ID: TH207

Title: A Tower, A Bridge, A Landmark: Three New York Laboratories

Date: Thursday, June 21, 2018

Time: 7:30 AM – 9:00 AM

LU: 1.50

Program Summary

Have you ever stopped to consider how life sciences and clinical care facilities contribute to the social, economic, and intellectual health of cities? The contribution of such facilities is further magnified when they incorporate public spaces for community engagement.

This session serves as its own space for engagement as you join your peers for an invaluable look at the phenomenon through New York City's centers of biomedical research and clinical care.

Don't miss the chance to hear directly from architect panelists as they share the innovative urban design strategies employed to integrate three biomedical facilities into the dense urban fabric of the city.

Learning Objectives

A. Discover how building configuration and massing strategies—horizontal, vertical, or adaptive re-use—influence research facility design and see how to work within the constraints of each.
B. Learn how zoning prerequisites impact research facility design and how early negotiations and consensus building—within an institution and with external agencies and authorities—can put goals within reach.
C. Gain an understanding of how integrated planning of final designs and construction phasing benefits the process as well as the final occupied building.
D. Begin identifying the options large urban institutions have before, during, and after design to facilitate resilient, sustainable structures that support research.

Speakers:

- Robert Easton, Moderator
- Todd Schliemann FAIA
  Design Partner, Ennead Architects
- Paul Broches FAIA
  Partner, Mitchell Giurgola Architects
- Jay Bargmann FAIA
  Vice President, Rafael Viñoly Architects

A Tower, A Bridge, A Landmark: Three New York Laboratories

Course Number TH207
Thursday, June 21, 2018, 7:30 AM – 9:00 AM
Learning Units 1.50

A'18 AIA Conference on Architecture 2018 June 21-23, New York City

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Questions related to specific products and services may be addressed at the conclusion of this presentation.

A'18 AIA Conference on Architecture 2018 June 21-23, New York City

PRESENTATION AGENDA

Overview of Biomedical Research in New York City
Robert Easton, Moderator
Co-Chairman, Bionest Partners, New York, New York

The Tower: Weill Cornell Medicine, Belfer Research Building
Todd Schliemann FAIA
Design Partner, Ennead Architects

The Landmark: The Rockefeller University, Collaborative Research Center
Paul Broches FAIA
Partner, Mitchell Giurgola Architects

The Bridge: The Rockefeller University, The Rockefeller University
Jay Bargmann FAIA
Vice President, Rafael Viñoly Architects

Panel Questions & Discussion with Audience
Moderator & Panel

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

LEARNING OBJECTIVES

Discover how building configuration and massing strategies—horizontal, vertical, or adaptive re-use—influence research facility design and see how to work within the constraints of each.

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A'18 AIA Conference on Architecture 2018
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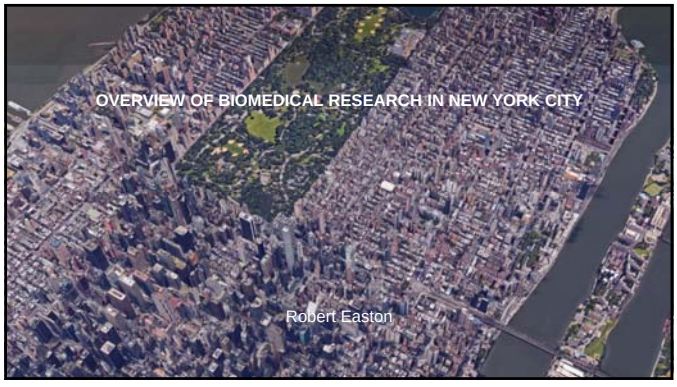
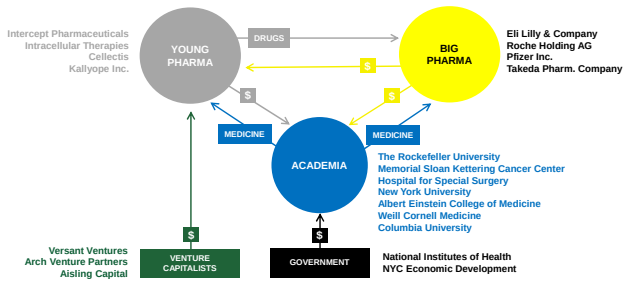


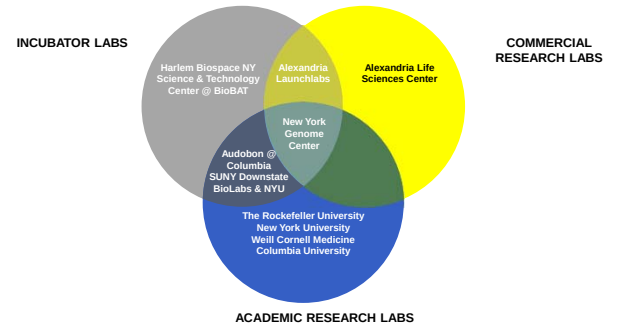
MAJOR PLAYERS OF BIOMEDICAL RESEARCH IN NEW YORK CITY

7



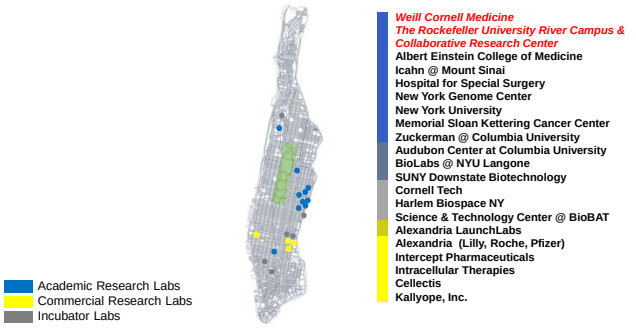
MAJOR SITES OF BIOMEDICAL RESEARCH IN NEW YORK CITY

8



MAJOR SITES OF BIOMEDICAL RESEARCH IN MANHATTAN

9



MAJOR ACADEMIC RESEARCH LABS IN THE UPPER EAST SIDE

10

Weill Cornell Medical Center
The Rockefeller University
Other Research Institutions

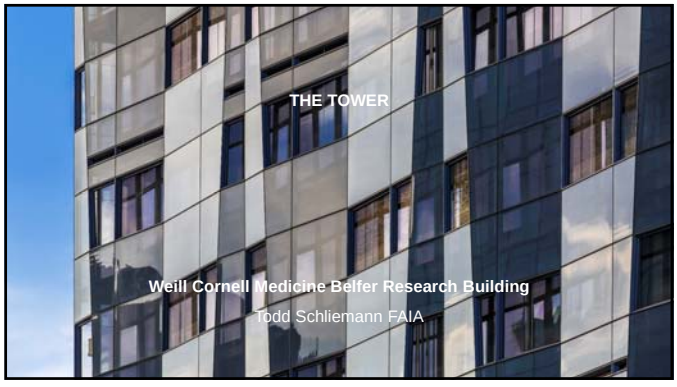
A TOWER, A BRIDGE, A LANDMARK: THREE NEW YORK LABORATORIES

