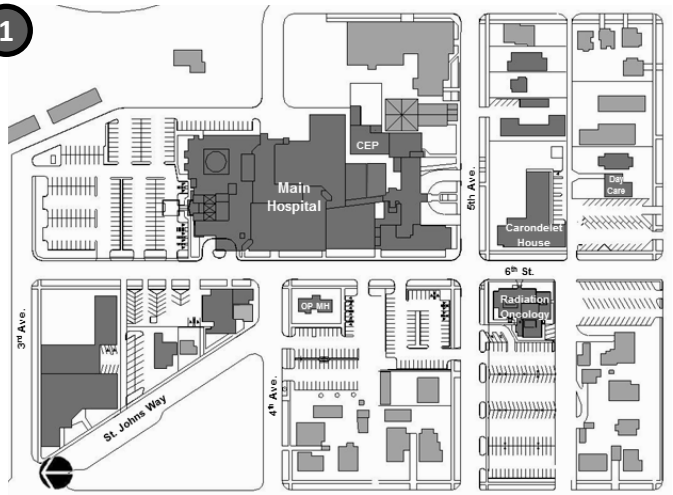
Table of Contents

Proposed Short Term Projects

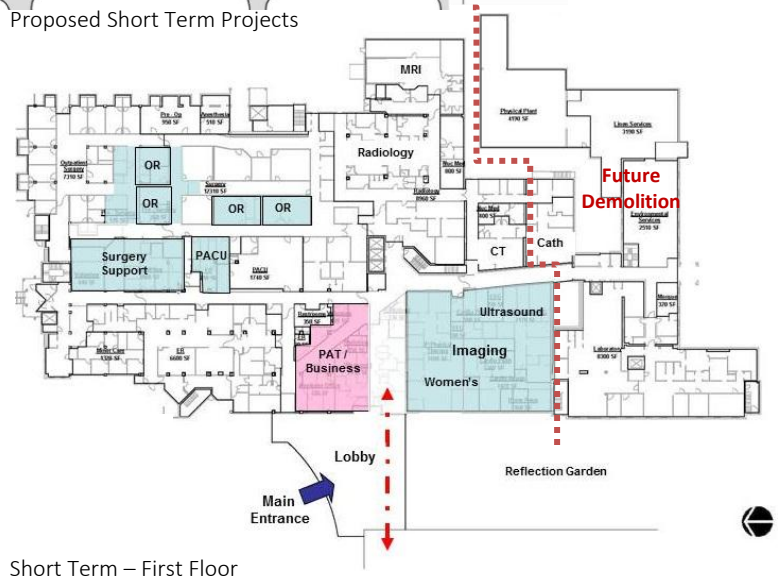
Existing Site Analysis (Right):
The existing site presented with many challenges: the South buildings are in poor condition; the main hospital, bounded by city streets, has little area for direct expansion.; Also, the campus suffers from difficult wayfinding and a lack of campus identity.

2 **Proposed Short Term Site (Left):**
Partial closure of 6th st. allows for a new entry sequence, connection to the ASB, and lays the groundwork for a campus identity

