AIA/AAH CASE STUDY LIBRARY: A BENCHMARKING TOOL

25 AUGUST ’18

BYRON EDWARDS | AIA, ACHA, EDAC, LEED AP
Chairman - AIA/AAH Research Initiatives Committee
Professor of Practice
Graduate Studies in Architecture+Health
Clemson University
UCLA Outpatient Surgery and Oncology Center
Santa Monica, California

SITE PLAN

ABOUT | DESIGN INTENTIONS

The design concept asserts that a more natural and less clinical environment promotes healing in patients. Primary design considerations include the creation of a distinctive and articulated massing, the maximal inclusion of natural daylighting and ventilation throughout the building, and a strong indoor-outdoor connection. The project achieves LEED Gold Certification for New Construction and is the first Outpatient Surgery and Oncology Center in the nation to achieve this rating.


Image Sources: http://www.folonisarchitects.com/ucla-1/
UCLA Outpatient Surgery and Oncology Center
Santa Monica, California

"CREATE a more natural and less Clinical Environment to promote Healing"

STRATEGIES

Daylighting
- Central light-filled Lobby with full height multi-story glass walls
- Indoor/Outdoor connection
- Key Public and Patient areas with perimeter windows and/or skylights

Views to Nature
- Shaded and unshaded exterior Garden Patios provide choice of outdoor Respite area
- Interior Planting brings deep into the building bringing views to Nature inside as well

Use of Warm Colors
- Warm-toned wood used throughout the building
- Warm accent colors and warm-off white adds to warm scale-lighting and variation in color as the day progresses

Natural Materials
- Use concrete, steel and glass against the backdrop of warmer wood textures and plantings
- Blurring the indoor/outdoor relationships with landscaping and hardscaping inside and out

PATIENT WALKING DISTANCE ANALYSIS:
- From entrance to registration: 86 ft
- From registration to medical waiting: 406 ft
- From medical waiting to exam room: 4 ft - 68 ft
- From registration to radiation waiting: 108 ft
- From radiation waiting to LINAC/other: 100 ft
- From registration to pre-op: 211 ft

CONCLUSION

All design elements—from planning to materials—were guided by the concept that a more natural, and less clinical, environment promotes healing. Taking advantage of climate and site conditions, the building features natural daylighting and ventilation. The building skin is composed of glass and smooth concrete; the materials were selected for their direct, clean presentation and functionality. Two building blocks are linked by an expansive atrium lobby, which serves as an ordering circulation core.
**UCLA Outpatient Surgery and Oncology Center**
Santa Monica, California

**DEPARTMENT PLAN KEY:**
- Parking
- Vehicle Drop-Off
- Mechanical + Electrical
- Circulation, Shafts, Stairs
- Elevator Lobby

**GROUND LEVEL:**
- Linear Accelerator Vaults (496 sf - 560 sf)
- Reception (204 sf - 650 sf)
- Physician Offices (120 sf - 137 sf)
- Supply Rooms (General) (60 sf - 75 sf)
- CT Simulator (448 sf)
- Locker Rooms (365 sf - 370 sf)
- Central Sterile Disinfecting (346 sf)
- Parking Spaces (8205 sf)
- Motorcycle Parking (87 sf)
- Accessible Vehicle Drop Offs (1831 sf)
- Elevators (131 sf - 150 sf)
- Pedestrian Walkways (1200 sf)
- Circulation Space (4297 sf)

**DEPARTMENTAL GROSS SQUARE FOOT TAKE-OFFS:**
- DGSF
  - Parking: 17000 SF
  - Mechanical + Electrical: 542 SF
  - Lobby (Elevator): 1046 SF
  - Shafts + Vertical Circulation: 903 SF

**LEVEL ONE:**
- Radiation Therapy
- LAB
- Admissions & Support
- Central Sterile & Surgery Support
- Central Supply
- Pharmacy & Support Space
- Circulation, Shafts, Stairs
- Mechanical + Electrical

