# R16: AIA AAH Case Studies, The Framework to Benchmark Rehab Hospitals and Ambulatory Clinical & Public Spaces

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# **LEARNING OBJECTIVES**:

- Learn how to use the AIA AAH Case Study Library as a design resource & inspiration.
- Explore the design metrics of clinics and acute care hospitals within the Case Study Library.
- Discuss the value of metric ranges, patterns and conclusions discovered.
- This is a RoundTable so we look to attendees to help direct the future efforts of the research committee for other measurable yet meaningful metrics to study.







### **HISTORY OF RESEARCH INITIATIVE COMMITTEE**







# what WE do



Assist The Center for Health Design with the Knowledge Repository **HC Industry Volunteers** 



Clemson University A+H Design Firm Volunteers



### **HC Industry Volunteers**







Create a Resource Library of award-winning Healthcare projects. Promote initiatives to analyze design benchmarking metrics.





### **CASE STUDY LIBRARY**

Develop a consistent formated archive library of award-winning HC projects, available for Owners and HC Designers to access current industry trends, adjacencies and design attributes.

- Utilizing AIA/AAH HealthCare Design Award Winners as the source for the Case Study Library, the Library grows at the rate of the yearly awards (7-9 projects per year - 44 total)
- Define the graphic format of the library & identify the project data being tracked
- Utilizing Clemson Grad Students and Design Firm volunteers to populate the Library
- Encourage use of the Library by firms, clients and industry professionals





### **ROUNDTABLE UPDATES from 2022**

- □ Incorporating the updated standardized format for all new case studies
- **D** Publishing 9 new projects
- Working on tool of searchable project attributes
- New metric studies:
  - added 2 Rehab Hospitals to our hospital metrics
  - further refined the of Ambulatory Clinic takeoff, room labeling and care typologies
  - added Clinic registration & circulation metrics studies













# SEARCHABLE PROJECT LISTING

Row Labels	
Acute Care (Hospitals): Children's Hospitals	
University of Minnesota Amplatz Children's Hospital	
Acute Care: Clinical Departments: Emergency Department	
Providence Sacred Heart Medical Center Pediatric ED	
Acute Care: Clinical Departments: Surgery and Interventional	
Bringham and Women's Hospital	
Acute Care: Medical/Surgical Hospitals	
Bridgepoint Active Healthcare	
Christ Hospital Joint and Spine Center	
Focal Point Community Campus	
Peace Island Medical Center	
University Medical Center New Orleans	







### **Palomar Medical Center**

### **Palomar Medical Center**

Escondido, California





Back of the building

Terrace garden



### 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 840-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 root 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.





Building concept





### **Palomar Medical Center**

### INTERDEPARTMENT PLAN



Emergency Department Lobby

### DEPARTMENTAL GROSS SQUARE FOOT TAKE-OFFS

Interdepartmental	GL		
Name	Gross Sqft	Net Sqft	Multiplier
Emergency Department	41480	22610	1.83
Imaging	25836	15074	1.71
Cardio Diagnostics/Blood Draw	2994	1640	1.83
Respiratory Therapy	2688	1806	1.45
Employee Health	297	215	1.38
Building Support	3873	2947	1.33
Public space	13862	8431	1.64
Shell space	6385	6300	1.01
Financial Counseling	1397	1129	1.24
Courtyard/Terraces	2639	n/a	6
Total	116950 bgst	98812 dgsf	1.18

### GROUND LEVEL:



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

### TRAVEL DISTANCE ANALYSIS



### KEY SPACES:

- MRI (521sf)
- Nuclear Medicine (368-376sf)
- ▶ CT (451sf)
  - Radiography/Fluoroscopy (250-271sf)
- Triage (121-132sf)
- Treatment Room (123-214sf)
   Critical Treatment Room (180-182sf)
- Trauma Room (706sf)

### TRAVEL DISTANCE ANALYSIS



- Nurse work area to treatment room 10-56ft
- Work area





### **Palomar Medical Center**

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### **EMERGENCY DEPARTMENT- TRAUMA ROOM**

