National Institutes of Health
Office of Management

Facilities Presentation to the Clinical Center Research Hospital Board (CCRHB)

by
Dan Wheeland, P.E.
Director, Office of Research Facilities

Friday, July 19, 2019

10:20 am

Building 1 Wilson Hall

Important Developments Since April 2018

- Fiscal Year 2019 funding for Buildings & Facilities increased from $128.6 million to $200 million. $200 Million was included in the 2020 President's Budget, which is expected to be approved.
- We received approximately $100M of FY19 Non-Expiring Expense Fund (NEF) resources.
- National Academies Study:
  - Fiscal Year Labor, Health and Human Services, and Education, and Related Agencies Appropriations Bill included $1 million for NIH to enter into a contract with the National Academies of Sciences, Engineering and Medicine to convene an *ad hoc* committee and prepare a report that assesses the capital needs of NIH's main campus.
  - March and May 2018: Committee attended two (2) onsite meetings with tours.
  - July and September 2018: Committee met in Washington DC with NIH staff presentations at a portion of the meeting.
  - January 2019: Final Committee meeting to begin report, followed by peer review.
  - July 2019: Draft report due.
  - Cautiously optimistic that this Committee will enhance the probability of additional facilities funding.

Ad Hoc Committee Members

Chair: Kenneth W. Kizer, M.D., M.P.H.

Distinguished Professor, Director of the Institute for Population Health Improvement (IPHI) at UC, Davis.

Internationally respected health care leader elected to the National Academy of Medicine and National Academy of Public Administration.

- **Edward J. Denton, FAIA**
  Former Vice Chancellor, Facilities Services, Campus Architect, and Chief Building Official at UC Berkeley
- **Don E. Detmer, NAM, MD, MA, FACMI, FACS**
  Professor Emeritus and Professor of Medical Education at the UVa, Charlottesville
- **Laura Kathryn Fidler, MPH**
  Senior Project Manager at AMC Strategies, LLC.
- **G. Edward (Ed) Gibson, Ph.D., P.E., M.B.A.**
  School Director and Professor of the School of Sustainability and the Built Environment (SSEBE) at Arizona State University.
- **Sanjiv B. Gokhale, P.E**.
  Professor of Civil Engineering and Director of Graduate Studies in Construction Management at the Department of Civil & Environmental Engineering, Vanderbilt Univ.
- **Michael Harber, P.E.**
  Vice President for Facilities Management at St. Jude Children's Research Hospital in Memphis, TN.
- **Kerstin Hildebrandt-Abdikarim, MSHS**
  Vice President of Research Administration, Children's Research Institute (CRI) at Children's National Health System
- **Douglas W. Kincaid, P.E.**
  President and General Manager, Applied Management Engineering, Inc.
- **Thomas L. Mitchell, Jr.**
  Senior Vice President/COO of FM3IS Associates, L.L.C., San Antonio, TX.
- **Kirk Pawlowski**
  Director and Senior Project Manager Construction Services Group, State of Washington Educational.
- **William R. Seed**
  Senior Vice President, Facility Design & Construction at Jackson Health System in FL.
- **Sarah Slaughter, NAE**
  CEO and President of the Built Environment Coalition in Cambridge, MA.
- **Philip E. Tobey, FAIA, FACHA**
  Senior Vice President of SmithGroupJJR

NAS Staff: Martin Offutt

Critical Infrastructure Projects Outside the Building 10 Complex

These First Projects Enhance Patient Safety in Cases of Regional or Local Water and Electrical Power Failure – These Projects Improve our Emergency Management Posture, Whether for Natural or Man-made Events

C101326 Industrial Water Storage (IWS)

Identified Risk/Impact: Loss of municipal domestic water supply to campus/ serious impact to all campus/hospital buildings functions.

Project Benefit / Risk Mitigation Strategy: Protect patients by providing 5 million gallons of make-up water (one full day under extreme conditions) for Central Utility Plant to generate steam and chilled water until municipal off-site supply is restored.

Funding Status: ***Funded***.

Schedule Status: Completed and Operational.

C101380 Thermal Energy Storage System (TESS)

Identified Risk/Impact: Lack of chilled water to serve hospital HVAC load during loss of normal power to campus

Project Benefit / Risk Mitigation Strategy: Increased chilled water reliability to maintain hospital operations. Acts as a 7.5 million gallon shock absorber (one full day under extreme conditions). Enables us to maintain proper temperatures and humidity levels to all patient care/infection control, meet standards and code requirement. Also, enables us to conserve energy and reduce utilities costs.

Funding Status: ***Funded***.

