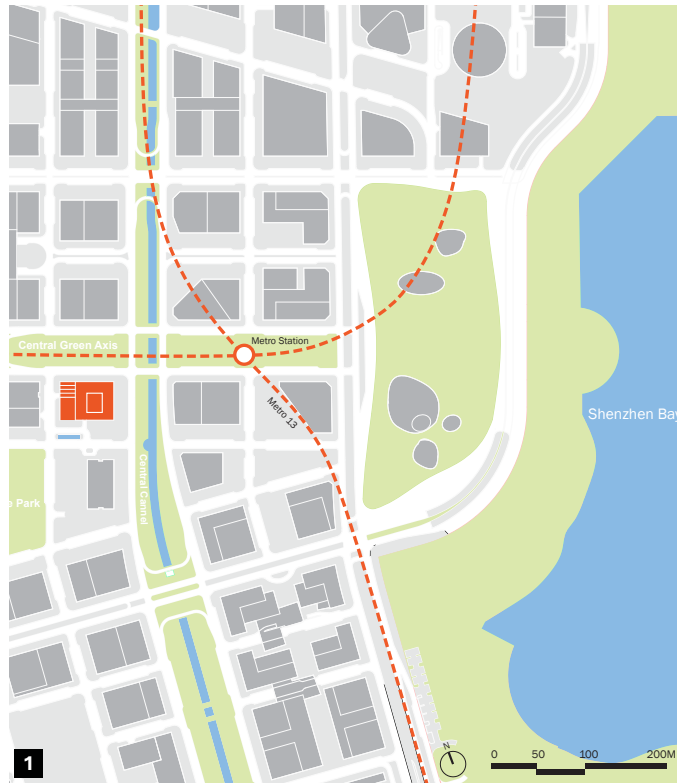


Storm Lee Armstrong
Professional Works Portfolio

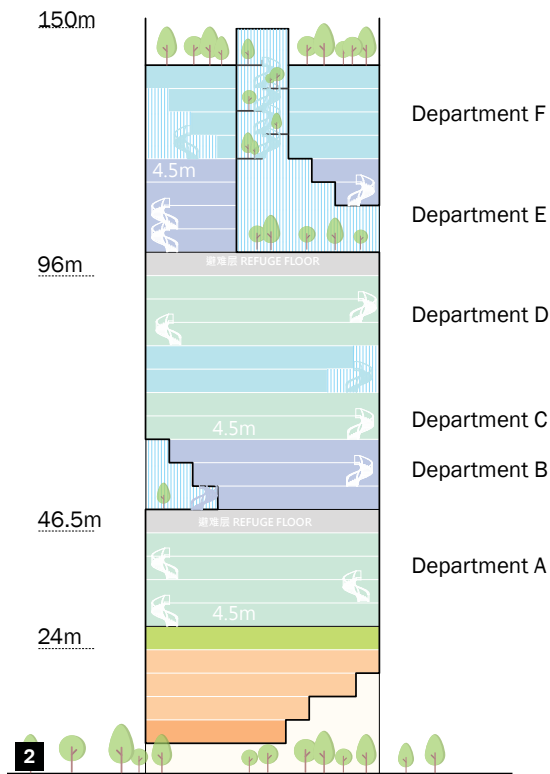


BYTEDANCE HOUHAI CENTER, (SHENZHEN, CHINA)