**DEPARTMENTAL GROSS SQUARE FOOT TAKE-OFFS:**
- Surgery Support: 2137 SF
- LAB: 796 SF
- Central Supply: 650 SF
- Central Sterile & Surgery Support: 2537 SF
- Radiation Therapy w/ Vaults: 5460 SF
- Admissions: 2534 SF
- Shafts/Vertical Circulation: 1326 SF
- Mechanical: 612 SF
- Lobby/Waiting/Other: 2565 SF

**CASE STUDIES**

Note: "Departmental Square footages take-off based on Analysis of Departmental Area in Contemporary Hospitals calculation methodologies & Design Factors Report, 2014"
UCLA Outpatient Surgery and Oncology Center
Santa Monica, California

Case Study Format Developed By: In Partnership With:
AIA Academy of Architecture for Health | Research Initiatives Committee

DEPARTMENTAL PLAN KEY:
- Pre-Op / Post-Op
- Surgery
- OR Care + Team Support
- Support Space
- Circulation, Shafts, Stairs
- Mechanical + Electrical

Key Spaces:
- Surgery OR (4020 SF - 4100 SF)
- Physician Workrooms (275 SF - 295 SF)
- Prep/Recovery Bays (77 SF - 79 SF)
- Offices (300 SF - 315 SF)
- Nurse Stations (50 SF - 101 SF)

Departmental Gross Square Foot Take-Offs
Pre-Op/Post-Op
Surgery
OR Care + Team Support
Support Space - Shafts + Vertical Circulation
Mechanical

LEVEL TWO DGSF TOTAL: 17,358 SF

LEVEL THREE:

DEPARTMENTAL PLAN KEY:
- Clinic A
- Clinic B
- Clinic C
- Support Space
- Circulation, Shafts, Stairs
- Mechanical + Electrical

Key Clinical Spaces:
- Patient Exam Rooms (90 SF - 110 SF)
- Provider Offices (90 SF - 120 SF)
- Nurse Stations (112 SF - 125 SF)
- Records (178 SF - 200 SF)
- Reception (254 SF)

Departmental Gross Square Foot Take-Offs
Clinic A
Clinic B
Clinic C
Support Space
Shafts + Vertical Circulation
Mechanical

LEVEL THREE DGSF TOTAL: 15,587 SF

Note: "Departmental Square footages take-off based on ‘Analysis of Departmental Area in Contemporary Hospitals calculation methodologies & Design Factors Report, 2014"
The UCLA Outpatient Surgery and Medical Building in Santa Monica is a hybrid academic and community outpatient surgery, endoscopy treatment, and medical office facility. The design concept asserts that a more-natural and less-clinical environment promotes healing in patients, and alert, productive behavior in doctors, staff, and students. The architects’ understanding of conditions that create an ideal healthcare environment was substantiated through feedback from user groups, which formulated the design approach.

The design concept is inspired by the belief that Modernism, with its adherent to passive solar design, is the ideal means to realize the high standards of sustainability in healthcare design. The design achieves an aesthetic ideal, while delivering a patient-focused healing environment, the utility required by the owner, and the requirements to meet Gold LEED certification.

To enhance the indoor-outdoor connection, light lines to the outdoor views and the quality of daylight into the first floor connect to exterior patio gardens, allowing guests to sit indoors or outdoors. The building’s cantilever protects the interior waiting areas from direct sun.

The UCLA Outpatient Surgery and Medical Building expresses an elegant, balanced sensibility and distinguishes itself from other healthcare projects by its thoughtful Modernist design. The UCLA Outpatient Surgery and Oncology Center expresses a functional and formal elegance.

The three-story building links two distinct wings via a central, full-height, expansive and light-filled lobby. The lobby is enclosed with a full-height multilayer glass system and covered in a fitted glass skylight, allowing light to flood the central common area of the building. Both second and third floor exterior glazed elevations incorporate the arched expression of louvre systems, awnings, light shelves, shading fins and fitted glass across the building façade. The elevators systematically facilitate and moderate the allowance of natural light into the core of the building, diffusing harsh direct sunlight and providing privacy to patients and staff. The interior wall finishes are finished with photovoltaic panels and are circumscribed by the shade awnings and height of the lobby and building wings.