11

1 THE TOWER
Weill Cornell Medicine,
Belfer Research Building

2 THE LANDMARK
The Rockefeller University,
Collaborative Research Center

3 THE BRIDGE
The Rockefeller University,
Stavros-Niarchos Foundation
David Rockefeller River Campus



WEILL CORNELL MEDICINE BELFER RESEARCH BUILDING Project Overview

13

Completed
2014

Area
476,000 square feet

Master planning for a new Weill Cornell Campus

Zoning approval process with variances to achieve research programmatic need

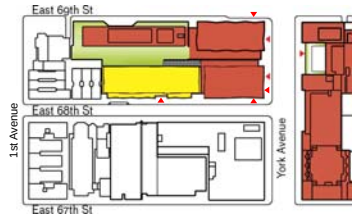
Programming, planning, and design for collaboration

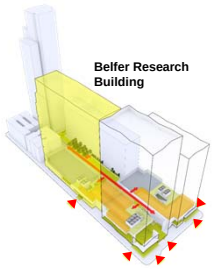
Sustainability initiatives to achieve LEED Gold

Construction challenges on a dense urban site

WEILL CORNELL CAMPUS SITE PLAN & BUILDING CONNECTIONS DIAGRAM

14

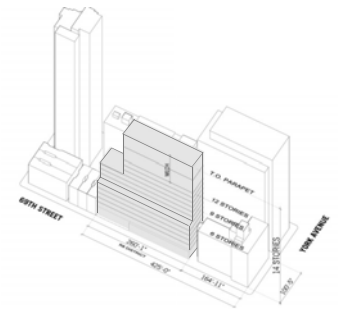




New Campus Green
Weill Cornell Campus / NY Presbyterian Hospital
Belfer Research Building

ZONING APPROVAL PROCESS & REQUIRED VARIANCES

15



Complying Building
14 Stories, including 2 mechanical
9 Laboratory Floors

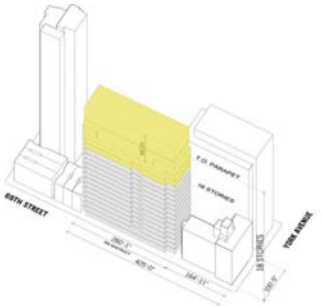
Metrics

FAR	6.5
GSF	318,050
ZSF	169,754
ASF	144,835
ASF, Lab	89,700
PI, Total	76-100

Laboratory Floor Plate Size
Floors 3-6 17,030 GSF (~8 researchers)
Floors 7-9 13,1300 GSF (~6 researchers)
Floors 10-12 10,100 GSF (~3-4 researchers)

ZONING & VARIANCE APPROVAL PROCESS

16



Approved Building
18 Stories, including 2 mechanical
13 Laboratory Floors

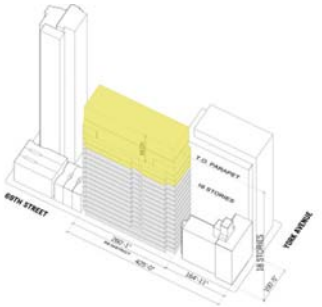
Metrics

FAR	12.41
GSF	476,069
ZSF	324,153
ASF	270,519
ASF, Lab	199,462
PI, Total	104-140

Laboratory Floor Plate Size
Typical Floor 21,187 GSF (~10 researchers)

ZONING & VARIANCE APPROVAL PROCESS

17



NYC Board of Standards & Appeals Variances Granted

Floor Area	Permitted – 169,754 SF Approved – 331,945 SF
Lot Coverage	Permitted – 65% Maximum Approved – 92%
Front Height	Required – 20'-0" @ 85' Approved – No Front Setback
Side Yard	Required – 8' Wide Approved – 5' Wide
Rear Yard	Required – 30'-0" Above 23' Approved – 15'-0" Above 23'

ZONING & VARIANCE APPROVAL PROCESS

18

Complying Building – Floors 4-6

NYC Zoning restricts floor size / requires setbacks

- ~144,000 ASF total research program
- ~17,030 GSF per typical lab floor
- Accommodates ~8 researchers per floor
- Divides researchers into two small groups remotely located
- Distance limits research collaboration and restricts scientific discovery

Approved Building – Floors 3-16

Labs require large, deep, repetitive floors

- ~200,000 ASF total research program
- ~22,000 GSF per typical lab floor
- Accommodates ~10 researchers per floor
- Large open lab for flexibility in research assignment
- Research offices located along a common corridor

ZONING & VARIANCE APPROVAL PROCESS

19

Complying Building – Floors 7-9

NYC Zoning restricts floor size / requires setbacks

- ~144,000 ASF total research program
- ~13,130 GSF per floor
- Accommodates ~6 researchers per floor
- Divides researchers into two small groups remotely located
- Distance limits research collaboration and restricts scientific discovery

Approved Building – Floors 3-16

Labs require large, deep, repetitive floors

- ~200,000 ASF total research program
- ~22,000 GSF per typical lab floor
- Accommodates ~10 researchers per floor
- Large open lab for flexibility in research assignment
- Research offices located along a common corridor

ZONING & VARIANCE APPROVAL PROCESS

20

Complying Building – Floors 10-12

NYC Zoning restricts floor size / requires setbacks

- ~144,000 ASF total research program
- ~10,130 GSF per floor
- Accommodates 3-4 researchers per floor
- Creates undesirable space assignments
- Limits collaboration
- Requires building systems transfers

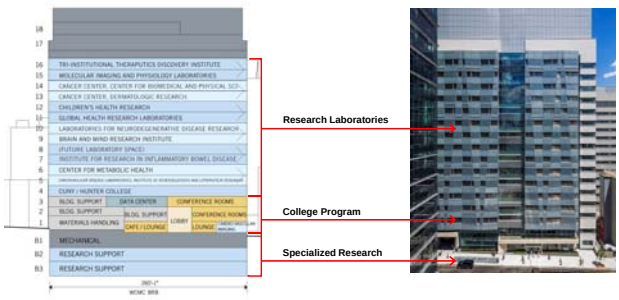
Approved Building – Floors 3-16

Labs require large, deep, repetitive floors

- ~200,000 ASF total research program
- ~22,000 GSF per typical lab floor
- Accommodates ~10 researchers per floor
- Large open lab for flexibility in research assignment
- Research offices located along a common corridor

BUILDING PROGRAM Disease-Based Organization Targeted Toward Researcher Recruitment

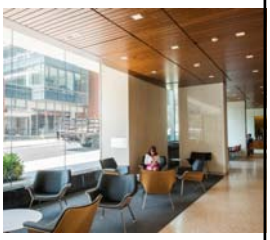
21



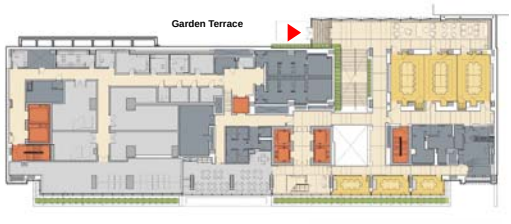
FIRST FLOOR Building Entrance, Welcome Lounge, Loading Dock, Mechanical Space 22