### EXPLODED KEY ROOMS

- Operating Room: 728 NSF
- Control Room: 60 NSF
- Support Areas: 35 NSF







# REHAB HOSPITAL CASE STUDY BENCHMARKING





# **2022 HCD**

- 2022 Palomar Medical Center & Rush University Hospital
  - 1. Emergency Department
  - 2. Imaging Department
  - 3. Surgery Suite
  - 4. Med/Surg (Patient Unit)
- 2022 Metrics being studied: Multiplier, DGSF/Key Room, NSF, DGSF







# 2023 REHAB HOSPITAL BENCHMARKING

Shirley Ryan Abilitylab & Bridgepoint Active Healthcare

- 1. Patient Floor
- 2. Day Room (Common Patient Area) & Gym
- 3. Typical Rehab Patient Room Size
- Metrics are being studied: NSF, DGSF, DGSF/Patient Room, Gym & Day Room Size per patient room









### Shirley Ryan Ability Lab

### Chicago, IL





1.2000.000





OWNER/AFFILIATION SHIRLEY RYAN ABILITYLAB



COMPLETION DATE 2017



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STREET ARRIVAL



Image Sources: https://www.gensler.com/projects/shirley-ryan-abilitylab, https://www.hdrinc. com/portfolio/shirley-ryan-abilitylab







ABOUT | DESIGN INTENTIONS

The Shirley Rvan AbilityLab (formerly Rehabilitation Institute of Chicago) is the top rehabilitation destination for adults and children with the most severe, complex conditions - from traumatic brain and spinal cord injury to stroke, amputation and cancer.

Shirley Ryan was designed the 1.2 million-square-foot facility, in partnership with Gensler and in association with Clive Wilkinson Architects and EGG Office, as the first-ever "translational" technologists work together in the same space - surrounding patients, discovering new approaches and applying (or "translating") research real time. This translational approach means patients have 24/7 access to the brightest minds, the latest research, and the best opportunity for recovery.

As an innovator in the healthcare industry, we were responsible for the design and programming of healthcare and research environments and all translational planning concepts. Sources: https://www.hdrinc.com/portfolio/shirley-ryan-abilitylab



BUILDING BREAKDOWN



FACETED FACADE

and represents the ed potential found within

SHIRLEY RYAN ABILITYLAB | CASE STUDY ANALYSIS AIA Academy of Architecture for Health | Research Initiatives Committee

DRAFT





### Shirley Ryan Ability Lab Chicago, IL

TITLE



### DEPARTMENTAL GROSS SQUARE FOOT TAKE-OFFS

	FUNCTIONAL PROGRAM	SF
	Patient Care	10534.72
	Clinic	3665.38
	Clinic Support	3238.64
	Staff Support	2751.6
12	Nurse/Work Station	553.56
DEPT	Admin/Public Space	964.09
0	Multipurpose Room	1019.18
	Open Gym	6230.27
	Total NSF	28957.44
	Net-to-Gross Multiplier	1.43
	Total DGSF	41264.7
U	Building Support	1140.38
BUILDING	Vertical Circulation	2706.71
	DGSF-to-BGSF Multiplier	1.24
B	Total Building BGSF	51100.93



LEVEL 18TH:

KEY Patient Rooms Clinic Clinic Support Staff Support Naroe Work Staf Admin Public Sp Matipurpose Re Rehab Gym Publicin Surgert



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

Image Sources: https://

### TRAVEL DISTANCE ANALYSIS



### **KEY SPACES:**

Exam Rooms (252 sf)
 Ability Lab (5,631 sf)
 Staff W ork core (2,541 sf)
 Consult Rooms (96 sf)
 Multipurpose Room (1,018 sf)

Patient 52ft - 222ft

Staff 51ft - 259ft

SHIRLEY RYAN ABILITYLAB | CASE STUDY ANALYSIS AIA Academy of Architecture for Health | Research Initiatives Committee