Schedule Status: Completed and Operational. Already "saved the day" when a chilled water line was broken on campus; the Clinical Center did not experience any impacts due to the TESS.

C100231 Black Start Generators

Identified Risk/Impact: Loss of steam generation/hot water/chilled water distribution due to power outage.

Project Benefit / Risk Mitigation Strategy: Ability to start the 23MW Cogen plant and boilers to provide steam to buildings during an area power outage and mitigate risk of freezing pipes. Ability to generate chilled water using Cogeneration and Steam driven chillers. Also Cogen can power critical patient care areas in the Clinical Center.

Schedule Status: In Design. Completion estimated: December 2020.

Funding Status: ***Funded***

C104771 Utility Vault and Patient Parking Garage

Proposed Utility Vault & Patient Parking Garage

Identified Risk/Impact: Security Risk – power supply components (normal and emergency) for Building 10/Hospital Complex are currently vulnerable due to unprotected location. The current structure offers no space to accommodate additional electrical equipment needed to support planned hospital expansion. Parking under hospital poses a security threat.

Project Benefit / Risk Mitigation Strategy: Protects vital power supply components, for current and future loads, in reinforced structure. Also, decreases parking load in current lot under Building 10.

Funding Status: ***Funded. (In April 2018, when CCRHB was last briefed, project was unfunded)***.

Project/Schedule Status: Currently soliciting proposals for a Design-Build (D-B) contract, for award in September 2019. Design and construction schedule planned for 24 months, with completion in September 2021.

Electrical Power Supply (Normal and Emergency) Replacement and Upgrade (Bldg 59/59A Replacement)

Identified Risk/Impact:

- CRC Emergency Generators and Clinical Center Switchgear are over 20 years old. Switchgear equipment is no longer manufactured; thus, replacement parts have to be custom-made.
- Technology of 480V generators stepped up to 13.8 kV distribution is outdated, requiring step-up transformers, which pose additional power supply system failure points.
- Current location is prone to flooding and poses a security risk.

Project Benefit / Risk Mitigation Strategy:

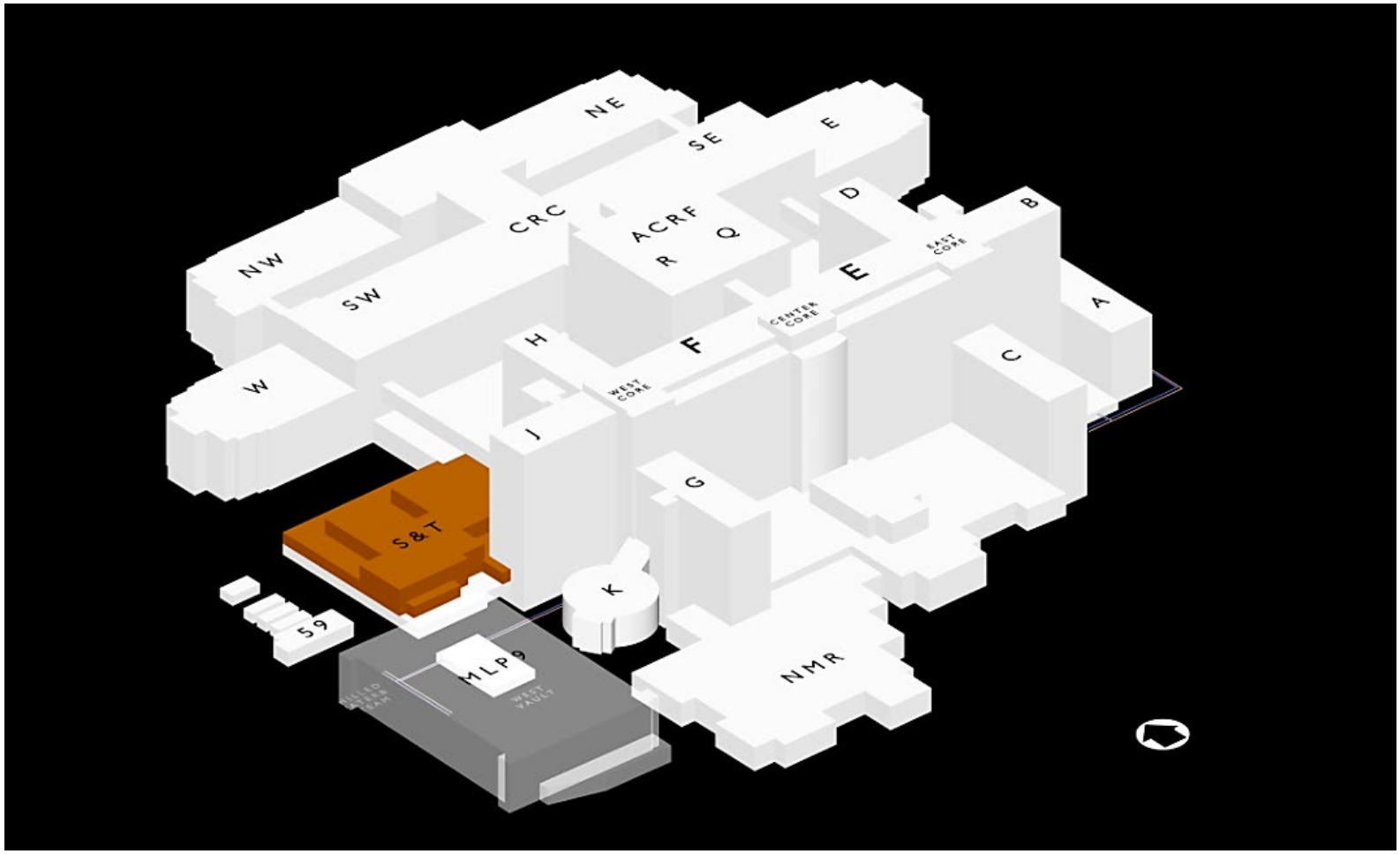
- Increased reliability of power supply by upgrading to 13.8KV generators
- Minimized failure points and improved reliability
- Generators and switchgear housed in reinforced structure in proposed new Utility Vault.