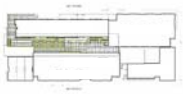
Building Systems	**22,700 GSF**
Vertical Circulation	9,140 NSF
Building Support	40% Efficiency
College Program	
Corridor	

FIRST FLOOR Building Entrance & Welcome Lounge 23



SECOND FLOOR Conference Center, Skylight Lounge & Campus Green 24



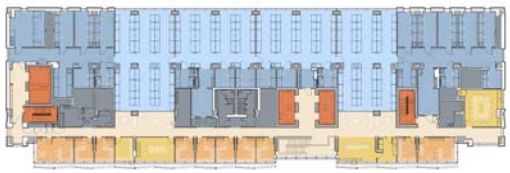


Building Systems	**21,164 GSF**
Vertical Circulation	11,305 NSF
Building Support	53% Efficiency
College Program	
Corridor	

SECOND FLOOR View of Double Height Lobby 25

SECOND FLOOR Skylight Lounge & Campus Green 26

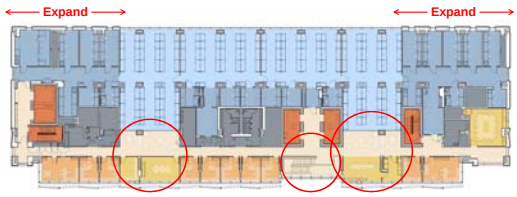
LABORATORY PLANNING Modified Laminated Plan Provides Building Transparency 27



Building Systems
Vertical Circulation
Office
Conference
Lab
Lab Support

21,200 GSF / Floor
15,400 NSF
73% Efficiency
~10 PI Groups / Floor
1 Group = PI + 8 Researchers

LABORATORY PLANNING Connecting Stair, Collaborative Lounges, and Flexibility to Expand 28



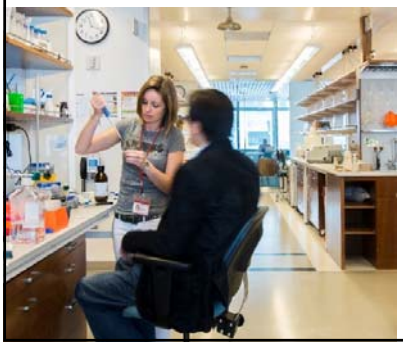
Building Systems
Vertical Circulation
Office
Conference
Lab
Lab Support

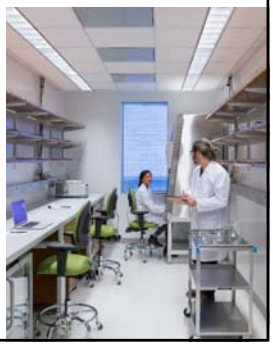
LABORATORY PLANNING Building Transparency & Connecting Floors 29

TYPICAL LABORATORY FLOOR Wet-bench Lab, Office Corridor & Collaborative Lounge 30

TYPICAL LABORATORY FLOOR Wet-bench Open Lab with Workstations in the Lab 31

TYPICAL LABORATORY FLOOR Wet-bench Lab with View to Offices & Lab Support Space 32

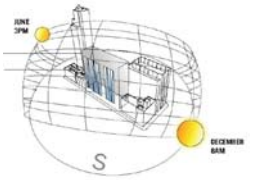




TYPICAL LABORATORY FLOOR Interconnecting Stairs & Lab Entry Lounge 33

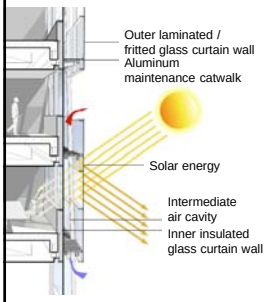
HIGH PERFORMANCE FAÇADE Double-skinned Curtain Wall on South Facade 34

BELFER RESEARCH BUILDING



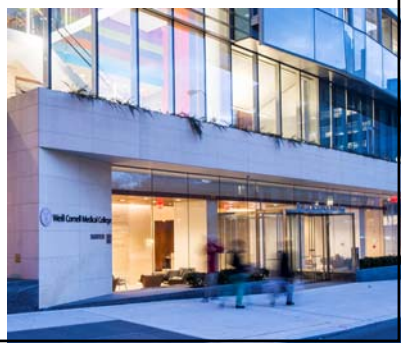
WEILL GREENBERG CENTER

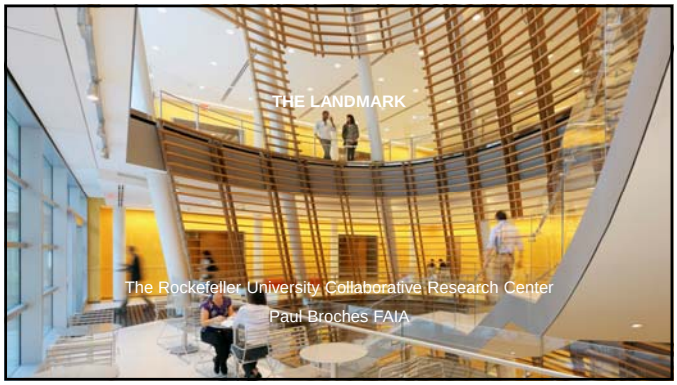
HIGH PERFORMANCE FAÇADE Double-skinned Curtain Wall, Segmented for Passive Ventilation 35



SITE LOGISTICS & VERTICAL CONSTRUCTION 36

WEILL CORNELL MEDICINE BELFER RESEARCH BUILDING 37





THE ROCKEFELLER UNIVERSITY COLLABORATIVE RESEARCH CENTER Project Overview 39

Brief History of The Rockefeller University Campus Development 1901 – 2012

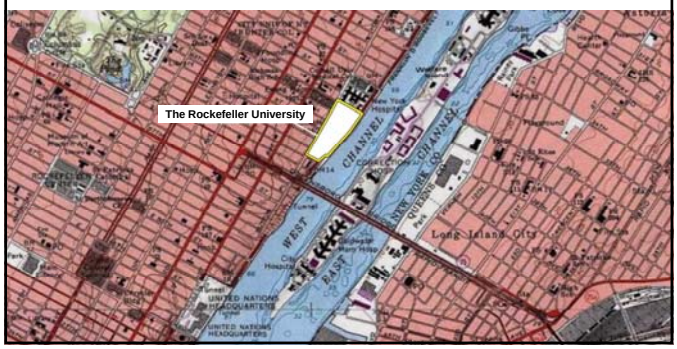
Comparative Analysis of new construction vs. adaptive re-use

