

2020 Project Delivery Course

Project Delivery in a Global Pandemic



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November 12, 2020

Moderators



GRACE C. LIN, AIA, CSI-CDT

CBRE | Healthcare

2019-2020 Chair

Project Delivery Knowledge
Community Advisory Group



LAURA STAGNER, AIA, DBIA, PMP

Retired Executive Assistant Commissioner
for Project Delivery at GSA

Member

Project Delivery Knowledge
Community Advisory Group



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Project Delivery Case Study Series

Live Course - Are You Ready to Design & Build a Field Hospital in 10 Days?

When: Nov 10, 2020 from 2:00 PM to 3:30 PM (ET)

Community: [Project Delivery](#)

Course 1 = 1.5 LU/HSW

Live Course - Project Delivery in a Global Pandemic

When: Nov 12, 2020 from 4:00 PM to 5:30 PM (ET)

Community: [Project Delivery](#)

Course 2 = 1.5 LU/HSW

Live Course - COVID-19 Rapid Response Project Delivery

When: Nov 17, 2020 from 4:00 PM to 5:30 PM (ET)

Community: [Project Delivery](#)

Course 3 = 1.5 LU/HSW



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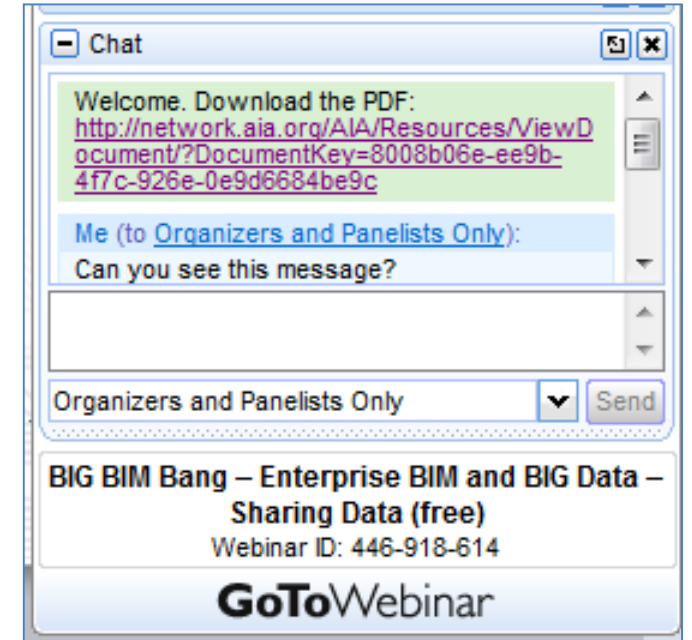
Questions?

Submit a question to the moderator via the chat box.



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Tech support questions will be answered by AIA staff promptly.



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Project Delivery in COVID-19 Era

“The COVID-19 pandemic is unprecedented. It has pressed on rapid design response and instant construction delivery to serve the community.

The AIA Project Delivery Knowledge Community (PDKC) gathered case studies from a number of architects who worked on the front lines during the public health emergency. These case studies share their stories, what they’ve experienced and learned in delivering essential projects during the moments of crisis. What worked, traps to avoid, how to win cooperation, and the course of actions taken to successfully deliver the projects.

These case studies highlight architects’ work that will inspire and improve the visibility and awareness of project delivery in our profession. Such leadership role demonstrates the importance of project delivery and helps architects rise to the occasion.”



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Grace Lin, AIA
Chair of AIA
PDKC

2020 Project Delivery Course

Colorado Convention Center Alternate Care Facility



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Speakers



Ann H. Adams

**AIA, ACHA, EDAC, LEED GA, GREEN BELT
LEAN CERTIFIED FOR FACILITIES DESIGN**

Principal, Davis Partnership Architects
Denver, Colorado



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Cheryl Hoffman

LEED AP BD+C, DBIA

Project Manager, Hensel Phelps
Thornton, Colorado



HENSEL PHELPS
Plan. Build. Manage.



Mike Watkins

P.E., LEED AP BD+C, DBIA, CM-Lean
Chief Operating Officer, RMH Group
Lakewood, Colorado



Learning Objectives

After participating in this webinar attendees will learn how the Colorado Convention Center ACF Project...

1. Obtained trust, teamwork and collaboration from all trade partners and USACE to design and build an Alternate Care Facility in 18 days.
2. Discovered that rapid deployment required modularity and repeatability – construction as an assembly line
3. Managed important communication as the pace and number of trade partners increased.
4. Decisions were based on speed of delivery and low cost and using local and available materials. Construction was moving so fast there was not time to re-think or digress.



The Challenge

Assemble a team, design and build this Rapid Disaster Infrastructure facility to be operational within 26 days of project kick-off.



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of Engineers®



HENSEL PHELPS
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DAVIS
PARTNERSHIP
ARCHITECTS





Project Overview

Adapt the Exhibit Hall level of the Colorado Convention Center into a 2,000-bed alternate care facility. This will house and support COVID positive patients who are in stable condition prior to fully discharging them to their homes.

Project: ~577,000 GSF

Owner/Stakeholders:
US Army Corps of
Engineers,
Omaha



The Solution and Project Delivery Method

The pace of this project required a hands-on design build delivery method. The design was modular using 10'x10' patient bays located adjacent to central nurse stations. Supplies and support spaces were at the ends of each patient row, and patient showers were installed in each Exhibit Hall. A small centrally located pharmacy was fed by a main pharmacy on the lower level of the Convention Center. Existing atrium spaces were re-purposed for Staff Lounges, and Exhibit Hall F was used for staff lockers and staff shower facilities.

