

# **EXHIBIT 31**

# PRINCE GEORGE'S HOSPITAL CENTER FACILITY ASSESSMENT REPORT

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AUGUST 2013

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## Index

### Facility Analysis

- Introduction
- Site Analysis
- Building Analysis
- Engineering Systems Analysis

### Appendix

- A – Site Assessment Checklist
- B – Facility Assessment Checklist
- C – User Group Meeting Minutes

## Introduction

The following report provides the findings of the facility assessment. The assessment goal is to provide an overall evaluation of the facilities to assist the planning process for maintaining, replacing, and/or modernizing space.

The report is composed of three major sections:

1. Site analysis consisting of accessibility, wayfinding, and safety assessment.
2. Building analysis consisting of departmental space, functionality, and flexibility assessment.
3. Engineering systems analysis considering current condition and anticipated useful life of mechanical, electrical, plumbing, fire protection, and technology building systems.

A color coded scheme was developed to illustrate the potential of each building section in supporting hospital processes and patient care.



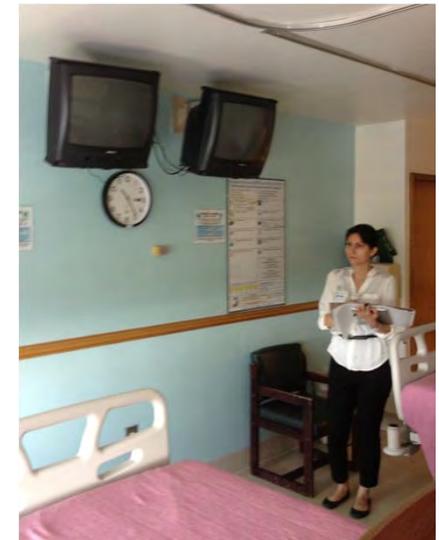
Color Coding Legend

	Poor	Space is below current benchmark space standards, and requires significant upgrades or replacement. Is a potential candidate for replacement or demolition, because it is costly to renovate or maintain.
	Fair	Space needs moderate upgrades or replacement to meet the space requirements and is a potential candidate for modernization.
	Good	Space requires little to no upgrades or replacement to extend useful life, and is a strong candidate to maintain and operate.

## Methods

The following methods were employed to obtain required information to conduct the facility assessment:

- Interview: General information regarding history of construction and renovations, current function of various sections of the facility, current issues and users groups ideal design, were documented through meetings with the facility manager and user groups.
- Review of the drawing documents: Key room sizes and program adjacencies were noted in the existing facility floor plans. These values were compared against today's healthcare standards and processes to identify areas for improvement.
- Facility Tour: Through a tour guided by the facility manager, current function of each space was documented in detail. The departments were assessed in three categories of space flexibility, quality of interior, and functionality. Mechanical and electric systems were evaluated to determine the useful life and potential costs to extend it.
- The assessment checklist and user meeting minutes can be found in the Appendix document.



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## Summary of Site and Architecture Key Findings

The findings do not support the continued use of the hospital building for acute care functions.

The age and configuration of the existing facility below current standards, and the quality of the patient experience in the current facility is compromised by these factors. The engineering systems are in need of significant upgrades or replacement, which render continued use or expansion of the existing facility questionable relative to the benefits of providing new engineering systems in a new facility, where both could concurrently offer the latest in medical space planning, patient care, and patient / visitor / staff amenities.

The Hospital is considering conversion of some existing space to outpatient care, which may be appropriate on a case-by case basis, but the age and condition of the facility suggest that for outpatient care, a new appropriately sized and planned facility on the site would be more appropriate.

It is not recommended to continue to expand the Hospital in the current location. The benefits of new idealized planning of acute care space would be compromised by the quality and organization of the existing building spaces.

The existing site is currently constrained to the point that new construction for acute care services would be functionally and physically compromised by the existing building shape and organization, and by the shape of the available open space on the existing site. The site does not provide enough space to build a replacement facility in one phase, and therefore, any expansion plans would be compromised by phased demolition of existing buildings and/or parking. Construction activity on the existing open spaces would severely restrict parking capacity and site access, while demolition of some existing facilities such as the parking garage to provide open footprints adjacent to the main diagnostic chassis, would be difficult and costly due to the phasing required and due to providing temporary parking and entrance locations during construction.

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## Summary of Site and Architecture Key Findings

### Site Analysis

- Site is used for multiple purposes including the Hospital, Health Department, Retail Pharmacy, and Public Utilities (towers)
- Site is located far from public access points and other community services. Signage is provided, but way finding is not intuitive and direct visual cues to entrances do not exist from major access roads.
- Parking demand at peak periods is greater than site capacity
- Growth constraints exist due to irregular parcel shapes and steep topography

### Building Analysis

- Critical program adjacencies are missing:  
(Surgery and Central Sterile / MRI and CT / Imaging and ED / ED and ICU / Public entries and education and amenities)
- Key room sizes are small compared to industry standards (Patient rooms, Dialysis, Physical Therapy, ED, Pharmacy)
- Inflexibility to adapt to modern key room sizes or planning standards due to structural/interior impediments (patient rooms, imaging, lab)
- Staff and clinical support areas poorly designed to support smooth staff/patient flow  
(Pharmacy, Lab, ED triage, Imaging, Central Sterile)
- Quality of interiors does not measure up to the industry's current direction toward creation of therapeutic environment  
(patient rooms / waiting areas / staff work area).

### Engineering Systems Analysis

- Chiller plant cooling capacity is maximized and not connected to emergency power
- Air handling systems need renewal at ACF, J and E wings
- Hydronic systems are failing and need renewal at lower level mechanical rooms
- Electrical gear is beyond useful life and manufacturer parts are limited
- Emergency power systems need replacement in K wing and CUP
- Fire alarm system requires complete code upgrade
- Plumbing systems are fragmented and need immediate renewal
- IT equipment room locations are at risk from heat and wet utilities
- Buildings are not full sprinklered

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## Site Analysis

Parameters selected for site assessment were derived from best practices and the industry standards which are recommended to improve user safety and health, and support building energy savings .  
The parameters represent three major categories:

- Accessibility and community connectivity
- Environmental Impact
- Safety and Security
- Growth and Flexibility

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## Site Analysis- Parameters

### Accessibility and community connectivity:

- Is the hospital located so that majority of patients and staff can arrive in less than an hour from departure using their typical transportation method?
- Is the facility located within 3 minutes walking distance from other services available to the same visitor/staff population?
- Does the accessibility/parking comply with ADA codes?
- Is clear signage available to direct visitors from access roads and navigate their way on campus?
- Trauma / Helipads(s) – volumes are down to  $\pm 50$ / month from  $\pm 100$ / month a few years ago, but access is critical for trauma service

### Environmental Impact/Energy Efficiency:

- Does the building orientation facilitate passive conditioning/ sunlight energy gain when needed to reduce air conditioning loads?
- Is cool pavement used to reduce heath island effect and improve comfort?
- Is there an adequate amount of vegetation surrounding the parking and the building?
- Is proper shading in place to help minimize excessive solar exposure in the building exterior?

### Safety and Security

- Is the campus well-lit during after dark?
- Is the parking is easy to navigate/ well-lit to support feeling of safety?
- Are dedicated entrances available for certain patient populations (such as a women's center, trauma, mental health or patients with infectious disease) to avoid interfering with other users?
- Are all building entrances secure and monitored at all times?

### Growth and Flexibility

- Are there "open chair" areas on the site, that provide correct expansion zones for diagnostic departments and correct connection points for public and staff?
- Is the central plant at maximum capacity or is there sufficient capacity and or space within the CUP for expansion?
- Can expansion or replacement occur while the facility remains in operation?

## Site Facts

### TOTAL CAMPUS SITE NOTES:

#### PARKING REQUIREMENTS PRINCE GEORGE'S HOSPITAL CENTER:

##### A. PARKING REQUIREMENTS:

1. HOSPITAL 461 BEDS @ 1.5 SPACES/BED	692 SPACES
2. CLINICS AND E.R. 43,865 S.F. @ 1 SPACE/200 SF (INCLUDES 465 SF. ADDITION FOR MRI TRAILER)	220 SPACES
3. MEDICAL OFFICE BUILDING (Conversion of Prior Nursing Home Use): 51,200 S.F @ 1 SPACE/200 SF	256 SPACES
4. DAY CARE CENTER: 93 STUDENTS @ 1 SPACE/6 STUDENTS:	16 SPACES
5. TELECOMMUNICATIONS BUILDING: (VARIANCE V-235-95)	3 SPACES
6. HEATING PLANT: (OCCUPIED BY STAFF ONLY):	3 SPACES
7. HEALTH DEPARTMENT APPROX 66,000 S.F. @ 1 SPACE/200 SF	330 SPACES
8. PHARMACY BUILDING: 990 SF @ 1 SPACE/150 SLF	7 SPACES
9. AMBULATORY SERVICES PAVILION	
24 INTENSIVE CARE UNIT BEDS @ 1.5 SPACES/BED:	36 SPACES
36,300 SF @ 1 SPACE/200 SF:	182 SPACES
TOTAL PARKING SPACES REQUIRED:	1,745 SPACES

##### B. PARKING PROVIDED:

SURFACE PARKING SPACES:	1,100 SPACES
PARKING GARAGE	555 SPACES
TOTAL PARKING PROVIDED	1,655 SPACES
(NOTE 40 HANDICAP SPACES ARE PROVIDED)	

##### C. LOADING SPACES REQUIRED:

1. HOSPITAL GFA. = (INCLUDING ADDITION) 552,900 SF	6 SPACES
2. MEDICAL OFFICE BUILDING GFA. = 52,300 SF	2 SPACES
3. HEALTH DEPARTMENT GFA. = 66,000 SF	1 SPACE
4. HEATING PLANT GFA. = 15,560 SF	1 SPACE
5. TELECOMMUNICATIONS BUILDING: 512 SF:	0 SPACES
TOTAL LOADING SPACES REQUIRED:	10 SPACES

D. LOADING SPACES PROVIDED: 10 SPACES

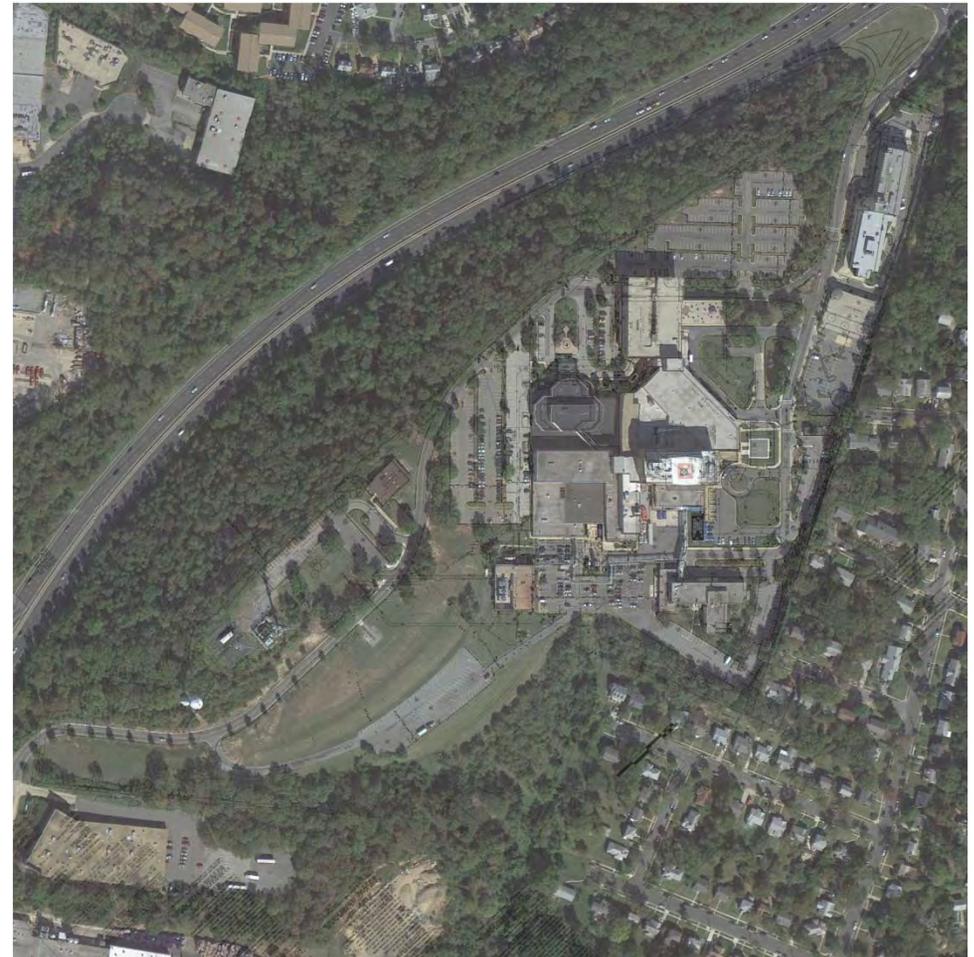
ZONING NOTES: ZONING: R-55

##### 1. PERCENTAGE OF LOT COVERAGE:

AREA COVERED BY BUILDINGS AND PARKING:	929,865 SQUARE FEET
TOTAL TRACT AREA:	1,908,581 SQUARE FEET
MAXIMUM ALLOWED COVERAGE: 60% OR	1,145,149 SQUARE FEET
EXISTING PERCENTAGE OF LOT COVERAGE:	49 %

3 AREA OF PARKING COMPOUND:	654,140 SQUARE FEET
10% GREEN AREA REQUIRED	65,414 SQUARE FEET
GREEN AREA PROVIDED:	81,700 SQUARE FEET OR 11.49%

4. PROJECT SITE HAS AN EXISTING "CELLULAR ONE" WHIP ANTENNA., WHICH COMPLIES WITH SECTION 17-445.04 OF THE PRINCE GEORGE'S COUNTY CRITERIA



THIS INFORMATION COMPILED FROM THE SITE SURVEY CONDUCTED BY JOYCE ENGINEERING CORPORATION DATED 6/16/00

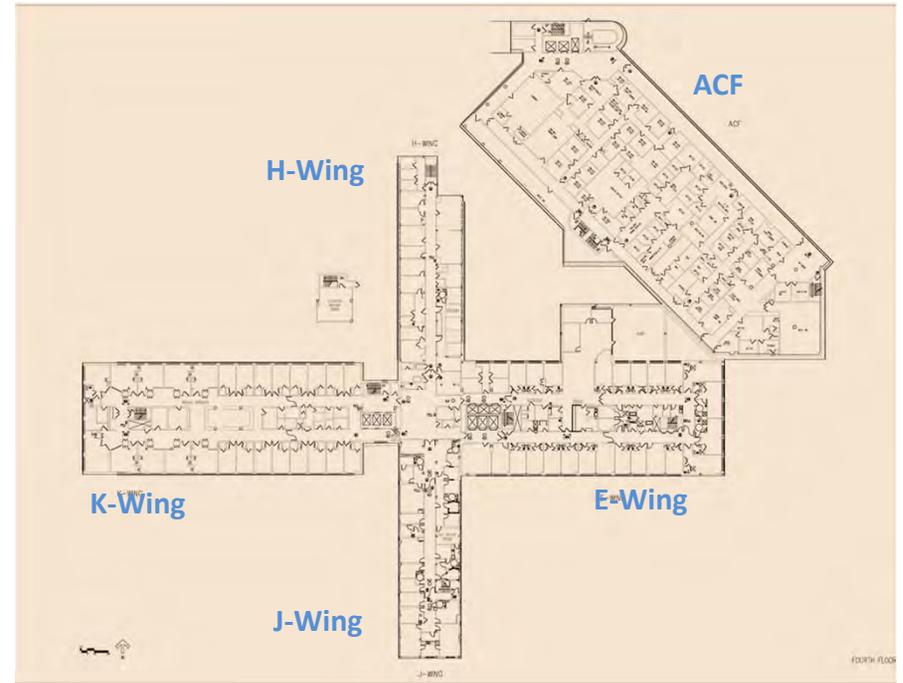
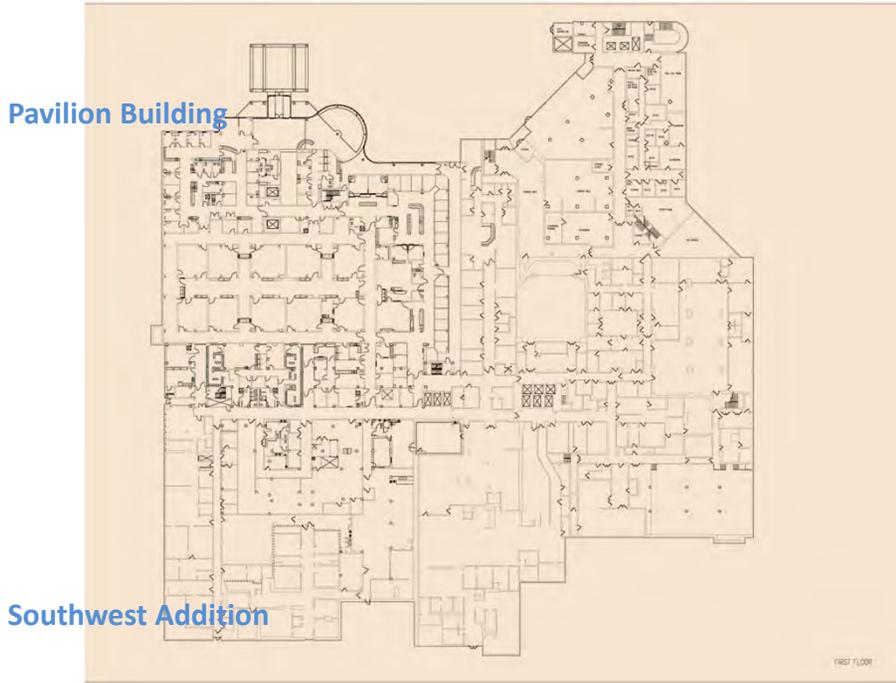
## Existing Buildings and Features

1. Hospital
2. Pavilion
3. ED
4. Health Department
5. Parking Garage
6. Daycare (Vacant)
7. Boiler Planet
8. Pharmacy
9. Spellman Specialty Hospital and Nursing Center (Vacant)
10. MRI Trailer

- KEY:
- MAIN
  - ED –WALK IN
  - ED- AMBULANCE
  - SERVICE
  - DAY SURGERY



# Campus Development / Construction History



H-Wing - 1952

K-Wing - 1957

J-Wing - 1961-2  
Southwest  
Addition - 1962

E-Wing - 1968

ACF - 1977-8

Pavilion - 1995  
H-Wing Renovation

OB Unit  
Renovations -  
2007

NICU / CS  
Upgrades - 2010

CT upgrades

NICU Expansion  
TBD (unfunded)



## Campus Development



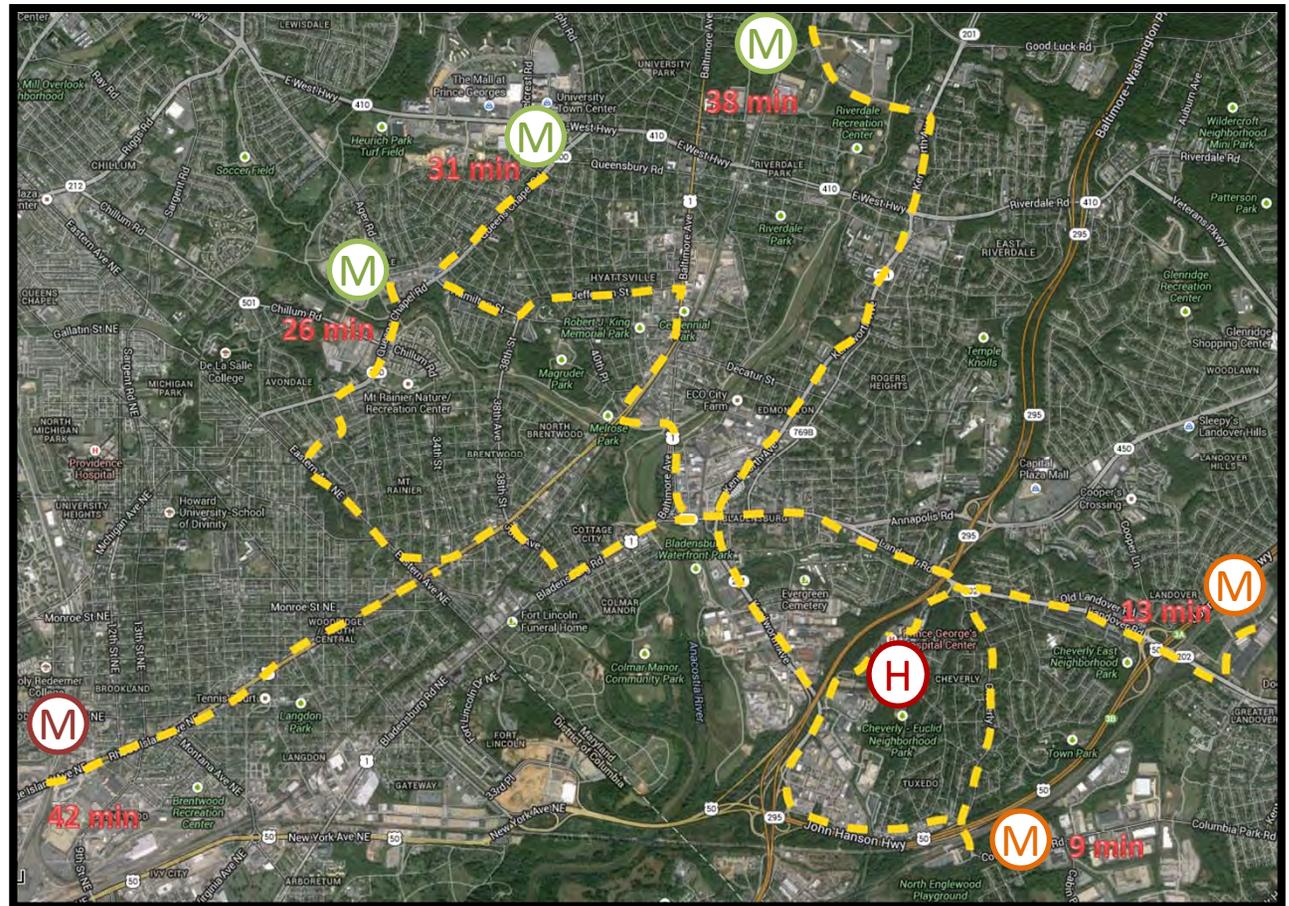
## Public Transportation/ Pedestrian access

The site is located off of Baltimore-Washington Parkway (295) and Landover Road, but is not immediate to a metro stop.