Laboratory concept and collaboration strategy

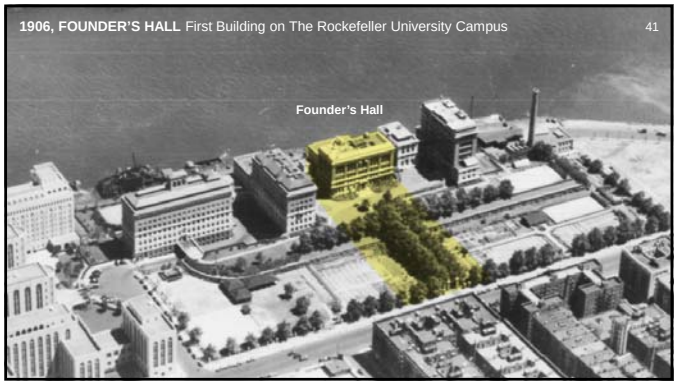
Construction challenges with phased implementation and adaptive reuse

The CRC lab environment and collaborative culture

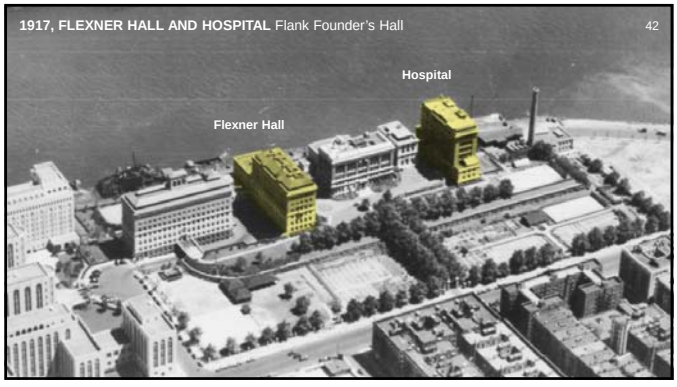
1901, THE ROCKEFELLER UNIVERSITY CAMPUS FOUNDED 40



1906, FOUNDER'S HALL First Building on The Rockefeller University Campus 41

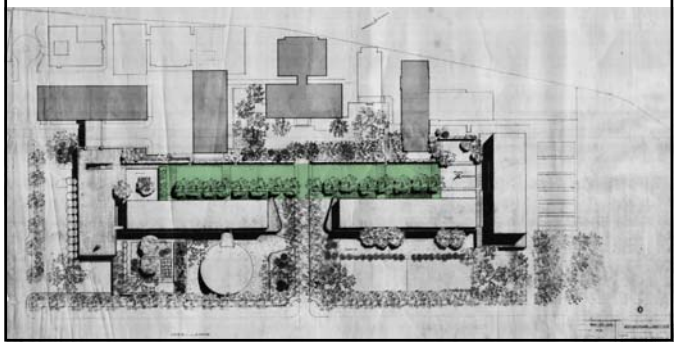


1917, FLEXNER HALL AND HOSPITAL Flank Founder's Hall 42

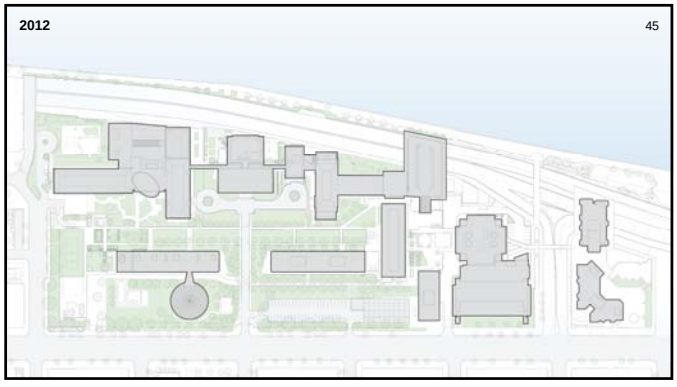


1930, SMITH HALL Constructed with the Same Floor-to-Floor Levels as Flexner 43

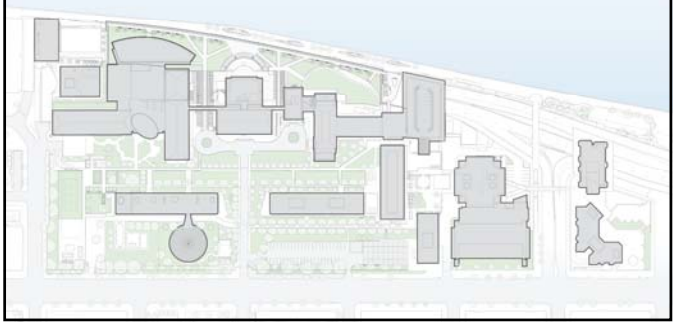
1950s, CAMPUS ESPLANADE & PEDESTRIAN SPINE Dan Kiley Design 44



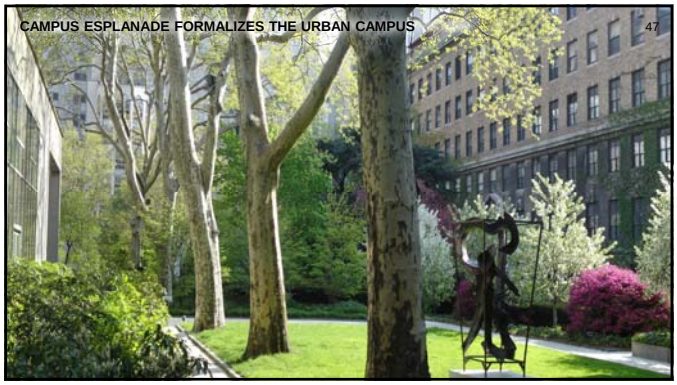
2012 45



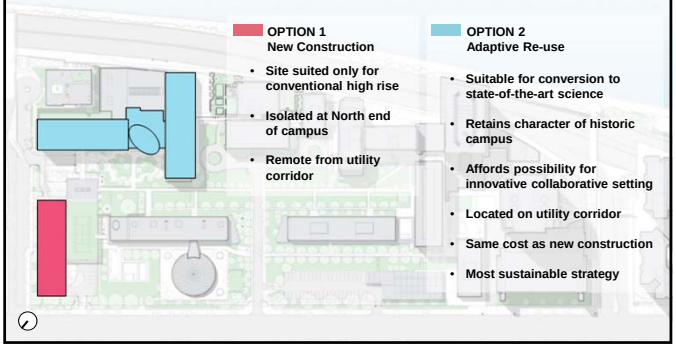
2019 46



CAMPUS ESPLANADE FORMALIZES THE URBAN CAMPUS 47



2005, FEASIBILITY STUDY New Construction vs. Adaptive Re-use 48



OPTION 1
New Construction

- **Site suited only for conventional high rise**
- **Isolated at North end of campus**
- **Remote from utility corridor**

OPTION 2
Adaptive Re-use

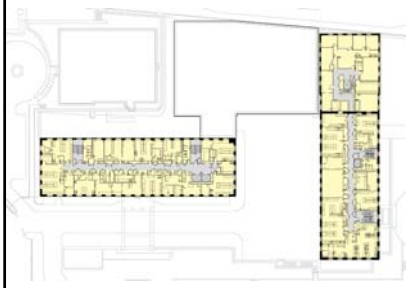
- **Suitable for conversion to state-of-the-art science**
- **Retains character of historic campus**
- **Affords possibility for innovative collaborative setting**
- **Located on utility corridor**
- **Same cost as new construction**
- **Most sustainable strategy**