The Solution

TRUST

COLLABORATION

MOTIVATION

OUTSTANDING TEAM EXECUTION

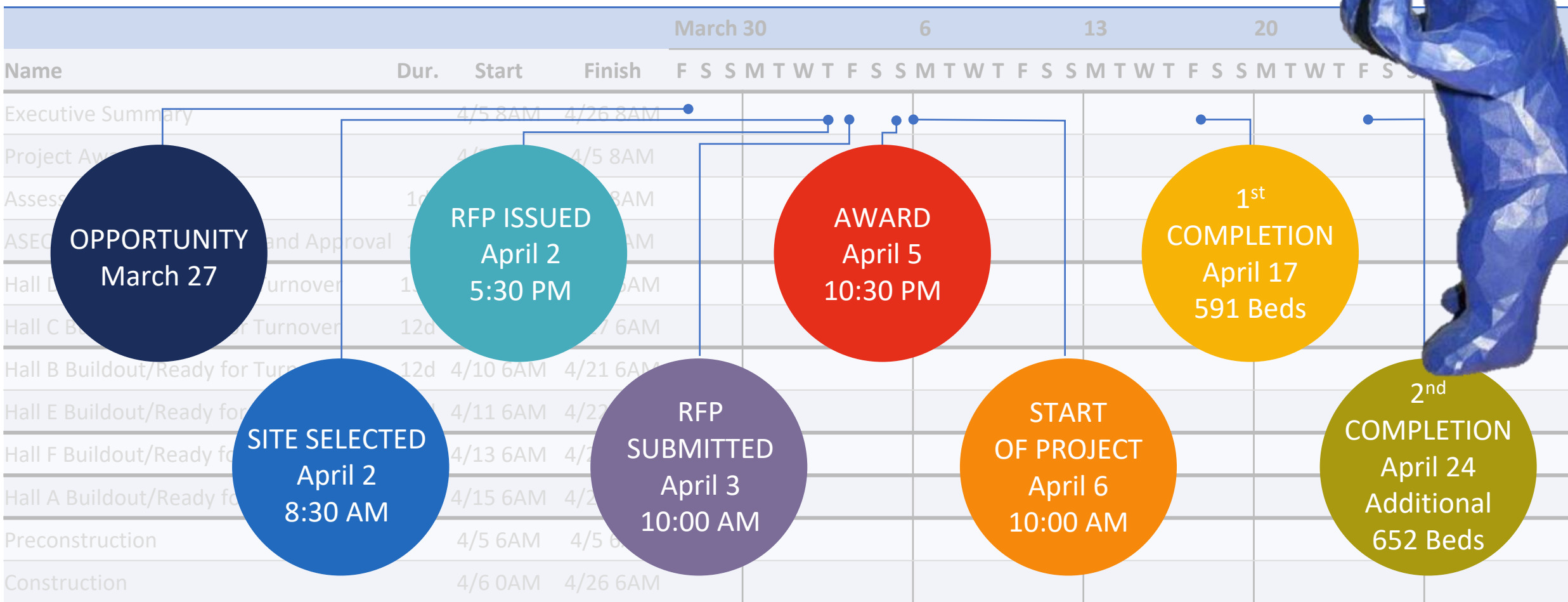


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Project Timeline



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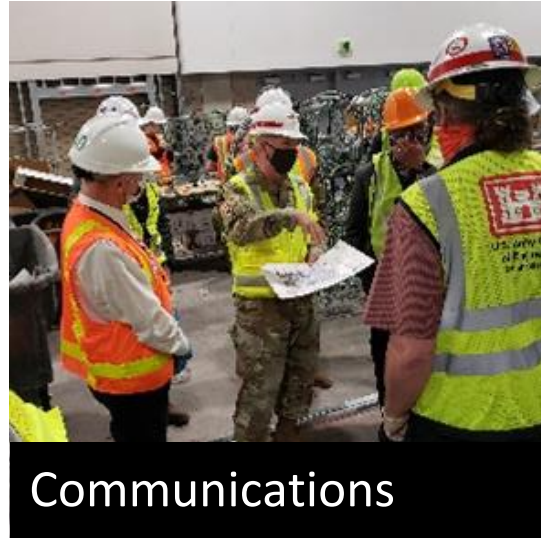
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Construction Challenges

Average of 375
Construction
workers per day
plus 50-60 USACE,
A/E team, etc.

Peak on-site
workers – 625

Only three were
sent home due to
high fever through
the entire process.



Communications



Liquid O₂ Plant



Craft Availability



Material Availability



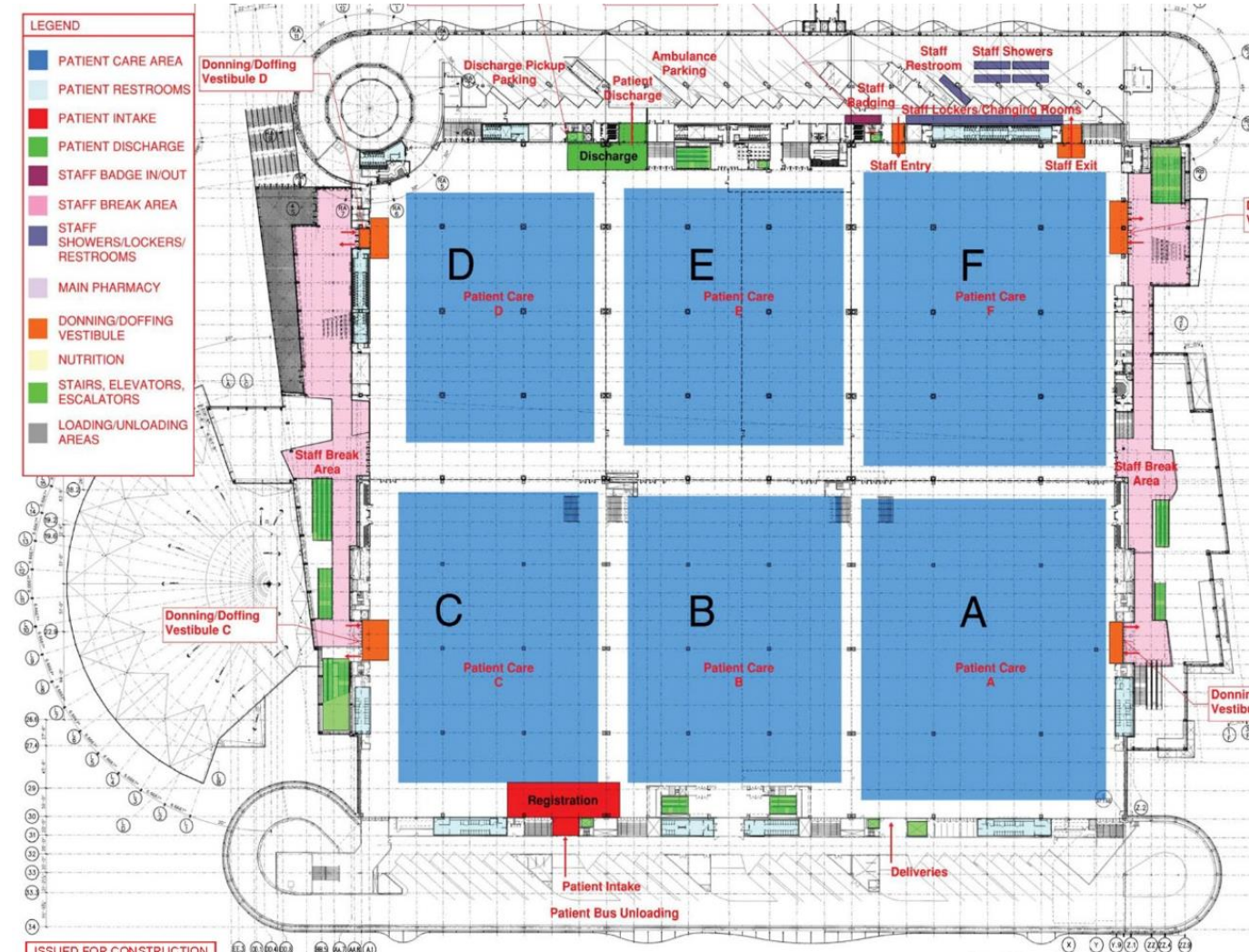
Covid Protocol



Logistics

Architectural Challenges

- 2,000 Beds in 28 days
- Local AHJ Requirements
 - NO** Combustible materials
 - NO** Composite Panels
 - NO** Curtains – Must meet NFPA 701
- 1 Nurse for every 20 beds
- 7 Patient showers in every Hall
- 1 Hand sanitizer for every 4 beds
- Utilize existing Restrooms
- Staff Break / Locker / Shower Rooms
- Staff Donning / Doffing Areas
- Central Pharmacy to support each Hall