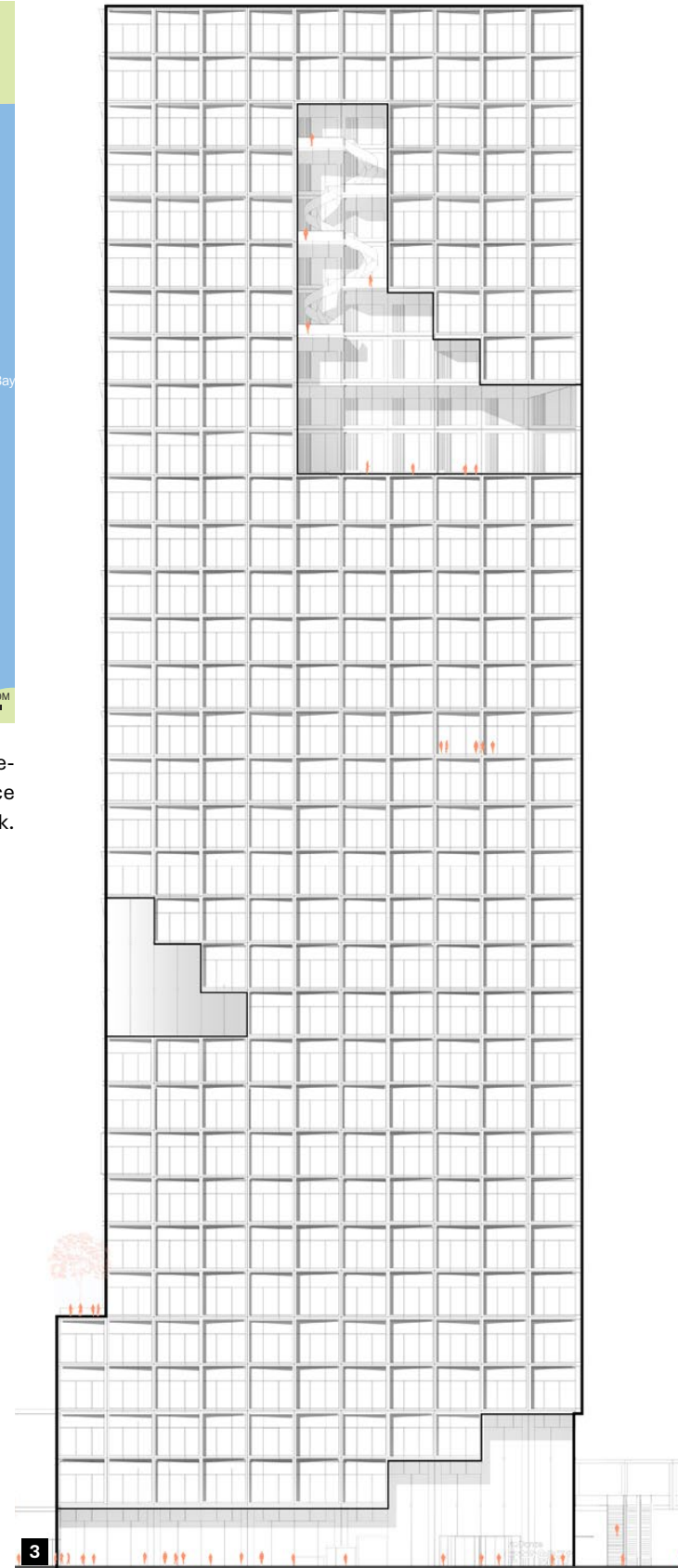
Like a city, Houhai Center brings people together in many “Neighborhoods” which correspond to the client’s many business platforms. Each Neighborhood, which consists of several floors, enjoys its own identity and its own common spaces for gathering and collaboration. The Neighborhoods come together in two “Town Centers” at the podium Commons and Rooftop, where interaction and exchange abound.



The building creates a lively public realm by activating the sidewalks and pedestrian experience with retail storefronts, entrance lobbies, plaza, vehicular arrival court, and an elevated Skywalk.



