital and clinical functions. Just over half of the total space recommendation (739,000 gsf) is dedicated to a new inpatient tower. Additionally, a 805,000gsf of structure parking is included.

Conceptually, there are three big picture moves that occur in this program:

1. All non-behavioral health inpatient services will be located on the east side of Main Street while outpatient services will remain on the west side of Main Street or be located elsewhere on Main Campus but not intermixed with inpatient services
2. The existing Main Hospital bed tower will be "decanted" with the majority of functional areas moving to the new inpatient tower. The existing bed tower will be reserved for future growth.
3. Behavioral health will expand on the west side of the Main Campus



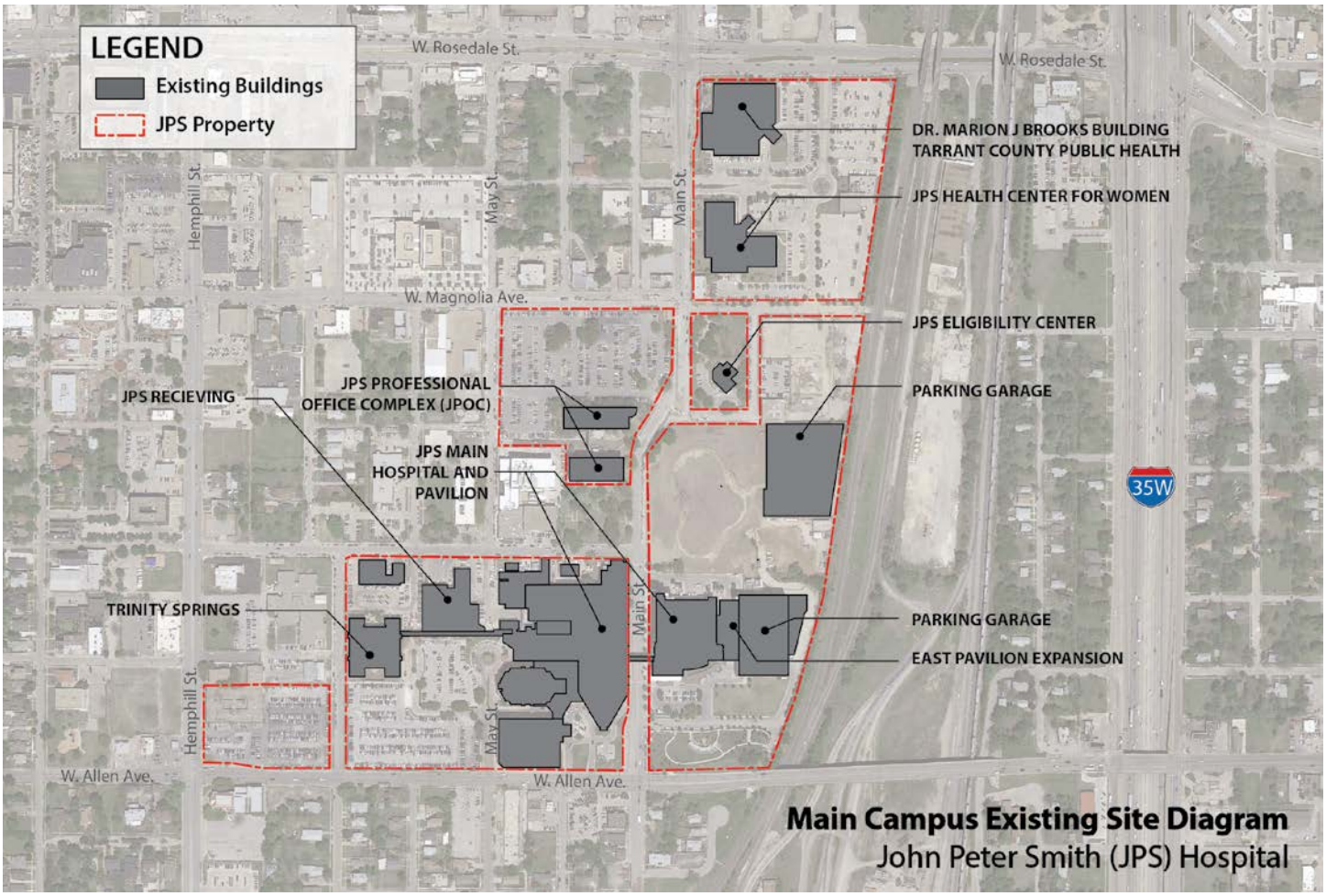
JPS Program Components--or "Bundles"

The following seven project "bundles"are included in this project:

1. New Inpatient Tower (739,011gsf)

At 739,011gsf, the new inpatient tower is the largest component of the space program, and it is also an enabling project—that is, it needs to be operational before other related projects such as the renovation of portions of the Main Hospital and Pavilion can be undertaken. This tower will be located on the east side of Main Street and will be built adjacent to the existing Pavilion. This adjacency is very important as the new inpatient tower will rely on using the operating rooms in the existing Pavilion. The tower will be 10 stories tall including 1.5 floors of shell space for future expansion. The following functional areas are included in the space program for the tower:

- Inpatient Beds (medical surgical bed capacity will increase from 312 to 406)
- Women's Services
- Neo-Natal Intensive Care Unit (NICU)
- Emergency Department Expansion
- Urgent Care Relocation (to be adjacent to Emergency Department)
- Surgical Services
- GI/Bronchoscopy
- Pre-Admission Testing
- Radiology
- Inpatient Pharmacy
- Support Services
- Food & Nutrition
- Sterile Processing



2. Main Hospital and Pavilion Renovation (164,619gsf)

Upon the completion of the new inpatient tower, the Main Hospital on the west side of Main Street and some portions of the Pavilion can be renovated. Functional areas to be renovated include:

- Diagnostic and treatment services (emergency department, observation unit, outpatient rehabilitation services)
- Simulation/education center
- Hospital clinics (family medicine/medical home clinic, ortho/podiatry, specialty)

A substantial portion of the existing bed tower will be reserved for future growth/expansion to be defined in the future.

3. Ambulatory Specialty Center (ASC) (126,800gsf)

The ASC is programmed to be a comprehensive outpatient center. It will include services like GI Endoscopy, ambulatory surgery, radiology, dialysis, and clinics. The main impetus behind creating the ASC is to centralize and cohort outpatient services on campus. Attributes of the ASC include:

- Enhanced patient access
- Adjacency of services for patient care experience
- Space designed specifically for the function, service
- Shifts over 4,000 OR cases and GI procedures out of hospital

As part of this project, the JPS Enrollment and Eligibilty Center, a single-story, 5,360gsf building located on Main Street north of the Pavilion will be demolished. The future location for the uses currently in the center will be relocated elswhere

Project Bundles				
#	**Project**	**Construction Type**	**Size**	**Enabling Project?**
1	New Inpatient Tower	New Construction	739,011gsf	Yes
2	Main Hospital and Pavilion Renovations/Backfill	Renovation	164,619gsf	No
3	Ambulatory Care Center	New Construction	126,800gsf	No
3	Demolish Existing Enrollment and Eligibility Building	Demolition	-5,360gsf	No
4	Psychiatric Hospital	New Construction	220,000gsf	No
5	Parking Garage	New Construction	805,000gsf	Yes
6	Medical Office Building	New Construction	80,000gsf	No
7	Central Utility Plant	New Construction	15,000gsf	Yes
	TOTAL		**2,145,070gsf**	

on the Main Campus before demolition.

4. Psychiatric Hospital (220,000gsf)

A stand-alone psychiatric hospital will integrate disparate components and provides a physical environment that supports a full continuum of behavioral health services in the appropriate configuration. Benefits of the psychiatric hospital include:

- Full range of behavioral health services integrated, enabling a 'Center of Excellence' program
- Easy access
- Clear brand, identity
- Full continuum of care enables clinical effectiveness and operational efficiencies
- Increase inpatient psych capacity from 96 to 148
- Increase ED psych capacity from 20 to 30 (excluding observation)
- Increase revenue through new/expanded contracts, partnerships

5. Parking Garage (805,000gsf)

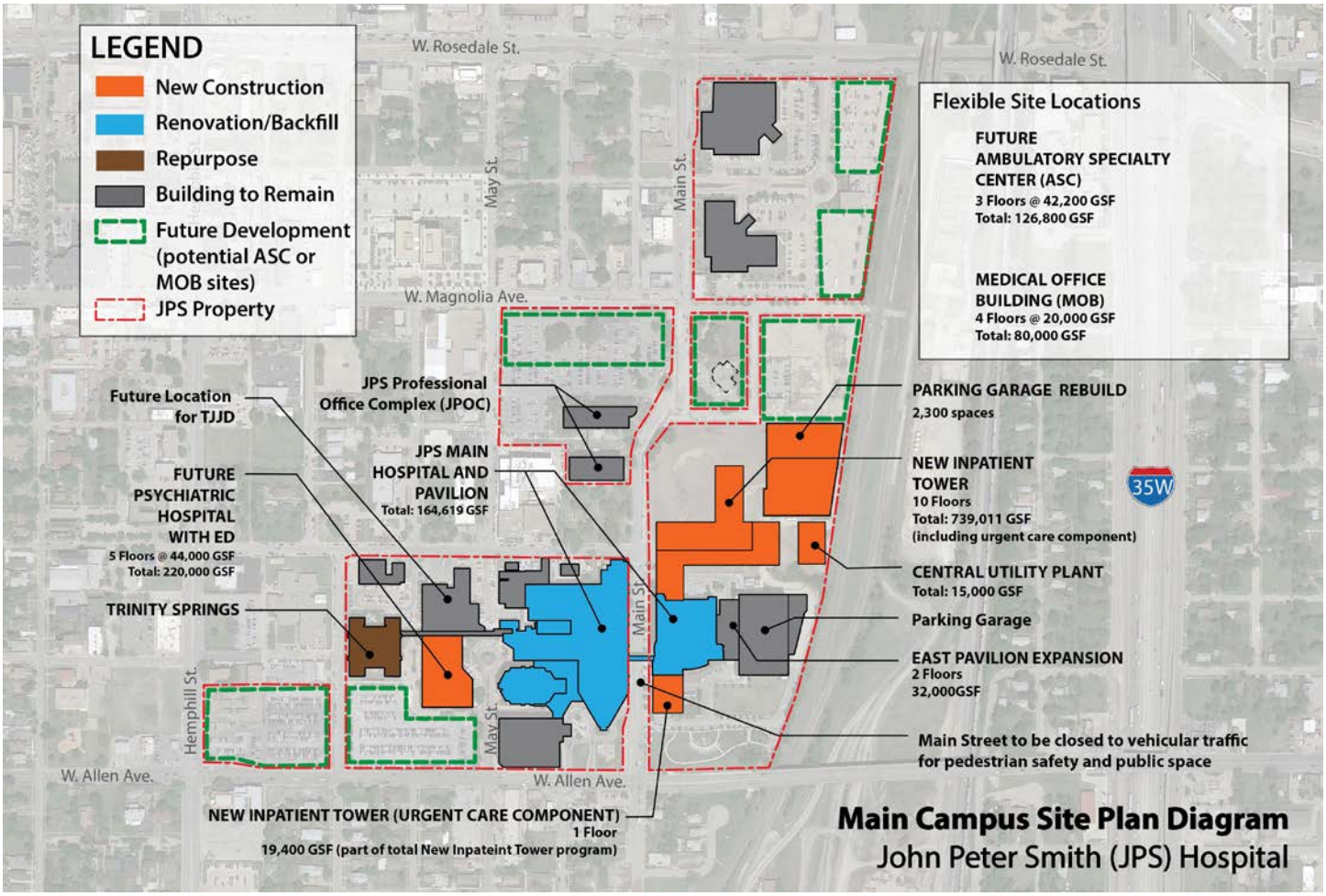
In order to meet the projected growth of the campus and to meet the increase in total building area, approximately 2,300 additional parking spaces will be needed (the existing campus has 3,385 spaces). This quantity includes parking for patients, visitors, staff, and physicians. For the purposes of this project, structured garage parking is assumed to be constructed in the future as the campus increases in density. Using a parking planning benchmark metric of 350gsf per space, 805,000gsf of total structured parking will need to be provided to accommodate the space program. The structured parking could be built in multiple garages, however, the existing Lot Q garage near the future inpatient tower could be demolished and a much larger garage could be built in place to provide parking for the inpatient tower.

6. Medical Office Building (80,000gsf)

With the goal of enhancing partnerships with the physician community and to provide fewer physician offices in prime hospital patient care areas, a medical office building (MOB) is recommended to be located in close proximity to on-campus clinic, hospital, and teaching functions. The MOB could include private clinics. This facility could stand-alone or be integrated with a mix of other suitable uses. The site location for this facility is flexible, but should be relatively close the new inpatient tower and ASC.

7. Central Utility Plant (15,000gsf)

In support of the space program, a 15,000gsf central utility plant (CUP) is included. The CUP should be located on the east side of Main Street as it will primarily serve the new inpatient tower. For a more detailed description of the CUP, please see the mechanical, electrical, and plumbing functional narrative in chapter two of this volume.


LEGEND
New Construction
Renovation/Backfill
Repurpose
Building to Remain
Future Development (potential ASC or MOB sites)
JPS Property
W. Rosedale St.
W. Rosedale St.
May St.
Main St.
W. Magnolia Ave.
Flexible Site Locations
FUTURE AMBULATORY SPECIALTY CENTER (ASC)
3 Floors @ 42,200 GSF
Total: 126,800 GSF
MEDICAL OFFICE BUILDING (MOB)
4 Floors @ 20,000 GSF
Total: 80,000 GSF
Future Location for TJJD
JPS Professional Office Complex (JPOC)
JPS MAIN HOSPITAL AND PAVILION
Total: 164,619 GSF
FUTURE PSYCHIATRIC HOSPITAL WITH ED
5 Floors @ 44,000 GSF
Total: 220,000 GSF
TRINITY SPRINGS
PARKING GARAGE REBUILD
2,300 spaces
NEW INPATIENT TOWER
10 Floors
Total: 739,011 GSF
(including urgent care component)
35W
CENTRAL UTILITY PLANT
Total: 15,000 GSF
Parking Garage
EAST PAVILION EXPANSION
2 Floors
32,000GSF
Main Street to be closed to vehicular traffic for pedestrian safety and public space
Hemphill St.
May St.
Main St.
W. Allen Ave.
W. Allen Ave.
NEW INPATIENT TOWER (URGENT CARE COMPONENT)
1 Floor
19,400 GSF (part of total New Inpateint Tower program)
Main Campus Site Plan Diagram
John Peter Smith (JPS) Hospital

New Inpatient Tower Features and Benefits

Program Summary - Inpatient	
Department	**Features & Benefits**
Inpatient Beds (non-OB) *Create additional capacity adjacent to the Pavilion; decant majority of intensive care and acute care beds to a New Tower*	• Ability to meet current capacity demands and future growth • Reduce holding in emergency department • Appropriately sized patient rooms and support • Improved work flow and collaboration opportunities in new flexible units • Adjacency to inpatient beds in Pavilion • Ability to operate all private beds • Reduced travel distance to diagnostic/treatment departments in Pavilion • Increase medical and surgical bed capacity from 312 to 406
Women's	• Increased capacity to meet expected demand (16% over ten years) : » One additional OB operating room to account for 700-800 anticipated GYN surgeries » Three additional LDRs, five additional PACU beds, and 18 additional Postpartum/ Antepartum/GYN beds • Private rooms designed to create privacy, improve comfort, and enhance the patient experience while improving clinical outcomes • Triage placement at point of entry on the street level for easy access • Increased amount of support space for improved patient and staff experience • Increase women's bed capacity from 62 to 80 • Increase labor and delivery rooms from 15 to 18
NICU *Relocation of NICU to location adjacent to the Obstetrics program*	• Increased capacity with five additional NICU beds to handle an estimated growth of 16% in OB and corresponding support space • Contemporary private room environment to improve maternal and infant outcomes • Enhanced integration with the obstetrics service line to highlight patient-centered care • Increase NICU capacity from 35 to 40
Program Summary – Diagnostics/Treatment	
Department	**Features & Benefits**
Emergency ***Short Term:*** *Create additional capacity (16) in the available shell space of East Pavilion expansion, expand/renovate Triage into PAT area, renovate purple pod, and reconfigure remaining pods* ***Long Term:*** *gain UC capacity (32)*	• Increased capacity to meet current demand and future growth » By adding 16 exam rooms in shelled East Pavilion area » By reallocating purple pod to more acute patients (less acute to UC) » By earmarking relocated Urgent Care capacity to ED in long-term • Improved intake flow and triaging capacity • Improved entire ED operations and work flow by reconfiguring/renovating red, yellow, blue, and green pods • Reduced distance when re-directing patients to Urgent Care • Improved patient throughput
Urgent Care *Relocate Urgent Care adjacent to Emergency Department*	• Reduced distance when re-directing patients to Emergency Department • Improved configuration for Urgent Care operations • Appropriately sized exam rooms and support • Creates opportunity for strategic placement of a high volume service • Maintain current capacity of 32 in future urgent care location
Surgical Services	• Re-orientation of entry to surgical services from South to North to align with the new tower entrance. • Integrated surgical/procedural recovery platform (Surgery, GI, Bronchoscopy, Cath/EP) for increased operational efficiency and future flexibility. • Opportunity to shift 3,000 outpatient cases from the high-cost, difficult to access hospital environment to a cost-effective outpatient surgery center. • Increase OR capacity from 12 to 13, plus future growth expansion zone, plus 30% increased capacity from moving outpatient procedures

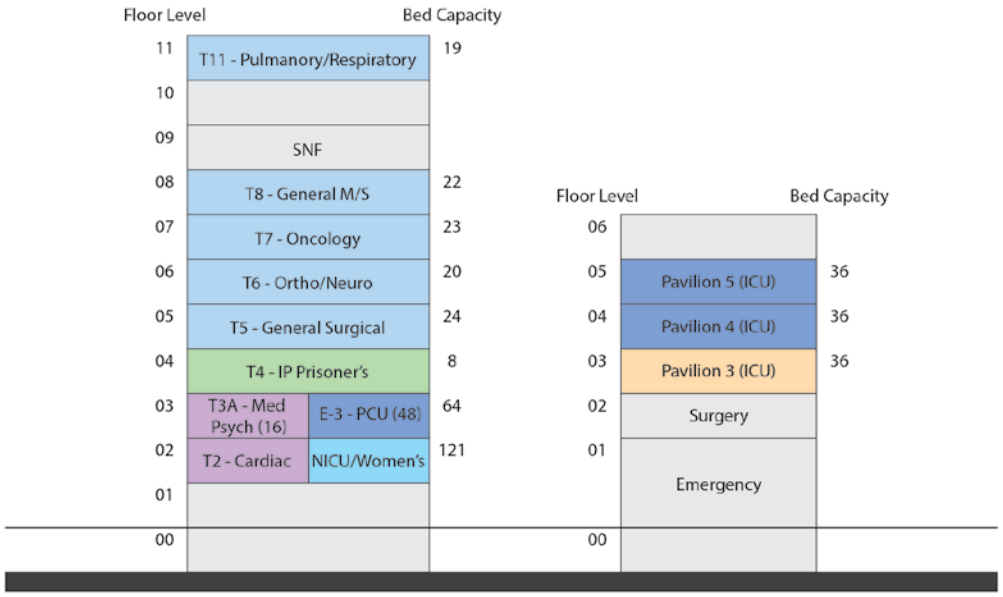
Program Summary – Diagnostics/Treatment (Continued)	
Department	**Features & Benefits**
GI/Bronchoscopy *Integration with surgical services platform, but with distinct space to support expanded service offering for GI and Bronchoscopy services.*	• Planned growth of inpatient case volume to accommodate unmet demand. • Opportunity to shift 1,200 outpatient cases from the high-cost, difficult to access hospital environment to a cost-effective outpatient procedure center. • Increased support areas like pre/post procedure spaces to enable optimal operational efficiency • Increased support and adjacency with surgery platform to expand scope of inpatient procedures (including EBUS) • Maintain 4 Endo/GI rooms, but increase capacity by moving outpatient procedures
Pre-Admission Testing *Single pre-admission testing service near public elevators, near surgical/procedural platform.*	• Adjacency to surgical/procedural services allows for operational efficiencies to be realized for anesthesia and pre/post recovery nursing staff. • Potential to support reduced case cancellations and delays related to incomplete pre-admission screening.
Radiology Relocation and shifting of inpatient-supporting equipment east of Main Street to align with the new inpatient tower.	• Opportunity to consolidate CT Scanners into a 'CT Suite' to support patients in the Emergency Department and on the Inpatient units (particularly ICU). • Potential to relocate / re-position ED-supporting radiology to enable greater radiology department staffing efficiencies / equipment utilization without sacrificing the service of the Emergency Department. • Relocation of the Nuclear Medicine camera on the 3rd floor (difficult to access) adjacent to other Nuclear Medicine resources and to stress testing.
Inpatient Pharmacy *Relocate Inpatient Pharmacy to new tower*	• Improved configuration for pharmacy operations • Appropriately sized department to accommodate equipment and work flow • Reduced travel distances to major inpatient areas serviced • Improved staff collaboration opportunities
Program Summary – Support Services	
Department	**Features & Benefits**
Support Services *Relocate Materials Management, EVS, Laundry/Linen to new tower*	• Improved adjacency to inpatient units, diagnostic/treatment departments, and public space • Reduced travel distances and time to major inpatient areas serviced • Improved dock flow and capacity
Food & Nutrition *Relocate Food and Nutrition to new tower*	• Right-size the department to accommodate inpatient meal service demands • Ability to create room-service model and increase patient satisfaction • Improved public dining options, amenities and environment • Centralized location convenient to inpatient beds • Reduced travel distances and time to major inpatient areas serviced • Improved dock flow and capacity
Sterile Processing Department *Single sterile processing and concentration of sterile processing functions at the lower level (and not in Surgery)*	• Combines satellite sterile processing into the expanded main department in lower level of Pavilion. • Relocates some processes, staging space from the OR suite into the sterile processing department for more efficient operations and use of space on surgery floor.

Inpatient Beds Projection Summary

As part of the functional and space programming effort, the project team reviewed and vetted previous inpatient projections originally developed in the 2013 Facility Utilization Plan (FUP). Broaddus-Blue Cottage focused on understanding the original model as well as creating a high-level parallel bed need estimate to validate and update the original projections in order to establish a target bed number to use in space programming.

The 2013 FUP projected inpatient beds for John Peter Smith Hospital utilizing FY2012 patient days and discharges data. The model embedded in the FUP organized Tarrant county demographic data by age group to project volume growth at 10 and 20 years. Additionally, average length of stay was reviewed and future reductions were suggested. This generated four scenarios of beds– 10 and 20 years each with or without a length of stay reduction. The chart on the next page summaries those bed projections.

Broaddus-Blue Cottage created a high-level bed need estimate to vet the original model and use updated inpatient data. This check-model used FY2013 patient days by acuity (similar breakdown as the 2013 FUP model). It's important to note here that there was a 22% increase in patient days from FY2012 and FY2013, so a significant shift in the baseline data. The Broaddus-Blue Cottage bed need estimate then projected patient days out 10 years with about a 1.5% annual growth rate, which was in line with the approved 2013 FUP. The check-model didn't apply length of stay reduction assumptions, but rather applied appropriate benchmark utilization rates by acuity as well as a target benchmark percentage of intensive care beds.



JPS Main Tower

M/S Acute Care	108
M/S Acute Care Tele	40
M/S PCU	48
M/S ICU	0
Women's	62
NICU	35
IP Prisoner's	8
Total	301

JPS Pavilion

M/S Acute Care	0	108
M/S Acute Care Tele	0	40
M/S PCU	72	120
M/S ICU	36	36
Women's	0	62
NICU	0	35
IP Prisoner's	0	8
Total	108	409

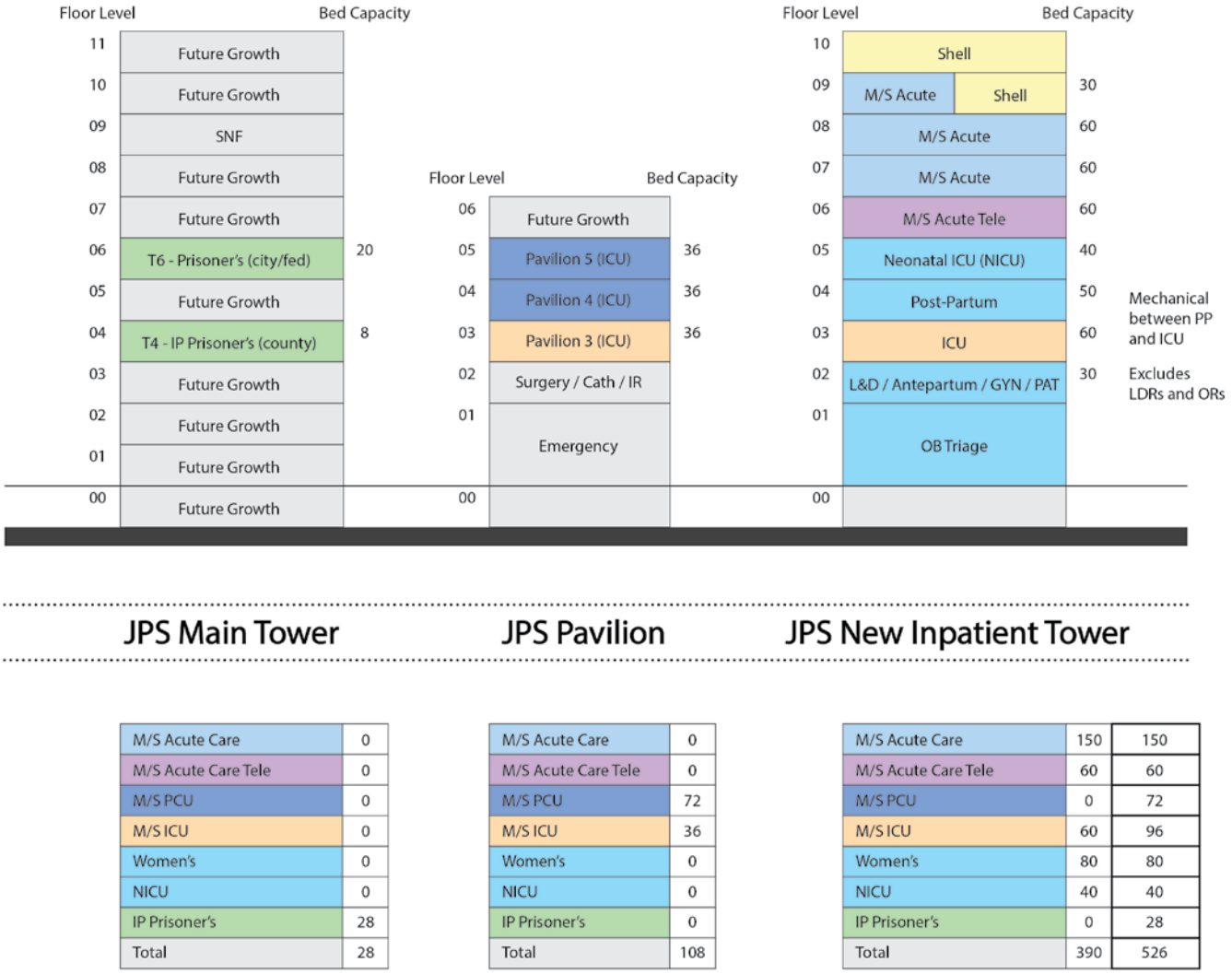
All other beds equals 112 (Nursery, SNF, LDR, OB Triage, Observation)

521 Grand Operating Total

Existing Med/Surg Bed Stacking Diagram

Based on baseline of 109,123 FY2012 M/S Patient Days	Need 2012**	Need 2023 (no LOS reductions)***	Need 2033 (No LOS reductions)***	Need 2023 with LOS reductions***	Need 2033 with LOS reductions***	Planned 2023****
Med / Surg	**360**	**402**	**454**	**338**	**353**	**352**
Medical	106	119	132	99	99	165
Surgical	65	73	81	64	66	
Medical Progressive Care		85	94	67	74	72
Surgical Progressive Care	141	64	71	57	56	57
MICU	18	23	29	23	29	58
SICU	29	38	47	27	29	

In comparing and considering the check-model results to the original four modeled scenarios, it was decided to target 400 total medical/surgical inpatient beds and provide additional shell space for growth in the future. Above are current total medical/surgical operating beds versus after master plan implementation. Women's and NICU future bed targets were developed independent of this analysis of medical/surgical beds and are in line with expected demographic changes and reference to historical levels. Please reference inpatient and women's/NICU functional narratives for more detail.



Future Med/Surg Bed Stacking Diagram Including New Inpatient Tower

Project Schedule

The Broaddus-Blue Cottage team generated two different implementation schedules. One schedule--referred to as "Option A: Multi-phase"--assumed that the enabling projects (new inpatient tower, central utility plant, and parking garage) would begin design and construction as soon as funding is available. The remaining project components would then be staggered in order to balance the amount of construction occuring at the same time on campus.

The second schedule--referred to as "Option B: Front-loaded"--assumed that all projects start as soon as funding is available. The objective of this option is to optimize speed-to-market to save money by reducing the impact of cost escalation over time. For this schedule, the timelines for the new inpatient tower and the main hospital renovation/backfill project components do not change.

Both schedules have a significant impact on total project cost as escalation is factored into the schedule at a rate of 1.5% per quarter or 6% per annum.

Option A: Multi-phased Schedule

		May 2015 Bond		November 2015 Bond	
#	Project	Design	Construction	Design	Construction
1	New Inpatient Tower	Q3 2015 - Q2 2017	Q4 2016 - Q3 2019	Q1 2016 - Q4 2017	Q2 2017 - Q1 2020
2	Main Hospital and Pavilion Renovations/Backfill	Q3 2018 - Q4 2019	Q1 2020 - Q4 2021	Q1 2019 - Q2 2020	Q3 2020 - Q2 2022
3	Ambulatory Specialty Center	Q1 2016 - Q4 2016	Q4 2016 - Q1 2018	Q3 2016 - Q3 2017	Q2 2017 - Q3 2018
4	Psychiatric Hospital	Q1 2017 - Q4 2017	Q4 2017 - Q1 2019	Q3 2017 - Q2 2018	Q2 2018 - Q3 2019
5	Parking Garage	Q3 2015 - Q1 2016	Q4 2015 - Q2 2017	Q1 2016 - Q3 2016	Q3 2016 - Q4 2017
6	Medical Office Building	Q1 2018 - Q3 2018	Q2 2018 - Q1 2019	Q3 2018 - Q1 2019	Q4 2018 - Q3 2019
7	Central Utility Plant	Q2 2016 - Q1 2017	Q4 2016 - Q1 2018	Q4 2016 - Q3 2017	Q2 2017 - Q3 2018
	TOTAL	**$452,710,000**	**$755,070,000**	**$899,500,000**	

Note: Q = Quarter

Option B: Front-loaded Schedule

		May 2015 Bond		November 2015 Bond	
#	Project	Design	Construction	Design	Construction
1	New Inpatient Tower	Q3 2015 - Q2 2017	Q4 2016 - Q3 2019	Q1 2016 - Q4 2017	Q2 2017 - Q1 2020
2	Main Hospital and Pavilion Renovations/Backfill	Q3 2018 - Q4 2019	Q1 2020 - Q4 2021	Q1 2019 - Q2 2020	Q3 2020 - Q2 2022
3	Ambulatory Specialty Center	Q3 2015 - Q2 2016	Q2 2016 - Q3 2017	Q1 2016 - Q4 2016	Q4 2016 - Q1 2018
4	Psychiatric Hospital	Q3 2015 - Q2 2016	Q2 2016 - Q3 2017	Q1 2016 - Q4 2016	Q4 2016 - Q2 2018
5	Parking Garage	Q3 2015 - Q1 2016	Q4 2015 - Q2 2017	Q1 2016 - Q3 2016	Q2 2016 - Q4 2017
6	Medical Office Building	Q3 2015 - Q1 2016	Q4 2015 - Q3 2016	Q1 2016 - Q3 2016	Q2 2016 - Q1 2017
7	Central Utility Plant	Q3 2015 - Q2 2016	Q1 2016 - Q2 2017	Q1 2016 - Q4 2016	Q3 2016 - Q1 2018
	TOTAL	**$452,710,000**	**$755,070,000**	**$899,500,000**	

Note: Q = Quarter


Centered in Care
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Project Cost Estimate

Multiple iterations of the total project cost conceptual estimate were generated for this project based on the implementation schedule and bond referendum timing. The objective of creating iterations was to explore the impact of cost escalation relative to the standard bond referendum voting schedule (May or November of each year) as well as the speed-to-market for beginning construction of each project "bundle."

The total project cost for each project "bundle" is escalated to the mid-point of construction rounded to the nearest quarter-year (eg. Quarter 3, 2017). Escalation is factored at 1.5% per quarter--6% per annum--for all project "bundles" as that is the best assessment of construction market conditions in the Dallas-Fort Worth Metro Area.

The construction costs were generated in current (FY2014) dollar values, and were comprised by two independent estimates based on the same information. The two estimates were then reconciled by a third construction cost estimator to ensure consistency and thoroughness of the estimates. The final construction costs remain the same for all implementation schedules.

Discretion of District Board

All project bundles comprise the complete recommendations of this functional and space program. These recommendations are conceptual and will need to be further vetted by the Tarrant County Hospital District Board of Managers. Ultimate cost and financing discretion resides with the Board after it weighs financial and operational affordability.

Cost Estimate, Assuming May 2015 Bond and Option A: Front-loaded Schedule

#	Project	Construction Cost	Total Project Cost	Total Project Cost Escalated*
1	New Inpatient Tower	$248,880,000	$434,870,000	$526,190,000
2	Main Hospital and Pavilion Renovations/Backfill	$35,430,000	$66,750,000	$91,780,000
3	Ambulatory Specialty Center	$37,160,000	$63,810,000	$73,390,000
4	Psychiatric Hospital	$55,140,000	$87,530,000	$104,600,000
5	Parking Garage	$49,110,000	$63,970,000	$70,690,000
6	Medical Office Building	$10,400,000	$16,200,000	$19,850,000
7	Central Utility Plant	$16,590,000	$21,940,000	$25,560,000
	TOTAL	**$452,710,000**	**$755,070,000**	**$912,060,000**

Cost Estimate, Assuming May 2015 Bond and Option B: Front-loaded Schedule

#	Project	Construction Cost	Total Project Cost	Total Project Cost Escalated*
1	New Inpatient Tower	$248,880,000	$434,870,000	$526,190,000
2	Main Hospital and Pavilion Renovations/Backfill	$35,430,000	$66,750,000	$91,780,000
3	Ambulatory Specialty Center	$37,160,000	$63,810,000	$71,470,000
4	Psychiatric Hospital	$55,140,000	$87,530,000	$98,040,000
5	Parking Garage	$49,110,000	$63,970,000	$70,690,000
6	Medical Office Building	$10,400,000	$16,200,000	$17,420,000
7	Central Utility Plant	$16,590,000	$21,940,000	$23,910,000
	TOTAL	**$452,710,000**	**$755,070,000**	**$899,500,000**

Cost Estimate, Assuming November 2015 Bond and Option A: Multi-phase Schedule				
#	**Project**	**Construction Cost**	**Total Project Cost**	**Total Project Cost Escalated**
1	New Inpatient Tower	$248,880,000	$434,870,000	$532,710,000
2	Main Hospital and Pavilion Renovations/Backfill	$35,430,000	$66,750,000	$93,780,000
3	Ambulatory Specialty Center	$37,160,000	$63,810,000	$76,260,000
4	Psychiatric Hospital	$55,140,000	$87,530,000	$109,860,000
5	Parking Garage	$49,110,000	$63,970,000	$72,600,000
6	Medical Office Building	$10,400,000	$16,200,000	$20,580,000
7	Central Utility Plant	$16,590,000	$21,940,000	$26,210,000
	TOTAL	**$452,710,000**	**$755,070,000**	**$932,000,000**

Cost Estimate, Assuming November 2015 Bond and Option B: Front-loaded Schedule				
#	**Project**	**Construction Cost**	**Total Project Cost**	**Total Project Cost Escalated**
1	New Inpatient Tower	$248,880,000	$434,870,000	$532,710,000
2	Main Hospital and Pavilion Renovations/Backfill	$35,430,000	$66,750,000	$93,780,000
3	Ambulatory Specialty Center	$37,160,000	$63,810,000	$73,390,000
4	Psychiatric Hospital	$55,140,000	$87,530,000	$101,980,000
5	Parking Garage	$49,110,000	$63,970,000	$72,600,000
6	Medical Office Building	$10,400,000	$16,200,000	$18,150,000
7	Central Utility Plant	$16,590,000	$21,940,000	$25,230,000
	TOTAL	**$452,710,000**	**$755,070,000**	**$917,840,000**

CHAPTER 2:

Functional and Space Program

New Inpatient Tower Program Summary

	Department	DGSF	Multiplier	Total DGSF	Comments
1	**Inpatient Nursing Units**				
2	Acute Care Unit (30 Beds)	19,998	7	139,989	7 Acute/Acute Tele units on 3.5 floors in New Tower; 2 units are telemetry capable, 5 units are not telemetry capable
3	Intensive Care Unit (30 Beds)	21,187	2	42,375	2 ICU units on 1 floor in New Tower
4	Labor and Delivery Recovery Unit	31,374	1	31,374	Includes Triage which should be located on 1st Floor
5	Newborn Nursery	2,963	1	2,963	
6	Postpartum Unit	33,701	1	33,701	Includes GYN Beds
7	Antepartum/Gynecology Unit	22,823	1	22,823	
8	Neonatal Intensive Care Unit (Private Rooms)	28,272	1	28,272	
9	***Subtotal***			***301,496***	*Excludes Bldg Gross Area (Elevators, Stairs, Mech Rms, etc)*
10					
11	**Diagnostic and Treatment Services**				
12	Cardiopulmonary Diagnostics	3,891	1	3,891	Echo, EKG, Stress (Nuc Med in Medical Imaging)
13	Diagnostic Imaging	11,599	1	11,599	Relocations: CT (4), Rad (1), U/S (2), NM (2); New: Rad (1)
14	Dialysis Suite - Inpatient	4,103	1	4,103	
15	Emergency Department - Expansion into Shelled Area	7,109	1	7,109	Adding 14 exam rooms and support in shell of East Pavilion
16	Urgent Care	14,485	1	14,485	32 future capacity projection, full relocation near ED
17	Pre-Admission Testing	4,363	1	4,363	Near Surgery waiting, reception in new space
18	Respiratory Therapy	2,193	1	2,193	
18	Surgery Department (Support and Pre-Op/Recovery)	29,227	1	29,227	Reception, Waiting, Prep/Recovery, Staff Support
19	Endoscopy	4,334	1	4,334	Procedure rooms and immediate support near OR suite.
21	***Subtotal***			***81,302***	*Excludes Bldg Gross Area (Elevators, Stairs, Mech Rms, etc)*
22					
23	**Administrative and Public Services**				
24	Executive Administration	6,097	1	6,097	Executive Admin
25	Admitting/Registration	1,838	1	1,838	
26	Conference Center	3,131	1	3,131	Large Auditorium
27	Finance	767	1	767	Cashier only; placeholer; main department in JPOC
28	Gift Shop	1,200	1	1,200	
29	Information Technology	5,000	1	5,000	5000 SF placeholder
30	Lobby/Discharge Lounge	5,636	1	5,636	Includes information desk, personal care, etc.
31	Pastoral Care	2,340	1	2,340	
32	***Subtotal***			***26,009***	*Excludes Bldg Gross Area (Elevators, Stairs, Mech Rms, etc)*
33					
34	**Support Services**				
35	Central Employee Services	1,888	1	1,888	Shared for EVS, Linen, MM, Vehicle Transport
36	Sterile Processing Department	3,024	1	3,024	
37	Environmental Services	7,823	1	7,823	
38	Food & Nutrition	26,956	1	26,956	
39	Laundry/Linen Services	13,819	1	13,819	3,000 DGSF for Linen Services if laundry processing outsourced (per Industry benchmark); 10,900 SF is benchmark for full-service laundry 401-600 bed hospitals per American Society for Healthcare Environmental Services Study (1994)
40	Mat Mgmt/Purchasing/Central Supply	21,250	1	21,250	
41	Patient Transport	780	1	780	
42	Pharmacy	6,957	1	6,957	
43	Phlebotomy	203	1	203	Phlebotomist satellite re-supply storage; OP not moving
44	***Subtotal***			***82,698***	*Excludes Bldg Gross Area (Elevators, Stairs, Mech Rms, etc)*
45					
46	**Shelled Space**				
47	Shell, equivalent of 3 Acute M/S patient units	19,998	3	59,995	
48	***Subtotal***			***59,995***	*Excludes Bldg Gross Area (Elevators, Stairs, Mech Rms, etc)*
49					
50					
51	**Total Departmental Gross Square Feet**			**551,501**	
52	*16% - Interdepartmental/Building Circulation*				
53	*12% - Mechanical / Electrical Infrastructure Allowance*				
54	*6% - Exterior Wall Allowance*				
55	**Total Building Gross Square Feet**			**739,011**	

Main Hospital and Pavilion Renovation Program Summary

	Department	GSF Total	Reno Type	Comments
1	**Diagnostic and Treatment Services**			
2	Emergency Department	22,300	Heavy	Renovate the Purple fast track pod for increased acute volume in ED, renovate for added triage, renovate Reg/Admitting space to ED (Reg/Admitting moving to new lobby); additional 15k SF for renovation of existing pods and reconfiguration (not originally identified in BOKA FUP)
3	Observation Unit	32,601	Med	Moving to E3
3	Surgical Services (Storage, Anesthesia Work, Officing)	11,000	Med	Coupled with new space expansion
4	Sterile Processing Department	1,825	Med	Coupled with new space expansion
4	Rehabilitation Services (Outpatient)	10,260	Heavy	Outpatient expanding, Inpatient support in New Tower
6	***Subtotal***	***77,986***		
7				
8	**Administrative and Public Services**			
9	Simulation/Education	41,192	Med	Main Tower Level 02
10	***Subtotal***	***41,192***		
11				
12				
13	**Hospital Clinics**			
14	Family Medicine/Medical Home Clinic	18,731	Heavy	Main Tower Level 01
15	Ortho/Podiatry Clinic	11,214	Heavy	Main Tower Level 01
16	Specialty Clinic	15,496	Heavy	Main Tower Level 02
17	***Subtotal***	***45,441***		
18				
19				
20				
21	Total Gross Square Feet (Medium Renovation)	86,618		*Full SF identified in BOKA 2013 FUP w/ some additions*
22	Total Gross Square Feet (Heavy Renovation)	78,001		*Full SF identified in BOKA 2013 FUP w/ some additions*
23	**Total Gross Square Feet**	**164,619**		

Ambulatory Specialty Center (ASC) Program Summary

Program	Target Capacity	Units	Future DGSF Range Low	Future DGSF Range High	Comments
Clinics/Exam					
Clinics/Exam (TBD)	60	exam rooms	33,000	34,500	Medical specialties currently in hospital?
Subtotal	60		33,000	34,500	
Procedural					
Ambulatory Surgery Center	6	ORs	16,800	18,000	
Minor Procedure	2	Rooms	2,000	2,200	
GI Endoscopy	6	Labs	12,600	13,860	
Subtotal	14		31,400	34,060	
Diagnostics, Therapy					
General Radiography	2	rooms	2,600	3,000	estimate; depends on mix of specialists/services in development.
Fluoroscopy	1	rooms	1,300	1,500	estimate; depends on mix of specialists/services in development.
CT	2	rooms	3,600	4,000	estimate; depends on mix of specialists/services in development.
MRI	1	rooms	2,000	2,200	estimate; depends on mix of specialists/services in development.
Nuclear Medicine	2	rooms	1,600	2,000	estimate; depends on mix of specialists/services in development.
Non-invasive Dx (Echo, EKG, Stress)	4	rooms	2,000	2,400	estimate; depends on mix of specialists/services in development.
Cardiac Rehab	1		3,000	3,300	estimate; depends on mix of specialists/services in development.
Wellness Center	1		4,000	4,800	
Subtotal	2		20,100	23,200	
Public, Retail, Support					
Lobby, Waiting	n/a		2,000	3,500	
Food/Café			300	400	
Retail Supplies			1,000	1,200	
Lab/Phlebotomy			2,000	2,400	
Retail Pharmacy			1,000	1,200	
Patient Financial Services			800	960	Financial counseling, other patient support
Subtotal	0		7,100	9,660	
		TOTAL ESTIMATED	91,600	101,420	
		TOTAL ESTIMATED	114,500	126,775	

