

2020 SEFA Lab of the Year Submission

## EXECUTIVE SUMMARY **Purpose**

"The opportunity to work in the River Campus building definitely played a major role in my decision to come to Rockefeller."

Viviana Risca, PhD Principal Investigator The Rockefeller University



The historic campus as viewed from the East River

The Rockefeller University, located in a garden-like setting on the Upper East Side of Manhattan, New York City, was founded in 1901.

Since that time the University has maintained its focus on biomedical research in the following areas: chemistry, biophysics, chemical biology, structural biology, immunology, virology and microbiology, mechanisms of human disease, genetics and genomics, neurogenetics, cancer biology, cell biology, morphogenesis, and host-pathogen biology.

One metric of Rockefeller University's success is that its scientists have been awarded 25 Nobel prizes. This includes five in the last 20 years in the fields of medicine and chemistry.

The purpose of the Stavros Niarchos Foundation– David Rockefeller River Campus fulfills two goals:

- 1. Provide a new type of laboratory that is open and provides maximum interaction among researchers in support of science, recruitment, and retention of world class researchers.
- 2. Provide diverse forms of collaborative and communal spaces, including dining, conferencing, recreation, and offices reinforcing campus and community relations.

## EXECUTIVE SUMMARY Architectural Influences



View of building from Main Campus Entrance

<b>Project Owner</b> The Rockefeller University				
Project Location	Manhattan, New York			
Completion	March 2019			
Project Cost & Construction Cost	Withheld at client's request			
<b>Total Gross Area</b> New Construction Renovation	160,000 sf 60,000 sf	14,860 sm 5,570 sm		
<b>Total Net Area</b> New Construction Renovation	105,000 sf 43,000 sf	9,750 sm 3,990 sm		
Total Net Area of Lab & Lab Support New Construction	78,750 sf	7,310 sm		
Percentage of Buildin Net Area of New Lab	ng 75 %			

Our vision was to provide large, flexible laboratory spaces, extends campus gardens, maximizes existing vistas, connects with existing research buildings, and centralizes community amenities on a platform that sits 20 feet over one of Manhattan's major arterial highways.

The result is a campus extension that is invisible from the University's main entrance and historic campus walks and extends the historic gardens via two monumental stairways flanking Founder's Hall ascend from the main campus walk up to rooftop gardens and a promenade overlooking the East River.

The building is a platform for pedestrian-oriented vegetation and a new dining commons, a new conference center, and centralized offices for the University's senior leadership, each with an individual identity expressed as pavilions within a garden.

When seen from the east, the building's 1,000-foot-long continuous horizontal band of steel and glass gently underscores and unifies the beautiful, but disparate campus buildings that had grown organically over the last 120 years.

Between the building and the East River, the project provides a fully rebuilt linear park that is open to the community and maintained by the University.

A campus that five years ago had no recognizable identity from the east now has a singular presence that is clear yet understated and has two new acres of gardens, 160,000 square feet of new research space interconnecting ten existing buildings on campus, and shared common spaces.

## EXECUTIVE SUMMARY Building Spaces

"You're going to be bumping into lots of different people and their students and their post-docs and their staff and you're going to be exchanging ideas."

Erich Jarvis, PhD Principal Investigator The Rockefeller University



The research space, known as the Kravis Research Building, occupies two open floors of contiguous laboratory space, each approximately 1,000 feet long and 105 feet deep. Each floor is bisected by a large collaborative space with kitchen and dining facilities at the midpoint. The collaborative space looks out across the Sze-Donohue Amphitheater to the historic Welch Hall facade.

The Kravis Research Building is organized in three zones from a flexible, open, daylit east zone to a cellular, enclosed west zone.

**Zone 1** Principal investigator offices, collaborative spaces, and break rooms parallel a 16-foot-high glass wall under a sloping ceiling which allows light to penetrate across the plan. Write-up stations, freed from the lab benches, provide a safe collaborative environment for researchers requiring access to computers.

**Zone 2** Lab benches and support spaces with demountable partitions occupy the central zone of the floor plan midway between write-up stations and support spaces. The demountable partitions provide laboratory-specific support spaces and separation between adjacent labs.

**Zone 3** A storage wall with hard piping fronts rigidly defined support spaces that are penetrated by equipment corridors that allow light and views across the floor plan.

Communal amenities are each expressed as individual pavilions set into the gardens. These amenities, the Hess Academic Center, Kellen Biolink, and Bass Dining Commons are accessible from within the research building and from the campus gardens.