Funding Status: ORF plans to request FY2021 NEF funds for this project.

Schedule Status: Preparing Bridging Documents to render project shovel-ready, for the anticipated award of a Design-Build contract in FY2021.

Critical Projects Within the Building 10 Complex

Building 10 Complex Visual Aid



C106167 Replace 6" Diameter Heating Piping in 14th Floor of ACRF

Identified Risk/Impact: Corroded piping joints may fail causing leaks and disruption to operations.

Project Benefit / Risk Mitigation Strategy: Dramatically reduce likelihood of future floods.

Funding Status: ***Funded***

Schedule Status: Completed.

C106384 Replace Chilled Water Piping in 14th Floor of ACRF

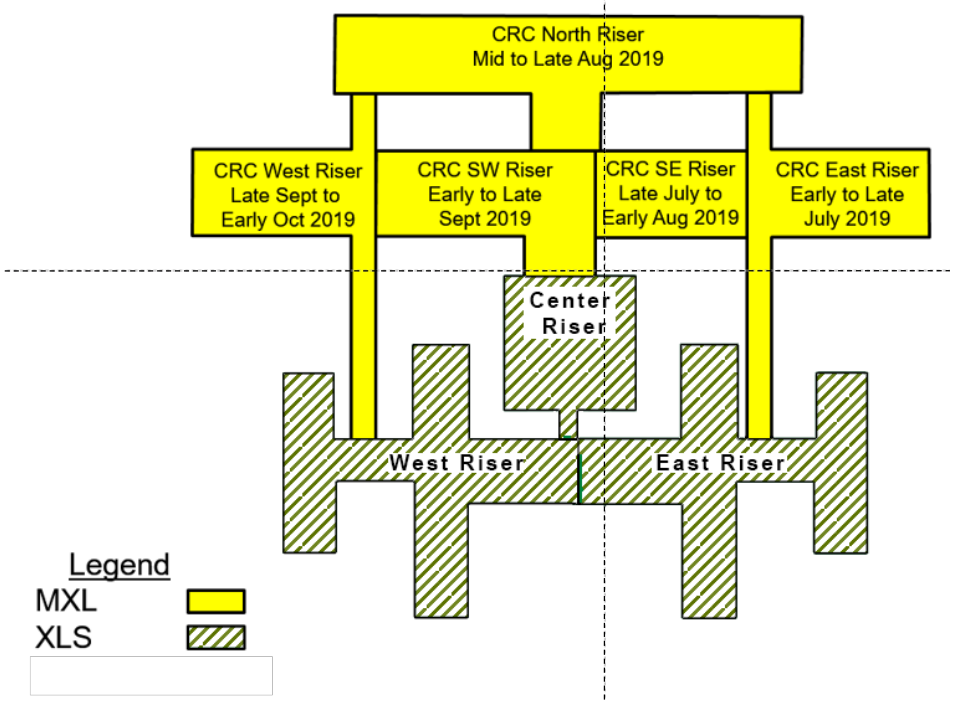
Identified Risk/Impact: Corroded piping joints may fail causing leaks and disruption to operations.