Psychiatric Hospital Program Summary

Program	Target Capacity	Units	Target DGSF/Room Range		Future DGSF Range		Comments
			Low	High	Low	High	
Beds							
Adult Beds	96	beds	625	650	60,000	62,400	All private room model; 24 bed units
Shell Floor for Additional Beds	48	beds	625	650	30,000	31,200	All private room model; 24 bed units
Geriatric Beds	12	beds	650	675	7,800	8,100	All private room model; 60 and older
Adolesent Beds	20	beds	650	675	13,000	13,500	All private room model
LCA Beds	20	beds	625	650	12,500	13,000	All private room model
Subtotal	196				123,300	128,200	Includes shell floor allocation
Assessment Center and Partial Hospitalization							
Assessment Center	1	n/a	6,500	7,150	6,500	7,150	Waiting, 30 offices, 15 small offices, 3 group rooms, 2 conf rooms, suppt.
Partial Hospitalization Program	1	n/a	2,500	2,750	2,500	2,750	Waiting, 5 offices, 2 group rooms, 1 conf rooms, call center, suppt.
Subtotal	1				2,500	2,750	
Emergency and Observation							
Emergency Dept	30	rooms	800	825	24,000	24,750	estimate; depends on mix of specialists/services in development.
Observation	16	rooms	400	425	6,400	6,800	estimate; depends on mix of specialists/services in development.
Subtotal					30,400	31,550	
Public and Support							
Lobby, Waiting	n/a				2,000	2,200	
Staff Support	n/a				5,000	5,500	
Conference Rooms	3		400	400	1,200	1,200	20 people capacity each
Auditorium	60		25	25	1,500	1,500	
Auditorium (Small)	20		30	30	600	600	
TBD Allowance	n/a				2,000	2,200	
Subtotal					12,300	13,200	
			TOTAL ESTIMATED Departmental GSF:		168,500	175,700	
			TOTAL ESTIMATED Building GSF:		210,625	219,625	Plus green space

New Inpatient Tower Program

Department: Inpatient Nursing Units - Antepartum/Gynecology Unit (22,823 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Reception/Waiting**				
2	Waiting Room	1	250	250	Minimal waiting assumed, seating for 10
3	Ultrasound Procedure Rooms	**1**	220	220	
4	Ultrasound Toilet Room	1	65	65	
5	Consult Room/Bereavement	2	120	240	1 of each
6	Public Toilets	2	65	130	Unisex; 1 per 15 visitors
7	***Subtotal***			***905***	
8					
9	**Clinical Area**				**Antepartum (A/P) and GYN**
10	Private Patient Room	**26**	315	8,190	100% Telemetry; All ADA toilet/shower rooms. Only need four beds to have telemetry (cardiac) capabilities. Total beds (including bariatric and isolation): 30 beds, 18 A/P, 12 GYN
11	Bariatric Patient Room (1 A/P, 1 GYN)	**2**	360	720	Will need capability to do fetal monitoring
12	Isolation Private Patient Room (1 A/P, 1 GYN)	**2**	315	630	Will need capability to do fetal monitoring
13	Patient Anteroom, Isolation	2	60	120	
14	Charting Alcoves	15	24	360	1 alcove/2 rooms
15	Nurse / Staff Work Station	3	320	960	Two for A/P, One for GYN; 5 staff workstations; PTS; telemetry monitoring; 6 beds per station
16	Newborn Resuscitation Room	1	260	260	
17	Team Room	1	180	180	
18	Code Cart Alcove	2	15	30	
19	GYN Exam Room	1	180	180	GYN stretcher, procedure/surgical light, computer work station, storage & microscope area
20	Medication Room	2	100	200	
21	Point-of-Care Testing Alcove	1	30	30	
22	Nourishment Room	1	100	100	
23	Dietary Cart Storage (Alcove)	1	15	15	
24	Clean Supply Room	2	100	200	
25	Linen Alcove - Doors	3	25	75	

	Room or Space	Quantity	Unit Area	Total	Comments
26	Soiled Workroom	2	150	300	
27	Storage	1	300	300	
28	Lactation/Breast Pump Room	1	100	100	
29	Wheelchair/Stretcher Alcove	2	48	96	
30	Portable Equipment Alcove	2	48	96	
31	Respiratory Therapy Storage	1	80	80	
32	TDR/IDF Room	1	200	200	
33	Electrical Equipment Room	0	0	0	
34	Housekeeping Closet	1	50	50	
35	***Subtotal***			***13,472***	
36					
37	**Administrative and Staff Support**				
38	Office, Team Leader	1	80	80	
39	Office, Maternal Fetal Medicine Physician	2	80	160	
40	Workstation, Case Manager/Social Worker	2	65	130	
41	Workstation, Hoteling	2	65	130	
42	Conference Room	12	24	288	
43	Staff Lounge/Locker Room	1	380	380	Needs for staff include: refrigerator, microwave x2, sink, ice machine
44	Staff Toilets	3	65	195	
45	***Subtotal***			***1,363***	
46					
47					
48					
49	**Total Net Area**			**15,740**	**DNSF**
50	Net to Gross Factor			1.45	
51	**Departmental Gross Area**			**22,823**	**DGSF**

New Inpatient Tower Program

Department: Diagnostic and Treatment Services - Cardiopulmonary (3,891 DGSF)

	Room or Space		Quantity	Unit Area	Total	Comments
1	**Entry/Waiting**					
2	Waiting Room		1	200	200	
3		***Subtotal***	***0***		***200***	
4						
5	**Reception/Registration**					
6	Check-in Desk		1	65	65	
7		***Subtotal***			***65***	
8						
9	**Procedure Rooms and Support**					
10	Echo Vascular Room		**1**	180	180	Urgent care patients
11	Echo/Stress Test Room		**1**	220	220	
12	Stress Test Room		**3**	200	600	Shell one room
13	Patient Toilet		1	65	65	
14	Nuclear Medicine Camera Room		0	0	0	See imaging program
15	Nuclear Cardiology Injection/Prep Room		2	80	160	Share prep/injection rooms.
16	Nuclear Cardiology Hot Lab		1	80	80	
17	Nuclear Cardiology Sub-Waiting Alcove		2	22	44	
18	Equipment Storage Room		1	150	150	Including downloading capabilities
19	Physician Reading Room		1	65	65	
20	Blanket Warmer		1	25	25	
21	Crash Cart		1	15	15	
22	Medication Room		1	80	80	
23	Clean Linen Closet		1	25	25	
24	Soiled Utility		1	80	80	
25	Clean Utility		1	100	100	
26	Equipment Storage Room		1	100	100	
26	Stretcher Alcove		1	30	30	
27	Nutrition		1	30	30	
28	Workroom, Stress		4	35	140	
29	Workroom, Ultrasound		4	35	140	Includes TEE probe storage cabinet
30		***Subtotal***			***2,329***	
31						
32						
33	**Total Net Area**				**2,594**	**DNSF**
34	Net to Gross Factor				1.50	
35	**Departmental Gross Area**				**3,891**	**DGSF**

New Inpatient Tower Program

Department: Support Services – Central Employee Services (I,888 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Staff Support**				Shared EVS, Laundry, Patient Transport, Mat Mgmt
2	Staff Lounge	1	720	720	Table with seating, pantry with refrigerator, computer workstations, seating for 30
3	Male Staff Locker Room	1	470	470	80 male half lockers (5 SF/each) with toilet/shower (70 NSF)
4	Female Staff Locker Room	1	270	270	40 female half lockers (5 SF/each) with toilet/shower (70 NSF)
5	Housekeeping Room	1	50	50	
6	***Subtotal***			***1,510***	
7					
8					
9					
10	**Total Net Area**			**1,510 DNSF**	
11	Net to Gross Factor			1.25	
12	**Departmental Gross Area**			**1,888 DGSF**	

New Inpatient Tower Program

Department: Support Services – Central Sterile Processing Department (3,024 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Soiled Receiving and Decontamination**				Part of backfill renovation
2					
3	**Instrument Assembly & Terminal Sterilization**				Part of backfill renovation
4					
5	**Sterile Stores**				New Construction
6	Receiving/Breakout Area	1	120	120	
7	Workstation, Issuing	1	50	50	
8	Pneumatic Tube Station	1	15	15	Adjacent to dispensing station
9	Workstation, Tech	3	50	150	
10	Sterilized Instrumentation Storage Area	8	28	224	
11	Sterile Supply Storage Area	14	28	392	
12	Equipment Storage Area	1	400	400	
13	Cart Staging	12	15	180	
14	TDR or IDF Room	0	200	0	
15	Electrical Equipment Room	0	0	0	
16	Housekeeping Room	1	50	50	
17	***Subtotal***			***1,581***	
18					
19	**Staff Support**				New Construction
20	Offices	2	100	200	
21	Locker Room - Male	1	150	150	
22	Locker Room - Female	1	150	150	
23	Toilet Room	1	65	65	
24	Office Support	1	60	60	
25	Staff Break Room	1	120	120	
26	***Subtotal***			***745***	
27					
28					
29					
30	**Total Net Area**			**2,326**	**DNSF**
31	Net to Gross Factor			1.30	
32	**Departmental Gross Area**			**3,024**	**DGSF**

New Inpatient Tower Program

Department: Administrative and Public Services - Conference Center (3,131 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Conference/Classroom**				
2	Pre-Function Area	1	200	200	
3	Auditorium	1	1,500	1,500	100 seats @ 15 SF each
4	AV Control Room	1	100	100	
5	AV Equipment Storage Room	1	65	65	
6	Storage	1	200	200	
7	Public Toilet, Male	1	220	220	
8	Public Toilet, Female	1	220	220	
9	***Subtotal***			***2,505***	
10					
11					
12					
13	**Total Net Area**			**2,505**	**DNSF**
14	Net to Gross Factor			1.25	
15	**Departmental Gross Area**			**3,131**	**DGSF**

New Inpatient Tower Program

Department: Diagnostic and Treatment Services - Dialysis Suite (4,103 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Dialysis Area**				
2	Exam Room	0	120	0	For home training; Counter w/sink
3	Inpatient Holding Room	0	120	0	Counter w/sink, stretcher, medical gases
4	Dialysis Infusion - Open Bay	12	100	1,200	Staff work counter; Recliner, cubicle curtain separation; One sink between bays
5	Dialysis Infusion - Private Room	2	140	280	Counter w/sink; Bed/recliner
6	Patient Toilet	2	65	130	One toilet per 6 stations
7	Physician Work Alcove	1	40	40	
8				***1,650***	
9					
10	**Clinical Support**				
11	Control Center	1	250	250	Nurse/staff work area with visibility to patients; 5 workstations
12	Code Cart Alcove	1	15	15	Central location
13	Mobile Cart Alcove	0	0	0	
14	Nourishment Alcove	0	50	0	
15	Medication Room/Alcove	1	50	50	
16	Clean Utility	1	80	80	
17	Linen Alcove	1	25	25	
18	Soiled Utility	1	100	100	
19	Dialyzer Maintenance Room	1	100	100	One way flow of materials from soiled to clean; Counter w/sink, decontamination equipment
20	RO Reprocessing Room	1	200	200	
21	Housekeeping Room	0	50	0	Share with adjacent unit
22	***Subtotal***			***820***	
23					
24	**Administrative and Staff Support**				
25	Office, Manager	1	80	80	
26	Staff Lounge/Lockers	1	120	120	
27	Staff Toilet	1	65	65	Single occupancy
28	***Subtotal***			***265***	
29					
30					
31					
32	**Total Net Area**			**2,735**	**DNSF**
33	Net to Gross Factor			1.50	
34	**Departmental Gross Area**			**4,103**	**DGSF**

New Inpatient Tower Program

Department: Diagnostic and Treatment Services – Emergency Department (7,109 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Emergent/Urgent**				
2	ED Universal Exam Room	16	140	2,240	2 pods of 8 exam rooms
3	Alcove, POC	2	40	80	
4	Toilet	4	65	260	
5	Control Center	2	250	500	2 RNs, 1 unit clerk, 1 tech, 1 physician; 1 per pod
6	PACS Alcove	2	40	80	
7	Mobile Cart Alcove	4	15	60	
8	Nourishment Alcove	2	50	100	
9	Medication Room	1	100	100	
10	Clean Utility	1	100	100	
11	Linen Alcove	2	25	50	
12	Soiled Utility	1	100	100	
13	Equipment Storage Room	1	150	150	
14	Stretcher/Wheelchair Storage Alcove	1	48	48	
15	Staff Toilet	1	65	65	Single occupancy
16	Multipurpose workroom	1	300	300	
17	Office, Case Manager	2	80	160	
18	Housekeeping Room	1	50	50	
19	***Subtotal***			***4,443***	
20					
21	**Total Net Area**			**4,443 DNSF**	
22	Net to Gross Factor			1.60	7,331 SF is available shell space area
23	**Departmental Gross Area**			**7,109 DGSF**	

New Inpatient Tower Program

Department: Diagnostic and Treatment Services - Endoscopy (4,334 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Procedure Rooms**				Prep/Recovery and Waiting under separate program
2	Control Center	1	180	180	
3	Physician Dictation Station	2	40	80	
4	Code Cart Alcove	1	15	15	
5	Mobile Cart Alcove	0	0	0	
6	Endoscopy Room	**2**	320	640	
7	Bronchoscopy Room	**1**	320	320	
8	ERCP Room	**1**	400	400	
9	Patient Toilet	3	65	195	
10	Scope Cleaning Room	1	148	148	
11	- Door / Vestibule	1	18		
12	- Dirty Counter with Sink	1	50		
13	- Clean Counter with Sink	1	30		
14	- Double scope washer	1	30		
15	- Biohazardous red-bag waster container	1	10		
16	- Trash container	1	10		
26	Clean Scope Storage Room	1	96	96	
27	- Door / Vestibule	1	18		
28	- Counter w/ handwashing sink	1	30		
29	- Scope cabinet	2	10		
30	- Supply cart	1	28		
31	Linen Alcove - Doors	1	25	25	
32	Equipment Storage Room	1	200	200	
33	Staff Toilet	2	65	130	
34	TDR or IDF Room	0	200	0	
35	Electrical Equipment Room	0	0	0	
36	Housekeeping Room	1	50	50	
37	***Subtotal***			***2,479***	
38					
39	**Administrative Offices**				
41	Workstation, Reception/Admin. Asst	1	90	90	Includes file storage
43	Office, Physician Director	1	120	120	
44	Office, Director	1	120	120	
45	Workstation, Assistant	1	80	80	
52	***Subtotal***			***410***	
65					
66	**Total Net Area**			**2,889**	**DNSF**
67	Net to Gross Factor			1.50	
68	**Departmental Gross Area**			**4,334**	**DGSF**

New Inpatient Tower Program

Department: Support Services – Environmental Services (7,823 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Housekeeping Equipment / Supply Area**				
2	Housekeeping Equipment Room	1	2,400	2,400	Carts, polishers, etc.; wall plugs
3	Chemical Storage Room	1	300	300	
4	Supply Storage Room	1	600	600	
5	Bed Storage Room	0	45	0	Decentralized on units and stored in Materials Management and repaired in Biomed
6	***Subtotal***			***3,300***	
7					
8	**Housekeeping Holding/Processing Areas**				*Floor drains and hose bibs needed in this area*
9	Trash Holding / Staging Room	1	288	288	8 empty carts, 8 full carts; 18 SF each
10	Washer, Dryer	2	50	100	
11	Washer, Commercial	2	50	100	
12	Biohazardous Waste Storage Room	1	100	100	
13	Hazardous Waste Storage Room	1	100	100	
14	Recycle Holding Area	1	200	200	
15	***Subtotal***			***888***	
16					
17	**Autoclave**				*Floor drains and hose bibs needed in this area*
18	Red bin, soiled staging	1	180	180	60 bins staged at a time
19	Red bin weigh station	1	50	50	
20	Autoclave processor	1	1,500	1,500	
21	Compactor	1	100	100	
22	Red bin, clean staging	1	60	60	60 bins staged at a time
23				***1,890***	
24					
25	**Administrative**				
26	Office, Manager	1	80	80	
27	Office, Shared	1	100	100	2 workstations
28	***Subtotal***			***180***	
29					
30					
31					
32	**Total Net Area**			**6,258**	**DNSF**
33	Net to Gross Factor			1.25	
34	**Departmental Gross Area**			**7,823**	**DGSF**

New Inpatient Tower Program

Department: Administrative and Public Services – Executive Administration (6,097 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Office Suite**				
2	Waiting Area	1	80	80	4 seats
3	Workstation, Reception/Admin. Asst	1	90	90	
4	Office, CEO	1	220	220	
5	Toilet Room - CEO	1	65	65	
6	Workstation, Admin. Asst to CEO	1	60	60	
7	Office, COO	1	180	180	
8	Office, CFO	1	180	180	
9	Office, CNO	1	180	180	
10	Office, CMO	1	180	180	
11	Office, SVP Quality	1	180	180	
12	Office, SVP HR	1	180	180	
13	Workstation, Admin. Asst.	5	60	300	Includes files
14	Office, Vice President	4	160	640	VP of Administration, Operations, Support Services, Community Health
15	Office, Board Liason	1	120	120	
16	Staff Work Room	1	150	150	Copy machine, printers, storage shelving
17	File Storage	1	60	60	
18	Conference Room	1	300	300	12 seats
19	Board Room	1	1,200	1,200	50 seats
20	Pantry/Break Room	1	200	200	
21	Staff Toilet	1	65	65	
22	Storage Room	1	60	60	
23	***Subtotal***			***4,690***	
24					
25					
26					
27	**Total Net Area**			**4,690**	**DNSF**
28	Net to Gross Factor			1.30	
29	**Departmental Gross Area**			**6,097**	**DGSF**

New Inpatient Tower Program

Department: Administrative and Public Services - Finance (767 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Office Area**				
2	Office, Supervisor	1	100	100	
3	Office, Staff	1	80	80	
4	Office, Staff	1	80	80	
5	Workstation, Clerk	2	65	130	Window to consult with patients
6	Staff Work Room	1	200	200	Copier/printers, shelving for storage, safe
7	***Subtotal***			***590***	
8					
9					
10					
11	**Total Net Area**			**590**	**DNSF**
12	Net to Gross Factor			1.30	
13	**Departmental Gross Area**			**767**	**DGSF**

New Inpatient Tower Program

Department: Support Services - Food & Nutrition (26,956 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Serving Area**				
2	Dining Room	1	3,750	3,750	250 seats @ 15 SF each
3	Vending Area	1	160	160	8 vending machines @ 20 SF each
4	Coffee/Food Cart	1	300	300	
5	Servery	1	4,000	4,000	4 food stations and cashier stations
6	Housekeeping Room	1	50	50	
7	***Subtotal***			***8,260***	
8					
9	**Receiving & Storage**				
10	Receiving / Breakdown Area	1	600	600	Near dock; 2 dispatch workstations and staging
11	Cart Wash	1	80	80	
12	Pulper Room	1	100	100	
13	CO2 Container	1	60	60	
14	Compressor Rack	1	180	180	
15	Paper Storage	1	120	120	
16	Non-Food Detergent Storage	1	80	80	
17	Dry Food Storage	1	600	600	
18	Vending Supply Storage	1	200	200	
19	Catering Storage	1	200	200	
20	***Subtotal***			***2,220***	
21					
22	**Refrigerated/Frozen Storage**				
23	General Cooler	2	150	300	
24	General Freezer	2	150	300	
25	Meat/Poultry Cooler	1	150	150	
26	Meat/Poultry Freezer	1	150	150	
27	Produce Cooler	1	150	150	
28	Dairy Cooler	1	150	150	
29	***Subtotal***			***1,200***	
30					

	Room or Space	Quantity	Unit Area	Total	Comments
31	**Bulk Production**				
32	Ingredient Room	1	300	300	
33	Cold Food Prep Area	1	200	200	
34	Cold Food Cooler	1	150	150	
35	Catering Prep Area	1	200	200	
36	Catering Cooler	1	150	150	
37	Bakery Production Area	1	200	200	
38	Bakery Cooler	1	150	150	
39	Bakery Freezer	1	150	150	
40	Retail Prep Area	1	200	200	
41	Retail Prep Cooler	1	150	150	
42	Hot Food Prep Area	1	200	200	
43	Bulk Cooking Area	1	300	300	
44	Cook's Cooler	1	150	150	
45	Blast Chiller/Food Bank	1	150	150	
46	Meat Prep Area	1	150	150	
47	Meat Cooler	1	150	150	
48	***Subtotal***			***2,950***	
49					
50	**Food Finishing**				
51	Retail Finishing Area	1	300	300	
52	Retail Cooler	0	300	0	
53	Patient Nourishment Stations	0	0	0	On-units
54	Patient Room Service	1	300	300	
55	Hot Cooking Area	1	300	300	
56	Cold Assembly Area	1	300	300	
57	Cart Holding Area	1	300	300	
58	Beverage Area	1	300	300	
59	Paper/Ice Storage Area	1	300	300	
60	***Subtotal***			***2,100***	
61					
62	**Warewashing**				
63	Soiled Cart Holding	1	200	200	
64	Garbage Holding Room	1	300	300	
65	Cart Wash	1	300	300	
66	Soiled Dish Room	1	200	200	
67	Pot Wash Room	1	200	200	Near hot food prep area
68	Clean Cart Holding	1	300	300	
69	Clean Dish Holding Area	1	300	300	
70	Housekeeping Room	0	50	0	
71	***Subtotal***			***1,800***	
72					

	Room or Space	Quantity	Unit Area	Total	Comments
73	**Administrative Offices**				
74	Waiting Area	1	80	80	
75	Workstation, Reception/Admin. Asst	1	60	60	Includes file storage
76	Office, Director	1	100	100	
77	Office, Retail Manager	1	80	80	
78	Office, Inpatient Manager	1	80	80	
79	Office, Executive Chef	1	80	80	
80	Office, Manager - Clinical Dietitian	1	80	80	
81	Workstation, Order Taker/Hostess	10	65	650	
82	Workstation, Clinical Dietitian	8	65	520	
83	Office, Buyer	1	80	80	
84	Office, Cash Counting	1	120	120	Secured office w/safe; 3 workstations
85	File Area (Hard-Copy Record Storage)	0	18	0	
86	Office Equipment Alcove	1	50	50	
87	Conference Room	1	120	120	
88	Staff Toilet Room	1	65	65	
89	Storage Room	1	100	100	
90	***Subtotal***			***2,265***	
91					
92	**Staff Support**				
93	Staff Lounge	1	280	280	Seating for 8, pantry, 2 workstations
94	Male Staff Locker Room	1	170	170	20 half height lockers, toilet/shower room
95	Female Staff Locker Room	1	270	270	40 half height lockers, toilet/shower room
96	Housekeeping Room	1	50	50	
97	***Subtotal***			***770***	
98					
99					
100					
101	**Total Net Area**			**21,565**	**DNSF**
102	Net to Gross Factor			1.25	
103	**Departmental Gross Area**			**26,956**	**DGSF**

New Inpatient Tower Program

Department: Administrative Services - Gift Shop (I,200 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Gift Shop**				
2	Display area	1	600	600	
3	Cashier Area	1	80	80	
4	Storage Room	1	200	200	
5	Office, Manager	1	80	80	
6	***Subtotal***			***960***	
7					
8					
9					
10	**Total Net Area**			**960**	**DNSF**
11	Net to Gross Factor			1.25	
12	**Departmental Gross Area**			**1,200**	**DGSF**

New Inpatient Tower Program

Department: Diagnostic and Treatment Services - Diagnostic Imaging (II,599 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Entry/Waiting**				
2	Wheelchair Storage	4	12	48	
3	Waiting Room	1	200	200	Small waiting
4	Public Toilet	2	65	130	
5	***Subtotal***			***378***	
6					
7	**Reception/Registration**				
8	Check-in Desk	0	65	0	Use main radiology department
9	Registration Kiosk	0	30	0	Use main radiology department
10	Registration Station - Enclosed	0	100	0	Use main radiology department
11	Office, Financial Counselor	1	100	100	
12	Workstation, Interpreter	1	65	65	
13	***Subtotal***			***165***	
14					
15	**Outpatient Dressing/Changing Facilities**				
16	Male Facilities	1	310	310	4 dressing rooms and 10 lockers with gowned waiting area
17	Female Facilities	1	310	310	4 dressing rooms and 10 lockers with gowned waiting area
18	Sub-Waiting Alcove	10	22	220	
19	Clean Linen Closet	0	25	0	
20	***Subtotal***			***840***	
21					
22	**Diagnostic Radiography**				One relocation, one new
23	Diagnostic Radiography	**2**	360	720	Includes control area
24	Tech Work Core	1	60	60	
25	Radiologist Reading Station	1	100	100	
26	***Subtotal***			***880***	
27					
28	**Ultrasound**				
29	Ultrasound Room	**2**	160	320	
30	Patient Toilet	1	65	65	
31	Tech Work Room	1	60	60	
32	Radiologist Reading Station	1	100	100	
33	Clean Linen Closet	1	25	25	
34	***Subtotal***			***570***	
35					

	Room or Space	Quantity	Unit Area	Total	Comments
36	**Computed Tomography Scanner (CT)**				
37	CT Suite:	1	1,920	1,920	
38	- Procedure Room	**4**	360		
39	- Control / Computer Room	4	120		
40	Injection/Holding Room	1	120	120	
41	Patient Toilet	1	65	65	
42	Radiologist Reading Station	1	100	100	
43	***Subtotal***			***2,205***	
44					
81	**Nuclear Medicine**				
82	Nuclear Medicine Camera Room	**2**	400	800	Includes tech workstation
83	Stress Test Room	0	180	0	In Cardiopulmonary Diagnostics program
84	Injection Room	1	80	80	
85	Hot Lab	1	80	80	
86	Exam Room	1	140	140	
87	Sub-Waiting Alcove - Injected Patients	2	22	44	
88	Patient Toilet - Injected Patients	1	65	65	
89	Radiologist Reading Station	1	100	100	
90	***Subtotal***			***1,309***	
91	Medication Room/Alcove	1	100	100	
92	Clean Utility	1	100	100	
93	Soiled Utility	1	120	120	
94	Equipment Storage Room	1	200	200	Discuss
95	Stretcher / Wheelchair Storage Alcove	2	48	96	
96	TDR or IDF Room	0	200	0	
97	Electrical Equipment Room	0	0	0	
98	Housekeeping Room	1	50	50	
99	***Subtotal***			***666***	
100					

	Room or Space	Quantity	Unit Area	Total	Comments
101	**Pre-Procedure Holding/Post-Procedure Recovery**				
102	Stretcher Holding Bay	2	100	200	
103	Wheelchair Holding Bay	2	60	120	
104	Code Cart Alcove - Adult	2	15	30	
105	Clean Utility	1	120	120	
106	***Subtotal***			***470***	
107					
108					
109	**Total Net Area**			**7,483**	**DNSF**
110	Net to Gross Factor			1.55	
111	**Departmental Gross Area**			**11,599**	**DGSF**

New Inpatient Tower Program

Department: Inpatient Nursing Units – Acute Care (I9,998 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Reception/Waiting**				
2	Waiting Room	1	800	800	30 seats, coffee bar/vending
3	Consult Room	1	100	100	4 seats
4	Public Toilets	2	65	130	unisex, single occupancy
5	***Subtotal***			***1,030***	
6					
7	**Clinical Area**				
8	Private Patient Room	21	290	6,090	Toilet/shower rooms included in SF
9	Private Patient Room ADA	3	315	945	ADA Toilet/shower rooms included in SF
10	Bariatric Patient Room	2	315	630	
11	Isolation Private Patient Room	4	315	1,260	PPE cab in alcove in corridor btw 2 rms
12	Patient Anteroom, Isolation	2	60	120	
13	Decentralized Nurse Stations	15	24	0	Between two patient rooms; SF included in patient room SF
14	Central Staff Work Station	2	120	240	4 staff workstations, printer/copier, PTS, charging docks
15	Team Room	2	180	360	Team Rooms used by physicians, med students, residents, nursing staff and/or ancillary staff; 4 workstations, work table in center
16	Code Cart Alcove	4	15	60	1 per 12 beds
17	Special Bathing Facility	1	140	140	
18	Multi-purpose Space	1	240	240	SF allocated for specialty areas
19	Treatment Room	0	180	0	
20	Medication Room	2	100	200	
21	Linen Alcove, Doors	2	30	60	
22	Point-of-Care Testing Alcove	2	30	60	
23	Nourishment Room	1	100	100	
24	Dietary Cart Storage Alcove	1	15	15	Storage of dirty trays, near elevator
25	Clean Utility Room	2	120	240	
26	Soiled Utility Room	2	120	240	
27	Storage	2	150	300	AIA recommends minimum 10 SF/Bed for equipment storage for Medical/Surgical bed
28	Wheelchair / Stretcher Alcove	4	48	192	
29	Bed Storage	2	45	90	2 bed holding area
30	Equipment Alcove	2	30	60	
31	TDR/IDF Room	1	200	200	
32	Housekeeping Closet	1	50	50	
33	***Subtotal***			***11,892***	

	Room or Space		Quantity	Unit Area	Total	Comments
1	**Reception/Waiting**					
2	Waiting Room		1	800	800	30 seats, coffee bar/vending
3	Consult Room		1	100	100	4 seats
4	Public Toilets		2	65	130	unisex, single occupancy
5		***Subtotal***			***1,030***	
6						
7	**Clinical Area**					
8	Private Patient Room		21	290	6,090	Toilet/shower rooms included in SF
9	Private Patient Room ADA		3	315	945	ADA Toilet/shower rooms included in SF
10	Bariatric Patient Room		2	315	630	
11	Isolation Private Patient Room		4	315	1,260	PPE cab in alcove in corridor btw 2 rms
12	Patient Anteroom, Isolation		2	60	120	
13	Decentralized Nurse Stations		15	24	0	Between two patient rooms; SF included in patient room SF
14	Central Staff Work Station		2	120	240	4 staff workstations, printer/copier, PTS, charging docks
15	Team Room		2	180	360	Team Rooms used by physicians, med students, residents, nursing staff and/or ancillary staff; 4 workstations, work table in center
16	Code Cart Alcove		4	15	60	1 per 12 beds
17	Special Bathing Facility		1	140	140	
18	Multi-purpose Space		1	240	240	SF allocated for specialty areas
19	Treatment Room		0	180	0	
20	Medication Room		2	100	200	
21	Linen Alcove, Doors		2	30	60	
22	Point-of-Care Testing Alcove		2	30	60	
23	Nourishment Room		1	100	100	
24	Dietary Cart Storage Alcove		1	15	15	Storage of dirty trays, near elevator
25	Clean Utility Room		2	120	240	
26	Soiled Utility Room		2	120	240	
27	Storage		2	150	300	AIA recommends minimum 10 SF/Bed for equipment storage for Medical/Surgical bed
28	Wheelchair / Stretcher Alcove		4	48	192	
29	Bed Storage		2	45	90	2 bed holding area
30	Equipment Alcove		2	30	60	
31	TDR/IDF Room		1	200	200	
32	Housekeeping Closet		1	50	50	
33		***Subtotal***			***11,892***	

New Inpatient Tower Program

Department: Inpatient Nursing Units – Intensive Care Unit (2I,I87 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Reception/Waiting**				
2	Waiting Room	1	800	800	30 seats, coffee bar/vending
3	Consult Room	1	100	100	4 seats
4	Public Toilets	2	65	130	unisex, single occupancy
5	***Subtotal***			***1,030***	
6					
7	**Clinical Area**				
8	Private Patient Room	21	290	6,090	Toilet/shower rooms included in SF
9	Private Patient Room ADA	3	315	945	ADA Toilet/shower rooms included in SF
10	Bariatric Patient Room	2	315	630	
11	Isolation Private Patient Room	4	315	1,260	PPE cab in alcove in corridor btw 2 rms
12	Patient Anteroom, Isolation	2	60	120	
13	Decentralized Nurse Stations	15	24	0	Between two patient rooms; SF included in patient room SF
14	Central Staff Work Station	2	120	240	4 staff workstations, printer/copier, PTS, charging docks
15	Team Room	2	180	360	Team Rooms used by physicians, med students, residents, nursing staff and/or ancillary staff; 4 workstations, work table in center
16	Code Cart Alcove	4	15	60	1 per 12 beds
17	Special Bathing Facility	1	140	140	
18	Multi-purpose Space	1	240	240	SF allocated for specialty areas
19	Treatment Room	0	180	0	
20	Medication Room	2	100	200	
21	Linen Alcove, Doors	2	30	60	
22	Point-of-Care Testing Alcove	2	30	60	
23	Nourishment Room	1	100	100	
24	Dietary Cart Storage Alcove	1	15	15	Storage of dirty trays, near elevator
25	Clean Utility Room	2	120	240	
26	Soiled Utility Room	2	120	240	
27	Storage	2	300	600	AIA recommends minimum 20 SF/Bed for equipment storage for Medical/Surgical bed
28	Respiratory Therapy Equipment Room	1	120	120	Soiled Equipment holding, sterilization with double sink

	Room or Space	Quantity	Unit Area	Total	Comments
29	Respiratory Therapy Workroom	1	300	300	2 workstations, counter with sink, ABG machine, Supply Storage, Vent Storage (10)
30	Satelitte Pharmacy	1	0	0	Will use existing ICU satelitte
31	Wheelchair / Stretcher Alcove	4	48	192	
32	Bed Storage	2	45	90	2 bed holding area
33	Equipment Alcove	2	30	60	
34	TDR/IDF Room	1	200	200	
35	Housekeeping Closet	1	50	50	
36	***Subtotal***			***12,612***	
37					
38	**Administrative and Staff Support**				
39	Office, Nurse Manager	1	80	80	Private office
40	Office, Nursing Admin	1	80	80	Private office
41	Office, Intensivists	1	100	100	Shared office for 2
42	Workstation, Asst. Nurse Manager	1	50	50	Shared office with below
43	Workstation, Clinical Pharmacist	1	50	50	Shared office with above
44	Workstation, Case Manager/Social Worker	2	50	100	Shared office
45	Workstation, Hoteling	2	50	100	Shared office
46	Conference Room	1	100	100	
47	Staff Lounge / Locker Room	1	180	180	
48	Staff Toilets	2	65	130	
49	On-call Suite	0	80	0	Centralized
50	***Subtotal***			***970***	
51					
52					
53					
54	**Total Net Area**			**14,612**	**DNSF**
55	Net to Gross Factor			1.45	
56	**Departmental Gross Area**			**21,187**	**DGSF**

New Inpatient Tower Program

Department: Support Services – Laundry/Linen Services (13,819 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Linen Distribution Area**				Space program assumes on-site laundry
2	Workstation, Linen Tech (Distribution)	6	50	300	
3	Clean Linen Holding Room	1	720	720	20 empty and 20 full exhange carts @ 18 SF each
4	Scrub Holding Room	1	110	110	6 carts @ 18 SF each
5	Soiled Linen Holding Room	1	360	360	20 carts @ 18 SF each
6	Soiled Linen Chute Collection Room	1	200	200	Optional; Locate in close proximity to soiled linen holding room and dock
7	Stock Linen Room	1	360	360	20 carts @ 18 SF each
8	Washer/Dryer (Residential)	1	80	80	
9	Staff Toilet Room	1	65	65	
10	***Subtotal***			***2,195***	
11					
12	**Laundry Processing**				
13	Staging area, soiled separation	1	4,000	4,000	
14	Workstation, Plant Op Tech	2	65	130	
15	Washer, Tunnel	1	120	120	
16	Washer, Winex washers	2	140	280	
17	Washer, small pieces	1	120	120	200# capacity
18	Driers	4	80	320	
19	Iron Machines	3	80	240	
20	Folder, small pieces	3	80	240	
21	Folder, blanket	1	80	80	
22	Feeder, sheet	1	80	80	
23	Work area, manual folding	1	200	200	Stainless steel work tables
24	Work area, general	1	200	200	Stainless steel work tables
25	Work area, clean separation	1	300	300	
26	Storage, chemicals	1	300	300	
27	Storage, general	1	300	300	
28	Workstation, Linen Tech (Processing)	4	50	200	
29	Office, Manager	1	80	80	
30	Workstation, Admin Asst	1	30	30	
31	Office, Alcove	1	50	50	
32	Staff Toilet Room	1	65	65	
33	Office, Supervisors	1	100	100	Shared office for 2
34	Work area, exchange carts	1	1,000	1,000	32 carts
35	***Subtotal***			***8,435***	
36					
37	**Total Net Area**			**10,630 DNSF**	
38	Net to Gross Factor			1.30	
39	**Departmental Gross Area**			**13,819 DGSF**	

New Inpatient Tower Program

Department: Inpatient Nursing Units - Labor and Delivery Recovery Unit (31,374 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Reception/Waiting**				
2	Reception/Security	1	60	60	Serve as control and security desk
3	Waiting Room	1	660	660	2 seats per patient room (18 LDRs + 4 C-section)
4	Consult Room	2	120	240	
5	Public Toilets	2	140	280	
6	***Subtotal***			***1,240***	
7					
8	**Triage/Observation/Recovery**				Stand-alone department on 1st floor of new tower
9	Reception/Waiting Area	1	200	200	
10	Triage/Assessment Alcoves	2	80	160	
11	Patient Dressing Area:	1	249	249	
12	- Dressing Cubicles	4	40		
13	- Locker Alcove	12	2		
14	- Patient Toilet	1	65		
15	Triage/Obersvation Rooms	**11**	140	1,540	
16	Advanced Labor Room	**1**	180	180	
17	Patient Toilet	6	65	390	One per two triage/observation rooms
18	Non-stress Test Room	1	140	140	
19	Nurse/Staff Work Station	1	200	200	5 RNs, NP
20	Medication Room	1	80	80	
21	Clean Utility	1	100	100	
22	Soiled Utility	1	80	80	
23	Storage	1	120	120	
24	Tech/Staff Work Room	1	180	180	4 techs
25	***Subtotal***			***3,419***	
26					
27	**LDR/Observation Control Station**				
28	Control Desk	1	164	164	
29	- L&D Charge Nurse	1	50		
30	- Handheld Equipment Storage/Recharging	1	50		
31	- Electronic Census Board / Strips	1	24		
32	- Office Equipment Alcove	0	24		
33	- Document Deconstruction Cabinet	0	24		
34	- Physician Work Area	1	40		
35	***Subtotal***			***164***	
36					

	Room or Space	Quantity	Unit Area	Total	Comments
37	**LDR Patient Rooms**				
38	Private LDR Room	**16**	428	6,848	SF includes toilet/shower room, equipment storage
39	Isolation LDR Room	**2**	428	856	
40	Isolation Ante Room	2	60	120	
41	Charting Alcoves	4	24	96	Distributed
42	Nurse/Staff Work Station	2	300	600	
43	***Subtotal***			***8,520***	
44					
45	**Shared Clinical Support**				Shared by Triage Area and LDR Rooms
46	Team Room	1	180	180	
47	Medication Room	2	100	200	
48	Forcep Cart Acove	1	20	20	
49	Code Cart Alcove	2	15	30	
50	Clean Utility	2	100	200	
51	Linen Alcove - Doors	4	25	100	
52	Soiled Utility	2	120	240	
53	Wheelchair/Stretcher Alcove	2	48	96	
54	Portable Equipment Alcove	1	48	48	
55	Equipment Storage	18	20	360	
56	Nourishment Room	1	100	100	
57	Dietary Cart Storage (Alcove)	1	15	15	
58	TDR/IDF Room	1	200	200	
59	Electrical Equipment Room	0	0	0	
60	Housekeeping Closet	1	50	50	
61	***Subtotal***			***1,839***	

	Room or Space	Quantity	Unit Area	Total	Comments
62					
63	**C-section Suite**				
64	Control Desk	1	140	140	
65	Code Cart Alcove	1	15	15	
66	C-section/Delivery Room	**4**	484	1,936	
67	Scrub Sink	4	24	96	1 per room
68	Stretcher/Bed Alcove	4	50	200	1 per room
69	Substerile Room	2	120	240	Shared by 2 C-section rooms
70	Storage	1	400	400	
71	Resuscitation Room	1	264	264	
72	Recovery Area:	1	1,079	1,079	
73	- Patient Station	8	100		3-sided (walls) with a curtain front
74	- Staff Workstation	4	50		
75	- Office Equipment Alcove	1	24		
76	- Pneumatic tube station	1	15		
77	- Clean Linen Storage	1	25		
78	- Supply Storage	1	15		
79	Anesthesia Storage	1	120	120	
80	Medication Room	1	100	100	
81	Toilet Room	1	65	65	
82	Soiled Utility	1	80	80	
83	***Subtotal***			***4,735***	
84					
85	**Administrative/Staff**				
86	Office, Nurse Manager	0	100	0	
87	Office, Team Lead	1	80	80	
88	Office, Medical Director	1	100	100	
89	Workstation, Hoteling	2	65	130	
90	Automated Dispensing Units - Scrubs	2	40	80	
91	Male Staff/Physician Locker Room	1	150	150	15 lockers with toilet/shower
92	Female Staff/Physician Locker Room	4	100	400	100 lockers with toilet/shower
93	Staff Break Room	1	200	200	Seating for 10 with pantry
94	Staff Toilets	2	65	130	
95	On-call Suite	1	450	450	3 rooms, 1 toilet/shower
96	***Subtotal***			***1,720***	
97					
98					
99	**Total Net Area**			**21,637**	**DNSF**
100	Net to Gross Factor			1.45	
101	**Departmental Gross Area**			**31,374**	**DGSF**

New Inpatient Tower Program

Department: Administration and Public Services - Lobby/Discharge Lounge (5,636 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Public Area**				
2	Vestibule	1	200	200	
3	Wheelchair Alcove	1	72	72	6 wheelchairs
4	Reception/Concierge Desk	1	130	130	
5	Patient Information Kiosk	1	25	25	
6	Secuity, Workstation	1	60	60	
7	Badging, Workstation	1	60	60	
8	Waiting Area	1	1,320	1,320	60 seats
9	Food/Coffee Cart	1	300	300	
10	Health Information Resource Center	1	120	120	
11	Office, Personal Care	1	100	100	
12	Drinking Fountain	2	5	10	
13	ATM Machine	1	15	15	
14	Public Toilet, Male	1	220	220	
15	Public Toilet, Female	1	220	220	
16	Housekeeping Closet	1	50	50	
17	***Subtotal***			***2,902***	
18					
19	**Discharge Lounge**				*near Registation/Admitting and Cashier*
20	Patient Bays	40	12	480	chairs
21	Control Station, Nurses	1	100	100	2 workstations
22	Nourishment Alcove	1	50	50	
23	Office, Manager	1	80	80	
24	Central Supply, Connection Program Pick Up	1	80	80	Managed by Materials Management
25	Central Supply, Manager Office	1	80	80	
26	Central Supply, Connection Program Storage	1	300	300	8 3'x5' open wire shelves
	Subtotal			***1,170***	
27					
28					
29	**Total Net Area**			**4,072**	**DNSF**
30	Net to Gross Factor			1.20	
31	**Departmental Gross Area**			**4,886**	**DGSF**
32	**Lobby / Atrium**			**750**	**Allowance**
33	**Total Department Gross Area**			**5,636**	**DGSF**

New Inpatient Tower Program

Department: Support Services - Materials Mgmt/Purchasing/Central Supply (21,250 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Receiving Dock**				
2	Loading Dock Parking Bay - Large Vehicles	6	0	0	4 MM, 1 food service, 1 EVS all with levelers
3	Loading Dock Parking Bay - Small Vehicles	2	0	0	
4	Parking, Fleet	15	0	0	15 proximate to dock fleet parking
5	Compactor / Dumpster Bay	2	0	0	1 trash, 1 compactor
6	Receiving / Breakdown Area	1	800	800	Staging, charging and cart staging
7	Receiving / Breakdown Area, Workstations	6	30	180	
8	Wash Room	1	65	65	High pressure water
9	Refrigerated storage	2	40	80	2 refrigerators
10	Supply Storage Closet	1	36	36	Detergent & chemical supply storage to support Wash Room
11	Staff Toilet	1	65	65	Accessible to delivery personnel and support staff
12	***Subtotal***			***1,226***	
13					
14	**General Storage / Special Holding Areas**				
15	Warehouse	1	10,000	10,000	AIA minimum requirement: 20 SF per bed
16	Office, Warehouse Manager	1	80	80	
17	Office, Warehouse Staff	1	120	120	Shared office, for 4
18	Low Unit of Measure Room	1	600	600	
19	Central Supply Storage	1	600	600	
20	New Equipment Holding Area	1	400	400	
21	Compressed Medical Gas Storage Room	0	300	0	Concrete block construction, stored with RT
22	Trash Holding / Staging Room	0	0	0	
23	Biohazardous Waste Storage Room	0	0	0	
24	Hazardous Waste Storage Room	0	0	0	
25	Recycle Holding Area	0	200	0	
26	Disaster Preparedness Storage Room	1	200	200	
27	Bed Storage Room	1	900	900	20 beds @ 45 SF each; managed by Biomed, vertical storage system if possible
28	Bed Repair Workroom	0	400	0	Managed by Biomed in existing area
29	Housekeeping Room	1	50	50	
30	***Subtotal***			***12,950***	
31					
32	**Mailroom/Copy Center**				*staying in existing location*
33	Mailroom	0	400	0	
34	Central Copy Center	0	120	0	
35	Graphics Workroom	0	120	0	
36	***Subtotal***			***0***	
37					

	Room or Space	Quantity	Unit Area	Total	Comments
38	**Administrative/Purchasing**				
39	Workstation, Vendors	1	90	90	
40	Workstation, Administrative Assistant/Recep	1	100	100	2 workstations
41	File storage	1	100	100	5 file cabinets
42	Office, Director	1	100	100	
43	Office, Manager	1	80	80	
44	Office, Supervisor	1	80	80	
45	Workstations, Buyers	18	65	1,170	
46	Office Equipment Alcove	1	50	50	
47	Workroom and storage	1	200	200	
48	***Subtotal***			***1,970***	
49					
50	**Staff Support**				
51	Conference Room	1	200	200	
52	Staff Lounge	0	0	0	Central Employee Services program (shared)
53	***Subtotal***			***200***	
54					
55					
56					
57	**Total Net Area**			**16,346 DNSF**	
58	Net to Gross Factor			1.30	
59	**Departmental Gross Area**			**21,250 DGSF**	

