LEGACY EMANUEL HOSPITAL

RENOVATION OF AN OCCUPIED LEVEL 1 TRAUMA FACILITY

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OBJECTIVES

• Gain insight into the challenges and successes of a **staged infrastructure upgrade** of an **occupied critical care facility**.

• Organizing **for future tenant improvements** with an eye towards the facility master plan.

• Balancing **temporary construction phasing** to maintain occupancy and **limit budget impact**.
Phase One: Children’s Hospital

- Parking Structure (418 spaces)
- North Utility Plant
- Randall Children’s Hospital
  - 334,000sf
  - Pediatric Acute Care: 96 Rooms
    - NICU: 45 Beds
    - PICU: 24 Rooms
- Decant Pediatric programs from existing facilities
Existing Utility Routing

- Steam and chilled water from south plant
- Chilled water from North Tower
- Steam utilized to generate all heating and domestic hot water
Final Utility Routing

- Randall Children’s Hospital added demand for heating and cooling
- NUP provides chilled water and steam to northern campus
Phase Two: Adult Services

- Emergency Department Expansion
- Ambulance Dock and Canopy
- West Wing Backfill
  - Adult Critical Care Units (36 beds)
  - Adult ED Renovation
- New West Wing Trauma Elevator
Phase Two: Adult Services

- North Patient Tower Backfill
  - Adult TRACU 33 Beds
  - Temporary Adult ED
  - Clinical Decision Unit
- Align TRACU with West Wing Critical Care
Phase Two: Adult Services

- Emanuel Central Backfill
  - Family Waiting/Support
  - Conference & Consult
- Align Family Support Functions with TRACU and Critical Care
GUIDING PRINCIPLES & INFRASTRUCTURE GOALS

- Patient & family-centered environments
- Improve quality & safety
- Clarity & identity to points of entry & arrival
- Safe & comforting environments minimizing stress
- Wayfinding & signage enhancements
- Optimize patient flow & staff efficiency
- Design flexible & adaptable space
- Promote healthy & supportive work environments
- Areas of respite
- Unique & identifiable materials palette

- Voluntarily strengthen existing structure
- Limit impact to patient care
- Achieve enhanced structural building performance
- Multi-phase construction solution
- Updated mechanical infrastructure
Stacking Organization

- Backfill 3rd Floor vacated spaces
- Adult TRACU moves to 3rd Floor
- Vacated NPT 1st Floor for ED Functions
- Provide shared Family Support zone in Emanuel Central
WEST WING: EXISTING CONDITIONS

Stacking Organization

- Decant Pediatrics services to Randall Children’s Hospital
- Assess current state of West Wing infrastructure
- Identify phasing strategies
Equipment Organization

- Equipment free current state
- Air intake to be removed after infrastructure upgrades
- Skylights to remain above corridor intersections
WEST WING: NEW AIR HANDLING EQUIPMENT

Stacking Organization

- Install AHUs prior to demolition of existing floors
- Emergency power switchgear room is constructed
WEST WING: NEW MECHANICAL EQUIPMENT

Equipment Organization

- AHU 1 and AHU 2 installed prior to demo
- Connect to risers in North Patient Tower “bullet”
Stacking Organization

- Randall Children’s Hospital opens
- 2nd & 3rd Floor demolition begins
- Next step: reconfigure MEP systems
- Mitigate noise and vibration during demolition
Stacking Organization

- North AHU
  - Serves Basement thru 3rd Floor
  - Serves north half of West Wing
- South AHU
  - Serves Basement thru 3rd Floor
  - Serves south half of West Wing
- Existing Surgeries served by sub basement AHUs
Stacking Organization

- Relocate 1st Floor Adult ICU beds
- Emergency Department phased construction begins
WEST WING: STRUCTURAL STRATEGIES

Concepts

- Shear walls?
- Braced Frames?
WEST WING: STRUCTURAL STRATEGIES

Concepts

• Shear walls?
• Braced Frames?
Stacking Organization

- Strengthening only available in decanted areas
- Strengthening solution must retain voluntary status
- Enhanced Performance Objective
Stacking Organization

- **3rd Floor**
  - Adult Critical Care (24 beds)
- **2nd Floor**
  - Cardiovascular ICU (12 beds)
  - Existing Labor & Delivery
- **1st Floor**
  - Adult Emergency Department
  - Existing Trauma & CV Surgeries
- **Basement**
  - Existing Surgeries
- **Sub-basement**
  - Mechanical
ICU PLANNING GOALS

- Minimize travel distances for staff
- Distribute care team and work spaces
- Support team collaboration
- Increase efficiency
- Airflow Control for consistency between new and existing systems
Plan Organization