Lab benches with storage wall

## EXECUTIVE SUMMARY Building Special Features

"It has junior investigators mixing together with senior laboratories, other Junior investigators—all in an open environment."

Robert Darnell, MD, PhD Principal Investigator The Rockefeller University



#### **Modular Prefabricated Structure**

The building's structure was designed to be prefabricated in 19 modules to meet logistical requirements in a cost effective and timely manner. Each 750-ton module of the 160,000 square foot building was constructed in New Jersey, transported by barge to the site, and hoisted by crane onto their foundations in five-hour intervals over 19 nights.

### Laboratory Casework Design

The design for laboratory casework, write-up desks and support rooms was consists of a vertical service module containing power, data, and gases and supporting adjustable work surfaces and storage components. The modules plug into floor boxes beneath the raised floor. The laboratory casework design allows for benches and support space to be modified in response to changing research modalities and principal investigator requirements.

### Sustainable and Wellness Initiatives

The project's site is its most sustainable aspect, as it renders urban land usable, creates new pedestrian-oriented garden spaces, and brings daylight to over 75% of building spaces. The redevelopment of the East River esplanade renders the city's public space more resilient with its native planting, and creates safe, pleasant public space with bicycle and jogging lanes.

### Integration of Mechanical Systems and Equipment-free Roof

All mechanical equipment is designed to be located in two large mechanical rooms embedded behind the existing schist wall and accessible from the FDR Drive for maintenance. Laboratory exhaust is housed in two towers clad to visually blend into historic buildings.

Two of 19 prefabricated modules installed

## ARCHITECTURAL INFLUENCES The Historic Campus

Over its first quarter century, early development establishes the campus' main spine with a network of buildings along the eastern edge. Subsequent development in the 1950s reinforces the north-south and east-west axes.

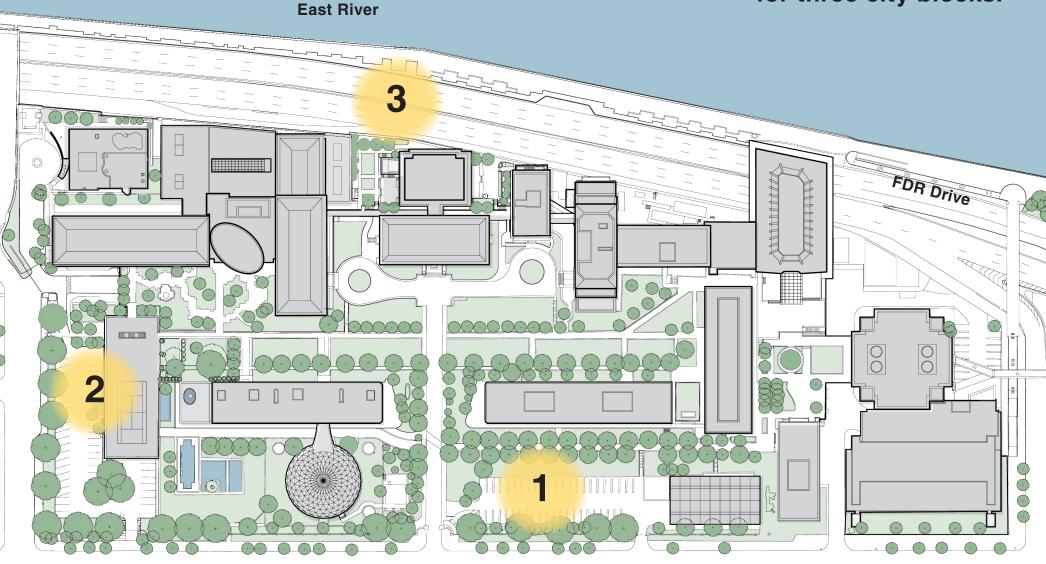
## ARCHITECTURAL INFLUENCES Reinforcing the Eastern Edge

100 FT

20

60

Three sites were evaluated for the expansion. The selected site (Site 3) required extending the campus over an active arterial highway for three city blocks.