Busses arrive every few minutes from each of the surrounding metro stops and neighborhoods, providing transportation for a significant number of the staff and patients.

Busses travel through the site to three stops, including the health department and along the southwest portions of Hospital Drive. The bus route travels under the hospital parking garage.

Public transportation access is a key need for the staff and patient population. Creating easier and more direct access would be very beneficial.



## Public Transportation/ Pedestrian access



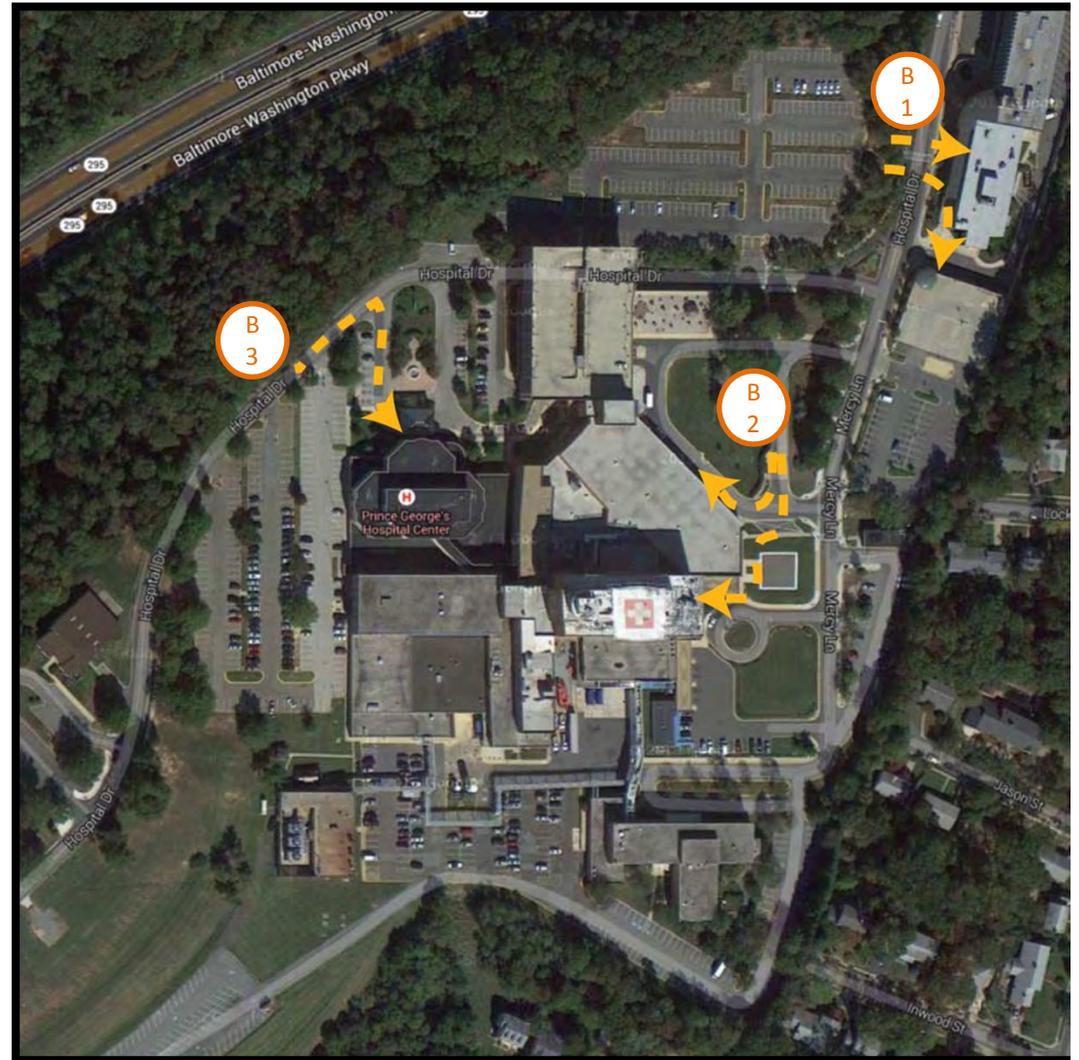
1. Health Department access



2. Metro bus stop at front door



3. Metro bus stop along Hospital Drive



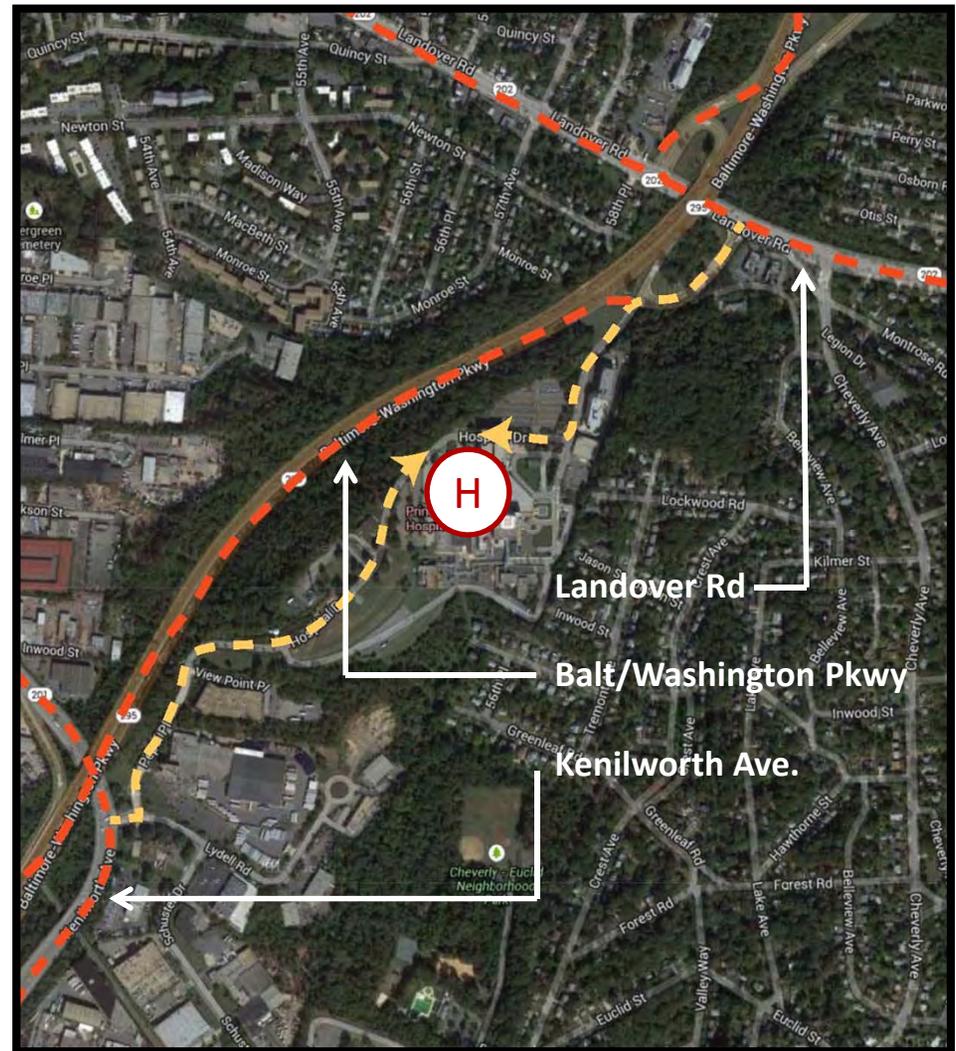
## Site Access, Parking, & Signage

The primary vehicular and emergency access is from the north, from the Baltimore / Washington parkway (295) and Landover road.

The hospital is visible from 295, but once on Hospital Drive arriving from the north, there is little visual cue, other than signage, to direct arriving patients to the facility.

The parking access is convenient to the front door when arriving from the north, but arriving from the south, visitors must travel under the garage and around the building to access the visitor parking. Staff parking is located in the lower levels of the garage and in surface lots to the south and west.

The southern access from Kenilworth on Hospital Drive is through an industrial area and neighborhoods, and is not very direct.



## Site Access, Parking, & Signage



## Internal Campus Circulation

There is no separation of emergency ambulance, public automobile, and public bus traffic on the entrance road.

The ground based helipad is immediately adjacent to the public main entrance and public emergency entrance.

The site does not have an internal “ring road” connecting the parking and entry points. The staff lots to the south and west, below the mechanical piping, are confusing and not interconnected.

Staff has expressed issues with the condition of the roadways during inclement weather, when accidents have occurred at the bottom of the hill at the Health Department site, which is the primary site access point.

Public/Staff        
Emergency          
Service            



## Internal Campus Circulation



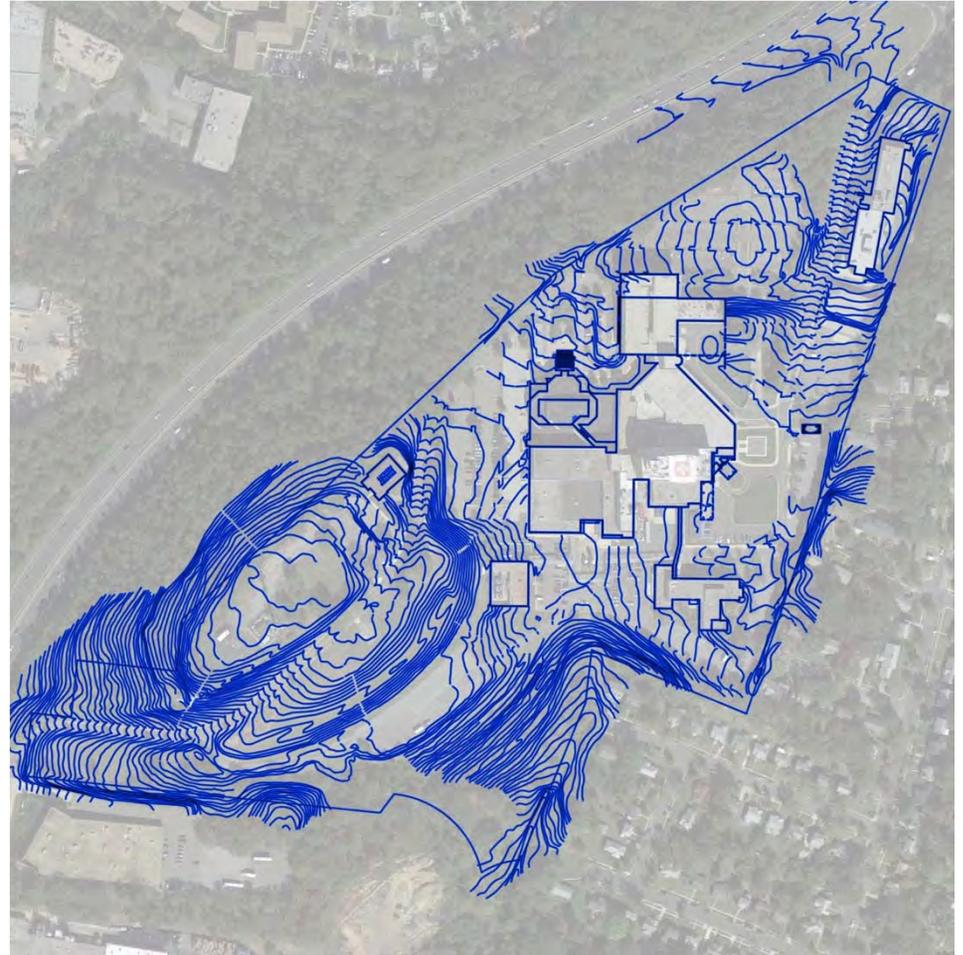
## Topography

The existing topography is quite severe across the site. While the hilltop site provides visibility from the community and good views from the upper floors across the district to the National Mall and east to Maryland, the grade changes have created significant functional compromises

The main public entry and emergency entry are on level three, while the surgery entry is across campus on level one. The loading dock and support areas enter at level two to the south. The parking deck negotiates the grade changes by locating staff parking at the lower levels and visitor parking on the upper floors. The entrances from the parking garage to the hospital are not intuitive.

The available parcels to the north and west have equally challenging topography, which will cause significant cut or fill for proper placement of diagnostic functions and entrances.

The prominence of the site and view potential could be very attractive for a different use for the site.



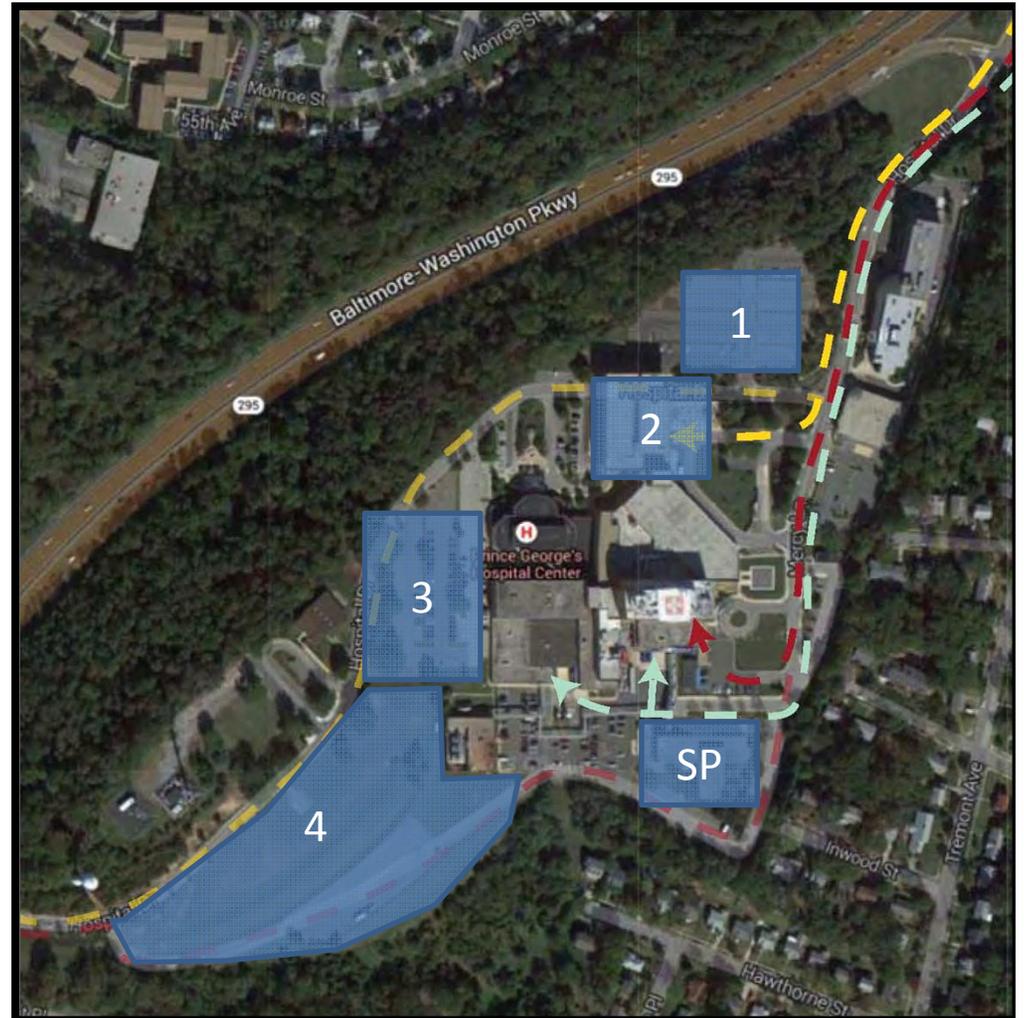
## Topography



## Growth Zones

Several open areas of the site have been considered for expansion of the facility on the existing site. While directly adjacent to the existing hospital, each of these locations presents specific problems for proper site location and internal connection to the existing departments. Additions on this campus would not fully solve the current flow problems; these would likely become more difficult with the add-on approach.

As mentioned in the building systems report, any expansion would immediately require upgrades to a majority of the mechanical systems. The central utility plant would need to be replaced, which renders continued use of this site questionable.



## Growth Zones

### Site 1 – North Parking Lot

This site is detached from the existing building and public / emergency / day surgery entry points.

This site could be considered for an ambulatory care or office building. This site has convenient access to the health department and to the existing main entry and would not require visitors to traverse the hospital site if the hospital site is repurposed and partial or full demolition were to occur.

This site could also be used for replacement of the existing parking garage to create an open area directly connected to the hospital.



## Growth Zones

### Site 2- existing parking garage

The site has been studied for a hospital expansion for a replacement patient tower or women's / birthing center.

This site offers convenient access from both entry roads and high visibility

The existing garage must first be rebuilt on an adjacent site and be demolished. However, the existing facilities offices, workshops, materials management and some infrastructure support are in the basement of the parking garage, which would be a significant phasing issue to removing the garage.

This site is very problematic in the connection the existing campus. The site is remote from both emergency and surgery. While connections may be created at levels one and three, these would magnify the current operational problems with moving patients and materials in an orderly flow. Moving the core patient unit functions remote from the core diagnostics will not create an enhanced patient-focused environment.

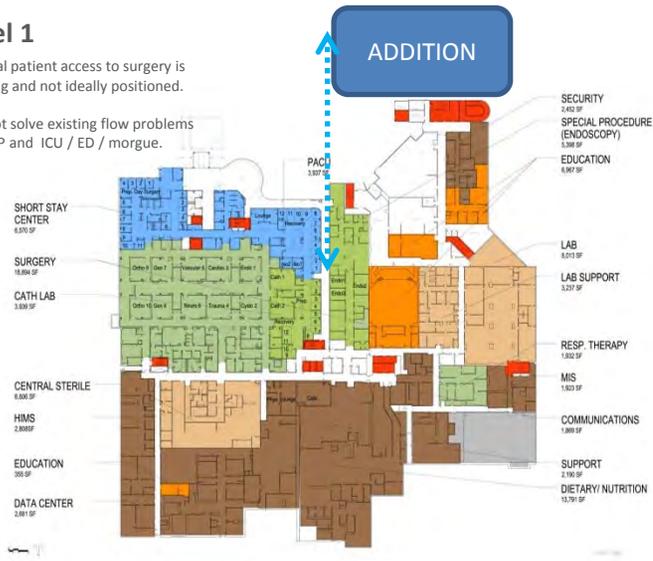


# Growth Zones

## Level 1

Potential patient access to surgery is very long and not ideally positioned.

Does not solve existing flow problems OR / CSP and ICU / ED / morgue.



## Level 2

Disconnected from main hospital.



## Level 3

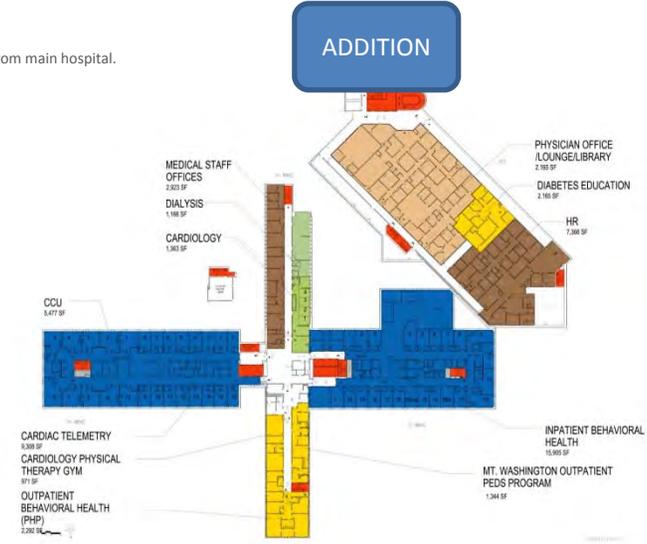
Public access is convenient. ED connection is not appropriate.

Does not solve existing flow problems OR / CSP and ICU / ED / morgue.



## Level 4

Disconnected from main hospital.