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CASE STUDIES

AIA/ACADEMY OF ARCHITECTURE FOR HEALTH

CASE STUDY LIBRARY | original seven (7) projects

Seattle Children’s South Clinic

OWNER/AFFILIATION

ARCHITECT(S)

COMPLETION DATE

58,651 BGSF

62 FT

UCLA Outpatient Surgery and Oncology Center
Santa Monica, California

OWNER/AFFILIATION

ARCHITECT(S)

COMPLETION DATE

58,651 BGSF

62 FT

Additional Case Studies Include:

• Kaiser Permanente Kraemer Radiation Oncology Center

• The University of Arizona Cancer Center

• Planned Parenthood Queens: Diane L. Max Health Center

Primary design considerations

The project achieves LEED Gold Certification for New Construction and is the first Outpatient Surgery and Oncology Center to achieve LEED Gold Certification. The project is designed to promote healing in patients. It is the first Outpatient Surgery and Oncology Center to achieve LEED Gold Certification.

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CASE STUDIES

AIA/ACADEMY OF ARCHITECTURE FOR HEALTH

CASE STUDY LIBRARY | 7 + 14 = 21 Projects (more on the way)
KANSAS UNIVERSITY - EMERGENCY ROOM CASE STUDIES
Departmental “Benchmarking” - 5 project pilot study

GREELEY EMERGENCY AND SURGERY CENTER
UNIVERSITY OF COLORADO HEALTH, GREELEY, COLORADO

ARCHITECT(S)
H+L Architecture
Denver, Colorado
Principal-in-charge - Steve Carr
Project Architect - Barrett Koczkur
Interior Design - Cherie Dice

OWNER/AFFILIATION
University of Colorado Health

COMPLETION DATE
Date Opened: NOVEMBER 2012


Lunder Building Emergency Department (MGH)
Boston, Massachusetts

ARCHITECT(S)
Perkins + Will

OWNER/AFFILIATION
Methodist Dallas Medical Center, ED

COMPLETION DATE
July 2014

Image sources: Perkins + Will

Scripps Prebys Cardiovascular Institute Barbey Family Emergency and Trauma Center
La Jolla, California

ARCHITECT
HOK

OWNER/AFFILIATION
Scripps Health

COMPLETION DATE
September 2016

Image sources: www.scripps.org www.hok.com

Lunder Building Emergency Department (MGH) Boston, Massachusetts

EXTERIOR VIEW DONOR WALL

SITE MAP

BEFORE RENOVATION/ADDITION

CURRENT CONCEPT

EXTERIOR VIEW DONOR WALL

ABOUT | DESIGN INTENTIONS

The Lunder Building is a 530,000 SF addition to the Massachusetts General Hospital. Part of the project was a renovation and addition to the Emergency Department. Completed in phases, NBBJ renovated existing spaces within the White and Ellison buildings, and added an additional 17,500 square feet to the department.

The main objectives of the project were to create a dedicated entrance for walk-in patients, and a separate ambulance garage. Before the addition and renovations, pedestrians and emergency vehicles would enter through the same doors, and there was no ambulance canopy to unload patients under. In addition, the emergency department was designed for the most efficient use of the space, and to help decrease patient wait times.
CASE STUDIES

HCD 18 RESEARCH FORUM: “AIA/AAH Case Study Library UPDATE – Focusing on Departmental and Key Clinical Space “BENCHMARKING”

Description:
At HCD 2016, the AAH Research Initiative Committee presented the “Case for Case Studies.” This new session will update participants on the current compilation of AIA/AAH Healthcare Design Award winner Case Studies, but it will also take a deeper dive into “benchmarking” several Acute Care nursing units and patient rooms from several of these Case Studies. The purpose of this deep dive is to produce a subset repository within the Case Study Library of Nursing Unit and Patient Room typologies using a consistent and rigorous format for comparison. Examining a series of new inpatient facilities in a consistent Case Study format is beneficial in informing a data base repository for identifying “best practices”. Case study comparisons are a pre-requisite to a performance based design approach.