Project Benefit / Risk Mitigation Strategy: Dramatically reduce likelihood of future floods.

Funding Status: ***Funded***

Schedule Status: Completed.

C103789 Building 10 Fire Alarm Control Upgrade



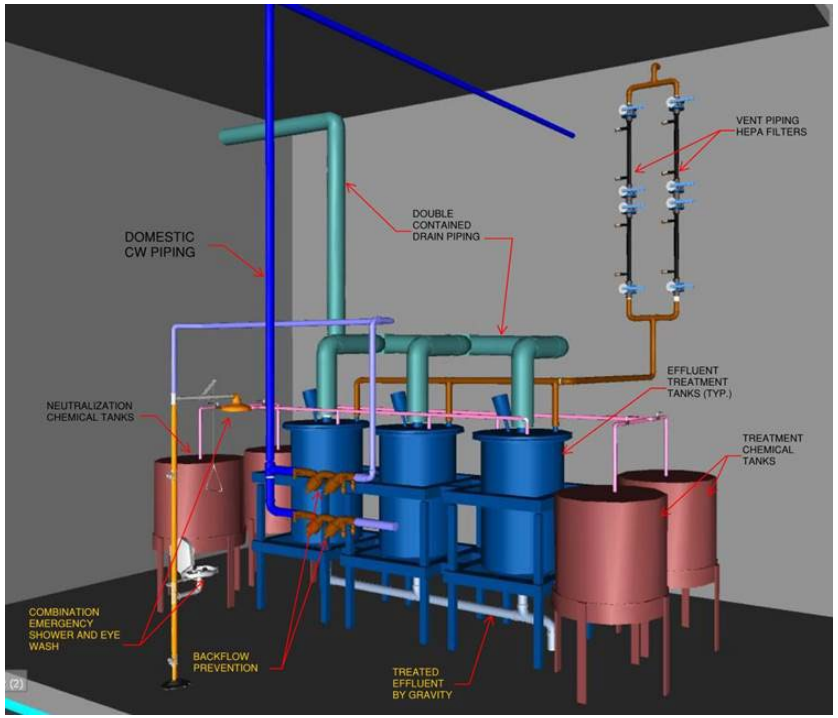
Identified Risk/Impact: Fire alarm control system equipment is no longer supported by manufacturer; difficult to obtain spare parts.

Project Benefit / Risk Mitigation Strategy: Infrastructure and life safety improvement.

Funding Status: ***Funded.***

Schedule Status: In Construction; Scheduled for completion as shown on left. Involves multiple phases (by wing and by floor).

C104250 Chemical-Based Effluent Decontamination System (EDS) for Special Clinical Studies Unit (SCSU)



Identified Risk/Impact: Ebola virus infected patients may generate nine liters of potentially infectious liquid waste per day. Original World Health Organization recommendations were to dispose of waste into sanitary sewer; however, subsequent studies have indicated that disinfection prior to discharge to sewage lines is prudent.

Project Benefit / Risk Mitigation Strategy: Improved safety and compliance. Disinfection of wastewater reduces risk of Ebola transmission, thus addressing public concern.

Schedule Status: In Construction. Estimated completion in December 2019.

Funding Status: ***Funded***

C100663 E-Wing Renovation, Including Cell Processing

Identified Risk/Impact: Outdated and inadequate facilities, negatively impacting mission accomplishment.