New Inpatient Tower Program

Department: Inpatient Nursing Units - Newborn Nursery (2,963 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Newborn Nursery**				
2	Family Waiting	0	0	0	Share with Postpartum
3	Scrub Sink Alcove	1	10	10	Located at entrance into nursery
4	Nursery Bassinets	28	30	840	Blended rooming in model
5	Isolation Private Patient Room	**2**	130	260	
6	Handwashing Sink Alcoves	4	10	40	
7	Nurse/Staff Work Station	1	240	240	
8	Medication Alcove	1	40	40	
9	Formula Room or Alcove	1	40	40	
10	Audiology Testing Room	1	80	80	
11	Lactation/Breast Pump Room	1	100	100	
12	Exam/Circumcision Room	1	144	144	2 patient stations
13	Storage	30	8	240	
14	Clean Utility	1	80	80	
15	Soiled Utility	1	100	100	
16	Staff Lounge/Locker Room	0	0	0	Share with Postpartum Unit
17	Staff Toilet	1	65	65	
18	Housekeeping Closet	0	0	0	Share with Postpartum Unit
19	***Subtotal***			***2,279***	
20					
21					
22	**Total Net Area**			**2,279**	**DNSF**
23	Net to Gross Factor			1.30	
24	**Departmental Gross Area**			**2,963**	**DGSF**

New Inpatient Tower Program

Department: Inpatient Services - Neonatal Intensive Care Unit (28,272 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Reception/Waiting**				
2	Reception/Information	1	65	65	Serve as control/information desk
3	Waiting Room	1	300	300	20 - 25 seats (waiting in unit also)
4	Consult Room	1	120	120	4 to 5 people per room
5	Public Toilets	2	120	240	
6	Scrub Sink/Gown Vestibule	1	40	40	
7	***Subtotal***			***765***	
8					
9	**Neonatal Intensive Care Unit - Pod 1**				**10-Bed Pod**
10	Private Patient Room	**9**	200	1,800	All private rooms
11	Private Patient Room - multiples (3 babies)	**1**	320	320	Patient room to include 3 head walls; Isolation capable.
12	Patient Anteroom, Isolation	1	60	60	
13	Charting Alcoves	5	24	120	
14	Nurse/Staff Work Station	1	300	300	
15	Formula Room	1	140	140	
16	Code Cart Alcove	1	15	15	
17	Handwashing Sink Alcoves - Corridor	2	10	20	One as scrub sink
18	***Subtotal***			***2,775***	
19					
20	**Neonatal Intensive Care Unit - Pod 2**				**10-Bed Pod**
21	Private Patient Room	**9**	200	1,800	All private rooms
22	Private Patient Room - multiples (3 babies)	**1**	320	320	Patient room to include 3 head walls; Isolation capable.
23	Patient Anteroom, Isolation	1	60	60	
24	Charting Alcoves	5	24	120	
25	Nurse/Staff Work Station	1	300	300	
26	Formula Room	1	140	140	
27	Code Cart Alcove	1	15	15	
28	Handwashing Sink Alcoves - Corridor	2	10	20	One as scrub sink
29	***Subtotal***			***2,775***	
30					
31	**Shared Clinical Support - Pods #1 & #2**				
32	Team Room	1	160	160	
33	Medication Room	1	100	100	
34	Clean Utility	1	120	120	
35	Linen Alcove - Doors	2	25	50	
36	Soiled Utility	1	120	120	
37	Equipment / Supply Storage	20	25	500	
38	Staff Toilet	1	65	65	
39	***Subtotal***			***1,115***	

	Room or Space	Quantity	Unit Area	Total	Comments
40					
41	**Neonatal Intensive Care Unit - Pod 3**				**10-Bed Pod**
42	Private Patient Room	**9**	200	1,800	All private rooms
43	Private Patient Room - multiples (3 babies)	**1**	320	320	Patient room to include 3 head walls; Isolation capable.
44	Patient Anteroom, Isolation	1	60	60	
45	Charting Alcoves	5	24	120	
46	Nurse/Staff Work Station	1	300	300	
47	Formula Room	1	140	140	
48	Code Cart Alcove	1	15	15	
49	Handwashing Sink Alcoves - Corridor	2	10	20	One as scrub sink
50	***Subtotal***			***2,775***	
51					
52	**Neonatal Intensive Care Unit - Pod 4**				**10-Bed Pod**
53	Private Patient Room	**9**	200	1,800	All private rooms
54	Private Patient Room - multiples (3 babies)	**1**	320	320	Patient room to include 3 head walls; Isolation capable.
55	Patient Anteroom, Isolation	1	60	60	
56	Charting Alcoves	5	24	120	
57	Nurse/Staff Work Station	1	300	300	
58	Formula Room	1	140	140	
59	Code Cart Alcove	1	15	15	
60	Handwashing Sink Alcoves - Corridor	2	10	20	One as scrub sink
61	***Subtotal***			***2,775***	
62					
63	**Shared Clinical Support - Pods #3 & #4**				
64	Team Room	1	160	160	
65	Medication Room	1	100	100	
66	Clean Utility	1	120	120	
67	Linen Alcove - Doors	2	25	50	
68	Soiled Utility	1	120	120	
69	Equipment/Supply Storage	20	25	500	
70	Staff Toilet	1	65	65	
71	***Subtotal***			***1,115***	
72					
73	**Satellite Pharmacy**				
74	IV Preparation Work Room	1	100	100	
75	IV Ante Room	1	60	60	
76	IV Clean Room	1	100	100	
77	IV Solution Storage Room	1	40	40	
78	Office, Pharmacist	1	100	100	
79	***Subtotal***			***400***	

	Room or Space	Quantity	Unit Area	Total	Comments
80					
81	**Parent Bonding Rooms**				
82	Rooming In/Transition to Home	2	240	480	
83	Parent Toilet/Shower Rooms	2	70	140	
84	***Subtotal***			***620***	
85					
86	**Parent Lounge / Family Resource Center**				
87	Parent Lounge	1	200	200	
88	Washer/Dryer Closet	1	48	48	
89	Parent Toilet/Shower Room	2	70	140	
90	***Subtotal***			***388***	
91					
92	**Clinical Support for Floor**				
93	Procedure Room	1	300	300	
94	Respiratory Therapy Equipment Room	1	160	160	
95	Respiratory Therapy Workroom/Storage	1	110	110	
96	- Workstation, Staff	1	40		
97	- Counter w/sink	1	30		
98	- ABG Machine	1	30		
99	- Undercounter Refrigerator	1	10		
100	Lactation / Breast Pump Room	1	100	100	
101	PT/OT Storage and Work Area	1	100	100	
102	TDR/IDF Room	1	200	200	
103	Housekeeping Closet	1	50	50	
104	***Subtotal***			***1,020***	
105					

	Room or Space	Quantity	Unit Area	Total	Comments
106	**Administrative and Staff Support**				
107	Office, Manager	5	100	500	Centralized Women's Services Suite
108	Office, Director	1	100	100	Centralized Women's Services Suite
109	Office, Assistant	1	100	100	Centralized Women's Services Suite
110	Shared Office, Staff Developers (2)	1	120	120	Centralized Women's Services Suite
111	Office, Neonatologists	2	100	200	One for Department Chair
112	Work Station, Assistant to Chair	2	80	160	and Transitional Program Assistant
113	Office, Team Leader	1	100	100	
114	Shared Office, NNP	4	50	200	
115	Shared Office, Child Life/Dicharge Planner (2)	1	120	120	
116	Office, Lactation Counselor	1	100	100	
117	Shared Office, Case Manager/Social Worker	1	120	120	
118	Conference Room	10	18	180	
119	Staff Lounge	1	260	260	Seating for 10 with computer workstations
120	Automated Dispensing Unit - Scrubs	1	35	35	
121	Male Staff Locker Room	1	150	150	15 lockers with toilet/shower
122	- Toilet / Shower Room	*1*	*70*		
123	Female Staff Locker Room	1	300	300	40 lockers with toilet/shower
124	- Toilet / Shower Room	*1*	*70*		
125	On-call Suite	1	230	230	2 rooms with shared toilet/shower
126	***Subtotal***			***2,975***	
127					
128					
129	**Total Net Area**			**19,498**	**DNSF**
130	Net to Gross Factor			1.45	
131	**Departmental Gross Area**			**28,272**	**DGSF**

New Inpatient Tower Program

Department: Administrative Services - Pastoral Care (2,340 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Office Area**				
2	Waiting Area	1	60	60	3 seats
3	Workstation, Reception/Admin. Asst	1	60	60	
4	Office, Director/Senior Chaplain	1	120	120	
5	Office, Associate Chaplain	1	80	80	
6	Office, Shared staff	1	120	120	Shared office (2)
7	Storage	1	60	60	
8	Conference Room	1	220	220	10 - 12 seats
9	Staff Toilet	0	65	0	Use adjacent
10	***Subtotal***			***720***	
11					
12	**Chapel/Meditation Room**				
13	All Faiths Chapel	1	960	960	Seating for 40
14	Meditation Room	1	120	120	
15	***Subtotal***			***1,080***	
16					
17					
18					
19	**Total Net Area**			**1,800**	**DNSF**
20	Net to Gross Factor			1.30	
21	**Departmental Gross Area**			**2,340**	**DGSF**

New Inpatient Tower Program

Department: Diagnostic and Treatment Services - Pre-Admission Testing (4,363 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Entry/Waiting**				Supports Surgery, Cath, GI/Bronch, C/Section
2	Wheelchair Alcove	2	12	24	
3	Waiting Room	1	220	220	Holds 10 people
4	Consult Room	1	120	120	
5	***Subtotal***			***364***	
6					
7	**Reception/Registration**				
8	Registration Kiosk	2	30	60	
9	Registration Station	2	85	170	
10	Office, Financial Counselor	1	100	100	
11	Workstation, Interpreter		65	0	
12	Workstation, Scheduler	1	65	65	
13	Staff Work Room	1	150	150	
14	Cashier Station	1	100	100	
15	***Subtotal***			***645***	
16					
17	**Pre-Admission Testing**				
18	Scale Alcove	2	50	100	Adult scale, bariatric scale
19	PAT Interview / Exam Room	6	140	840	
20	Specimen Labeling/Accessioning Station	1	95	95	
21	- Counter w/sink	1	60		
22	- Centrifuge	1	20		
23	- Pneumatic tube station	1	15		
24	Specimen Collection Toilet	2	65	130	
25	EKG Storage Alcove	2	25	50	
26	Control Center	1	160	160	2 workstations
27	Code or Medical Cart Alcove	1	15	15	Central location
28	Medication Room/Alcove	1	80	80	
29	Clean Utility	1	80	80	
30	Equipment Storage Room	1	100	100	
31	***Subtotal***			***1,650***	
32					
33	**Administrative and Staff Support**				
34	Office, Manager	1	100	100	
35	Office, Anesthesia	1	120	120	
36	Workstation, Pre-Screening	0	65	0	
37	Staff Toilet	2	65	130	
38	***Subtotal***			***350***	
39					
40					
41	**Total Net Area**			**3,009**	**DNSF**
42	Net to Gross Factor			1.45	
43	**Departmental Gross Area**			**4,363**	**DGSF**

New Inpatient Tower Program

Department: Support Services – Patient Transport (780 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Patient Transport**				
2	Transporter Holding	1	200	200	Seating for 3-4 transporters with 2 computer workstations, break room shared with other Support
3	Office, Leads/Dispatching	3	50	150	Shared office for 3
4	Office, Director	1	100	100	
5	Workstation, Admin Asst	1	50	50	
6	Transport Equipment Area	1	150	150	wheelchairs, stetchers
7	***Subtotal***			***650***	
8					
9					
10					
11	**Total Net Area**			**650**	**DNSF**
12	Net to Gross Factor			1.20	
13	**Departmental Gross Area**			**780**	**DGSF**

New Inpatient Tower Program

Department: Support Services - Pharmacy (6,957 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Receiving/Storage**				
2	Receiving Vestibule / Break Down	1	120	120	
3	Trash Holding Room	1	80	80	
4	Hazardous Waster Holding Room	1	80	80	
5	Flammable Storage Room	1	20	20	
6	Bulk IV Storage Area	1	300	300	
7	Active Bulk Storage Area	0	0	0	
8	AMD Storage Room	1	120	120	
9	Out-Of-Date Drug Storage Alcove	1	40	40	
10	Housekeeping Room	1	50	50	
11	***Subtotal***			***810***	
12					
13	**Medication Prep & Dispensing**				
14	Vestibule, Dispensing Window	0	65	0	
15	Dispensing Window	1	65	65	Bullet proof glass
16	Patient-owned Medication Storage	1	18	18	
17	EMT/Crash Cart Station and Workroom	1	120	120	4-5 crash carts exchange parking plus work area, counter space
18	Workstation, Order Entry	4	60	240	
19	Office Equipment Alcove	1	50	50	
20	Automated Carousel	2	150	300	Carousel with computer workstation
21	Alcove, Daily Delivery Carts	8	28	224	28 SF/cart
22	Pneumatic Tube Station	2	15	30	
23	Manual Picking Station	1	100	100	
24	Narcotics/Controlled Substance Workroom	1	60	60	Shelving and workstation
25	Investigational Drug Storage Room	1	60	60	Refrigerator
26	Compounding Area	1	300	300	
27	Pre-Packaging Area	1	450	450	4 computer workstations, barcoding supplies, 2 pre-packaging machines, office equipment
28	Off-Line Storage Area	0	80	0	Required if using robotics; adjacent to pre-packaging area
29	Enteral Compounding	1	100	100	Sink and refrigerator
30	Refrigerated Drug Storage	1	120	120	5 two-door refrigerators and 1 freezer
31	***Subtotal***			***2,237***	
32					

	Room or Space	Quantity	Unit Area	Total	Comments
33	**IV Prep**				
34	IV Anteroom	1	210	210	Positive Pressure ISO Class 8, Unless Shared with Hazardous Prep Room; Then it must be ISO Class 7
35	- Workstation	2	30		
36	- Single Person Scrub Sink	1	30		
37	- Pass-thru cabinet	1	15		
38	- Pass-thru Refrigerator (Double-Door)	1	25		Located between Anteroom and Compounding Room
39	- Wire Shelving Units	2	25		
40	- Gowning Bench	1	15		
41	- Soiled Linen Hamper	1	10		
42	- Coat Rack / Hooks	1	5		
43	IV Compounding Room	1	250	250	Accessed through Anteroom
44	- Pass-thru cabinet	1	15		Located between Anteroom and Compounding
45	- Pass-thru Refrigerator (Double-Door)	1	25		Located between Anteroom and Compounding
46	- 4' IV Hood	1	40		
47	- 6' IV Hood	2	60		
48	- Trash Container	1	5		1 per Hood
49	- Wire Shelving Units	1	18		
50	Chemotherapy IV Prep Room ("Clean Room or Buffer Area")	1	126	126	Minimum recommended size: 150 SF; Negative Pressure Room, ISO Class-7
51	- Pass-thru cabinet	1	15		Located between Anteroom and IV Prep Room
52	- Refrigerator (Double-Door)	1	25		Located in a negative pressure room
53	- 4' IV Hood	1	40		Directly vented, 100% Exhaust
54	- Trash Container	1	5		
55	- Biohazardous Waste Container	1	5		
56	- Wire Shelving Units	2	18		
57	Housekeeping Room	1	50	50	
58	***Subtotal***			***636***	
59					

	Room or Space	Quantity	Unit Area	Total	Comments
60	**Administrative Offices**				
61	Waiting Area	1	100	300	
62	Workstation, Reception/Admin. Asst	1	60	60	
63	Office Equipment Alcove	1	50	50	
64	Office, Director	1	100	100	
65	Office, Manager Operations	1	80	80	
66	Office, Manager Clinical Pharmacist	1	80	80	
67	Office, Quality Control	0	80	0	
68	Workstation, Pharmacy IT	1	65	65	
69	Workstation, Buyer	2	65	130	
70	Work Room, Residents	0	50	0	
71	Work Room, Students	0	50	0	
72	Reference Library/Conference Room	1	120	120	
73	File Area (Hard-Copy Record Storage)	1	40	40	
74	Conference Room	0	120	0	
75	Pantry	0	30	0	
76	Coat Closet	0	25	0	
77	Staff Toilet Room	0	65	0	
78	Storage Room	1	80	80	
79	***Subtotal***			***1,105***	
80					
81	**Staff Support**				
82	Staff Lounge / Locker Room	1	300	300	Seating for 4, computer workstation, pantry, 100
83	Staff Toilet	1	65	65	
84	***Subtotal***			***365***	
85					
86					
87					
88	**Total Net Area**			**5,153**	**DNSF**
89	Net to Gross Factor			1.35	
90	**Departmental Gross Area**			**6,957**	**DGSF**

New Inpatient Tower Program

Department: Diagnostic and Treatment Services – Phlebotomy (203 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Outpatient Laboratory**				Satellite Storage
2	Blood Draw Station	0	50	0	
3	Blood Draw - Private Room	0	130	0	
4	Specimen Collection Toilet	0	65	0	
5	Specimen Labeling/Accessioning Station	0	100	0	
6	Office Equipment Alcove	0	50	0	
7	Clean Supply Room	1	140	140	
8	Linen Alcove - Doors	0	25	0	
9	Nourishment Alcove	0	50	0	
10	Supply Storage Room	0	0	0	
11	TDR or IDF Room	0	200	0	
12	Electrical Equipment Room	0	0	0	
13	Housekeeping Room	0	50	0	
14	***Subtotal***			***140***	
28					
29	**Total Net Area**			**140**	**DNSF**
30	Net to Gross Factor			1.45	
31	**Departmental Gross Area**			**203**	**DGSF**

New Inpatient Tower Program

Department: Inpatient Nursing Units - Postpartum Unit (33,701 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Reception/Waiting**				
2	Waiting Room	1	260	260	Seating for 10 with play area and pantry
3	Consult Room	2	120	240	
4	Patient Education	1	30	30	
5	Public Toilets	2	140	280	
6	***Subtotal***			***810***	
7					
8	**Clinical Area**				**50 Beds sub-divided into two 25-bed zones**
9	Private Patient Room	**48**	306	14,688	100% Telemetry; All ADA toilet/shower rooms
10	Isolation Private Patient Room	**2**	306	612	Refer to note above
11	Patient Anteroom, Isolation	2	60	120	
12	Charting Alcoves	26	24	624	
13	Nurse/Staff Work Station	4	300	1,200	
14	Team Room	2	180	360	
15	Code Cart Alcove	4	15	60	
16	Handwashing Sink Alcoves - Corridor	10	10	100	
17	Medication Room	4	100	400	
18	Nourishment Room	2	100	200	
19	Dietary Cart Storage Alcove	2	15	30	
20	Clean Utility	4	100	400	
21	Linen Alcove - Doors	4	25	100	
22	Soiled Utility	2	120	240	
23	Storage	2	300	600	AIA recommends minimum 10 SF/Bed for equipment storage for Postpartum bed
24	Lactation/Breast Pump Room	1	100	100	
25	Wheelchair/Stretcher Alcove	4	48	192	
26	Portable Equipment Alcove	2	48	96	
27	Respiratory Therapy Storage	1	80	80	
28	TDR/IDF Room	1	200	200	
29	Housekeeping Closet	1	50	50	
30	***Subtotal***			***20,452***	
31					

	Room or Space	Quantity	Unit Area	Total	Comments
32	**Administrative and Staff Support**				
33	Office, Nurse Manager	1	100	100	
34	Office, Asst. Nurse Manager	1	80	80	
35	Office, Birth Certificate	1	80	80	
36	Workstation, Clinical Pharmacist	1	65	65	
37	Workstation, Lactation Counselor	1	65	65	
38	Workstation, Case Manager/Social Worker	4	65	260	
39	Workstation, Hoteling	4	65	260	
40	Conference Room	10	20	200	
41	Staff Lounge/Locker Room	1	380	380	Seating for 10 with pantry and 60 lockers
42	Staff Toilets	4	65	260	Distributed
43	On-call Suite	1	230	230	2 rooms with shared toilet/shower
44	***Subtotal***			***1,980***	
45					
46					
47					
48	**Total Net Area**			**23,242**	**DNSF**
49	Net to Gross Factor			1.45	
50	**Departmental Gross Area**			**33,701**	**DGSF**

New Inpatient Tower Program

Department: Administrative and Public Services – Registration/Admission (I,838 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Inpatient Registration**				
2	Waiting Area	1	100	100	4 seats, near lobby with additional waiting
3	Wheelchair Alcove	0	12	0	Use lobby alcove
4	Reception/Check-In Desk	1	65	65	
5	Registration Kiosk	2	30	60	
6	Office, Registration/Admitting	0	100	0	Open to registration work area in back
7	Cubicle, Registration/Admitting	4	65	260	Open to registration work area in back
8	Staff Work Room	1	150	150	
9	Storage	1	100	100	
10	Cubicle, Interpreter	1	50	50	
11	Office, Bed Control	0	80	0	
12	Office, Patient Rep	1	100	100	Public access
13	Office, Financial Counselor	1	100	100	Public access
14	Workstations, Staff	6	50	300	
15	Staff Lounge	1	120	120	
16	Staff Toilet	1	65	65	
17	***Subtotal***			***1,470***	
18					
19					
20					
21	**Total Net Area**			**1,470**	**DNSF**
22	Net to Gross Factor			1.25	
23	**Departmental Gross Area**			**1,838**	**DGSF**

New Inpatient Tower Program

Department: Diagnostic and Treatment Services – Respiratory Therapy (2,193 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Respiratory Therapy Work Area**				
2	Equipment Receiving	1	60	60	
3	Equipment Sterilizing/Assembly Area	1	120	120	For instrument cleaning
4	Sterilized Equipment Storage	1	160	160	
5	Supply Storage	1	120	120	
6	Compressed Gas Tank Storage	1	100	100	
7	Arterial Blood Gas Laboratory	0	0	0	
8	Pneumatic Tube Station	0	15	0	
9	Soiled Utility	1	120	120	
10	TDR or IDF Room	0	200	0	
11	Electrical Equipment Room	0	0	0	
12	Housekeeping Room	1	50	50	
13	***Subtotal***			***730***	
14					
15	**Administrative Offices**				
16	Workstation, Reception/Admin. Asst	0	90	0	
17	Office Equipment Alcove	1	24	24	
18	Office, Director	1	120	120	
19	Office, Manager	1	100	100	
20	Office, Hoteling	1	100	100	
21	Workstation, Educator	0	65	0	
22	Workstation, Lead Therapist	0	65	0	
23	Office, Respiratory Therapists	6	40	240	
24	Conference Room	1	200	200	10 seats @ 20 SF each
25	***Subtotal***			***784***	
26					
27	**Pulmonary Function Testing for Inpatients**				
28	Pulmonary Function Testing Room	1	240	240	Includes space for Body Box; Accessible from inpatient units
29					
30	**Total Net Area**			**1,754 DNSF**	
31	Net to Gross Factor			1.25	
32	**Departmental Gross Area**			**2,193 DGSF**	

New Inpatient Tower Program

Department: Diagnostic and Treatment Services - Surgery Department (29,227 DGSF)

	Room or Space	Quantity	Unit Area	Total	Comments
1	**Entry/Waiting**				**New Space / Phase 1**
2	Wheelchair Storage	10	12	120	10 wheelchairs @ 12 SF each
3	Waiting Room	1	990	990	3 seats per procedure room = 66 seats
4	Consult Room	3	120	480	
5	Public Toilet - Male	1	160	160	
6	Public Toilet - Female	1	160	160	
7	***Subtotal***			***1,910***	
8					
9	**Reception/Registration**				**New Space / Phase 1**
10	Check-in Desk	1	65	65	
11	Registration Kiosk	3	30	90	
12	Registration Station - Open	1	85	85	
13	Registration Station - Enclosed	3	100	300	
14	Office, Financial Counselor	1	100	100	
15	Office, Registration Supervisor	1	100	100	
16	Workstation, Interpreter	1	65	65	
17	Workstation, Scheduler	2	65	130	
18	Staff Work Room	1	150	150	
19	***Subtotal***			***1,085***	
20					
21	**Pre-Operative Holding/Stage II Recovery**				**New Space / Phase 1**
22	Nursing Work Station	2	200	400	Nurse/staff work area; Distributed
23	Nursing Work Station (Shell for Future)	1	200	200	Nurse/staff work area; Future / Shell
24	Physician Work Alcove	2	40	80	2 workstations including PACS @ 40 SF each
25	Patient Belonging Storage	30	2	60	
26	Prep/Holding/Recovery Room	**34**	140	4,760	
27	Prep/Holding/Recovery Room (Isolation)	**2**	140	280	
28	Prep/Holding/Recovery Room (Future Shell)	**12**	140	1,680	For Cath and IR in future
29	Patient Toilet	6	65	390	One per six prep/recovery positions
30	Patient Toilet (Future Shell)	2	65	130	One per six prep/recovery positions
31	Code Cart Alcove	2	15	30	Central location
32	Nourishment Alcove	2	50	100	
33	Medication Room	1	120	120	
34	Clean Utility	2	120	240	
35	Linen Alcove - Doors	4	25	100	
36	Soiled Utility	2	120	240	

	Room or Space		Quantity	Unit Area	Total	Comments
37	Equipment Storage Room		1	160	160	
38	Stretcher / Wheelchair Storage Alcove		4	48	192	
39	Staff Toilet		2	65	130	
40	Housekeeping Room		1	50	50	
41		***Subtotal***			***9,342***	
42						
43	**Staff Support**					**New Space / Phase 1 - Near Prep/Recovery, PACU**
44	Staff Lounge		1	360	360	Seating for 6 with pantry and 60 mailboxes
45	Automated Dispensing Unit - Scrubs		2	35	70	
46		***Subtotal***			***430***	
47						
48	**Shell Space - PACU Expansion**					**New Space over Main St / Phase 1**
49	PACU Expansion - Shell Only		1	3,000	3,000	Shell space only for future fit-out
50		***Subtotal***			***3,000***	
51						
52	**Shell Space - Support Expansion**					**New Space over Main St / Phase 1**
53	Future Support - Shell Only		1	2,500	2,500	Shell space only for future fit-out
54		***Subtotal***			***2,500***	
55						
56						
57	**Total Net Area**				**18,267**	**DNSF**
58	Net to Gross Factor				1.60	
59	**Departmental Gross Area**				**29,227**	**DGSF**

Prep/Phase 2 Recovery Need Estimate	**Proced Rm**	**P/R ratio**	**P/R Need**	*Excludes PACU*
Surgery	12	2	24	Mostly inpatient
GI	3	3	9	
Bronch	1	3	3	
Cath	2	3	6	Planned in Pavilion East expansion
IR	2	3	6	Planned in Pavilion East expansion
			48	Current: 23 Surgery + 9 GI/Bronch

Future assumes some outpatient cases shifted to Ambulatory Care Center and backfilled with inpatient cases.

New Inpatient Tower Program

Department: Diagnostic and Treatment Services - Urgent Care (I4,485 DGSF)

	Room or Space		Quantity	Unit Area	Total	Comments
1	**Walk-In Entry/Waiting**					
2	Walk-In Entrance		1	150	150	
3	Wheelchair Storage		1	12	12	
4	Waiting Room		1	1,200	1,200	2 seats per exam room
5	Public Toilet - Male		1	65	65	
6	Public Toilet - Female		1	65	65	
7	Vending Alcove		0	0	0	
8		***Subtotal***			***1,492***	
9						
10	**Reception/Registration/Triage**					
11	Check-in Desk		1	65	65	In-take area
12	Registration Kiosk		2	30	60	
13	Registration Station - Open		3	65	195	
14	Registration Station - Enclosed		0	100	0	
15	Office, Financial Counselor		1	80	80	
16	Office, Registration Supervisor		1	80	80	
17	Workstation, Interpreter		1	65	65	
18	Staff Work Room		1	80	80	
19	Cashier Station		1	100	100	
20	Triage Room		6	140	840	Sink, O2, vacuum, medical air
21	Toilet Room - Triage		2	65	130	
22	Triage Sub-waiting Alcove		0	22	0	
23		***Subtotal***			***1,695***	
24						
25	**Emergent/Urgent**					
26	UC Universal Exam Room		28	100	2,800	Sink, O2, vacuum, medical air
27	UC Universal Exam Room - Large		4	120	480	Sink, O2, vacuum, medical air
28	Patient Toilet		6	65	390	ADA accessible
29	Control Center		2	150	300	Nurse/clinician station, 3 workstations per pod
30	Physician Work Alcove		2	40	80	
31	Mobile Cart Alcove		2	15	30	
32	Nourishment Alcove		2	50	100	Sink, ice maker, refrigerator
33	Medication Room		1	100	100	
34	Clean Workroom		1	80	80	
35	Linen Alcove		1	25	25	
36	Soiled Utility		1	100	100	
37	Equipment Storage Room		1	100	100	
38	Stretcher/Wheelchair Storage Alcove		1	48	48	
39	Staff Toilet		2	65	130	Single occupancy
40	Housekeeping Room		1	50	50	
41		***Subtotal***			***4,813***	

	Room or Space		Quantity	Unit Area	Total	Comments
42						
43	**Imaging Equipment**					
44	Patient Sub-Waiting Alcove		1	60	60	3 seats
45	Patient Toilet		1	65	65	
46	Diagnostic Radiography Room		1	360	360	Includes control station
47	Radiologist Reading Station		1	80	80	
48	Technologists' Work Area:		1	80	80	
49	Mobile X-ray Equipment Alcove		1	48	48	
50		***Subtotal***			***693***	
51						
52	**Administrative/Staff Support**					
53	Office, Nurse Manager		1	80	80	
54	Office, Medical Director		1	100	100	
55	Staff Lounge/Locker		1	180	180	
56		***Subtotal***			***360***	
57						
58						
59						
60	**Total Net Area**				**9,053**	**DNSF**
61	Net to Gross Factor				1.60	
62	**Departmental Gross Area**				**14,485**	**DGSF**

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Cath/EP/Interventional Radiology
JPS CONTACT: Kathleen Whelan, Anne Goodrich
DATE: October 24, 2014

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DEPARTMENT'S SERVICES/PROGRAMS

Inpatient and outpatient diagnostic and treatment services to include:

- Interventional Cardiology (Cath and EP in the future)
- Neuro-Interventional
- Angiography/Interventional Radiology

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Current Volume Information

Interventional Radiology**		
Procedure Category	**CY 2013**	**CY 2014 1ST 6MO**
ANGIOGRAM PROCEDURE	2097	694
BILIARY PROCEDURE	46	30
BIOPSY PROCEDURE ***	932	410
IVC FILTER PROCEDURE	320	80
CENTRAL CATHETER PROCEDURE	676	290
FISTULOGRAM PROCEDURE	8	5
NEPHROS PROCEDURE	145	87
PARACENTESIS PROCEDURE	766	656
RENAL PROCEDURE	302	112
THORACENTESIS PROCEDURE	542	157
VENOGRAM PROCEDURE	42	10
Total Procedure Count	5876	2531

** Procedure volume is estimated based on procedure logs, due to change of procedure/order names with Radiant go live this may be under estimated in the CY 2014 1st 6mo.
*** Biopsy Procedures are under estimated due to changes and issues during Radiant go-live

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Consolidation to the Pavilion expansion project.

Cardiac Cath Lab		
Procedure Category	**CY 2013**	**CY 2014 1ST 6MO**
Cardiac Cath	1441	599
Pacemaker	32	12
Cardioversion	69	21
Tilt Table	19	6
TEE *	349	142
Total Procedure Count for Cath Lab:	1910	780
* TEE procedures are a joint procedure between cath lab and cardiac diagnostics echo		

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Business plans are in place to add ElectroPhysiology (EP) services, laser atherectomy, and Neuro Interventional.

East Pavilion Expansion project is set to begin (1 Cath, 1 Cath/EP, 2 Angio, 1 CT, 1 CVOR, 1 C-Arm Room, 2 procedure rooms). Once complete, the patient access route will traverse the surgical waiting and prep area. In the future, Cath/IR patient intake and prep/recovery should utilize the new entrance to the north (new bed tower project), similar to outpatient/same-day surgical patient flow.

No space table required.

5

NEXT STEPS REQUIRED

None

Sign & Date

(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Sterile Processing Department (SPD)
JPS CONTACT: Deb Saunders
DATE: October 24, 2014

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1

DEPARTMENT'S SERVICES/PROGRAMS

Sterile processing for surgical services, primarily, but also supporting other clinical programs.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

The main SPD department is in the Pavilion serving surgical services. A second location exists on the west side of Main Street serving OB, Clinics and other areas.

The main SPD department has limited circulation, staging and processing space (washers, sterilizers) to support the surgical case volume that exists today.

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Expand main SPD in the Pavilion at the same level to the north direction.

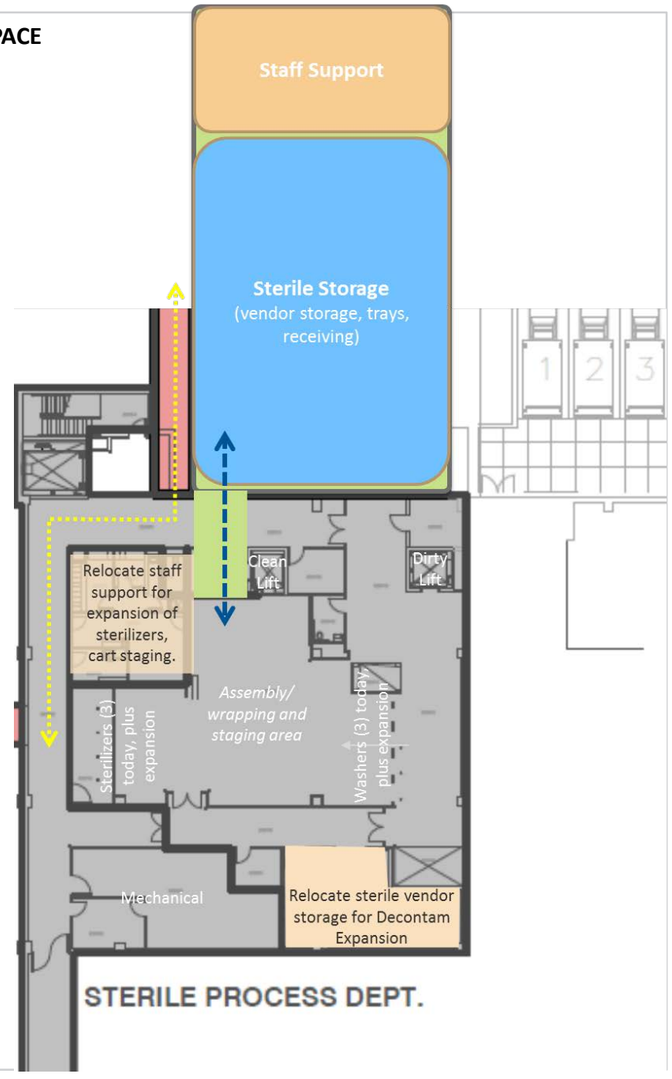
4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

The vision for this department is to consolidate the satellite SPD department with the expanded main SPD location (see graphic to right). The decontamination side of the process should be expanded in the current footprint. Sterilization and staging space should be expanded within the existing footprint as well. The displaced functions (light orange below) should be the focus of the new construction/ expansion zone.

The optimization of the SPD space on the lower level allows for some processes and staging space to be relocated from the OR suite to enable more efficient operations and use of space on the surgery floor.

See accompanying space table for additional information.



5

NEXT STEPS REQUIRED

None.

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Clinics
JPS CONTACT: Dianna Prachyl, VP of Community Health
DATE: October 24, 2014

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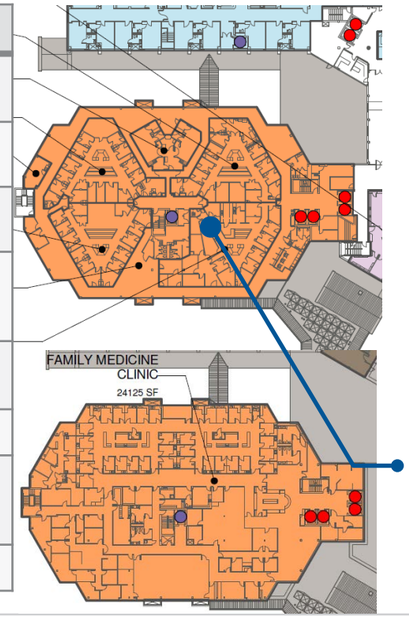
1 DEPARTMENT'S SERVICES/PROGRAMS

The outpatient building to the west of the current main entry is home to doctor's offices (Level LL), Urgent Care (Level 01), Specialty Clinics (Level 02), Department of Surgery/Admin (Level 03), and Family Medicine/Medical Home Clinic (Level 04).

The areas of focus for this effort are on Specialty Clinics (Level 02) and Family Medicine Clinics/Medical Home (Level 04).

2 CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Clinic	Current Exams and Location
ENT	Salmon pod on Lvl 02 **8 exam rooms and audio booth**
Eye	Dark purple pod on Lvl 02 **12 exam rooms**
OMFS	Yellow pod on Lvl 02 **6 exam rooms**
Surgical	Fuscia pod on Lvl 02 **12 exam rooms and procedure room**
Ortho/Podiatry	Green & Orange pods on Lvl 02 **10 exam rooms**
Total Lvl 02	**48 exam rooms**
Family Medicine/ Medical Home	On Level 04 **2 pods of 16 exam rooms plus 1 pod of 8 = 40 total**
Total Lvl 04	**40 exam rooms**



3 PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

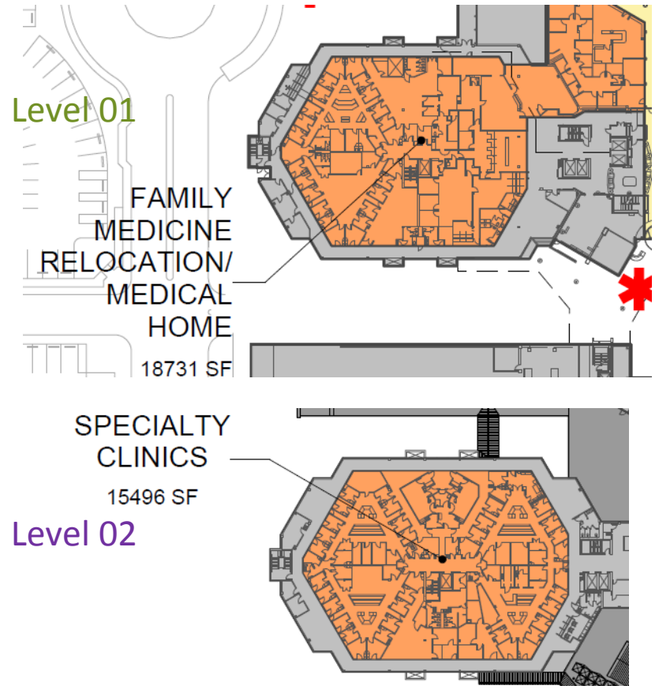
See diagrams/block plans in future state box to right.

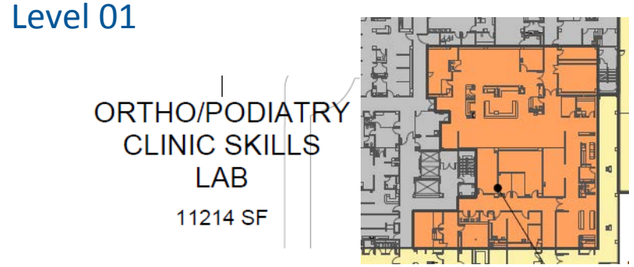
By implementing the master plan the following benefits will be achieved:

- Relocating high traffic family medicine clinic to first floor from top floor will reduce wayfinding issues and reduce patient load on elevators.
- Expanding and relocating the family medicine clinic allows for increased access on the ground floor and increased efficiency and satisfaction for specialty clinics.
- Improved patient waiting experience with dedicated spaces (not corridors) for all clinics in OPC.

4 FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Clinic	Qualitative Expected Future Growth	Future Target Exam Rooms	Future Target Square Footage (450 DGSF/ exam room)
ENT	1-2% annually	10	4,500 DGSF
Eye	3-4% annually	16	7,200 DGSF
OMFS	1-2% annually	6	2,700 DGSF
Surgical	4% annually	12	5,400 DGSF
Ortho/Podiatry	5% annually	16	7,200 DGSF
Total	-		
Family Medicine/ Medical Home	-	48	21,600 DGSF
Total	-		





5 NEXT STEPS REQUIRED

Space Program required for: N/A

Cost per SF required for: Family Medicine/Medical Home, Ortho Podiatry Clinic, Specialty Clinics – identified areas should suffice for clinics with growth, but are tight.

Determine if OMFS, Eye, Family Medicine/Medical Home and Stop 6 cohort together in the ACC clinic space – alternate from above expressed plan, would be about 70 exam rooms in short-term future.

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Equipment & Biomed
JPS CONTACT: Kathleen Whelan, Tom Colvin
DATE: October 24, 2014

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1

DEPARTMENT'S SERVICES/PROGRAMS

Maintenance and management of biomedical equipment for the acute care environment, ambulatory surgery centers, health center for women and skilled nursing.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Main location with satellite operations:

- Emergency department
- Arlington ASC
- Radiology

Space for bed repair, staging is inadequate.

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Slated to move into vacated core lab space by fall of 2014.

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Planning to add 14 FTEs as a biomedical engineering service contract is eliminated and this service moves in-house.

Future location for the main department to accommodate increased staffing has been determined (vacated core lab space). However, additional bed repair and staging space is needed. On average, the department fixes six to twelve broken beds per day.

Locate a new main bed shop and staging area proximate to the new bed tower/hospital expansion project.

See materials management space table for bed shop/staging space information.

5

NEXT STEPS REQUIRED

Estimate space requirements.

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Executive Admin
JPS CONTACT: Bill Whitman, COO; Angie Morgan Director of Const.
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

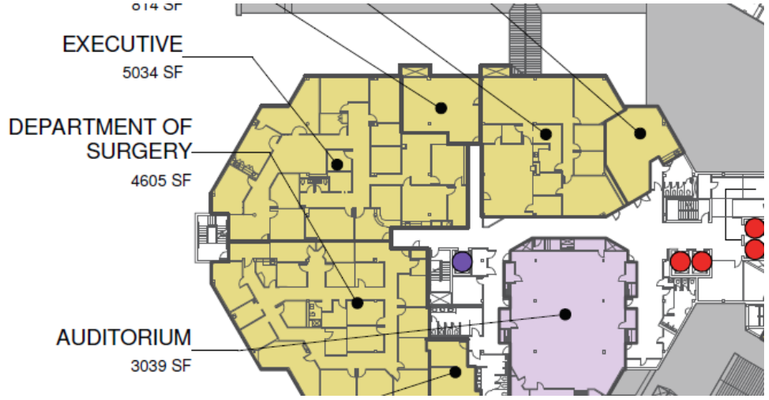
DEPARTMENT'S SERVICES/PROGRAMS

The executive admin suite is the headquarters of the senior administration of the hospital and network.

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Executive Admin is currently located in the OP building on level 03. Other administration and business functions are located in the JPOC.

2



3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Executive Admin was slated to move to Level 01 of the expansion tower per the master plan.

4

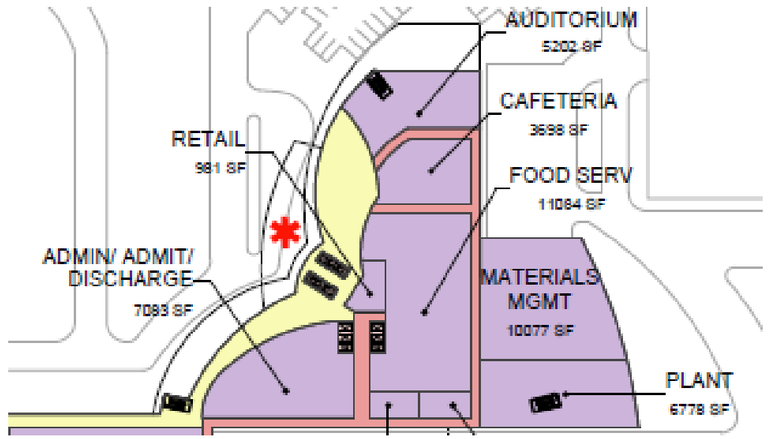
FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Executive Admin will need offices, support space, conference rooms and board room space to support their administrative needs.

Office standards to be applied in the new expansion tower:

EVPs	220 NSF
SVPs	180 NSF
VPs	160 NSF
Directors	100-120 NSF
Managers	100-120 NSF
Supervisors/Asst Mgrs	80-100 NSF
No-Report	30 NSF/workstation
Admin Asst	60-90 NSF
Shared offices	50 NSF/each person

It is important for senior administration officials to be located in proximity to hospital services to respond promptly and be engaged with clinical operations. With most of the inpatient and diagnostics/treatment services cohorting on the east side of Main Street, Executive Admin suite will need to move to the east as well. Office standards can also be achieved in relocation as well as developing a robust command center within the suite.