The goals of this subset of departmental case studies is to:
- Initiate a more focused departmental and key clinical space “benchmarking” tool utilizing award winning Acute Care Inpatient Unit comparisons
- In order to understand current trends in patient care units such as programmatic elements, space utilization, space adjacencies, net to gross factors and overall design attributes;
- And to develop a common Industry format and methodology to help critically analyze the built environment of patience care units in hospitals;
- As well as to generate a modest performance-based data base focusing on the environmental attributes of patient care units for purposes of informing design guidelines and conducting facility evaluations.

Moderators will discuss the methodology, formatting, and case study results in an attempt to bridge the gap between research and practice as we continue to build a larger online database of these case studies for healthcare architects to use as a benchmarking tool.

Learning Objectives
- Learn about the AIA/AAH Case Study Library and the current as well as ongoing and pending additions to the Case Study Library
- Learn about and discuss Design and Planning Rules of Thumb and Best Practices and how to engage in the development of a more robust Case Study Library
- Learn about and discuss more rigorous Evidence-Based Research opportunities to engage with the ongoing and future Case Studies efforts, e.g. POEs
- Learn about and discuss what we, as an Industry, can do to help each other build better and more effective “Bridges between Research and Practice”
Palomar Medical Center
Escondido, California

**CASE STUDIES**

**Palomar Medical Center**

- **SQ FT**: 740,000 BGSF
- **OWNER/AFFILIATION**: Palomar Health
- **ARCHITECT(S)**: CO Architects
- **COMPLETION DATE**: 2012

**ABOUT | DESIGN INTENTIONS**

Nationally recognized for its innovative approach to sustainable design, healing environments and technical execution, Palomar Medical Center is the first phase of development of a new 35-acre campus that includes the 360-bed acute-care hospital and a new central plant. Innovations in medical planning and architectural design meet the project goals of improving access to care, improving operational efficiencies, and creating sustainable, high-performance healing environments.

The hospital is designed as the only hospital in the region. Design strategies incorporate garden spaces at every level of the 11-story nursing tower, and utilize green roof technology that extends the landscape and improves views from the patient rooms. The design includes a full complement of water conservation, air quality and energy-saving measures.

Sources: [http://www.palomarhealth.org/media/file/2013/03/pmc_tourbook_v3.pdf](http://www.palomarhealth.org/media/file/2013/03/pmc_tourbook_v3.pdf)

Sources: [https://coarchitects.com/project/palomar-medical-center/](https://coarchitects.com/project/palomar-medical-center/)
**CASE STUDIES**

**Palomar Medical Center**
Escondido, California

**Flexibility**

Housing

The two-story Diagnostic and Treatment wing is pulled out from the patient tower to allow the buildings systems of each to be designed specifically and independently in response to their different functional needs. As needs and technology change over time, consolidations can be accommodated in use without impacting the other.

Infrastructure

The undulating green roof is supported on long-span trusses to maintain a column-free lower floor plate while providing the equivalent of an interstitial floor for mechanical systems routing.

The central elevator core is sized and positioned to accommodate the addition of a nursing wing to the north, and the Diagnostic and Treatment wings will soon be anticipated for future growth to the south or north.

Modular Design

Co-location of Surgical and Interventional Radiology procedure rooms creates an interdisciplinary approach to procedural medicine. This seamless integration of various types of procedures through a master planning approach will increase flexibility by allowing change over time. Reduce staffing requirements by consolidating service areas, and will promote interaction among the specialists.

**Acuity-adaptable Room**

Rooms are designed to accommodate any level of patient acuity — including intensive care offering the opportunity to assign a patient to a single room for the length of his or her stay. This preserves continuity of the care team and reduces medical errors and operational costs associated with continually relocating patients. However, actually acuity-adaptable operation has not been allowed by licensing law.

**Single-handed Patient Room**

All patient rooms are organized using identical orientation, decreasing the possibility of medical errors, especially in crisis situations.