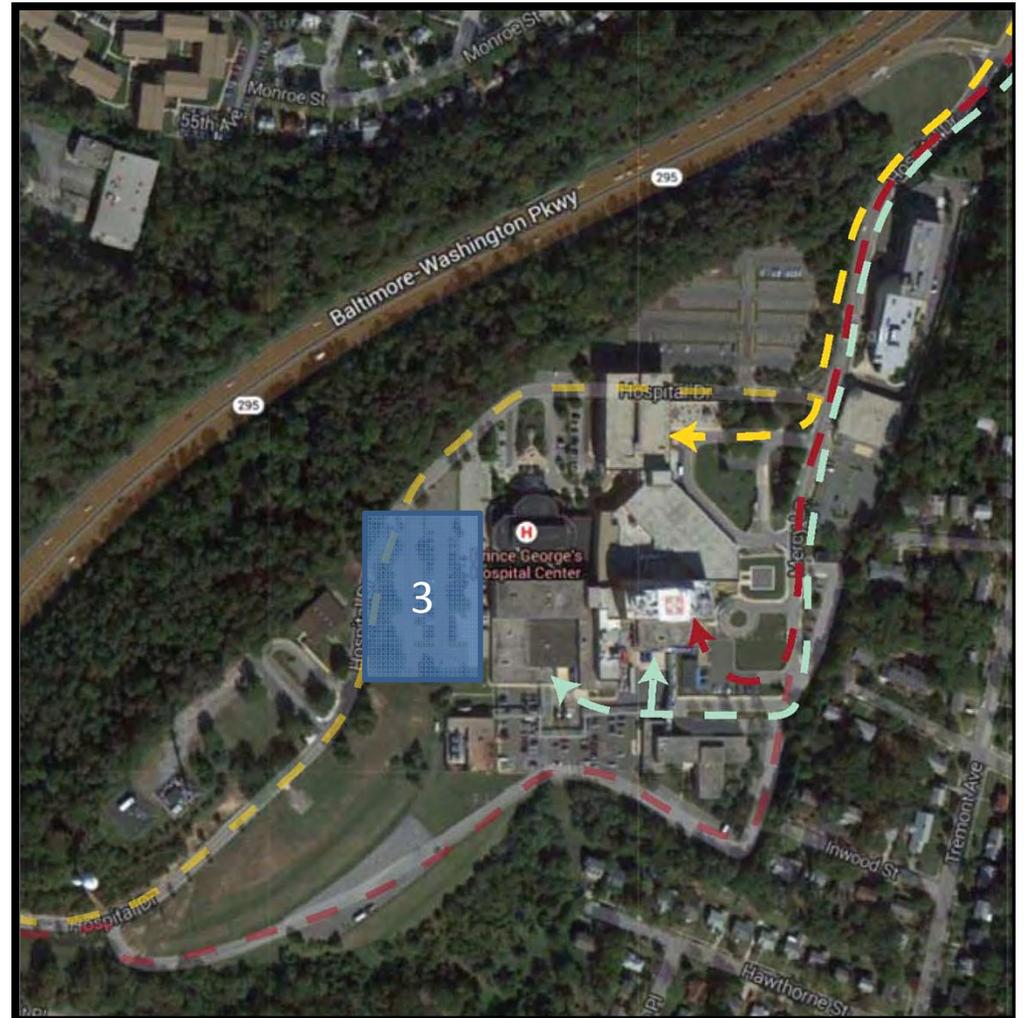


## Growth Zones

### Site 3- West parking lot

This site is immediately adjacent to the existing hospital, specifically the OR and ICU departments, but similar to Site #2, this site presents some specific problems in the connections the existing campus.

This location is very remote from the main public entry and from the emergency entry. The outpatient surgery entrance is adjacent to this site, but if a second public entry were considered here, the roadway and pedestrian access paths would be congested and unclear. Visitor parking access to the existing garage is not convenient from this site. A second garage could be considered on the sloping southwest parcel.



# Growth Zones

## Level 1

Potential patient access to surgery is convenient.

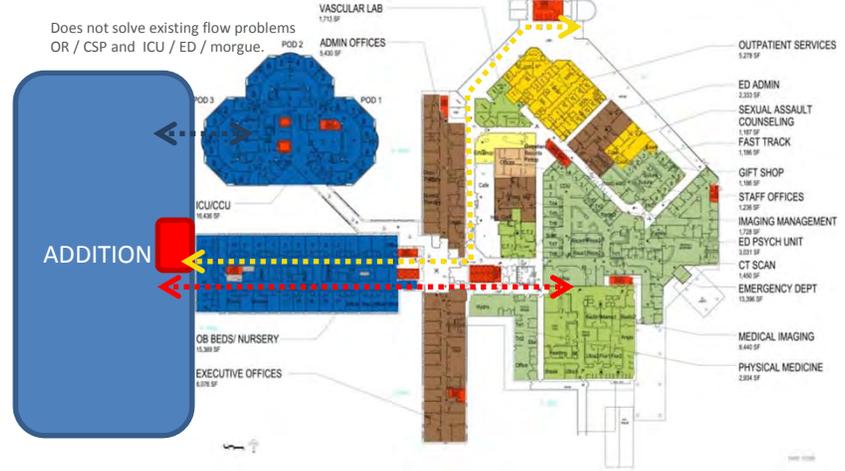
Does not solve existing flow problems OR / CSP and ICU / ED / morgue.



## Level 3

Public access is on the opposite side of the campus. ED connection is not convenient.

Does not solve existing flow problems OR / CSP and ICU / ED / morgue.



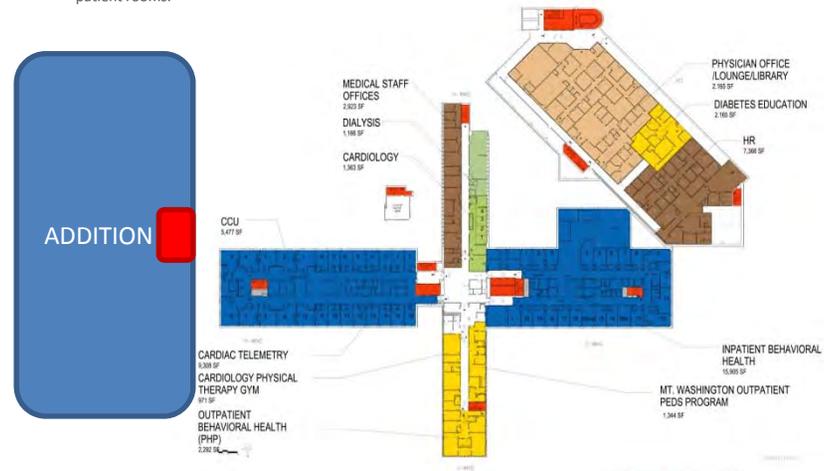
## Level 2

Additional would replace existing patient rooms.

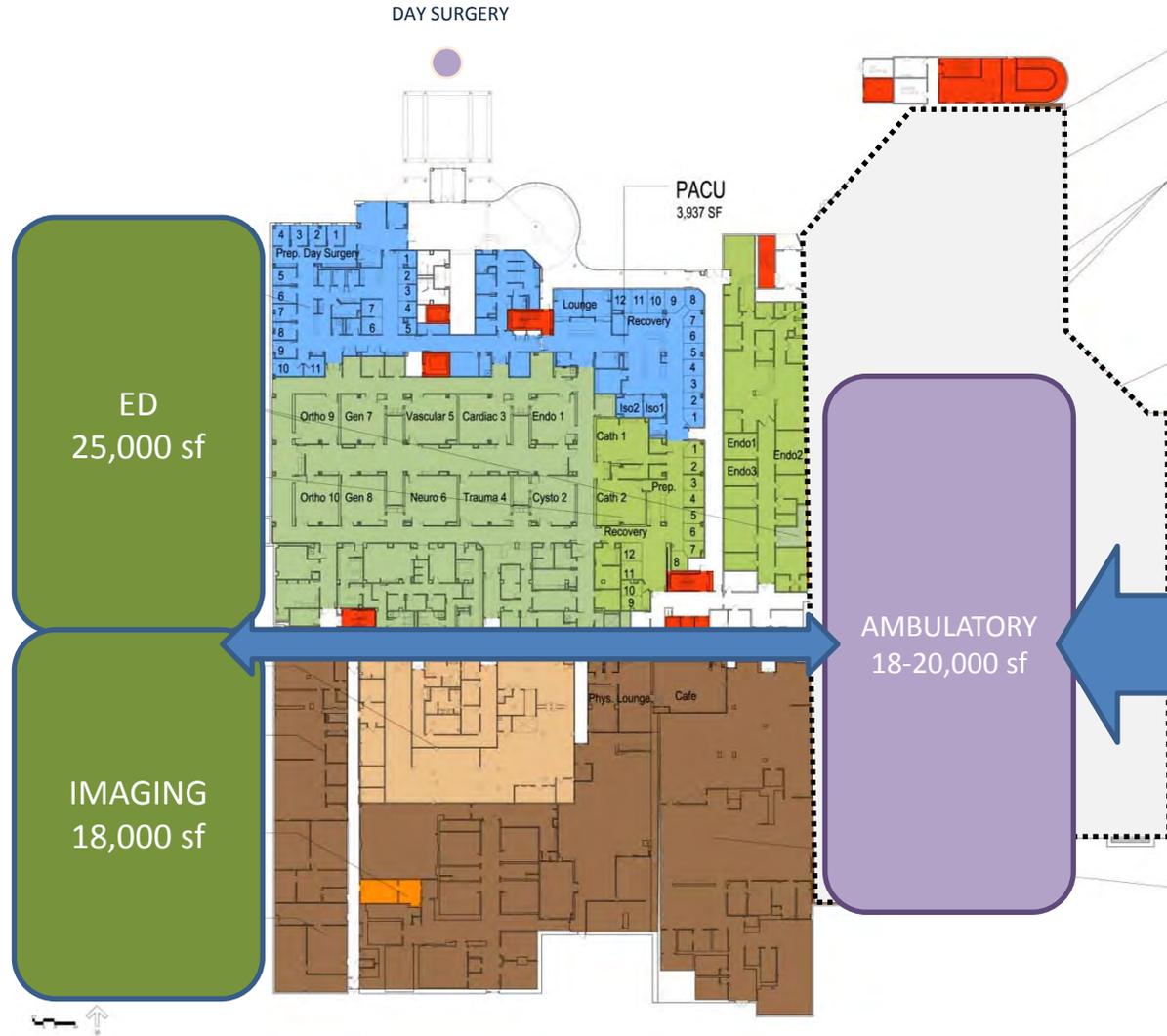


## Level 4

Additional would replace existing patient rooms.



Level 1



ED  
25,000 sf

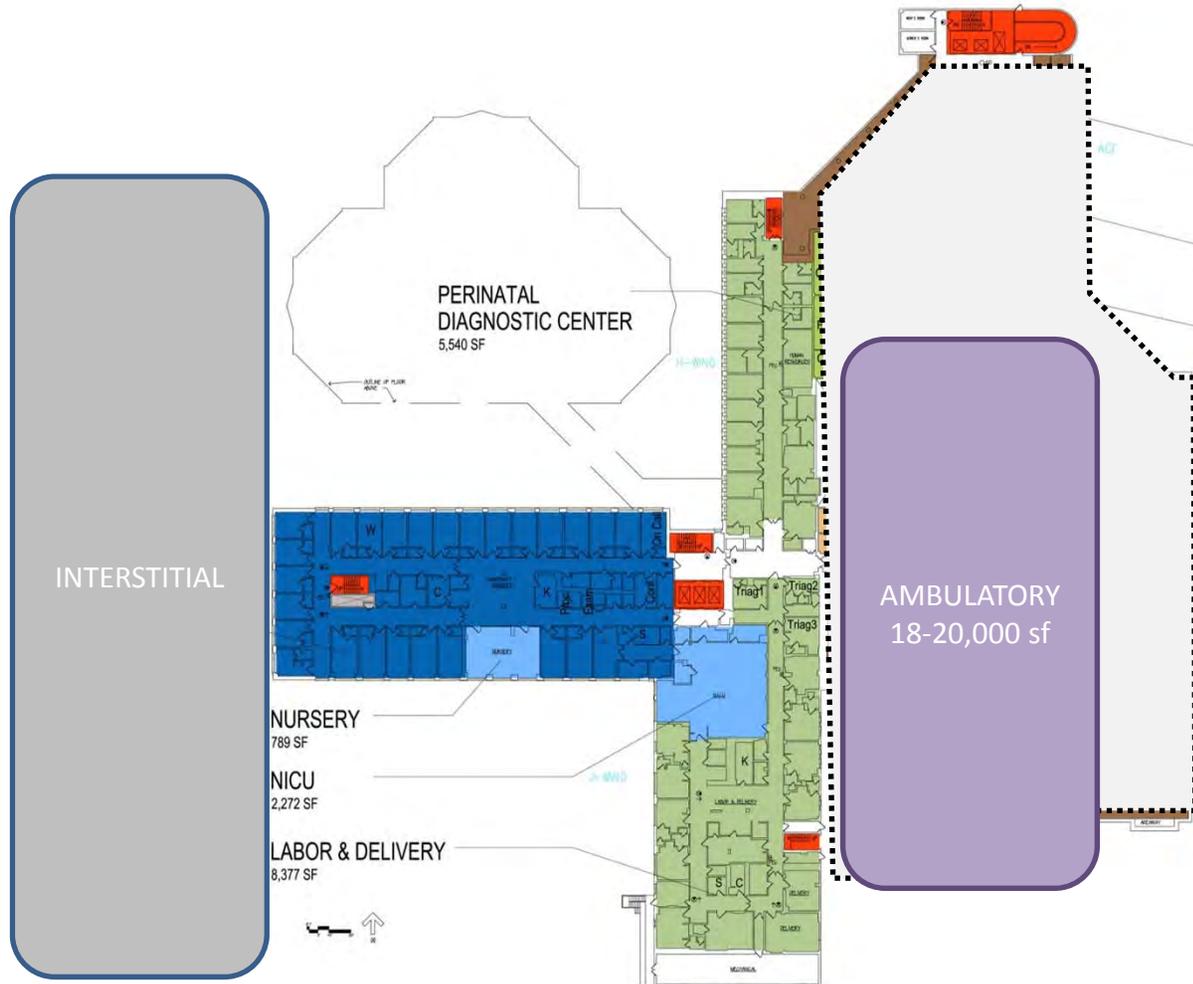
IMAGING  
18,000 sf

AMBULATORY  
18-20,000 sf

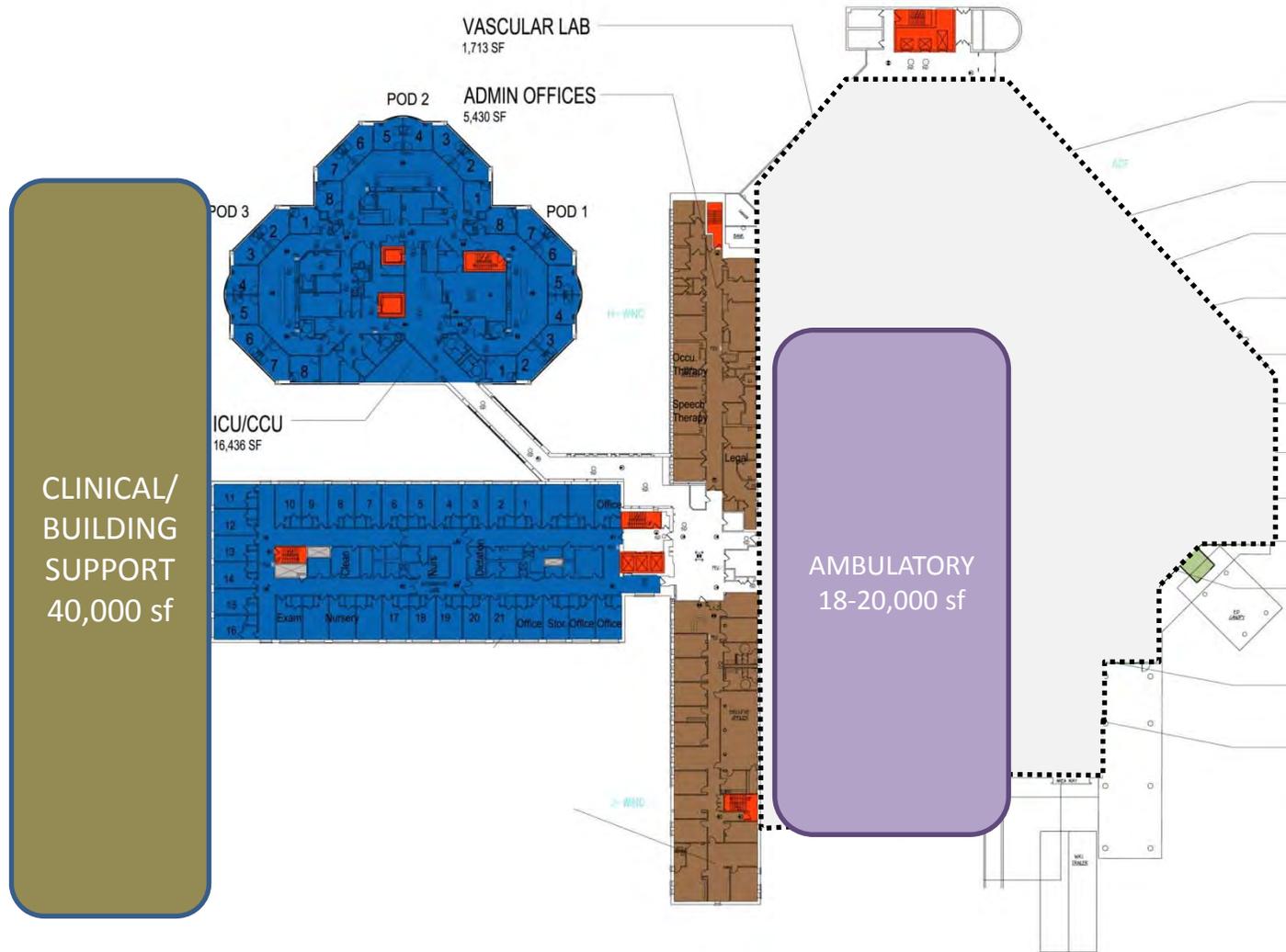
PACU  
3,937 SF

DAY SURGERY

Level 2

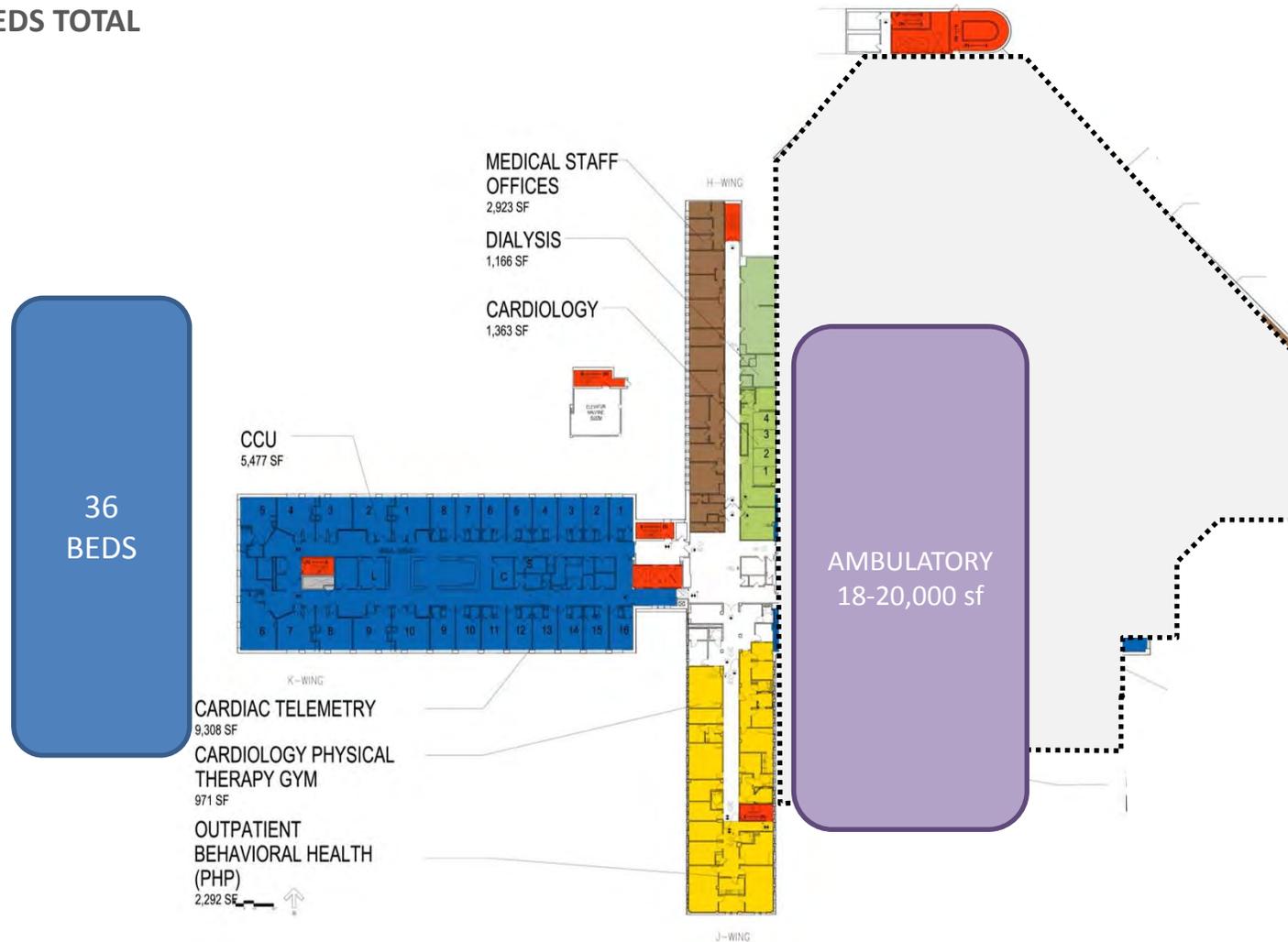


Level 3



Level 4-9

216 BEDS TOTAL



## ADDITION/RENOVATIONS TO PGHC

NEW CONSTRUCTION	AREA	COST/SF	TOTAL COST
<u>HOSPITAL EXPANSION</u>			
Level 1 - Emergency/Imaging	45,000		
Level 2 - Interstitial	45,000		
Level 3 - Clinical Support	45,000		
Level 4-9 Patient Units (36 Beds)	180,000		
Level 10 - Mechanical	30,000		
	<u>345,000</u>	\$500	<b>\$172,500,000</b>
<u>AMBULATORY CARE CENTER</u>			
Level 1-4	80,000	\$350	<b>\$28,000,000</b>
<u>CENTRAL UTILITY PLANT</u>			
Level 1	40,000	\$1,000	<b>\$40,000,000</b>
<u>RENOVATION</u>			
K Wing	50000	\$350	\$17,500,000
J Wing	30,000	\$250	\$7,500,000
H Wing	30000	\$250	\$7,500,000
Southwest	25000	\$350	\$8,750,000
			<b>\$41,250,000</b>
<u>DEMOLITION</u>			
ACF/E Wing			<b>\$5,000,000</b>
<u>SITE DEVELOPMENT</u>			
			<b>\$30,000,000</b>
<u>PARKING DECK EXPANSION</u>			
			<b>\$12,000,000</b>
<u>TOTAL CONSTRUCTION</u>			
			<b>\$328,750,000</b>
EQUIPMENT	0.15		<b>\$49,312,500</b>
SOFT COSTS	0.3		<b>\$98,625,000</b>
<u>TOTAL PROJECT COST</u>			
			<b>\$476,687,500</b>

