

NYU Langone Health Helen L. and Martin S. Kimmel Pavilion

SUSTAINABLE DESIGN



ennead

nbbj

atelier ten



Hargreaves Jones



NYU Langone Health Kimmel Pavilion

The Helen L. and Martin S. Kimmel Pavilion is a new, 830,000-square-foot, state-of-the-art healthcare facility, with 11 patient floors, 374 all single-bedded rooms, and 30 operating rooms and image-guided labs. Integrated technology, thoughtful design, and rooms that provide privacy for patients combine with best-in-class care to create a true healing environment.

Kimmel was designed with sustainability top of mind, and NYU Langone has applied for and received **LEED Platinum** designation, which signifies the building is resource efficient, uses less energy and water, and reduces greenhouse gas emissions. Sustainable elements of the building include: building materials made from recycled content, efficient usage of storm water runoff, and high tech windows which reduce the energy load and acoustically separate the healing spaces from the city.

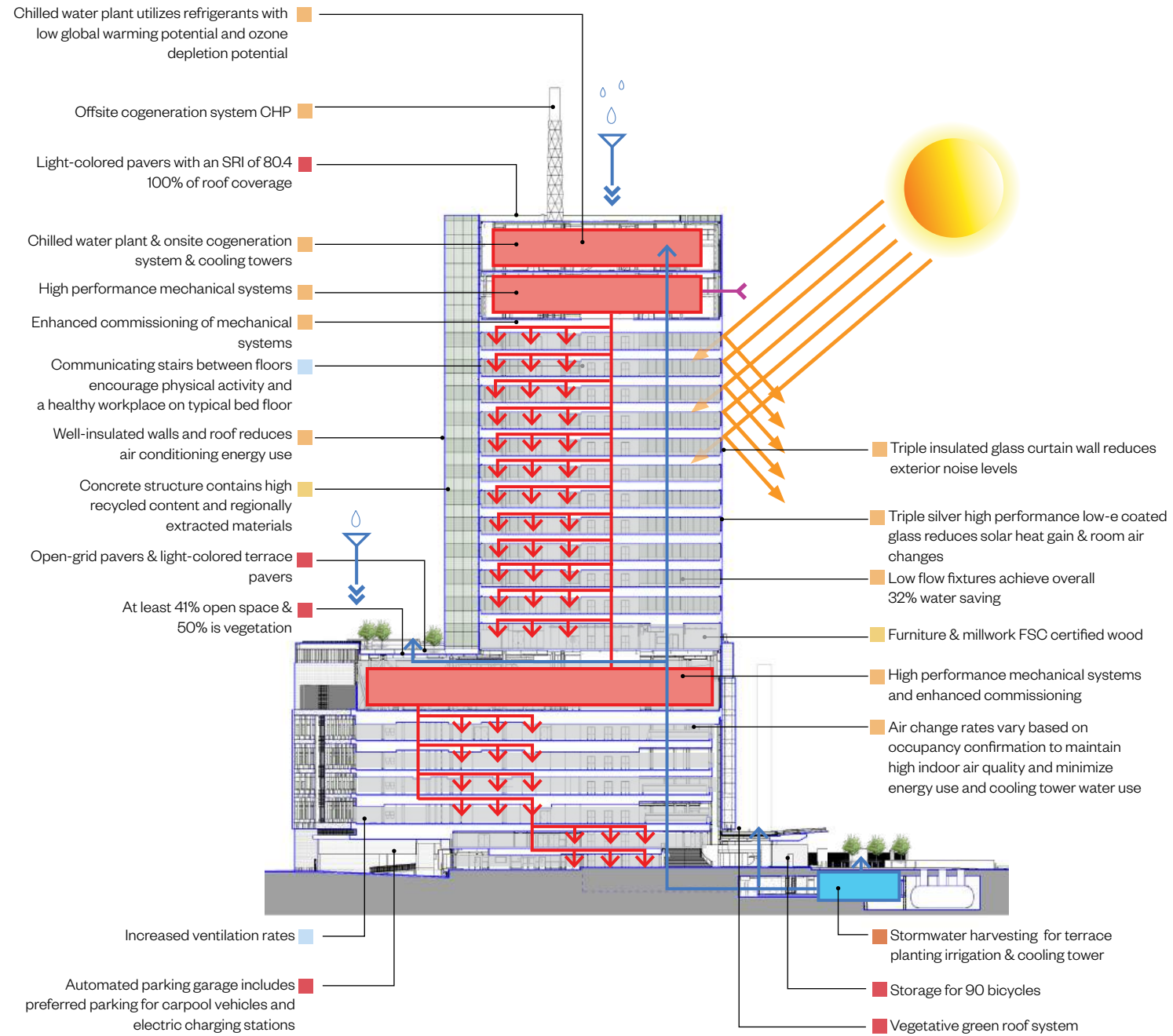
Recognizing that design greatly impacts patient experience and wellness, Kimmel has been thoughtfully planned out as a healing environment where patients can find comfort and draw inspiration. Because natural spaces help boost people’s moods and have a positive impact on health outcomes, our spaces have been designed to maximize access to light, views and green space through inviting outdoor spaces like courtyards, gardens, and terraces with sweeping views of the East River and the city.