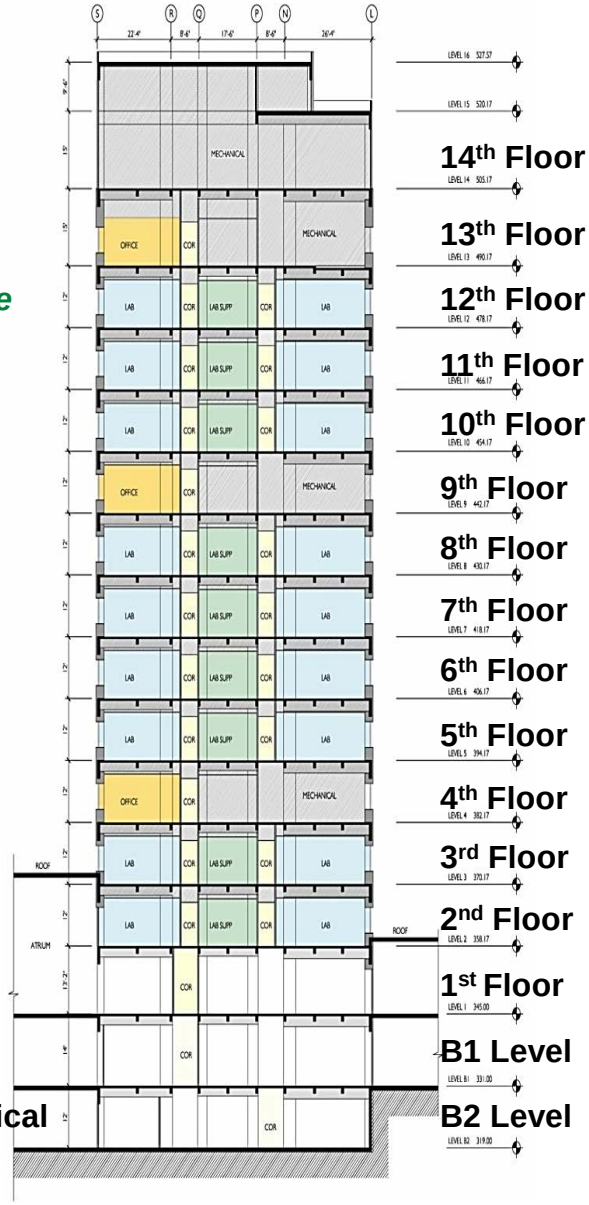
Project Benefit / Risk Mitigation Strategy: Renovated and modernized facilities to support cutting edge research.

Funding Status: ***Funded***

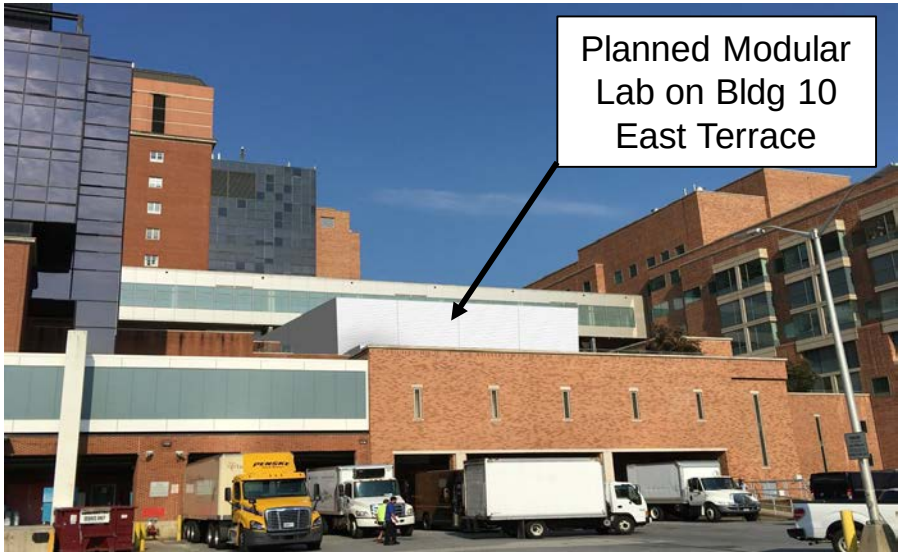
Schedule Status: In Construction phase. Estimated completion in early 2022.

C100663 E Wing Cross Section and Housing Plan

Mechanical	**14th Floor**
Mechanical	**13th Floor**
CC-DTM cGMP Suite	**12th Floor**
NIAID	**11th Floor**
NIDDK	**10th Floor**
NIDDK, Mechanical	**9th Floor**
NHLBI	**8th Floor**
NHLBI,NIMH	**7th Floor**
NHLBI	**6th Floor**
NINDS,NIDDK	**5th Floor**
NIMH, Mechanical	**4th Floor**
CC-DTM	**3rd Floor**
CC-DTM	**2nd Floor**
***CC-DTM,* WALS**	**1st Floor**
FAES, DFOM	**B1 Level**
Cagewash, Mechanical	**B2 Level**



C104935 DTM Cell Processing Modular Facility



Identified Risk/Impact: Inadequate amount of cGMP-compliant space to accomplish critical research objectives.

Project Benefit / Risk Mitigation Strategy: New facility to support DTM with additional aseptic Cell Processing and Engineering.

Funding Status: ***Funded***

Schedule Status: Design-Build contract awarded in September 2017. Currently in construction phase and Final Design review. Construction has started in January 2019. Modular units are in production and will be delivered to the site in December 2019. Projected completion in June 2020.

C105122 NCI Tumor Infiltrating Lymphocytes (TIL) Cell Processing Modular Facility

Identified Risk/Impact: Lack of available facilities to accomplish critical research objectives.