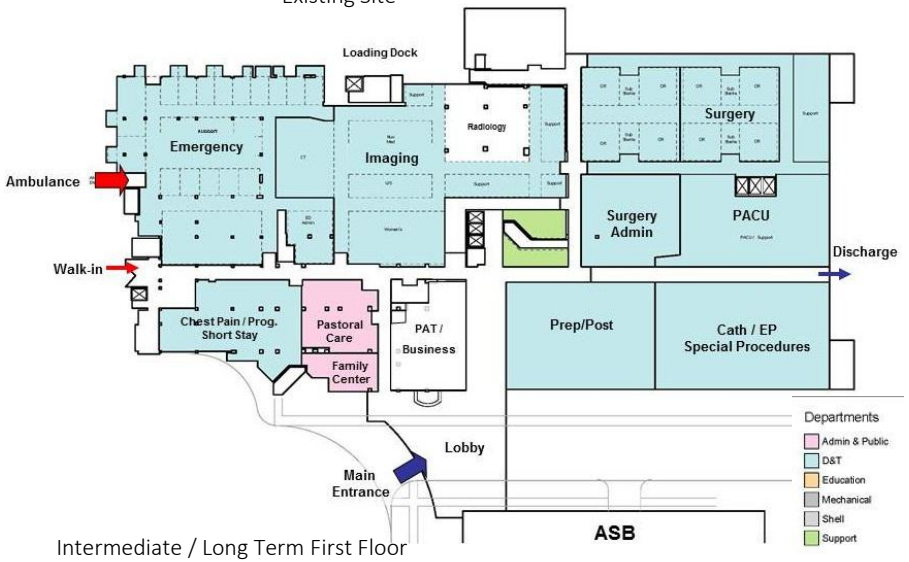
1



Existing Site



Short Term – First Floor



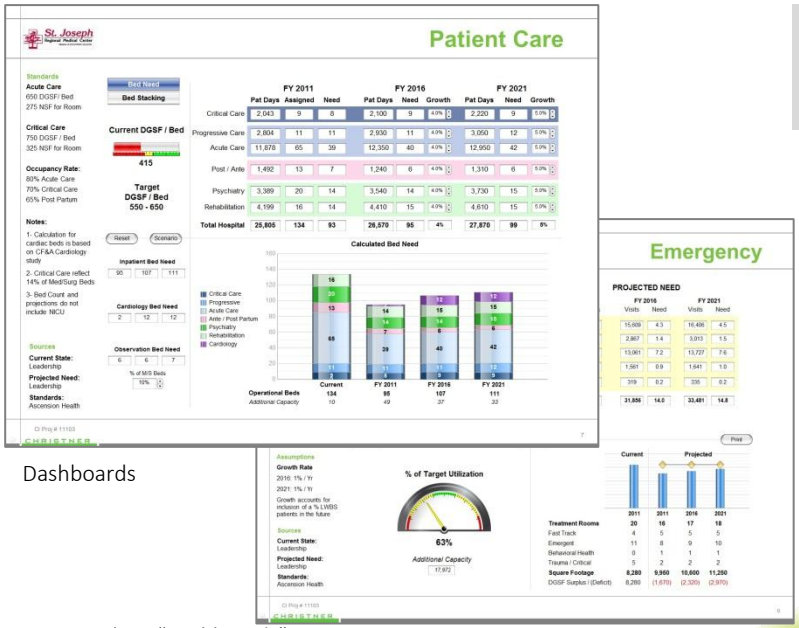
Intermediate / Long Term First Floor

3 **Short Term Project – First Floor**
With partial closure of 6th St, a new main entry pavilion and garden may be created to connect to the ASB. A new main circulation path and PAT / Registration office improves wayfinding. Short term solutions to Surgery and Imaging are implemented.

4 **Intermediate Term Project – First Floor**
A new patient tower is constructed on the site of the demolished South buildings, allowing for a new surgery / interventional suite. Relocated surgery allows for ED to be relocated and expanded, and a renovated imaging with improved circulation.

Project: St. Joseph Medical Center Strategic Facility Planning
Location: Lewiston, Idaho
Year: 2011

Summary:
A Strategic Facility Master Plan for a 110 bed regional medical center, including three major task areas - an energy plant replacement, creation of a new Ambulatory services building, and planning of future hospital development. Final deliverable included strategies to meet future service line needs, schematic expansion option, phasing diagrams, cost estimates, and long term campus development plan.



Dashboards

Data Analysis "Dashboards":
Interactive data analysis tools ("dashboards") were created for each service line, illustrating in graphical format how raw data such as patient days, turnaround times, and length of stay information affected final room need quantities and space allocation. These were further used to inform the short and long term plans.

Long Term Campus Vision:
While the primary focus on this project was development of a "Phase 1" 5-10 year project plan, including an energy plant replacement, ASB, and main hospital expansion, a 15+ year Long Term Vision development plan was created as a road map for future campus-wide development. Components that were addressed in this Vision Plan included: Future Energy Plant expansion, Cancer Center expansion, additional clinic space (ASB 2), Parking balance, improving campus circulation patterns, and creating a strong campus identity.

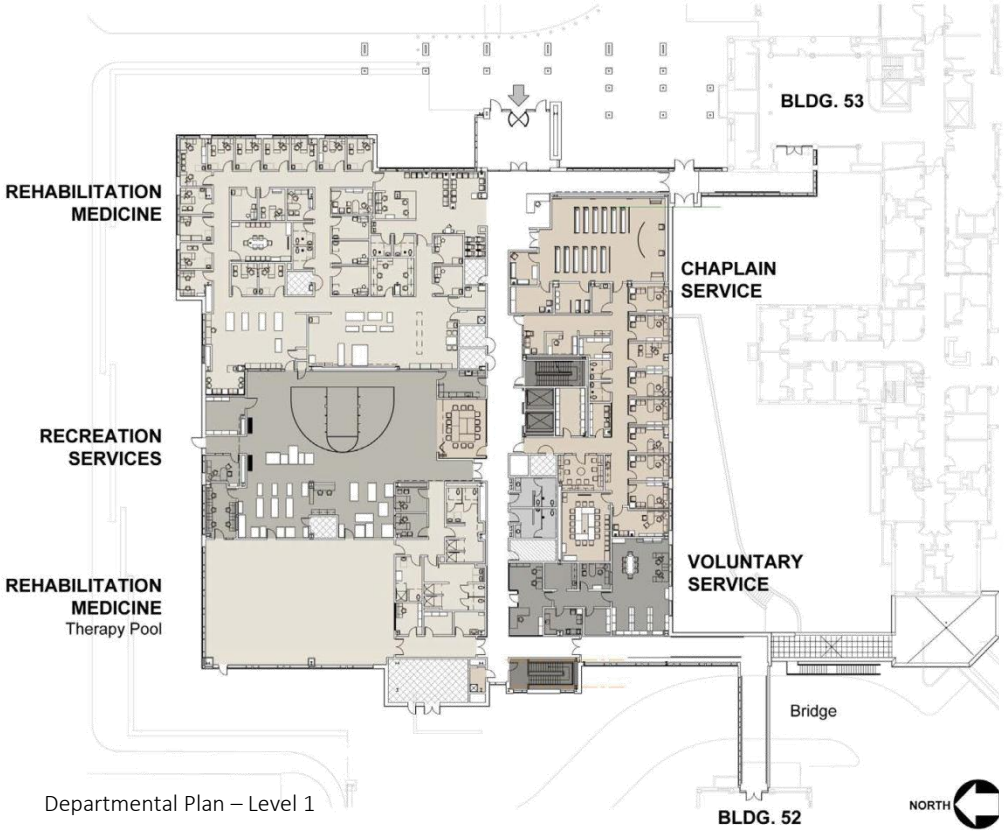
Long Term Campus Vision

Functional Relationships:

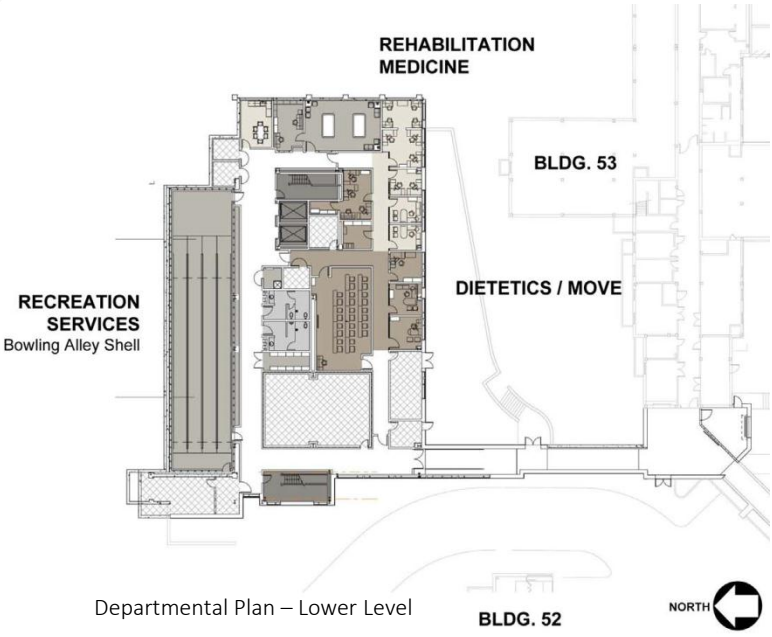
Key functional relationships determined both siting of the Rehab Building (Building number 54, shown at right) and internal department locations. Influencing the site layout of the Rehab Building, SCI patients travel from Building 52 to use the therapy pool, requiring minimal travel distance and elevation changes. Patients in Building 53 require corridor access to the chapel and recreation areas in Rehab. Service access must connect to the existing tunnel system on the lower level.

Regarding internal department adjacencies, Recreation Services required direct physical and visual adjacency to both the Therapy Pool and the Cardio=Pulmonary space in Rehabilitation Medicine. Chaplain Services required a highly visible location close to Building 53 for Chapel access to that population. Voluntary Services, in order to facilitate movements of volunteers between buildings, preferred near access to the tunnel system. The Chaplain multipurpose room required direct adjacency to the Recreation Services multipurpose room / gymnasium for connectivity during special events, yet able to be enclosed for private activities.

Rehab Site Plan / Building Context (Building 54)



Departmental Plan – Level 1



Departmental Plan – Lower Level

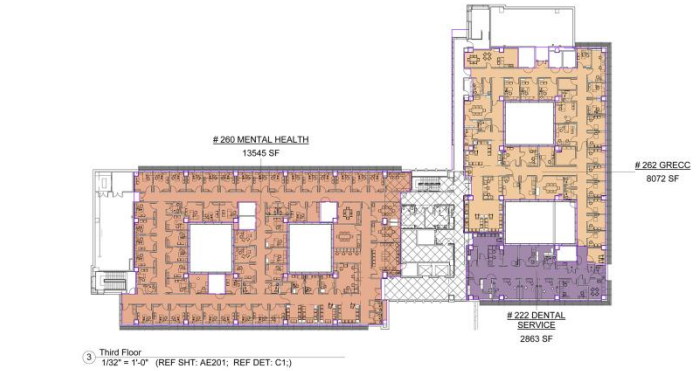
Conceptual Massing / Context Study

Project: St. Louis VAMC – Jefferson Barracks, Rehab Building
Location: St. Louis, Missouri
Year: 2010

Summary:
The Rehab Building, a 68,600 sf multipurpose building primarily serving outpatients, incorporates rehabilitation medicine, chaplain services, voluntary services, recreation services (including therapy pool, gymnasium, and bowling alley), and the dietetic MOVE program. A key feature of the building includes multipurpose areas to be combined to accommodate special even functions for two to three hundred people.

The design of the Rehab building provides for a highly visible entrance, and creates a courtyard to be enjoyed by patients and visitors. Clerestories bring daylight and added volume into the entry lobby, chapel, and multipurpose gymnasium.

View from North Entry

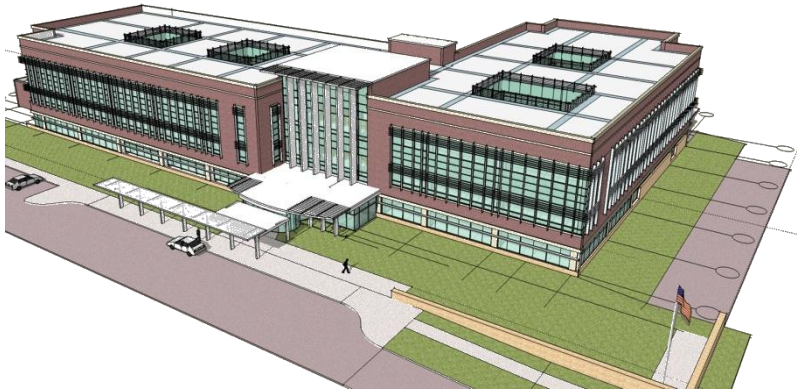


Department
- # 222 DENTAL SERVICE
- # 260 MENTAL HEALTH
- # 262 GRECC

Department
- # 262 AMBULATORY CARE

Department
- # 233 EYE CLINIC
- # 240 PATHOLOGY/LAB
- # 262 AMBULATORY CARE
- # 265 RADIOLOGY
- # 268 PHARMACY

Departmental Plans



View from Southwest

Department Adjacencies:

Within the Clinic Building, departments were located according to adjacency requirements and for the convenience of patients, visitors and staff.

On the first floor, Radiology, Lab, Eye Clinic, and Pharmacy are situated so they may serve as a single point destination or as convenient post exam waypoints. Radiology and Lab have direct access to the pedestrian corridor system connecting to inpatient units, an important consideration for the functioning of the departments. Eye Clinic is highly visible off the main lobby which facilitates serving its retail component, as are selected Ambulatory Care services intended to benefit the entire campus. Pharmacy is situated for ease of access for outpatients, inpatient medication transport, and dock access for deliveries.

On the second floor, Ambulatory Care's extensive program is divided into four zones over the entire floor- Primary Care Clinic, Specialty Care Clinic, Resident Clinic and C&P/Employee Health areas.

The third floor consists of Mental Health and GRECC, which require same-floor adjacency due to heavy overlap in the populations served. Dental Clinic, on the third floor as well, is centrally located for ease of both inpatient and outpatient traffic.