1. Site Plan 2. Diagrammatic Section



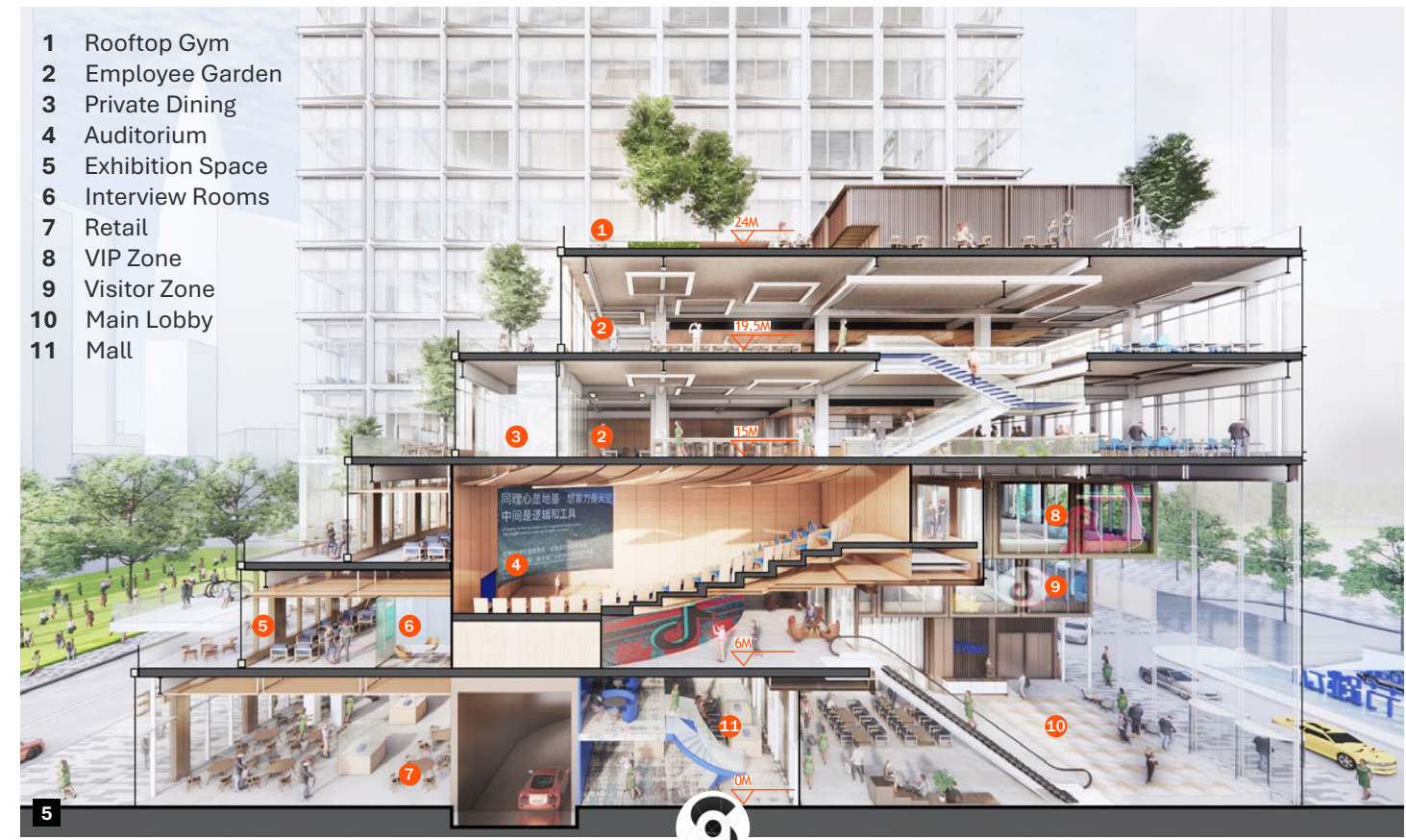
3. Elevation - East

(continued), BYTEDANCE HOUHAI CENTER

The planning of the building’s 5-level podium takes in the immediate context of greenery: the Greenways of Chuangye Road and Zhongxin Road, and Southwest Park. The tower’s form is simple, clean, and respectful of its neighbors, with visual accents in the form of multi-story “Bytes” that give a distinctive signature to Houhai Center. The circulation system is multi-segregated and secured for different user groups.



Natural daylight is maximized by providing ample windows and maintaining an open floor plan with optimized core to exterior wall dimensions. Daylight sensors and efficient light fixtures will provide significant reduction in lighting and cooling electricity use. The brise-soleil cladding system will reduce energy use and unwanted glare in the interior spaces. Additionally, the “Byte” at the upper floors will self-shade the windows.