LEED PLATINUM

LEED Points Achieved / Available	
SUSTAINABLE SITES	24 / 26
WATER EFFICIENCY	6 / 10
ENERGY & ATMOSPHERE	28 / 35
MATERIALS & RESOURCES	6 / 14
INDOOR ENVIRONMENTAL QUALITY	12 / 15
INNOVATION IN DESIGN	6 / 6
REGIONAL PRIORITY	3 / 4

reviewed and awarded by USGBC



NYU Langone Health Kimmel Pavilion

Building Energy Summary

Approximate Building Energy Savings against ASHRAE 90.1-2007 Baseline: 27%

Approximate Building Energy Cost Savings against ASHRAE 90.1-2007 Baseline: 52%

Energy Use Intensity (EU): 177 kBtu/sf/Yr



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NYU Langone Health Kimmel Pavilion

Various environmental strategies are utilized in the NYU Langone Kimmel Pavilion to increase occupant comfort and reduce energy and potable water usage. External glass incorporates triple silver high performance low-e coatings to mitigate solar heat gain while allowing daylight to penetrate the patient and public areas. Solar shades and radiant ceiling panels provide occupant comfort and reduce energy consumption. Triple insulated curtain wall glass helps reduce external noise pollution while maintaining views of the Manhattan skyline. Daylighting sensors in common areas and perimeter patient rooms reduce the electrical loads from lighting. Rain water is collected from the roofs, retained and reused for landscape irrigation and cooling tower systems. The addition of a three megawatt onsite reciprocating engine and a seven megawatt offsite cogeneration plant significantly reduce electrical demands.



Patient Room



Patient Room

*Illustrations courtesy of Nbbj



Environmental Strategies

- 1 Solar shades mitigate direct sun & glare
- 2 Well daylit interior patient rooms
- 3 Glazing optimized to reduce solar heat gain
- 4 Low VOC emitting resilient flooring
- 5 Low emitting adhesives, sealants, paints
- 6 Low & high temperature chilled water from chiller plant
- 7 Radiant ceiling panels provide perimeter heating

○ Not-Pictured

- 8 Prefabricated headwall & footwall & toilet room
- 9 Night time set backs
- 10 Occupancy lighting sensors
- 11 High efficiency electric lighting with daylighting dimming
- 12 Task lighting for occupant control
- 13 Triple glazed insulated glass reduces exterior noise
- 14 Thermally broken & insulated curtain wall
- 15 High efficiency low flow plumbing fixtures
- 16 Views of Manhattan skyline
- 17 Green seal cleaning program
- 18 Increased mechanical ventilation & higher outside air rates
- 19 Decrease peak air change rates
- 20 Individual thermal comfort controls
- 21 Air distribution designed with occupant comfort in mind



ENVIRONMENTAL STRATEGIES

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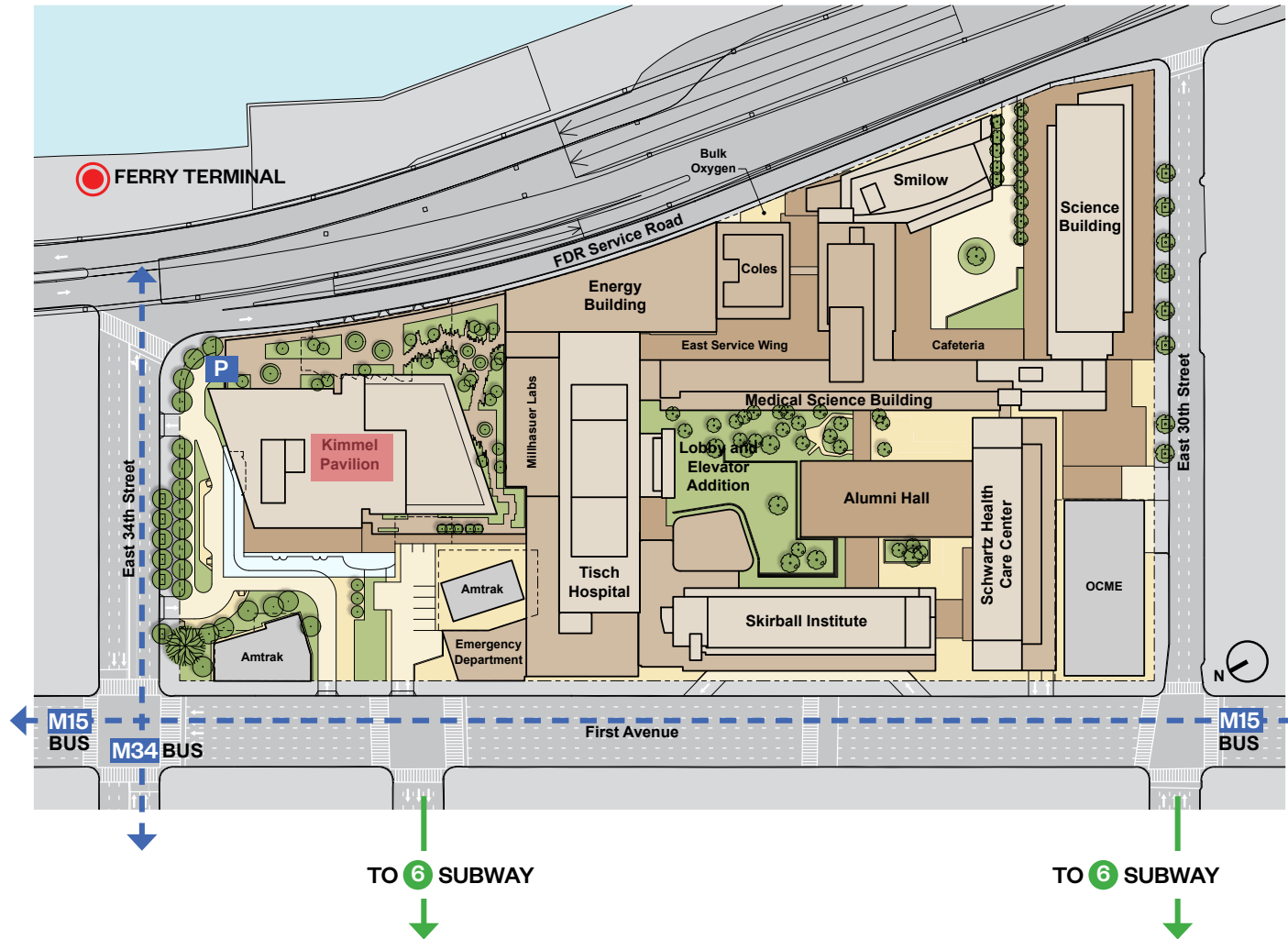
The Urban Campus