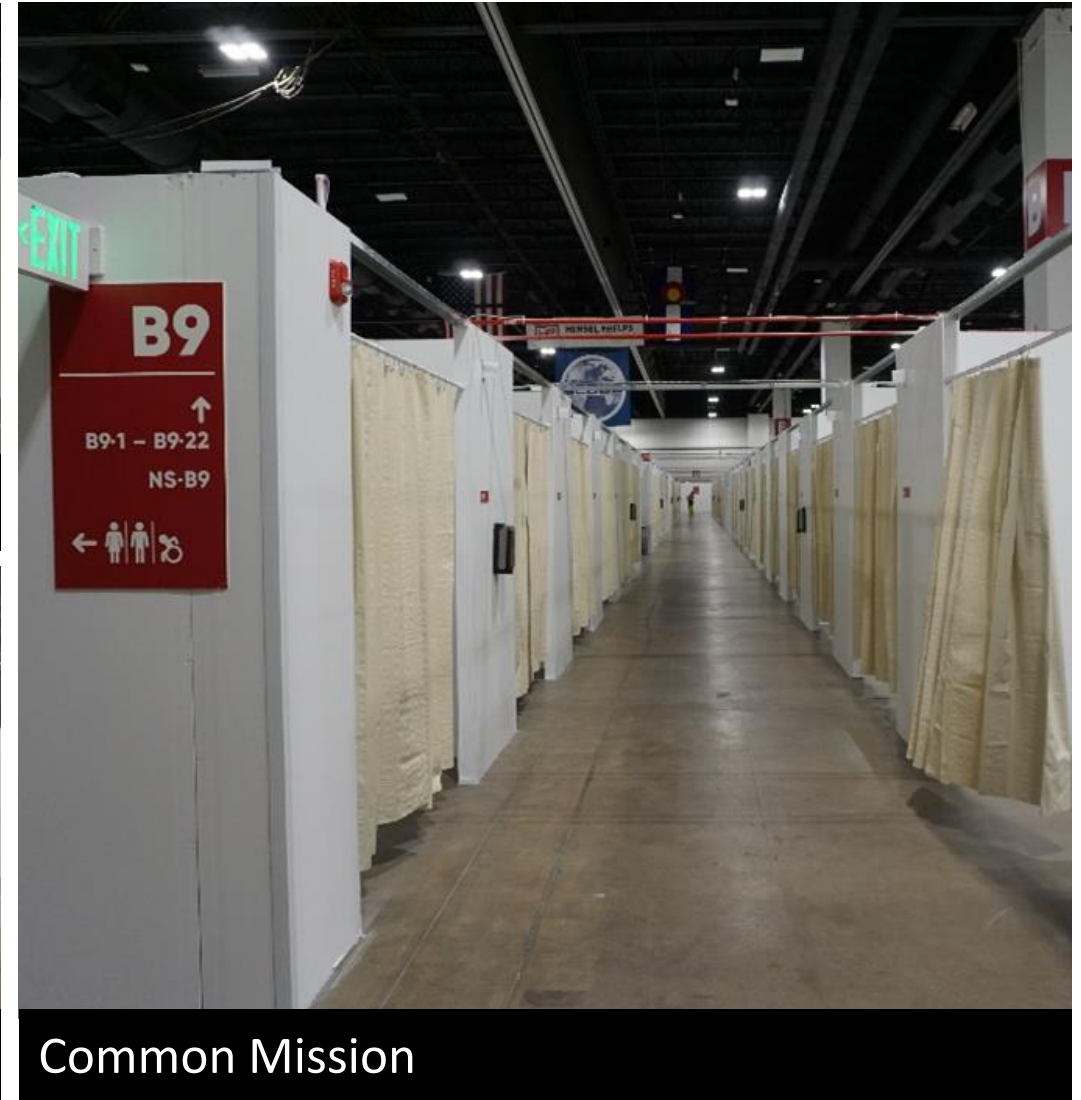
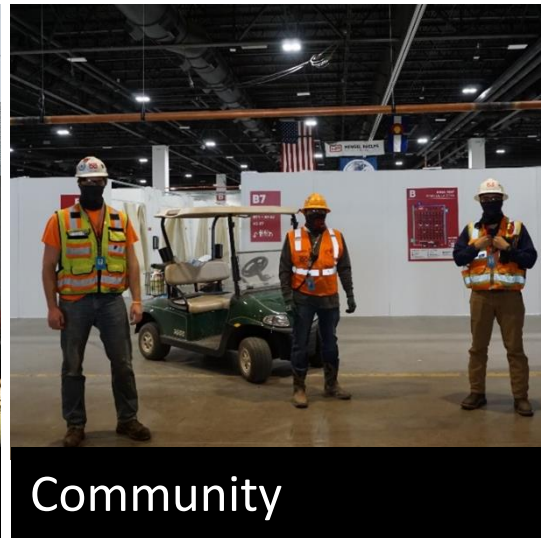
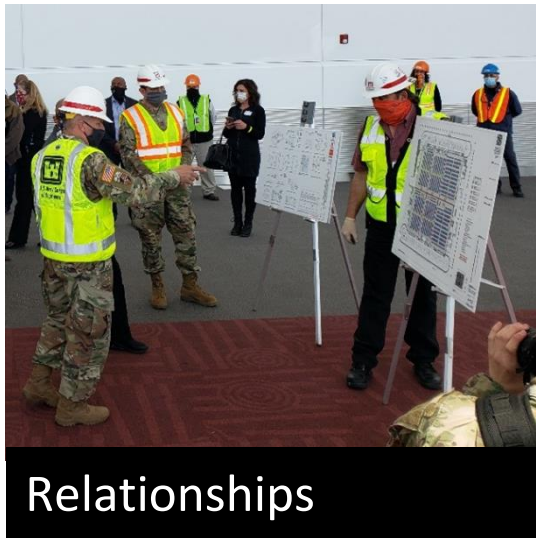
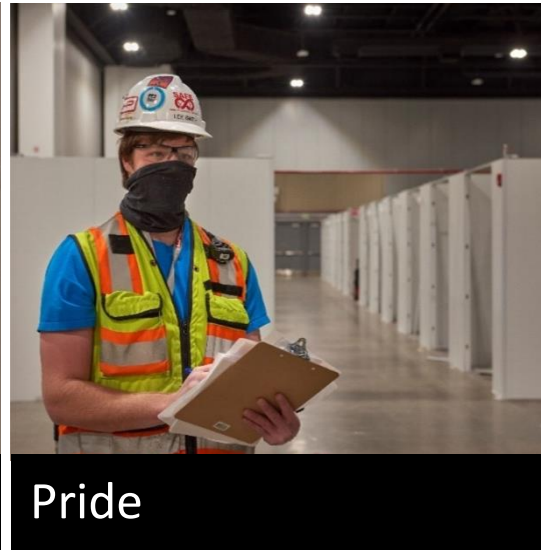
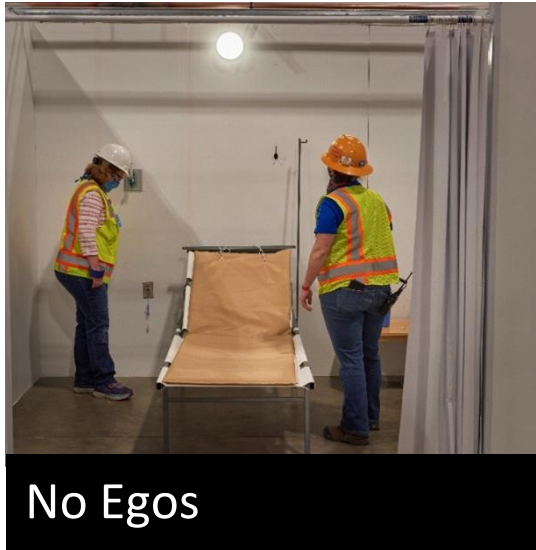
MEP Challenges

- Oxygen in each patient room (19,000-gallon LOX tank farm)
- Emergency power for patient rooms and nurse stations (500kW Generator)
- Nurse call at each patient room
- Fire alarm detection and notification required by AHJ
- Tempered sinks at each nurse station and showers (2MW power required)
- AHJ-required emergency lighting



Oxygen farm

Keys To Success



The Design – Design Day 1



The Walk Through

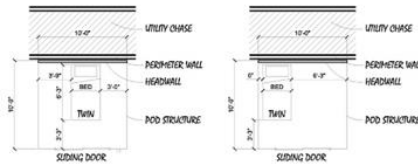
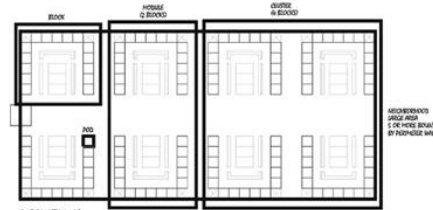


Design Meetings

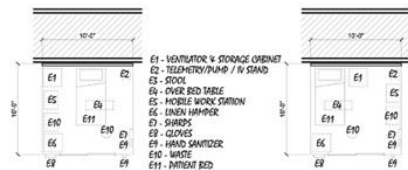
Templates



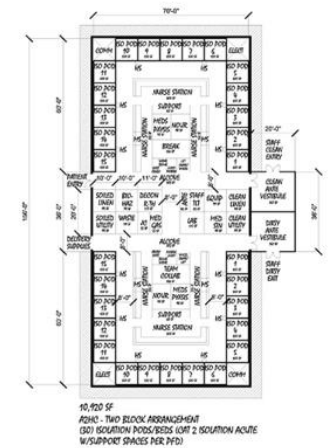
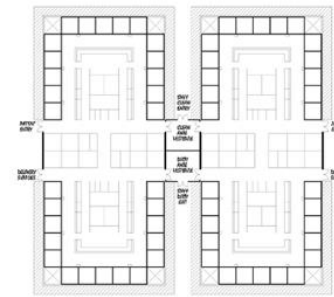
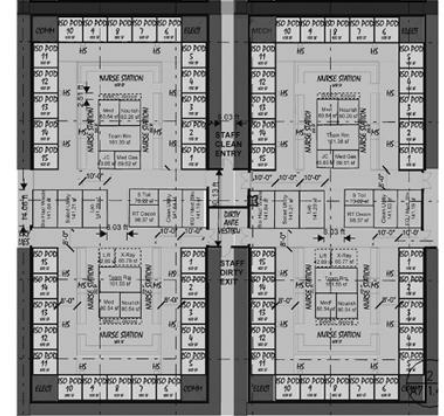
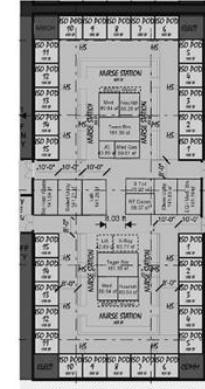
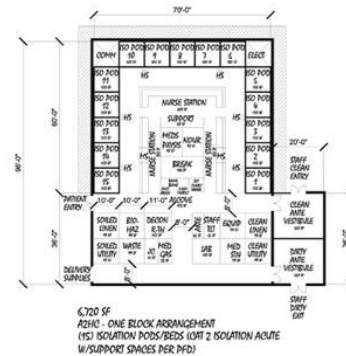
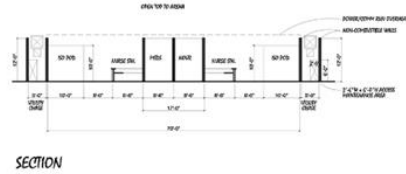
US Army Corps
of Engineers®