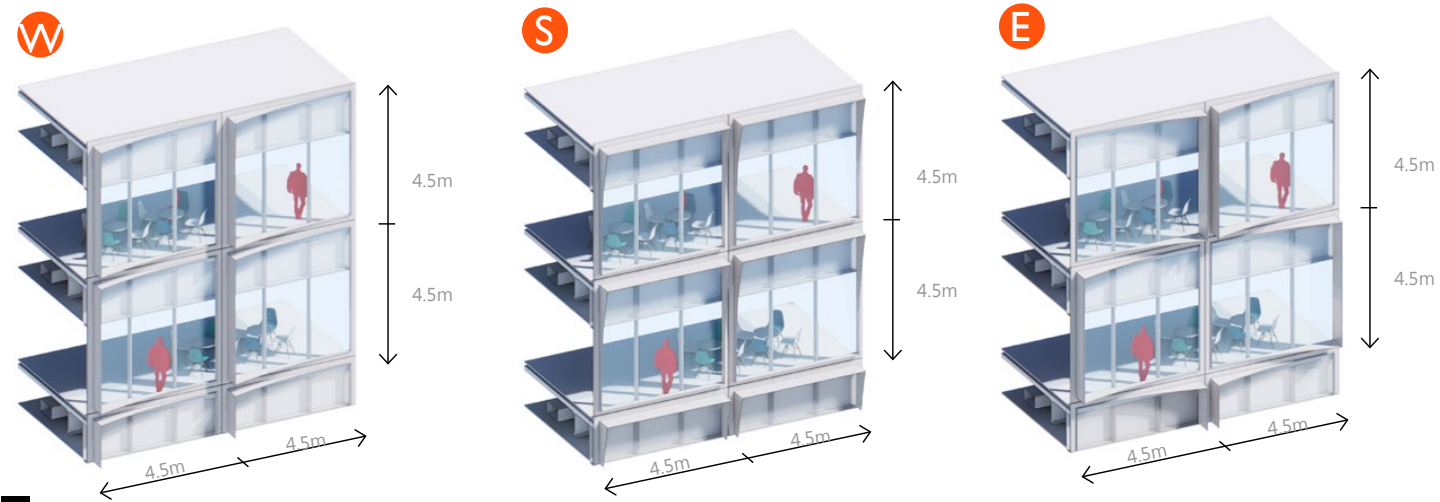


4. Exterior Render

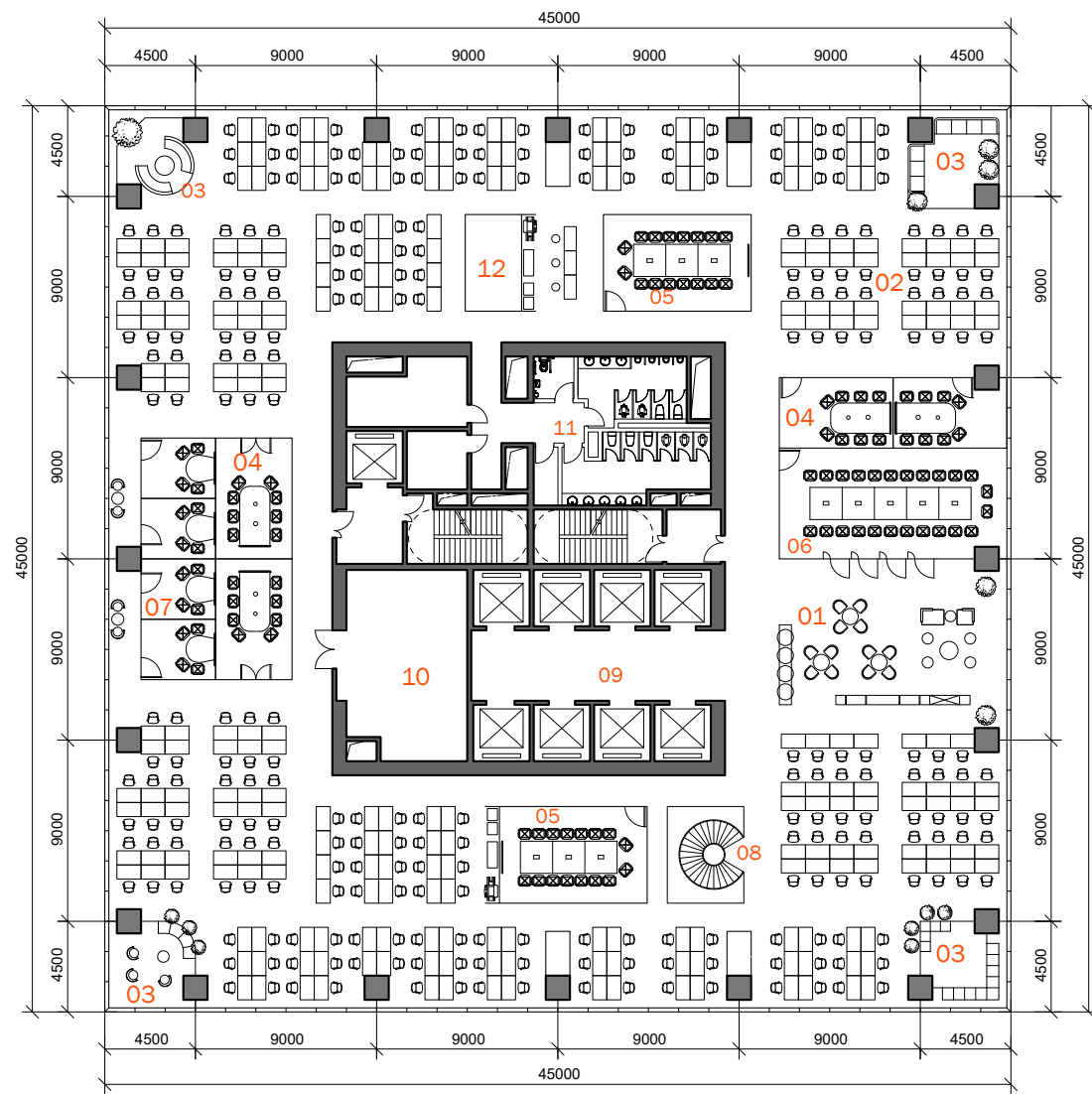


BYTEDANCE HOUHAI CENTER, (continued)

The structural system is composed of a traditional reinforced concrete core with steel moment frame system. The system is efficient and uses a steel structure for perimeter moment frame and floor framing. Compared to concrete framing, steel structure provides greater flexibility and ease for future modifications/fit-outs, & contributes less weight. Additionally, there is consistent structure throughout the height of the building.