5

NEXT STEPS REQUIRED

Space Program required for: Executive Admin

Cost per SF required for: N/A

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Food Services
JPS CONTACT: Jaime Pillai, VP; Celia Krazit, Director
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

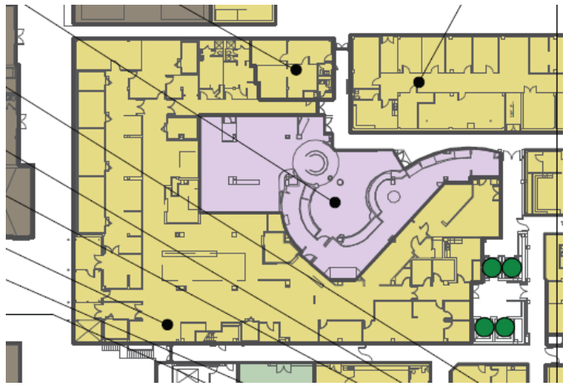
DEPARTMENT'S SERVICES/PROGRAMS

Food and Nutrition serves the inpatient population of the hospital and Trinity Springs, serves the nourishment areas of all clinical areas in the hospital including clinics, and serves nourishment areas of the network clinics as well. Additionally serve retail area and public cafeteria/servery, and a grab-and-go/coffee kiosk in the Pavilion.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Current meal times for inpatients are: 0715-0900, 1115-1345 and 1615-1800. These are longer meal times than preferred due to only having one tray line. The departments is open from 5am to 8pm. There are no meal options each day, only the one developed meal per meal time; "non-select" meals. Provide 450 meals per meal period per day to inpatients. Receive 3-4 deliveries a day with major deliveries 3-4x a week in a dedicated dock (with structural issues, so items are received out from dock and carted in). Retail area has servery, express window and an incubator program window. 70 seats in the dining area.



7 F/T + 1 P/T IP dieticians

3 F/T + 2 P/T diet clerks

There are 82 FTEs currently in the department. Food service staff delivers trays to unit and nursing staff delivers to patients. Storage and warewashing undersized.

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Food and Nutrition, both the public dining and servery area as well as the inpatient food preparation were slated to move into the new expansion per the master plan. This will help achieve the following improvements:

- Right-size the department to accommodate inpatient meal service demands
- Ability to create room-service model and increase patient satisfaction
- Improved public dining options, amenities and environment
- Centralized location convenient to inpatient beds
- Reduced travel distances and time to major inpatient areas serviced
- Improved dock flow and capacity

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

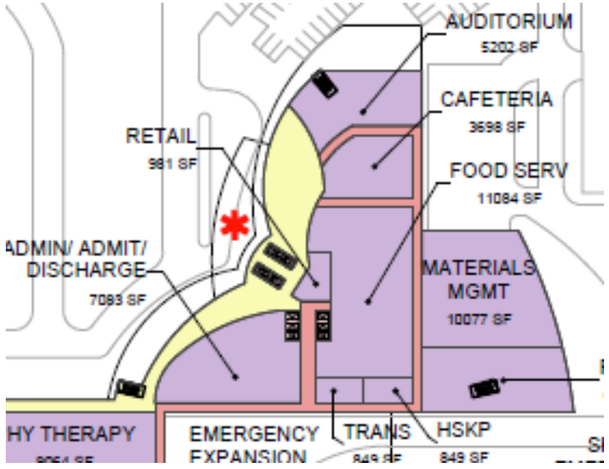
Inpatient Food Services:

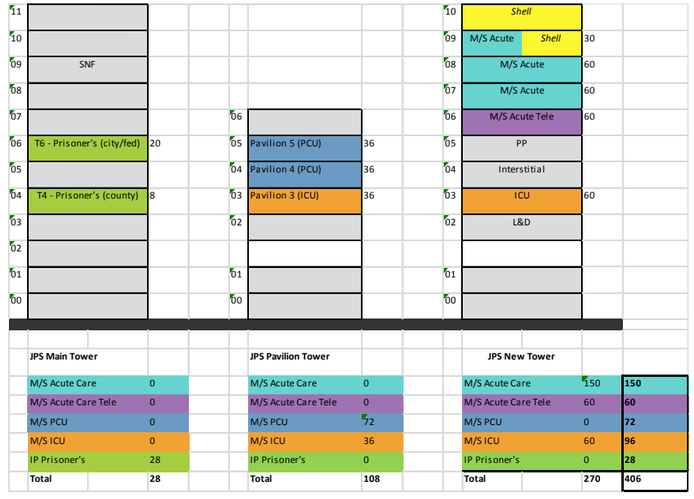
Department will move to a room-service model with a call-in center to take orders. Nutrition staff will deliver directly to patients on the unit. Would prefer a vendor to execute room-service model. Would like to get deliveries down to 45 minutes from order, with meal available anytime between 6am to 6pm using speed delivery carts. Would prefer dedicated elevators (2-3). Continue to service Trinity Spring kitchen/patients. Will need to increase diet clerks in the future. Continue to use china plateware with silverware utensils for temperature and presentation. Prisoner units will not be room-service. Will continue to serve main tower, pavilion tower and new tower. Pysch Hospital will need production kitchen if not connected to main kitchen and will continue to need a server for patients. Dock will be shared with other support services with appropriate separation of clean and soiled flow.

Retail Food Services:

Continue to service Corner Spot grab-and-go kiosk in Pavilion plus additional kiosk at new entry. Food Court" concept to include vendor supported food stations (Subway, Chick-fil-a, etc.). Will need 100+ seats and outdoor dining area preferred as well. All wares to be disposable/recyclable for retail. Will need a flexible space for private dining in the dining room. Outdoor dining/cafe with pergolas near street level entry is preferred to synergize with Magnolia development.

Below is the location slated for Food Services on level 01 of the new tower and a future stacking of inpatient medical/surgical beds.





5

NEXT STEPS REQUIRED

Space Program required for: Food Services and Dining/Retail

Cost per SF required for: N/A

Decide whether to continue to operate the original kitchen in existing main tower lower level to serve Psych Hospital (if connected) and Main Tower units, and new kitchen to serve public, pavilion tower and new tower.

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Gastroenterology and Bronchoscopy Services
JPS CONTACT: Wanda Peebles, Julie Fields
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

Inpatient and outpatient GI and Bronchoscopy diagnostic and therapeutic procedures, including complex endoscopic ultrasound and endobronchial ultrasound procedures (future service).

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Volumes

4,600 annual cases (IP + OP), ~300 of which were bronch-related.

There is currently a backlog of patients for these services, mostly outpatients.

Capacity

- 4 procedure rooms (includes one ERCP room)
- 9 prep/recovery positions

Operations

Prep/recovery positions are inadequate to support the volumes.

ERCPs will typically require 'deep sedation' levels (as compared to moderate sedation), thus requiring the appropriate oversight and equipment support.

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

The master plan direction had these services relocating to the old OR suite -- Build five (5) GI labs in the old (vacant) OR suite along with four (4) minor procedure rooms for non-GI patients.

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Vision

Expand capability to treat unmet demand for inpatient cases in the hospital by shifting ~1,200 outpatient cases from the high-cost, difficult to access hospital environment to a cost-effective outpatient procedure center (e.g., Ambulatory Specialty Center). Expand scope of inpatient procedures (including endobronchial ultrasound - EBUS). Increase support areas like pre/post procedure spaces to enable optimal operational efficiency, use of the GI/Bronch procedure rooms. Locate services adjacent to the OR suite to enable team-based care and share support spaces like prep/recovery rooms, staff support spaces, and to create a common intake/processing experience for all procedure-related patients (surgical and non-surgical).

Volumes

Assumed annual growth rate of 3% per year for inpatients over next ten years based on planned recruitments, patient demand. At that growth rate, plus a shift of select low-acuity outpatients to an ambulatory procedure center, the volumes would be ~4,400 (mostly inpatient).

Focus screening and future outpatient activity in off-campus locations, including a near-campus location.

Operations

Inpatient cases and complex outpatient cases will be directed to the hospital-based procedure suite. A near-by ambulatory-focused center will be explored to accommodate the demand for lower acuity patients.

Capacity

Master plan demand was for five rooms, however, based on growth expectations and scale of the program, Blue Cottage recommends planning for four (4) rooms
and approximately 12 prep/recovery positions.

Space

See attached space table.

Service	Current Volumes	Shift to ACC \a	Annual Growth Rate Over 10 Years	Future Hospital Volumes
GI Endo IP	2,300		3%	3,091
GI Endo OP	2,000	(1,200)	1%	884
Bronchoscopy	300		3%	403
Total	**4,600**	**(1,200)**		**4,378**

\a 1,500 outpatients with moderate sedation, assume 1,200 patients would be candidates for an ambulatory procedure center.

5

NEXT STEPS REQUIRED

Detailed space program.

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: HIM/IT
JPS CONTACT: David Mendenhall, Melinda Costin
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

Desktop services, EMR, applications, network management, help desk, phones and other related services.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Approximately 180 FTE employees fragmented in multiple locations.

The EMR System does not have an automatic secondary back-up today (only a manual backup). The on-site data center should be considered for replacement and upgraded to a tier 4 to serve this need (and the likely growing need for a sophisticated data center to support the new / planned technology).

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Main department services will remain in existing facilities, though requires consolidation of fragmented department locations…

- Lower Level of Main Hospital
- 1400 JPOC (2nd Floor)
- 1350 JPOC (3rd Floor)
- EMR Building
- 200 Magnolia (Testing and Training)
- 1100 Main Street
- Plus 12 staff that work from home.

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Best Practices

Implement best practices to improve patient experience, operational efficiencies, and reduce opportunities for errors should be explored, such as:

- Fully electronic record, including consent forms in the future.
- Ubiquitous wireless access
- Modern voice, messaging system using VoIP
- Telemetry throughout
- Real-time location service / RFID for equipment, staff, patients
- Single sign-on or proximity sign-on for staff, clinicians
- Leveraging telemedicine
- Using patient television as multi-access portal for entertainment, education, access to clinical information, video conferencing, etc.
- Single training center for HR, Nursing, and IT at JPS would allow these modern facilities to be efficiently used by multiple services.

Data Center

A near-campus tier 4 data center (5,000 SF) should be developed to serve as a secondary automatic back-up system for the EMR and other critical business systems. This location could be leased or built by JPS. No additional space table information has been prepared.

Integration with BioMed

Integration of biomedical equipment with IT will allow for programming alerts, dose tracking, IV pump calibration, predictive equipment maintenance, and other types of data gathering services to improve quality, patient experience, and equipment functionality.

5

NEXT STEPS REQUIRED

None

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Imaging
JPS CONTACT: Kathleen Whelan, Mike Dossey
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

Inpatient, outpatient and emergency medical imaging services. The department provides diagnostic and therapeutic services in the main imaging department, satellite services (e.g., emergency), Arlington surgery center, community health centers, portable services, and consultation.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Main Department:
- CT (2)
- MRI (2)
- X-Ray (1) … Future to be 2 as unit relocates from old ED.
- Rad/Fluoro (3)
- Chest X-Ray (1)
- Panographic (1)
- Ultrasound (4)
- Nuclear Medicine (1)
- Bone Density (1)
- Portables (11) – deployed across the organization

Main Department (2nd Flr):
- X-Ray (2) – supporting the specialty clinics

Main Department (3rd Flr):
- Nuc Med (1)

Obstetrics (2nd Flr):
- Ultrasound (2)

Endoscopy (3rd Flr):
- Uroscopic table (1)

Pavilion:
- Portable CT on 3rd Floor
- 4 C-arms and 2 mini's on the 2nd floor for surgery

Emergency Department:
- CT (2)
- X-Ray (1)
- Ultrasound (1)
- Mini C-arm (1)
- Plus four trauma bays

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

New construction on the street level near the main emergency department, enabling the move / relocation of four modalities out of the main Emergency Department. Re-design of existing main department after relocations, which allows efficiencies for Radiology staffing and ability to improve access and reduce patient transport time, frequency.

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Context

The Pavilion expansion project will create/relocate one CT for Biopsies/Interventional procedures. It's important to note that this unit won't be used for general diagnostic tests.

As the inpatient services transition to the east side of Main Street, it will be critically important to ensure supporting services like medical imaging are proximate. The attached program and vision for Radiology sets into motion a consolidation of radiology services and reconfiguration of the existing department that enables JPS to gain operational efficiencies and improve customer service.

Capacity

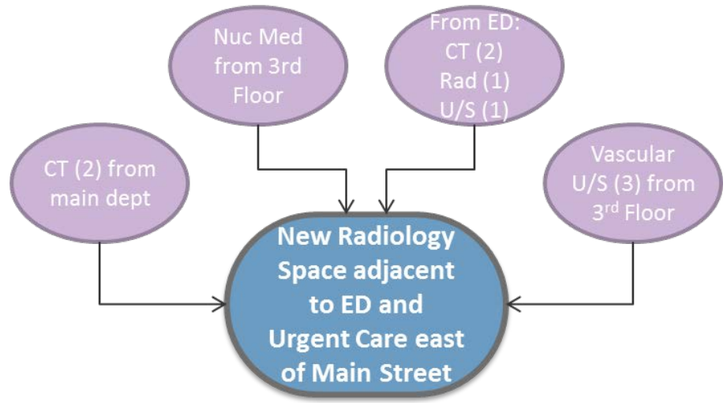
The plan is to relocate several imaging modalities to the new imaging department near Emergency / New Bed Tower, as shown below.

Relocated modalities:
- CT (4)
- Nuclear Medicine Camera (2)
- Ultrasound (2)
- Radiography (1)

New modalities / growth:
- Radiography (1)

Space

See attached space table.



5

NEXT STEPS REQUIRED

Developed detailed space program.

Review room prototypes.

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Inpatient Beds/ADT & Bed Management
JPS CONTACT: Wanda Peebles, SVP/CNO; Trudy Sanders, VP
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1 DEPARTMENT'S SERVICES/PROGRAMS

Inpatient care is managed in three levels of acuity; acute, progressive and intensive care. JPS operates 300 medical/surgical beds (in all acuities) in the JPS main tower and in the JPS pavilion tower + 8 inpatient prisoner beds on level 4 of the JPS main tower for a total of 308 medical/surgical operational inpatient beds.

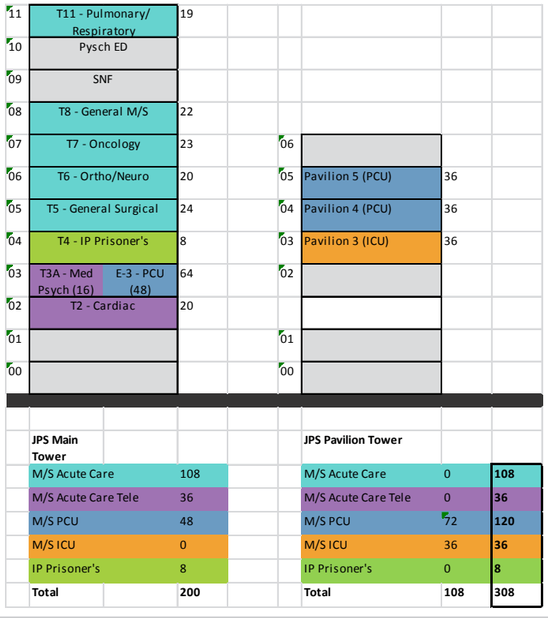
Recently an admission holding unit (AHU) was established to decant ED-based bed holding that is challenging ED operations. That unit is managed by inpatient services and is 8 holding positions. Additionally, 32 observation positions are on T3.

2 CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Diagram to the right shows the operational medical/surgical inpatient beds (this excludes women's, children's, NICU/nursery, AHU or observation positions.)

Below are the FY2013 patient days summarized. This represents a 22% increase from FY2012.

Service Line	FY13 Days**	ADC
BH Medical*	281	0.8
Intensive Care	10,024	27.5
Intensive Care - Trauma	1,928	5.3
Med/Surg	55,854	153.0
NULL	18,048	49.4
Outpatient	40	0.1
Tele/PCU	45,071	123.5
Subtotal	***131,246***	***359.6***



3 PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

The intention of the master plan is to decant the medical/surgical beds in the JPS main tower to a new tower. The new tower will be predominately acute and progressive acuities. Below are the BOKA Powell FUP 2013 projections. 352 total beds was target established.

Based on baseline of 109,123 FY2012 M/S Patient Days	Need 2012**	Need -2023 (No LOS reductions)***	Need - 2033 No LOS reductions)***	Need -2023 with LOS reductions***	Need -2033 with LOS reductions***	Planned - 2023****
Med/ Surg	36	402	454	338	353	352
Medical	10	119	132	99	99	165
Surgical	6	73	81	64	66	
Medical Progressive Care		85	94	67	74	72
Surgical Progressive Care	14	64	71	57	56	57
MICU	1	23	29	23	29	58
SICU	2	38	47	27	29	

4 FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

The number of planned future medical/surgical beds (as determined in the master plan by BOKA Powell) was 352 (for all acuities) and this was based in FY2012 patient days of ~109k. Beds were projected out 10 and 20 years with population growth annually (see box 3). With new data and similar throughput metrics the numbers of beds needed (without LOS reductions) will increase to greater than the planned 352 (see below). JPS should consider supplying over 400 medical/surgical beds to meet future demand plus ability to grow into shelled units equivalent to 90 more beds. JPS would like to program the new tower with 30-bed units to accommodate the patient:nurse ratios of acute 1:5-1:6) and progressive care (1:3).

The new tower will allow for provision of all private and appropriately sized patient rooms and allow for JPS to meet their growing capacity needs and reduce holding in the ED as well by doing so. By moving most of the existing beds from west of Main Street to east, inpatient services will be cohorted together for improved operational efficiency, both clinically and from a support services distribution perspective, and synergies in staffing can be achieved as well. Travel distances will be reduced to and from diagnostic/treatment services and routes simplified improving patient safety and satisfaction.

Throughput Assumptions	2023
Critical Care %	15%
Acute Care Utilization %	85%
Critical/Progressive Care Utilization %	70%
Private Room %	100%

Bed Need	2023 Beds @ 1.6% ICU//CCU	Acute	Total
BH Medical*	0.2	0.9	1.1
Intensive Care	6.9	32.2	39.1
Intensive Care - Trauma	1.3	6.2	7.5
Med/Surg	38.4	179.3	217.8
NULL	12.4	58.0	70.4
Outpatient	0.0	0.1	0.2
Tele/PCU	123.0	31.0	154.0
Sub-total Beds	182.3	307.7	490.0
Rehabilitation	0.0	0.0	0.0
Total Beds	182.3	307.7	490.0

22% due to increase in comparable patient days

5 NEXT STEPS REQUIRED

Space Program required for: ICU, Acute M/S and M/S Tele

2 30-bed ICU units, 7 30-bed M/S and M/S Tele units, 3 30-bed equivalent shelled units for growth, Inpatient Dialysis

Cost per SF required for: City/Federal Prisoner Unit on T6

Skilled Nursing Unit – no steps required, staying on T10 with 15 beds

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Lab & Pathology
JPS CONTACT: Kathleen Whelan, Mike Dossey
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

Clinical laboratory
Phlebotomy
Pathology

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Clinical laboratory and pathology services are located on the lower level (automated lab, micro, send outs and intake/accessioning of ambulatory network specimens. This area includes phlebotomist's home base support.

There are plans to renovate / reconfigure the central lab to achieve operational/flow efficiencies.

Phlebotomy is location on the main level with four draw stations to serve the outpatient clinics.

Two blood bank locations have plans to consolidate near the walkway E3 (construction to begin September 2014).

The pneumatic tube system is hindering turnaround times, service levels. Many departments mentioned this as an issue and that it will be important to allocate capital to improve the system, particularly as the inpatient beds move across Main St and some support departments will remain in current locations (e.g., Lab).

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Services will remain in existing space while being reconfigured as mentioned above.

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

An additional grossing room will be built as part of the Pavilion east expansion to support surgical services.

Enhanced pneumatic tube system connectivity is vitally important to the performance of the laboratory services to the acute care setting, in particular.

No space table required. Lab will remain in its current location but a modern, bi-directional pneumatic tube system is critical to supporting the inpatient services.

5

NEXT STEPS REQUIRED

None.

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Materials Management/EVS/Linen/Vehicle Transport
JPS CONTACT: Jason Limbaugh, Dir of MM; Louis Bedford, Dir of Textile, EVS, Transport
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

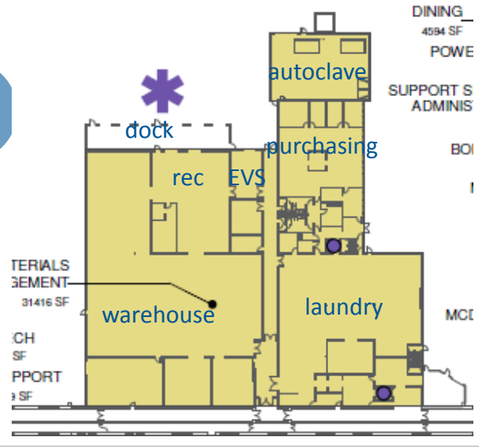
DEPARTMENT'S SERVICES/PROGRAMS

Materials Management, Environmental Services, Linen/Textile Processing and Vehicle Transport are all similar departments supporting and servicing clinical and non-clinical areas in the hospital. They each have a main area as well as rooms they serve throughout the building. They share the main dock area.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

The dock currently has 4 bays for vehicle delivery (with 1 leveler bay) and 1 bay for a compactor and 1 bay for trash. There is shared flow for EVS and Materials Management though the staging/receiving area. There is also a small central supply area down tunnel. Materials management services 33 PAR areas throughout the hospital. In addition to main dock the Pavilion has a dock for transport.



Central supply houses clean equipment for redistribution and specialty items that are not PAR. Patients come to this area to pick up supplies as part of the "Connection". Laundry is done on-site in the textile processing area, and is more cost-effective than outsourcing. It is two-levels. HHS is outsourced vendor for EVS, and they have some storage in warehouse, in old ORs area, and 2 additional compactors for trash and recycle. Distribution is done by foot or vehicle depending on destination.

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

The master plan slates for materials management , EVS, Linen/Laundry, and Transport to move to the expansion tower. A dock will be required. This will help achieve the following improvements:

- Improved adjacency to inpatient units, diagnostic/treatment departments, and public space (predominantly on east side of Main Street in future)
- Reduced travel distances and time to major inpatient areas serviced, improving staffing efficiency and equipment needs
- Improved, organized, and segregated dock flow (clean/soiled) and appropriate capacity for all support services departments

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Materials Management/Central Supply/Dock:

The current bulk warehouse and Low Unit of Measure is sufficient square footage. Central Supply is slightly undersized and will need additional space as well as a better location to public access due to Connection program. 4 bays plus 1 compactor and 1 trash bay. Purchasing needs to expand and be adjacent to department.

EVS:

EVS will need sufficient storage in expansion for goods and equipment. 1 trash bay, 1 recycle bay.

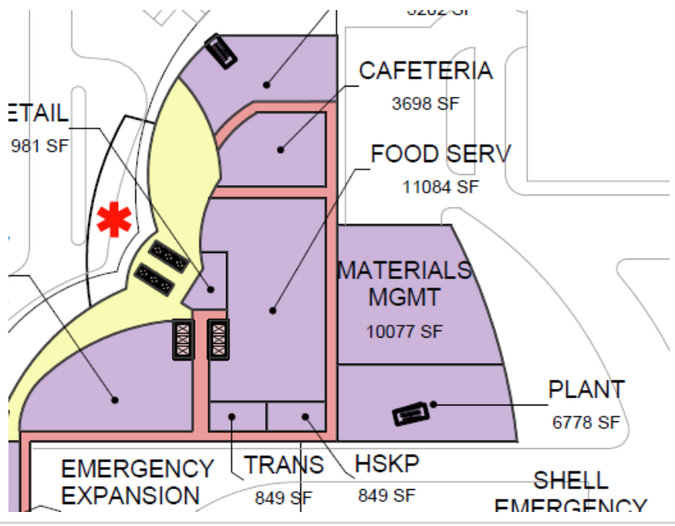
Vehicle Transport:

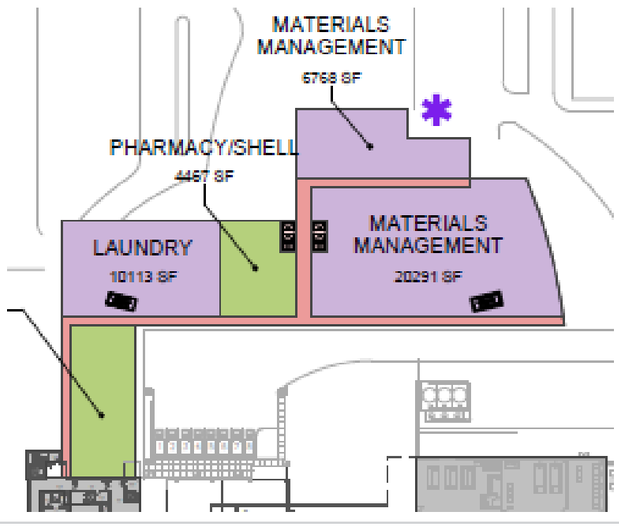
This department serves the other support services departments. The 70 vehicle fleet can continue to be parked in garages but a small administrative space will be required adjacent to dock.

Laundry/Linen:

Move the full-service laundry facility to the expansion tower, and continue to operate full-service, non-outsourced operation. Will need 1-2 dedicated bays for laundry.

Food/Nutrition will need a dock bay as well in the shared dock. Shared dock with above departments and Food Service with separated clean and soiled flow. Dock in Mat Mgmt space program.





5

NEXT STEPS REQUIRED

Space Program required for: Materials Management/Central Supply, EVS, Linen/Laundry
Cost per SF required for: N/A

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: NICU
JPS CONTACT: Patricia Alridge
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

The Neonatal Intensive Care Unit (NICU) provides comprehensive care for premature and high-risk babies. The NICU strives to provide the highest quality, personalized, compassionate care to its infants utilizing a family centered approach.

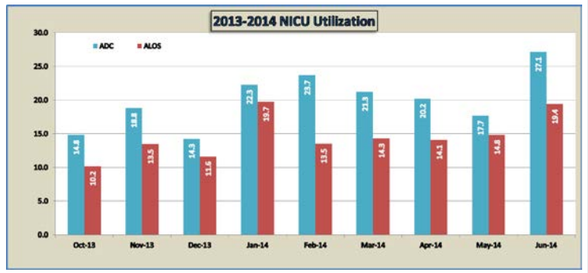
2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Volume

Approximately 540 annual admissions.

Monthly patient days and LOS in chart to right >>



Patient days distribution:

- Level II = 32%
- Level III = 43%
- Level IV = 25%

100% of the volume comes from the JPS Labor/Delivery unit, versus transfers in. Approximately 10 percent of the deliveries result in a NICU stay.

Capacity

Licensed for 35 beds, however average daily census can reach into the 40's.

Operations

~15 day ALOS

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Planned location adjacent to the Obstetrics program in the anticipated new building across Main Street. The vision for NICU is to increase capacity in line with OB growth, develop contemporary private room environment to improve maternal and infant outcomes, and create enhanced integration with the obstetrics service line to highlight patient-centered care.

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Volumes

The Neonatal Intensive Care Unit census correlates directly with OB delivery volumes. Based on an estimated growth of 15%+/- in OB, capacity and space planning will be based on 40 NICU beds.

Operations

Developmental care should be provided in an atmosphere blending advanced technology with highly skilled professionals reaching out to meet the needs of the infants and families of Fort Worth and those referred in from surrounding communities.

Maintain the adjacency of Pharmacy and Respiratory Therapy to NICU patients similar to current arrangements.

Three couplets per nurse.

Consider 'Transitional' nursery space that observes babies for the first six hours of life in an effort to catch babies that begin getting sick. Screening criteria for 'admission' include low Apgar score, diabetic mother, etc.

A transition nursery for high risk babies that meet select criteria should be created as a sub-zone in the NICU. This would be a proactive practice to observe new babies for the first six hours of life in an effort to identify babies that ideally require NICU services before they get too sick. At the end of a approximately six hours of observation, babies would either be admitted to the NICU or returned to well baby nursery/mother.

Space

See attached space table.

5

NEXT STEPS REQUIRED

None.

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Non-Invasive/Cardiopulmonary
JPS CONTACT: Kathleen Whelan, Anne Goodrich
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1 DEPARTMENT'S SERVICES/PROGRAMS

Inpatient non-invasive diagnostic services for:
Cardiopulmonary diagnostics (Echo, Vascular, EKG, stress)
Outpatient services are located at JPOC.

2 CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

One (1) nuclear room plus three (3) stress testing rooms, tech room, currently located on the 3rd floor of the hospital at the end of an old nursing unit.

3 PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Located near the planned construction for ease of access, adjacency to inpatient and radiology for nuclear medicine.

4 FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Non-invasive diagnostics (vascular, echo) should be relocated from the 3rd floor to a more convenient location for servicing inpatients.

There is an opportunity to consolidate nuclear medicine and stress testing to one area, thereby increasing staffing efficiencies and patient experience.

Adjacency of stress, echo, and vascular to the new radiology department would allow this department to share support spaces with radiology and minimize development of redundant support spaces in the new facility.

Cardioversions, tilt studies, and TEEs are done in the invasive labs in the Pavilion East expansion on 2nd floor.

Inpatient nursing units should have temporary work stations for staff to access.

Space

See attached space table.

5 NEXT STEPS REQUIRED

None.

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Patient Transport
JPS CONTACT: Kathleen Whelan, VP; Tom Colvin, Director
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

Patient transport is the department that takes patients from inpatient bed to ancillary services, outpatients to ancillary services, and patients to discharge, etc. They move patients throughput the hospital as needed.

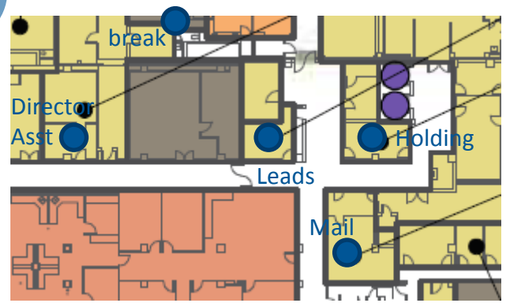
2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Home base for the patient transport department is in the lower level of the main tower. There are two offices is for the leads where dispatching is done and the other is a holding area for transporters not being dispatched. There is also a break room area and a director's office and mail room. Leads transport when needed.

Patient transport uses an electronic system for transfer orders. Transporters carry a paper "passport" to sign in/out patients along journey to/from destinations.

Currently have 20 transporters, but need 30, plus 3 leads and a director. Distance and fragmentation of the building challenges transporting.



← Offices

← Mail Room (Vehicle transport, Patient transport dept?)

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

This area was not identified in the master plan, however with much of inpatient hospital operations (nursing and diagnostics/treatment) is moving to the east side of Main Street, it is prudent to move the patient transport services for proximity to the patients – specifically beds, discharge area, and imaging.

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Identify and provide space for Patient Transport administrative area in new expansion tower to reduce dispatch distance to other side of Main Street.

Provide additional transporters as well to meet the transport demand. Will need additional transporters with inpatient bed increase. Staffing analysis to be conducted.

IT reviewing tracking system, may switch systems/softwares in future.

Mail room to remain in existing location and additional storage to backfill into adjacent available space.

5

NEXT STEPS REQUIRED

Space Program required for: Patient Transport

Cost per SF required for: N/A

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Pharmacy
JPS CONTACT: Kathleen Whelan, VP; Reg Scarborough, Director
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

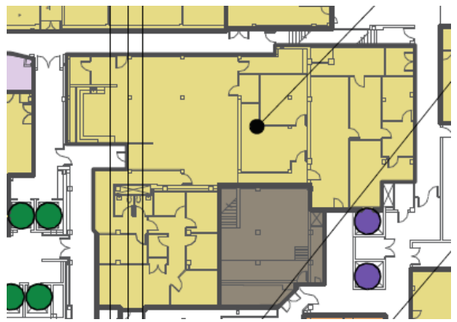
DEPARTMENT'S SERVICES/PROGRAMS

The central inpatient pharmacy is located on the Lower Level near Biomed. There are satellite locations in NICU, OR, ED and ICU. The outpatient pharmacy is located on Level 01 near the main entrance in newly renovated space. In addition to the hospital the main inpatient pharmacy serves Trinity Spring, the clinics, and the cancer center on Hemphill. There is a 4-chair infusion center in JPOC that is also serviced by central inpatient pharmacy.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

The main inpatient pharmacy operates 24 hours a day with partial day shifts in NICU, ICU, ED and OR. Pharmacy stocks Pyxis via carousel and those are delivered 1-2x a day to various locations throughout hospital. Try to deliver stat meds in 10 minutes, but that is a challenge due to staffing, distance and tubing. The pneumatic tube system is unreliable and unidirectional only. Often use outdoor connection by foot (across Main Street) to deliver to the Pavilion. Two techs and two pharmacists are present in the central inpatient pharmacy at any point in the day. Techs are 8 hour shifts and pharmacists are 10 hour shifts. There are also decentralized techs and pharmacists in other locations of the hospital for a portion of the day. 81 FTEs.



Have two carousels now.
NICU/ICU
1 tech from 0700-1430

OR
2 overlapping tech from 0600-2000

Decentralized pharmacists
24 hours

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

The inpatient pharmacy was not slated to move to the expansion tower in the master plan, however direction was received from the Steering Committee to go forward with moving it in lieu of the PT/OT move to the expansion tower so as to be adjacent to the clinical departments this department supports. This will help achieve the following improvements:

- Improved configuration for pharmacy operations
- Appropriately sized department to accommodate equipment and work flow
- Reduced travel distances to major inpatient areas serviced
- Improved staff collaboration opportunities

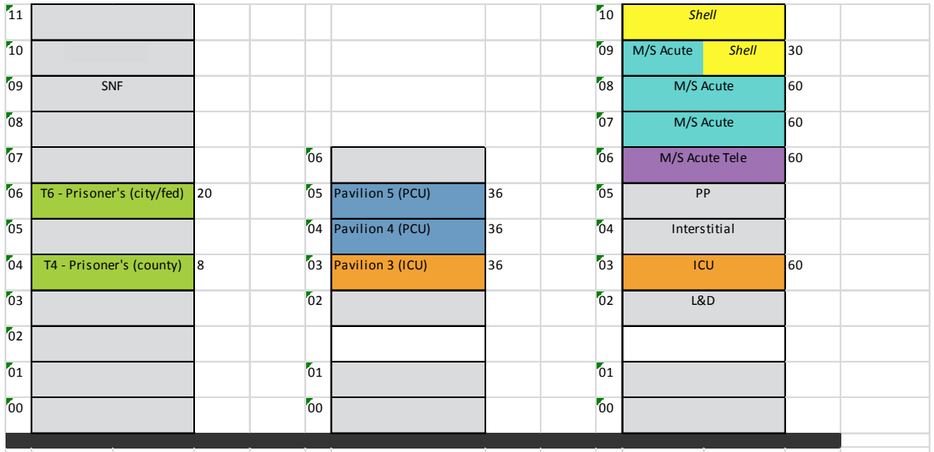
4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Provide an inpatient pharmacy in the expansion tower to provide more proximate inpatient service. Below is a stacking diagram of future medical/surgical beds. New ICU and Acute 30-bed units will be provided in the new tower, decanting medical/surgical from the main tower. Skilled Nursing beds will remain in the main tower on level 09 and Psych will also remain in its location in the Main Tower. 1 pharmacists per 30 patients is typical staffing.

OR, ED and ICU current satellites are sufficient. Will need touchdown space in new inpatient units. Currently going to minimally update to code requirements in existing central inpatient pharmacy location due to department relocation forthcoming with expansion project.

Medical/Surgical Inpatient Future Bed Stacking:



JPS Main Tower		JPS Pavilion Tower		JPS New Tower		
M/S Acute Care	0	M/S Acute Care	0	M/S Acute Care	150	**150**
M/S Acute Care Tele	0	M/S Acute Care Tele	0	M/S Acute Care Tele	60	**60**
M/S PCU	0	M/S PCU	72	M/S PCU	0	**72**
M/S ICU	0	M/S ICU	36	M/S ICU	60	**96**
IP Prisoner's	28	IP Prisoner's	0	IP Prisoner's	0	**28**
Total	28	Total	108	Total	270	**406**

5

NEXT STEPS REQUIRED

Space Program required for: Inpatient Pharmacy
Cost per SF required for: N/A

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Psychiatric Hospital and Emergency Department Services
JPS CONTACT: Wayne Young, Dr. Podawiltz
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

Inpatient and outpatient behavioral health services, including:

- Acute Inpatients
- Partial Hospital Program (on-campus and off-campus)
- Emergency Department
- Observation
- Central Assessment Center

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

96 total beds:

- 60 Adult
- 16 Adolescent
- 20 Long-term care
- Excludes beds on Tower-3 (Acute Medical Psych Patients)

20,000 annual behavioral health ED visits, 20% of which are admitted to Trinity Springs. ED census sometimes exceeds 25 patients and reaches 40. At 25 patients, operations become strained due to the limited space. Observation patients were 3,370 with an ALOS of 20.7 hours (based on first 10 months annualized).

The Behavioral Health service line is at maximum utilization (see below for transfers). Services are not integrated, leading to inefficiencies in operations and meeting the education mission

Transfers Volume Out from JPS				
	Under 18	18-64	Subset over 64	Totals
Jan 2014 -Jun 2014	130	520	57	707
Annualized	260	1040	114	1414
ALOS	6.49	6.49	7.1	-
Pt Days	1687	6750	809	9246
Pt Days @ 80%	1350	5400	648	7397
Beds Needed	3.7	14.8	1.8	20.3
Reimbursement Rate	$750	$750	$1,666	$3,166
Revenue Lost	$1,012,440	$4,049,760	$1,078,768	$6,140,968

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Conceived to renovate inpatient 'Tower' for re-use by Psychiatry, though not ideal for Behavioral Health Services in total as a service line and in terms of physical space floor size / nursing unit size.

The long-term vision is to create a center of excellence for Behavioral Health that will lead to improved operational efficiencies, enhanced revenues and improved outcomes.

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

(See next page for continuation of section 4)

Overview and Vision

JPS' vision for the Behavioral Health program is to create a Center of Excellence for clinical care, education and research. This will enable JPS to provide the appropriate continuum of services to the behavioral health population, improve operations, enhance revenues, and improve outcomes for patients. To that end, campus master planning concepts will explore opportunities to create a full-service behavioral health hospital near the current Trinity Springs Pavilion location. Services would include inpatient care, partial hospitalization program, outpatient visits, assessment center, emergency department, and observation care. Additionally, a 64-bed Texas Juvenile Justice and Detention center (TJJD) will be located on the JPS site and should ideally be adjacent to the JPS Psychiatric Hospital (see next page).

Enhanced Financial Performance

- Increase revenue by increasing capacity and decrease cost by eliminating outside contract use
- Improve bed utilization by eliminating closed beds due to semi-private environment (typically have at least five beds closed)
- Patient safety improved by reduced patient movement
- Reduced retro-fitting costs (capital avoidance) for TSP by improved architectural design elements that reduce risk for self-harm
- Improve provider and employee satisfaction/retention, enhance workplace safety through architectural solutions

Increase Operational Efficiencies

- Separate Observation and PEC allows for right level of care at right time
- Reduce Transportation from PEC to TSP which involves PD and Psych
- Better inter-professional experience and learning opportunities for all receiving clinical training
- Consolidate three locations to one improves patient navigation and way finding
- 24/7 presence of psychiatric physician in a single location rather than multiple areas to cover

Improve Clinical Outcomes

- Reduced Reliance on ED and Consults
- Reduce PEC boarding
- Increase continuity of care from decreased transfers
- Geriatric capacity to align with new service line
- New treatment program design rather than being bound by architectural barriers (ECT, dedicated depression unit, clinical trials)
- Enhanced privacy in ER area

5

NEXT STEPS REQUIRED

Develop detailed operational narrative and room-by-room space table to support more detailed site planning and financial *pro forma* development.

Sign & Date
(JPS Contact & VP)

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Volumes

From an inpatient perspective, there is un-met need in the community for all age ranges.

Emergency department volumes and inpatient admissions (bed capacity) should be coordinated since ~20% of ED visits result in admission. Expanding the ED without adding inpatient capacity will simply result in longer lengths of stay in the ED.

If the current annual ED visit volume was assumed to grow at a rate of 3% per year over 10 years, the future annual volume would be approximately 27,000.

Observation volumes are likely to exceed 4,500 per year, assuming a similar relation to future ED volumes as today.

Operations

The Psychiatric Emergency Department and Observation can be separate but should be near each other for patient transfer convenience and sharing of seclusion rooms.

4

Capacity

Plan for a future bed capacity as follows:

- Adult = 96
- Geriatric = 12
- Adolescent = 20
- Long-term care (LCA) = 20

Emergency Department = 30 positions.

Observation Unit = 16 positions.

Space

See attached master space table.

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: PT/OT & PMR
JPS CONTACT: David Graves, Kathleen Whelan
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

Physical Therapy is responsible for the assessment, diagnosis, and treatment as well as the maintenance and improvement of the physical capacity of the patient through physiotherapy procedures including exercise, manual therapy and manipulation, and use of radiant, mechanical, or electrical energy.

Occupational Therapy focuses on activities of daily living, the development of vocational and manual skills.

Speech Therapy focuses on the oral-pharyngeal-laryngeal mechanism.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Volume

The OT program is generally limited in scope today. Need kitchens, cars, living space (SNF, Strokes, trauma).

The addition of Cardiac Rehab (Phase 2 currently off campus, better to be on-campus) and Trauma Rehab would be complementary to the acute care services provided by JPS.

Capacity

Overall the space is adequate for the current volumes and range of services. Volume growth or the expansion of services will require additional equipment and space.

Operations

These departments provide both inpatient and ambulatory care services. Some (not all) inpatient services are performed bedside, with therapists traveling to the inpatient units. Patients who require specialized equipment will be transported to the gym spaces, which will serve both inpatients and outpatients.

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Remain in current location and expand in-place.

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

The preliminary direction is to allow PT/OT to expand in-place in its current location on the main level in order to expand the services as described in section 2. Additionally, this would allow for a distinct drop off/access point for outpatients.

'Touchdown' space for documentation, accessing clinical information will be required on the nursing units for therapy services staff.

Some therapy storage areas will be provided on the inpatient units.

No space table required, however renovation of the existing space and adjacent expansion space will be required to accommodate an expansion in services offered to the community and to support the growing inpatient mix.

5

NEXT STEPS REQUIRED

Develop space program

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Public Spaces
JPS CONTACT: Jaime Pillai, VP; Angie Morgan, Director of Construction
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

Public Spaces is not a specific department, but a general grouping of areas such as outpatient lab blood draw, chapel and pastoral offices, gift shop, admitting, personal care, and registration and cashier services.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Below are the locations of various public spaces currently that may need to move with the reorientation of hospital entry.

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

General public amenities and retail was identified in the master plan, but not specifics. However, a new main entry with important public amenities adjacent to the majority of inpatient and diagnostics/treatment area will improve wayfinding for visitors and patients as well as improve patient satisfaction. There is also an opportunity to strengthen the JPS brand through the design and planning of these spaces and synergize their operations and achieve staffing efficiencies.

4

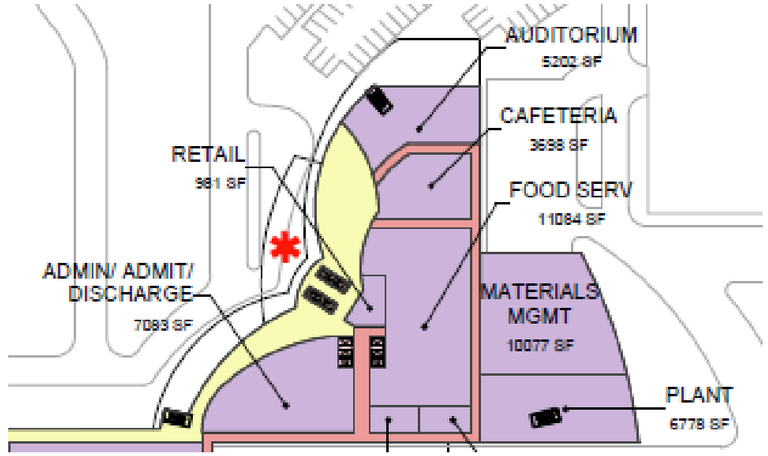
FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Areas that need to be located at the new entry:

Inpatient Registration/Admitting – proximity to main public space is important
Gift Shop – proximity to main public space is important
Chapel/Pastoral Offices – improved support and improved chapel location/capacity/image/flexibility
Police/Security position/presence at new entry – proximity to main public space is important
Information services – proximity to main public space is important
Personal Care – proximity to main public space is important
Cashier Services – proximity to main public space is important
Auditorium – provision of proximate large meeting space will improve major communication and collaboration moments
Discharge Lounge – should improve patient experience and improve inpatient capacity

Areas that can remain in existing location:

OP Pharmacy
OP Registration
Volunteer Services (Level 02 of Clinic Building)
Lab/Blood Draw area
Conference & Education (backfill into vacant)



5

NEXT STEPS REQUIRED

Space Program required for: Public Spaces: Registration/Admitting, Gift Shop, Lobby/Discharge Lounge, Finance, Conference Center

Cost per SF required for: N/A

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Respiratory Therapy and Neuro Diagnostics
JPS CONTACT: Kathleen Whelan, Jim Graves
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

Inpatient neuro-diagnostics (EEG, EMG) and respiratory therapy, including PFT.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

EEGs for inpatients are done bed-side.