POD - BED CLEARANCE



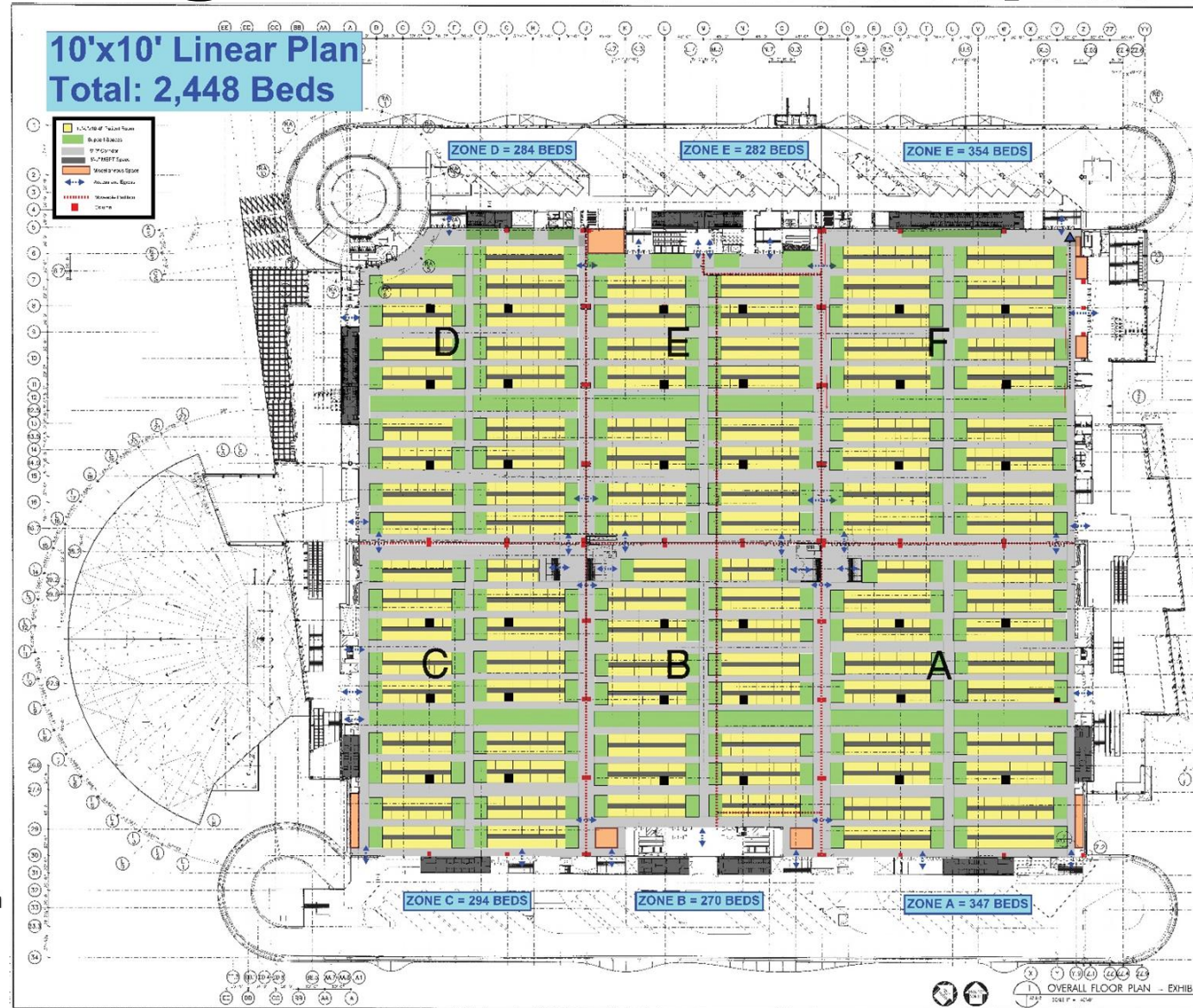
POD - EQUIPMENT



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The Design – USACE Templates



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Patient Room Mock Up 7 Apr 2020 - Nurse Call/O2 Right (Normal)

IV Hook, 60" AFF above bed at stud

Quad Rec, Switch, 40" AFF CL

Nurse Call, 24" AFF CL, Centered in-between studs

O2, 54" AFF, Outside Bed Footprint

Bed, 30"x82"

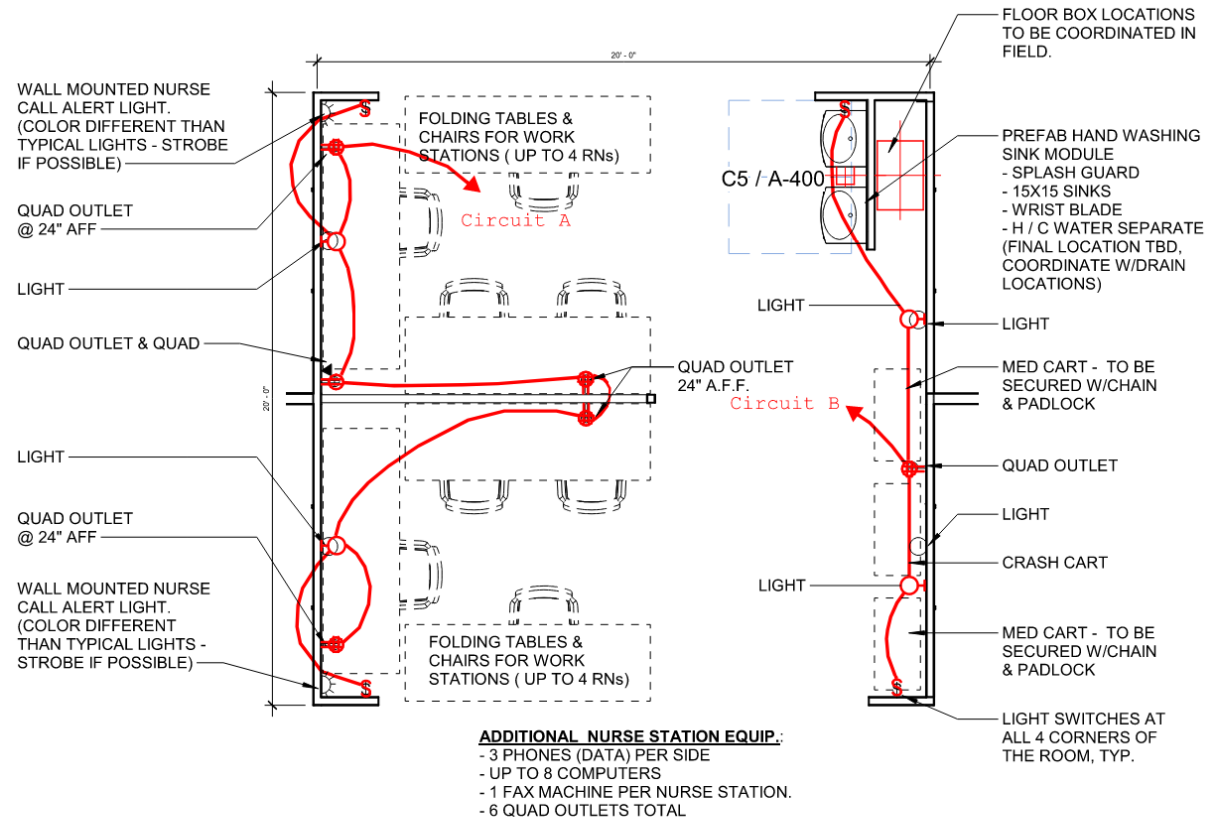
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Final Plan – Ready, Set, Go!