York Avenue

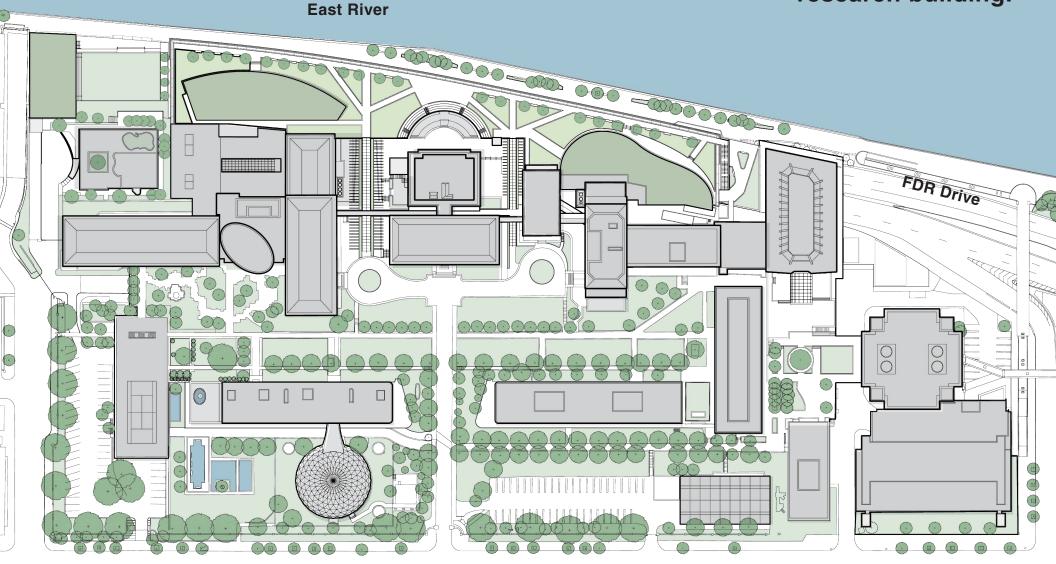
### ARCHITECTURAL INFLUENCES Connecting Buildings and Adding Campus Green Space

100 FT

20

60

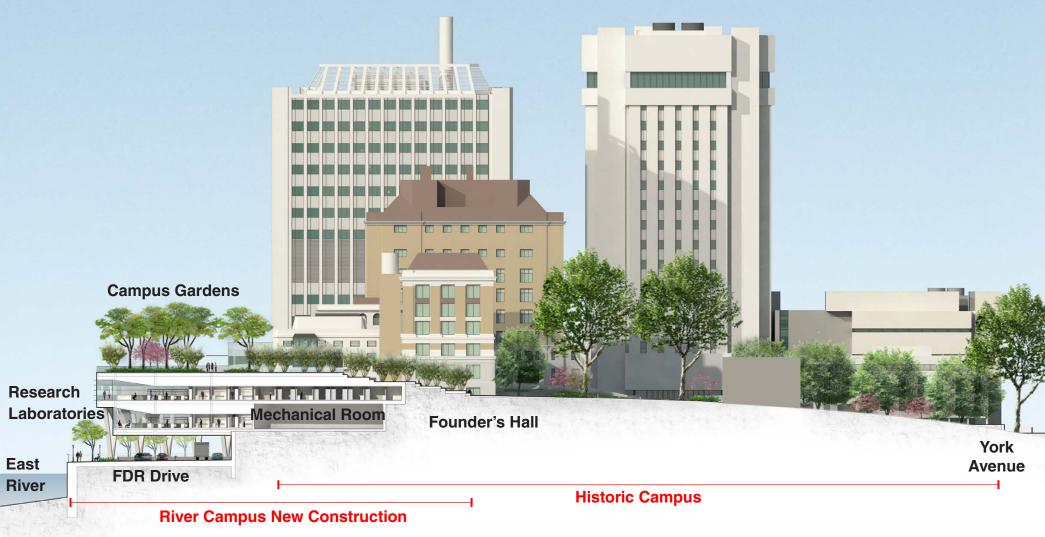
Two new landscaped acres are added to the campus and ten existing buildings are connected by the 1,000-foot-long research building.



**York Avenue** 

## ARCHITECTURAL INFLUENCES Extending the Gardens

160,000 square feet of research space on two levels below an extension of the landmark gardens maintain views of and from the historic buildings.