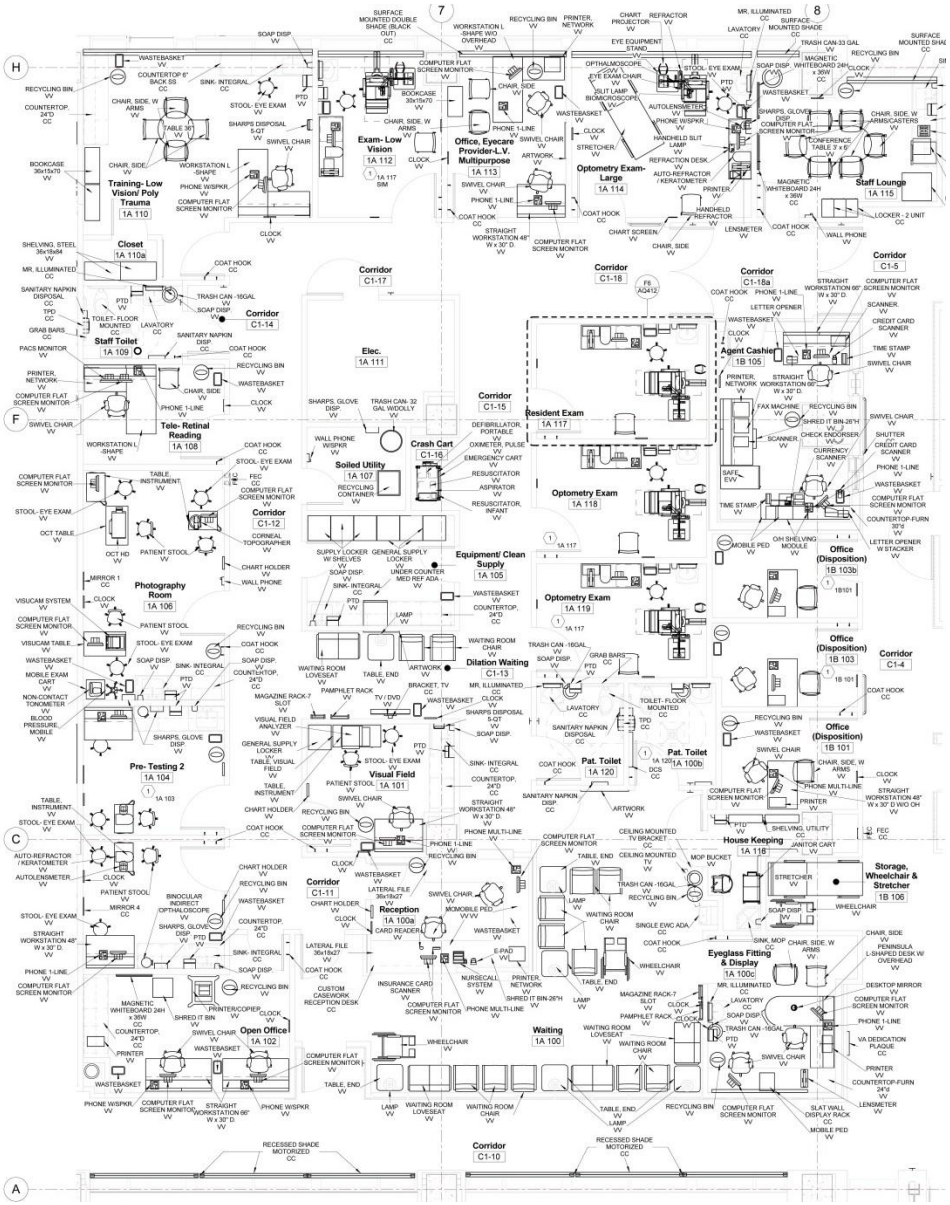
Building Entry

Project: St. Louis VAMC – Jefferson Barracks, Outpatient Clinic Building
Location: St. Louis, Missouri
Year: 2009

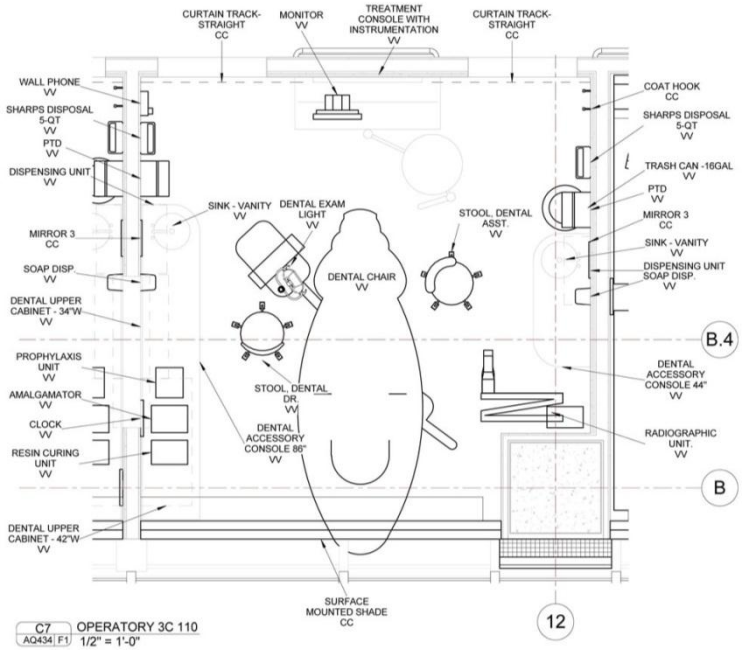
Summary:
The Master Plan for the VAMC Jefferson Barracks established a strategy for reducing the size of the campus for the NCA expansion while accommodating future needs and improving the patient experience. The Clinic Building is one of the first buildings to be designed as part of this plan. The three-story, 113,000 sf building includes radiology, laboratory/ pathology, and pharmacy services supporting clinics for ambulatory care (multi-specialty), eye, dental, and mental health services. It offers more convenient access and a new image for outpatients and helps to define greenspace and parking areas on the medical campus.