34th Street Entry



1st Avenue Entry



NYU Langone Health Kimmel Pavilion

The NYU Langone Kimmel Pavilion is located on the East Side of Manhattan. Public transportation is readily available, with bus and subway service as well as a public ferry terminal within 1/4 to 1/2 of a mile of the building site. Numerous stores and community services are provided within close proximity. Bicycle storage and showers are provided for employees, faculty and students. Landscaped areas are provided as part of the project site development, including open space and vegetated terraces. All parking is located inside the building which reduces the heat island effect and leaves more site area for vegetation. Roof terraces and roofing materials all have a high Solar Reflectance Index.



URBAN CAMPUS

Brownfield Redevelopment

-Remediated site contamination for the Kimmel Pavilion

Public Transportation Access

-Project served by four bus lines within 1/4 mile walking distance from site

Bicycle Storage & Changing Rooms

-Bicycle storage provided for 5.26% of the project FTE & transient occupants
-Showers provided for 0.73% of the project FTE

Maximize Open Lot Space

-Open space exceeds 20% of project site area and 50% of open space is vegetated

Stormwater Design & Control

-No net increase in stormwater site runoff

Reduce Heat Island Effect

-Used light-colored and open grid roof paving to achieve high SRI values
-Increased vegetation throughout the site including roof areas and terraces

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NYU Langone Health Kimmel Pavilion

The water strategy at the NYU Langone Kimmel Pavilion employs best practice water management measures that reduce potable water consumption and reuses stormwater collected on-site to supplement non-potable demands. High efficiency plumbing fixtures, including low-flow fixtures and dual flush toilets, greatly reduce the potable water demand and consumption by 32 percent from the calculated baseline.



- Rainwater collected from public terrace and reused for landscape irrigation
- At least 41% open space & 50% is vegetation
- Outdoor public space
- Open grid and light colored pavers reduce the heat island effect.
- Native trees, shrubs, and seasonal planting provide shade coverage and reduce the heat island effect



- No net increase in site run-off
- Native trees, shrubs, and seasonal planting provide shade coverage and reduce the heat island effect