- Pediatric Acute Care Unit
- Pediatric ICU
- Mechanical Room (serving 1st, 2nd, and 3rd floors)
Plan Organization

- Pre-renovation mechanical plan
- AHUs serve interior and exterior zones
- Common exhaust for the building
- Five existing shafts serve areas throughout the floors
- 3rd Floor IDF Room serves second floor low voltage systems
**WEST WING: UTILITY PATHWAY**

**Plan Organization**

- Pre-renovation mechanical plan
- AHUs serve interior and exterior zones
- Common exhaust for the building
- Five existing shafts serve areas throughout the floors
- 3rd Floor IDF Room serves second floor low voltage systems
Plan Organization

- 3rd Floor ACU/ICU demolished
- Utilized open floor to temporarily supply existing shafts
- New shafts constructed per final plan
- Connect distribution to the new AHUs
WEST WING: STRUCTURAL STRENGTHENING

Solution

- Existing building structure
- Columns and slabs
- Non-linear Procedures
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**Solution**

- Existing building structure
- Columns and slabs
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WEST WING: STRUCTURAL STRENGTHENING
WEST WING: RENOVATED 3<sup>RD</sup> FLOOR

Plan Organization

- 24 Bed Adult Critical Care
- Shared support zone in the center of the floor plate
  - Equipment Storage
  - Staff lockers/lounge
- Access to new Trauma Elevator
- Horizontally aligned to TRACU and Family Waiting
TRACU GOALS

- Maintain 33 patient rooms
- Minimize travel distances for staff
- Provide efficient distribution of care team and work spaces
- Support team collaboration
- Increase patient satisfaction
- Improve patient room layout

Challenges
- Maximize room layout
- Floor-to-floor height
Plan Organization

- 33 Bed Trauma Recovery & Acute Care Unit
- Nursing core reconfigured to support decentralized nursing
- Horizontally aligned to ICUs and Family Waiting
FAMILY WAITING GOALS

• Design an environment that is welcoming and inviting
• Create subdivided waiting to provide privacy for families
• Provide active and quiet areas within family amenity space
• Create better space by re-ducting to accommodate low floor-to-floor heights

• Baby Boomer building
Plan Organization

- Shared Family Support Zone for all Adult Services
- Family Lounge/Kitchen
- Family Resource
- Respite
- Consult/Conference
- Centralized location between ICU & TRACU
- Rehab Gym supports TRACU services
Planning Principles

• Access to natural light
• Adaptive reuse of existing/outdated inpatient facilities
• Provide respite space for families
Plan Organization

- ICU & TRACU are now aligned horizontally
- Shared Family Waiting & Support Services between ICU and TRACU
Plan Organization

- Labor & Delivery to remain operational during construction
- NICU to be relocated to Randall Children’s Hospital
- Continue new mechanical shaft construction and temporary supply to active floors
Plan Organization

- 12 beds
- Daylight into unit
- Decentralized care team stations
- Increased visibility of patient rooms
- Off stage utility and support space
- Direct access to trauma elevator
EMERGENCY DEPARTMENT GOALS

• Decrease door-to-provider time
• Improve patient satisfaction
• Improve patient safety
• Decrease the number of patients who leave without being seen
• Decrease length of stay
• Increase volumes

• Construction sequencing
Plan Organization

- Adult Emergency Department
- Pediatric Emergency Department
- Adult ICU
WEST WING: EMERGENCY DEPARTMENT PHASING

Phase 1

• Completion of shaft terminations
• Electrical Room serving ED
• Program space renovations
• Use Pediatric ED spaces for swing space during phased renovations
Phase 2

• Partial renovation of ICU & shaft construction into basement
• Develop program spaces at Behavioral Health
Phase 3

- Complete renovation of vacated Pediatric ED
- Construct intake zone for Adult ED
- Develop lockers and future shelled space for Hybrid OR
Phase 4

- ICU moves to second floor of the West Wing
- Final phase of construction
Temporary Emergency Department

- Decant TRACU to the 3rd Floor of the North Patient Tower
- Construct “tunnel” through existing ED for gurney traffic
- Complete Adult ED renovation in two phases:
  - Phase 1: Clinical
  - Phase 2: Public/Waiting
Plan Organization

- Direct access from ambulance dock to Trauma bays and surgery “corridor of life”
- Organized into care pods: Trauma, ED, and Behavioral Health
- Staff support zones
- Immediate triage for walk-in patients
- Results waiting area
THANK YOU

TEAM

LEGACY HEALTH SYSTEM

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