The Clinic Building is an "L" shape with two three-story wings separated by the principle entrance and building core. The relatively narrow floor plate and "L" configuration maximize the building perimeter. This allows for more spaces to be located along exterior walls, improving opportunities for views and daylight.

View from Campus Approach



Example Construction Documents Phase Equipment Plan – Eye Clinic



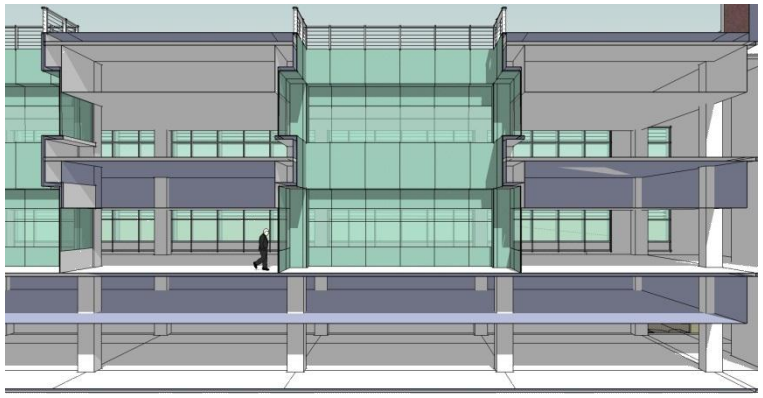
Detail – Dental Operatory Equipment Plan

Equipment Planning and Working with User Groups

For each department in the Clinic Building, a series of User Group meetings were conducted with VAMC staff to discuss needs and review the design as it progressed. In the early SD phase, this allowed for the planners to gather input on ideal department adjacencies and conceptual design options.

Later SD comprised of reviewing the VA SEPS provided room program, walkthroughs of existing facilities, and detailed discussions regarding department operations and needs. This resulted in an adjusted final program that allowed for significant user input, meeting the needs of local operational paradigms and creating a sense of buy-in and ownership for the campus staff.

For the Design Development and Construction Document phases, the main focus of meeting with users was to establish equipment needs and review room equipment layouts Resulting from these meetings, detailed equipment plans and an activation list were created detailing quantity and location of furniture and equipment items.



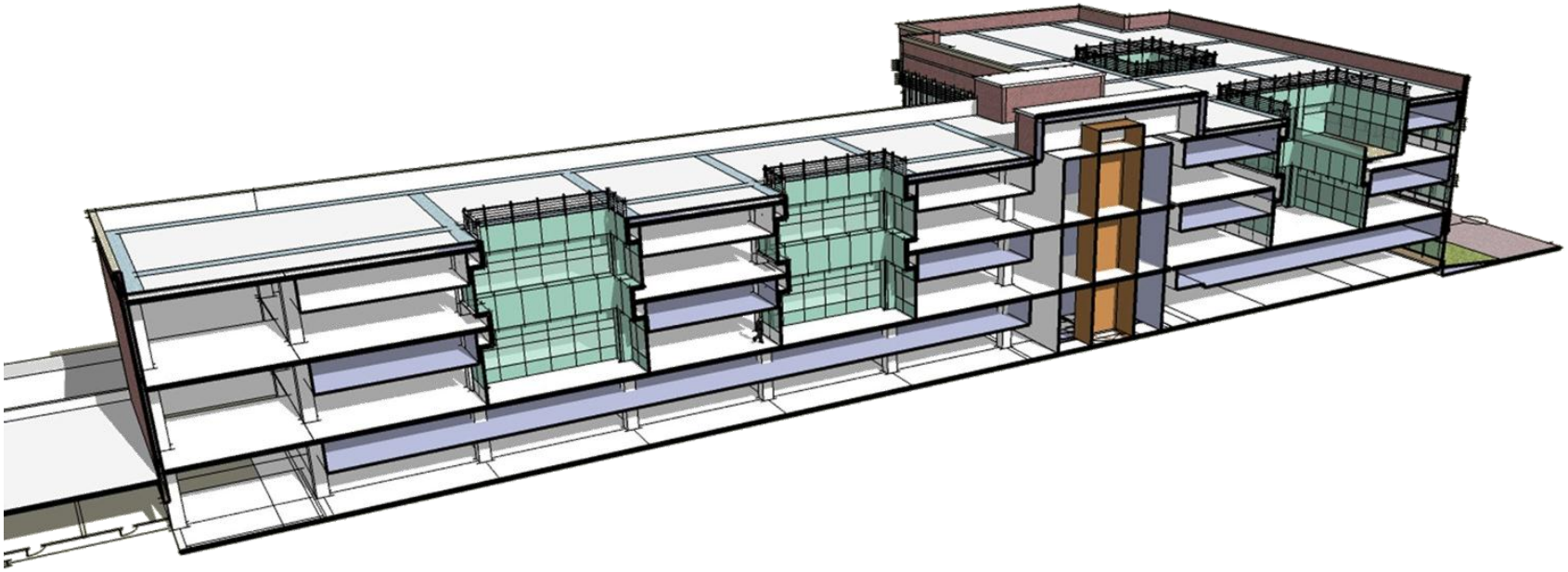
Lightwell Study

Project: St. Louis VAMC – Jefferson Barracks, Outpatient Clinic Building
Location: St. Louis, Missouri
Year: 2009

Daylighting and Sustainability:
One of the most compelling features of the design is how the building is arranged to capture daylight. Light wells, sunshades and light shelves allow natural light to penetrate 75% of the interior space. At the same time, the highly efficient building envelope achieves substantial energy savings. It is calculated to require 30% less energy for heating and cooling than is required by current standards (ASHRAE 90.1- 2004). The building employs a white roof (single ply membrane structure) reducing heat island effect. The exterior is a combination of brick, limestone trim, and curtain wall with insulated glass.