Execution

Design Efficiencies:

1. Architects started work in Bluebeam and converted to Revit
2. Mechanical and electrical drawings were created in Bluebeam
3. Typical room layouts were provided versus a full drawing set
4. Drawings were updated twice daily as construction progressed
5. Drawings were uploaded to a shared Teams page
6. Design Team was hands-on with Framers and MEP subcontractors making adjustments in the field – Day and night



Nurse Station

Execution

Material Procurement:

1. Project team members drove to El Paso to pick up beam detectors.
2. Vendors purchased from other vendors across the country to secure enough conduit and cable.
3. An airplane was chartered to pick up oxygen regulators from across the country. Project used all available oxygen regulators in the USA.
4. Emergency generator was reserved ahead of NTP.



25,330 Sheets of drywall



Oxygen regulator

On-Site Prefabrication

Prefabrication:

- Panelboards, conduit and cable, and below floor receptacle whips were fabricated on site ahead of installation
- O₂ and plumbing piping were fabricated on site ahead of installation



Copper
Pipe



Conduit
and
Cable

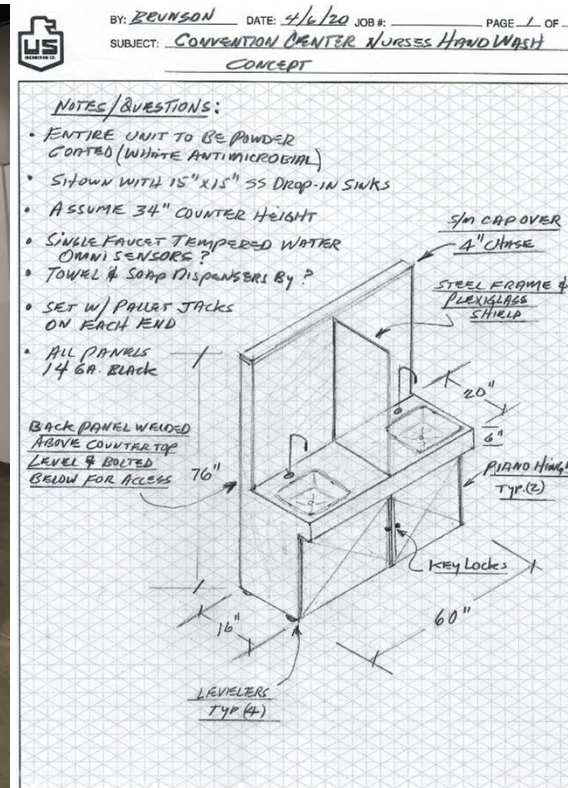


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Off-Site Pre-Fabrication



Handwashing sinks with insta-hot heaters fabricated off-site and delivered to install location



Shower skids fabricated off-site and delivered to install location



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Execution

Sign-offs:

1. A basis of design narrative was developed by design and construction team and approved by USACE within the first few days. This document served as our scope of work.
2. A/E and construction team split duties to execute sign-offs each day following directly behind construction.
3. Fire Marshall (AHJ) cooperated to provide timely approval for life safety systems.
4. USACE's involvement in decision making alongside the team



Execution

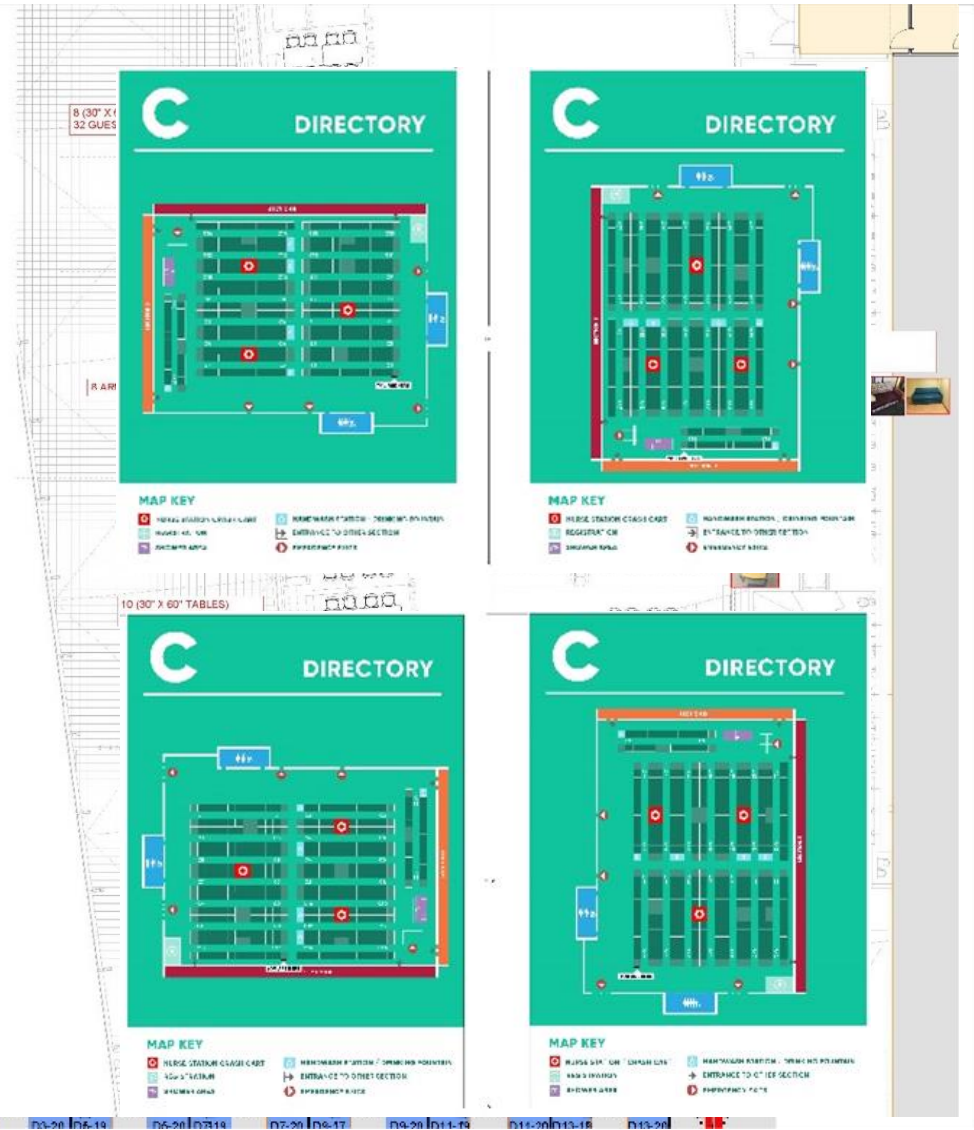
Submittals / As-Built / User Guides:

1. A single submittal package was created for each system.
 - Each submittal contained both construction drawings and material.
2. Detailed As-Built were created for hospital staff and convention center facilities personnel.



Miscellaneous Coordination:

- Crash Survival Kit
- Hand Sanitizer
- Fire Extinguisher
- Cabiners





Project Cost:

Confidential

Completion Date:

April 24, 2020

Accomplishments:

Project designed in two days, constructed in 14 days using drywall and steel studs, six miles of piped oxygen, nurse call and emergency power. Project completely framed 2,000 beds before the project was rescoped to finish 1,243 beds.

Fun Facts

Metrics	
Total Rooms	2,310
Patient Rooms Designed	2,000
Rooms Framed	1,913
MEP Rough-in Rooms	1,482
Drywall Rooms	1,482
Painted Rooms	1,431
Patient Rooms Completed	1,243
Total Rooms	2,310

Project Materials

Copper piping for O ₂	6 Miles / 14 tons
Size of liquid O ₂ Tank Farm	19,000 gallons
Sheet Rock	25,330 sheets / 810,560 sf
Studs	35,695 / 285,560 linear sf
Track	13,820 / 138,200 linear ft
Generator Capacity	500 kW
Light Fixtures	2,235
Outlets	4,790





Hand-off

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COVID-19 Alternate Care Facility, East Orange, NJ



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Presenters



Jeffrey Jones
Vice President, Buildings Group

Tetra Tech



Jeffrey Berman
Principal

Jeffrey Berman Architect



Dominick Derobertis
Sr. Vice President

Cosentini



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Learning objectives

After participating in this webinar attendees will learn how:

1. trust, teamwork and collaboration from all design, construction and trade partners, including the USACE, enabled our team to design and build an alternate care facility hospital in 14 days.
2. decisions were made based on project budget and availability of local materials.
3. to build a management team and communications structure to facilitate rapid team decision making and consensus building allowing for the team to adjust direction in response to new information and changing site and market conditions.
4. to organize continuous QA/QC, evaluation of work in place, inspection and testing of Life Safety systems to assure code compliance and proper functionality.