Inpatient PFT is currently located on the first floor of the main hospital (near McDonald's).

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Remaining in existing / backfill space.

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Neuro diagnostics and respiratory therapy can share staff support space and a 'home base' for staff to access a workstation when they aren't deployed to various clinical areas of the hospital. This will ensure redundant support space isn't built in the new facility.

Additionally, the IP PFT room should be relocated near the main inpatient bed units in the planned new bed tower for easy access for frail inpatients, reduced transport time.

Accessibility to inpatient elevators is important to support efficient patient transfers.

Space
See attached space table.

5

NEXT STEPS REQUIRED

None.

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Surgical Services
JPS CONTACT: Wanda Peebles, Deb Saunders,
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

Inpatient and outpatient surgical services, ranging from minor procedure-type cases to difficult obstetrics cases to complex cardiac and trauma cases. JPS is a training site for surgical residents.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Volumes

11,800 annual cases (IP + OP)….

- 6,600 IP cases (56% of total cases)
- 5,200 OP cases

Capacity

12-OR suite located in the Pavilion building on the 2nd floor above the Emergency Department. Planned expansion of the Pavilion to the east will add one CV OR (in addition to several interventional labs) bringing the total OR suites to 13.

18 PACU bays; 16 pre-op plus 7 phase 2 recovery.

Plans to add a grossing room near the OR suite.

Operations

Cases are scheduled 10-hours per day, Monday through Friday. Saturday cases were added about 6 months ago.

60 – 70 cases per month by-pass PACU and go directly to ICU.

Increasing demand for C-arm and portables to support surgical cases. Require additional storage.

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Pavilion for inpatient cases and existing hospital space for low acuity outpatient cases.

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Assumed inpatient surgical case volume growth rate of 3% per year and 1% per year for outpatient surgeries on-campus, resulting in over 14,600 annual cases, the OR need in the future is 11 to 12 ORs, if block schedule is expanded from 10- to 12-hour days (M-F). If the block schedule remains 10 hours, the OR need would be ~14, requiring the addition of at least one room (after the Cardiac OR is added in the Pavilion Expansion).

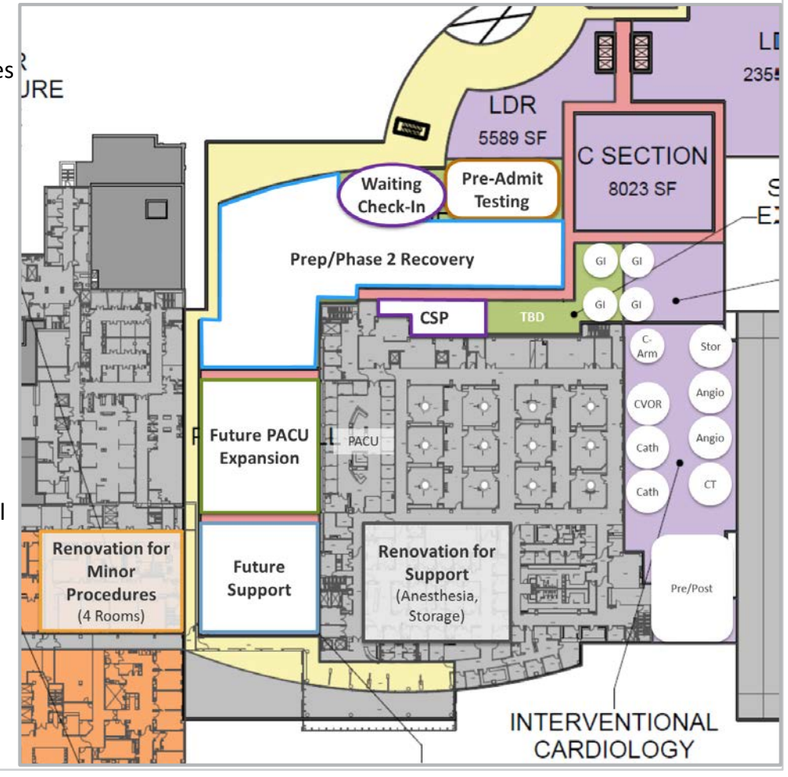
The vision for surgical services is to focus inpatient care in the Pavilion OR suite and outpatient care to a near-by alternative, such as a comprehensive Ambulatory Specialty Center that contains ambulatory surgery.

This plan re-orients the main of entry for surgical services from South to North to align with the new tower entrance.

Creates an integrated surgical/procedural recovery platform (Surgery, GI, Bronchoscopy, Cath/EP) for increased operational efficiency and future flexibility.

Opportunity to shift 3,000 outpatient cases from the high-cost, difficult to access hospital environment to a cost-effective outpatient surgery center.

Increase OR capacity in three ways: Expand operating rooms in the near-term from 12 to 13; Identify an adjacent growth zone; and Leverage Ambulatory Specialty Center development to shift around 3,000 to 4,000 low-acuity cases out of the hospital, thereby effectively increasing OR capacity in the hospital by 30%.



5

NEXT STEPS REQUIRED

Detailed space program.

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Emergency Department, Urgent Care, and Observation
JPS CONTACT: Wanda Peebles, SVP/CNO; Meg Bryant, Admin Director
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

Emergency Services includes the Emergency Department, Urgent Care Center, Clinical Decision Unit/Observation Units. The Emergency Department sees all acuity levels and the Urgent Care Center focuses on levels 4 and 5 and some 3's if they will be less than an hour to disposition. Psych ED is managed separately which has presented staffing and collaboration challenges.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Emergency Department:

The JPS ED is the only Level I trauma center in Tarrant County. The ED sees about 318 patients a day with an average of 4.5 hours door to discharge time. ED typically hold 20-30 patients a day and admits approximately 65-75 a day. ED operates 24 hours/day, 365 days/year. There are 54 beds, 24 chairs, and 8-12 wall positions in the ED currently (90 positions). There are two triage positions.

	ESI I	ESI II	ESI III	ESI IV	ESI V	NULL	
FY 2012	769	22,509	46,265	21,634	5,219	1,122	**106,658**
FY 2013	3,813	26,222	50,236	26,047	5,694	977	**112,989**

Urgent Care:

In addition to the above volumes summary, the Urgent Care Center, which is located separate from the main ED on level 01 had **64,026** visits in FY2012. There are 32 positions in Urgent Care. Urgent Care operates Monday-Saturday 6am to 10pm and Sunday 8am to 8pm. There are no appointments and there is a bus stop dedicated. Moving 20-25 patients a day from UC to ED.

Observation/CDU:

Observation/CDU occurs on level 03 (main) in three distinct bed areas, A, B, C (32 beds). There were **19,780 patient day equivalent observation hours** in FY2013.

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

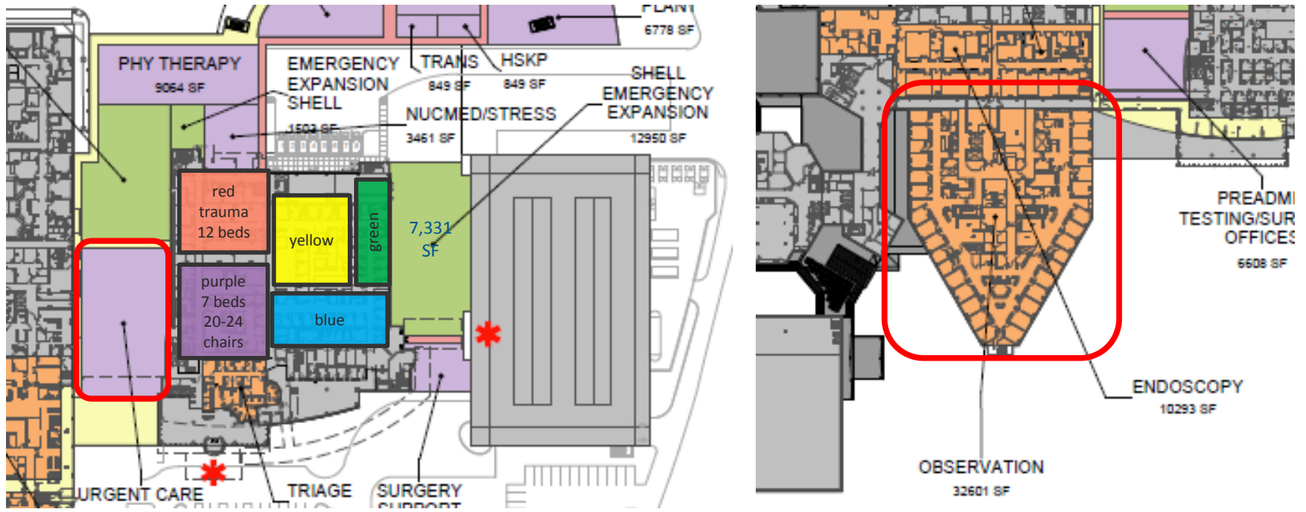
A volume growth of 30% over 20 years was projected in the master plan for ED and Urgent Care. The main ED is slated for some spatial growth in the expansion and Urgent Care slated to move adjacent to the ED. This expansion and relocation will help achieve the following improvements:

- Increased capacity to meet current demand and future growth
- Improved intake flow and triaging capacity and throughput
- Improved entire ED and Urgent Care operations and work flow by reconfiguring/renovating red, yellow, blue, and green pods in ED as well as intake area, and developing new configuration for Urgent Care operations in new location
- Reduced distance when re-directing patients to Urgent Care or ED
- Improved Appropriately sized exam rooms and support in Urgent Care

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

The Emergency Department has planned expansion space per the master plan to be fit out eventually, but to be shelled construction originally (7,331 SF marked below). Urgent Care is slated to move next to the ED on the first floor space that would require closing of Main Street (purple area marked below with red box). Observation is slated to move into the E3 space once inpatient beds in that location move to the new tower.



With assumed 30% added growth over 20 years, future volumes could be as below:

	Baseline volume	Shift 15k low acuity to UC	Short-term room need after shift	Grow 30% in 20 years	Room need in 20 years	Long-term plan
ED (1500/room)	112,989	97,989	65	127,386	85	add 32 UC positions to ED for a total of 102
UC (2500/room)	64,026	79,026	32	102,734	41	UC goes off site to ACC

There are about 54 available exam beds/rooms in the ED currently (excluding wall beds and chair positions). If it is assumed 15,000 of the 4s and 5s in the ED are shifted to UC per self-triaging to the appropriate flow then JPS should plan for 32 UC positions in the short-term and at least 65 ED positions (see red boxed area in chart above). In the long-term, UC may re-locate to an ACC and make way for further ED expansion. In order to achieve the needed short-term capacity, ED should plan for an immediate addition of 16 beds in the remaining East Pavilion shell slated for ED expansion – giving ED 70 true exam room positions. Assuming the shift of 15k visits to UC, this capacity would suffice for the ED in the short-term and growth could be accommodated by UC positions opening in the future. Additionally, the existing triage/intake area as well ass the red, purple, blue, yellow and green pods will need renovation to improve flow to support better staff collaboration, patient safety, patient throughput and clinical workflow.

5

NEXT STEPS REQUIRED

Space Program required for: Emergency Department Expansion, Urgent Care Relocation

Cost per SF required for: Observation move to E3, Triage addition, Purple pod renovation, Red/Yellow/Blue/Green pods reconfiguration renovation.

Short-term: ED with 70 exam room positions plus 20 chairs with adjacent Urgent Care of 32 exam room positions.

Long-term: ED gains 32 Urgent Care positions when Urgent Care relocates elsewhere.

Sign & Date
(JPS Contact & VP)

JOHN PETER SMITH HOSPITAL
DEPARTMENT FUNCTIONAL NARRATIVES

DEPARTMENT: Women's Services
JPS CONTACT: Patricia Alridge
DATE: October 24, 2014

BLUE COTTAGE CONSULTING

1

DEPARTMENT'S SERVICES/PROGRAMS

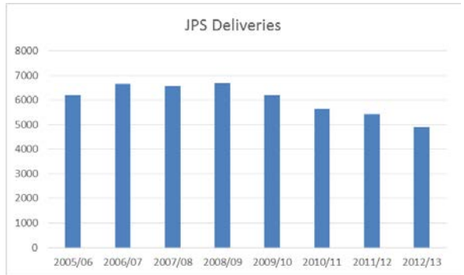
The OB/Women's Center will provide all obstetrical related services, including triage, ante-partum care, labor, delivery, C-section, recovery care, postpartum, GYN surgery (including pre-op and inpatient recovery), GYN onc and Breast Surgery IP recovery, diagnostic OB center, and newborn nursery. Neonatal Intensive Care Unit functional and space program is covered in a separate document.

2

CURRENT STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Volume

~5,000 annual deliveries, of which ~1,300 are c/sections (26% rate)



Capacity

LDR = 15
C/Section = 3
PACU = 3
Postpartum/Antepartum/GYN Beds = 62
Triage = 10

Operations

Currently utilize a LDR + Postpartum model, which is appropriate for the high volume and high-risk nature of the program.

3

PREFERRED FUTURE STATE SUMMARY – PER MASTER PLAN

Transition all Women's services to the new bed tower across Main Street. The vision of Women's Services is to expand capacity to meet demand, expand range of GYN surgeries, develop private rooms designed to create privacy, improve comfort, and enhance the patient experience while improving clinical outcomes, and locate OB triage at point of entry on the street level for easy access.

4

FUTURE STATE OF DEPARTMENT'S VOLUME, OPERATIONS, AND SPACE

Volume

Addition of midwifery service is anticipated and should support higher volumes. For planning purposes, the capacity requirements and space estimates assume an additional 700 to 800 annual deliveries, for a total of 5,800 (+16% over ten years). Population growth forecast for Fort Worth and Tarrant County overall rages from 15% to 17% over the next decade. No change in birth rates is assumed.

Operations

LDR + Postpartum model - The birthing model will be based on the use of LDR rooms for normal vaginal deliveries, including labor and subsequent recovery. The LDR area will accommodate patients in active labor preparing for a normal vaginal delivery or induction.

Scheduled C-Section patients will be prepared in the triage/outpatient evaluation area and recovered in the PACU/Recovery area adjacent to the C-Section Suite. C-Section rooms are also utilized for the vaginal birth of all multiples. It's anticipated that approximately 700 to 800 GYN surgeries will be done in the OB OR suite.

Postpartum care will occur in private rooms sized for mother-baby couplet care.

GYN recovery for GYN surgery, GYN Onc, and Breast Surgery will occur on the GYN Unit in the Women's Services department.

Capacity

LDR = 18
OB Operating Rooms = 4
PACU = 8
Postpartum Beds = 50
GYN Beds = 12
Antepartum Beds = 18
Triage positions = 12

Space

See attached space table.

	Triage Positions	Antepartum Beds	LDRs			Operating Rooms		Postpartum Beds	
			FY2014 Deliveries (estimated)						
			5,800						
FY2014	Annual Triage Volume	Annual Antepartum Volume							
	11,600	1,800	Non C-Section Patients		C-Section Patients		GYN Surgeries		
			74%		26% Rate		720		
Volumes >			4,292		1,508				
			54% Non-Induced	20% Induced	16% Unscheduled	Unscheduled	10% Scheduled	Normal Delivery	C/Section Delivery
			3,132	1,160	905	905	1,323	4,292	1,508
					Start in LDR and transfer to OR	→			
Operating	ALOS (Hours)	ALOS (Hours)	ALOS (Hours)	ALOS (Hours)	ALOS (Hours)	ALOS (Hours)	ALOS (Hours)	ALOS (Hours)	ALOS (Hours)
Assumptions >	6.0	96.0	14.0	24.0	20.0	2.0	1.5	48.0	72.0
	prep for surg, monitoring, etc	4 Days				Include room turnover time	Include room turnover time		
	Volume Variability Factor	Volume Variability Factor	Volume Variability Factor	Volume Variability Factor	Volume Variability Factor	Volume Variability Factor	Volume Variability Factor	Volume Variability Factor	Volume Variability Factor
	1.2	1.0	1.1	1.1	1.1	2.0	1.1	1.1	1.1
	Primary Hours per Day	Primary Hours per Day	Primary Hours per Day	Primary Hours per Day	Primary Hours per Day	Primary Hours per Day	Primary Hours per Day	Primary Hours per Day	Primary Hours per Day
	24.0	24.0	24.0	24.0	24.0	16.0	8.0	24.0	24.0
	Days per Year	Days per Year	Days per Year	Days per Year	Days per Year	Days per Year	Days per Year	Days per Year	Days per Year
	365	365	365	300	365	365	360	365	365
	Utilization Assumption	Utilization Assumption	Utilization Assumption	Utilization Assumption	Utilization Assumption	Utilization Assumption	Utilization Assumption	Utilization Assumption	Utilization Assumption
	80%	95%	70%	75%	60%	50%	50%	80%	75%
Calculated			8 Rooms	6 Rooms	4 Rooms	2 Rooms	2 Rooms	33 Beds	19 Beds
Capacity >	12 Rooms Required	21 Beds Required	18 Rooms Required			4.0 Operating Rooms Required		52 Beds Required	
			289 Deliveries per LDR per Year			557 Cases per Room per Year		2.3 Overall ALOS	

5

NEXT STEPS REQUIRED

None.

Sign & Date
(JPS Contact & VP)

A. PROJECT DESCRIPTION

1. The new Inpatient Tower will be located to the north of the Pavilion, just east of Main St on the John Peter Smith Hospital campus. The MEP systems are currently planned for the programmed square footage of approximately 739,000 square feet of new construction. Capacity will be provided in the systems infrastructure for shell or unfinished spaces within the building construction square footage. The project also includes approximately 164,600 square feet backfill and renovations of existing departments within the Existing Hospital, but these renovated spaces are not currently planned to be served from the new systems within the new Inpatient Tower.

2. Utility services will be provided to the new Inpatient Tower as follows:
   a. The Inpatient Tower will not receive any of its required services from the existing hospital or adjacent buildings.
   b. A new pad mounted electrical transformer will be required. Underground electrical service from the electric utility lines will be required.
   c. New Domestic Water Service entrance from the utility will be required.
   d. New Fire Protection Water Service entrance from the utility will be required.
   e. New Sanitary service connected to the utility will be required.
   f. New Storm Sewers service connected to the utility will be required.
   g. New medical gas bulk storage for oxygen, nitrous oxide, nitrogen and carbon dioxide will be required.
   h. Natural Gas service will be required.

B. BASE OF DESIGN CRITERIA

1. Applicable Codes, Standards, Regulations and Guidelines:
   a. Texas Department of State Health Services (TDSHS)
   b. International Building Code (IBC) 2009 with Local Amendments
   c. International Mechanical Code (IMC) 2009 with Local Amendments
   d. International Plumbing Code (IPC) 2009 with Local Amendments
   e. National Electrical Code (NEC) 2008 with Local Amendments
   f. International Energy Conservation Code 2009 with Local Amendments
   g. National Fire Protection Association (NFPA) guidelines and standards including but not limited to the following:
      1) NFPA 13 – Installation of Sprinkler Systems
      2) NFPA 14 – Installation of Standpipe and Hose Systems
      3) NFPA-20 –Installation of Stationary Pumps and Fire Protection
      4) NFPA 72 – National Fire Alarm Code
      5) NFPA 90A - Standard for the Installation of Air conditioning and Ventilating Systems.
      6) NFPA-99 - Standard for Health Care Facilities
      7) NFPA 101 - Life Safety Code
      8) NFPA 110 - Standard for Emergency and Stand-by Power Systems
      9) NFPA 780 - Standard for the Installation of Lightning protection Systems

h. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) guidelines and standards including but not limited to the following:
   1) ASHRAE Fundamentals Handbook (2009)
   2) ASHRAE Standard 15 (2007) Safety Code for Mechanical Refrigeration
   3) ASHRAE Standard 55 (2004) Thermal Environmental Conditions for Human Occupancy
   4) ASHRAE Standard 62.1 (2007) Ventilation for Acceptable Indoor Air Quality
   5) ASHRAE Standard 90.1 (2007) Energy Standard for Buildings except Low-Rise Residential Buildings
   6) ASHRAE Standard 170 (2008) Ventilation of Health Care Facilities

i. Illuminating Engineering Society of North America (IESNA) guidelines, standards and recommended practices (RP) including but not limited to the following:
   1) IESNA Lighting Handbook Reference and Application – Ninth Edition
   2) IESNA RP 1-04 Recommended Practice for Office Lighting
   3) IESNA RP 5-99 Recommended Practice of Day lighting
   4) IESNA RP 20-98 Recommended Practice for Parking Facilities
   5) IESNA RP 29-06 Recommended Practice for Hospitals and Health Care Facilities
   6) IESNA RP 33-99 Recommended Practice for Exterior Environments

2. Seismic Criteria
   a. Based on past project experience, this location currently has no Seismic bracing requirements for the MEP systems.
      1) Project is Seismic Site Class C
      2) Project is Seismic Design Category A

PART 2 - DIVISION 21 SYSTEMS

A. FIRE SUPPRESSION SYSTEMS

1. System Description
   a. A new fire suppression water service will be provided to the new Inpatient Tower and will be routed to the fire suppression service equipment room located in the Central Plant.
   b. An electric fire and jockey pump assembly will be provided in the fire suppression equipment room in the Central Plant.
   c. A fire pump controller will be provided in the fire suppression equipment room in the Central Plant to control the fire pump and jockey pump. Controller will be monitored by the fire alarm system.
   d. Fire suppression piping will be routed from the fire suppression equipment room to standpipes in each stair tower.
   e. Fire hose valves and hose connections will be provided at each level of each stair tower off of the standpipe riser. Pressure reducing type hose valves will be used to maintain a maximum pressure of 175 psig at the hose connection.

f. Fire suppression sprinkler systems will be supplied at each level from the stair tower standpipe. Pressure reducing type floor control valve assemblies and flow and tamper switches will be provided for each sprinkler zone in recessed wall cabinets. Fire suppression sprinkler zones will match the smoke compartments.

g. In general, the facility will be protected by wet pipe fire suppression systems. Specific areas will be protected by pre-action or dry pipe fire suppression systems as indicated on the fire suppression system drawings..

h. Fire suppression system will be designed to requirements to include but not be limited to FM Global, NFPA 13 and NFPA 14.

i. The fire suppression contractor will be responsible for the design, hydraulic calculations and complete installation of the fire suppression systems.

2. System Requirements

a. An electric, horizontal, split-case fire pump will be provided with a capacity of 1,000 gpm and will be designed to provide a pressure of 100 psi at the roof. Pumps shall be manufactured by ITT A-C Pump, Aurora Pump, Peerless Pump or Owner approved equal. Fire pump and motor shall be mounted on one piece steel frame and shall include OSHA approve coupling guard.

b. A small electric jockey pump, by the same manufacturer as the fire pump, will also take suction from the same common incoming line and will maintain the proper pressure on the fire suppression system at all times.

c. A fire pump controller, manufactured by Master Control Systems unless authorized otherwise by the owner, shall be provided to control the fire pump and jockey pumps. Fire pump controller shall be provided with a transfer switch, which will provide the power for the fire pump and, in case of a power failure from the main normal power source, will transfer the source power from the main electrical supply to the emergency generator. Controller shall be across the line type and shall be capable of automatic or manual transfer. Controller shall be mounted in a NEMA 12 enclosure and mounted on raised concrete housekeeping pad to avoid water entrance into the enclosure. Fire pump controller shall be interconnected to the fire alarm system.

d. The discharge from the fire pump system will include a line to feed the multiple 8 inch wet-pipe standpipes in the stairwells. At each level within the stairwell a 2 1/2” pressure reducing type fire hose valve with a 1 1/2” reducer and chained cap will be provided for fire department use.

e. At multiples locations off of these standpipes, a floor control valve will be located to feed the sprinkler systems for each floor. These devices shall be located within lockable Zone Valve Cabinets. Each cabinet shall be dedicated to a sprinkler zone and shall be located within a corridor of its sprinkler zone.

f. Install fire hose cabinets only where required by code. Where fire hose cabinets are installed provide with one (1) 5 lbs carbon dioxide extinguisher and one (1) 2.5 gallon water extinguisher.

g. A 3" drain lines will be required in each stairwell. A 3” connection at each level will be required to test the fire hose valves. A drain connection will also be required to be able to test the flow switch on each floor control valve assembly.

h. FM approved quick response semi-recessed sprinkler heads will be required throughout the entire facility. Installation shall comply with NFPA 13 and FM Global requirements.
i. Flexible sprinkler hose fittings shall be allowed at the sprinkler heads.
j. Sprinkler Service and Head Types in each Area shall be as follows:
    1) Core / Finished Areas: Wet sprinkler; fully concealed sprinkler heads.
    2) Shell Areas: Wet sprinkler; Upright heads with protective cages.
    3) Mechanical rooms: Wet sprinkler; Upright heads with protective cages.
    4) Electrical/Telecommunication rooms: Wet sprinkler; Upright heads with protective cages. Provide the wet pipe system with a tamperproof ball valve (with zone addressable module) and drain leg.
    5) Exterior Canopies: Provided with Dry Pipe system.
k. To supplement the fire suppression system, one fire department connection will be provided.
l. Design drawings and specification shall be submitted to the State Fire Marshall and FM Global for their review and approval. All comments shall be incorporated into the project scope.
m. All fire protection equipment shall be labeled with tags and with owner approved identification numbers.

PART 3 - DIVISION 22 SYSTEMS

A. PLUMBING FIXTURES

1. System Description
    a. Plumbing fixtures will be provided at locations indicated with functions as required.
    b. Fixtures shall be new and of the best quality available by manufacturers as approved by the owner.
    c. All fixtures shall be ADA approved where indicated or required.
    d. All plumbing fixtures are required to be lead free.

2. System Requirements
    a. All water closets will be floor mounted, rear discharge type.
    b. Flush valve in public and staff restrooms will be the 1.28 gallons per flush (gpf) type with battery activated electronic sensors.
    c. Patient room flush valves will be the 1.6/1.1 gpf dual flush activated handle and a pull-down bedpan washer.
    d. Lavatories are either integral to the countertops or wall hung.
    e. Electronic sensors will be installed at hand washing lavatories in patient rooms, staff toilets and in public toilets. Patient toilet lavatories shall incorporate faucets with wrist blades.
    f. All faucets will include laminar flow outlets with a 1.0 gpm flow restrictor.
    g. Sinks in work areas will be drop-in stainless steel. Faucets in these work areas will incorporate manual wrist blades with a 1.0 gpm flow restrictor and a laminar flow outlet. Sinks in break rooms, soiled and clean utility and Central Sterile will incorporate manual wrist blades with 2.2 gpm flow rate

h. Specialty fixtures such as clinical sinks and mop sinks will be installed where required. These fixtures will not have flow restrictors but will include a laminar flow outlet and a threaded hose end.
i. Showers will include a pressure balancing valve with a removable hose with a shower head. Flow restrictor set at 2.0 gpm to meet ADA requirements.
j. Electric Water Coolers with recessed chiller units shall be the dual bi-level type to meet ADA requirements.
k. Floor drains will be installed in patient toilet rooms and any multiple user public restrooms.

B. SANITARY SEWER AND VENT SYSTEM

1. System Description
   a. Sanitary sewer and vent systems will be installed at locations required to provide drainage for plumbing fixtures.
   b. The sanitary sewer piping will be collected throughout the building and shall exit at several locations of the building. From these points the lines will be extended as indicated to manhole locations.
   c. Grease waste lines will be installed as required by code to service the food service area. All greasy waste shall be routed to a grease interceptor before being routed to the sanitary waste system. A solids interceptor will be provided as required before the grease interceptor. These interceptors will be installed underground on the south side of the project site.
   d. Floor Drains will be provided to collect drainage from pieces of equipment and areas anticipated to have wet floors. For equipment with large discharges floor sinks will be provided. Each of these drains will require an automatic trap primer.
   e. One and a half floors (levels nine and ten) are planned to be "shelled out". The sanitary waste and vent piping will be stubbed up to above the tenth floor level to avoid disruption on the ninth floor below when these floors are finished out. The layout for this piping will be based upon the eighth floor plan unless directed otherwise by the owner.
   f. Sump pumps will be installed in a sump pit at the bottom of the grouped elevator shafts as required by code. Pumps will be sized at 50 gpm per elevator cab and discharge to the sanitary sewer. On sumps serving hydraulic elevators, the discharge from the elevator sump pumps will be required to pass through an oil separator before being discharged to the sanitary sewer system.

2. System Requirements
   a. Below ground waste and vent piping shall be constructed of standard weight bell-and-spigot or PVC piping and sanitary fittings.
   b. Above ground waste and vent systems under 3 inch diameter shall be of Type L, ASTM B88 copper with wrought sanitary fittings.
   c. Above ground waste and vent systems 3 inch diameter and above shall be of service weight cast iron no-hub or bell-and-spigot piping and sanitary fittings.
   d. Horizontal lengths of branch sanitary runs shall not exceed 80 feet to a building vertical stack.

e. Cleanouts shall be installed a maximum of 60 linear feet apart. Cleanouts shall be installed on the next floor up, either in a wall or floor configuration. Cleanouts shall not be installed in finished public spaces and should be limited to such rooms as soiled utility, housekeeping, etc.
f. Sanitary tees, crosses or double combinations are not allowed.
g. Plumbing vents through roofs shall not be installed within 25 feet of any air intake, door or other opening into the building.
h. Insulate and heat trace waste piping carrying air conditioning condensate or other cold waste to prevent piping from sweating.
i. Do not route piping over electrical, telecomm, elevator equipment, elevator shafts or major medical equipment spaces.
j. Risers extending more than two floors shall be installed in chases.
k. Install such that access for service is not blocked to other systems or equipment.
l. Install labels on all insulated piping.
m. Install tags on all system valves larger than 3/4 inch and all equipment. Tags shall be numbered as per owner direction and included in a schedule.
n. All equipment shall be labeled with tags and with owner approved identification numbers.
o. Dielectric couplings are required at the joining of all dissimilar metals.
p. Pressure test all piping systems.

C. STORM DRAINAGE

1. System Description
   a. Roof storm water drainage will be collected from each level of the roof at primary roof drains and directed through vertical shafts to below the first floor level. The storm drainage will exit the building and terminate at 5'-0" beyond the finished exterior walls. The Civil drawings will extend the piping from this point.
   b. At each primary roof drain there is also an emergency overflow drain with an internal dam. This drain would be utilized if the main piping cannot handle the rainfall and if, for some reason, the main piping is stopped up and will not flow. As each of the overflow drains is collected into common piping each of these pipes will be routed to an exterior wall at grade level and discharged through visible downspout nozzle fittings on the building exterior.
   c. A sub-soil underfloor and perimeter drainage system will be provided. The lowest level of the facility will be below the elevation of the storm sewer mains, therefore, the underfloor and foundation drainage system will be provided with a sump pit and sump pump system discharging into the storm water system.
   d. All areaways will be provided with drainage routed to the storm sewer system.
2. System Requirements
   a. Below ground storm drainage piping shall be constructed of standard weight bell-and-spigot or PVC piping and sanitary fittings. For bell-and-spigot piping, tie all joints 4 inch diameter and above.

b. Above ground storm drainage piping under 3 inch diameter shall be of Type L, ASTM B88 copper with wrought sanitary fittings.
c. Above ground storm drainage piping 3 inch diameter and above shall be of service weight cast iron no-hub or bell-and-spigot piping and sanitary fittings. Tie all joints 4 inch diameter and above.
d. Primary roof drains shall be of the dome type. Emergency drains shall have an internal dam or set at an elevation 2 inches higher than the primary drain.
e. Horizontal runs shall not exceed 80 feet to limit vertical slope causing conflict with other systems and ceiling heights.
f. Cleanouts shall be installed at the first bend below the roof, at the base of all risers, and at all changes in direction.
g. Insulate all interior storm water piping systems.
h. Do not route piping over electrical, telecomm, elevator equipment, elevator shafts or major medical equipment spaces.
i. Risers extending more than two floors shall be installed in chases.
j. Install such that access for service is not blocked to other systems or equipment.
k. Install labels on all insulated piping.
l. Install tags on all system valves larger than 3/4 inch and all equipment. Tags shall be number as per owner direction and included in a schedule.
m. Install identification tags on all equipment. Identification number shall be provided by the owner.
n. Dielectric couplings are required at the joining of all dissimilar metals.
o. Pressure test all piping systems.
p. Sump pumps shall consist of
    1) Minimum 36 inch diameter precast or poured concrete sewage basin with airtight cover.
    2) Duplex heavy duty submersible pumps
    3) Pump alternator controller to provide automatic pump cycling and operation of both pumps if demand so deems.
    4) Minimum of two level alarms, tied into the facility management system.
    5) Overhead lifting equipment for removing pumps.

D. DOMESTIC COLD WATER SYSTEM

1. System Description
    a. Domestic cold water service will be provided from the utility system. Two service mains from the utility tunnel will be provided
    b. It is anticipated that the new service will be sized for 8” and will enter the new facility at the 00 level.
    c. The service entrance will include a reduced pressure type backflow prevention device, a packaged domestic booster pump system and pressure reducing stations (as required).
    d. The facility will have two separate pressure systems for domestic water. The low pressure system will provide service to levels 00 up through level 04. The high pressure system will serve level 05 up through the level 10.
    e. A duplex, skid-mounted, packaged booster pump system with factory controller and bladder tank capable of providing 600 GPM shall be provided in the water service room in the Central Plant.

2. System Requirements
   a. Above ground domestic cold water systems under 4 inch diameter shall be of Type L, ASTM B88 copper with soldered joints. Joints and fitting on piping 2-inches and under shall be allowed to be crimped/pressed (Pro-Press) style fittings.
   b. Above ground domestic cold systems 4 inch diameter and above shall be of Type L, ASTM B88 copper or when approved ASTM A377 ductile iron. Copper joints shall be sill-brazed.
   c. All piping systems 2 inch and larger shall have flanged fittings on all valves, strainers and equipment required for maintenance.
   d. Route domestic cold water mains above ceilings in corridors.
   e. Piping dead ends shall be limited to less than 1 foot.
   f. Branch piping shall be a minimum of ¾ inch diameter.
   g. Isolation valves shall be provided at all riser connections, major branch lines and elsewhere as required for maintenance and minimal system shutdown.
   h. Ball valves with sweat connections shall be used on all lines 3 inch diameter and less. Valves over 3 inch shall be flanged ball valves. Where space limitations exist, a lug style butterfly valve may be installed for valves over 3 inch. All valves shall be chemical resistant.
   i. Insulate all domestic cold water piping systems.
   j. Water Hammer control shall be by use of arrestors certified by PDI. Arrestors shall be installed in the upright position.
   k. Do not route piping over electrical, telecomm, elevator equipment, elevator shafts or major medical equipment spaces.
   l. Risers extending more than two floors shall be installed in chases.
   m. Install such that access for service is not blocked to other systems or equipment.
   n. Install labels on all insulated piping.
   o. Install tags on all system valves larger than 3/4 inch and all equipment. Tags shall be number as per owner direction and included in a schedule.
   p. Install identification tags on all equipment. Identification number shall be provided by the owner.
   q. Dielectric couplings are required at the joining of all dissimilar metals.
   r. Pressure test all piping systems.
   s. Coordinate all pre-startup chlorination with the owner.
   t. Pressure Reducing Valve Assemblies shall have the following:
      1) Shall be by Watts 110 (epoxy coated with stainless steel and Viton Upgrades) unless approved otherwise
      2) No flow/low flow regulators are required for sizes over 3 inch.
      3) Shall be chemical resistant
      4) Shall be installed in locations that will enable full access for maintenance
      5) Provide with a line size (up to 2 inch maximum) valved bypass with pressure gauge.
      6) Provide two ½ inch ports downstream of each PRV for remote sensing of pressure and temperature.
      7) For PRV without integral unions, install flanges on both ends.
      8) For PRV with integral union on one end, install flange on other end.

u. Backflow Preventer Assemblies shall include the following:
   1) Shall be by Watts unless approved otherwise
   2) Shall be reduced pressure type
   3) Shall be provided with integral gate valves
   4) Installed in locations that provide full access on both sides and bottom.
   5) Shall be tested and certified prior to use.

v. Booster Pumps shall be provided with the following:
   1) Skid mounted design with triplex pumps (one pump sized as standby)
   2) Variable frequency driven close coupled pumps
   3) Stainless steel piping header with isolation valves
   4) Control panel for alternating pump run time, start/stop, etc
   5) ASME NSF-61 approved bladder tank

E. DOMESTIC HOT WATER SYSTEM

1. System Description

a. Domestic hot water will be produced by dual fuel natural gas/diesel, condensing type hot water boilers located in the Central Plant. The boilers will include dual fuel (fuel oil). The fuel oil tank will be upsized to allow 72 hours of continuous service.

b. Two boiler modules will be provided with one being back-up.

c. The facility will have two separate pressure systems for domestic hot water. The low pressure system will provide service to levels 00 up through level 04. The high pressure system will serve level 05 up through level 10.

d. The each pressure system will have dedicated water heaters producing 140 deg F water and will be provided with mixing valves to mix to desired temperature to circulate. The low pressure system will consist of two temperature loops, one at 140 deg F and the other at 120 deg F. The high pressure system will have one temperature loop at 120 deg F.

e. Each loop will have a dedicated duplex circulating pump station for hot water re-circulation. The second pump is a standby pump.

f. Each temperature loop re-circulation system will be provided with manual balance valves and will return water to the mixing valve/water heater assemblies.

2. System Requirements

a. Above ground domestic hot water systems under 4 inch diameter shall be of Type L, ASTM B88 copper with soldered joints. Joints and fitting on piping 2-inches and under shall be allowed to be crimped/pressed (Pro-Press) style fittings.

b. Above ground domestic hot water systems 4 inch diameter and above shall be of Type L, ASTM B88 copper or when approved ASTM A377 ductile iron. Copper joints shall be sill-brazed.

c. All piping systems 2 inch and larger shall have flanged fittings on all valves, strainers and equipment required for maintenance.

d. Route domestic hot water supply and re-circulation mains above ceilings in corridors, paralleling the cold water mains. Re-circulation mains shall be arranged in a reverse return configuration.

e. Re-circulating lines shall be installed such that plumbing fixtures are no more than 10 feet from a circulating branch line. For sensor operated fixtures, the circulating line shall be no more than 6 inches from the supply stop for the fixture.
f. Piping dead ends shall be limited to less than 1 foot.
g. Branch piping shall be a minimum of ¾ inch diameter.
h. Isolation valves shall be provided at all riser connections, major branch lines and elsewhere as required for maintenance and minimal system shutdown.
i. Ball valves with sweat connections shall be used on all lines 3 inch diameter and less. Valves over 3 inch shall be flanged ball valves. Where space limitations exist, a lug style butterfly valve may be installed for valves over 3 inch. All valves shall be chemical resistant.
j. Insulate all domestic hot water piping systems.
k. Water Hammer control shall be by use of arrestors certified by PDI. Arrestors shall be installed in the upright position.
l. Do not route piping over electrical, telecomm, elevator equipment, elevator shafts or major medical equipment spaces.
m. Risers extending more than two floors shall be installed in chases.
n. Install such that access for service is not blocked to other systems or equipment.
o. Install labels on all insulated piping.
p. Install tags on all system valves larger than 3/4 inch and all equipment. Tags shall be number as per owner direction and included in a schedule.
q. Install identification tags on all equipment. Identification number shall be provided by the owner.
r. Dielectric couplings are required at the joining of all dissimilar metals.
s. Pressure test all piping systems.
t. Coordinate all pre-startup chlorination with the owner.
u. Manual balance valves shall have flow measurement capabilities.
v. Water heaters shall be steam fired instantaneous type heaters. Control valves shall be pneumatic.
w. Backflow preventers and pressure reducing valves shall be as required by the domestic cold water requirements.

F. PURE WATER SYSTEMS

1. System Description
   a. Provide pure water systems as required by program. These systems could include distilled, deionized, reverse osmosis or filtered.

2. System Requirements
   a. Purified water systems shall be by Liquitech unless authorized otherwise by the owner.

G. MEDICAL GAS SYSTEMS

1. System Description

a. A bulk oxygen system will be provided and installed by a local supplier. A main line will enter into the building with the required valves and alarms. An emergency oxygen fill station will be installed on the exterior of the building.
b. Nitrogen, nitrous oxide, and carbon dioxide cylinder gas bottles with a manifold for each will be located in a separate room by the CEP. Each manifold will monitor the gases and switch from one bank to the other when the cylinders are near empty. The number of cylinders on each bank will be based on a two week delivery period.
c. Medical compressed air shall be provided by a new medical air compressor located in the medical gas equipment space within the CEP.
d. Medical vacuum shall be provided by a new medical vacuum pump located in the medical gas equipment spaces in the CEP.
e. Medical gas systems shall comply with NFPA 99.

2. System Requirements
a. Medical gas systems shall be Level 1 systems.
b. All system components, except for medical vacuum pumps and medical air compressors are to be by Beacon Medaes.
c. Complete system as-built drawings are required.
d. All bulk gas main lines will enter into the new building via the utility tunnel system and will be provided with the required valves and alarms.
e. Medical Air Compressors: An oil-less, air cooled single-point connection medical air compressor system complete with duplex dessicant dryers will be provided. As required by NFPA-99 the system will be sized with one of the compressors on standby. The system will be designed to be expandable to include four pumps when the shelled spaces are finished out. Outside air intake shall be from the roof.
f. Medical Vacuum Systems: A oil-less “claw type”, single-point connection medical vacuum pump system will be provided. Units shall be air cooled. As required by NFPA-99 the system will be sized with one of the pumps on standby. The system will be designed to be expandable to include four pumps when the shelled spaces are finished out.
g. Oxygen, nitrogen, nitrous oxide and carbon dioxide cylinder gas bottles with a two side automatic changeover manifold for each will be located in a separate room near the Central Plant. Each manifold will monitor the gases and switch from one bank to the other when the cylinders are near empty. These manifold systems are intended to back up the bulk system in the event of heavy demand and shall be sized for 24 hours of continuous use.
h. Piping from each of these systems will be routed throughout the hospital to their respective locations. Piping shall be either Type K or Type L, ASTM B819 copper. Minimum pipe size shall be ½ inch. Maximum length of ½ inch piping sections shall be 30 feet. Piping shall be sized to allow for future additional loads.
i. An isolation valve for each horizontal take-off from a riser shall be provided in accessible locations.
j. All take-offs from mains and branch lines shall be from the top of the piping.

k. Label all medical gas piping every 20 feet and at least in one location within each room and on either side of walls. Piping shall be labeled in colors and sizes as required by the owner.

l. As required by NFPA-99, Zone Valve Boxes will be located to isolate a room or group of rooms. In addition locked valves will be located at main intersections to minimize a shutdown in case of failure of the piping system or due to renovation of the system in the future.

m. The minimum number of outlets will be as defined in the Texas Hospital Licensing State Regulations. The owner may require additional outlets beyond the code based on clinical needs. Quick disconnect will be installed in specific locations. Outlet types and styles will be coordinated with the owner. Additional outlets (approximately 5% of each type) will be required to allow for owner requested change out of outlets.

n. Where ceiling booms are required in the procedure rooms regulated nitrogen will be utilized to operate the boom brakes. In each location where nitrous oxide is being administered a waste anesthetic gas disposal (WAGD) will be required and will be connected to the medical vacuum lines.

o. Alarms: Two Master Alarms will be located in the building. One will be located in the Engineers Office area and one will be located in the Security Office. These alarms will monitor each of the medical gas supplies for any source of problems. In addition Area Alarms will be installed at the required locations downstream of each zone valve box and upstream of a group of anesthetizing locations such as procedure rooms.

p. Install identification tags on all equipment. Identification number shall be provided by the owner.

q. Certification of the medical gas system shall be by the owner.

H. NATURAL GAS

a. Natural gas shall be provided for the boilers.

PART 4 - DIVISION 23 SYSTEMS

A. HVAC DESIGN CRITERIA

1. Climatic Design Conditions

a. Summer:

1) Dry-Bulb Temperature = 105°F

2) Wet-Bulb Temperature = 75.0°F

a) (Based on 0.4% wet-bulb temperature and mean coincident dry-bulb as published by 2009 ASHRAE)

b. Winter:

1) Dry-Bulb Temperature = 15°F

a) (Based on 99.6% dry-bulb temperature as published by 2009 ASHRAE)

c. Building Envelope (Climate Zone 3A per ASHRAE 90.1-2007): Minimum values are as follows:

1) Wall

a) Mass: U Value: 0.123 Btu/hr/ft2/°F, continuous.

b) Steel: U Value: 0.084 Btu/hr/ft2/°F, continuous.

2) Roof
   a) Maximum U Value: 0.048 Btu/hr/ft2/°F
   b) Minimum Insulation R Value: 20.0 continuous
3) Floors
   a) Maximum "U" Value: 0.074 Btu/hr/ft2/°F
   b) Minimum Insulation "R" Value: 10.4
4) Glass
   a) Fixed Fenestration U Value: 0.65 Btu/hr/ft2/°F SHGC: 0.25
   b) Solar Heat Gain Coefficient: 0.25

2. Noise Criteria
   a. Target NC levels will be based on ASHRAE recommendations. Equipment selections, duct design, and sound attenuation equipment will be provided based on standard design practice.