**Distributed Work Stations And Supply Storage**

All patient rooms are organized using identical orientation, decreasing the possibility of medical errors, especially in crisis situations.

**Patient’s Control of Room Environment**

From the bed, patients are able to adjust room lighting, temperature and window shades, they can access entertainment, order food, and have a teleconference with a physician who calls in from a remote location.

**FLEXIBILITY**

• Approximately $6 million of steel contract was returned
• Approximately $2 million saved for material and labor

**Quantifiable benefits after construction:**

• Productivity ratio shop vs. field at 4:1
• Estimated 66% reduction of RFIs compared to a typical project
• All panels to date of acceptable quality
• Construction schedule estimated at placing 12 panels per day, actual pace over 20 panels per day

**Sources:**
http://www.palomarhealth.org/media/file/pebble/090913 PMC tourbook_v2.pdf
http://www.palomarhealth.org/media/file/pebble/090913 PMC tourbook_v2.pdf

**Acuity-adaptable Room**

- offering the opportunity to assign a patient to a single room for the length of his or her stay

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**Case Study Format Developed By:**

AIA Academy of Architecture for Health | Research Initiatives Committee

**http://www.herricksteel.com/sites/default/files/9-palomar_aia_ta_bim_ipd_process.pdf**
CASE STUDIES

Palomar Medical Center
Escondido, California

SUSTAINABILITY

Green Roof
The surgical wing’s green roof, containing drought-tolerant and native plants, provides a connection to nature for patients in the nursing tower and accommodates the building’s structural and mechanical systems. The roof contributes to energy efficiency by reducing ground reflectance and solar heat gain in the tower’s interiors and is integrated into the storm water management system. Outdoor courts and skylights cut into the two-story wing bring natural light to the functionally determined deep floor plates below.

Garden Terrace
Garden terraces are located at the center and both ends of each patient floor. Besides bringing landscape gardens to all the inhabitants of a vertical building, they also provide an additional layer of solar protection for the fully glazed public spaces they adjoin.

Daylight and Shading
The patient tower is oriented to minimize east/west exposures in its arid, inland valley context and is designed to take maximum advantage of daylight. A perforated metal screen system on the south façade provides shade to patient rooms while allowing maximum views and natural light. The screens unify the building’s projecting elements and consist of two components: a second skin that sits parallel to the curtain wall enclosure, and horizontal louver elements that address summer sun angles. Where the screens extend to the garden terraces, they serve as wind protection for the high-rise outdoor spaces.

Water Management
The hospital is designed as a pilot project using the Green Guide for Health Care (GGHC), a rating system specifically designed for healthcare projects. A full complement of water conservation, air quality and energy-saving measures are an integral part of the design. A wetlands treatment system for wastewater from the AC cooling towers, to prepare it for irrigation. However, it was not implemented due to infection control requirements.

"Allowing all patients and staff access to fresh air and interaction with nature."

Sources: https://www.healthcaredesignmagazine.com/architecture/new-approach-sustainable-design-palomar-medical-center-west/
Sources: http://www.palomarhealth.org/media/file/pebble/090913_pmc_tourbook_v2.pdf
Sources: http://architypereview.com/project/palomar-medical-center-west/

DAYLIGHT IN THE EMERGENCY DEPARTMENT

PUBLIC LOUNGE

TERRACE CAFE

COURTYARD DAYLIGHT IN THE SURGICAL DEPARTMENT

OPERATING ROOM
Palomar Medical Center
Escondido, California

Located on a bluff overlooking the city of Escondido, the project is master planned as a 35-acre landscaped campus. The site is anchored by an extensive central garden that surrounds the north and east sides of the hospital and provides a welcoming space for patients, visitors and staff. A pedestrian spine, terminating in the garden, connects through the hospital to the southern extent of the site, linking the phased components of the medical center. A 1.5 acre green roof and public terrace above the surgery in the diagnostic and treatment (D&T) wing brings the landscape onto the building and engages the patients in the town above. Double height garden terraces on each floor of the patient tower overlook the green roof and extend the gardens the full height of the building, creating a vertical garden hospital.