LARGO COST MODEL  
(7/31/13)

**\$478,543,898**



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## Growth Zones

### Existing Spellman Building

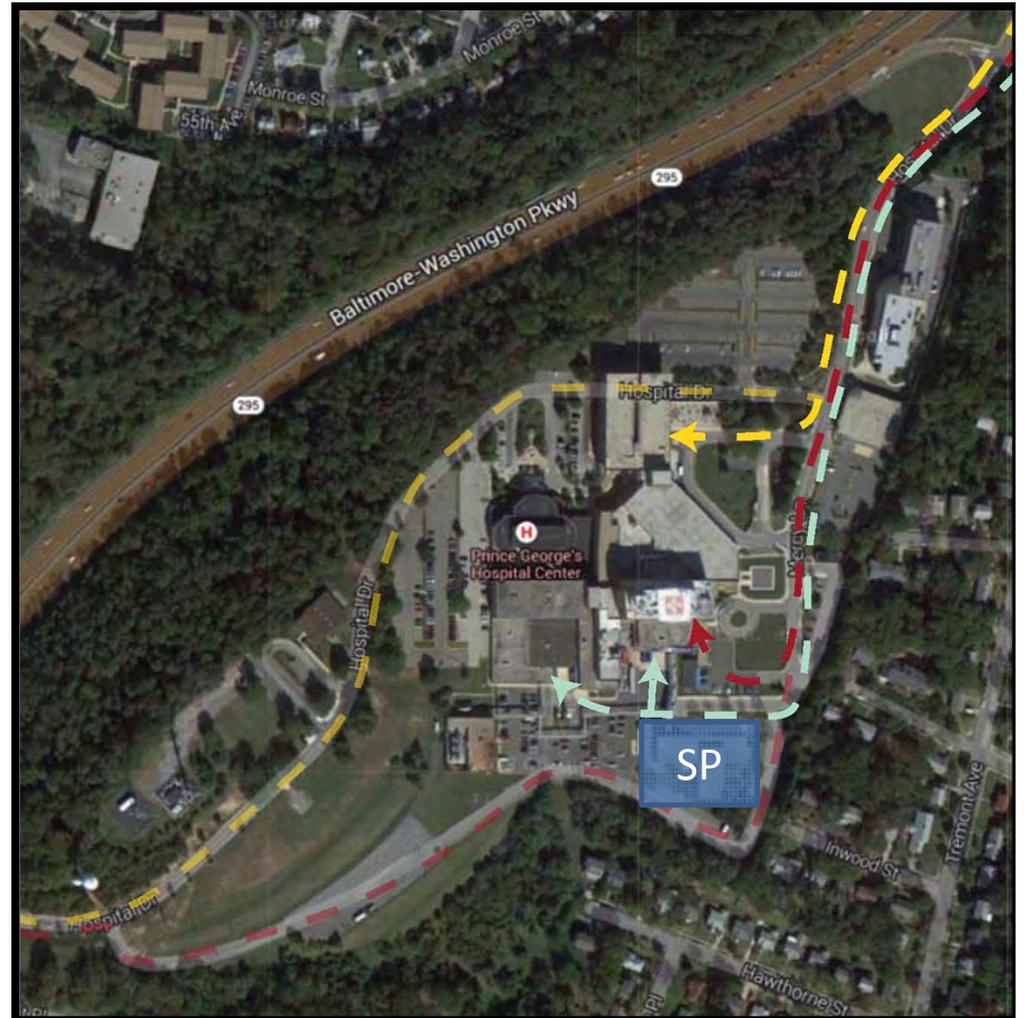
The facility is three stories with approximately 45,000 SF. A bridge connection exists to the main hospital at level 3.

This building is currently vacant. Several potential tenants have expressed interest in moving to this building.

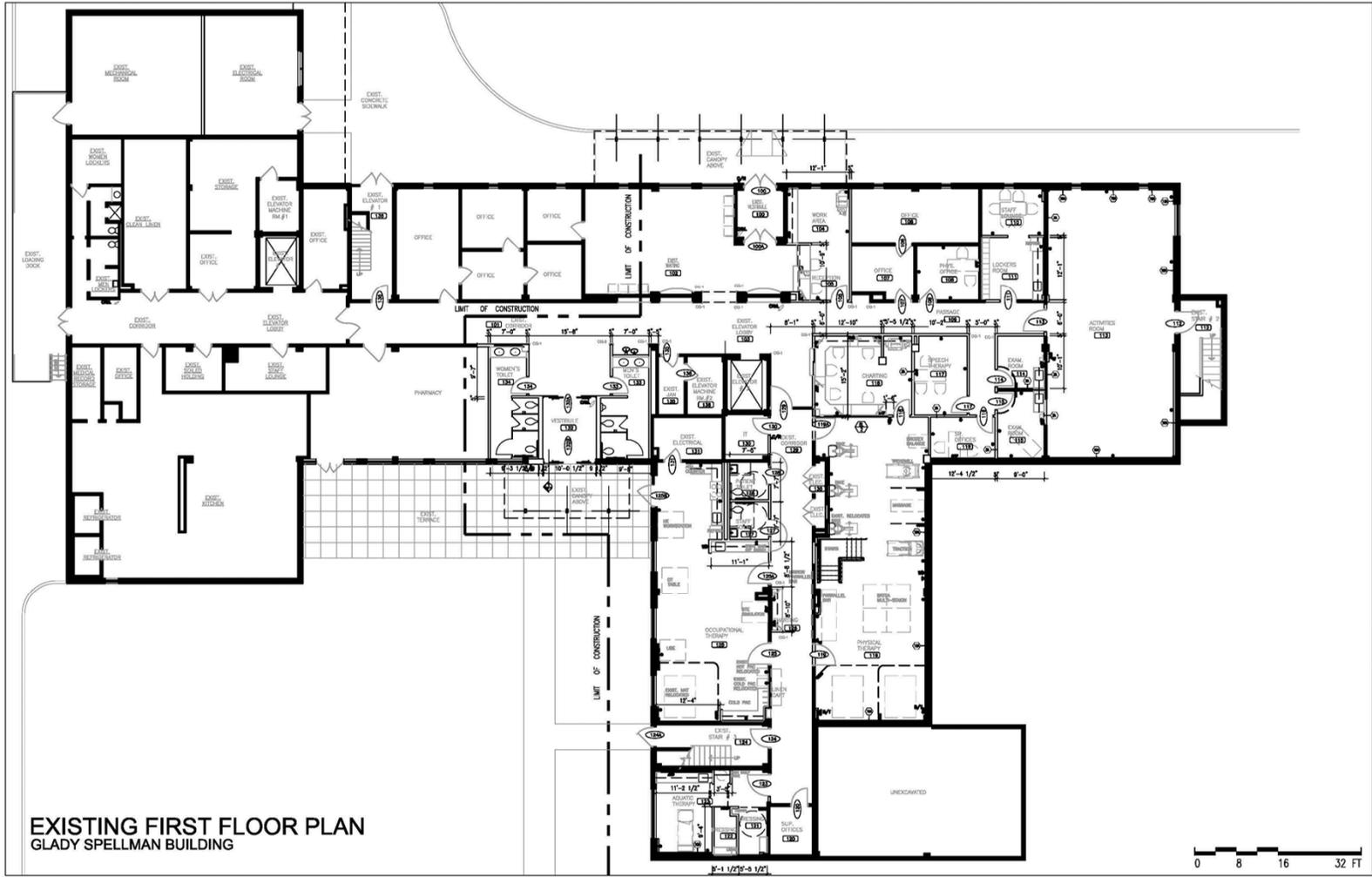
- A local physician practice has expressed interest in expanding into the second level.
- Ross university could use the third level and would fund a renovation.
- Outpatient therapy could be located on the first level. Grants are in place and plans have been developed.

The need for continued access to the main hospital support areas should be considered for renovations, including the central plant.

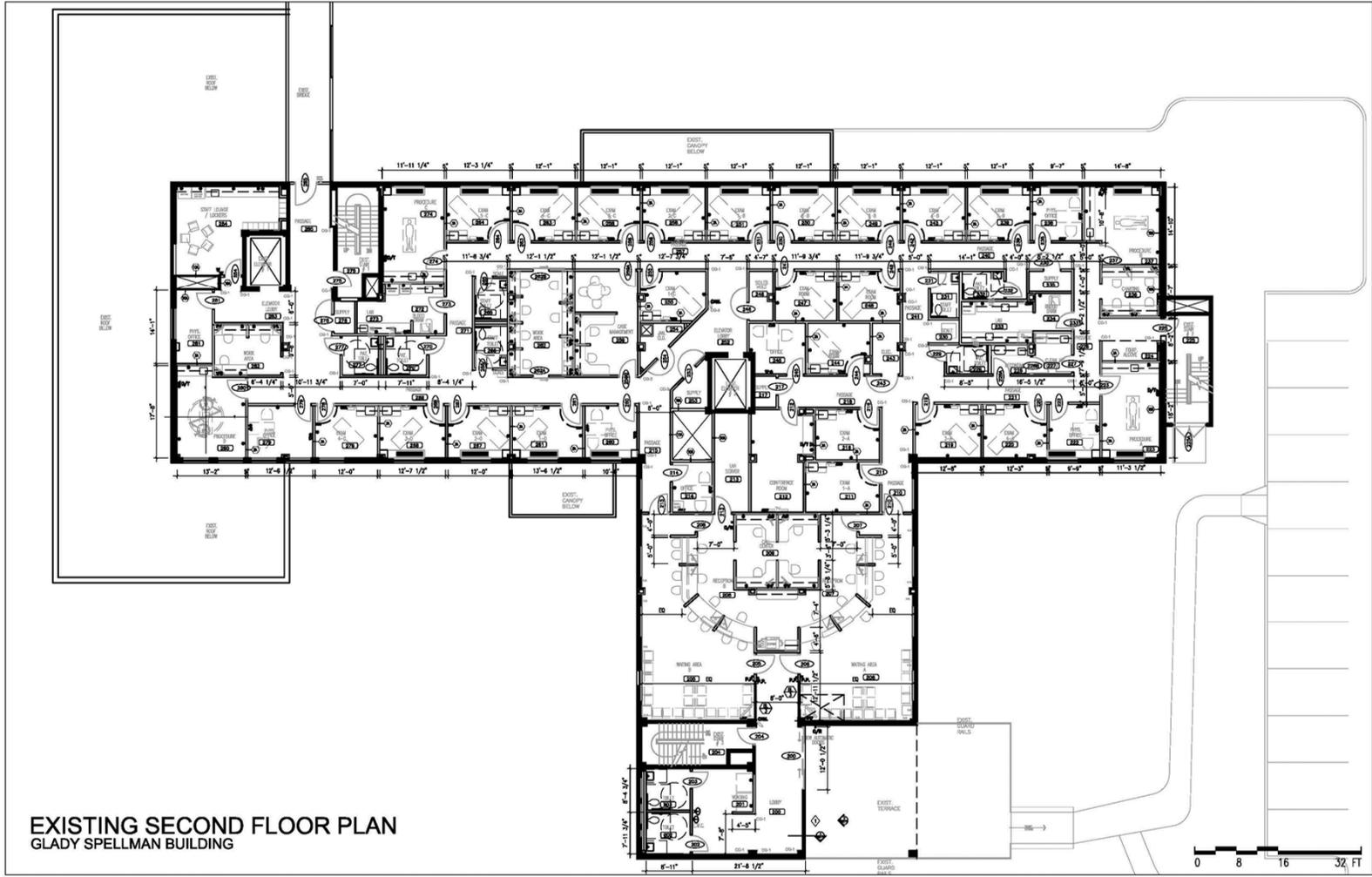
If the site is repurposed and partial or full demolition is considered, access to this building will not be convenient for an outpatient use.



# Growth Zones



## Growth Zones





## Growth Zones

### Site 4 – Southwest Parcel

This open site behind the existing central utility plant (CUP) has been suggested as a site for the full replacement of the existing facility. The site analysis in this report combined with the considerations for the need to replace the existing CUP and demolish the existing building after the replacement is complete do not support this concept.

The phasing of the construction and demolition would be exceptionally difficult. The CUP analysis concludes that the CUP would need to be replaced along with the Hospital itself.

The site itself does not offer enough area or the proper orientation / configuration for a new hospital, especially considering the primary public and emergency vehicle access point in the northeast would cause traffic to cross through the existing site during the demolition process. The resulting building would be oriented away from this public access point. The development of the existing hospital footprint after demolition would hide the hospital and provide an indirect path for visitor and emergency access.

Available sites for either surface parking or structured parking are not evident, and access from the new building would be circuitous.

There is a significant slope to this site, and while this may aid in stacking the programs to allow multiple levels of access, there would be grading required to provide the correct footprint and meet the correct entry point elevations.

The following scale comparison diagrams illustrate the size, orientation and access problems.



## Growth Zones – Scale Comparison

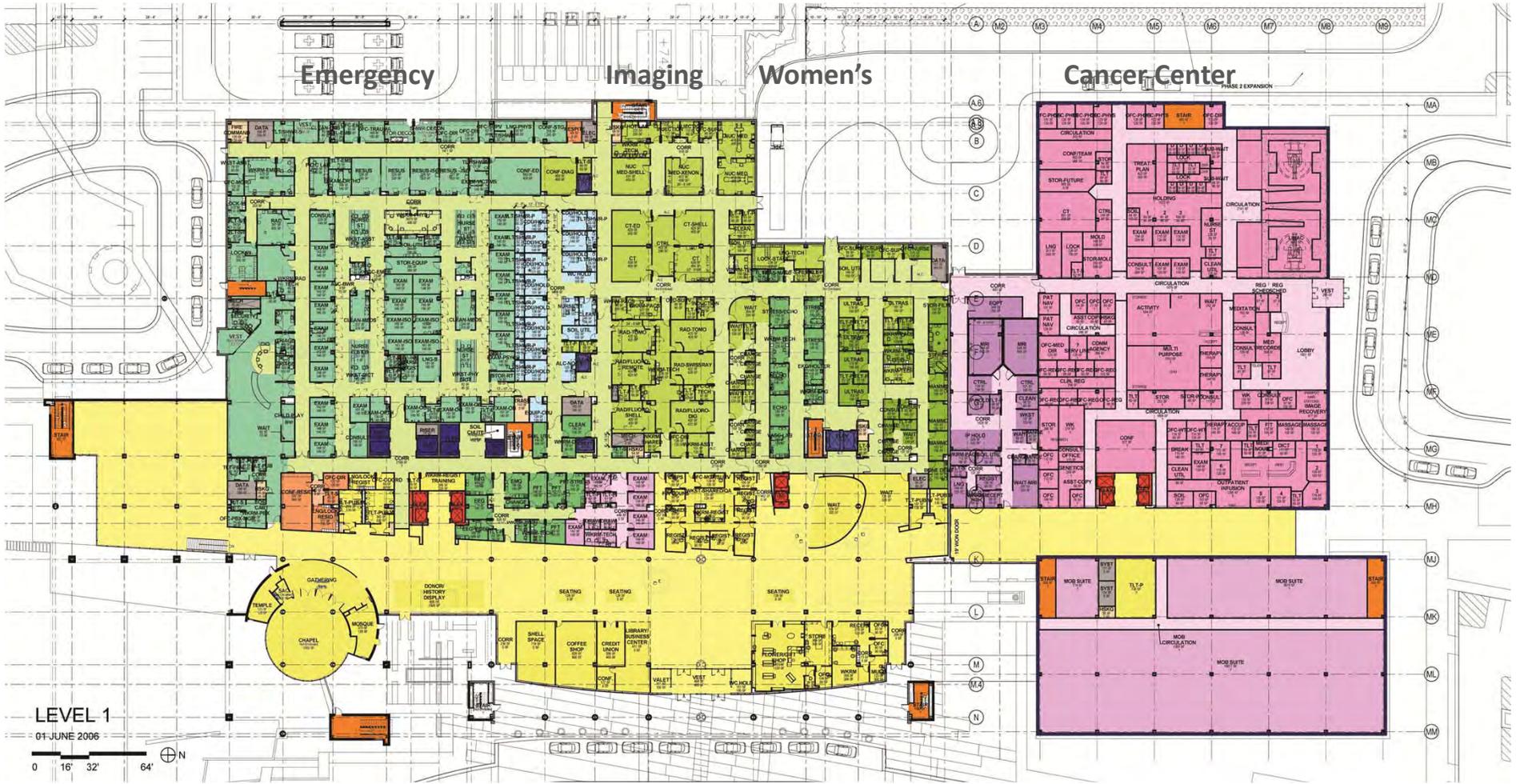


Existing PRHC

New Program / Blocking Diagram

■ Facility Assessment

# Growth Zones – Scale Comparison



Saint Joseph, IN – 296 beds

## Growth Zones – Scale Comparison

- KEY:
- MAIN
  - ED –WALK IN
  - ED- AMBULANCE
  - SERVICE
  - DAY SURGERY /  
OUTPATIENT



Saint Joseph, IN – 296 beds

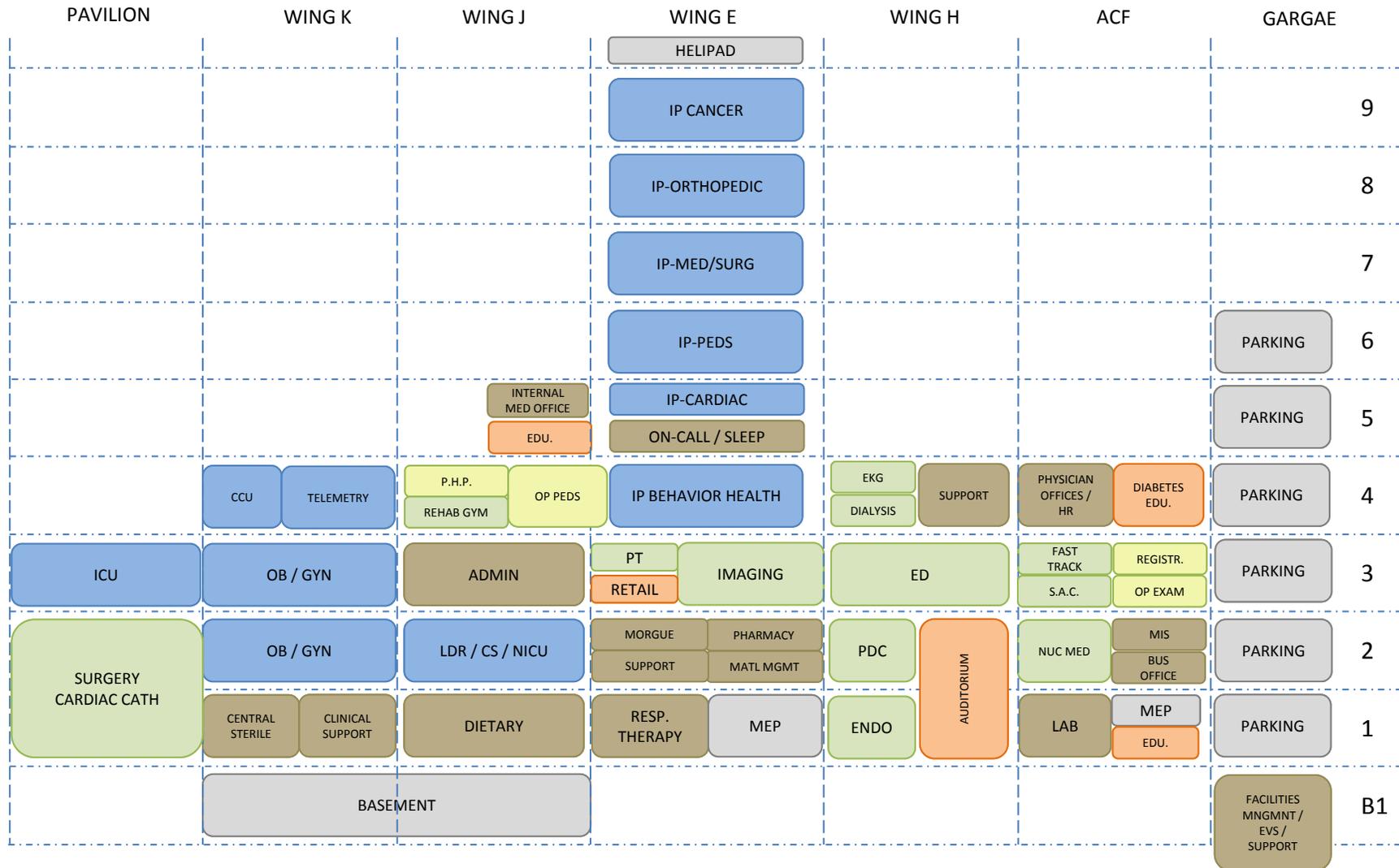
Stone Oak, TX – 128 / 256 beds

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FACILITY ANALYSIS

## Existing Functional Stacking



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## Departmental Assessment

Parameters selected for departmental assessment were derived from best practices and the industry standards that have shown to improve user satisfaction and efficient processes. Each department in the existing condition was examined to find its potential for achieving the gold standard.