TRAVEL DISTANCE ANALYSIS

-8

1

### Shirley Ryan Ability Lab Chicago, IL



View of 19th Floor Gym

### DEPARTMENTAL GROSS SQUARE FOOT TAKE-OFFS

	FUNCTIONAL PROGRAM	SF
	Patient Care	12764.97
	Clinic	1008.08
	Clinical Support	2625.91
	Work Station	752.23
ħ	Staff Support	2216.73
DEPT	multipurpose	994.49
	Ability lab	9621.98
	Total NSF	29984.35
	Net-to-Gross Multiplier	1.42
	Total DGSF	42456.71
U	Building Support	1149.92
BUILDING	Vertical Circulation	2796.03
	DGSF-to-BGSF Multiplier	1.20
5	Total Building BGSF	50780.14

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



LEVEL 19TH:

KEY Patent Roms Clinic Support Building Support Building Support Work Staticion Admn/Public Space Vertical Circulation Ability Lab Clinical Lab



Note: "Departmental Square footages take-off based on 'Analysis of Departmental Area in Contemporary Hospitals calculation methodologies &

hittee Image Sources: https://

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### KEY SPACES:

Exam Rooms (252 sf)
 Ability Lab (7,872 sf)
 Staff Work core (2,054 sf)
 Consult Rooms (96 sf)
 Multipurpose Room (994 sf)

TRAVEL DISTANCE ANALYSIS Patient 67ft - 320ft

----- Staff 66ft - 363ft

SHIRLEY RYAN ABILITYLAB | CASE STUDY ANALYSIS AIA Academy of Architecture for Health | Research Initiatives Committee



### Shirley Ryan Ability Lab Chicago, IL



### DEPARTMENTAL GROSS SOUARE FOOT TAKE-OFFS

	FUNCTIONAL PROGRAM	SF
	Patient Care	8414.1
	Clinic	819.86
	Clinical Support	1708.2
	Work Station	489.2
1	Staff Support	2576.5
EPI	multipurpose	989.11
0	Ability lab	7537.33
	Shell Space	7442.31
	Total NSF	29976.61
	Net-to-Gross Multiplier	1.31
	Total DGSF	39141.11
U	Building Support	963.38
N.	Vertical Circulation	2812.65
BUILDIN	DGSF-to-BGSF Multiplier	1.29
5	Total Building BGSF	50570

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LEVEL 20TH:

KEY 



Note: "Departmental Square footages take-off based on 'Analysis of Departmental Area in Contemporary Hospitals calculation methodologies &

Image Sources: https://

### TRAVEL DISTANCE ANALYSIS



KEY SPACES:

Exam Rooms (252sf) Ability Lab (6,342sf) Staff W ork core (2,459 sf) Consult Rooms (96 sf) Multipurpose Room (990 sf)

TRAVEL DISTANCE ANALYSIS Patient 67ft - 320ft

Staff 66ft - 363ft

SHIRLEY RYAN ABILITYLAB | CASE STUDY ANALYSIS AIA Academy of Architecture for Health | Research Initiatives Committee - DRAFT



### **BRIDGEPOINT ACTIVE HEALTHCARE**





Bridgepoint Active Healthcare is Canada's leader in complex care and rehabilitation. The 10-story, 472-bed hospital is the largest healthcare facility of its kind in Canada and the only organization dedicated to people living with complex chronic disease and

Using space already available, the adjacent 148-year-old Don Jail was readapted into the hospital's administrative and education center. The restoration is emblematic of Bridgepoint's

commitment to transformative rehabilitation-giving new life to

ABOUT | DESIGN INTENTIONS

an important Toronto landmark.

disability.

# Administrative Building - Former Don Jail

### NORTH ELEVATION



### BRIDGEPOINT ACTIVE HEALTHCARE | CASE STUDY ANALYSIS AIA Academy of Architecture for Health | Research Initiatives Committee DRAFT



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HEALTHCARE DESIGN CONFERENCE + EXPO **#HCDcon** 

### **BRIDGEPOINT ACTIVE HEALTHCARE**

### **Bridgepoint Active Healthcare**

Toronto, Ontario, Canada

### **RECOVERY AND WELLNESS**

An abundance of natural light and clear wayfinding is supported by a calm color palette and finishes, such as wood ceilings, both indoors and on terraces

Bridgepoint's Main Floor plan is conceived as a large, public accessible 'Urban Porch' which allows patients to participate in community life and invites the community to engage with Bridgepoint patients and visitors.