3. Occupancy
   a. The occupancy heat rejection will be based on 2009 ASHRAE Handbook of Fundamentals, Chapter 29 for moderately active office work or:
      1) Sensible = 250 Btuh/person
      2) Latent = 200 Btuh/person
   b. The number of occupants in each space will be based on the actual occupant density listed in the facility program.
   c. Occupancy Schedule - The mechanical systems will be designed to operate 24 hours per day, 365 days per year

4. Indoor Design Conditions
   a. Refer to APPENDIX

B. CHILLED WATER/CONDENSER WATER SYSTEM

1. System Description
   a. Chilled water will be produced by water cooled centrifugal chillers and a heat pump chiller located in the Central Plant. Four variable speed chillers will each be sized at 1,000 tons each and one heat recovery chiller sized at 400 tons (estimated peak load of 2,990 tons) to provide redundancy in event of a chiller failure
   b. Chilled water design supply/return temperatures will be 42°F/58°F (16°F delta T).
   c. The chilled water system will utilize variable primary pump control. Five (5) 1750 GPM pumps will be provided for n+1 redundancy and a sixth pump will serve the heat pump chiller.
   d. Four variable speed cooling tower cells matched to the overall cooling capacity with be located on the roof of the Central Plant. The towers shall be screened. Cooling tower location and selection will be carefully coordinated to ensure proper airflow at the towers.
   e. The condenser water system supply/return temperatures will be 85°F/95°F (10°F delta T).
   f. The condenser water pumping system will be variable speed. Five (5) 2400 GPM pumps will be provided for n+1 redundancy.
   g. A grit separator will be provided sized to accommodate a total of four cooling towers.

h. Chilled water and condenser water chemical treatment to be provided.

2. System Requirements
   a. Chilled water piping shall be as follows:
      1) Piping larger than 2 inches shall be Schedule 40 ASTM A53 seamless black steel with welded or mechanically coupled joints or Type L ASTM B88 copper with wrought fittings. Piping 2 inches and smaller shall be Schedule 40 ASTM A53 seamless black steel with screwed or welded joints, or Type L ASTM B88 copper with wrought fittings.
      2) Minimum pipe size shall be ¾".
      3) Piping pressure ratings shall be as shown on the drawings.
   b. Condenser water piping shall be as follows:
      1) Piping larger than 2 inches shall be Schedule 40 ASTM A53 seamless black steel with welded or mechanically coupled joints or Type L ASTM B88 copper with wrought fittings.
   c. Chilled water and condenser water piping insulation shall be fiberglass with vapor barrier and piping identification markers and flow direction arrows. Labels shall be color coded per facility standards. All piping installed in equipment rooms shall be insulated and covered with PVC jacket colored per facility standards. Provide aluminum jackets on any piping outdoors or where deemed for protection of insulation.
   d. Chilled water and condenser water pumps shall be installed on housekeeping pads. Provide a means to manually balance each pump (triple duty valves shall not be used). Pressure taps shall be provided directly at the suction and discharge of each pump for accurate pressure measurement. Parallel pumps shall be selected with equal head pressures and flow rates.
   e. All equipment shall be provided with equipment identification tags/labels. Equipment numbering shall be approved by the facility.
   f. Piping shall never be installed over electrical, telecomm, data or systems rooms.
   g. Piping shall be installed to allow access to equipment and valves.
   h. Isolation valves shall be installed at all connections at risers, branch lines off of mains, at equipment connections and elsewhere as required to enable system/equipment isolation and minimize system downtime or disruption. All valves shall be tagged and included on a valve schedule turned over at the completion of the project. Valve numbering shall comply with facility numbering sequence.
   i. Balance valves shall be provided with multiple stops. Ball valves are not to be used for balancing. Strainers above 2 inches shall be provided with ball flush valve assembly. Relief valves shall be piped to floor drains.
   j. All piping shall be pressure tested.
   k. Risers extending for three or more floors shall be installed in fire rated chases.
   l. Drain valves shall be provided at the base of all risers.
   m. Dielectric connections shall be provided where dissimilar metals are in contact.
   n. Air vents shall be provided at the top of all risers and at all piping system high points.

o. Chilled water coil control valves shall be pressure independent type, with 100 to 1 range and electronic actuator. Valves shall be Delta P by Flow Control Industries unless approved otherwise by the facility.

p. Chilled and condenser water systems shall be completely tested, balanced and adjusted. Reports shall be provided at project closeout.

C. STEAM SYSTEM

1. General Description

a. Steam shall be provided by (2) 450 BoHP dual fuel gas fired steam boilers.

b. A pressurized deaerator shall be provided to match the size of the steam boilers.

c. The Central Steam system will distribute through the building to serve humidification and sterile processing equipment.

d. Design discharge will be at 75 psig and shall serve the facility central sterile needs. Steam pressure will be reduced to 15 psi via dual inline pressure reducing valves for service to direct steam terminal humidifier grids for air handling units

e. Steam piping will be sized to maintain velocities between 6,000 and 10,000 fpm.

f. Steam piping for the steam pressure equal to or less than 15 psi will be sized for maximum pressure drop of ¾ psi/100 ft of pipe and a maximum velocity of 6,000 fpm.

g. Steam safety valves will be sized based on the capacity of the largest valve of the PRV stations and not the total capacity of all PRV's. Safety valve vent pipes will be piped through the wall for horizontal discharge.

h. A condensate receiver with dual pumps shall be provided to pump the condensate return back to the dearator.

i. Projected steam maximum demand is approximately 15,000 lbs per hour of steam.

2. System Requirements

a. Steam and condensate system piping shall be as follows:

1) Piping with pressures below 75 psig and larger than 2 inches shall be Schedule 40 ASTM A53 seamless black steel with welded joints or Type L ASTM B88 copper with wrought fittings. Piping with pressures below 75 psig and 2 inches and smaller shall be Schedule 40 ASTM A53 seamless black steel with screwed or welded joints, or Type L ASTM B88 copper with wrought fittings.

2) Piping with pressures above 75 psig and larger than 2 inches shall be Schedule 80 ASTM A106 GrB seamless black steel with threaded forged steel 2000 psig fittings. Piping with pressures above 75 psig and 2 inches and smaller shall be Schedule 40 ASTM A106 GrB seamless black steel with standard butt welded fittings.

3) Minimum pipe size shall be ¾".

4) Piping pressure ratings shall be as shown on the drawings.

b. Steam and condensate piping insulation shall be fiberglass with all service jacket and piping identification markers and flow direction arrows. Labels shall be color coded per facility standards. All piping installed in equipment

rooms shall be insulated and covered with PVC jacket colored per facility standards. Provide aluminum jackets on any piping outdoors or where deemed for protection of insulation.

c. Condensate receivers and pumps shall be installed on housekeeping pads. Provide a means to manually balance each pump (triple duty valves shall not be used). Pressure taps shall be provided directly at the suction and discharge of each pump for accurate pressure measurement. All condensate receiver/pump sets shall be duplex type arrangements.

d. Valves shall be 300 psig class. Valves above 2 inch shall be butt welded (flanged are not acceptable). Valves 2 inch and smaller shall be screwed bronze.

e. All steam and condensate equipment shall be provided with equipment identification tags/labels. Equipment numbering shall be approved by the facility.

f. Piping shall never be installed over electrical, telecomm, data or systems rooms.

g. Piping shall be installed to allow access to equipment and valves.

h. Isolation valves shall be installed at all connections at risers, branch lines off of mains, at equipment connections and elsewhere as required to enable system/equipment isolation and minimize system downtime or disruption. All valves shall be tagged and included on a valve schedule turned over at the completion of the project. Valve numbering shall comply with the facilities numbering sequence.

i. All piping shall be pressure tested.

j. Risers extending for three or more floors shall be installed in fire rated chases.

k. Drain valves shall be provided at the base of all risers and at all isolation valves.

l. Air vents shall be provided at all condensate piping system high points.

m. Steam and condensate systems shall be completely tested, balanced and adjusted. Reports shall be provided at project closeout.

D. HEATING WATER SYSTEM

1. System Description

a. Heating water will be produced by dual fuel natural gas/diesel, condensing type hot water boilers located in the Central Plant. The boilers will include dual fuel (fuel oil). The fuel oil tank will be upsized to allow 72 hours of continuous service.

b. Two boiler modules will be provided with one being back-up.

c. Heating hot water design supply/return temperatures will be 180°F/140°F (40°F delta T). The heating water pumping system will be variable flow. Three pumps will be provided, with one pump being back-up.

d. The heat recovery chiller will reject its heat to the heating water system and the cooling tower when necessary.

e. Heating water system capacity is estimated to be approximately 22,500 MBTUH

2. System Requirements

a. Heating hot water piping shall be as follows:

1) Piping larger than 2 inches shall be Schedule 40 ASTM A53 seamless black steel with welded joints or Type L ASTM B88 copper with wrought fittings. Piping 2 inches and smaller shall be Schedule 40 ASTM A53 seamless black steel with screwed, welded, or Type L ASTM B88 copper with wrought fittings or crimped/pressed (Pro Press) joints.
2) Minimum pipe size shall be ¾".
3) Piping pressure ratings shall be as shown on the drawings.

b. Heating hot water piping insulation shall be fiberglass with all service jacket and piping identification markers and flow direction arrows. Labels shall be color coded per facility standards. All piping installed in equipment rooms shall be insulated and covered with PVC jacket colored per facility standards. Provide aluminum jackets on any piping outdoors or where deemed for protection of insulation.

c. Heating hot water pumps shall be installed on housekeeping pads. Provide a means to manually balance each pump (triple duty valves shall not be used). Pressure taps shall be provided directly at the suction and discharge of each pump for accurate pressure measurement. Parallel pumps shall be selected with equal head pressures and flow rates.

d. All heating hot water equipment shall be provided with equipment identification tags/labels. Equipment numbering shall be approved by the facility.

e. Horizontal heating hot water mains shall be routed down corridors as much as practical. Mains not located in corridors shall be reviewed and approved by the facility.

f. Piping shall never be installed over electrical, telecomm, data or systems rooms.

g. Piping shall be installed to allow access to equipment and valves.

h. Isolation valves shall be installed at all connections at risers, branch lines off of mains, at equipment connections and elsewhere as required to enable system/equipment isolation and minimize system downtime or disruption. All valves shall be tagged and included on a valve schedule turned over at the completion of the project. Valve numbering shall comply with facility numbering sequence.

i. Balance valves shall be provided with multiple stops. Ball valves are not to be used for balancing. Strainers above 2 inches shall be provided with ball flush valve assembly. Relief valves shall be piped to floor drains.

j. All piping shall be pressure tested.

k. Risers extending for three or more floors shall be installed in fire rated chases.

l. Drain valves shall be provided at the base of all risers.

m. Dielectric connections shall be provided where dissimilar metals are in contact.

n. Air vents shall be provided at the top of all risers and at all piping system high points.

o. Heating hot water systems shall be completely tested, balanced and adjusted. Reports shall be provided at project closeout.

p. Provide manual shot type chemical feeder to provide additional chemical treatment as required

E. AIR HANDLING SYSTEMS

1. System Description
   a. Air handling units will be provided in the interstitial floor on level 04 between levels 03 and 05.
   b. Projected total air handling unit capacity to be 800,000 CFM. Total quantity of air handling units will be dependent on finalized programming and smoke compartmentalization.
   c. Air handling units will be custom fabricated, single duct, variable air volume design, providing filtering, heating, humidification, cooling to the spaces as required. Systems will operate continuously, year-round.
   d. Air handling units shall consist of the following components:
      1) Return air plenum
      2) Return fan/Relief air section
      3) Return/Outside air mixing section
      4) Blending section
      5) Prefilter section (MERV 11)
      6) Hydronic preheat coil section
      7) Humidifier section
      8) Cooling coil section
      9) Supply fan section with sound attenuation
      10) Final filter section (MERV 14)
      11) Supply discharge section
   e. Supply air volume will be controlled by modulating the supply VFD in response to a duct static pressure sensor located near the end of the system. Return air volume will be measured and will track the supply air volume by a set offset.
   f. All fans in the fan array shall be controlled by a redundant VFD package. Automatic changeover to the "back up" VFD shall be provided.
   g. Discharge air temperature control will be through preheat and cooling coil control in sequence. Discharge air temperature will be reset based on return air relative humidity.
   h. Humidification control will maintain a minimum supply air relative humidity, reset based on average return air relative humidity measured in return air stream.

2. System Requirements
   a. Air handling unit coils
      1) Cooling coils will be sized at an entering water temperature of 42°F with an 16°F temperature rise.
      2) Steam preheat coils will be sized utilizing 10 psig steam to produce an 80°F temperature rise with an design inlet air temperature of 10°F. Steam coils shall be provided with integral face and bypass dampers.
      3) Heating coils will be sized at a supply water temperature of 180°F with a 30°F temperature fall for 140°F return water temperature.
      4) Hydronic coils shall utilize a modulating 2-way control valve at each coil.

5) Air velocities through all cooling coils shall be limited to 450 FPM. Designs with velocities above this level shall be required to have mist eliminators.

b. Drain pans
   1) Drain pans shall be constructed of stainless steel and shall be positively sloped to the drain.
   2) Drain pans shall be provided for the heat recovery, preheat, humidifier and cooling coil sections
   3) Drain pans shall be installed/housekeeping pad heights shall be specified so that the drain piping trap will not need to extend below the mechanical room floor slab.

c. Air Blending
   1) Arrange for head on mixing of the outside air and return air.
   2) Provide air blending section.

d. Fans
   1) Custom air handling units will employ fan array technology. Each fan array shall be capable of losing one fan and still deliver scheduled air quantities at required static pressure. Units shall utilize a minimum of two VFDs.
   2) Provide isolation/backdraft dampers to prevent recirculation in the event of fan failure or maintainence.
   3) Air handling units shall be of the draw thru design.

e. Filtration
   1) All ratings are based on ASHRAE Standard 52.2-2007.
   2) Prefilters: Shall be located downstream of the mixed air section of the air handling unit. Prefilters shall be a minimum of MERV 14.
   3) Final filters: Shall be located downstream of the supply fan section. Final filters shall be a minimum of MERV 14 for all units.
   4) All filter racks shall be gasketed.

f. Humidification
   1) Direct steam injection type distribution shall be used with drain cooler for condensate tempering.
   2) Steam will be generated from a steam to steam type generator using 10 psig facility steam.
   3) Humidifiers shall be provided in each air handling unit to maintain a minimum of 30% space relative humidity.
   4) Humidifier shall control off return air humidistat.
   5) High limit humidistat shall be used in the supply duct.

g. AHU Casing
   1) Units shall be double wall construction. Inner liner shall be constructed of galvanized steel except for type 304 stainless steel shall be provided in all units in wet sections (humidifier, cooling coil).
   2) Interior units will have an insulation value of R-12.
   3) Access doors shall be provided for each section and for direct access to change filters (both sides of casing).

F. SUPPLY AIR SYSTEMS

1. General

a. This system shall deliver supply air from the air handling units via medium pressure primary air duct with terminal boxes to control air quantities/temperature delivered to each zone. Low pressure duct shall distribute air downstream of the terminal box to the diffuser(s). Provide manual balance dampers at low pressure system mains, branches, and taps to balance flow. Additionally provide manual balance dampers at each diffuser for minor adjustments.
b. Ductwork will be constructed in accordance with SMACNA Standards for appropriate pressure class as shown on the drawings.
c. Ductwork will be sealed to meet SMACNA Seal Class A as a minimum and to limit ductwork leakage not exceeding 1% of the design flow rate for high pressure ductwork and 2% of design flow rate for low pressure ductwork.
d. Supply air ductwork will be externally insulated with flexible duct wrap except for supply air ducts in mechanical rooms and risers enclosed in chases, which shall have rigid duct board insulation. All insulation shall meet ASHRAE 90.1 requirements. Interior duct liner shall not be used on supply air systems.
e. Terminal boxes shall be of the variable air volume type, even if the specific unit is designed for constant volume service. The controls for each terminal box shall be of DDC type for pressure independent control. Controls shall have electronic actuators for damper and heating coil control. Controls shall include space temperature, space temperature set point, air volume, discharge air temperature, heating coil control valve position and damper position. Heating coils shall be a minimum of two row design.
f. Flexible duct will be allowed for a maximum length of 5 feet to diffusers.
g. Duct systems shall be supported directly from the structure. Support system shall be designed for 4-times the calculated weight of the duct system.
h. Duct system shall be continuously sealed during construction and checked for cleanliness prior to first operation of the air handling system and before acceptance by the owner. Ducts shall be wiped down with alcohol just prior to installation.
i. Duct Distribution Criteria
    1) Medium pressure maximum design velocity is 2000 fpm or .2“ / 100 ft.
    2) Low pressure maximum design velocity is 1200 fpm or .08“ / 100 ft.
    3) Note that this criterion is a maximum and the duct system will be engineered and sized to optimize cost, ceiling space, fan horsepower, and acoustics.

G. RETURN AIR SYSTEMS

1. General
    a. This system shall deliver return air from the space back to the air handling unit via a low pressure duct system. Provide manual balance dampers at mains, branches, and taps to balance flow. Additionally provide manual balance dampers at each register for minor adjustments.
    b. Ductwork will be constructed in accordance with SMACNA Standards for

c. Ductwork will be sealed to meet SMACNA Seal Class A as a minimum and to limit ductwork leakage not exceeding 2% of design flow rate for low pressure ductwork.
d. Return air ductwork will not be required to be insulated except for return air ducts in mechanical rooms and ducts exposed to roof loads. Return ductwork required to be insulated can be externally insulated with flexible duct wrap except for ducts in mechanical rooms, which shall have rigid duct board insulation. All insulation shall meet ASHRAE 90.1 requirements. Interior duct liner shall not be used on return air systems.
e. Duct systems shall be supported directly from the structure. Support system shall be designed for 4-times the calculated weight of the duct system.
f. Duct system shall be continuously sealed during construction and checked for cleanliness prior to first operation of the air handling system and before acceptance by the owner. Duct work is to be wiped down with alcohol just prior to installation.
g. Duct Distribution Criteria
    1) Low pressure maximum design velocity is 1200 fpm or .08“ / 100 ft.
    2) Note that this criterion is a maximum and the duct system will be engineered and sized to optimize cost, ceiling space, fan horsepower, and acoustics.

H. EXHAUST AIR SYSTEMS

1. General Exhaust System
    a. This system will deliver exhaust air from toilet rooms locker rooms, janitor's closets, soiled utility, etc. to the exhaust fan(s) on the roof via a low pressure duct system.
    b. All exhaust fans to have VFDs.
    c. Provide manual balance dampers at mains, branches, and taps to balance flow. Additionally provide manual balance dampers at each register for minor adjustments.
    d. Ductwork will be constructed in accordance with SMACNA Standards for appropriate pressure class.
    e. Ductwork will be sealed to meet SMACNA Seal Class A as a minimum and to limit ductwork leakage not exceeding 2% of design flow rate for low pressure.
    f. General exhaust ductwork is not required to be insulated, but will be lined up to 40 feet prior to exhaust fan intake for acoustical purposes.
    g. Duct systems shall be supported directly from the structure. Support system shall be designed for 4-times the calculated weight of the duct system.
    h. Duct Distribution Criteria
        1) Maximum design velocity is 1200 fpm or .08” / 100 ft.
        2) Branch ducts and exhaust grilles in wet areas such as locker rooms will be of aluminum.
        3) Note that this criterion is a maximum and the duct system will be engineered and sized to optimize cost, ceiling space, fan horsepower, and acoustics.
2. Isolation Exhaust System

a. This system will service Isolation Rooms on patient floors. Multiple isolation exhaust systems to be provided depending on compartmentalization of isolation rooms.
b. When fans serve more than one room and more than one floor, venture type air valve shall be provided to maintain constant volume flow rates to the room or floor branch.
c. All isolation exhaust fans to have VFDs.
d. Ductwork will be constructed in accordance with SMACNA Standards for appropriate pressure class.
e. Ductwork will be sealed to meet SMACNA Seal Class A as a minimum and to limit ductwork leakage not exceeding 2% of design flow rate for low pressure ductwork.
f. Exhaust registers for isolation rooms shall be at floor level.
g. Ductwork shall not be internally lined. Select fans so that no sound attenuation is required.
h. Duct systems shall be supported directly from the structure. Support system shall be designed for 4-times the calculated weight of the duct system.
i. Duct Distribution Criteria
    1) Design velocity is 1200 fpm or .08" / 100 ft.
    2) Note that this criterion is a maximum and the duct system will be engineered and sized to optimize cost, ceiling space, fan horsepower, and acoustics.

3. Kitchen Hood Exhaust System
a. A dedicated exhaust fan shall be provided for each kitchen and servery hoods.
b. All kitchen exhaust fans to have VFDs.
c. Grease exhaust duct shall be sloped at 1/8" per 1' in the direction of the hood.
d. All grease exhaust duct shall be wrapped with 2 hour duct insulation system from the hood to the roof penetration.
e. Ductwork will be constructed in accordance with SMACNA Standards for appropriate pressure class.
f. Ductwork will be sealed to meet SMACNA Seal Class A as a minimum and to limit ductwork leakage not exceeding 2% of design flow rate for low pressure ductwork.
g. Kitchen hood exhaust shall be of welded galvanized steel or stainless steel construction sized and designed per NFPA 96 requirements.
h. Ductwork shall not be internally lined. Select fans so that no sound attenuation is required.
i. Duct systems shall be supported directly from the structure. Support system shall be designed for 4-times the calculated weight of the duct system.
j. Duct Distribution Criteria
    1) Design velocity is 1500 fpm.

4. Central Sterile Exhaust Systems
a. All central sterile exhaust fans to have VFDs.
b. All washer exhaust duct shall be wrapped with 2 hour duct insulation system from the hood to the roof penetration.

c. Ductwork will be constructed in accordance with SMACNA Standards for appropriate pressure class.
d. Ductwork will be sealed to meet SMACNA Seal Class A as a minimum and to limit ductwork leakage not exceeding 2% of design flow rate for low pressure ductwork.
e. Kitchen hood exhaust shall be of welded galvanized steel or stainless steel construction sized and designed per NFPA 96 requirements.
f. Ductwork shall not be internally lined. Select fans so that no sound attenuation is required.
g. Duct systems shall be supported directly from the structure. Support system shall be designed for 4-times the calculated weight of the duct system.
h. Duct Distribution Criteria
    1) Design velocity is 1200 fpm or .08" / 100 ft.
    2) Note that this criterion is a maximum and the duct system will be engineered and sized to optimize cost, ceiling space, fan horsepower, and acoustics.

5. Special Systems
    a. Anesthetizing locations: All areas with anesthesia performed shall also have provisions for smoke ventilation per NFPA 99.
    b. Stair Pressurization: All stairwells shall have a stairwell pressurization system. This will include a single fan with VFD located at the top of the stair shaft. Ductwork will extend down thru the stairwell within the fire rated enclosure around the stair.
    c. USP 797 and 800 Pharmacy Rooms: All USP 797 and 800 rooms shall have HEPA filter grilles in the laminar diffusers. An inline fan shall be provided upstream of the filter grilles. The Chemo Prep room will have a dedicated exhaust fan and ductwork system.

I. FACILITY MANAGEMENT SYSTEM

1. System Description
    a. The Facility Management System (FMS) Control System Architecture will be used to monitor and control utility systems and HVAC systems through Direct Digital Control (DDC).
    b. The FMS system design will be modular and flexible. The major system components of the FMS include fully stand-alone, remote and application specific controllers and network controllers. Major equipment will be controlled by individual application specific controllers to ensure that failure of the network or any of the controllers do not cause catastrophic control system failure.
    c. The FMS remote and application specific controllers will be networked to share information, and control the management functions without sacrificing stand-alone capability.
    d. One Operator Workstation will be provided in the control room for interface with FMS at the Building Level Network. Operator Workstations will facilitate FMS programming and network maintenance. Operator Workstations will include screens and Input/Output points as necessary to

convey information to the operator. The screens displayed on the Operator Workstations will include building floor plans, P&ID representations of each system showing indicating devices, operating status of each device, controlled variables, alarms, alarm history, trend data and other dedicated screens. Operator input will be via keyboard or mouse.

e. Portable operator interface terminals may be connected to any of the controllers to operate the network locally. One portable operator workstations will be provided. Others will be provided at the Owner's request.

f. Alarm management will be provided to monitor, buffer, and direct alarm reports to the appropriate devices or memory files. Security levels will be as provided by using multiple level password access to allow user/management to limit workstation control, display and database manipulation capabilities as deemed appropriate for each operator, based upon assigned passwords. Operators will be able to perform only those levels of commands available for their respective passwords.

g. Valve and damper actuators will be electronic.

h. Electrical power for air terminal controls and other field devices requiring 24 VAC, will be provided from transformer panels centrally located adjacent to control panels. The FMS contractor will be responsible for running 24 VAC wiring to field mounted air terminal controllers and other devices from these transformer panels. Number of transformers and number of field devices to be connected to each 24 VAC branch circuit will be determined during future phase of the FMS control system design.

i. All FMS equipment including network controllers, unitary controllers, routers, gateways, operator workstation, etc. will be provided with backup power from local Uninterruptible Power Supplies (UPS) as needed to ensure vital control functions are not interrupted during loss of primary power.

j. 24 VAC wiring in ceiling plenums are allowed to be plenum rated cable. Such wiring shall be supported by J-Hooks or wire ways. In no case shall wiring lay on top of ducts, piping, ceiling tiles or other above ceiling devices. Wiring in equipment spaces and patient rooms shall be in conduit.

k. 120 VAC wiring shall all be installed in conduit.

2. Design Criteria

a. DDC controllers will utilize distributed architecture and will not rely on "front-end" or higher level controller to perform required control sequences.

b. Each DDC controller will have a minimum of 10% spare points of each type (DI, DO, AI and AO) at each panel. For universal points, the spares will be divided evenly between the analog and digital types of points.

c. Major equipment controllers (air handling units, exhaust fans, pumps, etc.) will be arranged such that multiple equipment in the same system are not served by the same controller.

d. All control panels and DDC controllers will be served by standby power.

e. All DDC system primary LAN controllers, PC's, communications equipment and local controllers that monitor and control life safety and critical points (bio-containment, fire alarm, elevator emergency, etc.) will be supported by emergency generators and UPS.

PART 5 - DIVISION 26 SYSTEMS

A. ELECTRICAL SYSTEM CAPACITIES

1. The total facility connected load on the distribution system is anticipated to be approximately 12.9 MVA.

2. The total facility emergency power connected load is anticipated to be approximately 4.9 MVA with a calculated demand of 3.1 MVA.

B. UTILIZATION VOLTAGES

1. The service utilization voltage will be 480 volt, 3 phase, 4 wire, at 60 hertz.

2. The majority of the lighting will be fluorescent and LED at 277 volts.

3. HVAC equipment will operate at 480 volts, 3 phase, 3 wire.

4. Dry-Type Step-down transformers will provide 208/120 volt single-phase and three-phase power for receptacles and medical equipment.

C. NORMAL POWER SERVICE

1. The normal power service will be provided from Oncor pad mounted medium voltage gear located at grade on the new tower site The nominal 15kv feeders will be routed from the Oncor equipment via a new concrete encased ductbank to the service disconnect located in the Medium Voltage service entrance electric vault.

2. From the JPS service entrance vault, multiple 15kV feeders will be routed throughout the facility to multiple unit substations through-out the building where it will be transformed down to the utilization voltages.

3. The following shall be installed as part of the construction contract:
   a. 15KV underground ductbank,
   b. 15KV raceway within the facility
   c. Service Entrance 15kV equipment and grounding system.
   d. Concrete housekeeping pads for the electrical equipment supplied by Oncor.

4. Normal Power Distribution
   a. Central Plant Substations: Provide (2) 3000kVA double-ended substations with 4000A 480Y/277V Distribution Switchboards on each secondary to serve plant loads
   b. Hospital Substations:
      1) Provide (2) 3000kVA double-ended substations with 4000A 480Y/277V Distribution Switchboards on each secondary to serve lower floor loads
      2) Provide (2) 3000kVA double-ended substations with 4000A 480Y/277V Distribution Switchboards on each secondary to serve upper floor loads.

D. ESSENTIAL ELECTRICAL SYSTEM AND DISTRIBUTION

1. The emergency power distribution voltage will be nominal 15kV, actual voltage to match normal distribution voltage.

2. The Essential Electrical system shall be served from a centralized essential electrical power production facility in the new central plant.

generators in the central plant of the new tower. Provide provisions and future location to add a future fourth 2500kVA generator at a later date.

3. A SF6 Insulated Vault style medium-voltage loop and load interrupter switch (Similar to S&C Vista or G&W) will be placed throughout the new Hospital to distribute Medium Voltage (15kV Nominal) feeders and connect them to a Double-Ended Secondary Unit Substation serving the new tower as well as allow for the campus essential system loop to extend onto future buildings.

4. The 15kV feeder source will be converted to 480Y/120V utilization voltage using a Double-Ended Secondary Unit Substation with compact-compartmentalized load interrupter primary, Dry-type transformer, and low voltage switchgear secondary for feeder distribution to Automatic Transfer Switches.

5. Essential Power Distribution
   a. Central Plant Substations: Provide (2) 2000kVA double-ended substations with 4000A 480Y/277V Distribution Switchboards on each secondary to serve plant loads
   b. Hospital Substations:
      1) Provide (2) 1500kVA double-ended substations with 4000A 480Y/277V Distribution Switchboards on each secondary to serve lower floor loads
      2) Provide (2) 1500kVA double-ended substations with 4000A 480Y/277V Distribution Switchboards on each secondary to serve upper floor loads.

6. Transfer Switches
   a. Automatic transfer switches are located in the main essential system electrical room.
   b. The life safety and critical branch transfer switches will be closed transition.
   c. Equipment System transfer switches will be delayed transition.
   d. All transfer switches will be 4-pole, bypass isolation.
   e. Automatic load shed functions will be provided thru the ATS in a reverse priority sequence.
   f. All transfer switches will communicate with the building automation system as follows: “Normal Power Available,” “Switch Connected to Normal”, “Switch Connected to Emergency”, and “Emergency Power On”.
   g. Transfer Switches will report status, and start signals to the paralleling gear using a redundant communication system. The system shall consist of individual start signal cables from each switch to the paralleling gear (i.e. no daisy-chained signals).

7. Load Prioritization
   a. The distribution to the building loads shall be prioritized into groups for distribution of power with emergency generator back-up.
      1) Life Safety – Priority 1
      2) Critical - Priority 1
      3) Non-Shed Equipment – Priority 1
      4) Elevator - Priority 2
      5) Equipment – Priority 3
   b. Summaries of the loads connected to each priority group are as follows:

E. BRANCH ELECTRICAL ROOMS

1. There will be multiple branch electrical rooms per occupied floor.

2. Normal, Critical, Life Safety and Equipment System panels will be located in branch distribution rooms.

F. ISOLATED (UNGROUNDED) POWER SYSTEMS

1. Isolated power panels will be provided in all locations deemed as "wet location" by NFPA 99 and the Facility. These are anticipated to include wet locations invasive procedure Suites (including ORs, IRs, Cath, etc)

2. Operating rooms will have two isolation panels.
   a. Panel 1 will be provided with a dual voltage output for connection to laser equipment.
   b. Panel 2 will be a duplex panel with up to 32 branch circuits.
   c. Both panels will be served from the Critical branch of the essential electrical system.

3. OR Isolation panels are not anticipated to have UPS backup.

4. LIM (Line Isolation Monitors) shall report on the face of the panel and at the remote OR control station.

G. METERING AND POWER MONITORING

1. Power monitoring compatible with the existing campus Square D Power Logic system will be provided for the following locations for both normal and emergency power:
   a. Main normal switchboards
   b. Distribution Panelboards

2. The following minimum metering is required:
   a. Volts (phase-to-phase and phase-to-neutral)
   b. Frequency
   c. Ampere demand (per phase and average three-phase)
   d. Kilowatt hours (re-settable)
   e. Kilowatt demand (three-phase) (re-settable)
   f. kVA demand (three-phase) (re-settable)
   g. Harmonic load content (percent THD)
   h. Power factor

3. Digital output from the meters will interface with the facility management system for monitoring.

H. SURGE PROTECTION DEVICES (A.K.A. TVSS)

1. Surge Protection Devices will be provided to limit transient voltage disturbances. SPD will be provided at main switchboards and Imaging distribution panels.

I. FUTURE GROWTH

J. UNINTERRUPTIBLE POWER SUPPLY (UPS)

1. Space planning shall accommodate provisions for a Radiology UPS or Power Conditioning equipment will be provided.

2. A centralized double conversion UPS will be provided to serve information technology and Patent Monitoring systems. System shall have 15 minutes of battery and be served from the essential electrical system.

K. LIGHTING

1. Lighting levels in the facility will be in accordance with IES publications (Recommended Illuminance Categories and Illuminance Values for Lighting Design).

2. Interior lighting will generally be LED using high efficiency drivers and fluorescent using programmed start electronic ballasts. Incandescent lighting will generally not be used.

3. All fluorescent lamps will be 4100K CCT with 82% or greater CRI.

4. All ballasts will be <10% TDH, programmed rapid start electronic ballasts.

5. Lighting control will include low voltage networked controllers for all light fixtures in the Hospital in non-patient care spaces. Patient care spaces will be controlled via one or several local switches controlled at the room.

6. All requirements of the International Energy Conservation Code will be adhered to during the design of the lighting in the expansion and renovation areas, this will include the use of automatic shut-off via time of day schedule, occupancy sensors and/or dual level switching.

7. In addition to minimum code control requirements, occupancy sensors will be provided in all spaces with infrequent use (ex. storage rooms, housekeeping rooms, etc.) regardless if they are exempt from this requirement by code.

8. Daylight harvesting: Throughout the spaces listed below, dimmable ballast in conjunction with indoor photocell controls will be used to reduce electric light during hours where sufficient day lighting is available.
   a. Main Lobbies
   b. Offices within 15 feet of exterior windows
   c. Areas with skylights or clearstories

9. All exits from the building will be provided with life-safety lighting. Recessed compact fluorescent downlights with remote mounted ballasts will be provided in the soffit at the canopy areas. Areas without soffits or canopies will have a decorative wall mounted compact fluorescent or LED sconce will be provided with remote mounted ballasts or drivers.

10. All exterior lighting will meet Dark Sky's requirements with Full Cutoff and controls necessary to comply with local lighting ordinances as well as LEED SS Credit requirements.

11. All exterior lighting will be controlled by a combination of the FMS, relay panels, time clocks, and photocells so as to achieve the desired sequence of control.

12. Specialty medical fixtures will be provided as required in patient treatment rooms. Specialty fixture selection and schedule shall be based on User Group meeting input during the design development phase.

13. The typical light fixture for storage and back-of-house works spaces shall be a 2'x4' lensed troffer type fixture. The troffer shall be three-lamp with acrylic lens and T8 lamps.

14. Down lighting, where required, will consist of horizontal and vertical lamp compact fluorescent nominal 6" aperture downlights. The use of incandescent fixtures will be strictly limited to areas where this type of application is necessary.

15. Mechanical, electrical, and other spaces without a ceiling will have four-foot long industrial strip fixtures with two (2) lamps T8 Lamps. Fixtures shall have wire guards and be chain hung.

16. All upper cabinets over counter space shall have an undercabinet light. Provide multiple fixtures as dictated by cabinet length.

17. Lighting at the emergency generator, at the automatic transfer switches, in all electrical rooms, in Interventional Radiology or other invasive procedure rooms will be provided with emergency back-up battery.

18. Provide life-safety lighting in all exit paths in accordance with IES minimum foot-candle / Lux recommendations and AIA guidelines.

L. LIGHTNING PROTECTION

1. A complete UL Certified lightning protection system will be provided for all new buildings on the site and shall be designed and constructed in accordance with NFPA 780.

2. If other contiguous buildings not in the scope of this project do not currently have a UL Certified lightning protection system, an Underwriters Laboratory Certificate of Inspection (formally known as a Master Label) may not be issued for the project. However, this shall not preclude the project from being built to UL and NFPA 780 requirements.

M. POWER SYSTEM GROUNDING

1. System Description: The grounding and bonding system will be specified to meet the requirements of the Authority Having Jurisdiction and latest edition of NFPA 70 and NFPA 99.

2. A "green wire" equipment grounding conductor shall be installed within each feeder and branch circuit raceway, whether metallic or non-metallic, to form a complete and continuous grounding path.

3. A ground bar shall be provided in each electrical rooms and in each Information Systems IDF and MDF room.

5. For Dry Type Transformers: The grounding electrode shall be the nearest ground bar and the nearest available effectively grounded structural member of the building or nearest available effectively grounded metal water pipe 2-inches or larger in diameter.

6. Ground the main incoming medium voltage switchgear ground bus and housing to the building ground electrode system.

7. Test the continuity of, and the proper connection of; each ground conductor and system to assure that the grounding system is complete and uninterrupted.

N. ELECTRICAL ACCEPTANCE TESTING

1. This project will require electrical system acceptance testing for all systems and system components by a NICET or NETA certified testing organization.

O. SYSTEM IDENTIFICATION LABELING

1. A complete labeling and identification system shall be provided. The labeling and identification system shall include all equipment, raceways and pull boxes.

2. Label all switchgear, panelboards, disconnect switches, and equipment with permanent nameplates identifying the item, the circuit number and the panelboard serving same.

3. For Electric Devices: On the face of the wiring device wall plate engrave the panelboard and branch circuit number the device is served from.

4. Labeling of each item of electrical equipment with nameplates.

5. Wire tags for all wiring.

6. Labeling of three phase motors with rotation tag.

P. SYSTEM IDENTIFICATION LABELING

1. Allow EMT in lieu of IMC/Rigid for conduits inside the building.

2. Allow MC-HCF for normal branch circuits within a room, transition to EMT for homeruns.

3. Allow industry standard alloy busing in switchgear, switchboards and panelboards.

4. Allow industry standard alloy coils in transformers.

PART 6 - DIVISION 27 SYSTEMS

A. NURSE CALL

1. All nurse call revisions and additions will comply as required by local and state codes.

2. The intent will be to match the predominant system being used in the facility.

3. The new system will interconnect with the existing system. Additional components will be added to the existing system as needed to communicate with the new construction.

1. A master clock system using a roof mounted GPS satellite receiver and wireless signal distribution antenna will be provided. Clocks will be battery or 120V powered but will receive their synchronization signal via wireless means from roof mounted antenna.
2. System will be compatible with existing Primex campus clock system

PART 7 - DIVISION 28 SYSTEMS

A. FIRE ALARM

1. An analog addressable fire alarm with voice evacuation and communication system shall be provided for the facility. The building fire alarm system will annunciate to the existing Campus monitoring station for 24 hour monitoring and alarms to the fire department.
2. The system will be designed to meet the requirements for a high rise building.
3. There are no atriums or other spaces that require a smoke exhaust system.
4. A smoke ventilation system for anesthetizing locations will be provided to meet the requirements of NFPA 99.
5. All notification circuits and NAC power extender circuits will have a 2 hr rating to meet the survivability requirements as defined in NFPA 72. This will extend from the main panel to the notification zone. The notification zone for this facility is each smoke compartment.
6. Smoke detection will be provided in all areas required by NFPA and IBC and will include fire/smoke damper locations, supply air stream, return air stream, and outside air stream for air handling units.
7. Upon receipt of a general alarm, the notification devices will activate and a passive shut down will occur. This will cause fire/smoke dampers to close within the compartment of alarm. If the unit is served by a single air handling unit, that unit will shut down. For air handling units which serve multiple compartments, the unit will modulate back via the VFD and continue to serve adjacent compartments.

PART 8 - APPENDIXES

A. MINIMUM POWER RECEPTACLES

B. VENTILATION REQUIREMENTS AND INDOOR DESIGN CONDITIONS

C. NURSE CALL SYSTEM REQUIREMENTS

D. MINIMUM MEDICAL GAS REQUIREMENT

I. TECHNOLOGY OVERVIEW

A. The technology systems infrastructure will expand the current Ethernet technologies deployed within the health system today. The Ethernet architecture will allow the various systems to utilize a common transport. The health system will converge upon a single expanded infrastructure to support the various technologies required. Through the use of virtual networking and other protocols, the telecommunications, security, radiology, teleconferencing, facilities, biomedical, and audio/visual systems will be able to utilize this common Ethernet platform. This backbone design will reduce the number of autonomous networks, decrease the number of active components as well as ensure a network that can be secured, provisioned, managed, and monitored from a centralized location.

II. IT Infrastructure

A. The structured cabling system will comply with the current the most current ratified TIA/EIA, IEEE, ANSI, NEC and all other applicable laboratory and medical industry standards, as noted in standards list at the end of this document. Multiple pathways from the electronic equipment in the main equipment room will add to the resiliency and reliability of the network. Other cabling design considerations to support this Ethernet platform are:

1. Flexibility - to accommodate future renovation and reconfiguration of interior structures

2. Accessibility – to accommodate cable moves, adds and changes by both Hospital personnel and third-party contractors

3. Pathway security – to protect from unauthorized access

4. Spare Capacity – to accommodate additional cabling required for future applications

B. The cabling infrastructure to support the health system will consist of a variety of signal pathways which include highly dense copper backbone cable, coaxial backbone cable, and high bandwidth fiber optic cabling. These media will provide the platform to deliver the various campus wide services.

C. When planning a new facility careful consideration must be taken in the sizing and design of the infrastructure to accommodate possible changes in technology. In order to address the concerns of emerging technology and to future-proof investment, one should consider:

1. An expanded universal cabling platform to support the facilities technological needs.

2. A design that can account for future integration and consolidation of medical technology systems as IP devices are formally considered edge upgradeable technologies

3. A system of pathways that are reusable, sustainable and well documented will allow for the most value long term

D. Cabling Infrastructure

1. Horizontal Cabling

2. Distribution consists of extending campus wide services to individual work areas from regularly spaced technology rooms. These rooms are referred to as Entrance Facilities (EF), Building Distributors (BD) formally known as Main Distribution Frames (MDF), Floor Distributors (FD) formally known as Intermediate Distribution Frames (IDF), and Telecommunication Rooms (TR), as well as many others.

3. Current TIA/EIA standards indicate a move towards the international designation of BD and FD. As such, this report will refer to this current industry nomenclature. The standards include guidelines for the sizing of the BD and FD based on the number of square feet the room will serve and the density of workstation outlets. Due to the convergence of technology, the projected increase of density of workstation outlets with medical equipment, and future growth of the facility, consideration for size for the FD would be 300 square feet. Once a project moves into the construction document phase, the sizing of this room will need to be coordinated both with the design team and Hospital representatives. The BD rooms must also be located on the floor plan such that no one cable run to any work area will exceed a maximum cable distance of 295 feet and the rooms should be stacked vertically so as to provide a consistent vertical pathway.

4. Once the BD's are sized and located, a system of pathways leading from the BD to the individual work areas should be carefully designed. As with a campus backbone conduit network, a system of pathways should be designed that have been sized for future capacities, is accessible, and is resilient. If multiple services are to be distributed using a single pathway, it is recommended that a means of segregating the services be employed. Each pathway should be labeled with the name of the BD room of origin. In addition to segregation, it is recommended that a standard color scheme be implemented to aid in the identification of structured cabling that is used to support various systems (AV, IT Security, Nurse Call, Etc.).

5. Currently the highest rated UTP horizontal distribution cable ratified by EIA/TIA to provide a 10 gigabit data rate to work area computers across a full 100 meters is Category 6A UTP. If other structured cabling systems such as Screened twisted pair (ScTP) and Shielded twisted pair (STP) are utilized, it is recommended that an additional ten to fifteen percent be added to the structured cabling budget to account for these higher bandwidth media.

E. Backbone (Riser or Vertical) Cabling:

1. The backbone cabling provides connectivity from the BD equipment to the floor serving FD and Special Systems Equipment. This cabling consists of both fiber optic and copper cabling. The copper cabling is dedicated to voice analog lines and CATV, with fiber optic cabling dedicated to network equipment and special systems equipment such as Electronic Security, Access Control, Audio Visual, Overhead Paging, Nurse Call, Distributed Antenna Systems, and Telemetry.

2. The minimum pair count from the BD to the FD is 50 pair copper cable and 24 singlemode and 24 multimode (50 micron) fiber optic cable. This will require verification with Hospital personnel once design begins.

3. Diverse redundant pathways for backbone cabling from the BD to FD are required suggested.

III. RF Distribution

A. CATV/MATV

1. Cable television services must include cable media that can support standard CATV with the possibility of adding interactive services such as video on demand, patient education, patient records, and other patient on-demand services.

2. The CATV cabling to support the technology for the project consists of the spaces, pathways, low voltage cable and cable connectivity that is separate from the information technology structured cabling system, and will be based on the most current ratified standards.

IV. Nurse Call

A. The integrated healthcare Nurse/Patient communications system which combines traditional nurse call with a variety of complimentary communications technologies and management tools is an essential component of today's health initiatives.

B. In the design of the system, consideration must be given to:

1. Areas in which efficiencies in staffing, responsiveness, and attention can be increased or improved through the use of the nurse call system and features.

2. Areas in which economies can be achieved by using common elements; such as universal cable structures, shared spaces, or raceway/infrastructure.