The parameters represent three major categories:

- Flexibility
- Quality
- Functionality

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## Flexibility

Flexibility:

- Does the structural grid support planning changes to meet today's space standards?\*
  - Good:** The structural grid meets the minimum 30'x30' or larger module
  - Fair:** The structural grid does not meet the minimum 30'x30' but has a workable pattern.
  - Poor:** The structural grid is too small or has an irregular pattern.
- Do the floor to floor heights allow placement of necessary services for D&T, interventional, and inpatient services?\*
  - Good:** The floor to floor height meets the minimum 16' -18' standard for D&T and 14' for patient units.
  - Fair:** The floor to floor height does not meet the ideal standards but can support functions with few compromises.
  - Poor:** The floor to floor heights are below the minimum to allow enough space for mechanical/electrical systems as well as the functional use.
- Does the location of shafts and other major fixed infrastructure allow for future change in program/function?
  - Good:** The shafts, staircases, and elevators are located adjacent to the department and do not interfere with space modifications.
  - Fair:** The shafts, staircases, and elevators provide easy accessibility to the unit but interfere with future modifications.
  - Poor:** The shafts, staircases, and elevators are not located to provide best accessibility to the unit and their positioning interferes with future modifications.
- Does furniture / casework / millwork support future functional and technological changes?
  - Good:** The millwork supports future functional and technological needs.
  - Fair:** The millwork does not fully support future functional and technological needs but is easily replaceable.
  - Poor:** The millwork neither supports future functional and technological needs nor is easy to replace/upgrade.

\* Key Criteria

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## Interiors Quality

- Does the space provide a high quality, functional, and comfortable environment for the users?
    - Good:** The furniture, finishes, window views, and artwork create a non-institutional environment. The layout and arrangement support effective communication while providing opportunities for privacy.
    - Fair:** The interior environment does not compete with today's best practices but provides an acceptable stress-free environment.
    - Poor:** The department looks/feels institutional and there are no discernible boundaries between public and private space.
  - Are the finishes type, quality, and existing condition support the function?
    - Good:** The finishes meet the industry standards, are clean and in good condition.
    - Fair:** The finishes meet the industry standards, but are aging.
    - Poor:** The finishes don't meet the industry standards, and/or are deteriorating /not clean.
  - Do the regularly occupied portions of the department receive adequate levels of daylight?
    - Good:** Common spaces, staff work area and patient areas are day-lit and have outside views.
    - Fair:** Some of the regularly occupied spaces do not have access to daylight.
    - Poor:** None or very small portion of regularly occupied spaces are day-lit.
  - Are the spaces designed with necessary acoustical considerations (relative to operations and crowding) in mind?
    - Good:** Background noise is present but the space is quite and calm.
    - Fair:** Background noise is noticeable but does not seem disruptive.
    - Poor:** Background noise is disruptive and interferes with staff productivity/patient comfort.
  - Do the key room size and configuration meet functional needs?\*
- Good:** The room size meets the industry standards.
- Fair:** The room size does not fully comply with the standards but the space flexibility allows for adjustments.
- Poor:** The room size is too short of the industry standards and is not flexible to a level that adjustments are possible.

\* Key Criteria

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## Function

- Are the critical departmental/functional adjacencies solved?\*
- Is the patient circulation path clear and easy to navigate?
- Are staff travel distances supportive of staff efficiency and productivity?
- Does the supplies circulation pattern comply with cost efficient operations?

**Good:** The circulation path meets the operational needs, is clear from obstacles, easy to navigate, and supports operational efficiency.

**Fair:** The circulation path is acceptable but might have issues in terms of equipment's blocking the way, wayfinding, travel distances, etc.

**Poor:** The circulation pattern is not acceptable as it does not comply with required standards and/or operations requirements.

\* Key Criteria

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## Calculating the overall score

To calculate an overall score for each department based on aforementioned parameters, the average of scores in each category was used. However, it was noted that all parameters are not of similar value. This means that a department's poor grade in an specific parameter will render the department as incompatible for future modernization or renovation for acute care use, no matter how well the department does in terms of other parameters in the same category. These key criteria are identified as "deal breakers" and include:

Flexibility: Structural Grid

Flexibility: Floor to floor heights

Interior Quality: Key room size and configuration

Accordingly, departments that were graded "poor" in these key criteria were assigned an score of "poor" for the corresponding overall category.

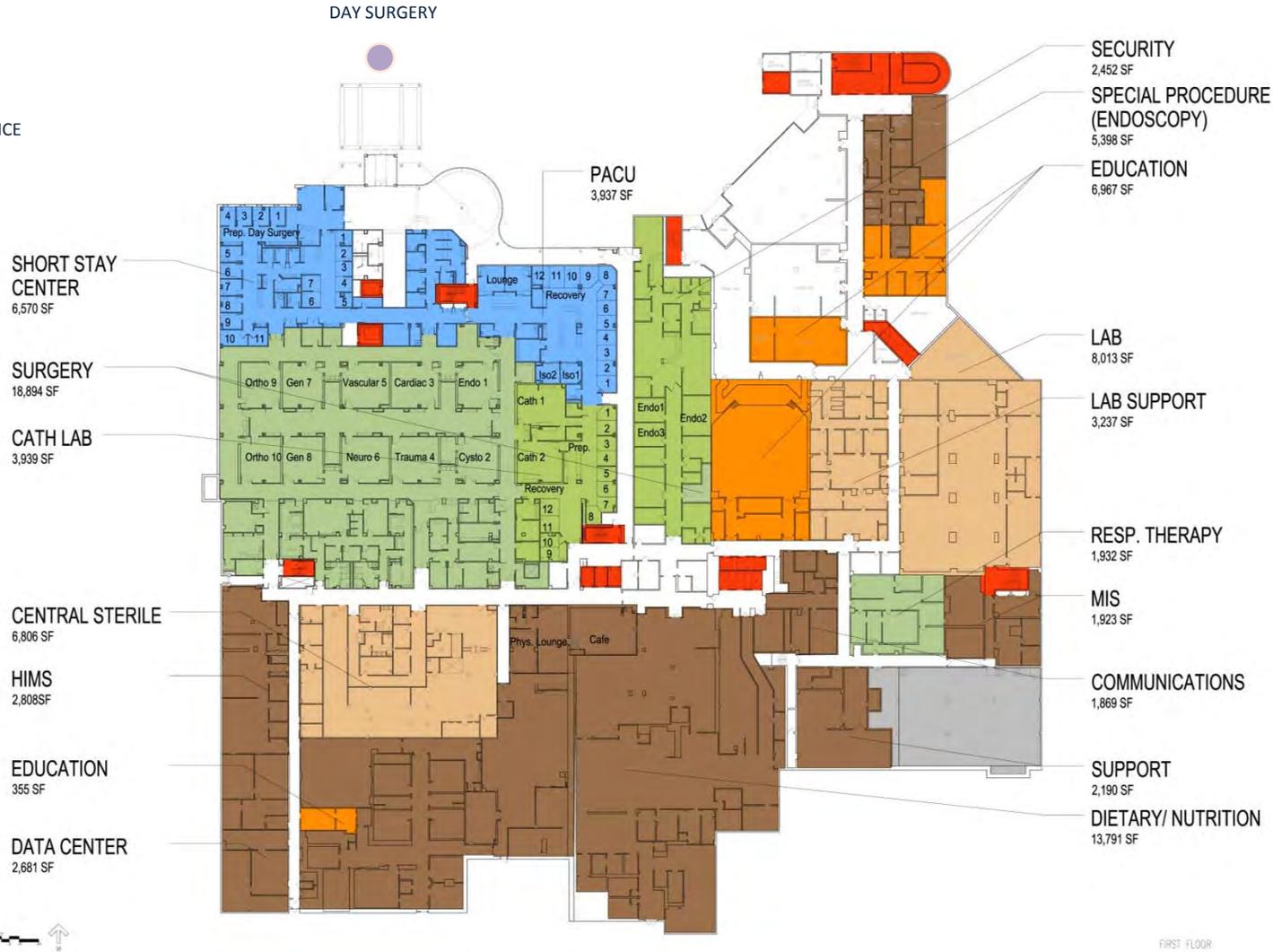
## Key Room Counts

Existing Space Summary: Prince George's Hospital Center										July 23, 2013
Floor	Department	Key Rooms								Departmental Areas
		Type	Licensed	Operating Capacity	Physical Available	Private Beds	Semi-Private Beds	Semi-Private Rooms	Number of Rooms	DGSF
Basement 1										
	Facilities Management									24,330
Basement 2										
First Floor										
	Surgery	General OR			2					18,894
		Ortho OR			2					
		Trauma OR			1					
		Vascular OR			1					
		Neuro OR			1					
		Cardiac OR			1					
		OR( Endoscopy)			1					
		Cysto			1					
	Cath Labs	Cath Labs			2					3,939
		Trans Care (Cath Prep/Recov)			8					
		Radial			2					
	PACU	PACU/ Recovery			15					3,937
	Short Stay Center	Prep Beds			11					6,570
		Phase II Recovery			7					
		PAT			4					
		Reg			2					
	Central Sterile									6,806
	Data Center									2,681
	MIS									1,923
	Resp. Therapy									1,932
	Lab									8,013
	Lab Support									3,237
	Special Procedures (Endoscopy)				3					5,398
		Pre/ Post			8					
		Isolation			1					
	Education									7,312
	Communications									1,869
	Dietary/ Nutrition									13,791
	Support									2,190
	Security									2,452
	HIMS									2,808
	Data Center									2,681

# Level 1

KEY:

- MAIN
- ED - WALK IN
- ED - AMBULANCE
- SERVICE
- DAY SURGERY





▲ Cafeteria/Kitchen



▼ Auditorium

▼ Lab





▲ Surgery/ Pre-op/ Recovery

▼ Central Sterile



## Key Room Counts

Existing Space Summary: Prince George's Hospital Center										July 23, 2013	
Floor	Department	Type	Licensed	Operating Capacity	Key Rooms					Departmental Areas	
					Physical Available	Private Beds	Semi-Private Beds	Semi-Private Rooms	Number of Rooms	DGSF	
Second Floor											
	OB/ GYN	Adult Beds	36	21	21	21	0	0	21	12,606	
	Nursery	Bassinettes		43	20	0	0	0	1	789	
	NICU	Bassinettes		24	18	0	0	0	1	2,272	
	Labor & Delivery	C-Section			2					8,377	
		Triage			3						
		LDR			9						
		PACU			0						
		Fetal Monitoring			2						
	Perinatal Diagnostic Center									5,540	
		Ultrasound			2						
	Morgue									2,343	
	Storage									8,064	
	Medical Assistance									1,854	
	Material Management									1,207	
	Pharmacy									2,293	
	Nuclear Medicine	gamma camera			2					4,888	
	Business Offices									4,923	
	Business Offices									2,243	
	IT									3,121	

# Level 2

KEY:

- MAIN
- ED - WALK IN
- ED- AMBULANCE
- SERVICE
- DAY SURGERY



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▲ LDR /Maternity



▼ Nuclear Medicine



▲ Pharmacy



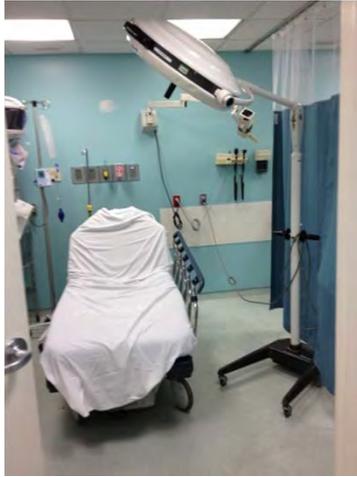
▼ Morgue



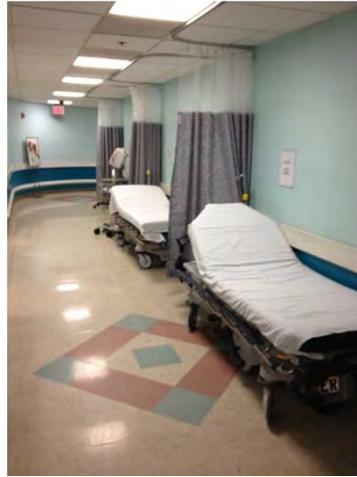
## Key Room Counts

Existing Space Summary: Prince George's Hospital Center										July 23, 2013
Floor	Department	Key Rooms								Departmental Areas
		Type	Licensed	Operating Capacity	Physical Available	Private Beds	Semi-Private Beds	Semi-Private Rooms	Number of Rooms	DGSF
Third Floor										
	In-patient OB/ Nursery	Adult Beds		21 (18)	21	21	0	0	21	15,369
		Bassinette		56	20	0	0	0	1	0
	ICU/CCU	Adult CCC Beds	24	24	24	24	0	0	24	16,436
	Executive Offices									6,076
	Physical Medicine									2,934
	Medical Imaging	Mammography			1					8,440
		Radiology			2					
		Ultrasound			2					
		Fluoroscopy			2					
		Angiography			1					
	Vascular Lab				1					1,713
	CT Scan	CT			2					1,450
	Imaging Management									1,728
	Gift Shop									1,186
	Emergency Department	Trauma			2					13,396
		Medical Resus			4					
		Treatment rooms			8					
		Hallway Beds			8					
		CDU Beds			7					
		Fast Track			10					
		Amb Staging			4					
		Triage			4					
	ED Psych Unit				6					3,031
	ED Admin									2,333
	Fast Track									1,186
	Outpatient Services									5,278
	Sexual Assault Counseling									1,187
	Staff Offices									1,236





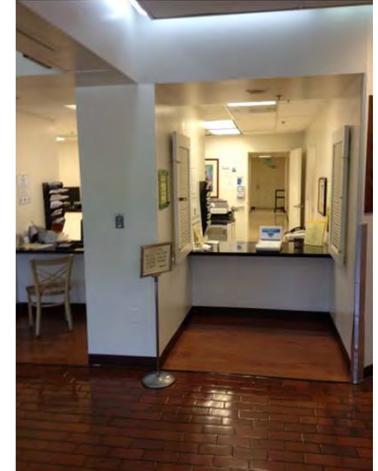
▲ ED



▼ CDU



▼ Registration / Waiting





▲ Imaging

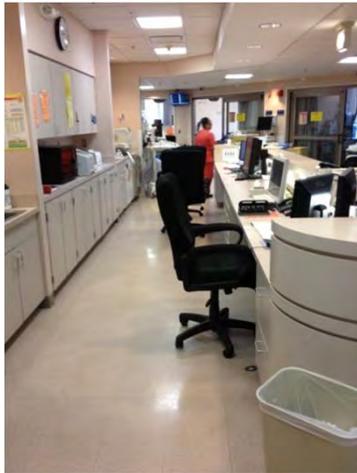


▼ ICU



▲ Physical Therapy

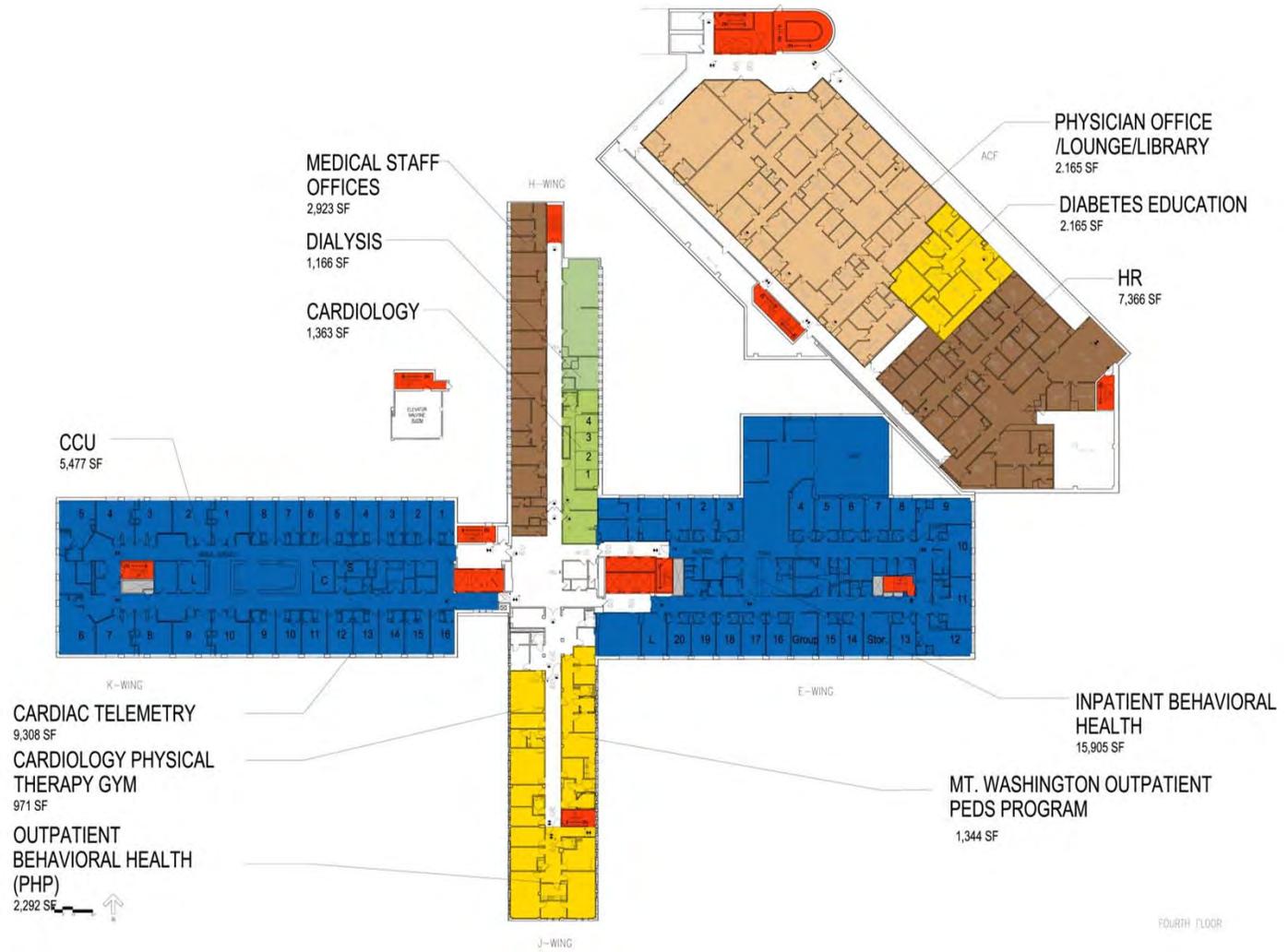
▼ OB/GYN



## Key Room Counts

Existing Space Summary: Prince George's Hospital Center										July 23, 2013
Floor	Department	Key Rooms								Departmental Areas
		Type	Licensed	Operating Capacity	Physical Available	Private Beds	Semi-Private Beds	Semi-Private Rooms	Number of Rooms	DGSF
Fourth Floor										
	Cardiac Telemetry			26	26	4	22	11	15	9,308
	CCU	Adult CCC Beds	10	10	10	10	0	0	10	5,477
	Dialysis				8					1,166
	Outpatient Behavioral Health (PHP)									2,292
	Inpatient Behavioural Health			38 (34)	26	0	32	16	18	15,905
	Physical Therapy Gym									971
	Physician Offices									2,165
	Cardiology	EKG			4					1,363
	Diabetes Education									2,165
	Medical Staff Offices									2,923
	Mt Washington PEDS OP									1,344
	Human Resources									7,366

# Level 4





▲ Cardiac Telemetry

▼ Cardiology/ Cardiac Gym



▲ ICU

▼ Dialysis





▲ Library



▲ Medical Staff Offices

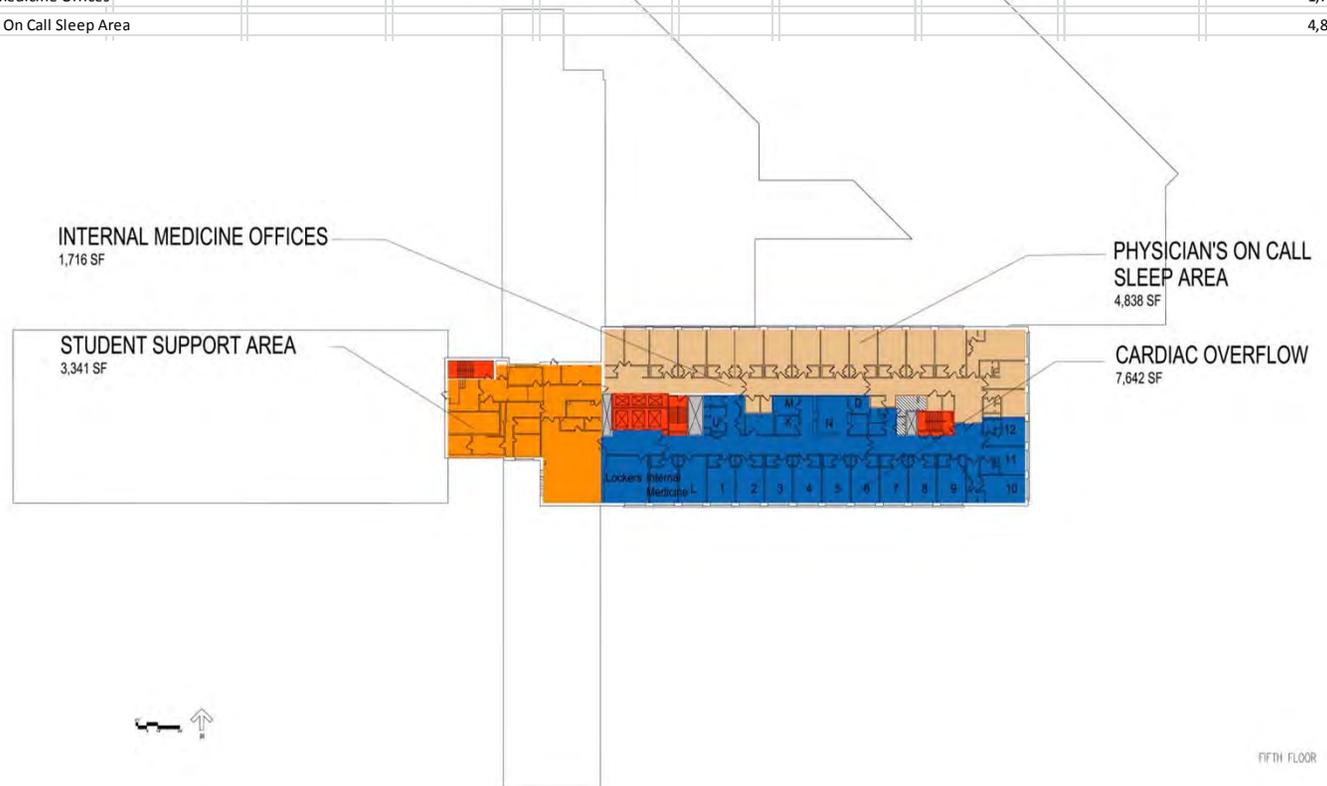


▼ Behavioral Health



# Level 5

Existing Space Summary: Prince George's Hospital Center										July 23, 2013
Floor	Department	Key Rooms								Departmental Areas
		Type	Licensed	Operating Capacity	Physical Available	Private Beds	Semi-Private Beds	Semi-Private Rooms	Number of Rooms	DGSF
Fifth Floor	Inpatient Beds	Cardiac Overflow		12	12	4	8	4	8 (10)	7,642
	Education									3,341
	Internal Medicine Offices									1,716
	Physician On Call Sleep Area									4,838