**SITE PLAN**

1. Hospital
2. Main Drop Off
3. Emergency Drop Off
4. Ambulance Entry
5. Loading Dock
6. Central Plant
7. Healing Garden
8. Pedestrian Garden
9. Parking
10. Bus Stop

**Access to Terrace Garden**

**Pedestrian Axis**

**PLANNING**

http://www.palomarhealth.org/media/file/pebble/090913_pmc_tourbook_v2.pdf

**BUILDING CONTEXT**

Sources: http://architypereview.com/project/palomar-medical-center-west/

Architects conceptualized a functional and flexible vertical garden hospital set within a campus configuration. The greenfield site, part of a 16-acre business park currently under development, is bounded by residential property to the west, light industrial development to the north, Citracado Parkway and a Sempra power plant to the east, and future business park development to the south. The site positions the hospital at the north end of the site, where there is the greatest width to accommodate necessary access points and circulation.

The signature patient tower building with its gently curving form figuratively opens its arms to welcome patients. A vertical garden at the center of the south facade overlooks the extensive landscaped roof and garden terraces above the two-story diagnostic and treatment wing. The consumatory element is repeated at the east and west ends to reinforce the garden hospital concept. Site planning, landscaping, non-institutional architectural expression, and materials selected are all strongly influenced by the desire to merge nature and building, with each aspect informing the other to create a unified whole.

Palomar Medical Center is a public hospital, organized to accommodate future healthcare delivery innovations and designed to create an environment of healing that considers the impact of buildings on both human health and the larger physical environment.
Palomar Medical Center
Escondido, California

### Key:
- Lab
- Facilities
- MECH
- Sterile processing
- Material management
- EVS
- Morgue
- Food service
- Shared staff support
- Vertical circulation

### Travel Distance Analysis

**Note:** Departmental Square footages take-off based on Analysis of Departmental Area in Contemporary Hospitals calculation methodologies & Design Factors Report, 2014

#### Departmental Gross Square Foot Take-Offs

<table>
<thead>
<tr>
<th>Department</th>
<th>Gross SF</th>
<th>Net SF</th>
<th>N/S Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab</td>
<td>4064 SF</td>
<td>9560 SF</td>
<td>1.39</td>
</tr>
<tr>
<td>Facilities</td>
<td>1204 SF</td>
<td>2532 SF</td>
<td>1.09</td>
</tr>
<tr>
<td>MECH</td>
<td>15161 SF</td>
<td>16640 SF</td>
<td>1.05</td>
</tr>
<tr>
<td>Sterile processing</td>
<td>1886 SF</td>
<td>7229 SF</td>
<td>1.05</td>
</tr>
<tr>
<td>Material management</td>
<td>2412 SF</td>
<td>1952 SF</td>
<td>1.05</td>
</tr>
<tr>
<td>EVS</td>
<td>3213 SF</td>
<td>4287 SF</td>
<td>1.09</td>
</tr>
<tr>
<td>Morgue</td>
<td>1248 SF</td>
<td>1984 SF</td>
<td>1.20</td>
</tr>
<tr>
<td>Food service</td>
<td>8802 SF</td>
<td>6830 SF</td>
<td>1.09</td>
</tr>
<tr>
<td>Shared staff support</td>
<td>1215 SF</td>
<td>1061 SF</td>
<td>1.23</td>
</tr>
</tbody>
</table>

**Travel Distance Analysis**

- Locker to Lab: 127 ft
- Loading dock to Sterile processing: 125 ft

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*Palomar Medical Center | AIA Academy of Architecture for Health | Research Initiatives Committee

Case Study Format Developed By: AIA Academy of Architecture for Health | Research Initiatives Committee

Clemson A+H Alumni 50th Anniversary Reunion | 2018
Palomar Medical Center
Escondido, California

GROUND LEVEL:

TRAVEL DISTANCE ANALYSIS

Note: "Departmental Square Footage take-off based on Analysis of Departmental Area in Contemporary Hospitals calculation methodologies & Design Factors Report, 2014

DEPARTMENTAL GROSS SQUARE FOOT TAKE-OFFS

<table>
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<th>N/G ratio</th>
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</thead>
<tbody>
<tr>
<td>Emergency Department</td>
<td>2543 SF</td>
<td>3010 SF</td>
<td>1.18</td>
</tr>
<tr>
<td>Imaging</td>
<td>3045 SF</td>
<td>2018 SF</td>
<td>1.11</td>
</tr>
<tr>
<td>Cardio-Diagnostics/Blood Draw</td>
<td>254 SF</td>
<td>1975 SF</td>
<td>1.81</td>
</tr>
<tr>
<td>Respiratory Therapy</td>
<td>314 SF</td>
<td>2018 SF</td>
<td>1.26</td>
</tr>
</tbody>
</table>

KEY SPACES:
- MRI (331sf)
- Nuclear Medicine (360-374sf)
- CT (240sf)
- Radiography/Fluoroscopy (250-271sf)
- Triage (223-230sf)
- Treatment Room (122-214sf)
- Critical Treatment Room (160-124sf)
- Trauma Room (756sf)

TRAVEL DISTANCE ANALYSIS

- Entrance to radiology waiting room 110F
- Waiting room to CT room 64-118R
- Waiting room to MRI 116R
- ED Entrance to triage 66-MHR
- Waiting Room to Treatment Room 62-215R
- Emergency entrance to trauma room 33-110R
- Nurse work area to treatment room 10-50R
- Work area

KEY:
- Emergency Department
- Imaging
- Cardio-Diagnostics/Blood Draw
- Respiratory Therapy
- Employee Health
- Building Support
- Public Space
- Shell Space
- Financial Counseling
- Vertical Circulation
- Courtyard

AIA Academy of Architecture for Health | Research Initiatives Committee
Case Study Format Developed By: [Name]

Sources: http://www.palomarhealth.org/media/file/pebble/090913_pmc_tourbook_v2.pdf
Palomar Medical Center
Escondido, California

SECOND LEVEL:

Surgical Services
Intervention Cardiology and Radiology
Clean Procedures
Pre/post op
Pathology
Public Space
Pharmacy
Public Resource Center
Chaplaincy
Inpatient Rehab
Vertical Circulation

KEY:
- Surgical Services
- Intervention Cardiology and Radiology
- Clean Procedures
- Pre/post op
- Pathology
- Public Space
- Pharmacy
- Public Resource Center
- Chaplaincy
- Inpatient Rehab
- Vertical Circulation

TRAVEL DISTANCE ANALYSIS

Gross Square Foot Take-Offs:

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</tr>
</thead>
<tbody>
<tr>
<td>Surgical Services</td>
<td>25207 SF</td>
<td>28671 SF</td>
<td>1.14</td>
</tr>
<tr>
<td>Preoperative Care Unit</td>
<td>9207 SF</td>
<td>10868 SF</td>
<td>1.19</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>5065 SF</td>
<td>6082 SF</td>
<td>1.20</td>
</tr>
<tr>
<td>Intervention Radiology</td>
<td>7205 SF</td>
<td>10780 SF</td>
<td>1.49</td>
</tr>
</tbody>
</table>

KEY SPACES:
- Operating Rooms (657-731 sf)
- Patient Care Station (335-347 sf)
- Cath Lab (750-771 sf)

Note: “Departmental Square Footages take-off based on Analysis of Departmental Area in Contemporary Hospitals calculation methodologies & Design Factors Report, 2014

KEY SPACES:
- Private elevator to operating rooms 85 ft-317 ft
- Work area

SOURCES:
http://www.palomarhealth.org/media/file/pebble/090913_pmc_tourbook_v2.pdf
Palomar Medical Center
Escondido, California

CASE STUDIES

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THIRD LEVEL:

TRAVEL DISTANCE ANALYSIS

Note: "Departmental" gross square footage take-off based on Analysis of Departmental Area in Contemporary Hospitals calculation methodologies & Design Factors Report, 2014