3. Availability of vendors, installers, and certified support staff.

4. Enhanced or expanded features which will improve staff and patient comfort, safety, and satisfaction within the facility.

5. Areas in which services or systems can combine information or functionality to reduce duplication of effort or equipment that also increases maintenance cost.

6. Nurse Call systems are modular in nature, meaning initially they can be installed with a basic platform in place and have additional features, sub-systems, or services added over time. For example, this allows staff locating, patient, and equipment tracking or functionality for wireless interface to be added at the Hospital's discretion.

C. Nurse Call System Interface:

1. The nurse call system will interface with the communications systems of the hospital, in the form of network connectivity as well as phone system integration. This interface will be accomplished directly by the nurse call system configuration or through the use of a third party interface component. This interface will be used to control wireless phones, hard line phones, pagers, and associated communications devices as well as interfaces to asset, patient, and personnel tracking systems.

D. Expected System Functionality:

1. The minimum expected :

a) Code compliant support for both visual and audio alerts

b) PBX interface including support of analog and digital telephones

c) Wireless phone and pager interface

d) Category 6A structured cabling infrastructure

e) Staff locator

f) Patient and Asset Tracking Integration

g) Variety of patient interface devices

h) Simple software reconfiguration without hardware changes

E. Functionality

1. The nurse call will utilize the Category 6A universal cable structure being deployed to support voice, data, and other. At each bedside location, the nurse call system will support, at a minimum, a Code Blue, Patient Call, and Cancel functionality. And depending on the system selected, these functions may reside in a single interface unit or may be separate components/buttons. The emergency pull cord stations will be located in each shower and toilet area accessible to patients as well as in changing areas where patients may be unattended by a care provider for a period of time. Staff stations allowing two-way communication to the patient call station will be placed in all clinical support areas as per code would include all clean utility, soiled utility, and caregiver support spaces. Master stations will be placed in caregiver support areas that are manned at all times where patients may need to utilize the system, which is defined by the individual departments/functional areas. An emergency call dome light will be located directly outside the entry area where each nurse call patient function is present. Zone lights will be used in corridors to direct caregivers to a call location in cases where the call origination cannot be directly observed by the answering clinician.

F. Individual departments may include additional functions at each bedside location. These features may include:

1. Staff Assist functionality

2. Code Pink or similar functions

3. Bed Status indicators or interfaces

4. Medical equipment Monitoring Functions/Ports

5. Bed Paddle Interfaces for control of Nurse call functions as well as pillow speaker and TV controls

6. Bed Interface Units for additional "smart bed" functionality

V. Audio Visual

A. This system requires a high bandwidth cable platform for streaming of HD video and audio. Campus infrastructure requirements must be coordinated and should be combined with voice and data planning and infrastructure.

B. Control systems should be standardized and provided with management functionality to a central system to allow for advanced functional control and feedback

C. System will consist of various inputs, outputs, and control points that will allow for determined audio conferencing, video conferencing, presentation depending on the needs of the space

VI. Overhead Paging

A. General announcement paging capabilities through an overhead paging system. This system will include ceiling mounted loudspeakers divided into zones which can be paged separately or combined for larger area pages. The overhead paging system will be integrated with the phone system.

VII. Outside Plant (OSP)

A. All OSP cables must be installed using industry best practices and the most current edition of applicable standards (E.G. TIA 758-A). Each cable will be clearly labeled at each end and intermediate pulling location. All copper pairs and fiber optic strands will be tested to verify proper installation and functionality. Pathways for OSP cables shall be provided using conduit sized and rated for the application. Basic design criteria for OSP infrastructure can be described as follows:

1. Conduits should be continuous and not contain more than 180 degrees of bending without installing a pull box or maintenance hole (some design considerations allow for 270 degrees).

2. In those areas where the conduits will be buried in the ground, they will be required to be encased in concrete to provide protection of the installed conduits and cables.

3. Should the conduit duct bank be placed under areas where there will be traffic loads, the concrete will be steel reinforced.

4. All duct banks are to be identified by a marker tape 18" above the duct bank.

5. All OSP conduits will have a maximum fill of 40% of capacity.

6. In those conduits containing fiber optic cables, additional pathways or inner ducts shall be installed to allow for the ability to add future cables. The recommendation is that the inner ducts be of the fabric type which allows for 6 to 9 inner ducts in one 4" or 5" diameter conduit.

7. OSP cabling will be designed to provide connectivity in a star or hierarchical star topologies. This star topology is illustrated in the following figure. To provide connectivity to the various campus buildings, redundant copper and fiber optic cables must be placed in separate diverse pathways from the main IT room to the data center currently located in the existing hospital building.

VIII. Electronic Security / Access Control

A. General

1. Network and Information (Privacy) Security: Due to recent national standards created to protect the privacy of personal health information, the design should include a high level of network security both at the physical and logical levels. Some of the risks include unauthorized viewing of information and documents, detecting and blocking authentication schemes, intrusion detection systems, and detection of breaches at the physical infrastructure level. These requirements will also impact the physical layout of equipment by limiting the availability of output ports on local computing systems and limiting the viewing area / accessibility to monitors, keyboards, and printing devices, and those devices requiring password login. Additionally, by increasing the number of applications and devices available on the network (i.e. IP phones, wireless devices, remote users) this introduces many new points of vulnerability requiring special attention be given to the techniques implemented to secure the network logical layers.

B. Access Control

1. The security system should be planned as a multi-level zoned system requiring increased authorization and authentication as zones become more restrictive. Security should, at a minimum, encompass Access Control, Intrusion Detection, Surveillance and Emergency Notification as an integrated compatible system. The system should be IP based to the fullest possible extent, thereby allowing users with valid access/authorization codes to program, manipulate, and view security device status from any work station with installed application software, utilizing the clients LAN/WAN connectivity. Security system zoning is typically divided into public areas with minimal control, administrative areas with access card control of the suite entrances and reception areas, general laboratory space requiring card access control on an authorized user basis, and finally high security areas. High security information repositories which should require dual level access control, possibly consisting of card access & biometric authentication.

C. Video Surveillance

1. Should be planned to cover the building exterior and parking areas, public circulation areas, office / administrative areas where public contact occurs, areas housing high value equipment or sensitive information/materials, cash handling areas and main loading or storage areas. Surveillance devices should be IP based and planned as a combination of (fixed view, auto-iris, vari-focal) and Pan, Tilt, Zoom (PTZ) devices as required for providing complete coverage.

D. Emergency Notification / Panic, Duress Buttons

1. Should be planned to cover the building exterior and parking areas, public circulation areas, office / administrative areas where public contact occurs, and cash handling areas. In office, administrative, and cash handling areas these devices should be covert devices that may be activated without the public being aware of their use. Security systems should be located within the technology room for each floor or area and consideration for the appropriate wall space will be conducted during the design phase.

IX. Active Network:

A. Data Network

1. The bandwidth requirements of users have been increasing rapidly. This is due to the expanded use of technology within the workplace with systems such as video conferencing, streaming audio/visual, security, building automation, and numerous imaging services. Convergence of technology systems is placing more responsibility on the backbone distribution and core switching environments. Strong consideration to understand external systems connections is critical to representing an efficient networked topology that does not arbitrarily burden server or core fabrics within the network

B. Voice Network:

1. Unified messaging, centralized provisioning, easier moves, adds and changes, and asset management are some of the reasons which are motivating organizations to implement computer based voice systems referred to as voice over internet protocol (VoIP) telephone systems for new facilities. Since this type of communication's system uses the same transport network as the data, it is not necessary to build out and maintain two separate networks, thus reducing equipment expenditures. Training personnel to perform maintenance and changes on the one common platform also can streamline operations and reduce overhead. The selected VoIP system should comply with industry standards, have a minimal number of unique proprietary features and have a very high level of compatibly with currently available network platforms. The structured cabling platform to support a VoIP system shall have the same performance specifications as the data network and will be terminated in the same modular patch panels as the data network. Category 6a cable should be used as the minimum horizontal distribution cabling standard for the voice network. Although the design of the telecommunications system for this new facility will be based on VoIP, it should include a fail over scheme so in the event of a LAN/WAN failure, calls from emergency phones placed throughout the facility are automatically routed to the public switched network (PSN).

C. Wireless

1. Industry trends indicate that the proliferation of wireless devices and services used in medical and research buildings will be continually expanding. Mobile communications (cellular, two way radio), WLAN, wireless security system devices, RFID, as well as others can either be implemented as autonomous systems each with its own cabling and antenna network or be integrated as part of an in building broadband distributed antenna system (DAS).

2. Current recommendations call out that two cables be provided at the Telecommunications Outlet to meet the demands of emerging 802.11 standards. Density models are protracting as location based systems and higher bandwidth vendor systems require additional speeds and utilization.

X. RFID:

A. RFID systems are used to accurately locate important medical hardware, staff and patients. It is assumed that because of these requirements that a facility wide active RFID system will need to be deployed. Unlike the Passive RFID solutions used primarily for inventory control, active RFID systems are integrated into other platforms and business processes to improve operational efficiency and reduce cost by providing real-time location information about assets and people. Unlike their passive counterparts, active tags are sophisticated wireless devices capable of communicating data at much longer ranges and operating in demanding environments for prolonged time frames. Example uses of RFID include patient tracking, infant abduction, medication confirmation/tracking, and staff tracking. Asset management may include pumps, gurneys, wheel chairs, COWS and surgical sponges.

B. Most Active RFID systems are sold as complete solutions. The total cost of ownership of a RFID System includes the antenna system/reader, the tags, the server system and software. A standard versus proprietary is a key factor in the selection of the manufacturer. Some manufacturers require their own specialized wireless reader network specifically for the asset/personnel tracking. Others are compatible with existing standards based Wi-Fi 802.11. The choice of the tags frequency should be made as early in the design process as possible, as it has major implications for the physical infrastructure. The investment in a supplementary or proprietary network may be appropriate. Supplementary or proprietary RFID systems have the advantage of avoiding possible IP address proliferation on the networks 802.11 networks. Some manufacturers propose tracking thousands of tags through the hospital's 802.11 networks which could overburden a network that already supports a heavy load for the hospital such as VoIP.

XI. Two-way Radio Systems:

A. VHF private land mobile radio two-way Radio systems currently used by facility maintenance and emergency personnel for communications are expensive and require special expertise to adjust and maintain.

B. Cellular: Cellular boost systems will have to be negotiated with the individual service providers. These signals would be propagated over an in-building distributed antenna system. Space and power in the Entrance Facility should be allocated for cellular service provider's equipment.

C. Radio paging still has a place in a modern hospital or research environment. There are advantages to having the ability to quickly send key personnel brief alpha numeric information delivered to a relatively inexpensive device. Space and power in the Entrance Facility should be allocated for paging service provider's equipment.

XII. Wireless Telemetry:

A. Two types of wireless telemetry systems may be used in building of this type. One type, such as Zigbee (in the 2.4Ghz range), is used to control and monitor building services and the other is Wireless Medical Telemetry Service (WMTS). WMTS systems are used to allow medical personnel to monitor patients or research subjects from a central station as they move around within the building. Recently the Federal Communications Commission (FCC) established the Wireless Medical Telemetry Service (WMTS), dedicating bands of frequencies for interference-free operation of medical telemetry systems. The WMTS bands are 608 - 614 MHz, 1395 - 1400 MHz, and 1427 - 1432 MHz. All transmitters operating in the WMTS bands must be registered in the national database to ensure interference-free operation. The impact of this is that should the building chose to implement a distributed antenna system that system must be able to support the above frequencies. How telemetry systems might be used with this facility is still to be determined.

XIII. Distributed Antenna System (DAS):

A. A DAS consists of an infrastructure of a fully active set of amplifiers, cabling, connectors, and antennas installed at strategic locations within a building. It uses a radio transceiver which transmits to a broader outdoor network or connects directly to a landline telecommunications network. The system will repeat and amplify radio coverage in the 450 MHz to the 2.5 GHz ranges. This range covers some life safety, fire department, city radio systems, and a range of cellular phone signals. The antennae systems can take the form of a directional, omnidirectional (broadcast with equal strength in all horizontal directions), radiating cable, or a combination of all three. Radiating cable allows a single length cable run of coaxial cable to be the radiating and receive antenna, which helps to reduce the overall cost by eliminating the need for discrete antennas.

B. A DAS network is a broadband wireless system onto which many wireless services use an integrated access device (IAD) that combines and filters the signals, then transports them over one fiber backbone or trunk up the riser of the building where they are distributed across the floor areas via arrays of engineered distribution antennas and/or radiating coaxial cables. There are two types of DAS networks passive and active. To optimize the desired coverage areas, the manufacturer or integrator will engineer the antenna distribution so as to account for the buildings layout and construction materials. Active type systems have the advantage in that they can be monitored and alarmed remotely.

XIV. Guidelines

A. Codes

1. International Building Code (IBC)

2. International Fire Code (IFC)

3. NFPA 70: National Electrical Code (NEC)

4. NFPA 101: Life Safety Code

5. National Electrical Safety Code (NES IEEE)

6. IEEE Std. 1100-1999 Recommended Practice for Powering and Grounding Sensitive Electronic Equipment.

7. Local Codes, amendments, and ordinances

8. Americans with Disabilities Act Guidelines

B. Standards

1. ANSI/TIA/EIA-568-C.1: Commercial Building Telecommunications Cabling Standard, Part 1

2. ANSI/TIA/EIA-568-C.2-1: Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted-Pair Cabling Components

3. ANSI/TIA/EIA-568-C.3: Commercial Building Telecommunications Cabling Standard, Part 3: Optical Fiber Cabling Components Standard

4. ANSI/TIA/EIA-455-A: Standard Test Procedures for Fiber Optic Cables

5. ANSI/CEA S83-596: Fiber Optic Premises Distribution Cable

6. ANSI/TIA/EIA-526-7: Optical Power Loss Measurements of Installed Single Mode Fiber Cable Plant-OFSTP-7

7. ANSI/TIA/EIA-526-14-A: Optical Power Loss Measurements of Installed Multi Mode Fiber Cable Plant-OFSTP-14A

8. ANSI/TIA/EIA-569-A: Commercial Building Standards for Telecommunications Pathways and Spaces

9. ANSI/TIA/EIA-606: The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings

10. ANSI/TIA/EIA-607: Commercial Building Grounding and Bonding Requirements for Telecommunications

11. TIA/EIA 758: Customer-Outside Plant Telecommunications Cabling Standard

12. Association of Telecommunications and Systems Management (ATSM) Standards

13. Texas Accessibility Standards (TAS)

14. Texas Department of Health (TDH)

New Inpatient Tower Program

Civil Narrative

I. General Site Conditions

The JPS Health Network main campus is an 80-acre, Level 1 trauma center, 547-bed County-owned facility located at 1500 South Main Street in Fort Worth, Texas. The main campus is generally within an area bounded by West/East Allen Avenue on the south, Hemphill Street on the west, East Rosedale Street on the north, and the Burlington-Northern-Santa Fe right-of-way (BNSF) on the east. Various satellite facility, such as the Cancer Care Clinic, are located in close proximity to the main campus. The scope of work includes the evaluation of existing infrastructure surround and passing through the main campus to provide concepts for future improvements, relocations, and abandonments to accommodate future expansion of the main campus and satellite facilities and support cost verification.

JQ's activities have included site visits to document the location of existing visible site utilities, research conducted at the City of Fort Worth Department of Transportation & Public Works for public utilities (i.e. water, sanitary sewer and storm). This research included franchise utilities (i.e. natural gas, electric and communications) was limited to information provided on the public utility plans and by site observation.

II. Existing Public Roadways

The following roadways make-up the perimeter and internal transportation system servicing the overall facility. Generally these all were or are public roadways, in the course of the growth of the hospital system some of these roadways were vacated as public right-of way and still may have active public utilities and/or easements granting rights of access to others than can effect current and future operations.

A. East Allen Avenue (Public)
B. West Allen Avenue (Public)
C. South Main Street (Public)
D. St. Joseph Court (Public/Private)
E. Bryan Avenue (Public-south of Magnolia Ave, Private-north of Allen Ave.)
F. St Louis Avenue (Private-north of Allen Ave, Public-between Magnolia Ave and Feliks Gwozdz Plaza)
G. May Street (Private between West Myrtle St and West Allen Ave)
H. South Jennings Avenue (Public)
I. Hemphill Street (Public)
J. West Myrtle Street (Public)
K. Feliks Gwozdz Plaza (Public)
L. East Morphy Street (Public)
M. Crawford Street (Public)
N. Crawford Street (Private)
O. Lucy Street (Private)
P. Galveston Avenue (Private – South of West Magnolia Ave.)
Q. East Magnolia Avenue (Public)
R. West Magnolia Avenue (Public)
S. East Oleander Street (Private)
T. East Rosedale Street (Public)

III. Existing Utilities

A. Water

1. An existing 16-inch water main is located within S. Main St. This water main runs north-south from the intersection with E. Allen Ave. to intersection with E. Morphy St. The water main then transitions to a 12 inch main than continues north to W. Rosedale Street.

2. The 16-inch water main branches off from the north to a 12-inch main in Feliks Gwozdz Plaza at South Jennings Ave., an 8 inch water main continues from the 12 inch from South Jennings to the south along Feliks Gwozdz Plaza to South Main Street.

3. An existing 16-inch water main east-west along West Rosedale Street from Burlington-Northern-Santa Fe right-of-way westward past South Main Street.

4. An existing 12-inch water main runs west in E. Magnolia Ave from Oak Grove Street and continues westerly past Hemphill Street.

5. An existing 8-inch water main is located within St. Louis Ave from Feliks Gwozdz Plaza north to West Magnolia Ave.

6. An existing 8-inch water main is located within the former right-of way of St. Louis Ave from Feliks Gwozdz Plaza south to West Allen Ave.

7. An existing 6-inch water main is located within the former right-of way of May Street from Feliks Gwozdz Plaza south to West Allen Ave.

8. An existing 18-inch water main is located within S. Jennings Ave from West Allen north to Feliks Gwozdz Plaza.

9. An existing 12-inch water is located within St. Joseph Ct going east for approximately 250 L.F.

10. An existing 12-inch water is located within West Allen Ave. going west from South Main Street to South Jennings Ave and continues to the west as a 4 inch water main.

11. An existing 6-inch water main along East Morphy Street from South Main Street around the existing Heliport to the terminal end of the street and continues north along Crawford Street to East Magnolia Ave.

12. An existing 6-inch water main runs north along Bryan Street from East Morphy Street to East Magnolia Ave.

13. An existing s-inch water mains runs east from South Main Street and continues easterly across the Burlington-Northern-Santa Fe right-of-way

14. An existing 6-inch water main runs along the west boundary of the Burlington-Northern-Santa Fe right-of-way from East Mongolia Avenue north to West Rosedale and the 16-inch water main.

B. Sanitary Sewer

1. An existing 10-inch sewer main is located within S. Main St. This sanitary sewer main runs north to Feliks Gwozdz Plaza, then runs west and connects to the 10-inch main in May St.

2. An existing 10-inch sewer line is located within St. Louis Ave. at Feliks Gwozdz Pl. and runs north to W. Oleander St. to a 12-inch line at Oak Grove St. An 8-inch sewer splits off from the 10-inch main south of the turn-about at the Outpatient Tower.

3. An existing 10-inch sewer line run north in May St. to an 8-inch line from the west and continues north on May St. as a 16-inch to W. Rosedale Street.

4. The 10-inch sewer line runs parallel to the 8-inch main at the Outpatient Tower, turns west along 10-inch line in Feliks Gwozdz Plaza to the west.

5. An existing 6-inch sewer line is located along the Burlington-Northern-Santa Fe right-of-way at St. Joseph Ct. The line runs north and turns east before E. Magnolia Ave under the railroad.

6. Existing 8-inch sewer lines from the south at St. Louis and alley to the east connect to an existing 10-inch line run east along W. Allen Ave. to South Main St.

7. An existing 6-inch sewer line runs north along May St. and turns west along W. Allen Ave to South Jennings Ave.

8. An existing 8-inch sewer main is located within S. Jennings Ave south of W. Allen Ave and continues north then turns east along Feliks Gwozdz Pl the turns north along an alley between S. Jennings and May St. and connects to an 8-inch line from the west turns east to the 10-inch line at May St.

9. An existing 8-inch sewer line runs north, east of the Tarrant County Medical Examiners building (old Galveston Ave/Lucy St.) the crosses W. Magnolia Ave and continues north along Galveston Ave to the 10-inch in W. Oleander St.

10. An existing 8-inch sewer line is located on South Main St at E. Morphy St that runs north to an existing 12-inch line along W. Rosedale St.

11. An existing 8-inch sewer line runs north along Crawford St then turns west along E. Magnolia Ave to the 8-inch sewer line in South Main St.

12. An existing 8-inch sewer line runs north along Bryan St to the 8-inch sewer line in E. Magnolia St.

13. An existing 12-inch sewer line runs north along Oak Grove St. from W. Magnolia to W. Rosedale St and runs east along W. Rosedale toward the Burlington-Northern-Santa Fe right-of-way.

C. Storm Drainage

1. An existing 24-inch RCP is located within St. Joseph Ct and east of the Parking Garage. This storm line runs south and connects to a 36-inch RCP in E. Allen Ave. The line runs west along W. Allen Ave. then turn north along St. Louis Ave (Private). It then transitions to a 54-inch RCP and continues north along St. Louis Ave (Public). The line turns east along W. Magnolia Ave., north along Galveston Ave., and then east along W. Oleander. The line transitions into a 5'x5.5' arch that runs north along Oak Grove St. and discharges into an 8'x5.5' arch along W. Rosedale easterly toward the Burlington-Northern-Santa Fe right-of-way.

2. An 18-inch RCP is located in the Parking Garage service drive on W. Allen Ave. This line runs south and connects to the 36-inch RCP in W. Allen Ave.

3. A 24-inch RCP connects to a catch basin located north of the Plant Operations building and runs north along old Galveston Ave., west of the Cemetery, across W. Morphy St., through the parking area, and then connects to the 5'x5.5' arch in Oleander St.

4. A 24-inch RCP connects two curb inlets on E. Morphy St. then runs north of the JPOC building (old Lucy Street) to connect to the 24-inch RCP (Old Galveston Ave.) perpendicular to W. Magnolia Ave.

5. A 30-inch RCP is located east of the Health Center for Women building and runs north (old Crawford Street), connecting to an 8'x5.5' arch on W. Rosedale. This storm line picks up runoff from inlets located at the intersection of E. Magnolia Ave. and Crawford St., E. Oleander St. and Tarrant County Central Plant parking lot.

6. A series of inlets at the intersection of Feliks Gwozdz Plaza and South Jennings Ave. connect to a 39-inch RCP is located within Feliks Gwozdz Pl. north of the Central Plant and connects to a 54-inch RCP on St. Louis Ave.

Limited information was available regarding the design capacity of the existing storm drainage systems located throughout the JPS campus. Correspondence with the City of Fort Worth Department of Transportation & Public Works personnel indicate that portions of the existing storm drainage system is not designed to meet the requirements of the current City of Fort Worth Drainage Design Manual. Any proposed improvements that result in an increase in impervious area will be evaluated to see if the existing receiving storm drainage system is sized to meet the current requirements. On-

site stormwater detention and/or upgrades to the existing public storm drainage systems may be required.

D. Natural Gas

1. An 18-inch main gas is located along St. Louis Ave from Jefferson Ave. to W. Rosedale St.

2. 8-inch main gas lines are located as follow:
    1. Along W. Rosedale St., from St Louis Ave. to Crawford.

3. 6-inch main gas lines are located as follow:
    a. Along S. Main St., from E. Morphy St. to West Rosedale St.
    b. Along E. Morphy and across parking lot north of JPOC 1350 building (Old Lucy St.), from Brian St. to St Louis Ave.
    c. Along S. Jennings Ave. from Feliks Gwozdz Pl. to W. Magnolia Ave.
    d. Along E/W Magnolia Ave from the Burlington-Northern-Santa Fe right-of-way westward past Hemphill St.
    e. Along Feliks Gwozdz Pl. from May St. to S. Jennings Ave.

4. 4-inch main gas lines are located as follow:
    a. Along Crawford St. from E. Morphy St. to E. Magnolia Ave.
    b. Along the Burlington-Northern-Santa Fe right-of-way from E. Magnolia Ave. to West Rosedale St.
    c. Across the parking lot east of Heath Center for Women (old Crawford St.) from E. Magnolia to W. Rosedale St.
    d. Along Feliks Gwozdz Pl. from St Louis to S. Main St.
    e. Along W. Allen Ave. from Hemphill St. to St. Joseph Ct.
    f. Along W. Maddox Ave. East form Hemphill St.

5. 2-inch main gas lines are located Along E. Magnolia Ave. from Crawford St. to Arizona Ave.

E. Electrical

Numerous overhead electrical lines located within the project boundary. No records for underground electrical lines were available.

F. Communication

Limited records for underground and overhead telephone lines were available.

Existing underground telephone lines are located as follow:
    a. Along W. Terrell Ave. from Travis Ave to St Louis Ave.
    b. Along S. Jennings Ave from W. Rosedale St. to W. Terrell Ave.
    c. Along W. Rosedale St. from St. Louis Ave. to Hwy. 35W
    d. Along Feliks Gwozdz Pl. from Lipscomb St. to S. Main St.
    e. Along St. Louis Ave from W. Allen Ave. to Feliks Gwozdz Pl.

IV. Potential Abandonments, Relocations, Improvements

A. Abandonments:

1. Public Roadways:
   a. St. Joseph Court (from the east side South Main Street to it termination at Burlington Northern Railroad right-of-way), 517 L.F. Right-of-way width approximately 50'.
   b. East Morphy Street (from the east side South Main Street to it termination at Crawford Street), 522 L.F. Right-of-way width approximately 50'.
   c. Bryan Street (from the north side of Morphy Street to the south side of East Magnolia Avenue), 342 L.F. Right-of-way width approximately 40'.
   d. Crawford Street (from the north side of Morphy Street to the south side of East Magnolia Avenue), 362 L.F. Right-of-way width approximately 40'.

2. Private Roadways/Access Easement/Utility Easements
   It is believed that the JPS Hospital property is crisscrossed with numerous utility easements (active/inactive) that would be required to be located to determine full impact to current and future planned development. It is recommended that a full boundary survey and title commitment be performed on all properties owned by the JPS Health Network that make up the Fort Worth Campus.

   The following streets were at one time public roadways that appear to have been abandoned, but not fully a many public utilities remain in-service.
   a. St. Louis Street (from the north side of West Allen Avenue to the south side of Feliks Gwozdz Plaza), 765 L.F. Former right-of-way width approximately 50'.
   b. May Avenue (from the north side of West Allen Avenue to the south side of Feliks Gwozdz Plaza), 765 L.F. Former right-of-way width approximately 40'.
   c. Lucy Avenue (from the south side of West Magnolia Avenue to the west side of South Main Street), 300 L.F. Former right-of-way width approximately 40'.
   d. Galveston Avenue (from the south side of West Magnolia Avenue to north side of Feliks Gwozdz Plaza), 834 L.F.

3. Utility Systems:
   a. Water:
      i. 770 L.F., 8-inch line in Old St. Louis from West Allen to Feliks Gwozdz Pl.
      ii. 770 L.F., 6-inch line from W. Allen to Feliks Gwozdz Pl along Old May St.
      iii. 695 L.F., 6-inch line from E. Magnolia Ave along Crawford St turning west along E. Morphy to Bryan St.
      iv. 620 L.F., 6-inch line from E. Magnolia Ave along Bryan St turning westward along E. Morphy St to South Main St.
      v. 720 L.F., 8-inch line from S. Main St, near Lucy St to St Louis Ave.
      vi. 160 L.F., 6-inch line along old Galveston Ave north to W. Magnolia Ave.
      vii. 835 L.F., 6-inch line runs along the west boundary of the Burlington-Northern-Santa Fe right-of-way from East Mongolia Avenue north to West Rosedale and the 16-inch water main
      viii. 1040 L.F., 8-inch line along Feliks Gwozdz Pl from S. Main to S. Jennings

   b. Sanitary: (to be abandoned in place or converted to private lateral services)

i. 740 L.F., 10-inch line in Old St. Louis north of W. Allen to Feliks Gwozdz Pl.
ii. 440 L.F., 8-inch line in Old St. Louis north of W. Allen to Feliks Gwozdz Pl.
iii. 455 L.F., 6-inch line north to Feliks Gwozdz Pl. along Old May St.
iv. 700 L.F., 8-inch line along old Galveston Ave between Feliks Gwozdz Pl and West Magnolia Ave.
v. 315 L.F., 8-inch line, north of W. Allen Ave and East of Metro West building

c. Stormwater:
i. 575 L.F., 36-inch RCP in Old St. Louis north of W. Allen
ii. 550 L.F., 39-inch RCP along Feliks Gwozdz Pl from S. Jennings Ave to St. Louis Ave.
iii. 185 L.F., 48-inch RCP in Old St. Louis north to Feliks Gwozdz Pl.
iv. 850 L.F., 24-inch RCP along old Galveston Ave between Feliks Gwozdz Pl and West Magnolia Ave.
v. 405 L.F., 24-inch RCP from South Main St westerly to 24-inch line in old Galveston Ave
vi. 190 L.F., 24-inch RCP along E. Magnolia to Crawford St.

d. Natural Gas:
i. 570 L.F., 4-inch line in West Allen Ave from St. Louis to S. Jennings Ave.
ii. 810 L.F., 18-inch line in Old St. Louis from West Allen to Feliks Gwozdz Pl.
iii. 815 L.F., 4-inch line in South Jennings from W. Allen Ave to Feliks Gwozdz Pl.
iv. 275 L.F., 4-inch line along Feliks Gwozdz Pl from S. Jennings to May St.
v. 1455 L.F. 4- to 6-inch line from the east end and along of E. Morphy to Lucy St to St Louis Ave.
vi. 385 L.F., 4-inch line from E. Magnolia along Crawford St.
vii. 120 L.F., 6-inch line south of W. Magnolia and east of St Louis Ave.

B. Relocations:
1. Public Roadways: It is anticipated at this time that roadway relocations will not be required. Rather, improvements to current surrounding roadway that appear to have capacity to facilitate traffic volumes through improved signalization, turn lanes and road widening.

2. Utility Systems - New installations for the following:

a. Water:
i. 165 L.F., 12-inch water line along W. Mongolia Ave from S. Main St.
ii. 1000 L.F., 12-inch water line along Feliks Gwozdz Pl from S. Jennings to S. Main St.
iii. 800 L.F., 12-inch water line along West Allen Ave from S. Jennings Ave to Galveston Ave.
iv. 930 L.F., 8-inch water line along Burlington-Northern ROW from E. Magnolia Ave to E. Rosedale St.

b. Sanitary:
None at this time.

c. Stormwater: It is recommended that any cost estimate for the stormwater system improvements have a contingency factor of 20% for unknown downstream factors.
   i. Re-route storm system in St Louis Ave between W. Allen and Feliks Gwozdz Pl. South along S. Louis Ave to W. Allen Ave, then west along W. Allen to S. Jennings Ave, then north along S. Jennings Ave to Feliks Gwozdz Pl, then east along Feliks Gwozdz Pl to tie to existing system at the intersection of St Louis Ave. The system would consist of the following:
      - Reconnect to 6-existing curb inlets
      - 4 – new curb inlets
      - 5 - new storm manholes
      - 300 L.F. – 18-inch RCP
      - 290 L.F. – 24-inch RCP
      - 515 L.F. – 36-inch RCP
      - 785 L.F. – 42-inch RCP
      - 535 L.F. – 54-inch RCP
   ii. Install storm system in Feliks Gwozdz Pl from intersection of Old Galveston Ave to S. Main St, then north along S Main St to W. Rosedale St.
      - Reconnect to 3-existing area drains
      - 12 – new curb inlets
      - 5 – new storm manholes
      - 600 L.F. – 18-inch RCP
      - 140 L.F. – 24-inch RCP
      - 170 L.F. – 30-inch RCP
      - 300 L.F. – 36-inch RCP
      - 470 L.F. – 42-inch RCP
      - 130 L.F. – 48-inch RCP
      - 735 L.F. – 54-inch RCP
   iii. Re-route storm system in E Magnolia Ave westward to new within S. Main St system
      - 1 – new storm manhole
      - 30 L.F. – 18-inch RCP
      - 530 L.F. – 36-inch RCP

   iv. Re-route storm system in E. Oleander St westward to new within S Main St system
      - Reconnect to 2-existing area drains
      - 320 L.F. – 18-inch RCP
      - 195 L.F. – 24-inch RCP

d. Natural Gas:
   i. 1900 L.F., 18-inch Gas line from the intersection of St Louis Ave and W. Allen, then along W. Allen to S. Jennings Ave turning north to Feliks Gwozdz Pl, then west to existing 18-inch line at St. Louis Ave.
   ii. 490 L.F., 6-inch Gas line along E. Magnolia from S. Main St to Crawford St.

iii. 325 L.F., 2-inch Gas line south along Burlington-Northern ROW from E. Magnolia to existing 2-inch gas line

C. Improvements:
1. A condition assessment will be require on the pavement surface condition, curb & gutter, and stormwater management on the following roadways to identify repairs, replacement or expansion of current alignments. Assume pavement grind and resurfacing, spot repair curbing for the following:

    a. 1,650 L.F., West Allen Ave from South Main St. to Hemphill Street.
    b. 2,600 L.F., Hemphill Street from West Allen Ave to West Rosedale St.
    c. 1,525 L.F., Feliks Gwozdz Plaza from Hemphill Street to South Main Street
    d. 1,800 L.F., South Main Street from Feliks Gwozdz Plaza to West Rosedale St.
    e. 770 L.F., South Jennings Street from West Allen Ave to Feliks Gwozdz Plaza.

2. The following roadway intersections will have to be assess for traffic volume to facilitate traffic flow with improved signage, signalization and/or additional turn lanes. Assume pavement grinding and resurfacing for all to following:
    a. West Allen Ave and South Main Street, add dedicated north bound left-turn lane
    b. West Allen and South Jennings Ave, add dedicated west bound right-turn lane
    c. West Allen Ave and Hemphill Street
    d. Hemphill Street and Feliks Gwozdz Plaza, add dedicated north bound right – turn lane
    e. Feliks Gwozdz Plaza and South Jennings Ave, add dedicated north bound right-turn lane
    f. Feliks Gwozdz Plaza and South Main Street
    g. South Main Street and Magnolia Ave
    h. South Main Street and West Rosedale Street, dedicated east bound right-turn lane
    i. Hemphill Street and West Rosedale Ave

At this time, further definition of improvements cannot be determined based on the level of this scope of work. Additional study with increased level of detail mapping would be required.

CHAPTER 3:

Cost Estimate and Project Schedule

Project Schedule

The Broaddus-Blue Cottage team generated two different implementation schedules. One schedule--referred to as "Option A: Multi-phase"--assumed that the enabling projects (new inpatient tower, central utility plant, and parking garage) would begin design and construction as soon as funding is available. The remaining project components would then be staggered in order to balance the amount of construction occurring at the same time on campus.

The second schedule--referred to as "Option B: Front-loaded"--assumed that all projects start as soon as funding is available. The objective of this option is to optimize speed-to-market to save money by reducing the impact of cost escalation over time. For this schedule, the timelines for the new inpatient tower and the main hospital renovation/backfill project components do not change.

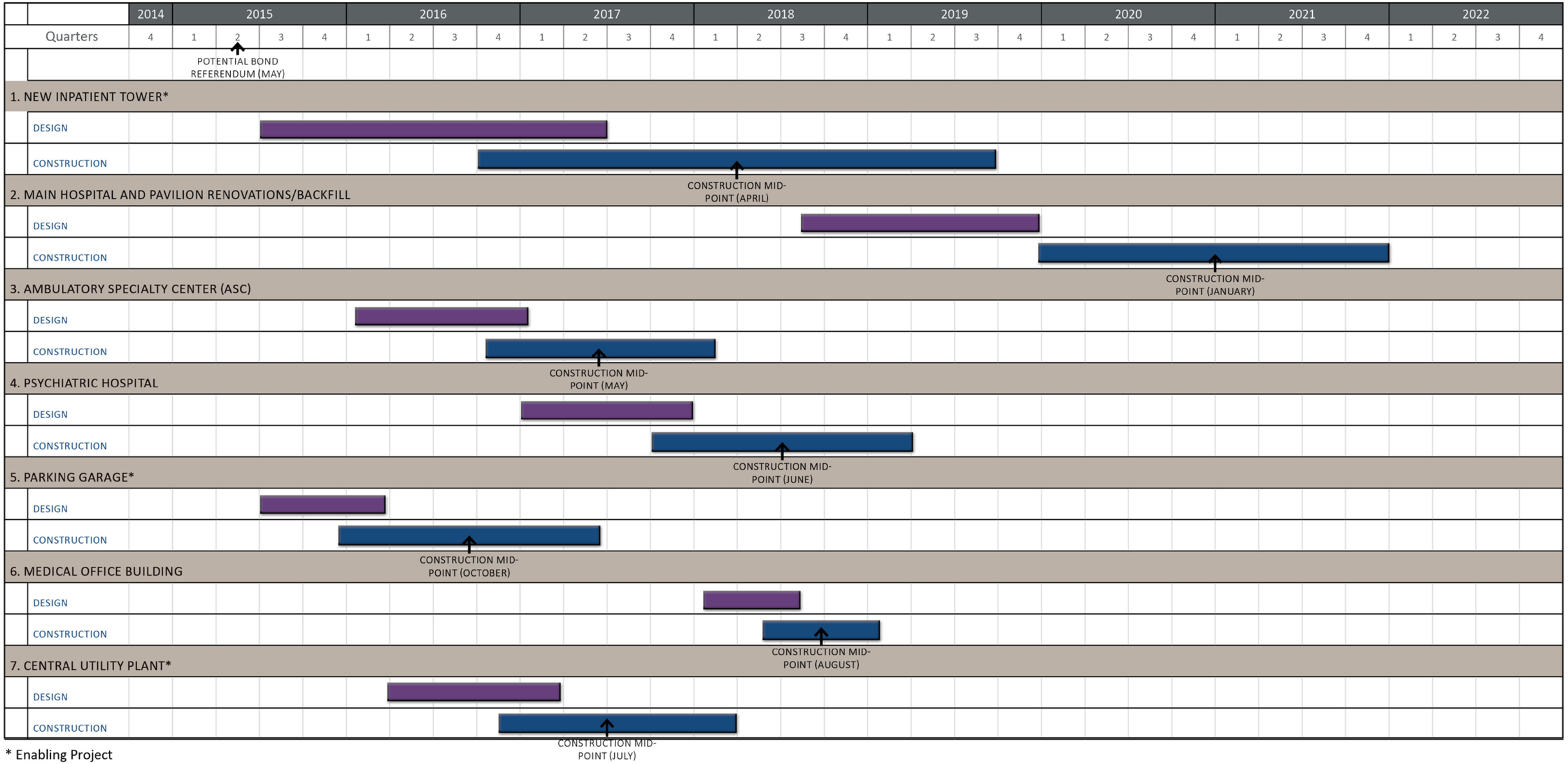
Both schedules have a significant impact on total project cost as escalation is factored into the schedule at a rate of 1.5% per quarter or 6% per annum.

Project Cost Estimate

Multiple iterations of the total project cost conceptual estimate were generated for this project based on the implementation schedule and bond referendum timing. The objective of creating iterations was to explore the impact of cost escalation relative to the standard bond referendum voting schedule (May or November of each year) as well as the speed-to-market for beginning construction of each project "bundle."

The total project cost for each project "bundle" is escalated to the mid-point of construction rounded to the nearest quarter-year (e.g. Quarter 3, 2017). Escalation is factored at 1.5% per quarter--6% per annum--for all project "bundles" as that is the best assessment of construction market conditions in the Dallas-Fort Worth Metro Area.
The construction costs were generated in current (2014) dollar values, and were comprised by two independent estimates based on the same information. The two estimates were then reconciled by a third construction cost estimator to ensure consistency and thoroughness of the estimates. The final construction costs remain the same for all implementation schedules.