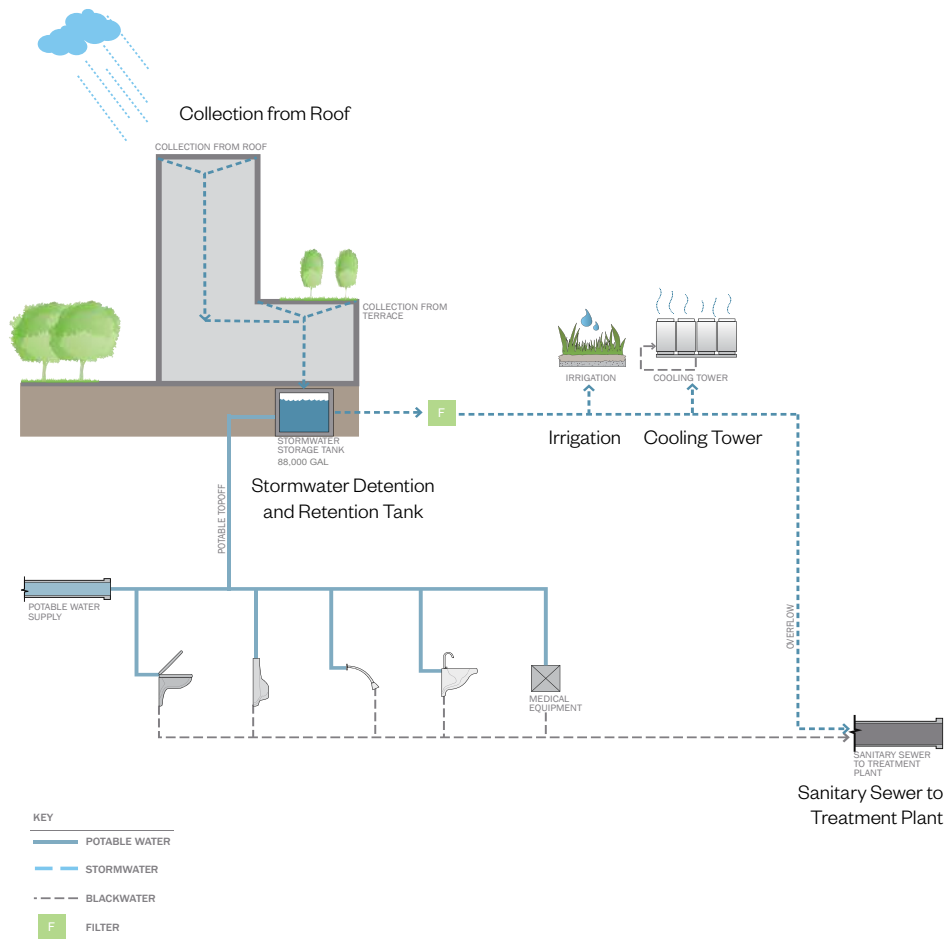


Water Efficient Landscaping

-No potable water used for landscape irrigation

Water Use Reduction

-Project has reduced potable water use by 32% from calculated baseline

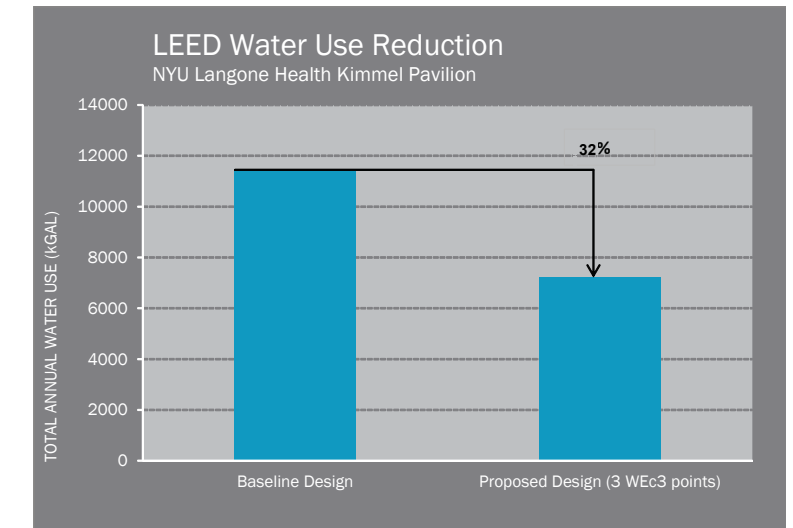


KIMMEL PAVILION WATER DIAGRAM

* Illustration courtesy of Atelier Ten

Water Conservation

-88,000 gallon, compartmented stormwater collection tank eliminates potable water required for irrigation and cooling tower usage.

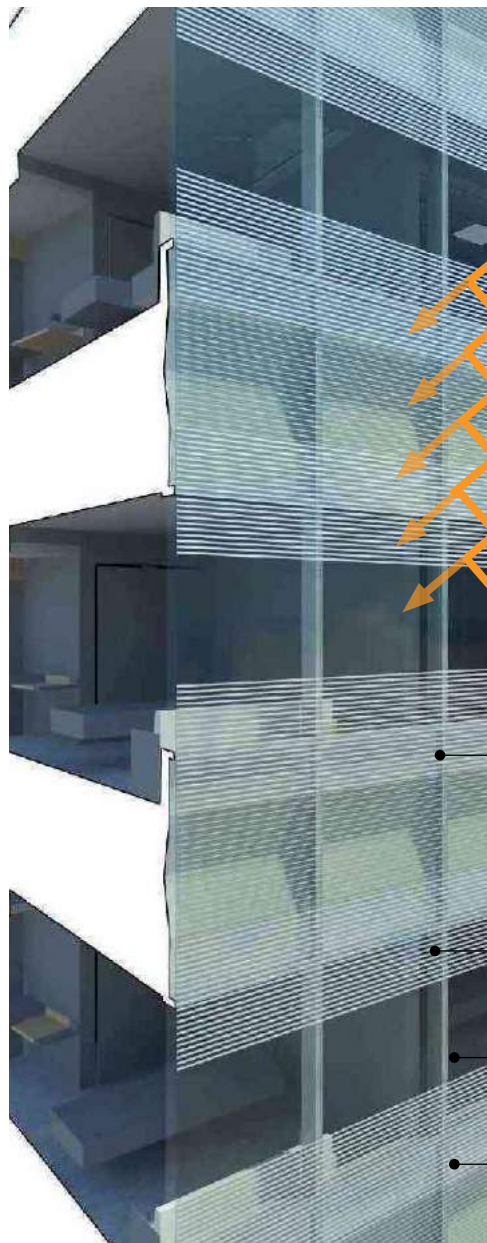


	BASELINE FIXTURE FLOW RATE	LOW-FLOW RATES
TOILETS	1.6 GPF	1.28 GPF
URINALS	1.0 GPF	0.125 GPF
TAPS	2.5 GPM	0.5 GPM
SHOWERS	2.5 GPM	1.6 GPM