BUILDING CONCEPT Fill the Gap & Join Buildings with Meeting Spaces, Amenities 49

Campus Plan Before
Existing Smith & Flexner Halls

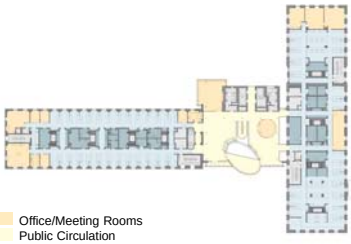
Campus Plan After
New Collaborative Research Center

LABORATORY PLANS BEFORE RENOVATION Central Corridor and Random Lab Configurations 50



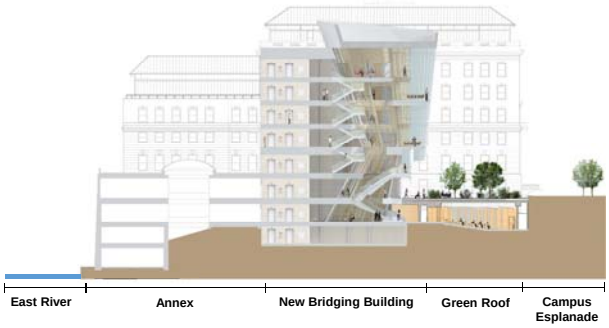
Isolated Laboratory Rooms

LABORATORY PLANS AFTER RENOVATION Open Labs and Shared Support Spaces 51

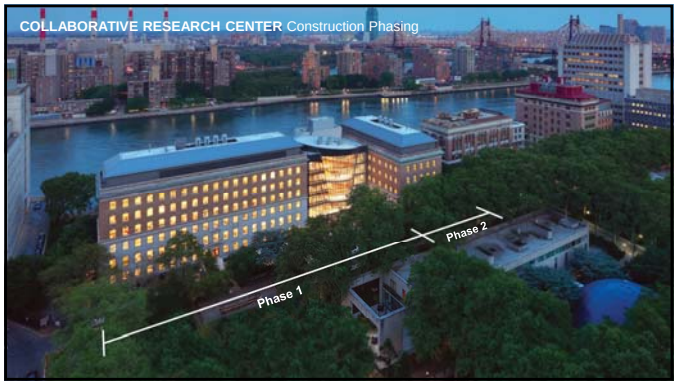


Office/Meeting Rooms
Public Circulation
Support/Shaft Space
Lab
Lab Support

CONNECTOR BUILDING Gathering Spaces & Auditorium 52

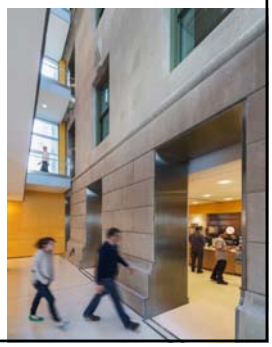


COLLABORATIVE RESEARCH CENTER Construction Phasing

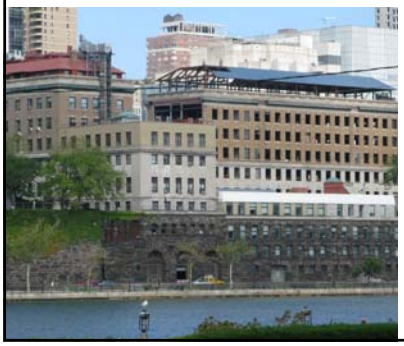


GUT DEMOLITION Retention of Floor Slabs & Exterior Envelope 54

CONSTRUCTION Connector Building 55

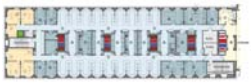


CONSTRUCTION New Mechanical Penthouse 56

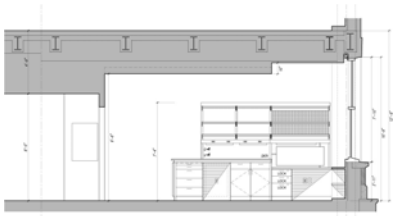


Rooftop and exterior envelope subject to New York State historic preservation review

TRANSFORMATION TO OPEN LAB CONCEPT 57



New Laboratory Floor Plan
Shared equipment and procedure rooms
Open lab configuration with desks at the bench
Lab Head and computational work in the lab



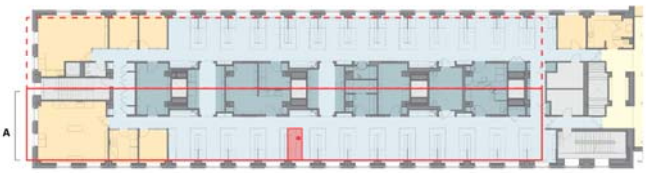
Typical Bench Module and Lab Section

FLEXIBLE LAB BENCH MODULES 58

SHARED EQUIPMENT & PROCEDURE ROOM CROSSOVERS 59

FLEXIBLE, SHARED EQUIPMENT CORE 60

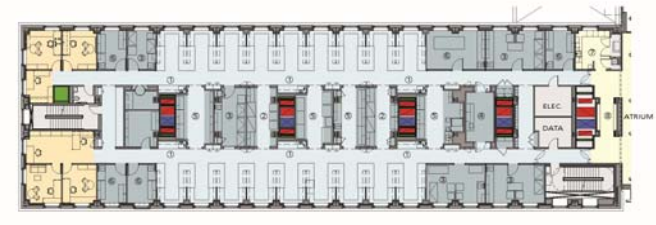
LABORATORY METRICS 61



Office/Meeting Rooms
Public Circulation
Support/Shaft Space
Lab
Lab Support

CRC Building Area	**260,000**	**GSF**
Typical Lab Type A	**6,200**	**NSF**
Average per Lab Tech	**246**	**SF**
Typical Lab Population	**25**	
Length of Bench and Desk	**7.5**	**LF**
Desk	**4**	**LF**
Principal Investigators	**29**	

LABORATORY METRICS 62



Office/Meeting Rooms
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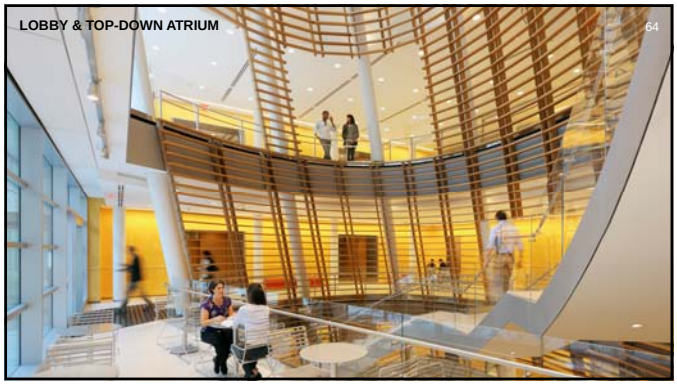
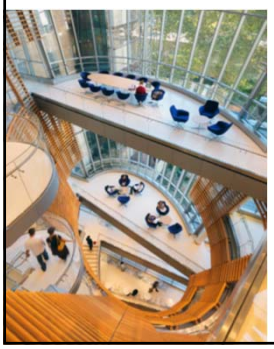
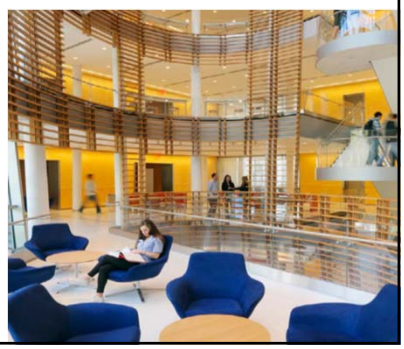
MAIN ENTRANCE TO SMITH, FLEXNER & FUTURE RIVER CAMPUS 63