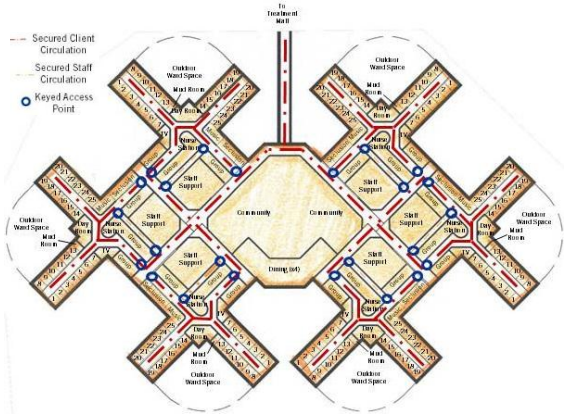
Additional sustainability elements included in design are automatic lighting controls, domestic water pre-heating, an intensive green roof with plantings on each light well surface, use of regional and recycled materials, certified wood, and low emitting materials.

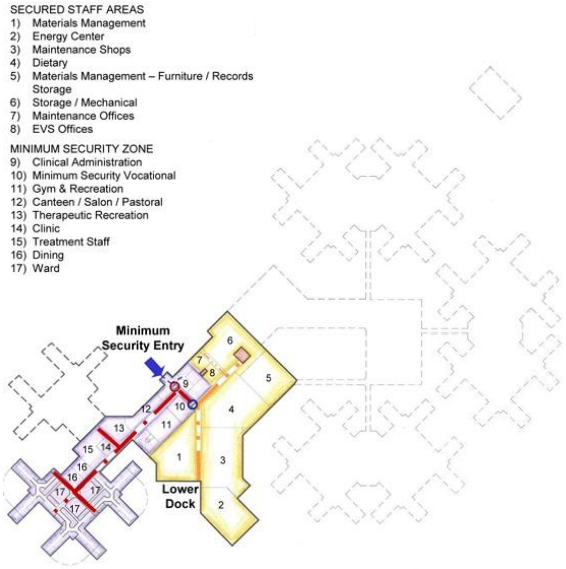
This project is targeting LEED Silver certification with 61 credits.



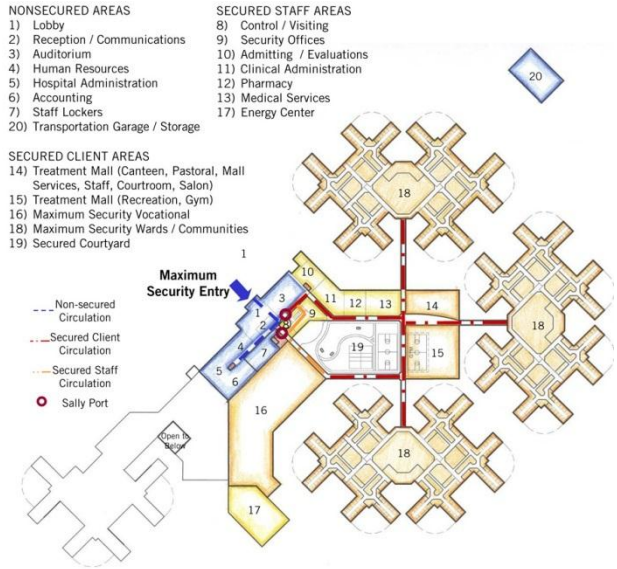
Concept Section / Lightwell Study

Program:
In addition to the client and staff areas located in each pod, shared activity and support areas are provided for each client population. The concept for these areas is to create a public-street like “treatment mall”, which clients can socialize, engage in therapeutic activities, or receive services. In these areas, clients have access to vocational training, courtyard / garden areas, medical care, canteens, pastoral care, salon, courtroom, and a recreational gym with performance space.





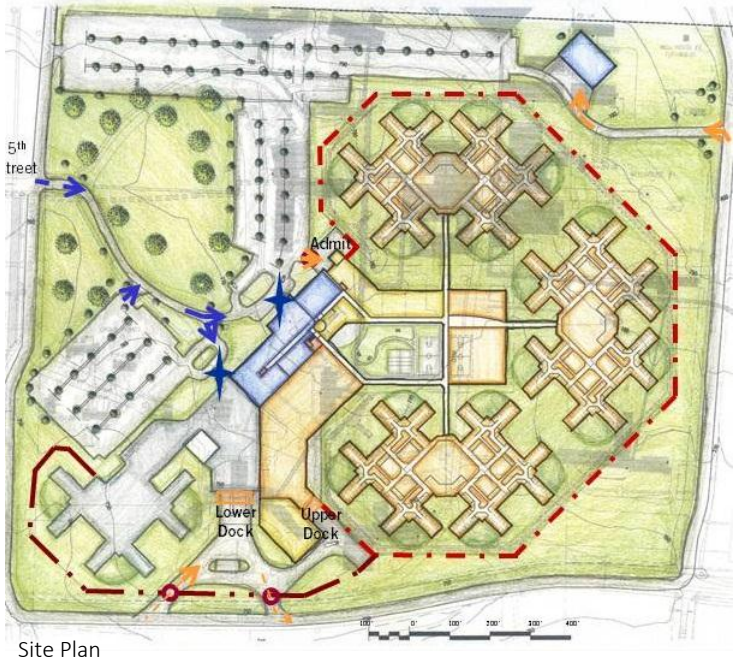
Ground Floor Plan



Level 1 Floor Plan

Pod Layout:
Each ward contains twenty five beds, group rooms, therapy and staff spaces, and a client day room with outdoor courtyard access. A grouping of three wards makes up each pod, with each pod sharing dining and support spaces. Two pods joined create a unit of 150 beds with a shared central “community” space for all other client support services. Circulation is tightly controlled by secured access points and separate back of house circulation for staff areas.