* Graph courtesy of Atelier Ten

WATER EFFICIENCY

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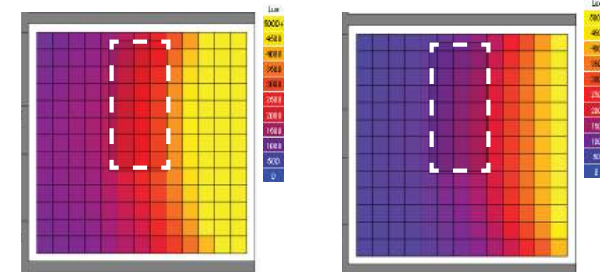
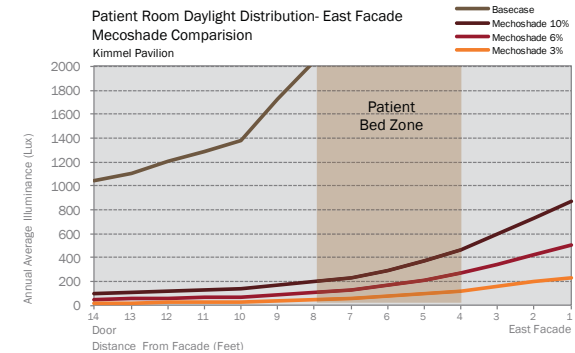
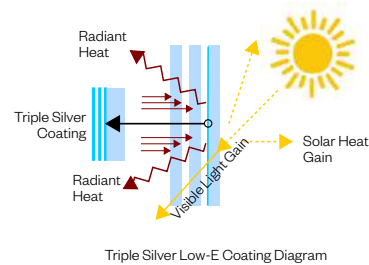
- Triple silver high performance low-e coated on the #2 vision glass surface with a 13% white ceramic frit coverage on the #2 surface and argon filled cavities, reduces solar heat gain while allowing visible light to penetrate the occupied areas and reflects radiant heat back into the building
- Triple insulated curtain wall glass reduces exterior noise and increases occupant comfort
- Custom patterned ceramic frit, painted aluminum backpan and insulation
- Thermally broken and insulated aluminum curtain wall system

Tower Curtain Wall Section

Curtain Wall Facade Strategies

- Solar heat gain on north, south, east facades reduced to .22 and west facade to .24 compared to baseline line at .40
- Visible light transmittance for north, south, east facades at 56% and 64% at west facade
- Shading coefficient for north, south, east facades at .25 and .27 at west facade
- Window-to-wall ratio at 52% for bed tower

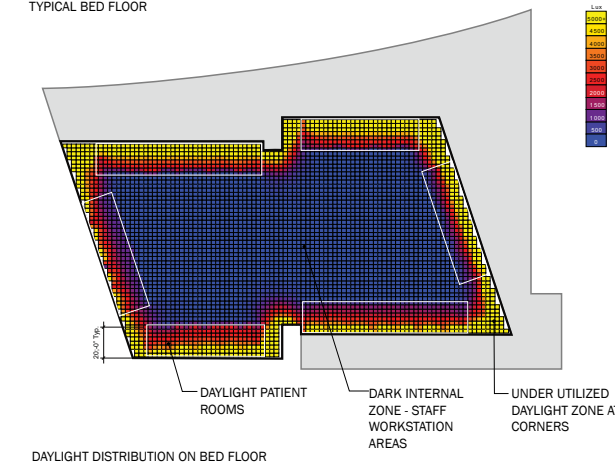
-Above curtain wall facade strategies resulted in a lower solar load in the room, lowering peak airflow into the patient bed tower and less cooling load from the central chiller plant



EAST FACING PATIENT ROOM WITHOUT SHADES

EAST FACING PATIENT ROOM WITH 6% MECOSHADE

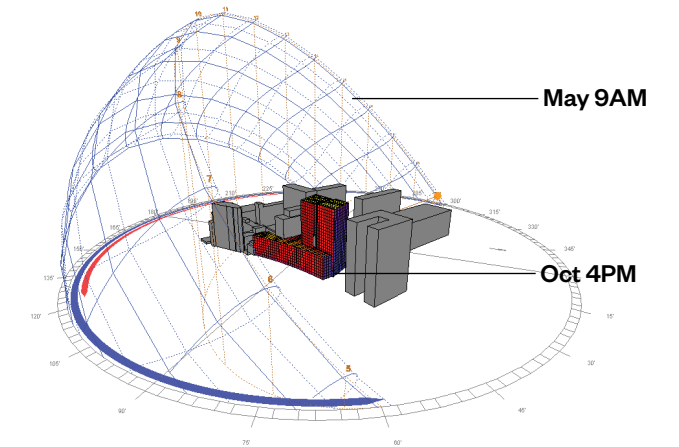
TYPICAL BED FLOOR



Daylight distribution on a typical bed floor with solar shading optimization

NYU Langone Health Kimmel Pavilion

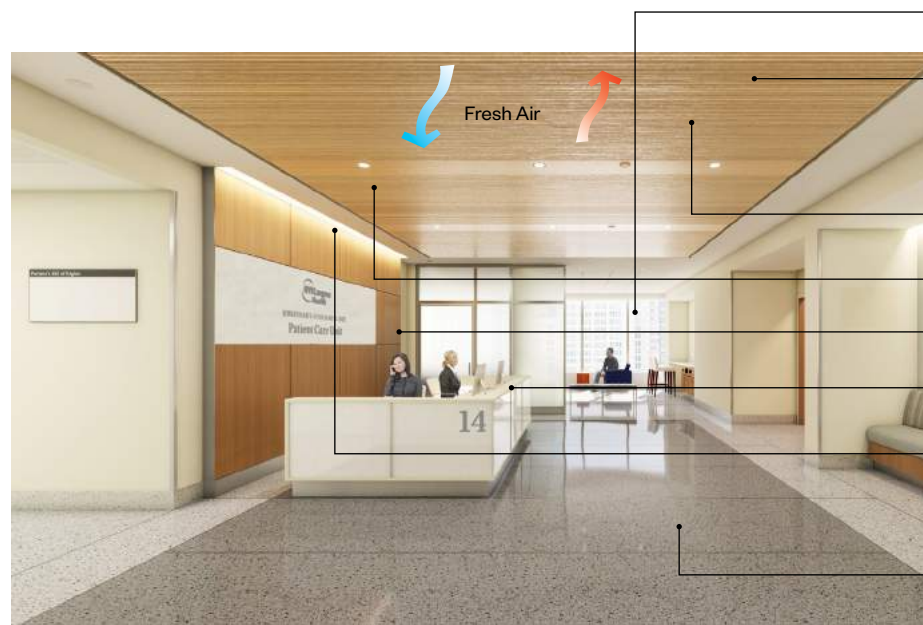
Optimizing the building envelope is critical for controlling daylight distribution into the spaces and minimizing the potential for visual discomfort caused by glare. While the whole building energy consumption profile is driven by internal loads and ventilation requirements typical for a healthcare building, high-performance glazing and internal shading strategies contribute towards energy savings, and they are critical in maintaining ideal indoor environmental quality.