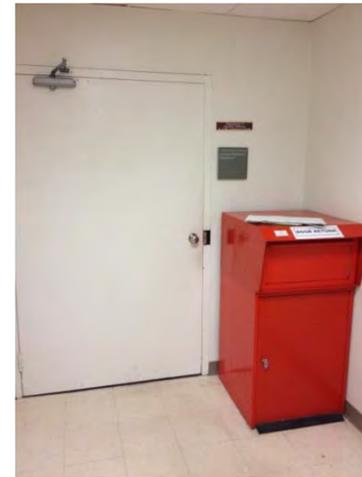




▲ Cardiac Patient Room



▲ Student Support / Book Drop ▲







▲ Sleep Studies

▼ Nursery



▲ Exam/ Gym

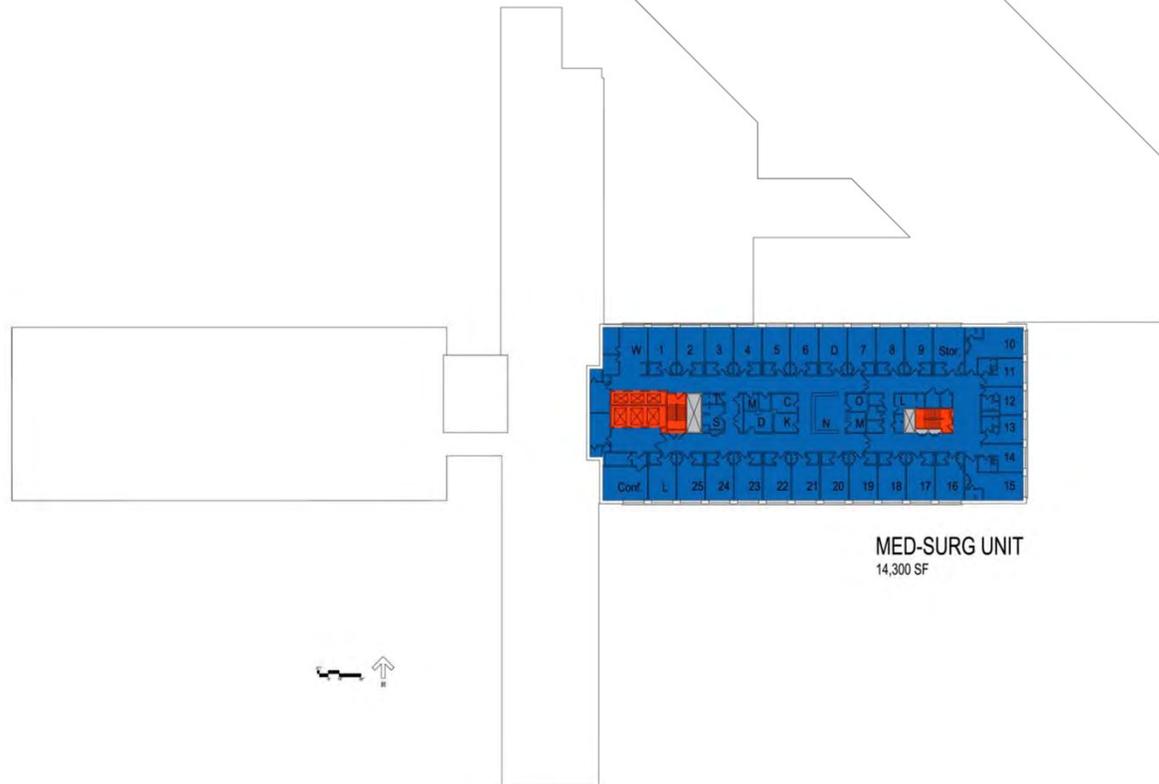


▼ Nurse Station



# Level 7

Existing Space Summary: Prince George's Hospital Center										July 23, 2013
Floor	Department	Key Rooms								Departmental Areas
		Type	Licensed	Operating Capacity	Physical Available	Private Beds	Semi-Private Beds	Semi-Private Rooms	Number of Rooms	DGSF
Seventh Floor	Inpatient Beds	Med-Surg		42	41	9	32	16	25	14,300



MED-SURG UNIT  
14,300 SF

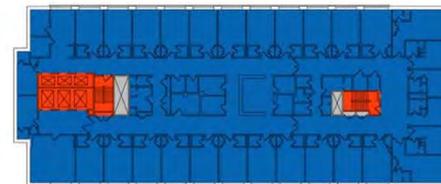
SEVENTH FLOOR



▲ Medical – Surgical VIP room

# Level 8

Existing Space Summary: Prince George's Hospital Center										July 23, 2013
Floor	Department	Key Rooms							Departmental Areas	
		Type	Licensed	Operating Capacity	Physical Available	Private Beds	Semi-Private Beds	Semi-Private Rooms	Number of Rooms	DGSF
Eighth Floor	Inpatient Beds	Orthopedic Trauma		42	42	8	34	17	25	14,300



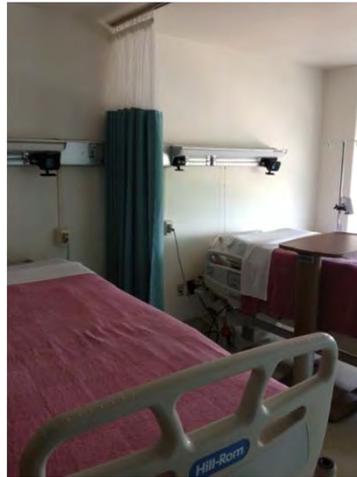
ORTHOPEDIC TRAUMA  
14,300 SF



EIGHTH FLOOR



▲ Typical double patient room



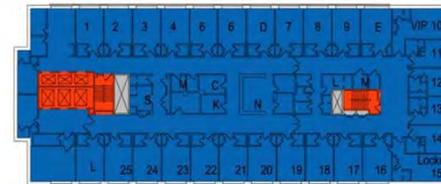
▲ Isolation  
Ante-Room



▲ Waiting

# Level 9

Existing Space Summary: Prince George's Hospital Center										July 23, 2013
Floor	Department	Key Rooms								Departmental Areas
		Type	Licensed	Operating Capacity	Physical Available	Private Beds	Semi-Private Beds	Semi-Private Rooms	Number of Rooms	DGSF
Ninth Floor	Inpatient Beds	Cancer		42	40	10	30	15	26	14,300



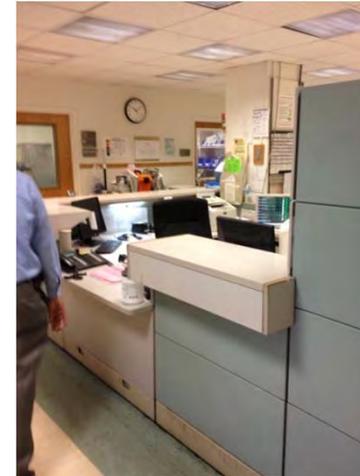
CANCER  
14,300 SF



NINTH FLOOR



▲ Typical unit / single patient room

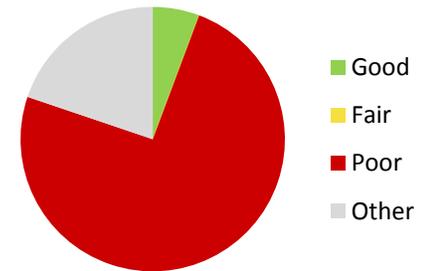


▲ Nurse Station



▲ Charting / Work

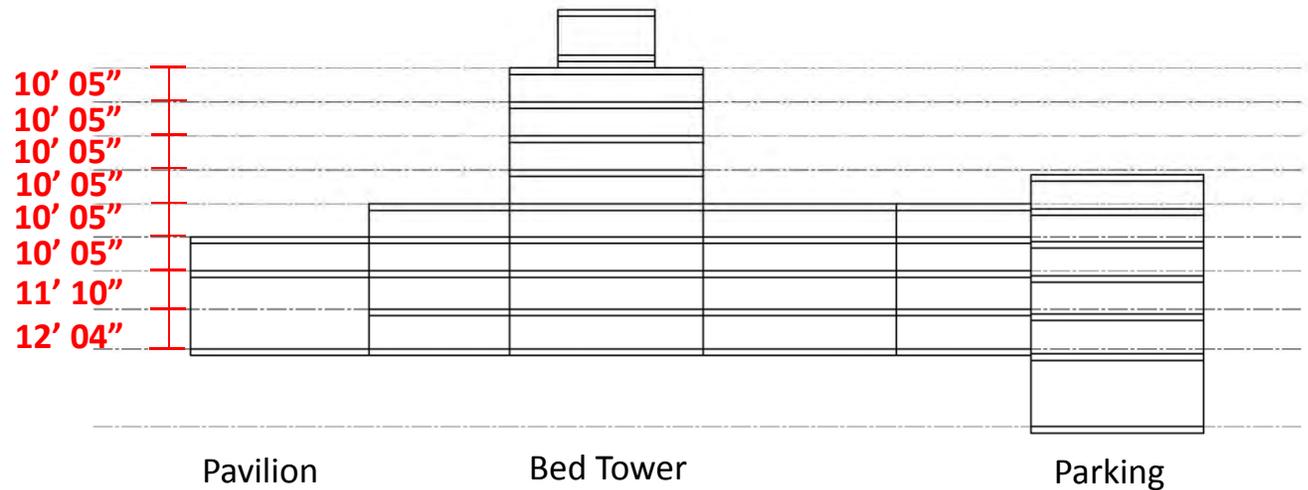
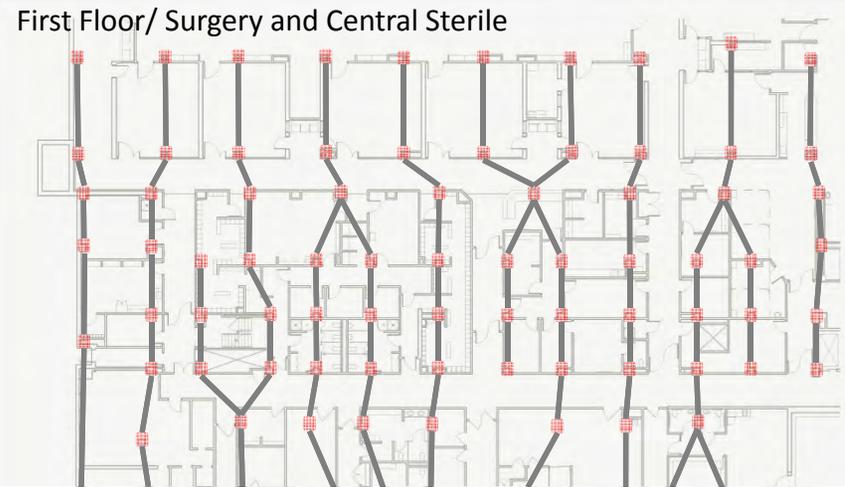
# FLEXIBILITY



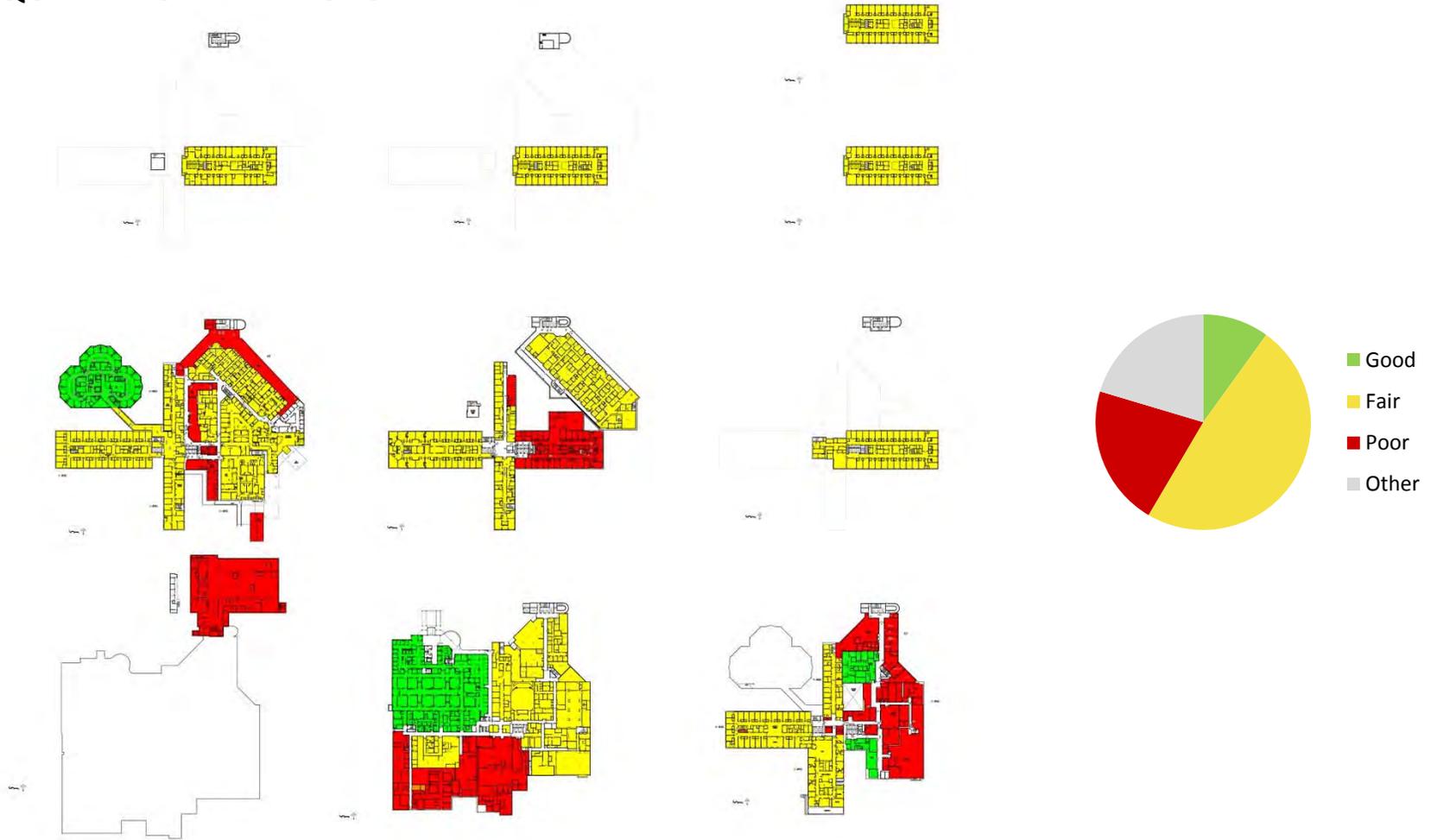
## FLEXIBILITY

The Structural Grid does not meet the minimum 30'X30' size and in most areas has an irregular pattern, making it difficult for adjustments.

Ceiling heights are below the industry standard (16' for diagnostic floors and 14' for patient units floors).



# QUALITY OF INTERIORS

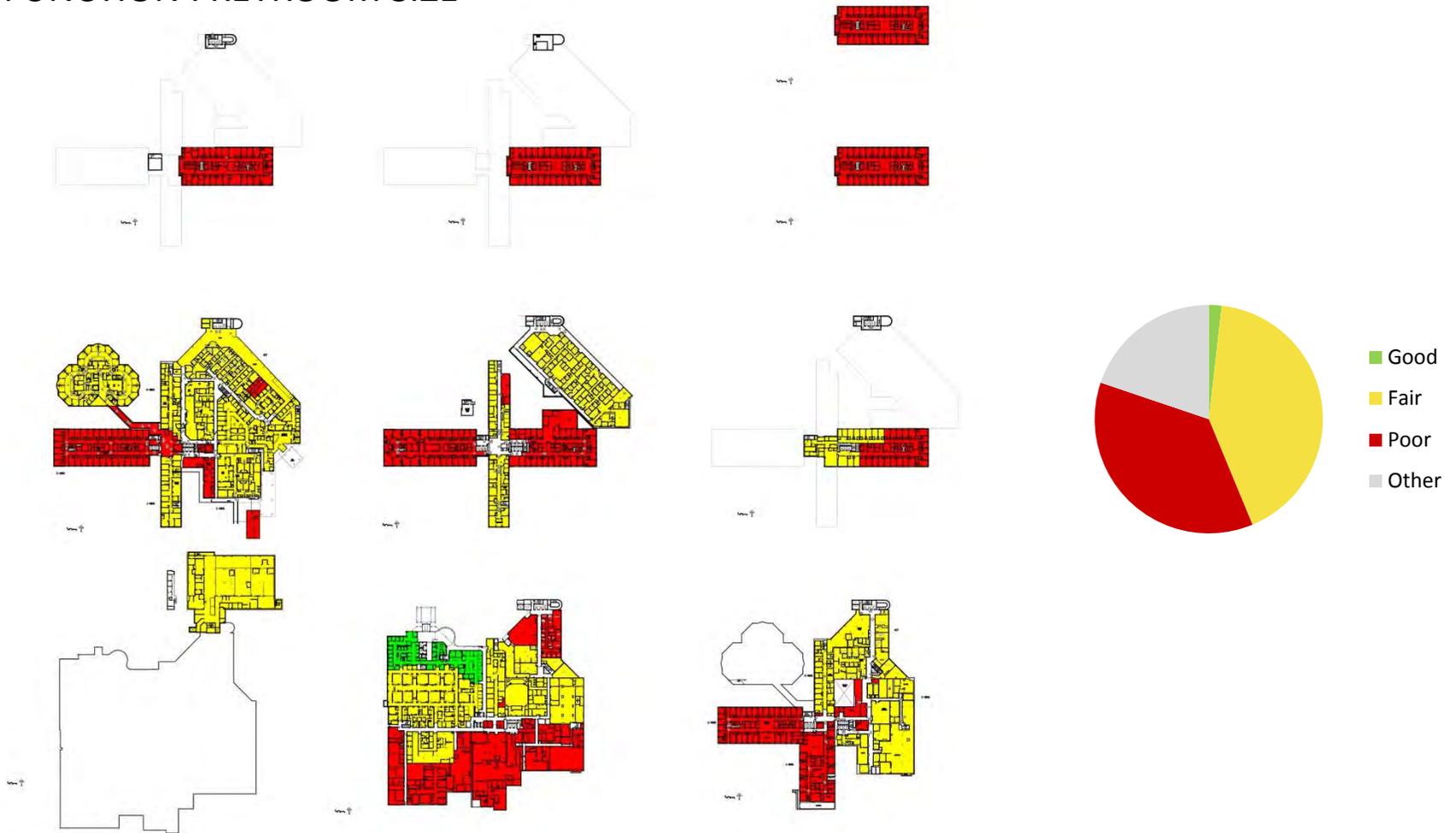


## QUALITY OF INTERIORS

- The hospital has a institutional look which does not support staff and patient comfort.
- Some programs are too small to meet their goals.
  - Some programs such as SAC and Gym lack supporting space including shower and lockers space.
  - Staff spaces and counseling units need more and larger group rooms and conference rooms.
  - Double occupancy patient rooms are common, although this is not current best practice
  - A majority of the toilets do not comply with ADA.
- Some areas have old and deteriorating finishes.
- Some staff work spaces can be noisy, crowded, and cluttered.
- Some spaces such as lab and medical imaging archive are dated considering today's modern healthcare operations.