### ARCHITECTURAL INFLUENCES Preserving Campus Vistas

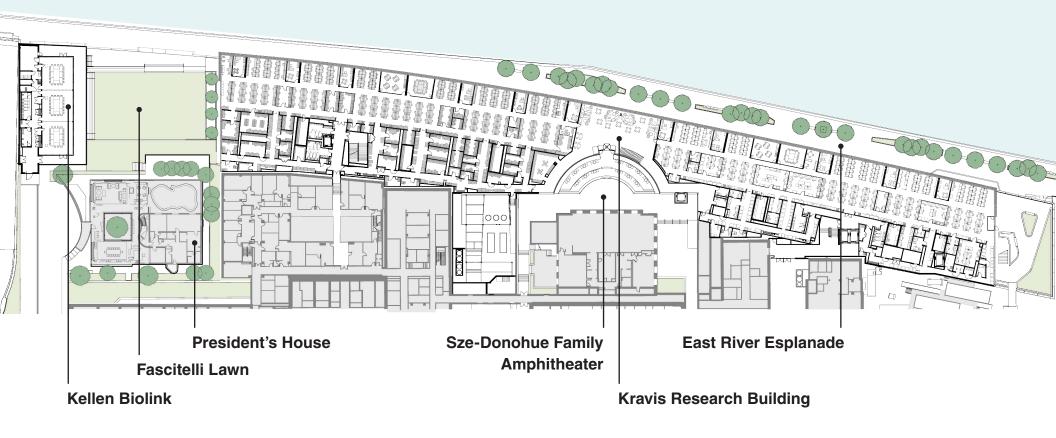
The River Campus is invisible from the University's historic campus, seamlessly connecting to buildings and campus walkways.

### ARCHITECTURAL INFLUENCES Unifying and Giving Identity to the University

From the east, the building—spanning three city blocks on a massive site created over one of Manhattan's main north-south thoroughfares gives new identity to the 120-year-old institution.

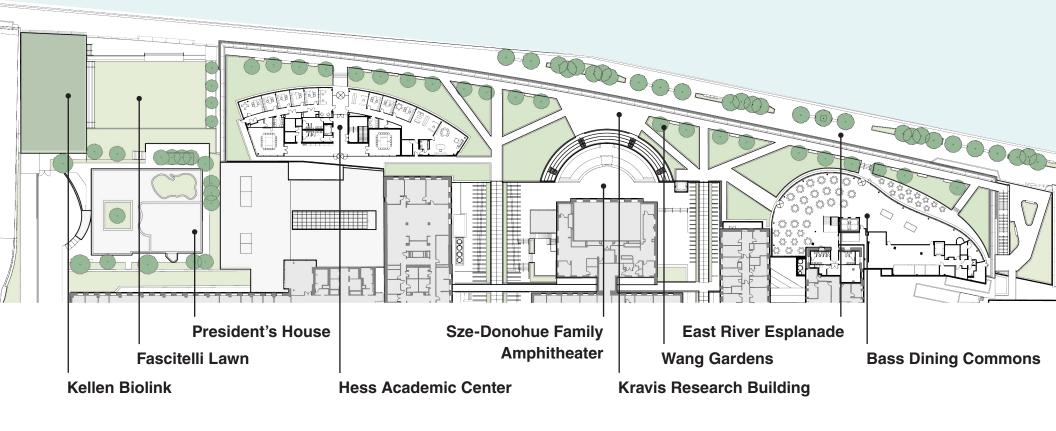
### BUILDING SPACES Open Research Environment

Continuous laboratory space promotes interaction between junior and senior investigators and provides a flexible, daylit research environment.



## BUILDING SPACES Garden Pavilions

More than a research facility, the expansion represents a holistic expansion of the campus with collaborative, convening, recreation, and dining amenities that can be enjoyed by the full University population and also by the surrounding community.



### BUILDING SPACES Kravis Research Building

### **Principal Investigator Office**

Principal investigator offices are interspersed along the full-height glazed wall and open directly onto the write-up and wet bench zones.

BUILDING SPACES Kravis Research Building, Write-up Stations

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To enhance lab safety, and improve collaboration among researchers write-up stations are removed from the benches and organized along a full-height glass wall under a sloping ceiling.

BUILDING SP

## Kravis Research Building, Laboratory Benches

Laboratory functions are organized into three open and continuous zones: 1) principal investigator offices and write-up stations at right, 2) lab benches in the center, and 3) support spaces at left.

### BUILDING SPACES Kravis Research Building, Support Spaces with Demountable Partitions



BUILDING SPACES Kravis Research Building, Support Spaces

Along the West Wall, sinks, glassware storage, and emergency showers serve the open benches in the daylit open environment. Rooms requiring dedicated environmental services are organized along equipment corridors leading to autoclaves, fumehoods, dark rooms, and environmental rooms.