* Daylight analysis courtesy of Atelier Ten

DAYLIGHT & FACADE

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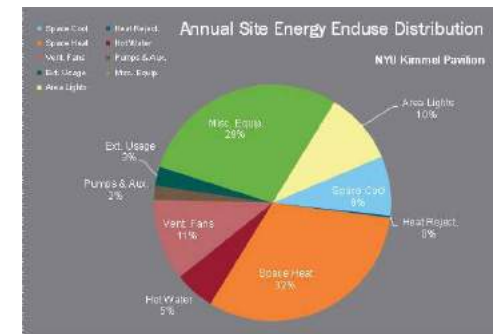
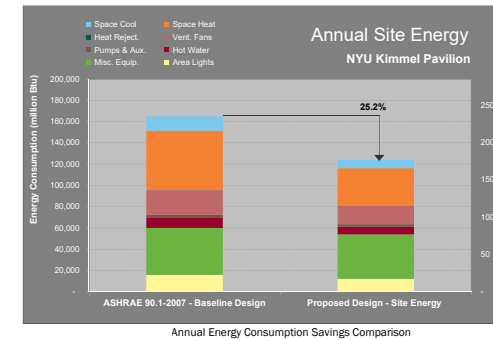
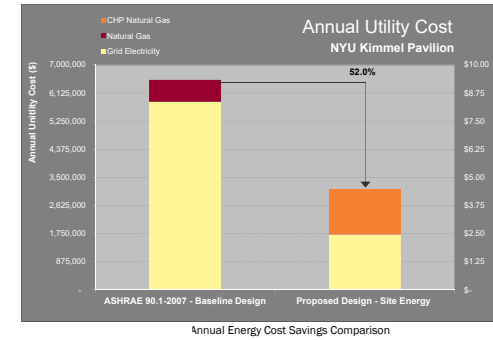
Bed Tower Patient Waiting and Reception Area

- Exterior day lighting reduces demand for artificial lighting.
- Air change rates vary based on occupancy confirmation and Co2 sensors to maintain high indoor air quality and minimize energy use and cooling tower water use
- Fully ducted, overhead variable air volume mixed air system
- Daylight dimming full range lighting
- Millwork FSC certified wood
- Lighting user controls & overrides
- High Efficiency Lighting
- Epoxy Terrazzo Flooring



Bed Tower Patient Room

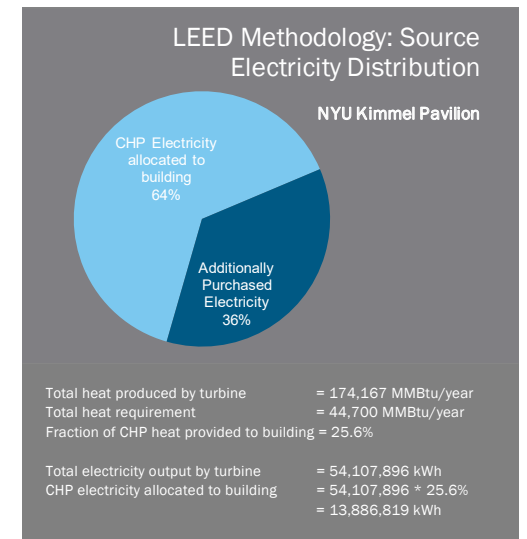
- Radiant ceiling panels
- Solar Shading optimizes the daylight distribution
- Triple low-e glass coating reduces heat gain and the number of air changes required to condition the room
- Individual temperature controls



* Graph/Table courtesy of Atelier Ten

NYU Langone Health Kimmel Pavilion

The building's high performance envelope and careful lighting design reduce conditioning loads, which are then met with an efficient mechanical system design. The mechanical systems, including variable speed drives on fans and pumps, air and water-side economizers, fan static pressure and cooling supply reset controls, premium efficiency motors, and enhanced mechanical controls (including unoccupied system setbacks), reduce the energy required to remove the large heat loads and condition the building. An offsite cogeneration plant and an onsite reciprocating engine within the Kimmel Pavilion reduce the amount of electricity that is required to be provided by the local utility.



Mechanical Systems Energy Savings

-NYU Kimmel Pavilion reduces annual energy use 51.75% below ASHRAE 90.1-2007.

Measurement & Verification

-Measurement and verification of all HVAC and lighting systems
 -Post -occupancy thermal comfort survey.