HEALTHCARE DESIGN CONFERENCE + EXPO



**TYPICAL PATIENT FLOOR (Level 1-4, 6-9)** 

Note: "Departmental Square footages take-off based on 'Analysis of Departmental Area in Contemporary Hospitals calculation methodologies &

### 1. Nurse Stations 2. Therapy Gym 3. Complex Continuing Care Core Program 4. Shared Dining and Activity Room

Design Factors Report, 2014

5. Patient Lounge

### TRAVEL DISTANCE ANALYSIS



Sources: https://www.hdrinc.com/portfolio/bridgepoint-active-healthcare

### TYPICAL PATIENT FLOOR PLAN

### Neighborhoods

To mitigate the scale of this facility, a vertical campus concept was conceived to create a community of stacked neighborhoods of patient units. Each floor is clearly ordered and organized into two neighborhoods of 32 beds each configured with single and double-bed patient rooms. Because the patients at Bridgepoint are not acute, double-bed rooms are actually preferred as they help with socialization ----an important part of therapy. Shared therapy space is centralized on each floor at the cores with common spaces to the north and south. Nursing stations are in close proximity to their respective neighborhoods of care.

### **KEY SPACES:**

- Patient Room (253sf)
- Therapy Gym (1,653sf) Patient Lounge (1,100sf)
- Complex Continuing Care Core Program (3,989sf)

### FLOOR GROSS SOUARE FOOT

TAKE-OFFS
Patient Care
Dining and Activity

Net Gross 10,296 SF 12,403 SE 3,141 SF 3,287 SF

### TRAVEL DISTANCE ANALYSIS

Patient 36ft - 112ft

----- Family 36ft - 112ft

----- Staff 36ft - 210ft

BRIDGEPOINT ACTIVE HEALTHCARE | CASE STUDY ANALYSIS AIA Academy of Architecture for Health | Research Initiatives Committee A DRAFT







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### BRIDGEPOINT ACTIVE HEALTHCARE

**GYM** 

Multi-

purpose



### **DGSF/PATIENT ROOM**



### **PATIENT ROOM SIZE**



### **Net-to-Gross Multiplier**



### **REHAB HOSPITALS - GYM SIZE COMPARISON**



### **REHAB HOSPITALS - COMMON PATIENT AREA**



# CLINIC CASE STUDY BENCHMARKING





# **CLINIC BENCHMARKING**

### Goal:

Develop a consistent methodology for comparing net to gross metrics in clinics, in a way that is <u>comparable to the rigor of the</u> <u>hospital methodology</u>, and which can become an industry standard – with a standardized reporting format.







### **2023 ROUNDTABLE UPDATES**

- **Takeoff protocol refined**
- Room labeling standardized
- Third clinic typology added
- Registration & waiting, and circulation methodology defined





# **TAKE-OFF PROTOCOL**

### New Terminology:

- "Care Team Strategies" vs "Circulation type"
  - On-stage/Off-stage
  - Central
  - Linear
- <u>Pod</u> metrics: PNSF, PGSF, Total Usable Net SF (TUNSF)
- Registration and waiting metrics: RegNSF, WaitingNSF
- Floor metrics: FGSF and # of Pods





### **STANDARDIZED LABELING**

Functional Program	NSF
Patient Care	
Clinical Staff	
Clinical Support	
Diagnostics	
Staff Admin	
Staff Support	
Waiting Area	
Total NSF	
TULdTINSF	
Building Support	
Total BGSF	
Net-to-Gross Multiplier	

Patient Care: Exam Room, Procedure, Consultation, Patient Toilet
Clinical Staff: Nurse Stations, touch-down (recessed counter 2' wide), work area
Clinical Support: Clean Supply, Soiled Utility, Meds, EQ Alcove
Diagnostics:Lab, Imaging, Stress, ECHO, EEG, Ultrasound/Mammography
Staff Admin: Office space, reception, Registration/Check-out,
Staff Support: Break Room, Locker Room, Lactation Room, Staff Toilet
Waiting Area: POD/departmental Waiting, Central Waiting Area