Project Benefit / Risk Mitigation Strategy: New facility to support Dr. Rosenberg.

Funding Status: ***Funded***

Schedule Status: Design-Build contract awarded. Utilities and foundation work is essentially complete. The Modular units are in production in manufacturer's warehouse and will be delivered to the site in early Fall 2019. Estimated completion in June 2020.

C103863 NCI Viral Vector & cGMP Module Trailers

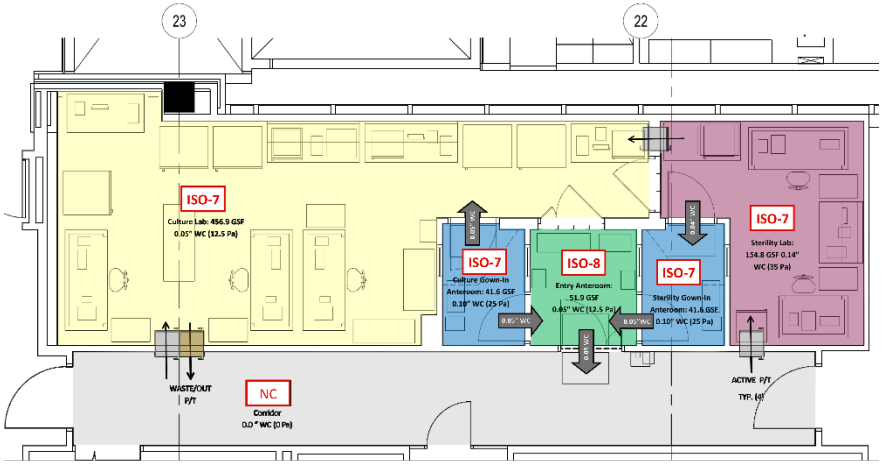
Identified Risk/Impact: Inadequate amount of cGMP space.

Project Benefit / Risk Mitigation Strategy: Increased reliability of cGMP production space. Trailers support Dr. Rosenberg's Branch.

Funding Status: ***Funded***

Schedule Status: TR-10A experienced a flood during the 2018/2019 winter and is being reconstructed in manufacturer's factory. TR-10B was completed, but there are challenges in maintaining differential pressure in the vestibule. A third party firm specializing in controls has been hired and alternative control logic will be deployed once tested.

C104603 Department of Laboratory Medicine Sterility Lab



Second Floor of ACRF

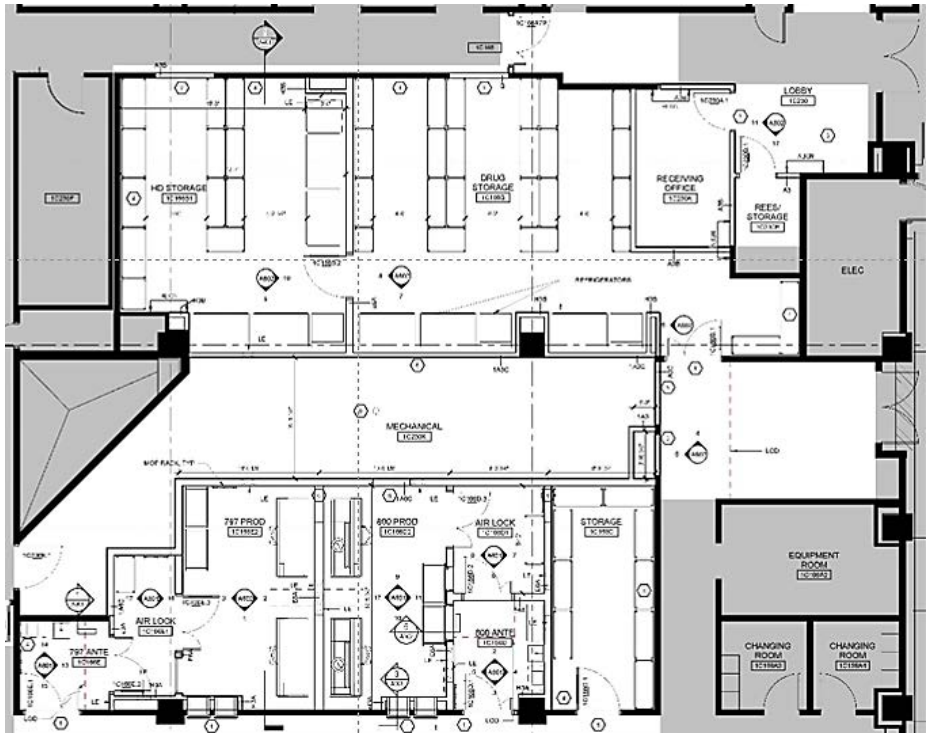
Identified Risk/Impact: Lack of sterility testing facility will affect patient safety.