Option A: Multi-phase Schedule, May 2015 Bond Schedule

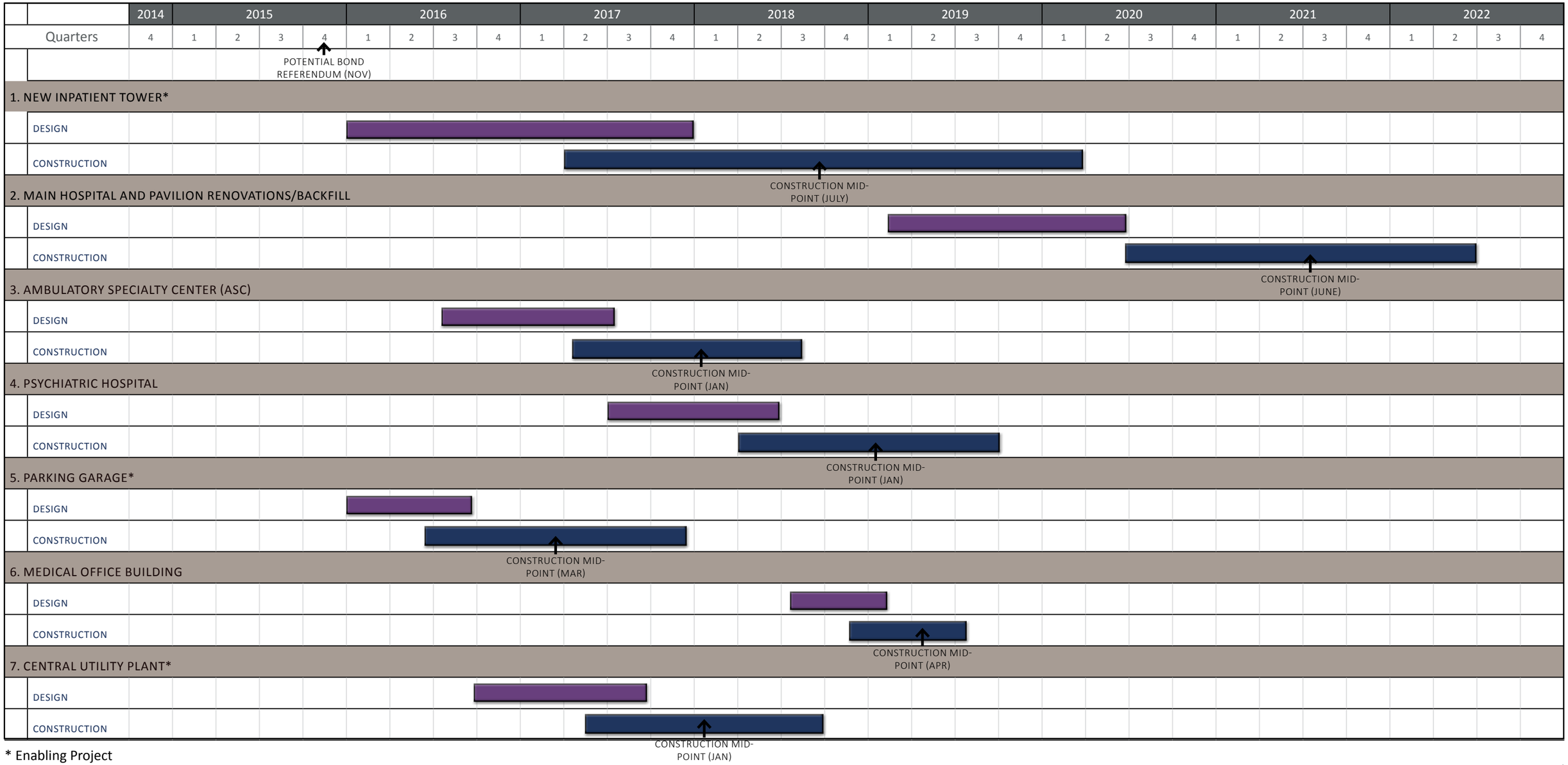


* Enabling Project

Option A: Multi-phase Schedule, May 2015 Bond
Total Project Cost Summary

		New Inpatient Tower	Main Hospital and Pavilion Renovations/Backfill	Ambulatory Specialty Center*	Psychiatric Hospital*	Parking Garage (2300 Spaces)	Medical Office Building	Central Utility Plant	Total Program Project Cost
1	**Project Construction Costs**	**$ 212,720,220**	**$ 30,278,729**	**$ 31,756,455**	**$ 47,127,904**	**$ 41,975,000**	**$ 8,891,102**	**$ 14,181,876**	**$ 386,931,286**
2	**Contractors Fees + Insurance**	$ 36,162,437	$ 5,147,384	$ 5,398,597	$ 8,011,744	$ 7,135,750	$ 1,511,487	$ 2,410,919	$ 65,778,319
3	**CONSTRUCTION COST LIMITATION (CCL)**	**$ 248,882,657**	**$ 35,426,113**	**$ 37,155,053**	**$ 55,139,647**	**$ 49,110,750**	**$ 10,402,589**	**$ 16,592,795**	**$ 452,709,604**
4	**Professional Fees:**	**$ 36,087,985**	**$ 5,136,786**	**$ 5,387,483**	**$ 7,995,249**	**$ 7,121,059**	**$ 1,508,375**	**$ 2,405,955**	**$ 65,642,893**
	(a) A/E Basic Fees	$ 17,421,786	$ 2,479,828	$ 2,600,854	$ 3,859,775	$ 3,437,753	$ 728,181	$ 1,161,496	$ 31,689,672
	(b) A/E Additional Services Fees	$ 3,733,240	$ 531,392	$ 557,326	$ 827,095	$ 736,661	$ 156,039	$ 248,892	$ 6,790,644
	(c) Misc. Design Consultants	$ 11,199,720	$ 1,594,175	$ 1,671,977	$ 2,481,284	$ 2,209,984	$ 468,117	$ 746,676	$ 20,371,932
	(d) Project Management Fee	$ 3,733,240	$ 531,392	$ 557,326	$ 827,095	$ 736,661	$ 156,039	$ 248,892	$ 6,790,644
5	**Furniture, Fixtures & Equipment**	**$ 88,353,343**	**$ 16,118,881**	**$ 10,589,190**	**$ 10,200,835**	**$ -**	**$ 1,924,479**	**$ -**	**$ 113,641,516**
	(a) Medical Equipment	$ 62,220,664	$ 12,399,139	$ 9,288,763	$ 8,270,947	$ -	$ 1,560,388	$ -	$ 93,739,902
	(b) Food Service Euipment	$ 12,444,133	$ 1,771,306	$ -	$ -	$ -	$ -	$ -	$ 14,215,438
	(c) Laundry Service Equipment	$ 4,977,653	$ 708,522	$ -	$ -	$ -	$ -	$ -	$ 5,686,175
	(d) Furniture Fixtures and Equipment (FFE)	$ 8,710,893	$ 1,239,914	$ 1,300,427	$ 1,929,888	$ -	$ 364,091	$ -	
6	**Other Work, Institution Managed**	**$ 3,733,000**	**$ 531,392**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	$ 4,264,392
	(a) Instructional Technology	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	(b) Moving Expenses (1.5% of CCL)	$ 3,733,000	$ 531,392	$ -	$ -	$ -	$ -	$ -	$ 4,264,392
7	**Miscellaneous Expenses**	**$ 27,945,438**	**$ 5,284,407**	**$ 5,108,820**	**$ 5,927,512**	**$ 368,331**	**$ 806,201**	**$ 448,005**	**$ 45,888,714**
	(a) Informational Technology/Equipment	$23,589,992	$4,664,450	$ 4,458,606	$ 4,962,568	$ -	$ 624,155	$ 124,446	$ 38,424,218
	(b) Testing and Commissioning	$ 2,488,827	$ 354,261	$ 371,551	$ 551,396	$ -	$ 104,026	$ 165,928	$ 4,035,989
	(c) Owner's Other Costs (0.75% of CCL)	$ 1,866,620	$ 265,696	$ 278,663	$ 413,547	$ 368,331	$ 78,019	$ 157,632	$ 3,428,508
8	**Project Contingency**	**$ 29,865,919**	**$ 4,251,134**	**$ 5,573,258**	**$ 8,270,947**	**$ 7,366,613**	**$ 1,560,388**	**$ 2,488,919**	**$ 59,377,178**
	(a) Owner Construction Contingency	$ 19,910,613	$ 2,834,089	$ 3,715,505	$ 5,513,965	$ 4,911,075	$ 1,040,259	$ 1,659,280	$ 39,584,785
	(b) Owner Project Contingency	$ 9,955,306	$ 1,417,045	$ 1,857,753	$ 2,756,982	$ 2,455,538	$ 520,129	$ 829,640	$ 19,792,393
11	**SUBTOTAL OWNER COSTS**	**$ 185,986,000**	**$ 31,323,000**	**$ 26,659,000**	**$ 32,395,000**	**$ 14,856,000**	**$ 5,799,000**	**$ 5,343,000**	**$ 302,361,000**
12	**SUBTOTAL (CCL + OWNER'S COST)**	**$ 434,868,657**	**$ 66,749,113**	**$ 63,814,053**	**$ 87,534,647**	**$ 63,966,750**	**$ 16,201,589**	**$ 21,935,795**	**$ 755,070,604**
13	**TOTAL PROJECT COST (TPC) 2014 DOLLARS**	$ 434,868,657	$ 66,749,113	$ 63,814,053	$ 87,534,647	$ 63,966,750	$ 16,201,589	$ 21,935,795	$ 755,070,604
14	**TOTAL PROJECT COST ESCALATED TO PROJECT MIDPOINT**	**$ 526,191,075**	**$ 91,780,030**	**$ 73,386,161**	**$ 104,603,904**	**$ 70,683,259**	**$ 19,846,947**	**$ 25,555,201**	**$ 912,046,576**

Option A: Multi-phase Schedule, November 2015 Bond Schedule



* Enabling Project

Option A: Multi-phase Schedule, November 2015 Bond
Total Project Cost Summary

		1	2	3	4	5	6	7	TOTALS 1-7
		New Inpatient Tower	Main Hospital and Pavilion Renovations/Backfill	Ambulatory Specialty Center*	Psychiatric Hospital*	Parking Garage (2300 Spaces)	Medical Office Building	Central Utility Plant	Total Program Project Cost
1	**Project Construction Costs**	**$ 212,720,220**	**$ 30,278,729**	**$ 31,756,455**	**$ 47,127,904**	**$ 41,975,000**	**$ 8,891,102**	**$ 14,181,876**	**$ 386,931,286**
2	**Contractors Fees + Insurance**	$ 36,162,437	$ 5,147,384	$ 5,398,597	$ 8,011,744	$ 7,135,750	$ 1,511,487	$ 2,410,919	$ 65,778,319
3	**CONSTRUCTION COST LIMITATION (CCL)**	**$ 248,882,657**	**$ 35,426,113**	**$ 37,155,053**	**$ 55,139,647**	**$ 49,110,750**	**$ 10,402,589**	**$ 16,592,795**	**$ 452,709,604**
4	**Professional Fees:**	**$ 36,087,985**	**$ 5,136,786**	**$ 5,387,483**	**$ 7,995,249**	**$ 7,121,059**	**$ 1,508,375**	**$ 2,405,955**	**$ 65,642,893**
	(a) A/E Basic Fees	$ 17,421,786	$ 2,479,828	$ 2,600,854	$ 3,859,775	$ 3,437,753	$ 728,181	$ 1,161,496	$ 31,689,672
	(b) A/E Additional Services Fees	$ 3,733,240	$ 531,392	$ 557,326	$ 827,095	$ 736,661	$ 156,039	$ 248,892	$ 6,790,644
	(c) Misc. Design Consultants	$ 11,199,720	$ 1,594,175	$ 1,671,977	$ 2,481,284	$ 2,209,984	$ 468,117	$ 746,676	$ 20,371,932
	(d) Project Management Fee	$ 3,733,240	$ 531,392	$ 557,326	$ 827,095	$ 736,661	$ 156,039	$ 248,892	$ 6,790,644
5	**Furniture, Fixtures & Equipment**	**$ 88,353,343**	**$ 16,118,881**	**$ 10,589,190**	**$ 10,200,835**	**$ -**	**$ 1,924,479**	**$ -**	**$ 113,641,516**
	(a) Medical Equipment	$ 62,220,664	$ 12,399,139	$ 9,288,763	$ 8,270,947	$ -	$ 1,560,388	$ -	$ 93,739,902
	(b) Food Service Euipment	$ 12,444,133	$ 1,771,306	$ -	$ -	$ -	$ -	$ -	$ 14,215,438
	(c) Laundry Service Equipment	$ 4,977,653	$ 708,522	$ -	$ -	$ -	$ -	$ -	$ 5,686,175
	(d) Furniture Fixtures and Equipment (FFE)	$ 8,710,893	$ 1,239,914	$ 1,300,427	$ 1,929,888	$ -	$ 364,091	$ -	
6	**Other Work, Institution Managed**	**$ 3,733,000**	**$ 531,392**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	$ 4,264,392
	(a) Instructional Technology	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	(b) Moving Expenses (1.5% of CCL)	$ 3,733,000	$ 531,392	$ -	$ -	$ -	$ -	$ -	$ 4,264,392
7	**Miscellaneous Expenses**	**$ 27,945,438**	**$ 5,284,407**	**$ 5,108,820**	**$ 5,927,512**	**$ 368,331**	**$ 806,201**	**$ 448,005**	**$ 45,888,714**
	(a) Informational Technology/Equipment	$23,589,992	$4,664,450	$ 4,458,606	$ 4,962,568	$ -	$ 624,155	$ 124,446	$ 38,424,218
	(b) Testing and Commissioning	$ 2,488,827	$ 354,261	$ 371,551	$ 551,396	$ -	$ 104,026	$ 165,928	$ 4,035,989
	(c) Owner's Other Costs (0.75% of CCL)	$ 1,866,620	$ 265,696	$ 278,663	$ 413,547	$ 368,331	$ 78,019	$ 157,632	$ 3,428,508
8	**Project Contingency**	**$ 29,865,919**	**$ 4,251,134**	**$ 5,573,258**	**$ 8,270,947**	**$ 7,366,613**	**$ 1,560,388**	**$ 2,488,919**	**$ 59,377,178**
	(a) Owner Construction Contingency	$ 19,910,613	$ 2,834,089	$ 3,715,505	$ 5,513,965	$ 4,911,075	$ 1,040,259	$ 1,659,280	$ 39,584,785
	(b) Owner Project Contingency	$ 9,955,306	$ 1,417,045	$ 1,857,753	$ 2,756,982	$ 2,455,538	$ 520,129	$ 829,640	$ 19,792,393
11	**SUBTOTAL OWNER COSTS**	**$ 185,986,000**	**$ 31,323,000**	**$ 26,659,000**	**$ 32,395,000**	**$ 14,856,000**	**$ 5,799,000**	**$ 5,343,000**	**$ 302,361,000**
12	**SUBTOTAL (CCL + OWNER'S COST)**	**$ 434,868,657**	**$ 66,749,113**	**$ 63,814,053**	**$ 87,534,647**	**$ 63,966,750**	**$ 16,201,589**	**$ 21,935,795**	**$ 755,070,604**
13	**TOTAL PROJECT COST (TPC) 2014 DOLLARS**	$ 434,868,657	$ 66,749,113	$ 63,814,053	$ 87,534,647	$ 63,966,750	$ 16,201,589	$ 21,935,795	$ 755,070,604
14	**TOTAL PROJECT COST ESCALATED TO PROJECT MIDPOINT**	**$ 532,714,105**	**$ 93,782,503**	**$ 76,257,793**	**$ 109,855,982**	**$ 72,602,261**	**$ 20,576,018**	**$ 26,213,275**	**$ 932,001,938**
									$ -

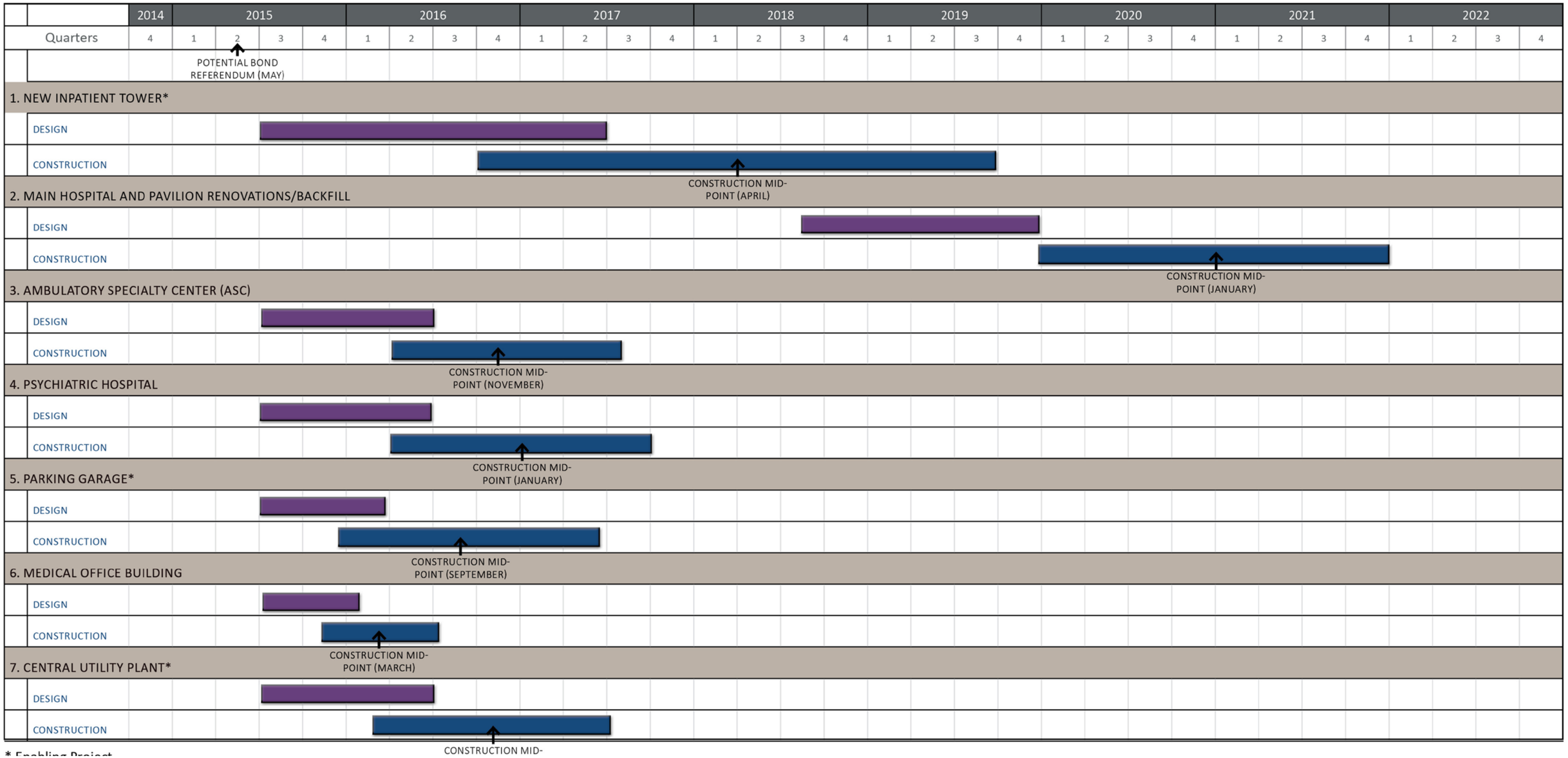
Option A: Multi-phase Schedule, May 2015 Bond
Escalation Worksheet

		QUATERLY ESCALATION	COMPOUNDED ESCALTION	PROJECT BUNDLE MIDPOINT	2014 DOLLARS	ESCALATED DOLLARS
2014	Q4	1.50%	0.00%			
2015	Q1	1.50%	1.50%			
	Q2	1.50%	3.00%			
	Q3	1.50%	4.50%			
	Q4	1.50%	6.00%			
2016	Q1	1.50%	7.50%			
	Q2	1.50%	9.00%			
	Q3	1.50%	10.50%	PARKING GARAGE	$ 63,966,750	$ 70,683,259
	Q4	1.50%	12.00%			
2017	Q1	1.50%	13.50%			
	Q2	1.50%	15.00%	AMBULATORY SPECILATY CENTER	$ 63,814,053	$ 73,386,161
	Q3	1.50%	16.50%	CENTRAL UTILITY PLANT	$ 21,935,795	$ 25,555,201
	Q4	1.50%	18.00%			
2018	Q1	1.50%	19.50%	PSYCHIATRIC HOSPITAL	$ 87,534,647	$ 104,603,904
	Q2	1.50%	21.00%	NEW INPATIENT TOWER	$ 434,868,657	$ 526,191,075
	Q3	1.50%	22.50%	MEDICAL OFFICE BUILDING	$ 16,201,589	$ 19,846,947
	Q4	1.50%	24.00%			
2019	Q1	1.50%	25.50%			
	Q2	1.50%	27.00%			
	Q3	1.50%	28.50%			
	Q4	1.50%	30.00%			
2020	Q1	1.50%	31.50%			
	Q2	1.50%	33.00%			
	Q3	1.50%	34.50%			
	Q4	1.50%	36.00%			
2021	Q1	1.50%	37.50%	MAIN HOSPTIAL PAVILION BACKFILL	$ 66,749,113	$ 91,780,030
	Q2	1.50%	39.00%			
	Q3	1.50%	40.50%			
	Q4	1.50%	42.00%			
2022	Q1	1.50%	43.50%			
	Q2	1.50%	45.00%			
	Q3	1.50%	46.50%			
	Q4	1.50%	48.00%			
				TOTALS	**$ 755,070,604**	**$ 912,046,576**

Option A: Multi-phase Schedule, November 2015 Bond
Escalation Worksheet

		QUATERLY ESCALATION	COMPOUNDED ESCALTION	PROJECT BUNDLE MIDPOINT	2014 DOLLARS	ESCALATED DOLLARS
2014	Q4	1.50%	0.00%			
2015	Q1	1.50%	1.50%			
	Q2	1.50%	3.00%			
	Q3	1.50%	4.50%			
	Q4	1.50%	6.00%			
2016	Q1	1.50%	7.50%			
	Q2	1.50%	9.00%			
	Q3	1.50%	10.50%			
	Q4	1.50%	12.00%			
2017	Q1	1.50%	13.50%	PARKING GARAGE	$ 63,966,750	$ 72,602,261
	Q2	1.50%	15.00%			
	Q3	1.50%	16.50%			
	Q4	1.50%	18.00%			
2018	Q1	1.50%	19.50%	CENTRAL UTILITY PLANT + A.S.C.	$ 85,749,848	$ 102,471,068
	Q2	1.50%	21.00%			
	Q3	1.50%	22.50%	NEW INPATIENT TOWER	$ 434,868,657	$ 532,714,105
	Q4	1.50%	24.00%			
2019	Q1	1.50%	25.50%	PSYCHIATRIC HOSPITAL	$ 87,534,647	$ 109,855,982
	Q2	1.50%	27.00%	MEDICAL OFFICE BUILDING	$ 16,201,589	$ 20,576,018
	Q3	1.50%	28.50%			
	Q4	1.50%	30.00%			
2020	Q1	1.50%	31.50%			
	Q2	1.50%	33.00%			
	Q3	1.50%	34.50%			
	Q4	1.50%	36.00%			
2021	Q1	1.50%	37.50%			
	Q2	1.50%	39.00%			
	Q3	1.50%	40.50%	MAIN HOSPTIAL PAVILION BACKFILL	$ 66,749,113	$ 93,782,503
	Q4	1.50%	42.00%			
2022	Q1	1.50%	43.50%			
	Q2	1.50%	45.00%			
	Q3	1.50%	46.50%			
	Q4	1.50%	48.00%			
				TOTALS	**$ 755,070,604**	**$ 932,001,938**

OptionB: Front-loaded Schedule, May 2015 Bond Schedule



* Enabling Project

OptionB: Front-loaded Schedule, May 2015 Bond
Total Project Cost Summary

		New Inpatient Tower	Main Hospital and Pavilion Renovations/Backfill	Ambulatory Specialty Center*	Psychiatric Hospital*	Parking Garage (2300 Spaces)	Medical Office Building	Central Utility Plant	Total Program Project Cost
1	**Project Construction Costs**	**$ 212,720,220**	**$ 30,278,729**	**$ 31,756,455**	**$ 47,127,904**	**$ 41,975,000**	**$ 8,891,102**	**$ 14,181,876**	**$ 386,931,286**
2	**Contractors Fees + Insurance**	$ 36,162,437	$ 5,147,384	$ 5,398,597	$ 8,011,744	$ 7,135,750	$ 1,511,487	$ 2,410,919	$ 65,778,319
3	**CONSTRUCTION COST LIMITATION (CCL)**	**$ 248,882,657**	**$ 35,426,113**	**$ 37,155,053**	**$ 55,139,647**	**$ 49,110,750**	**$ 10,402,589**	**$ 16,592,795**	**$ 452,709,604**
4	**Professional Fees:**	**$ 36,087,985**	**$ 5,136,786**	**$ 5,387,483**	**$ 7,995,249**	**$ 7,121,059**	**$ 1,508,375**	**$ 2,405,955**	**$ 65,642,893**
	(a) A/E Basic Fees	$ 17,421,786	$ 2,479,828	$ 2,600,854	$ 3,859,775	$ 3,437,753	$ 728,181	$ 1,161,496	$ 31,689,672
	(b) A/E Additional Services Fees	$ 3,733,240	$ 531,392	$ 557,326	$ 827,095	$ 736,661	$ 156,039	$ 248,892	$ 6,790,644
	(c) Misc. Design Consultants	$ 11,199,720	$ 1,594,175	$ 1,671,977	$ 2,481,284	$ 2,209,984	$ 468,117	$ 746,676	$ 20,371,932
	(d) Project Management Fee	$ 3,733,240	$ 531,392	$ 557,326	$ 827,095	$ 736,661	$ 156,039	$ 248,892	$ 6,790,644
5	**Furniture, Fixtures & Equipment**	**$ 88,353,343**	**$ 16,118,881**	**$ 10,589,190**	**$ 10,200,835**	**$ -**	**$ 1,924,479**	**$ -**	**$ 113,641,516**
	(a) Medical Equipment	$ 62,220,664	$ 12,399,139	$ 9,288,763	$ 8,270,947	$ -	$ 1,560,388	$ -	$ 93,739,902
	(b) Food Service Euipment	$ 12,444,133	$ 1,771,306	$ -	$ -	$ -	$ -	$ -	$ 14,215,438
	(c) Laundry Service Equipment	$ 4,977,653	$ 708,522	$ -	$ -	$ -	$ -	$ -	$ 5,686,175
	(d) Furniture Fixtures and Equipment (FFE)	$ 8,710,893	$ 1,239,914	$ 1,300,427	$ 1,929,888	$ -	$ 364,091	$ -	
6	**Other Work, Institution Managed**	**$ 3,733,000**	**$ 531,392**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	$ 4,264,392
	(a) Instructional Technology	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	(b) Moving Expenses (1.5% of CCL)	$ 3,733,000	$ 531,392	$ -	$ -	$ -	$ -	$ -	$ 4,264,392
7	**Miscellaneous Expenses**	**$ 27,945,438**	**$ 5,284,407**	**$ 5,108,820**	**$ 5,927,512**	**$ 368,331**	**$ 806,201**	**$ 448,005**	**$ 45,888,714**
	(a) Informational Technology/Equipment	$23,589,992	$4,664,450	$ 4,458,606	$ 4,962,568	$ -	$ 624,155	$ 124,446	$ 38,424,218
	(b) Testing and Commissioning	$ 2,488,827	$ 354,261	$ 371,551	$ 551,396	$ -	$ 104,026	$ 165,928	$ 4,035,989
	(c) Owner's Other Costs (0.75% of CCL)	$ 1,866,620	$ 265,696	$ 278,663	$ 413,547	$ 368,331	$ 78,019	$ 157,632	$ 3,428,508
8	**Project Contingency**	**$ 29,865,919**	**$ 4,251,134**	**$ 5,573,258**	**$ 8,270,947**	**$ 7,366,613**	**$ 1,560,388**	**$ 2,488,919**	**$ 59,377,178**
	(a) Owner Construction Contingency	$ 19,910,613	$ 2,834,089	$ 3,715,505	$ 5,513,965	$ 4,911,075	$ 1,040,259	$ 1,659,280	$ 39,584,785
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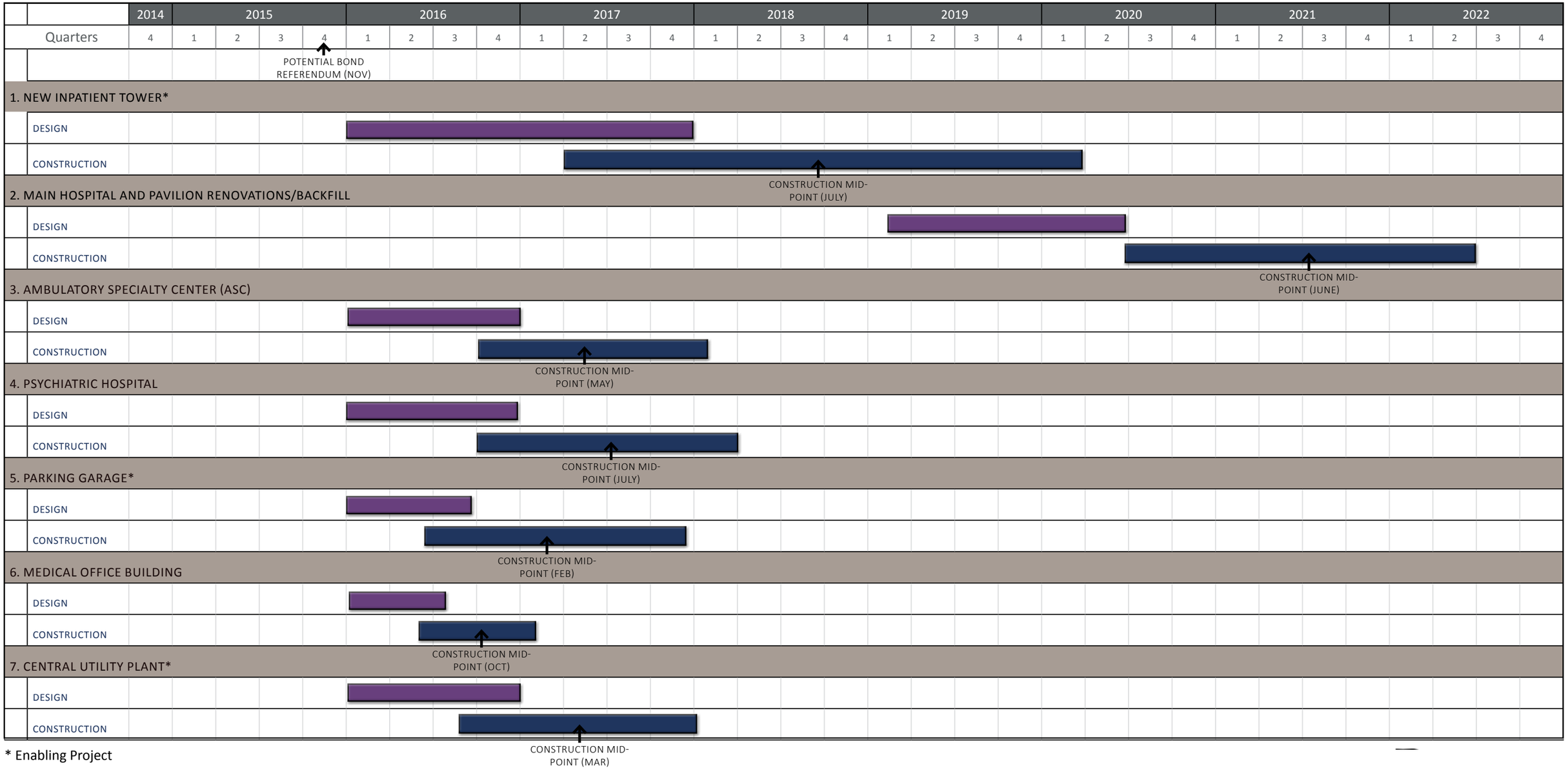
11	**SUBTOTAL OWNER COSTS**	**$ 185,986,000**	**$ 31,323,000**	**$ 26,659,000**	**$ 32,395,000**	**$ 14,856,000**	**$ 5,799,000**	**$ 5,343,000**	**$ 302,361,000**
12	**SUBTOTAL (CCL + OWNER'S COST)**	**$ 434,868,657**	**$ 66,749,113**	**$ 63,814,053**	**$ 87,534,647**	**$ 63,966,750**	**$ 16,201,589**	**$ 21,935,795**	**$ 755,070,604**
13	**TOTAL PROJECT COST (TPC) 2014 DOLLARS**	$ 434,868,657	$ 66,749,113	$ 63,814,053	$ 87,534,647	$ 63,966,750	$ 16,201,589	$ 21,935,795	$ 755,070,604
14	**TOTAL PROJECT COST ESCALATED TO PROJECT MIDPOINT**	**$ 526,191,075**	**$ 91,780,030**	**$ 71,471,739**	**$ 98,038,805**	**$ 70,683,259**	**$ 17,416,709**	**$ 23,910,017**	**$ 899,491,633**

OptionB: Front-loaded Schedule, November 2015 Bond Schedule



* Enabling Project

Option B: Front-loaded Schedule, November 2015 Bond
Total Project Cost Summary

		1	2	3	4	5	6	7	TOTALS 1-7
		New Inpatient Tower	Main Hospital and Pavilion Renovations/Backfill	Ambulatory Specialty Center*	Psychiatric Hospital*	Parking Garage (2300 Spaces)	Medical Office Building	Central Utility Plant	Total Program Project Cost
1	**Project Construction Costs**	**$ 212,720,220**	**$ 30,278,729**	**$ 31,756,455**	**$ 47,127,904**	**$ 41,975,000**	**$ 8,891,102**	**$ 14,181,876**	**$ 386,931,286**
2	**Contractors Fees + Insurance**	$ 36,162,437	$ 5,147,384	$ 5,398,597	$ 8,011,744	$ 7,135,750	$ 1,511,487	$ 2,410,919	$ 65,778,319
3	**CONSTRUCTION COST LIMITATION (CCL)**	**$ 248,882,657**	**$ 35,426,113**	**$ 37,155,053**	**$ 55,139,647**	**$ 49,110,750**	**$ 10,402,589**	**$ 16,592,795**	**$ 452,709,604**
4	**Professional Fees:**	**$ 36,087,985**	**$ 5,136,786**	**$ 5,387,483**	**$ 7,995,249**	**$ 7,121,059**	**$ 1,508,375**	**$ 2,405,955**	**$ 65,642,893**
	(a) A/E Basic Fees	$ 17,421,786	$ 2,479,828	$ 2,600,854	$ 3,859,775	$ 3,437,753	$ 728,181	$ 1,161,496	$ 31,689,672
	(b) A/E Additional Services Fees	$ 3,733,240	$ 531,392	$ 557,326	$ 827,095	$ 736,661	$ 156,039	$ 248,892	$ 6,790,644
	(c) Misc. Design Consultants	$ 11,199,720	$ 1,594,175	$ 1,671,977	$ 2,481,284	$ 2,209,984	$ 468,117	$ 746,676	$ 20,371,932
	(d) Project Management Fee	$ 3,733,240	$ 531,392	$ 557,326	$ 827,095	$ 736,661	$ 156,039	$ 248,892	$ 6,790,644
5	**Furniture, Fixtures & Equipment**	**$ 88,353,343**	**$ 16,118,881**	**$ 10,589,190**	**$ 10,200,835**	**$ -**	**$ 1,924,479**	**$ -**	**$ 113,641,516**
	(a) Medical Equipment	$ 62,220,664	$ 12,399,139	$ 9,288,763	$ 8,270,947	$ -	$ 1,560,388	$ -	$ 93,739,902
	(b) Food Service Euipment	$ 12,444,133	$ 1,771,306	$ -	$ -	$ -	$ -	$ -	$ 14,215,438
	(c) Laundry Service Equipment	$ 4,977,653	$ 708,522	$ -	$ -	$ -	$ -	$ -	$ 5,686,175
	(d) Furniture Fixtures and Equipment (FFE)	$ 8,710,893	$ 1,239,914	$ 1,300,427	$ 1,929,888	$ -	$ 364,091	$ -	
6	**Other Work, Institution Managed**	**$ 3,733,000**	**$ 531,392**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	$ 4,264,392
	(a) Instructional Technology	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	(b) Moving Expenses (1.5% of CCL)	$ 3,733,000	$ 531,392	$ -	$ -	$ -	$ -	$ -	$ 4,264,392
7	**Miscellaneous Expenses**	**$ 27,945,438**	**$ 5,284,407**	**$ 5,108,820**	**$ 5,927,512**	**$ 368,331**	**$ 806,201**	**$ 448,005**	**$ 45,888,714**
	(a) Informational Technology/Equipment	$23,589,992	$4,664,450	$ 4,458,606	$ 4,962,568	$ -	$ 624,155	$ 124,446	$ 38,424,218
	(b) Testing and Commissioning	$ 2,488,827	$ 354,261	$ 371,551	$ 551,396	$ -	$ 104,026	$ 165,928	$ 4,035,989
	(c) Owner's Other Costs (0.75% of CCL)	$ 1,866,620	$ 265,696	$ 278,663	$ 413,547	$ 368,331	$ 78,019	$ 157,632	$ 3,428,508
8	**Project Contingency**	**$ 29,865,919**	**$ 4,251,134**	**$ 5,573,258**	**$ 8,270,947**	**$ 7,366,613**	**$ 1,560,388**	**$ 2,488,919**	**$ 59,377,178**
	(a) Owner Construction Contingency	$ 19,910,613	$ 2,834,089	$ 3,715,505	$ 5,513,965	$ 4,911,075	$ 1,040,259	$ 1,659,280	$ 39,584,785
	(b) Owner Project Contingency	$ 9,955,306	$ 1,417,045	$ 1,857,753	$ 2,756,982	$ 2,455,538	$ 520,129	$ 829,640	$ 19,792,393
11	**SUBTOTAL OWNER COSTS**	**$ 185,986,000**	**$ 31,323,000**	**$ 26,659,000**	**$ 32,395,000**	**$ 14,856,000**	**$ 5,799,000**	**$ 5,343,000**	**$ 302,361,000**
12	**SUBTOTAL (CCL + OWNER'S COST)**	**$ 434,868,657**	**$ 66,749,113**	**$ 63,814,053**	**$ 87,534,647**	**$ 63,966,750**	**$ 16,201,589**	**$ 21,935,795**	**$ 755,070,604**
13	**TOTAL PROJECT COST (TPC) 2014 DOLLARS**	$ 434,868,657	$ 66,749,113	$ 63,814,053	$ 87,534,647	$ 72,602,261	$ 18,145,780	$ 21,935,795	$ 755,070,604
14	**TOTAL PROJECT COST ESCALATED TO PROJECT MIDPOINT**	**$ 532,714,105**	**$ 93,782,503**	**$ 73,386,161**	**$ 101,977,864**	**$ 72,602,261**	**$ 18,145,780**	**$ 25,226,164.51**	**$ 917,834,838**
									$ -

Option B: Front-loaded Schedule, May 2015 Bond Escalation Worksheet

FRONT LOADED SCHEDULE

		QUATERLY ESCALATION	COMPOUNDED ESCALTION	PROJECT BUNDLE MIDPOINT	2014 DOLLARS	ESCALATED DOLLARS
2014	Q4	1.50%	0.00%			
2015	Q1	1.50%	1.50%			
	Q2	1.50%	3.00%			
	Q3	1.50%	4.50%			
	Q4	1.50%	6.00%			
2016	Q1	1.50%	7.50%	MEDICAL OFFICE BUILDING	$ 16,201,589	$ 17,416,709
	Q2	1.50%	9.00%	CENTRAL UTILITY PLANT	$ 21,935,795	$ 23,910,017
	Q3	1.50%	10.50%	PARKING GARAGE	$ 63,966,750	$ 70,683,259
	Q4	1.50%	12.00%	AMBULATORY SPECIALTY CENTER/PSYCHIATRIC HOSPITAL	$ 151,348,700	$ 169,510,544
2017	Q1	1.50%	13.50%			
	Q2	1.50%	15.00%			
	Q3	1.50%	16.50%			
	Q4	1.50%	18.00%			
2018	Q1	1.50%	19.50%			
	Q2	1.50%	21.00%	NEW INPATIENT TOWER	$ 434,868,657	$ 526,191,075
	Q3	1.50%	22.50%			
	Q4	1.50%	24.00%			
2019	Q1	1.50%	25.50%			
	Q2	1.50%	27.00%			
	Q3	1.50%	28.50%			
	Q4	1.50%	30.00%			
2020	Q1	1.50%	31.50%			
	Q2	1.50%	33.00%			
	Q3	1.50%	34.50%			
	Q4	1.50%	36.00%			
2021	Q1	1.50%	37.50%	MAIN HOSPTIAL PAVILION BACKFILL	$ 66,749,113	$ 91,780,030
	Q2	1.50%	39.00%			
	Q3	1.50%	40.50%			
	Q4	1.50%	42.00%			
2022	Q1	1.50%	43.50%			
	Q2	1.50%	45.00%			
	Q3	1.50%	46.50%			
	Q4	1.50%	48.00%			
				TOTALS	**$ 755,070,604**	**$ 899,491,633**

Option B: Front-loaded Schedule, November 2015 Bond Escalation Worksheet

Option B: Front-loaded Project Start

		QUATERLY ESCALATION	COMPOUNDED ESCALTION	PROJECT BUNDLE MIDPOINT	2014 DOLLARS	ESCALATED DOLLARS
2014	Q4	1.50%	0.00%			
2015	Q1	1.50%	1.50%			
	Q2	1.50%	3.00%			
	Q3	1.50%	4.50%			
	Q4	1.50%	6.00%			
2016	Q1	1.50%	7.50%			
	Q2	1.50%	9.00%			
	Q3	1.50%	10.50%			
	Q4	1.50%	12.00%	MEDICAL OFFICE BUILDING	$ 16,201,589	$ 18,145,780
2017	Q1	1.50%	13.50%	PARKING GARAGE	$ 63,966,750	$ 72,602,261
	Q2	1.50%	15.00%	AMBULATORY SPECIALTY CENTER, CUP	$ 85,749,848	$ 98,612,325
	Q3	1.50%	16.50%	PSYCHIATRIC HOSPITAL	$ 87,534,647	$ 101,977,864
	Q4	1.50%	18.00%			
2018	Q1	1.50%	19.50%			
	Q2	1.50%	21.00%			
	Q3	1.50%	22.50%	NEW INPATIENT TOWER	$ 434,868,657	$ 532,714,105
	Q4	1.50%	24.00%			
2019	Q1	1.50%	25.50%			
	Q2	1.50%	27.00%			
	Q3	1.50%	28.50%			
	Q4	1.50%	30.00%			
2020	Q1	1.50%	31.50%			
	Q2	1.50%	33.00%			
	Q3	1.50%	34.50%			
	Q4	1.50%	36.00%			
2021	Q1	1.50%	37.50%			
	Q2	1.50%	39.00%			
	Q3	1.50%	40.50%	MAIN HOSPTIAL PAVILION BACKFILL	$ 66,749,113	$ 93,782,503
	Q4	1.50%	42.00%			
2022	Q1	1.50%	43.50%			
	Q2	1.50%	45.00%			
	Q3	1.50%	46.50%			
	Q4	1.50%	48.00%			
				TOTALS	**$ 755,070,604**	**$ 917,834,838**

Construction Cost Estimate for Both Schedule Options and All Project Bundles

Tuesday, October 07, 2014

		Bundle 1	Bundle 2	Bundle 3	Bundle 4	Bundle 5	Bundle 6	Bundle 7	TOTAL
		New Inpatient Tower	Main Hospital and Pavilion Renovations/Backfill	Ambulatory Specialty Center*	Psychiatric Hospital*	Parking Garage (2300 Spaces)	Medical Office Building	Central Utility Plant	Total Program Project Cost
A. SUBSTRUCTURE		**$ 6,083,798**	**$ -**	**$ 635,129**	**$ 942,558**	**$ 1,888,875**	**$ 400,100**	**$ 631,093**	**$ 10,581,554**
A 10. FOUNDATIONS		$ 3,254,619	$ -	$ 635,129	$ 942,558	$ 1,888,875	$ 400,100	$ 631,093	$ 7,752,375
A 20. BASEMENT CONSTRUCTION		$ 2,829,179	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,829,179
B. SHELL		**$ 42,714,220**	**$ 1,922,699**	**$ 5,525,623**	**$ 8,200,255**	**$ 24,975,125**	**$ 1,453,695**	**$ 1,957,099**	**$ 86,748,717**
B 10. SUPERSTRUCTURE		$ 25,739,147	$ 756,968	$ 2,858,081	$ 4,241,511	$ 23,086,250	$ 720,179	$ 1,006,913	$ 58,409,050
B 20. EXTERIOR ENCLOSURE		$ 14,954,231	$ 666,132	$ 2,222,952	$ 3,298,953	$ 1,888,875	$ 595,704	$ 765,821	$ 24,392,669
B 30. ROOFING		$ 2,020,842	$ 499,599	$ 444,590	$ 659,791	$ -	$ 137,812	$ 184,364	$ 3,946,999
C. INTERIORS		**$ 38,417,272**	**$ 9,235,012**	**$ 7,780,332**	**$ 11,546,336**	**$ 1,783,938**	**$ 2,596,202**	**$ 560,184**	**$ 71,919,275**
C 10. INTERIOR CONSTRUCTION		$ 23,463,040	$ 3,875,677	$ 3,493,210	$ 5,184,069	$ 209,875	$ 1,271,428	$ 173,019	$ 37,670,318
C 20. STAIRS		$ 3,509,884	$ 635,853	$ 1,111,476	$ 1,649,477	$ 1,259,250	$ 186,713	$ 205,637	$ 8,558,290
C 30. INTERIOR FINISHES		$ 11,444,348	$ 4,723,482	$ 3,175,646	$ 4,712,790	$ 314,813	$ 1,138,061	$ 181,528	$ 25,690,667
D. SERVICES		**$ 107,551,343**	**$ 16,074,977**	**$ 15,290,733**	**$ 22,692,086**	**$ 7,870,313**	**$ 3,338,609**	**$ 10,083,314**	**$ 182,901,374**
D 10. CONVEYING SYSTEMS		$ 3,531,156	$ 363,345	$ 381,077	$ 565,535	$ 587,650	$ 108,471	$ -	$ 5,537,234
D 20. PLUMBING		$ 22,207,991	$ 4,774,956	$ 5,081,033	$ 7,540,465	$ 1,888,875	$ 915,784	$ 2,269,100	$ 44,678,203
D 30. HVAC		$ 41,352,811	$ 5,683,317	$ 5,160,424	$ 7,658,284	$ -	$ 1,214,525	$ 4,538,200	$ 65,607,561
D 40. FIRE PROTECTION		$ 2,786,635	$ 308,843	$ 222,295	$ 329,895	$ 1,301,225	$ 118,252	$ 173,019	$ 5,240,164
D 50. ELECTRICAL		$ 37,672,751	$ 4,944,516	$ 4,445,904	$ 6,597,907	$ 4,092,563	$ 981,578	$ 3,102,995	$ 61,838,212
E. EQUIPMENT AND FURNISHINGS		**$ 4,956,381**	**$ 814,498**	**$ 1,540,188**	**$ 2,285,703**	**$ -**	**$ 604,595**	**$ -**	**$ 10,201,365**
E 10. EQUIPMENT (CONTRACTOR - FIXED)		$ 425,440	$ 121,115	$ 666,886	$ 989,686	$ -	$ 204,495	$ -	$ 2,407,622
E 20. FURNISHINGS (CONTRACTOR - FIXED)		$ 4,530,941	$ 693,383	$ 873,303	$ 1,296,017	$ -	$ 400,100	$ -	$ 7,793,743
F. SPECIAL CONSTRUCTION & DEMOLITION		**$ 12,997,206**	**$ 2,231,542**	**$ 984,450**	**$ 1,460,965**	**$ 5,456,750**	**$ 497,902**	**$ 950,186**	**$ 24,579,001**
F 10. SITE CONSTRUCTION		$ 12,843,556	$ 181,672	$ 984,450	$ 1,460,965	$ 5,456,750	$ 497,902	$ 950,186	$ 22,375,481
F 20. DEMOLITION		$ 153,650	$ 2,049,870	$ -	$ -	$ -	$ -	$ -	$ 2,203,520
SUBTOTAL COST OF WORK		**$ 212,720,220**	**$ 30,278,729**	**$ 31,756,455**	**$ 47,127,904**	**$ 41,975,000**	**$ 8,891,102**	**$ 14,181,876**	**$ 386,931,286**
G. NON-FIELD RELATED CONSTRUCTION COSTS									
GENERAL CONDITIONS	4.75%	$ 10,104,210	$ 1,438,240	$ 1,508,432	$ 2,238,575	$ 1,993,813	$ 422,327	$ 673,639	$ 18,379,236
CONTRACTOR FEES	5.00%	$ 10,636,011	$ 1,513,936	$ 1,587,823	$ 2,356,395	$ 2,098,750	$ 444,555	$ 709,094	$ 19,346,564
INSURANCES	1.25%	$ 2,659,003	$ 378,484	$ 396,956	$ 589,099	$ 524,688	$ 111,139	$ 177,273	$ 4,836,641
PAYMENT AND PERFORMANCE BOND	1.00%	$ 2,127,202	$ 302,787	$ 317,565	$ 471,279	$ 419,750	$ 88,911	$ 141,819	$ 3,869,313
CONSTRUCTION CONTINGENCY	5.00%	$ 10,636,011	$ 1,513,936	$ 1,587,823	$ 2,356,395	$ 2,098,750	$ 444,555	$ 709,094	$ 19,346,564
SUBTOTAL PROJECT SOFT COSTS		**$ 36,162,437**	**$ 5,147,384**	**$ 5,398,597**	**$ 8,011,744**	**$ 7,135,750**	**$ 1,511,487**	**$ 2,410,919**	**$ 65,778,319**
COST OF WORK + PROJECT SOFT COSTS		**$ 248,882,658**	**$ 35,426,113**	**$ 37,155,053**	**$ 55,139,647**	**$ 49,110,750**	**$ 10,402,589**	**$ 16,592,795**	**$ 452,709,605**