**Building support**: Gift shops, Chapel, Public Toilet, Lobby, Building Circulation, Vestibule, Electrical/IT Closet, Stairs, Elevators, Shafts

Net-to- Gross Multiplier (building): Total BGSF/DGSF





### **THIRD CLINIC TYPOLOGY**



On Stage/Off Stage



**Centralized Care Team** 



**Linear Care Team** 





### **REGISTRATION, WAITING & CIRCULATION**

### Registration

- Centralized (multi-story), Centralized (per story), and Decentralized
- With/out pre-registration

### Waiting

 Centralized waiting, and Decentralized (e.g., POD/departmental waiting; waiting in other areas)

### Circulation

- On-stage/Off-stage
- Mixed circulation
- Vertical circulation pattern (e.g., central staircase, central elevator, fire escape stairs, ADA elevator)

### **Design Quality and Spatial Experience**

- Traffic patterns (staff vs patient): shared or separated
- Traveling distance
- Signage system
- Intelligibility
- Degree of enclosure
- Window and transparency
- Furniture arrangement (socialization vs. privacy)
- Technology
- Other amenities and positive distractions





### WAITING TAKE-OFF METHODOLGY



Scenario 1: Waiting Room Method: Entire room measurements Example: Adamsville Regional Health Center



Scenario 2: Semi-enclosed Method: Treat it as a room Example: Adamsville Regional Health Center





Scenario 4: Open-Irregular Method: Align with walls and major furniture, Door-to-door circulation spaces that fulfills minimum corridor width, then make the subtraction Example: Seattle Children's







### **WAITING TAKE-OFF METHODOLGY**



HCDD HEALTHCARE DESIGN CONFERENCE + EXPO

### **COMPARATIVE DATA**

Facility Name	(Award) Year	Award Category	Care Team Typology	# Patient Care Room	Staff Core SF	TUNSF	PNSF	PGSF	PNSF/PGSF	TUNSF/PGSF	PGSF/Exam	Staff Core/Exam	TUNSF/Exam
Whittier Clinic	2010	NA	Central	14	492.92	3913.9	2410.53	4213.41	0.57	0.93	300.96	35.21	279.56
Smokey Point	2013	A	Onstage/Offstage	11	696	3124.6	2138.34	3296.79	0.65	0.95	299.71	63.27	284.05
Seattle Children's South	2016	E	Onstage/Offstage	12	1424.05	4818.14	3296.73	5181.72	0.64	0.93	431.81	118.67	401.51
Harvey Peds	2017	A	Linear	8	258.65	1755.52	1106.71	1903.87	0.58	0.92	237.98	32.33	219.44
Cedars-Sinai	2018	В	Central	8	434	2793	1672	3023	0.55	0.92	377.88	54.25	349.13
Story County	2018	A	Onstage/Offstage	9	536.17	3448.11	1974.53	3647.89	0.54	0.95	405.32	59.57	383.12
Penn Radnor	2021	A	Linear	19	852	4821	3493	5357	0.65	0.90	281.95	44.84	253.74
VACDC	2021	А	Onstage/Offstage	15	2678.65	7864.51	5232.83	8448.93	0.62	0.93	563.26	178.58	524.30

Note:

TUNSF = Total Usable Net Square Feet PNSF = Pod Net Square Feet PGSF = Pod Gross Square Feet





### Room NSF to TUNSF Ratio by Facility



Room NSF/TUNSF by Facility

















6%



### WHAT'S NEXT

- Continue to grow the Case Study Library with AIA/AAH award projects
   7-9 per year ( considering adding other HC award programs projects)
- Expand the Case Study search capabilities on the website
- Continue to use the Clemson Grad Students (canvassing interest from other HC grad programs)
- Canvassing interest of Award winning firms to participate
- Develop explicit template and takeoff protocols manual and a QA/QC review process to manage the proposed larger volunteer group
- Increase Industry use





# **BREAKOUT TOPICS**

- Methods of measurement
  - Waiting & Registration
  - OS/OS include staff circulation in staff core or don't?
  - Waiting aggregated or broken out?
- Additional Metrics for CLINICS or REHAB HOSPITALS?
- Other SPECIALTY HOSPITALS?
- Other Healthcare Award Programs





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