View From West



Site Plan

Project: Fulton State Hospital, Master Plan
Location: Fulton, Missouri
Year: 2008

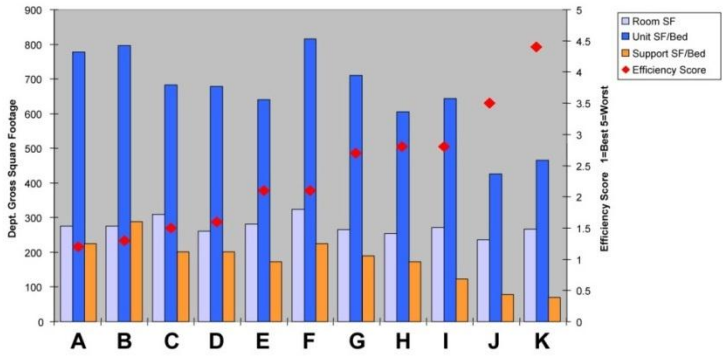
Summary:
This study analyzed the site, infrastructure and cost implications for the replacement of the existing 376 bed Fulton State Hospital. The proposed new facility consolidates minimum, intermediate and maximum security clients currently distributed across a 95 acre campus into contiguous buildings with appropriate service/security level divisions. By consolidating the building footprint, the plan improves staffing accessibility and increases the efficiency of the infrastructure, as well as providing updated treatment and activity areas. The new facility will provide accommodations for 75 minimum security clients and 450 intermediate to maximum security clients. Each client ward is designed to accommodate 25 rooms and three wards are grouped together in pods to share support spaces. The minimum security ward grouping is sited to provide for future expansion of 75 rooms with associated support areas.

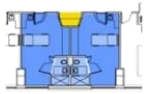
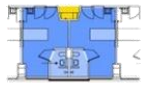
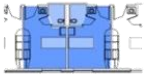
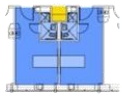
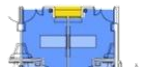
Site Plan:
Working with the site topography and retaining the residential context for the surrounding community were the key factors for placing this project on the South and East edges of the site. The topography allows for a natural separation of security levels, with all of intermediate / maximum security to be on the main level, minimum security functions on a lower level. This orientation and location also preserves the wooded entry park at the 5th Street entry.


Bird's Eye View

Project: Research Project, Inpatient Unit Efficiency Analysis
Location: -
Year: 2008

Summary:
Assisted in expanding a research project determining Inpatient Unit layout efficiency, and resulting design recommendations. Tasks included developing methodology for determining efficiency through an updated Yale index analysis, researching existing medical precedents and design layouts to create a comparison of efficiency scores.



	BUILDING IMAGERY	UNIT PLAN AND STATISTICS	ROOM PLAN AND STATISTICS	DESIGN DRIVERS	EFFICIENCY SCORE
A		 # or Beds/Unit: 36 Beds Unit DGSF: 26,000 DGSF SF/Bed: 778 DGSF Room Area w/Tlt.: 276 SF Beds/Nurse Station: 6 Beds Unit Support Area%: 32% Vertical Core: Inside Unit Column Spacing: 29' X 29'	 Room Dimension: 14'-1" X 21'-0" Patient Toilet: Outboard Shower in Room: Yes Alcoves @ Room: Yes Workspace in Room: Yes Family Area: 7' X 4'	This design was driven by: • Quiet patient environment • Ability to connect to existing facilities • Distributed nursing model • Elevator core internal to the plan	1.2
B		 # or Beds/Unit: 32 Beds Unit DGSF: 25,500 DGSF SF/Bed: 797 DGSF Room Area w/Tlt.: 276 SF Beds/Nurse Station: 4 Beds Unit Support Area%: 36% Vertical Core: Outside Unit Column Spacing: 29' X 29'	 Room Dimension: 14'-1" X 21'-0" Patient Toilet: Outboard Shower in Room: Yes Alcoves @ Room: Yes Workspace in Room: Yes Family Area: 7' X 4'	This design was driven by: • Quiet patient environment • Ability to connect to existing facilities • Provide for future expansion • Distributed nursing model	1.3
C		 # or Beds/Unit: 34 Beds Unit DGSF: 23,203 DGSF SF/Bed: 682 DGSF Room Area w/Tlt.: 309 SF Beds/Nurse Station: 6 Beds Unit Support Area%: 32% Vertical Core: Outside Unit Column Spacing: 29' X 29'	 Room Dimension: 14'-2" X 23'-8" Patient Toilet: Outboard/Mix Shower in Room: Yes Alcoves @ Room: Yes Workspace in Room: Yes Family Area: 8' X 5'	This design was driven by: • Limited site • Ability to connect to existing facilities • Provide for future expansion • Limit square footage for cost • Maximize patient privacy	1.5
D		 # or Beds/Unit: 24 Beds Unit DGSF: 16,268 DGSF SF/Bed: 678 DGSF Room Area w/Tlt.: 261 SF Beds/Nurse Station: 12 Beds Unit Support Area%: 32% Vertical Core: Outside Unit Column Spacing: 28' X 28'	 Room Dimension: 13'-8" X 20'-4" Patient Toilet: Inboard Shower in Room: Yes Alcoves @ Room: No Workspace in Room: Yes Family Area: 14' X 4'	This design was driven by: • Maximized patient room counts • Consolidated pediatric inpatient services within the unit • Staffing efficiency	
E		 # or Beds/Unit: 33 Beds Unit DGSF: 21,100 DGSF SF/Bed: 640 DGSF Room Area w/Tlt.: 281 SF Beds/Nurse Station: 11 Beds Unit Support Area%: 27% Vertical Core: Outside Unit Column Spacing: 26' X 24'	 Room Dimension: 13'-3" X 23'-10" Patient Toilet: Inboard Shower in Room: Yes Alcoves @ Room: No Workspace in Room: Yes Family Area: 13' X 3'- 4"	This design was driven by: • Maximized room counts in renovation • Distributed nursing model • Comfortable patient environment	
F		 # or Beds/Unit: 32 Beds Unit DGSF: 26,035 DGSF SF/Bed: 816 DGSF Room Area w/Tlt.: 324 SF Beds/Nurse Station: 16 Beds	 Room Dimension: 13'-7" X 25'-1" Patient Toilet: Outboard Shower in Room: Yes Alcoves @ Room: Yes	This design was driven by: • Maximize support efficiency to support patient rooms	