Presenters



Part 1 The Situation



Part 2 Organization & Execution



Part 3 Project Delivery



Part 4 Lessons Learned

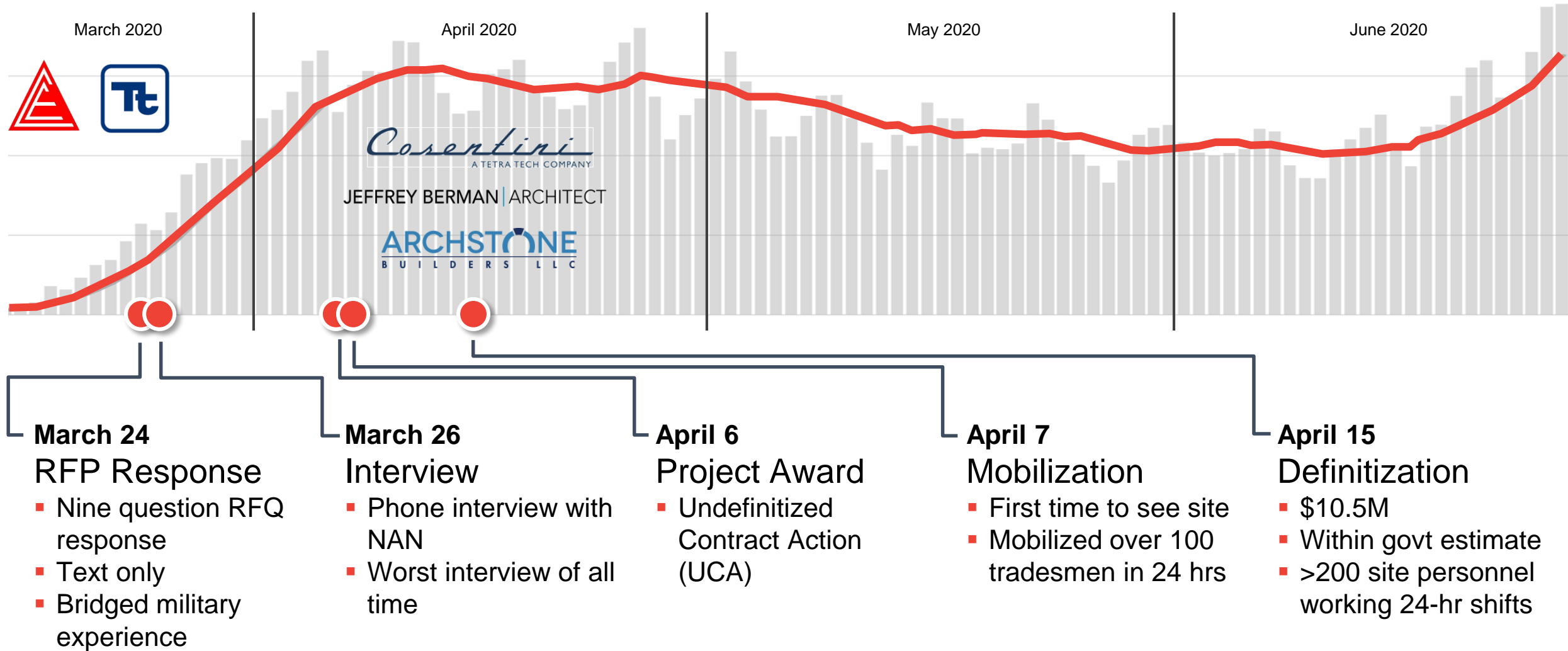


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Introduction & Timeline



Undefinitized Contract Action (UCA)



DFARS SUBPART 217.74--UNDEFINITIZED CONTRACT ACTIONS

217.7403 Policy.

DoD policy is that undefinitized contract actions shall—

- (a) Be used only when—
 - (1) The negotiation of a definitive contract action is not possible in sufficient time to meet the Government's requirements; and
 - (2) The Government's interest demands that the contractor be given a binding commitment so that contract performance can begin immediately.
- (b) Be as complete and definite as practicable under the particular circumstances.

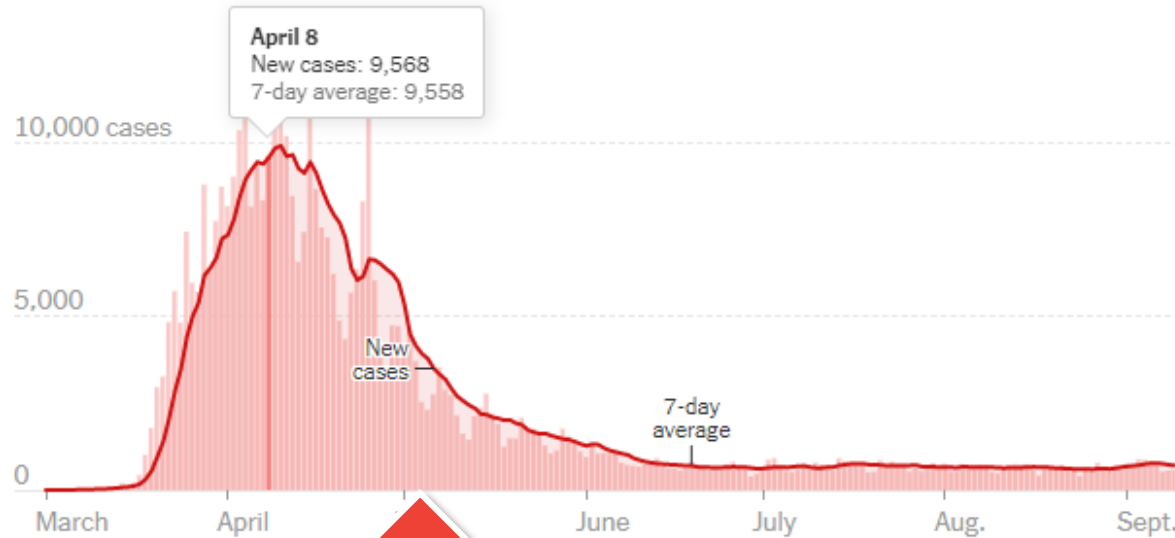


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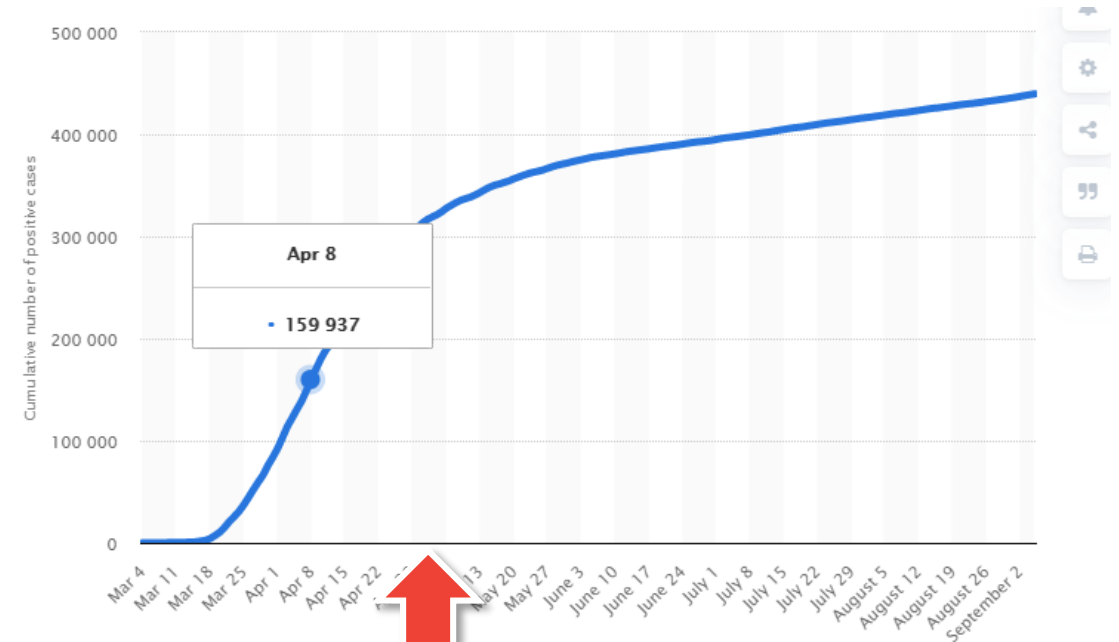
The Situation

- Largely abandoned, unmaintained building
- Need for 250 acute patient bed spaces
- Backdrop: Major COVID-19 hotspot

New reported cases by day in New York



Note: The seven-day average is the average of a day and the previous six days of data.