LOBBY & TOP-DOWN ATRIUM 64

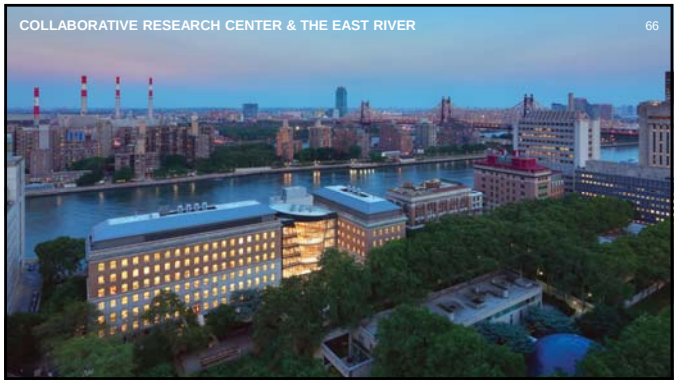


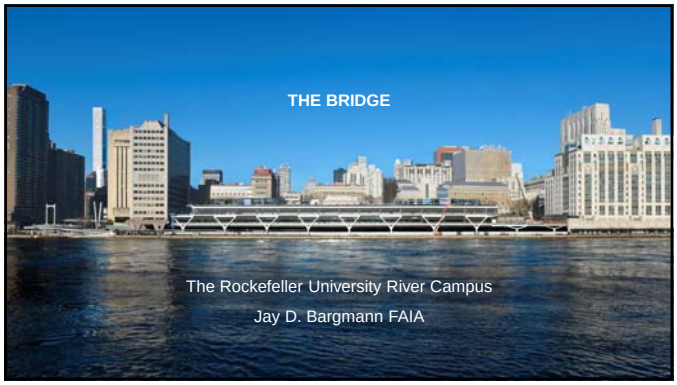
ATRIUM GATHERING SPACE & VERTICAL CIRCULATION 65





COLLABORATIVE RESEARCH CENTER & THE EAST RIVER 66





THE ROCKEFELLER UNIVERSITY RIVER CAMPUS Master Plan Objectives 68

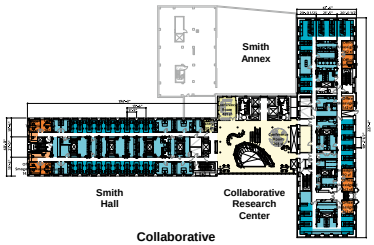
Accommodate researchers from existing buildings of The Rockefeller University

Provide large floor plates that maximize flexibility and collaboration and alternative laboratory environments

Maintain views to and from the historic buildings

Preserve and enhance the garden landscape

DEVELOP PROGRAM Campus-wide Space Utilization Survey 69



- Enclosed Office / Open Office
- Laboratory Common Areas
- Laboratory Bench Areas
- Support Laboratory
- Building Common Area

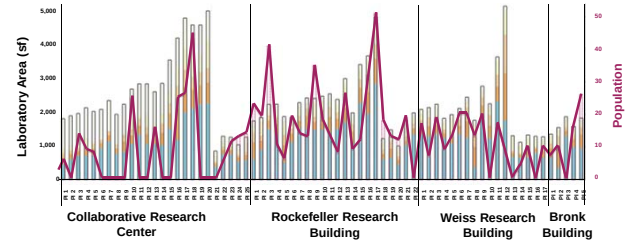
Collaborative Research Center
Floor Plate Depth:
60'-0" to 61'-6"
Laboratory Bench Module:
9'-9" to 10'-7 ½"

Smith Hall
36 Benches
4 Offices
9 Benches / Office

Flexner Hall
38 Benches
6 Offices
6 Benches / Office

RELATIONSHIP BETWEEN LABORATORY AREA & POPULATION

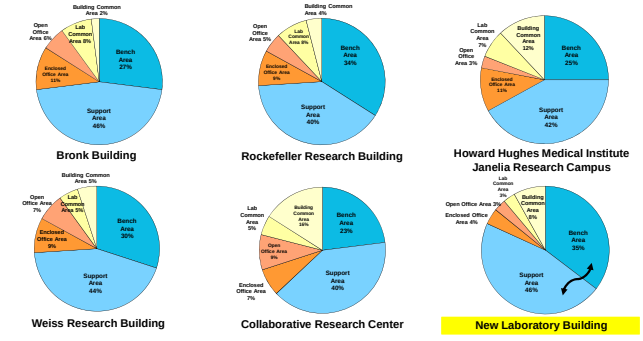
70



- Enclosed Office / Open Office
- Laboratory Common Areas
- Laboratory Bench Areas
- Building Common Area
- Population

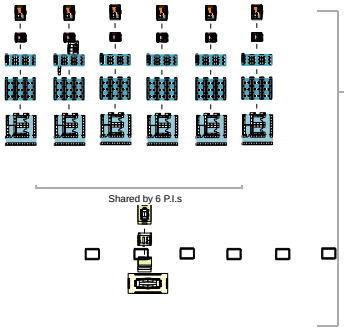
PEER BENCHMARKS Comparison Informs Final Program Targets

71



FINAL PROGRAM 4,000 Square Feet per Principal Investigator

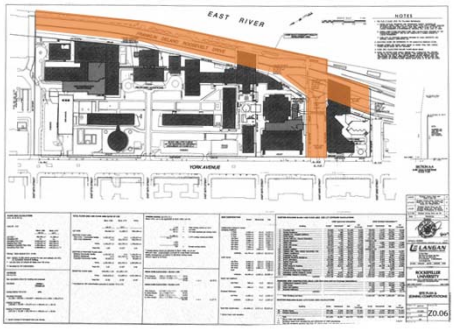
72



1	Principal Investigator Office
1	Administrative Workstation
13	Write-up Desks
13	Benches
1	Laboratory Support
1	Equipment Corridor
0.50	Collaborative Space
0.25	Conference Room
0.25	Pantry / Break Area
0.25	Copy / Supply Space
0.04	Flexible Conference Center