### BUILDING SPACES Kravis Research Building, Equipment Corridor

Daylight penetrates deep into equipment corridors with views to benches and write-up stations.

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# Contiguous labs run the full length of the building punctuated at the midpoint only by a collaborative space and an amphitheater with outdoor seating.

Kravis Research Building, Collaborative Space 🥯

BUILDING SPACES

### BUILDING SPACES Sze-Donohue Family Amphitheater

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The Amphitheater organizes the space in front of historic Welch Hall and provides a ceremonial entrance into the central collaborative spaces on two levels.

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MARIE-JOSTE AND HENRY R. KRAVIS RESEARCH BUILDING

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### BUILDING SPACES Wang Roofton Garden

Gardens overlooking the river provide a healthy outdoor respite for the campus community and serve as the access to the campus amenities housed in garden pavilions.

## BUILDING SPACES Bass Dining Commons

The commons has expansive views, outdoor seating, and revives the tradition of eating at large communal tables and sharing ideas with fellow researchers.

### BUILDING SPACES Hess Academic Center President's Office

The Center provides new offices for the President, administrators, and much-needed meeting space. With its location at the center of campus, senior leadership are visible and accessible to the campus population.

### BUILDING SPACES Kellen Biolink

ANNA-MARIA AND STEPHEN KELLEN BIOLINK

The Biolink provides convening space for the local, national, and international academic communities for scientific meetings and science policy meetings.

BUILDING SPACES **President's House Renovation** 

Intimate dining and gathering spaces within the President's renovated mid-century modern residence, located adjacent to the Biolink, are used for convening of researchers and guests, and as part of the recruitment process.

BUILDING SPACES East River Public Esplanade

An esplanade between the building and the river provides a safe and resilient park for scientists and the greater Manhattan community.

## BUILDING SPECIAL FEATURES Design Innovations

**Modular Prefabricated Structure** 

Integration of Mechanical Systems and Equipment-free Roof

**Sustainable and Wellness Initiatives** 

Laboratory Casework Design

"Over the past four years, our architects, engineers, and construction personnel have turned a nearly crazy idea constructing a building by swinging nineteen 750-ton modules from a barge on the East River over the FDR Drive—into a functional and absolutely beautiful reality. It's a thrill to see the result of that work now in use."

Timothy O'Connor, PhD Executive Vice President The Rockefeller University



### BUILDING SPECIAL FEATURES Modular Prefabricated Structure

To resolve logistical complexities of building over an active highway and reducing on-site construction, the superstructure was prefabricated in 19 multi-story sections and was erected in 19 nights while the highway was closed to traffic for only five hours a night.

# BUILDING SPECIAL FEATURES

> Mechanical equipment is accommodated underneath the gardens in newly excavated mechanical rooms with access for equipment replacement from the FDR Drive below the building.

To preserve views from campus buildings, laboratory exhaust is housed in masonry shafts clad to blend seamlessly with historic buildings.

## BUILDING SPECIAL FEATURES Sustainability and Wellness Initiatives

**LEED Gold Certification Pending** 

# BUILDING SPECIAL FEATURES Sustainability and Wellness Initiatives



Infill construction creates a new site above an arterial highway in a dense city environment



Two new landscaped acres created in Manhattan



Constructed from river, minimizing disruption to city streets



100% of the site is pedestrianoriented hardscape and vegetation



Hazardous materials from site remediated



Rainwater captured for green roof



Stormwater filtration added



93% of regularly occupied spaces have access to views of vegetation, human activity, or vistas

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76% of all occupied spaces are daylit



35% of the building's electricity is from purchased Green Power



Solar reflecting pavement and roof materials improve energy efficiency



20% less energy used than code requirement



30% more outside air than ASHRAE 62



Automatic day light control and CO<sub>2</sub> monitors provided

# BUILDING SPECIAL FEATURES Sustainability and Wellness Initiatives



High performance lighting including LED, task lighting, and central lighting control



Ozone and climate change friendly refrigerants utilized



Water and energy data shared with Energy Star Portfolio Manager



Fundamental and enhanced commissioning completed



35% reduction in water usage



1,500 linear feet of recreation space rebuilt with planting, bike paths, lighting and irrigation



\$1 million endowment established to maintain the landscaping of the esplanade in perpetuity

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15,000 square feet of seawall rebuilt

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  - Safe and resilient design includes storm proofed levels at river edge



Bicycle storage and changing and shower facilities added



Accommodations for low emission vehicles



91% construction waste recycling rate

## BUILDING SPECIAL FEATURES Laboratory Design

"The modular design brought efficiency to the design, procurement, and construction process, and has streamlined operations of the lab after occupancy. This flexibility combined with the 'kit of parts' approach to the lab bench design has allowed us to nimbly respond to user requests."