© Statista 2020



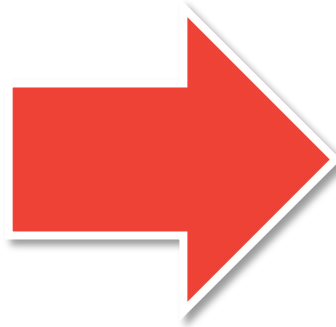
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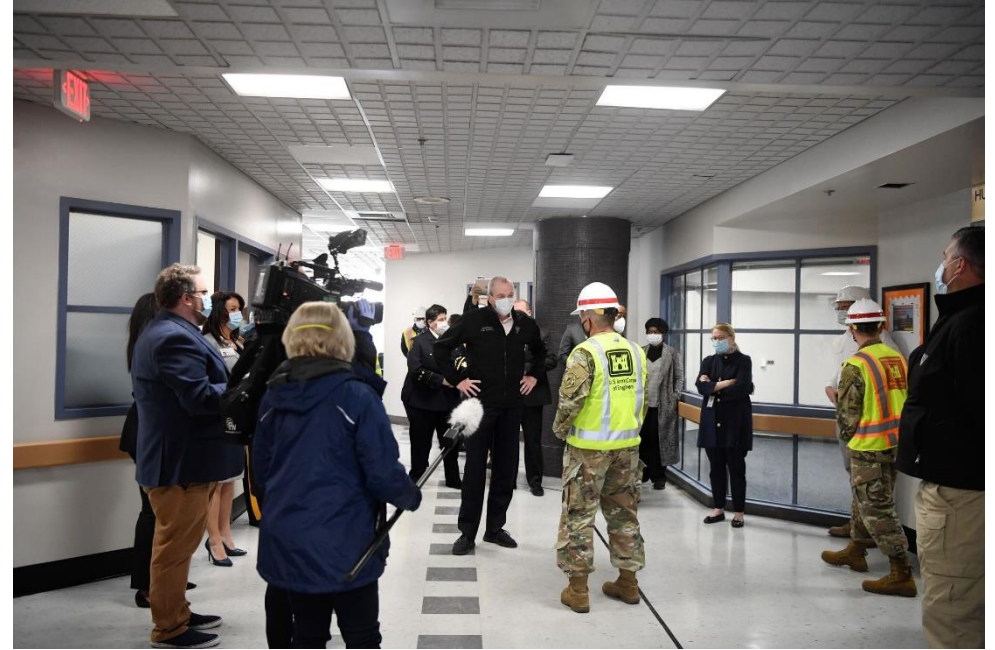
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Source: <https://www.nytimes.com/interactive/2020/04/23/upshot/five-ways-to-monitor-coronavirus-outbreak-us.html>

The Challenge



The Desired End State



Immediate response required



Unmaintained facility



Cascading system failure



Quarantine



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Getting Organized



New team



Unique contract



Vague program



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Making Decisions



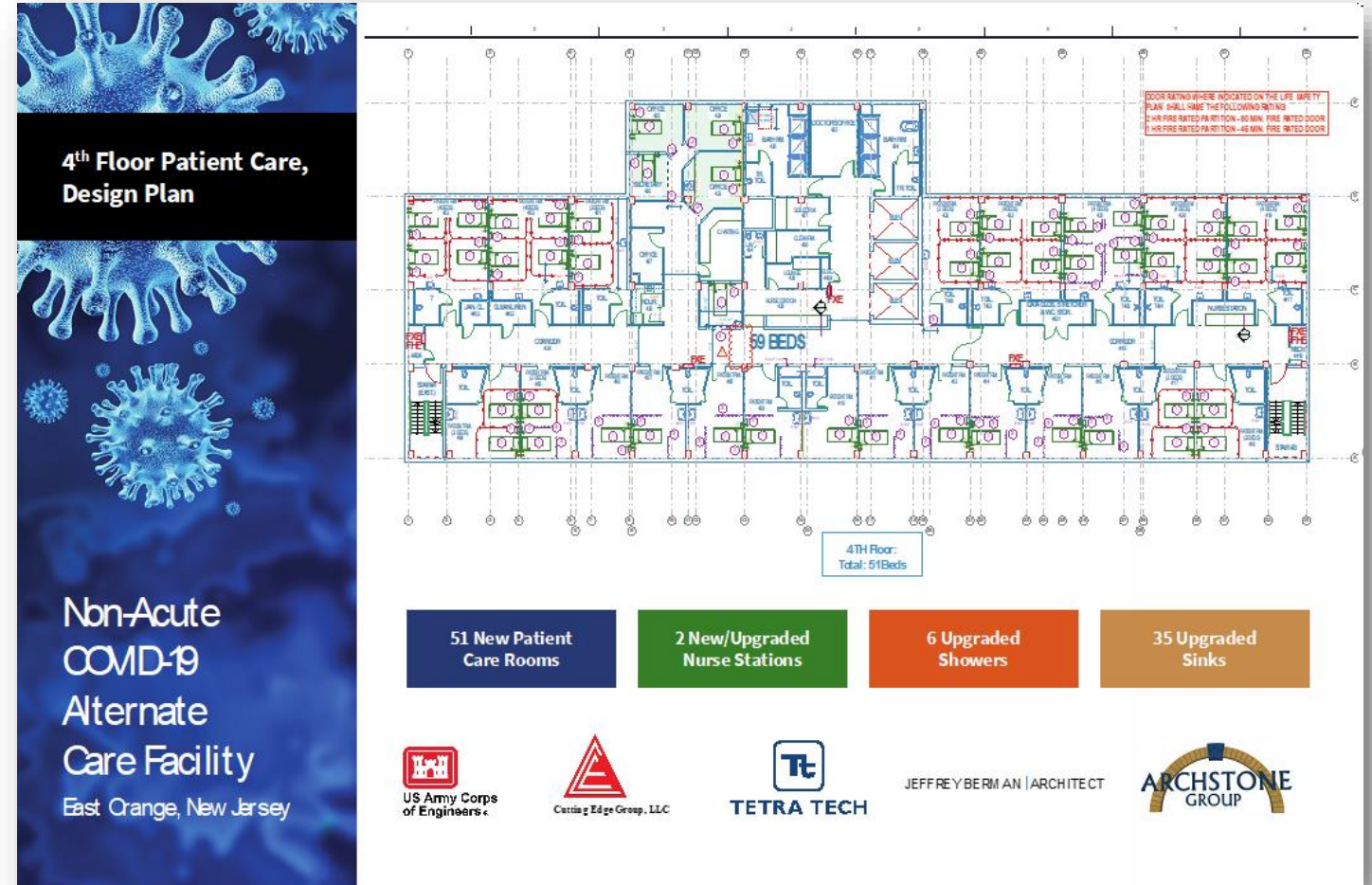
Balancing priorities



Consensus building



Reporting decisions



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Getting It Done: **Execution**



Available resources



Monitoring work



Resolving issues



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Immediate Mobilization

- On site within 2-hours of notification



Aggressive schedule

- 14-week project completed in 14-days



Conventional design approach with extreme acceleration

- Survey – design – submittals – punchlist – closeout



Code Compliance

- NJ DOH, Office of Emergency Management, Fire Marshal, NJ State Police, East Orange Hospital and University Hospital

Project Delivery



Code Compliance

LOOKING AT STANDARDS OF CARE

In this new landscape, health care industry professionals report that, often, the goal of these temporary arrangements and configurations is to provide a "sufficient level of care" as opposed to the normal "standard level of care" that health care facilities typically strive for. That does not mean that life safety and fire safety can be set aside; however, it does mean that everybody has to determine how to be flexible, where there can be some elasticity in the code requirements, and where applying the equivalency provisions has perhaps never been more important.

ADJUSTMENTS TO REGULATION

The CMS announcement also requires nonhospital buildings to be approved by the state while also working to ensure both the safety and comfort of the patients. The current and ongoing models for this include the use of hotels, motels and dormitory spaces, and the conversion of large open facilities, such as convention centers and arenas, to serve as temporary environments for providing health care under these extreme circumstances.