23	Principal Investigators
13	Researchers / PI
4,000	Square Feet / PI
450	Total Population

AIR RIGHTS Granted to Three Institutions by New York City in 1973 73



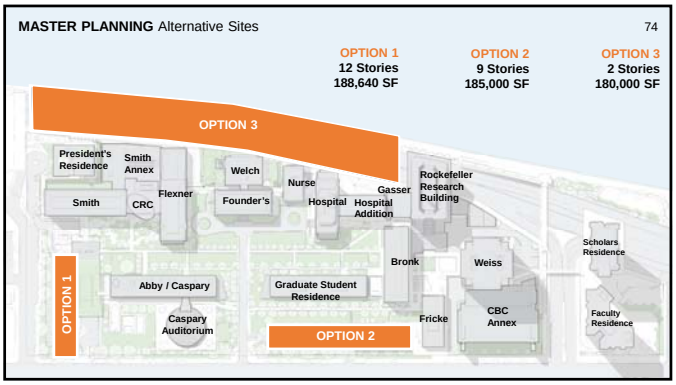
Hospital for Special Surgery

New York Hospital
(now The New York Presbyterian Hospital-Weill Cornell Medical Center)

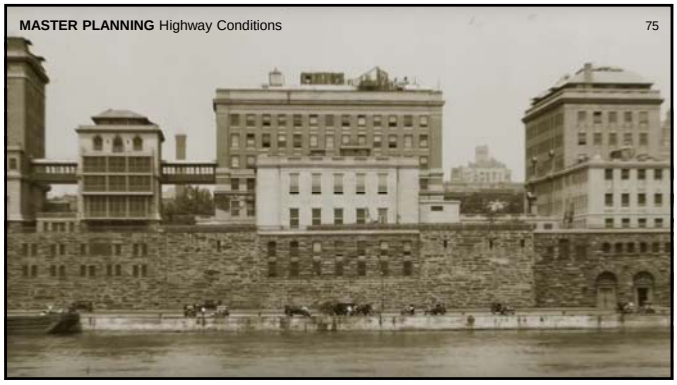
The Rockefeller University

675,000 Square Feet Allowable Area for Construction

MASTER PLANNING Alternative Sites 74

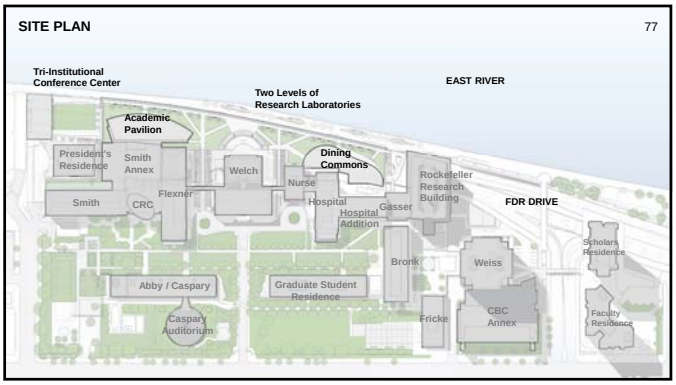


MASTER PLANNING Highway Conditions 75

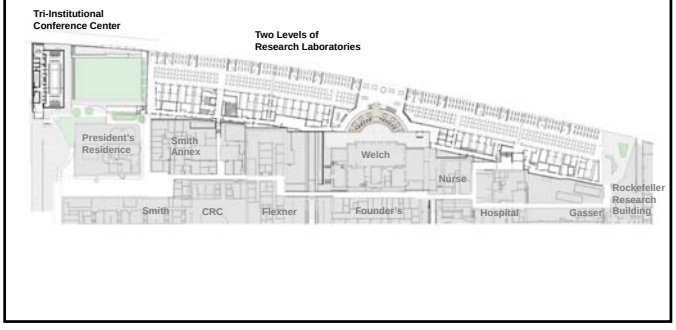


EXTENSION OF GARDEN TO RIVER Adds Two Acres of Land to Campus 76

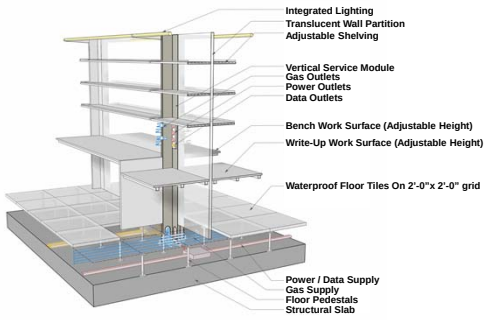
SITE PLAN 77



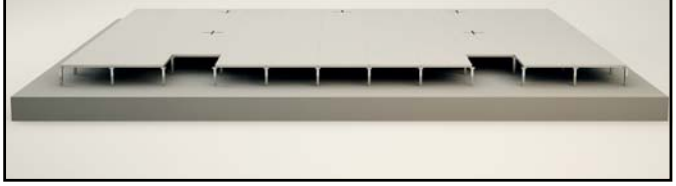
FIRST & SECOND LEVEL PLAN 78



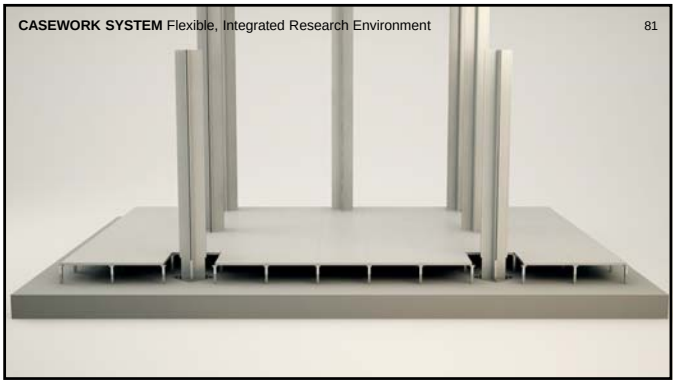
CASEWORK SYSTEM Flexible, Integrated Research Environment 79