Project Benefit / Risk Mitigation Strategy: Sterility testing on a wide-range of investigational new drugs will contribute to patient safety.

Funding Status: ***Funded***

Schedule Status: Design-build contract awarded. 100% design development in progress. Project completion estimated in Summer 2020.

C106585 Expansion of Interim IVAU



Identified Risk/Impact: Current capacity is inadequate.

Project Benefit / Risk Mitigation Strategy: Project will provide interim increase in IVAU capacity until we complete P-IVAU, including two each ISO 7 clean rooms with two BSCs each.

Funding Status: ***Funded***

Schedule Status: Design-build contract awarded. Commissioning/Qualification/ Validation (CQV) contract awarded. Previous occupants relocated to allow construction. Construction to be completed in April 2020; CQV scheduled for June 2020.

C103578 Building 10 Electrical Vault 10 Upgrade

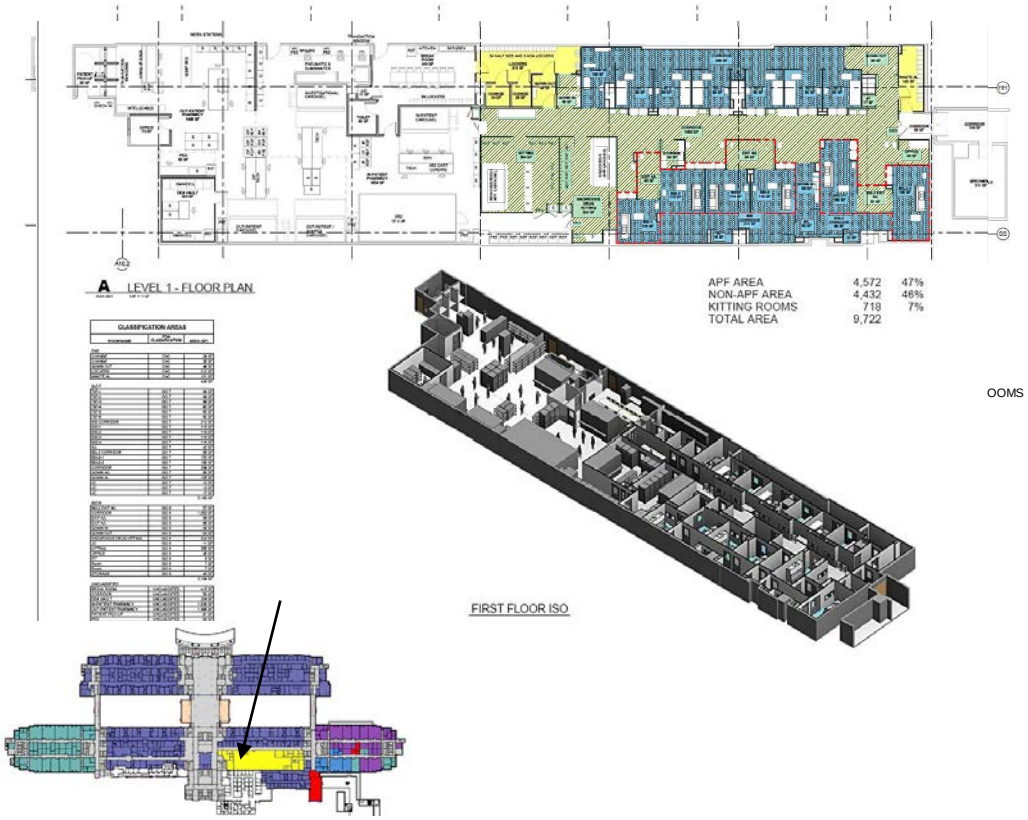
Identified Risk/Impact: Existing electrical equipment is 38 years old and end of life; increased probability of failure, poor availability of spare parts.

Project Benefit / Risk Mitigation Strategy: Improve reliability and sustainability of clinic operations and labs located in ACRF tower.

Funding Status: ***Funded with FY19 NEF funds.***

Schedule Status: Will award design-build construction contract in Sep 2019. Completion in 2022.