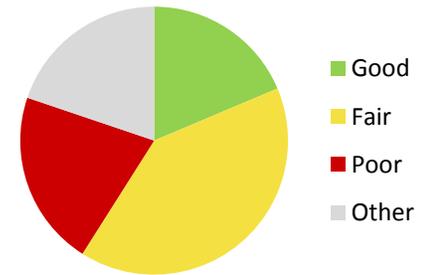
# FUNCTION : KEYROOM SIZE



**FUNCTION : KEYROOM SIZE**

<b>Departmental Functions</b>	<b>Existing Room Size</b>	<b>Industry Benchmark</b>
Acute Care	230 sf	280 sf
Intensive Care	180-210 sf	280 sf
IP Behavioral Health	230 sf	280 sf
Labor and Delivery	280 sf	350 sf
Emergency Trauma	200 sf (4 beds @ 800 sf)	400 sf
Emergency Triage	137 sf	120 sf
Emergency Treatment	182 sf	140 sf
Surgery	8@465 sf, 4@560 sf	650 sf
Cath-lab	474 sf	625 sf

# FUNCTION : ADJACENCIES

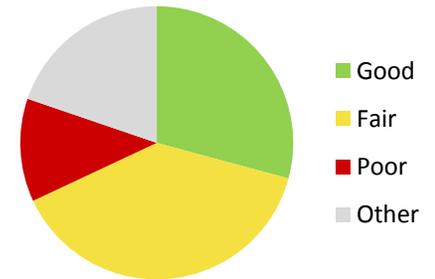


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## FUNCTION : ADJACENCIES

- Preferred adjacencies include:
  - Ortho and neuro patient beds should be grouped together.
  - Pediatrics to be closer to NICU and OB .
  - Imaging should be located adjacent to ED with Xray and CT located within the ED.
  - ED and ICU should be located closer to each other.
  - MRI and CT should be located close to each other as the staff are cross trained.
- Staff and supply circulation not efficient. Central sterile across the public corridor.
- Not easy to navigate way towards the cafe through the public corridors.

# FUNCTION : FLOWS



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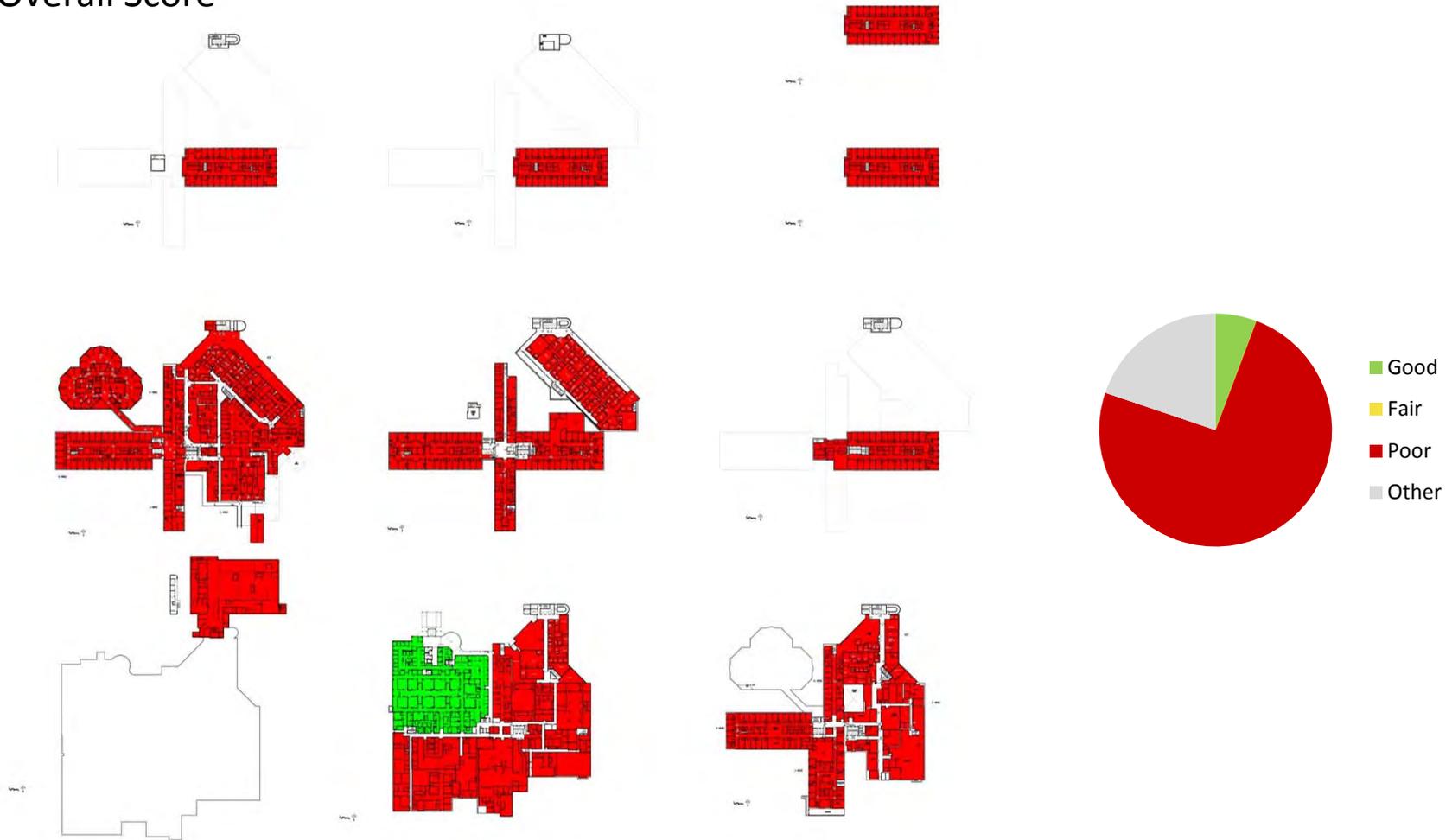
## FUNCTION : FLOWS

Need dedicated space for COWs to avoid clutter in the inpatient unit corridor.

Inpatient and outpatient flow to imaging should be separated.

Ultrasound and x-ray machines need a separate patient flow from the rest of the imaging equipment.

# Overall Score



Floor Name	Department	Sub Department	FLEXIBILITY: Millwork support future functional and technological changes.	FLEXIBILITY: Location of shafts, elevator stairwells and major fixed infrastructure components provide flexibility?	FLEXIBILITY: Structural grid module supports planning changes to include current space standards?	FLEXIBILITY: Floor to floor heights allow an array of services including DIT, Interventional, and Inpatient Services.	FLEXIBILITY: Comments	INTER QUALITY: Space is high quality, based on functionality and comfort parameters.	INTER QUALITY: Finishes are adequate to support space functionality.	INTER QUALITY: Space receives adequate levels of daylight.	INTER QUALITY: Space is adequately calm and quiet.	INTER QUALITY: Key room size and configuration meet functional needs.	INTER QUALITY: Comments (Staff spaces/patient spaces/common areas)	ADJACENCY: Critical functional adjacencies are solved.	PATIENT FLOW: Circulation pattern is clear and facilitates navigation.	STAFF FLOW: Circulation pattern emphasizes travel distance efficiencies.	SUPPLY FLOW: Circulation pattern supports cost effective operations.	FUNCTION: Comments
9-E	Inpatient - Cancer		Fair	Poor	Poor	Poor		Poor	Fair	Good	Fair	Poor	Double patient rooms that are also too small. Restrooms don't comply with ADA.	Fair	Fair	Fair	Good	Hospice and Palliative care should be a part of the comprehensive cancer program. Need dedicated space for COWs to avoid clutter in the corridor.
8-E	Inpatient - Orthopedics		Fair	Poor	Poor	Poor		Poor	Fair	Good	Fair	Poor	Double patient rooms that are also too small. Restrooms don't comply with ADA.	Fair	Fair	Fair	Good	Co-locate ortho and neuro patient beds. Need dedicated space for COWs to avoid clutter in the corridor.
7-E	Inpatient - Med/Surg		Fair	Poor	Poor	Poor		Poor	Fair	Good	Fair	Poor	Double patient rooms that are also too small. Restrooms don't comply with ADA.	Fair	Fair	Fair	Good	Need dedicated space for COWs to avoid clutter in the corridor.
6-E	Inpatient - Pediatrics		Poor	Poor	Poor	Poor		Poor	Fair	Good	Good	Poor	Nurse station has no daylight or views to outside. Not enough space for bathing. Most patient rooms are double patient rooms that are also too small.	Fair	Fair	Fair	Fair	Preferably should be closer to NICU and OB connection to ED preferable since it works as a 24 hour unit. Need dedicated space for COWs to avoid clutter in the corridor.
6-E	Inpatient - Mt Washington Pediatrics		Fair	Poor	Poor	Poor		Poor	Fair	Good	Good	Poor	Split of the layout has created small dark and crowded nurse stations. Pediatrics unit more quiet than other units.	Fair	Fair	Fair	Fair	Need dedicated space for COWs to avoid clutter in the corridor.
5-E	Physicians On-Call Sleep Area		Fair	Poor	Poor	Poor		Fair	Fair	Good	Fair	Fair	Space almost vacant.	Good	NA	Good	NA	
5-E	Inpatient - Cardiac Overflow		Fair	Poor	Poor	Poor		Fair	Fair	Good	Good	Fair	Double rooms too small. Nurse station too noisy and crowded.	Poor	Fair	Fair	Good	Cardiac unit should be acutely adaptable and all inclusive. Need dedicated space for COWs to avoid clutter in the corridor.
4-K	Inpatient - Cardiac Telemetry		Fair	Fair	Poor	Poor		Fair	Fair	Fair	Poor	Poor	CCU rooms are good size (renovated with charting station).	Poor	Fair	Poor	Poor	Monitoring stations are not positioned well for patient care. Does not have true isolation room. Is located away from the rest of CCU rooms.
4-K	PCRU (CCU)		Fair	Fair	Poor	Poor		Fair	Fair	Good	Fair	Poor	CCU rooms are good size (renovated with charting station).	Poor	Fair	Poor	Poor	Monitoring stations are not positioned well for patient care. Does not have true isolation room. Is located away from the rest of CCU rooms.
4-J	Cardiology Physical Therapy Gym		Fair	Fair	Poor	Poor		Fair	Fair	Fair	Fair	Fair	Gym needs shower/locker space.	Fair	Fair	Fair	Fair	Does not provide enough space for group therapy/therapeutic activities. Not easily accessible for daily outpatient visits, preferably located with outpatient services.
4-J	"PHIP" - Outpatient Behavioral Health		Fair	Fair	Poor	Poor		Fair	Good	Good	Good	Fair	Need larger group therapy counseling rooms. According to staff need more conference spaces and larger ones.	Fair	Fair	Good	Good	Does not provide enough space for group therapy/therapeutic activities.
4-H	Medical Staff Offices		Good	Fair	Poor	Poor		Good	Good	Good	Good	Fair	Does not support opportunities for privacy/socialization for the duration of treatment.	Good	NA	Good	Fair	Does not provide enough space for group therapy/therapeutic activities.
4-H	Dialysis		Poor	Poor	Poor	Poor		Poor	Poor	Fair	Poor	Poor	Does not support opportunities for privacy/socialization for the duration of treatment.	Poor	Poor	Poor	Poor	Does not provide enough space for group therapy/therapeutic activities.
4-H	Cardiology EKG		Poor	Poor	Poor	Poor		Fair	Fair	Fair	Fair	Fair	Nursing station should look less institutional and have better visibility.	Good	Fair	Fair	Poor	Located far from elevators/ D&T block.
4-E	Inpatient Behavioral Health		Poor	Poor	Poor	Poor		Fair	Fair	Good	Fair	Poor	Nursing station should look less institutional and have better visibility.	Poor	Fair	Fair	Fair	Located far from elevators/ D&T block.
4-ACF	Diabetes Education		Fair	Fair	Fair	Poor		Fair	Good	Poor	Good	Fair	Plan for instructional kitchen and conference room as part of diabetes and cardiac patient education spaces. Not in an ideal location for instructional kitchen activities in terms of supplies flow. Preferably closer to outpatient or education blocks considering the patient flow.	Fair	Fair	Good	Poor	Plan for instructional kitchen and conference room as part of diabetes and cardiac patient education spaces. Not in an ideal location for instructional kitchen activities in terms of supplies flow. Preferably closer to outpatient or education blocks considering the patient flow.
4-ACF	HR		Good	Fair	Fair	Poor		Fair	Fair	Poor	Good	Fair	According to staff need more and larger conference rooms.	Fair	NA	Good	NA	According to staff need more and larger conference rooms.
4-ACF	Physician Offices		Fair	Fair	Fair	Poor		Poor	Fair	Poor	Good	Fair	Does not provide in-room toilets.	Fair	NA	Fair	Fair	Does not provide in-room toilets.
3-PAVILION	ICU		Fair	Poor	Fair	Good		Fair	Good	Good	Good	Fair	Restrooms do not comply with ADA. Rooms do not provide enough space for baby bassinets (all located in nursery). Although the rooms should be large enough to room baby bassinets, it is good practice to have a nursery with min number of bassinets for the unit as required by code.	Fair	Good	Good	Good	Restrooms do not comply with ADA. Rooms do not provide enough space for baby bassinets (all located in nursery). Although the rooms should be large enough to room baby bassinets, it is good practice to have a nursery with min number of bassinets for the unit as required by code.
3-MRI	MRI		Poor	Poor	Poor	Poor		Poor	Poor	Poor	Poor	Poor	Restrooms do not comply with ADA. Rooms do not provide enough space for baby bassinets (all located in nursery). Although the rooms should be large enough to room baby bassinets, it is good practice to have a nursery with min number of bassinets for the unit as required by code.	Poor	Poor	Poor	Poor	Restrooms do not comply with ADA. Rooms do not provide enough space for baby bassinets (all located in nursery). Although the rooms should be large enough to room baby bassinets, it is good practice to have a nursery with min number of bassinets for the unit as required by code.
3-K	OB		Good	Fair	Fair	Poor		Fair	Fair	Good	Good	Poor	Restrooms do not comply with ADA. Rooms do not provide enough space for baby bassinets (all located in nursery). Although the rooms should be large enough to room baby bassinets, it is good practice to have a nursery with min number of bassinets for the unit as required by code.	Fair	Fair	Good	Good	Restrooms do not comply with ADA. Rooms do not provide enough space for baby bassinets (all located in nursery). Although the rooms should be large enough to room baby bassinets, it is good practice to have a nursery with min number of bassinets for the unit as required by code.
3-J	Executive Offices		Poor	Poor	Poor	Poor		Fair	Fair	Good	Fair	Fair	Does not provide in-room toilets.	Fair	NA	Fair	Fair	Does not provide in-room toilets.
3-H	Retail		Fair	Poor	Poor	Poor		Poor	Fair	Poor	Fair	Fair	Does not provide in-room toilets.	Fair	Fair	Fair	Fair	Does not provide in-room toilets.
3-H	Admin Offices		Fair	Poor	Poor	Poor		Fair	Fair	Good	Fair	Fair	Does not provide in-room toilets.	Fair	NA	Fair	Fair	Does not provide in-room toilets.
3-H	Speech & OT		Poor	Poor	Poor	Poor		Good	Good	Good	Good	Fair	Does not provide in-room toilets.	Poor	Fair	Fair	Fair	Located in staff administration area and away from the physical medicine unit.
3-E	Physical Medicine		Fair	Poor	Poor	Poor		Fair	Good	Poor	Good	Poor	According to staff need more space/ storage.	Fair	Good	Good	Good	According to staff need more space/ storage.
3-E	Medical Imaging		Good	Fair	Fair	Poor		Fair	Fair	Poor	Good	Fair	Imaging should be located adjacent to ED with X-ray and CT located within the ED MRI and CT should be located close to each other as the staff are cross trained. Dedicated pediatric imaging capability is required with space for families and observation unit. Inpatient and outpatient flow to imaging should be separated. Ultrasound and x-ray machines need a separate patient flow from the rest of the imaging equipment.	Fair	Fair	Poor	Fair	Imaging should be located adjacent to ED with X-ray and CT located within the ED MRI and CT should be located close to each other as the staff are cross trained. Dedicated pediatric imaging capability is required with space for families and observation unit. Inpatient and outpatient flow to imaging should be separated. Ultrasound and x-ray machines need a separate patient flow from the rest of the imaging equipment.
3-E	ED		Good	Fair	Fair	Poor		Fair	Good	Poor	Fair	Fair	Trauma does not provide enough staff work space.	Fair	Fair	Good	Good	Trauma does not provide enough staff work space.
3-E	ED	Waiting and Triage	Good	Fair	Fair	Poor		Fair	Fair	Fair	Good	Poor	Triage does not allow for good visibility and good patient flow, specialty admission of patient on stretchers.	Fair	Poor	Fair	Fair	Triage does not allow for good visibility and good patient flow, specialty admission of patient on stretchers.
3-E	ED	Psych Unit	Poor	Poor	Poor	Poor		NA	NA	NA	NA	NA	Did not visit interior of Unit.	Good	Good	Fair	Fair	Did not visit interior of Unit.
3-ACF	Outpatient Services		Fair	Fair	Fair	Poor		Fair	Good	Poor	Good	Fair	Waiting area is dry-ii but exam rooms are not. Currently not in use.	Good	Good	Good	Good	Waiting area is dry-ii but exam rooms are not. Currently not in use.
3-ACF	ED	Fast Track	Good	Fair	Fair	Poor		Fair	Good	Poor	Fair	Fair	Need more space. Too small and crowded. Does not provide adequate work space for staff.	Good	Fair	Good	Good	Need more space. Too small and crowded. Does not provide adequate work space for staff.
3-ACF	Nuclear Assault Counseling (SAC)		Fair	Fair	Fair	Poor		Poor	Good	Poor	Poor	Poor	NICU is undersized.	Fair	Fair	Fair	Fair	NICU is undersized.
2-K	LDR		Fair	Fair	Fair	Poor		Fair	Fair	Good	Good	Poor	Seems underutilized.	Good	Good	Good	Good	Seems underutilized.
2-J	Inpatient - Maternity		Fair	Poor	Poor	Poor		Fair	Fair	Good	Good	Poor	Need more space. Too small and crowded. Does not provide adequate work space for staff.	Good	Good	Good	Good	Need more space. Too small and crowded. Does not provide adequate work space for staff.
2-H	Perinatal Diagnostic Center (PDC)		Good	Poor	Poor	Poor		Good	Good	Good	Good	Good	Seems underutilized.	Good	Good	Good	Good	Seems underutilized.
2-E	Pharmacy		Fair	Poor	Poor	Poor		Poor	Fair	Good	Fair	Poor	Need more space. Too small and crowded. Does not provide adequate work space for staff.	Poor	NA	Fair	Poor	Need more space. Too small and crowded. Does not provide adequate work space for staff.
2-E	Morgue		Poor	Poor	Poor	Poor		Poor	Good	NA	Good	Fair	Might need individual drawers for bodies.	Fair	NA	Good	Fair	Might need individual drawers for bodies.
2-ACF	Nuclear Medicine		Fair	Fair	Fair	Poor		Fair	Fair	Poor	Good	Fair	Cathlabs seem small.	Fair	Fair	Poor	Poor	Cathlabs seem small.
1-PAVILION	Surgey		Good	Good	Good	Good		Fair	Good	NA	Good	Fair	Cathlabs seem small.	Fair	Good	Poor	Poor	Cathlabs seem small.
1-PAVILION	Central Sterile		Fair	Fair	Fair	Fair		Fair	Good	Poor	Good	Good	Central sterile across the public corridor. Located across the public corridor relative to the Surgery unit.	Poor	NA	Fair	Fair	Central sterile across the public corridor. Located across the public corridor relative to the Surgery unit.
1-J	Kitchen / Servery / Dining		Poor	Fair	Poor	Poor		Poor	Poor	Poor	Poor	Poor	Finishes are old and deteriorating.	Poor	Poor	Fair	Fair	Finishes are old and deteriorating.
1-H	Endoscopy		Fair	Fair	Poor	Poor		Fair	Fair	Poor	Fair	Fair	Large Auditorium and several small conference rooms. Dated finishes, but function well.	Fair	Good	Good	Good	Large Auditorium and several small conference rooms. Dated finishes, but function well.
1-E	Education		Poor	Fair	Poor	Poor		Fair	Fair	Poor	Fair	Fair	Large Auditorium and several small conference rooms. Dated finishes, but function well.	Poor	Poor	Poor	Poor	Large Auditorium and several small conference rooms. Dated finishes, but function well.
1-ACF	Lab		Poor	Fair	Poor	Poor		Fair	Good	Poor	Fair	Fair	Islands have old design which is not desirable for today's lab procedures.	Good	NA	Good	Good	Islands have old design which is not desirable for today's lab procedures.

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**ENGINEERING SYSTEMS ANALYSIS**

## Executive Summary – Engineering Systems

Affiliated Engineers, Inc (AEI) commenced building engineering system evaluations at PGHC on July 23, 2013. AEI represented and evaluated mechanical, electrical, plumbing, fire protection and technology engineering systems which are described within this assessment report.

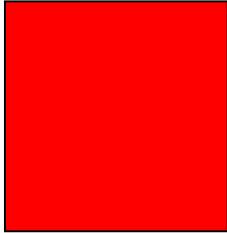
In summary, PGHC has engineering systems in poor conditions throughout the facility which requires immediate attention. Although modest investment in engineering infrastructure has occurred over the years, it is evident that infrastructure equipment and distribution has aged beyond its useful life and there is risk to patient care at the facility. Some of the key deficiencies are the following:

- Chiller plant cooling capacity is maximized and not connected to emergency power
- Air handling systems need renewal at ACF, J and E wings
- Hydronic systems are failing and need renewal at lower level mechanical rooms
- Electrical gear is beyond useful life and manufacturer parts are limited
- Emergency power systems need replacement in K wing and CUP
- Fire alarm system requires complete code upgrade
- Plumbing systems are fragmented and need immediate renewal
- IT equipment room locations are at risk from heat and wet utilities

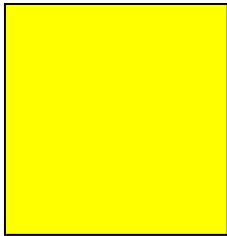
An assessment legend is used to visually depict immediate, intermediate and long-term action items for engineering infrastructure.