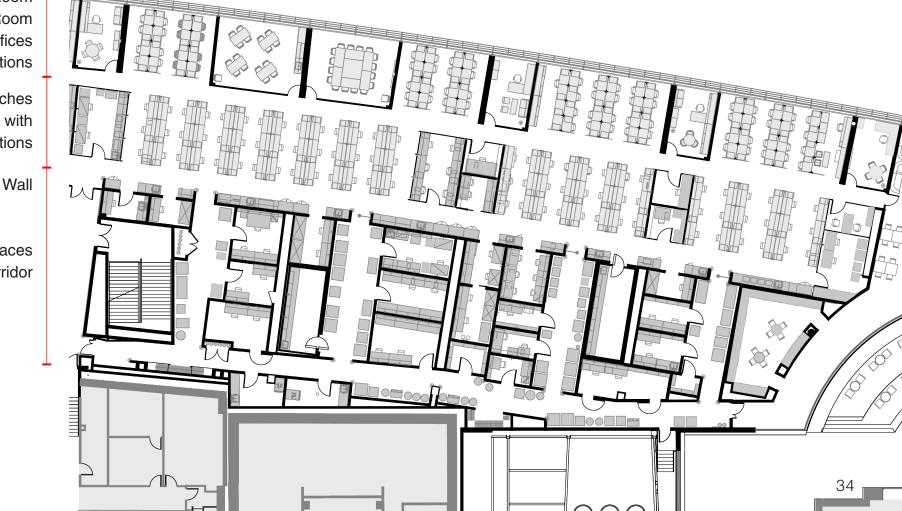
Alex Kogan, Associate Vice President, Campus Operations The Rockefeller University

Conference Room Break Room PI Offices Write-up Stations

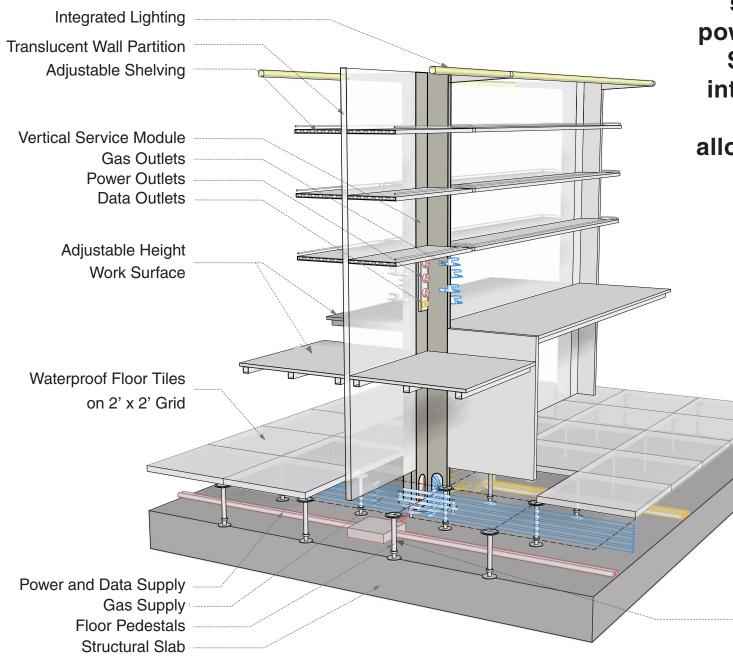
Benches Support Spaces with Demountable Partitions

Storage Wall

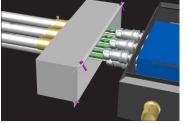
Support Spaces Equipment Corridor



## BUILDING SPECIAL FEATURES Prefabricated Casework



Vertical service modules support adjustable work surfaces and contain power, data, and gases. Services are plugged into floor boxes placed below a raised floor allowing free access for relocation.



Power and Data Distribution

BUILDING SPECIAL FEATURES

## **Benches and Write-up Stations**

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### The Rockefeller University Stavros Niarchos Foundation–David Rockefeller River Campus



## **Project Team**

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Casework

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