C105559 Pharmacy and Permanent Intravenous Admixture Unit (P-IVAU) Renovation



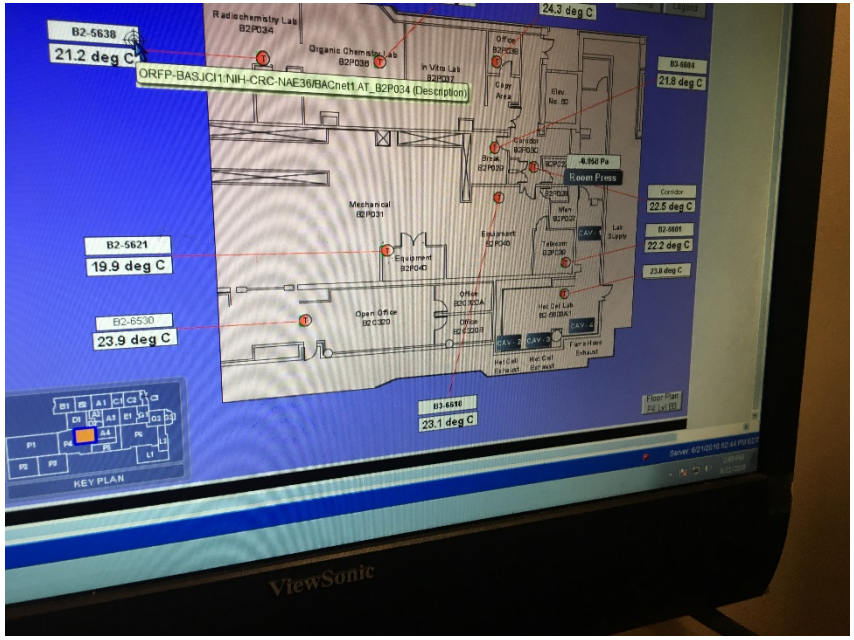
Identified Risk/Impact: Interim IVAU is only temporary, is inadequate in size and there is no backup plan in case of a facility emergency. Will involve a new penthouse to house dedicated air handling equipment.

Project Benefit / Risk Mitigation Strategy: Improved safety and compliance.

Funding Status: ***Funded***.

Schedule Status: Plan is to award design-build contract in September 2019. Estimated completion of construction in January 2021, followed by CQV in April 2021 and relocation in May 2021.

C101700 Replace CRC BAS



Identified Risk/Impact: Building Automation System (BAS) for the CRC is no longer supported by manufacturer, parts are difficult to find, and the system does not meet modern information system security standards making it potentially vulnerable to cyber intrusions.

Project Benefit / Risk Mitigation Strategy: Improved temperature and humidity control.

Funding Status: ***Funded***

Schedule Status: Design-Build contract to be awarded in FY20; completion in July 2023.

C100883 Radiopharmacy & Biologics Radiolabeling Project

- **Identified Risk/Impact:** The existing facility was deemed to be insufficient to meet FDA and USP regulatory standards for combined production of both sterile compounding and “cell labeling” work. Project will ensure NIH meets all applicable regulations in order to provide patient safety and workforce safety.
- **Project Benefit / Risk Mitigation Strategy:** Improved patient safety and regulatory compliance. Creating a facility that will allow both radiopharmaceutical and biologics radiolabeling work with secure access and properly cascading/pressurized rooms of increasing levels of cleanliness with work will improve patient safety.
- **Funding Status:** Submitted for FY20 B&F funding.
- **Schedule Status:** Completed User Requirements Specification (URS) and schematic layout forwarded to the FDA . Type C meeting with FDA scheduled for July 17, 2019. Outcome of this meeting will determine follow on activities and associated project timeframe.

C103157 Surgery, Radiology and Laboratory Medicine (SRLM) Building, including Catheterization Lab and Interventional Radiology

Looking from north to south

Looking from west to east

Identified Risk/Impact: Clinical Center Departments of Perioperative Medicine, Laboratory Medicine, Radiology and Imaging Sciences, and the NHLBI Cardiac Catheterization Program are housed in 1980-era obsolete space with mechanical, electrical and plumbing infrastructure that cannot be economically upgraded.

Project Benefit / Risk Mitigation Strategy: Safe, compliant, maintainable and flexible facilities to support cutting edge research and optimal patient care.

Funding Status: FY20 NEF funds requested.

Schedule Status: Programming has been completed. Preparing Bridging Documents to render project shovel-ready, for the anticipated award of a Design-Build contract in FY2020.

Summary

- The projects described will contribute to patient safety, the environment of care and life safety.
- We anxiously await the results of the National Academies report. We are cautiously optimistic that this report will convince decisionmakers that 1) quality buildings are required in order to conduct safe, reproducible biomedical research; and 2) funding needs to be identified for the SRLM project