Public elevator to cafe 67 ft
Stair to terrace garden to cafe 277 ft

DEPARTMENTAL GROSS SQUARE FOOT TAKE-OFFS

<table>
<thead>
<tr>
<th>Department</th>
<th>Gross SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Cafe</td>
<td>922 SF</td>
</tr>
<tr>
<td>Physician Lounge</td>
<td>479 SF</td>
</tr>
<tr>
<td>Terrace Garden</td>
<td>1120 SF</td>
</tr>
<tr>
<td>Green Roof</td>
<td>4964 SF</td>
</tr>
<tr>
<td>Mechanical System</td>
<td>26419 SF</td>
</tr>
</tbody>
</table>

TRAVEL DISTANCE ANALYSIS

Public elevator to cafe 67 ft
Stair to terrace garden to cafe 277 ft

SOURCES: http://www.palomarhealth.org/media/file/pibb/00011_pmc_tourbook_v2.pdf

PUBLIC CAFE

Physician Lounge
Terrace Garden
Green Roof
Mechanical Systems
Vertical Circulation

KEY:

- Public Cafe
- Physician Lounge
- Terrace Garden
- Green Roof
- Mechanical Systems
- Vertical Circulation

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**LEVEL 4 to 11:**

<table>
<thead>
<tr>
<th>KEY:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICU/Acuity Adaptable Unit</td>
</tr>
<tr>
<td>Med/Surg Unit</td>
</tr>
<tr>
<td>Public Space</td>
</tr>
<tr>
<td>Vertical Circulation</td>
</tr>
</tbody>
</table>

Note: “Departmental Square footages take off based on Analysis of Departmental Area in Contemporary Hospitals calculation methodologies & Design Factors Report, 2014

**TRAVEL DISTANCE ANALYSIS**

**DEPARTMENTAL GROSS SQUARE FOOT TAKE-OFFS**

<table>
<thead>
<tr>
<th>ICU/Acuity Adaptable Unit</th>
<th>Med/Surg Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>12,081 SF</td>
<td>13,383 SF</td>
</tr>
<tr>
<td>20,447 SF</td>
<td>22,409 SF</td>
</tr>
<tr>
<td>1.61</td>
<td>1.47</td>
</tr>
</tbody>
</table>

**KEY SPACES:**
- Med/Surg patient room (253sf)
- ICU/Acuity Adaptable patient room (282sf)
- Prefab patient toilet (44sf)

**TRAVEL DISTANCE ANALYSIS**

- Public Elevator to ICU Patient room 74-245ft
- Public Elevator to Med/Surg room 140-300ft
- Private Elevator to ICU Patient room 40-245ft
- Private Elevator to Med/Surg room 36-152ft

**CASE STUDIES**

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**CASE STUDY ANALYSIS**

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Source: http://www.palomarhealth.org/media/file/pebble/090913_pmc_tourbook_v2.pdf

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MED/SURG ROOM DIMENSION

The ceiling is lifted near the window to maximize the view.
The curved headwall makes the transition to bathroom smooth. Also, there is the grab bar to help with safety.
The headwall is prefabricated and modular to minimize the impact of medical equipment on the atmosphere of the room.

CASE STUDIES

with toilet: 296sf
without toilet : 253sf
Med/Surg room patient room
without toilet : 282sf
with toilet: 325sf

MED/SURG ROOM DIMENSION

The headwall is prefabricated and modular to minimize the impact of medical equipment on the atmosphere of the room.

ICU/NICU ADAPTABLE ROOM

The acuity adaptable room is designed to accommodate different needs of all stages of patient care. The idea is to minimize the amount of patient transfers and help decrease medication errors, infection rates and medical complications. However, the concept was not fully implemented because of the policy of Certificate of Need (CON). The rooms are used as ICU instead.

ICU patient room
without toilet : 320sf
with toilet: 355sf

The headwall is prefabricated and modular to minimize the impact of medical equipment on the atmosphere of the room.