EFFICIENCY SCORE METHODOLOGY:

Measures travel distance from and multiplies by # of trips per shift:
- Patient room to patient room
- Nurse station to patient room
- Utility room to patient room
- Nurse station to utility
- Nurse station to medication room
- Medication room to patient room
- Nurse station to elevator core
- Patient room to nourishment room
- Patient room to elevator core
- Medication room to utility
- Utility room to elevator core
- Utility room to nourishment
- Nurse station to nourishment
- Utility to janitor's closet

The overall score is adjusted for % of support to patient room square footage (with 32% being the goal).

1 = BEST SCORE
5 = WORST SCORE

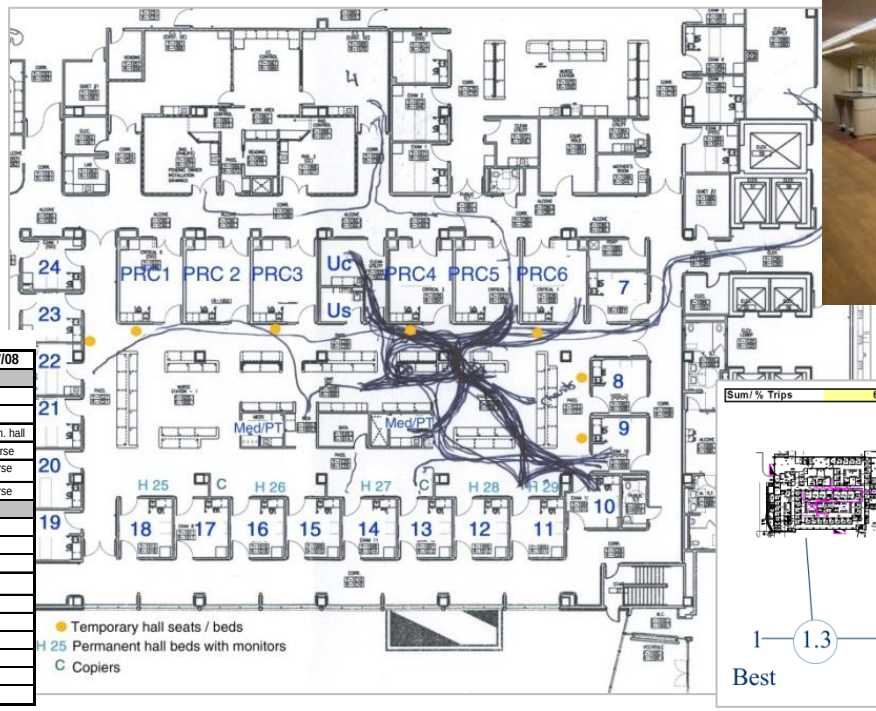
Inpatient Unit Comparison

St. John's Mercy Emergency Department

Project: St. John's Mercy Medical Center ED Post-Occupancy Evaluation
Location: St. Louis, Missouri
Year: 2008

Summary:
Research project and post - occupancy evaluation of St. John's Medical Center with the goal of developing a prototype methodology for determining Emergency Department efficiency, and resulting design recommendations. Research methods included shadowing RNs throughout their shift and tracking their number of steps, pathways and distance traveled, and time spent in direct interaction with patients. Additional tasks included developing methodology for determining efficiency through an updated Yale index analysis, researching existing medical precedents and design layouts to create a comparison of efficiency scores.

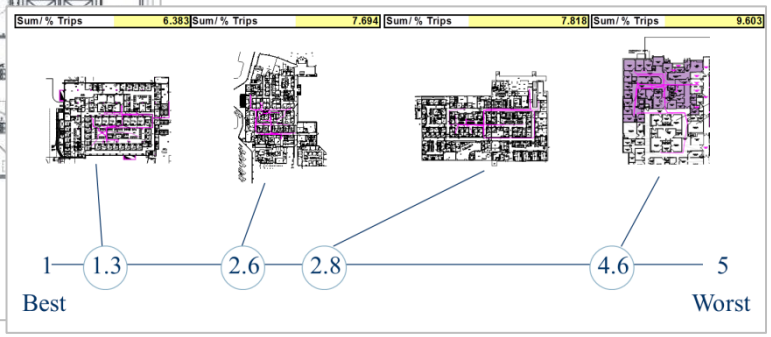
St. John's Mercy Emergency Department



Day of Observations	Monday 1/7/08
Nurse Shadowed	Mel
Experience of RN	22 years
# of Beds in Unit (Zone 1)	11 rooms/3 perm. hall
Maximum # of Patients	18/Zone, 4/nurse
# of Admits	23/zone 4/nurse
# of Discharges	5/zone 0 /nurse
Total Trips (in 8 hours)	146
Total Trips (in 12 hours)	N/A
Total Trips (in each shift)	146
# of Hours in Shift	8
Trips/Hour (in 8 hrs)	18.25
Trips/Hour (in 12 hrs)	N/A
# of Steps Walked (shift)	5790
# of Steps Walked (hour)	723.75
# of Miles Walked (hour)	0.34
# of Miles Walked (total)	2.74

1 step =30"

Spaghetti Diagram and Data Summary



Layout Comparison