Enhanced Refrigerant Management

-Selected refrigerants with low global warming and ozone depletion potential

Green Power

-Offset 70% of the annual electrical load for 2 years with purchased green power

MECHANICAL SYSTEMS

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NYU Langone Health Kimmel Pavilion



FSC certified wood used for patient room credenza

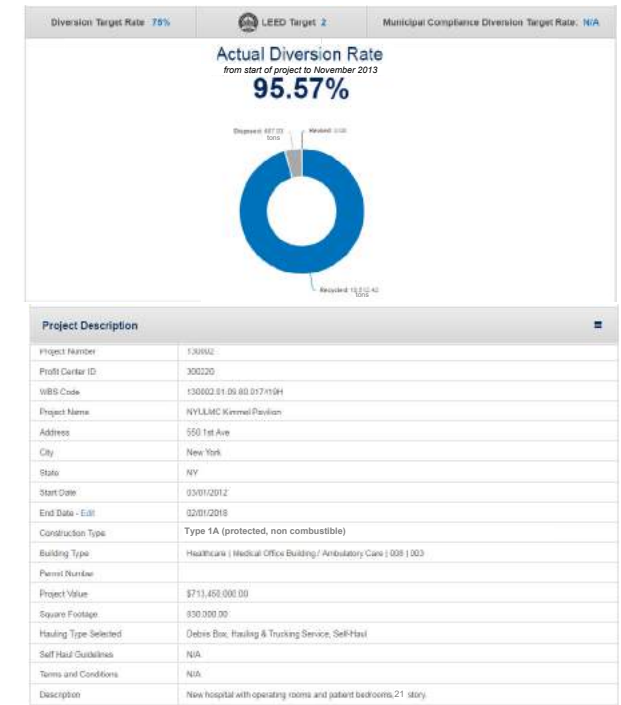
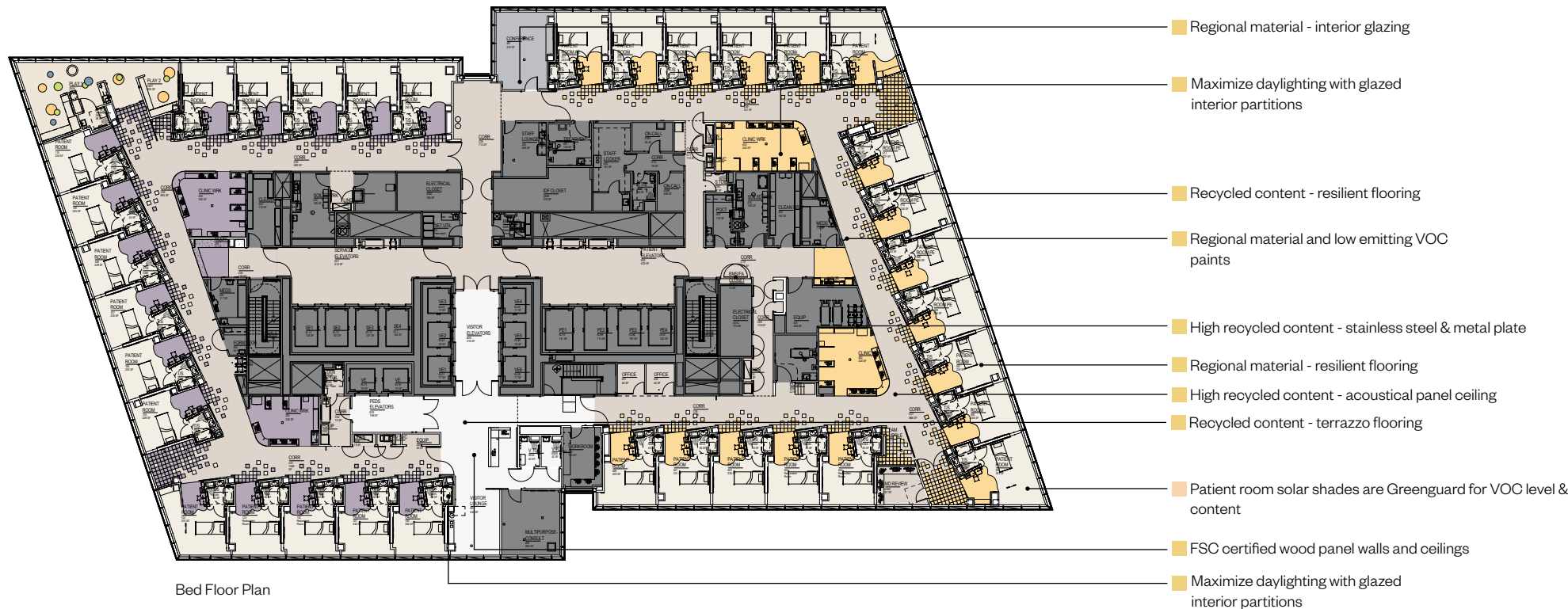


Recycled content included with acoustic ceiling tiles
Regional material and Greenguard resilient flooring



Recycled content included in terrazzo flooring
FSC certified wood panel walls and ceiling

Materials within the NYU Langone Kimmel Pavilion were selected based upon several environmental criteria. Materials were selected for their high recycled content, and wherever possible, local extraction and manufacture. Additionally, the majority of the building's new woodwork was sourced from sustainably managed forests, and all materials were carefully selected for low emission of contaminants to maintain good indoor air quality.