## ASSESSMENT LEGEND

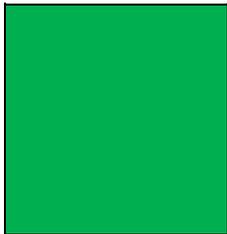
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System requires immediate maintenance, replacement, or additional capacity. Current operations are at severe risk of downtime or regulatory noncompliance. System should be replaced/augmented within 1- 5 years.



System has operational or sizing concerns, but is currently functioning. Continued use without changes will present maintenance challenges and operational risks. System should be replaced/augmented within 10 years.



System is appropriately sized and functioning properly. With continued maintenance, system should be able to serve facility. System expansion may require additional capacity. System should be replaced/augmented within 20 years.

## MECHANICAL SYSTEMS SUMMARY

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- Chilled water generation is at capacity.
- Chillers are not connected to emergency power.
- Secondary chiller pumps require augmentation/replacement
- Boilers are 1968 vintage and will require replacement in near future.
- Air handling units for E-Wing Patient tower are hot/cold deck type and require maintenance attention and are near 35 years old.
- Dietary and OB AHU's require replacement.
- Steam and hydronic systems are very old and leaking, requiring on-going maintenance. Systems are fragmented and should be renewed and centralized.



## MECHANICAL SYSTEMS SUMMARY

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- The ACF addition has migrated substantially from its original programming and as such the equipment is no longer applicable to the current usage.
- Chilled water distribution is at capacity and cannot support additions.
- Steam has substantial excess capacity.
- Dearation equipment is near failure.
- Controls are original pneumatic with very little DDC capability.



## ELECTRICAL SYSTEMS SUMMARY

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- Majority of the normal electrical service gear is Federal Pacific and no longer manufactured. Third party parts are available. Equipment beyond useful life.
- Normal site distribution is high risk. 13.2kV feeders are directly tapped off the bus and not able to be de-energized without de-energizing half of the main service gear. Separate breakers should be integrated for safety, reliability and maintainability.
- Two of the substations on campus have primary select but single ended secondary distribution (ACF and ISP).



## ELECTRICAL SYSTEMS SUMMARY

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- Chiller Plant is not connected to Emergency power. PGH looking into funding for portable generator connection.
- Essential distribution gear is beyond useful life. ATS's have been replaced recently but the circuiting does not meet the separation requirements per current codes (Life Safety, Critical, and Equipment branches).
- Emergency power systems are fragmented and not centralized. There are 4 separate units throughout campus. CUP and K wing generators are at the end of their useful life.
- Only one Critical Power circuit is provided to the Critical Care spaces. Current standard is to provide two independent Critical power feeds.



## PLUMBING SYSTEMS SUMMARY

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- Plumbing systems are fragmented and not centralized; and many systems are beyond their useful life.
- Many piping systems are leaking at lower level mechanical rooms.
- Water quality should be tested and confirmed acceptable. Evaluation of water filtration/treatment may be required.
- Double backflow prevention is incorporated into water service.
- Facility served from local water tower supplied by WSSC water utility. From CUP/Water tower, campus supply serves multiple entrances with appropriate backflow prevention.
- Two independent fire pump systems serve the facility.



## PLUMBING SYSTEMS SUMMARY

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- Building pressures and hot water deliveries are sufficiently adequate.
- Water and waste/storm piping and valving in system is largely original and has notable service issues and failures, due to age.
- Grease waste system and interceptor is WSSC compliant and serviced regularly.
- Medical Oxygen system is NFPA-99 compliant and of adequate capacity and condition.
- Medical Air and Vacuum systems are in suspect condition, located in mechanical rooms with excessive heat and abusive conditions.
- Bottled gas manifolds are NFPA-99 compliant and of adequate capacity and condition.
- The building is not currently fully sprinklered and in full compliance with NFPA-13 requirements.



## INFORMATION TECHNOLOGY SYSTEMS SUMMARY

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- Facility retrofitted with telecommunications rooms and cabling.
- Fiber and copper backbones adequate but near capacity.
- Single Data Center / Network Operations Center for facility in good condition.
- Cabling/jacks added as necessary with challenges; few spare ports for new equipment.
- Robust wireless network.
- Telecommunications room environmental, cable management, and storage concerns.
- Aged and inconsistent voice, nurse call, and overhead paging systems.



## MECHANICAL SYSTEMS

System	Description	Est. Life	EVAL.	Comments
Chiller System	(4) 450 ton Carrier Units vintage 1996; 18 years old. R-22 refrigerant. Primary pumping delivers chilled water to buildings; and secondary pumps provide pumping at several building additions. The delivery temperature is 42F and returns with 10-12 degree delta T. A water side economizer is present, but not operational due to inadequate commissioning.	<5 years		Chiller tonnage is short at PGH; and requires expansion. Some AHU's have short capacity, but there is a primary deficiency in cooling capacity during peak summer season. The ACF addition in 1979 used decoupled DX heat pump systems. R-22 is not an environmentally safe refrigerant, requiring these units to be replaced sooner rather than later with a safer refrigerant. Utilization of the water side economizer would reduce utility costs were it operational
Cooling Towers	(3) 750 T Evapco Cooling Towers were installed in 2011. Tower capacity matches chiller capacity. Exterior condenser water piping is substantially pitted. Some surface rust is evident on the tower basins.	10 years		Tower tonnage matches chiller tonnage and since the chillers are at capacity, the towers are at capacity and have no spare capacity. Condenser water piping will require repair or replacement when leaks occur.
Boilers	(2) Superior water tube boilers with induced draft fans at 30 kPPH each and one Hurst Fire tube boiler also at 30 kPPH.	10 and 20 years, respectively.		The water tube units are high quality and operate well, but were manufactured 45 years ago (1968 vintage). The Hurst boiler is only 3 years old. An industrial level laundry was closed in the past thus allowing substantial excess boiler capacity at plant

## MECHANICAL SYSTEMS

System	Description	Est. Life	EVAL.	Comments
CUP Distribution	Chilled water and steam are routed on an elevated and exposed piping rack throughout the grounds. The system was installed in the 1980's and has been tapped as necessary to feed new buildings as they come on line. No leaks are evident.	10 years		Chilled water piping is at capacity. Substantial additions will require upsizing the mains from the tap point back to the point of distribution. Central steam piping is expected to be in adequate condition, however, the steam condensate piping is nearing the end of its beneficial life and it is expected to begin having reoccurring leaks within the near future.
Deaeration and condensate collection	The facility is utilizing its second deaerator. The internals of the first unit failed. The shell is being used as a surge tank that feeds into the deaerator.	5 years		Deaerators are subject to much corrosion and will eventually leak. The original tank being used as a surge tank will probably fail sooner as it has been exposed to corrosion potential longer. Typical condensate return is about 80%, however, only about 40% is being returned to the CUP necessitating a large amount of makeup and increasing operating costs.
E Wing, Patient Tower, AHU's	The nine floors of E Wing are served by two large, hot deck/cold deck air handlers, one in the basement and one in the penthouse. Each AHU has an associated return fan.	5 years		Units are original. Hot deck/cold deck units are inefficient and waste energy. Units leak at joints.

## MECHANICAL SYSTEMS

System	Description	Est. Life	EVAL.	Comments
H Wing, Patient Services, AHU's	An original air handling unit with a separate return fan.	5 years		The unit is over 60 years old. The access door to one section does not fit properly and leaks a significant amount of air.
J Wing, Dietary and OB AHU	An original air handling unit with a separate return fan.	2 years		Both units have been replaced 10-15 years ago and exhibiting rust on the interior walls of the intake section. Dampers have been replaced at least once before. Guards are missing and bearings should be replaced on the return fan. It is felt the space load is exceeding the capacity of the unit.
K Wing, Patients, AHU	This space was renovated about 10 years ago and has 2 smaller York "Solutions" units and one larger built-up AHU.	10 years		Although these unit are estimated to have about 10 years of life left in them, the conditions to which they are exposed could substantially affect their life expectancy. The units are subject to localized leaks and flooding from other equipment and are exhibiting rusting at their base.
ACF, Ambulatory Care Facility, AHU's	The cooling and heating of this wing is accomplished via a multitude of water-source heat pumps.	2 years		The usage of this space has changed drastically from individual small clinics to larger-open space operation. The result of ganging several units together to serve a single space is poor temperature control. In addition, the units are original and numerous, leading not only to failures but an increased frequency of failures.

## MECHANICAL SYSTEMS

System	Description	Est. Life	EVAL.	Comments
ISP, Pavilion, AHU	Installed in 1996, this unit is still in acceptable condition, however, the unit exhibits substantial casing sweating downstream of the cooling coil due to thinner walls.	10 years		The unit casing is already experiencing decomposition of the galvanized metal outer wall and small locations of rust are noted. This unit will prematurely fail as a result of the wall thickness.
Steam heating and humidification	Each wing or subbuilding has a steam station to serve the hot water systems Humidification is by plant steam which has been deemed acceptable for human consumption by the hospital.	7 years		Pressure reducing valves are an on-going maintenance item and are serviced as needed. Some of the humidifiers are not working.
Controls	Controls are mostly pneumatic throughout the facility with compressors being replaced over time. What modern controls exist, consists of several VFD's, of which only one is operational.	10 years		While it is servicable, the system is original and does not represent the controls technology of today.

## MECHANICAL



Chiller



Cooling Tower



Boiler



Piping Distribution



Deaerator

## MECHANICAL



E Wing Hot/Cold deck



Dietary return fan



K-Wing AHU



ACF water sourced heat pumps



Recently renovated steam station



Typical control air compressor

## ELECTRICAL SYSTEMS

System	Description	Est. Life	EVAL.	Comments
PEPCO Electrical Service	Two overhead 13.2 kV PEPCO feeds serve the site from one substation and enter from the north and south. Underground routing is via separate ductbanks	20 yrs		Capacity of PEPCO Service is limited to 600 amps on each of the PEPCO feeders. Load is approximately 150 amps each.
Normal Electrical Service Gear	1952 Service gear located at Central Utility Plant (CUP) with Main-Tie-Main auto transfer function.	0-5 yrs		Gear is Federal Pacific and no longer made. Third party parts are available. Capacity is 1200A on each main breaker but capacity of incoming feeder is 600A. Normal service gear is at the end of it's service life.
Normal Site Distribution	Three 13.2kV feeders are tapped directly off the bus on each side of the Tie breaker at the Main Service Gear.	5 yrs		These feeders are routed throughout the site via manholes to substations serving the various buildings. These feeders can not be de-energized without de-energizing half of the main gear and manually switching all downstream substations to be fed from the energized end with Tie closed. The feeders to the buildings should each be on a separate breaker for reliability and maintainability as well as routed via separate manholes.
CUP Normal Electrical Distribution	CUP gear is 4160V Double ended substation transformers rated at 1887 amps. Main breakers are rated at 2500A and the Current loading is 900A on Main 1 and 1200A on main 2.	5 yrs		If operating from one side can run only 2 chillers and MCC's. Project in place to add a portable generator connection to serve 2 chillers. Cup gear no longer can function with N+1 as intended. Capacity and age of equipment requires replacement.
Outdoor Normal Electrical Switchgear	Gear is 16 years old; is single ended with a primary select double cabinet and 480V, 3000A secondary. Gear serves the ISP, and wings J, K & H. Secondary feeder is routed along west side into K wing basement. Gear is 3000A with no main breaker.	20 yrs		Gear is in decent shape outside. The ICS switchboard in K wing basement has a single ended distribution. Gear could operate as long as estimated, but fails to meet code.

## ELECTRICAL SYSTEMS

System	Description	Est. Life	EVAL.	Comments
ACF Normal Substation	Gear is single ended gear with a selector switch primary select (Single cabinet for both primary feeds). Secondary is switchboard construction with a rating of 3000 amps. Current measured load is approximately 1200 amps.	5-10 yrs		Primary select with selector switch in a single cabinet provides poor maintenance and poor reliability. Room has generator, fire pump, normal distribution and ATS's all in the same room. Separate rooms are required per code.
Hospital E Wing (Addition) Switchgear	Double ended substation with 208/120V, 3000 amp secondary.	20 yrs		Gear is in good shape with some space. Room is shared with normal power, ATS's, and generators. Current codes require separation of normal and essential systems. Generator requires separate 2 hour room.
Essential Generators	Distributed generators throughout site to serve areas of buildings. All radial feeds and single ended distribution. ACF Bldg: 1994, CAT 1000kW E Bldg: 1988, 400 kW K Bldg: 1972, 500 kW CUP: 1967, CAT 150 kW	ACF = 20 yrs E = 10 yrs K,CUP = 5 yrs		All but the ACF generator has reached the end of it's life. All generators required to be in separate 2 hour rooms in current codes.
Essential Distribution	Many ATS's replaced in 2008 with open transition, isolation bypass, electronic controls.	5 yrs EMDP 20 yrs Others		EMDP installed in 1967 is an ASCO board with integral ATS and distribution in E wing; is in poor condition and has reached the end of its life. All wings do not have separation of Life Safety, Critical, and equipment branches per codes.
Operating Rooms	Single isolation power panels are provided in OR's per current codes. Current industry practice is to provide two isolation power panels in each OR served from separate sources back to the generator plant.	20 yrs		Isolated power panels installed recently and In good shape. Current design standards are to feed OR's from two separate feeds from generator via two isolated power panels.
Fire Alarm System	Current system is addressable Edwards system. This is a horn and strobe based system with minimal coverage. The paging system is used to supplement this and give voice instructions. Single alarm zone and paging zone for whole campus.	5 yrs		Fire alarm systems now required to be voice systems with coverage throughout all occupied spaces. Upgrade of head end panel and speaker/strobes throughout all buildings.

# ELECTRICAL

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CUP Substation



CUP Generator



E Wing Essential ATS and Distribution



CUP Motor Control Center



Exterior ISP Substation

## PLUMBING SYSTEMS

System	Description	Est. Life	EVAL.	Comments
Domestic System	WSSC compliant with adequate pressure and backflow prevention. Piping system and valves have recurring failure.	10 years	Yellow	Although service is adequate, system needs replacement and upgrading.
Fire Protection System	Two sets of fire pump systems, adequately pressurized. Facility only partially sprinklered.	5 years	Red	Building needs to be fully sprinklered to comply with current codes and life safety.
Domestic Hot Water System	Central water heaters are sufficient for load capacity and delivery. Piping system and valves have recurring failure.	10 years	Yellow	Although service is adequate, system needs replacement and upgrading.
Waste and Storm System	Capacity and system is aged, but operates sufficiently with expected maintenance and service for its age.	10 years	Yellow	Grease waste system is adequate and WSSC compliant, but piping system should be upgraded and replaced soon, prior to major system failure.
Medical Gas System	Oxygen and bottled service supplies are adequate and compliant. Medical air and vacuum system sources need attention.	5 years	Red	Central medical air and vacuum systems need replacement and upgrades.

## ■ PLUMBING



Water Pump



Natural Gas Entrance



Fire Pump



Fire Water Entrance



Vacuum System



Air Compressor

# ■ PLUMBING



RO Water



Bottled Gas



Clean Steam Generator



Oxygen Tank



Hot Water Heater



Instantaneous Hot Water Heater

## INFORMATION TECHNOLOGY SYSTEMS

System	Description	Est. Life	EVAL.	Comments
Telecommunications Rooms	Telecommunications rooms are generally repurposed storage, electrical, closets, or office rooms. Many rooms used for storage of materials not related to telecommunications. Room access is via keyed locks. Rooms placed to reach all areas of the facility. Overhead and in-rack cable management is poor.	10 years	Yellow	Consider cleaning up rooms, removing unrelated equipment, and developing a room maintenance/upgrade list.
Telecommunications Rooms	No facility telecommunications grounding system present.	5 years	Red	Potential hazard to personnel and equipment. Warrantees may not be honored if a grounding system isn't present.
Telecommunications Rooms	Some rooms have partial architectural ceilings (not desired), where not specifically removed. Many rooms have foreign utilities (mechanical, plumbing, electrical) over equipment.	10 years	Yellow	Consider cleaning up rooms and adding pans/leak detection to locations where wet utilities are over equipment.
Telecommunications Rooms	Each room has emergency power. UPS is provided via floor or rack mounted units.	20 years	Green	
Telecommunications Rooms	Main telephone room is located on lowest level, in mechanical space with wet utilities. Room door threshold has had lip added to slow entry of water, should flooding occur. Room has poor cable management, uses extension cords, is in an area subject to water damage, and has many wet, aged, and pressurized utilities.	5 years	Red	Clean up room, reduce/eliminate cord/cable routing issues, consider drip pans where wet utilities are over equipment.
Telecommunications Rooms	Some telecommunications rooms show signs of water ingress or leaks.	5 years	Red	Review and mitigate rooms where evidence of water is present.
Telecommunications Rooms	Some rooms have temperature, humidity and minimum air change rates outside of recommended ranges. In at least one case, equipment needed to be upgraded to a model with a higher thermal operating range.	10 years	Yellow	Provide ventilation to reduce high temperatures. System failures, such as Nurse Call, may pose serious risk to patients.

## INFORMATION TECHNOLOGY SYSTEMS

System	Description	Est. Life	EVAL.	Comments
Telecommunications Cabling	Past and current project to identify, repair, and document all fire rated partition penetrations.	10 years	Yellow	Confirm project is finished to avoid potential code violations.
Telecommunications Cabling	Telecommunications rooms served with 6 or 12 strands multimode cable and copper as needed. Cabling is single source with no redundant path.	10 years	Yellow	Consider options for providing redundant fiber to rooms.
Telecommunications Cabling	Backbone cabling is generally home run to NOC or Telephone room, but there are locations where backbone cables converge at an intermediate cross connect (atypical of communications cable distribution).	10 years	Yellow	Avoid using intermediate cross connects as remodel projects occur; home run all cabling.
Telecommunications Cabling	Patient monitoring is dedicated wiring and network.	20 years	Green	
Telecommunications Cabling	Voice and data cabling is a mix of CAT5, CAT5E, CAT6, and some CAT6A. Labeling is inconsistent, regularly requiring "toning out" of circuits for identification. Facility construction makes adding pathways for new cable difficult (concrete drilling). Much new cabling is installed in surface raceway. Cabling typically provided only as needed, with little spare/future provisions.	10 years	Yellow	Consider cable standard and labeling scheme for all new work. Enforce standards.
Telecommunications Cabling	Facility has a robust wireless network to augment the wired network. System has separate bands for clinical, enterprise, and visitor use. System was reported as capable of supporting wireless VoIP.	20 years	Green	
Telecommunications Cabling	Real time locating system (RTLS) deployed in limited areas with HillRom nurse call. System is separate from network cabling.	20 years	Green	
Telephone System	Telephone system is analog and over 20 years old.	0-5 years	Red	Support and spare parts availability should be reviewed.

## INFORMATION TECHNOLOGY SYSTEMS

System	Description	Est. Life	EVAL.	Comments
Telemetry and Patient Monitoring	Telemetry system is SpaceLabs (10 to 20 years old) and has "decent" coverage.	10 years	Yellow	
Security - Access Control	Access control is Software House with magnetic stripe readers.	2-5 years	Red	Proximity technologies typical for new installations. Magnetic stripe has maintenance issues and is less user friendly.
TV Signal Distribution System	Coax cable TV signal distribution system present. Previously installed TV content management system (TeleHealth) not maintained. System unlikely be able to support HD signals or interactive systems.	0-5 years	Red	Any TV system upgrades need to be tested against current cabling and distribution system capacity.
Data Center /Network Operations Center	Data Center/NOC is on-site, serves the PGHC, and several other Dimensions Health facilities. NOC has emergency power, UPS power, and redundant cooling units. Space and utility capacity are available for approximately 10 additional cabinets, after legacy equipment cleanup. Some hardware may be removed as some services will be hosted at Cerner. NOC has raised floor (for power and cooling distribution) and overhead data cable runway.	10+ years	Yellow	
Data Center / Network Operations Center	No offsite backup or disaster recovery site used.	5 years	Red	Implement off-site data replication.
Telecommunications Service	Facility is serviced via one physical tele-communications service entrance (single physical point of failure). This entrance serves both the PGHC and other facilities reliant on the PGHC NOC.	5 years	Red	This is a single physical point of failure that could impact this and other facilities.
Telecommunications Service	Per staff responses, there is physical space capacity in entrance conduits for future cabling.	20 years	Green	
Infant Protection	Infant protection is Safe Place and MatchMaker	5years	Yellow	Consider a unified system for maintenance and operational simplicity.

## INFORMATION TECHNOLOGY SYSTEMS

System	Description	Est. Life	EVAL.	Comments
Overhead Paging	Overhead paging is a single zone, vintage system, distributed via ceiling mounted speakers. Announcements are made by telephone operators.	5 years		This is a vital communications system with limited service and spare parts availability.
Distributed Antenna System (DAS)	Facility has a Distributed Antenna System for Sprint service. Other providers not accommodated. No Public Safety Radio system observed. Facility does have a transmitter for maintenance/security radios.	5 years		Review any pending local regulations and code updates requiring Public Safety Radio coverage in near future. If so, begin to budget and concept now. Consider enterprise solutions and partnering with cellular service providers.
Centralized clock systems	The facility does have a vintage wired synchronized clock system (Simplex) that is not being expanded. Most clocks are simple digital clocks without synchronization.	5 years		Consider deploying synchronized clocks that use existing wireless network or independent mesh network.

## INFORMATION TECHNOLOGY SYSTEMS



Typical closet with original nurse call system



New corridor workstation



Main Telephone Room



Patient monitor located away from data jack



Telecommunications space with evidence of water exposure



Typical Telecommunications closet