CASEWORK SYSTEM Flexible, Integrated Research Environment 80

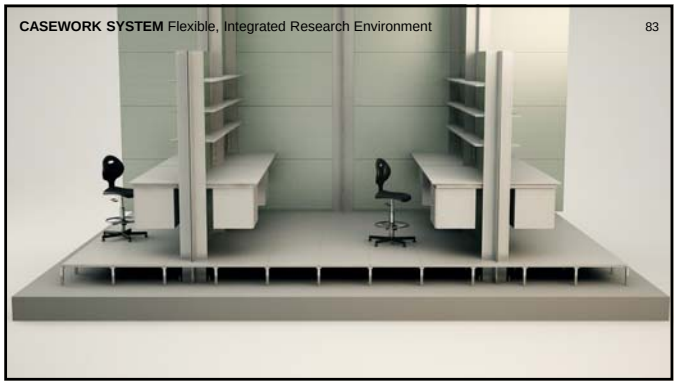


CASEWORK SYSTEM Flexible, Integrated Research Environment 81

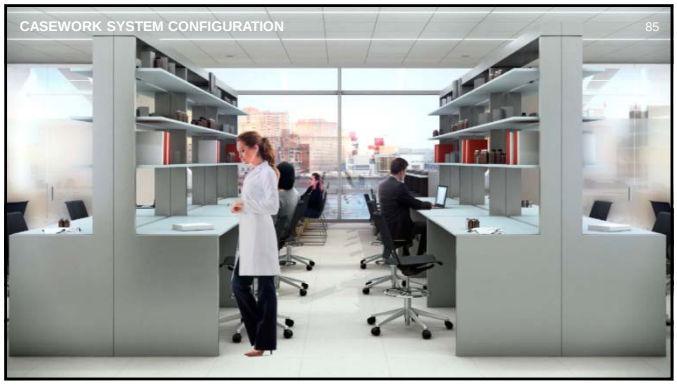


CASEWORK SYSTEM Flexible, Integrated Research Environment 82

CASEWORK SYSTEM Flexible, Integrated Research Environment 83



CASEWORK SYSTEM CONFIGURATION 84


CASEWORK SYSTEM CONFIGURATION
85


CAMPUS AMENITIES Include Garden, Dining, & Conference Center
86

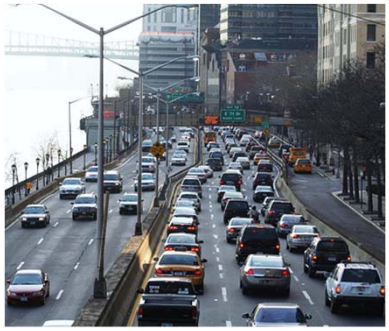

UPGRADES TO THE PUBLIC ESPLANADE
87

IMPLEMENTATION CHALLENGES 88

Construction atop Franklin D. Roosevelt East River Drive – unique circumstances / solution

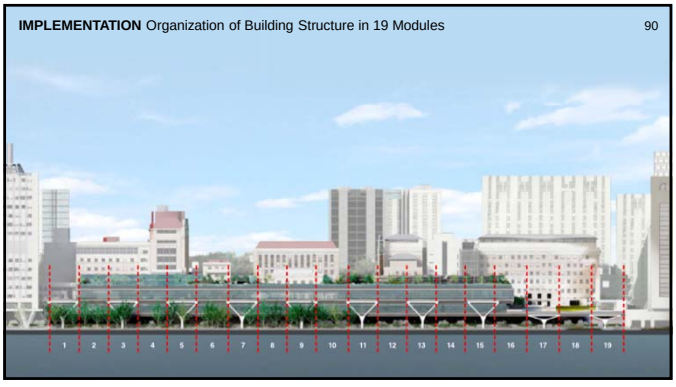
Engaged with traffic consultants and negotiated up to 24 full overnight road closures

Offsite fabrication, add value, and "bench check" in a controlled environment the methodology, connections, computerized crane systems

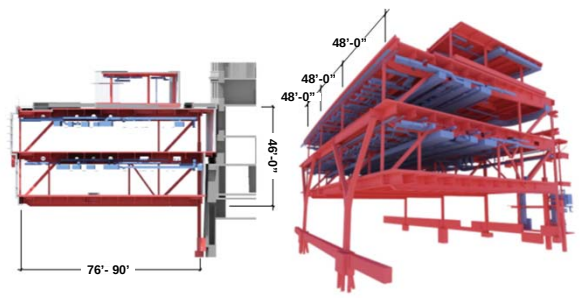


IMPLEMENTATION CHALLENGES Construction Atop Franklin D. Roosevelt East River Drive 89

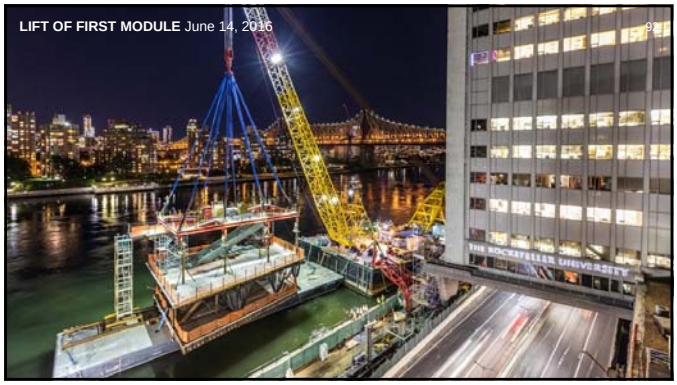
IMPLEMENTATION Organization of Building Structure in 19 Modules 90



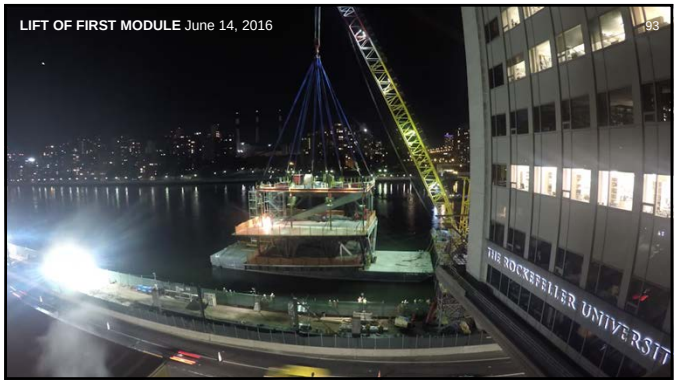
STEEL MODULES 19 Units, ±700 Tons Each 91



LIFT OF FIRST MODULE June 14, 2016 92



LIFT OF FIRST MODULE June 14, 2016 93




94


95


96

PANEL DISCUSSION 98

- How frequently should an institution prepare a master plan?

PANEL DISCUSSION 99

- How frequently should an institution prepare a master plan?
- When and how should users be involved in the programming and planning process?

PANEL DISCUSSION 100

- How frequently should an institution prepare a master plan?
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- **How is the expansion and contraction of laboratories accommodated?**

PANEL DISCUSSION 101

- How frequently should an institution prepare a master plan?
- When and how should users be involved in the programming and planning process?
- How is the expansion and contraction of laboratories accommodated?
- **How does a building's floor plan impact the research activities in the building?**

PANEL DISCUSSION 102

- How frequently should an institution prepare a master plan?
- When and how should users be involved in the programming and planning process?
- How is the expansion and contraction of laboratories accommodated?
- How does a building's floor plan impact the research activities in the building?
- **What are the planning and construction challenges of restricted urban sites?**

PANEL DISCUSSION

103

- How frequently should an institution prepare a master plan?
- When and how should users be involved in the programming and planning process?
- How is the expansion and contraction of laboratories accommodated?
- How does a building's floor plan impact the research activities in the building?
- What are the planning and construction challenges of restricted urban sites?
- Is it justifiable to pay high cost per square foot to build laboratories in dense urban settings?

PANEL DISCUSSION

104

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- Is it justifiable to pay high cost per square foot to build laboratories in dense urban settings?

ACKNOWLEDGEMENTS

105

Weill Cornell Medicine

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ACKNOWLEDGEMENTS 106

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THANK YOU.