Construction waste management plan

MATERIALS

Construction Waste Management

- Construction waste management plan developed and implemented
- 90% of the construction waste was recycled

Regional & Recycled Materials

- 20% extracted, processed, and manufactured regionally
- 25% (post-consumer + 1/2 pre-consumer) recycled content

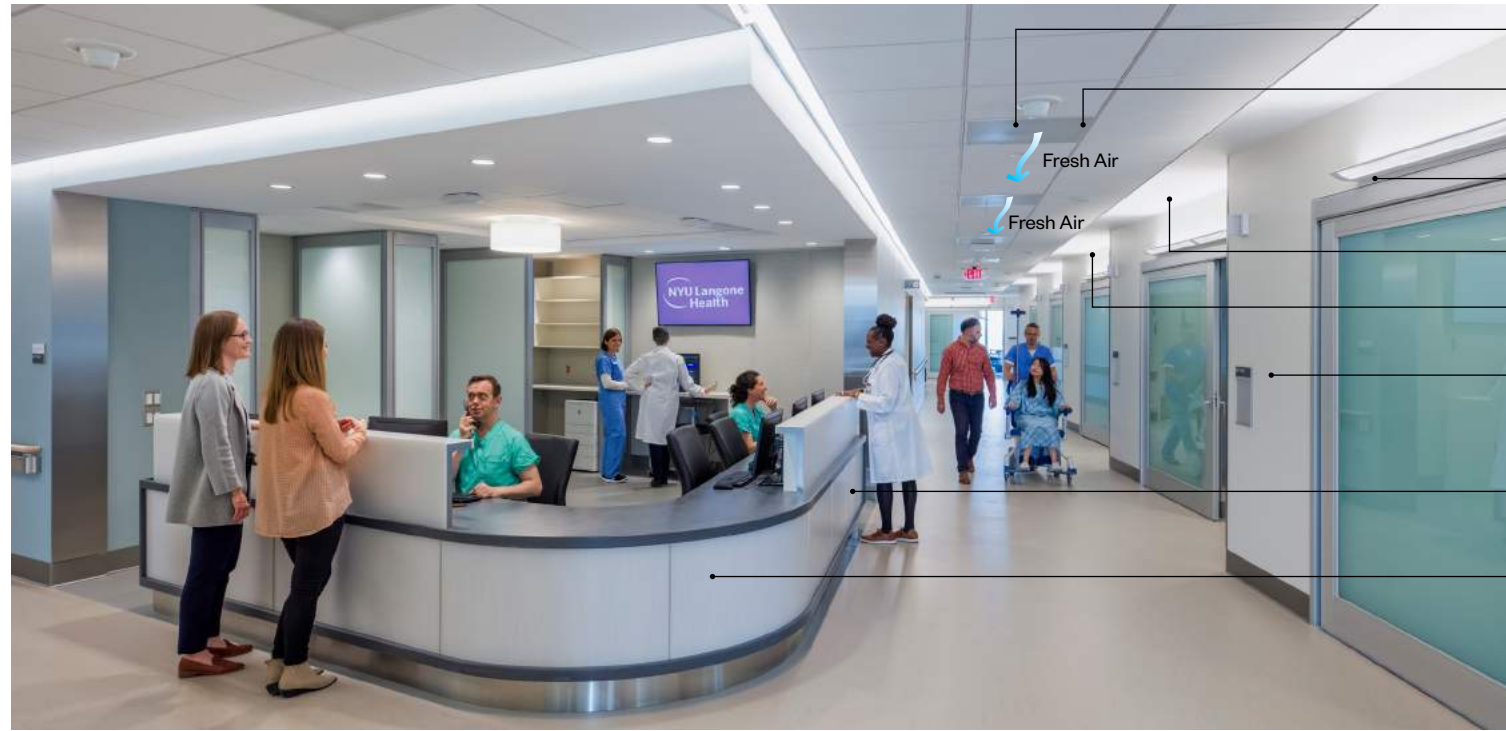
Certified Wood

- 50% FSC certified wood used

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NYU Langone Health Kimmel Pavilion

High indoor environmental quality is achieved at the NYU Langone Kimmel Pavilion through numerous environmental strategies. This includes the selection of low-emitting adhesives, sealants, paints, coatings and carpet systems. Daylight dimming with occupancy sensors provides occupant comfort while vision glass maximizes daylight into the corridor. Ventilation rates have been increased to 30% above the ASHRAE 62.1 baseline and individual thermal comfort controls have been provided in all patient rooms. To reduce contaminants brought in from the outdoors, all main entryways have walk-off grilles.



Nurse Station at typical bed floor with exterior views and daylighting

- Increased ventilation rates 30 % above ASHRAE 62.1-2007
- Monitoring outdoor air on ventilation systems and monitor Co2 concentrations
- Occupancy sensors for lighting control
- Daylight dimming full range lighting
- High efficiency lighting
- Low-emitting adhesives, sealants, paints, coatings & resilient flooring-systems
- Urea-Formaldehyde free resins & adhesives for millwork
- Individual lighting control at nurse station



Waiting area with exterior views and daylighting



Public Cafeteria with exterior views and daylighting. Direct access to outdoor terrace

- Urea-Formaldehyde free resins & adhesives for millwork
- Direct exterior views the Manhattan skyline
- Triple insulated curtain wall glass reduces exterior noise and increases occupant comfort
- Direct exterior access



Operating Room includes full lighting and thermal comfort temperature controls. Low emitting paints and flooring. Occupancy sensors to allow the air change rates in the space to be reduced when the space is not in use.

Lighting Controls

-Provided lighting controls for 90% of individuals and 100% for group spaces

Thermal Comfort

-Provided comfort controls for 50% of individuals and 100% for group spaces
 -Met ASHRAE 55-2004 thermal comfort conditions for human occupancy
 -Provided permanent monitoring system and post-occupancy thermal comfort survey

Improved Air Quality

-Ventilation rates are 30% above ASHRAE 62.1-2007
 -Provided direct outdoor airflow measurement devices

Low VOC Materials

-Provided low emitting adhesives, sealants, paints & coatings

INDOOR ENVIRONMENT

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