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Temporary Compliance Options for Code Modifications, Alternate Care Sites, and Facilities Related to Health Care

April 2020



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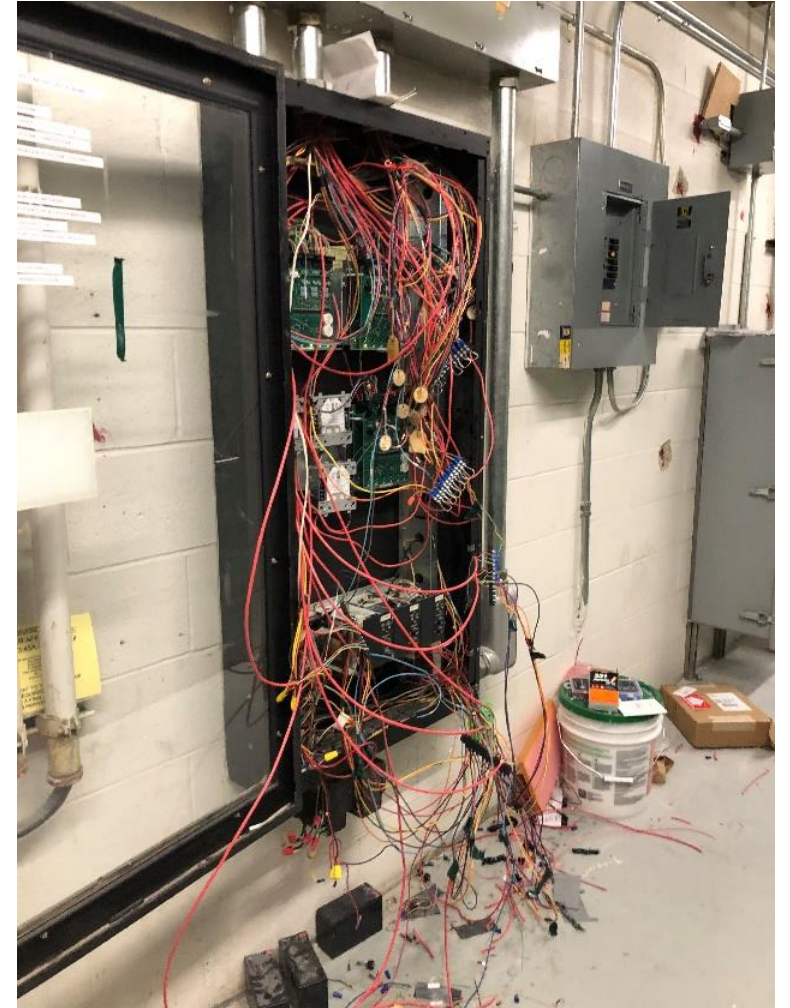
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Day 1: **Assessment**

- Review existing MEP systems
 - Building – partially occupied/partially abandoned
 - Many areas and systems in disrepair
 - PTAC units – all had to be tested
 - Building exhaust systems – not functioning
 - Existing emergency generator
 - Plumbing fixture evaluation



Day 1: Existing Equipment



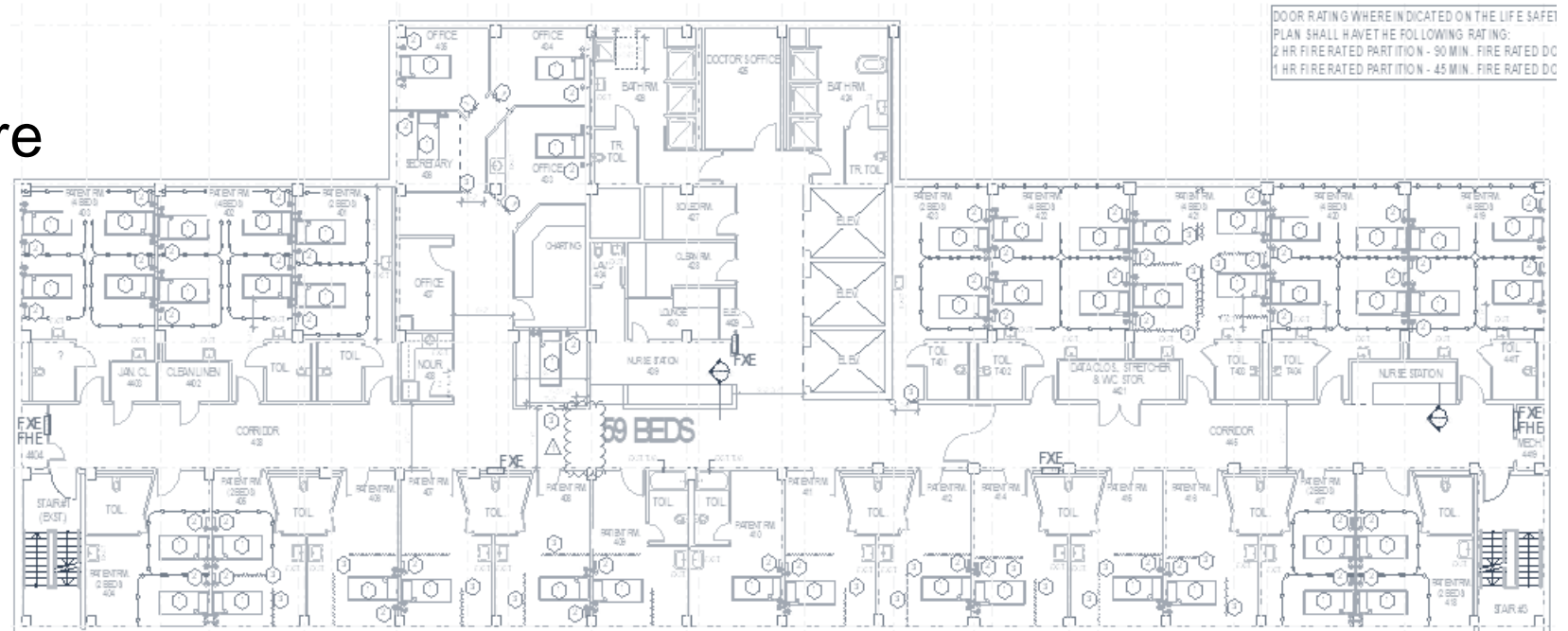
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Day 2: Design Requirements

- Determine project requirements
 - Configuration of beds and supporting spaces
 - Code requirements
 - Existing infrastructure



Day 3: Procurement/Construction

- Identify system upgrades, repairs, and additions that could be acquired and implemented within project duration.
- PTAC Units – (60) replaced
- Emergency Generator/ATS/Switchgear
- Normal/Emergency Power
 - Installed 30 miles of cable
- Plumbing
 - 123 sinks
 - 70 toilets
 - 24 showers



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Day 3: New Equipment



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Day 4+: Speed to Delivery

- Wireless nurse call system
- Modular plumbing rig for sinks
- Underground directional drilling



VL535-NB7
Necklace Pendant



VL160-2-EM-B7
Emergency Pull Station



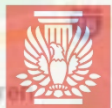
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Lessons Learned

- Locality rules the day
- Relationships matter
- Large business support of small
- Robust health and safety program
 - Continuous high-touch cleaning crew
 - Over 26,000 worker-hours in NYC Metro Area with zero Covid-19 positives



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Full Project Team



US Army Corps
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Cutting Edge Group, LLC



UNIVERSITY HOSPITAL
Newark, New Jersey



East Orange
General Hospital



TETRA TECH

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COVID-19 Rapid Response Project Delivery Case Studies

Q & A



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AIA KnowledgeNet

<https://network.aia.org/communities>

The AIA **Project Delivery Knowledge Community** (PDKC) promotes the architect's leadership role in all project delivery methods by assembling and distributing knowledge and best practices for a variety of project delivery methods, e.g. design-build (DB), integrated project deliveries (IPD), and public-private partnerships (P3).

Upcoming Courses

November 2020

Live Course - COVID-19 Rapid Response Project Delivery

When: Nov 17, 2020 from 4:00 PM to 5:30 PM (ET)

Community: Project Delivery

1.5 Hour Course = 1.5

December 2020

Live Course - Virtual Design + Construction: The Future of Project Delivery

When: Dec 8, 2020 from 2:00 PM to 3:00 PM (ET)

Community: Project Delivery

1.0 Hour Course = 1.0 LU

Visit <https://network.aia.org/projectdelivery> for more information



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THANK YOU



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