1



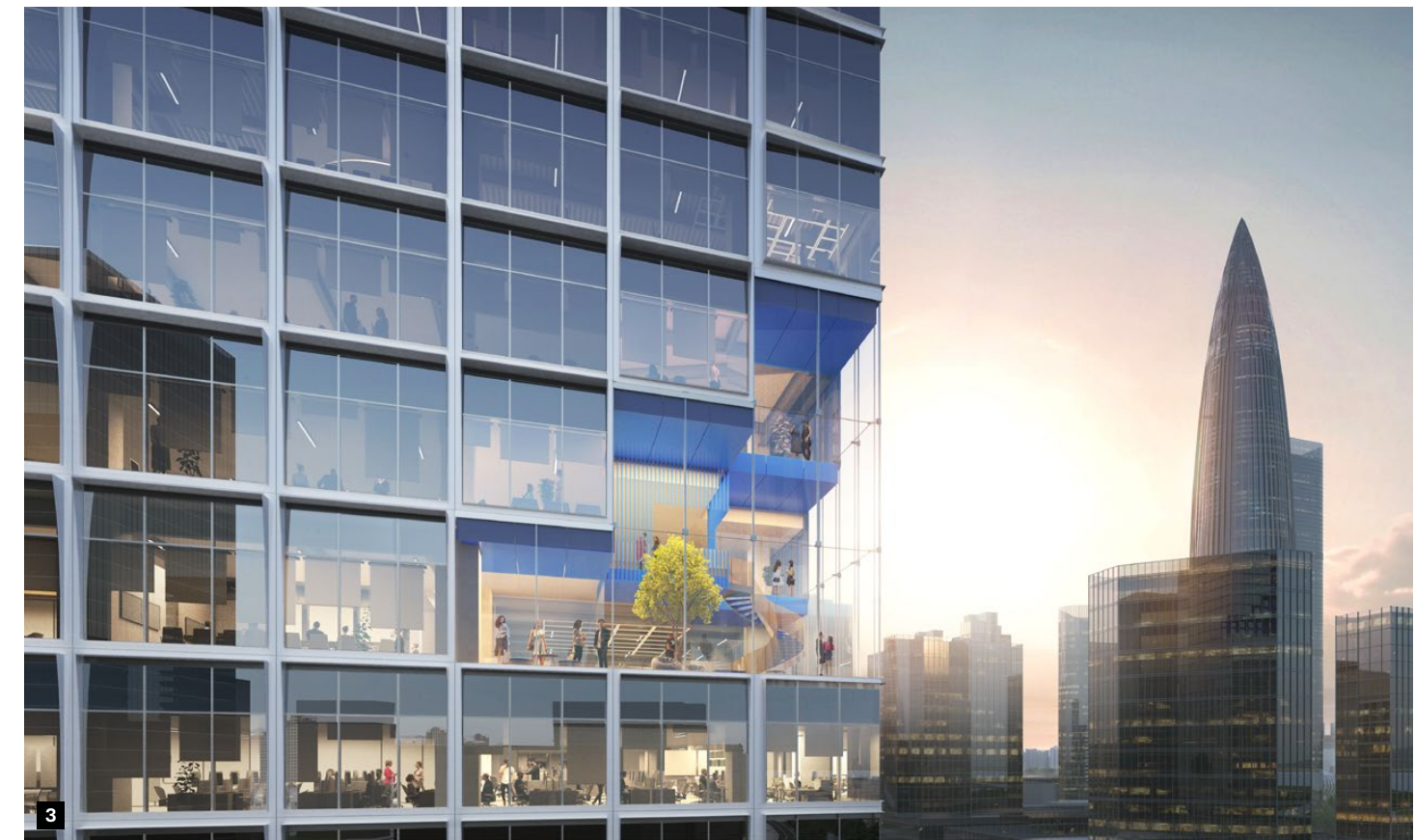
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1. Facade Types 2. Typical Tower Floor Plan 3. Aerial Exterior Render 4. Interior Render

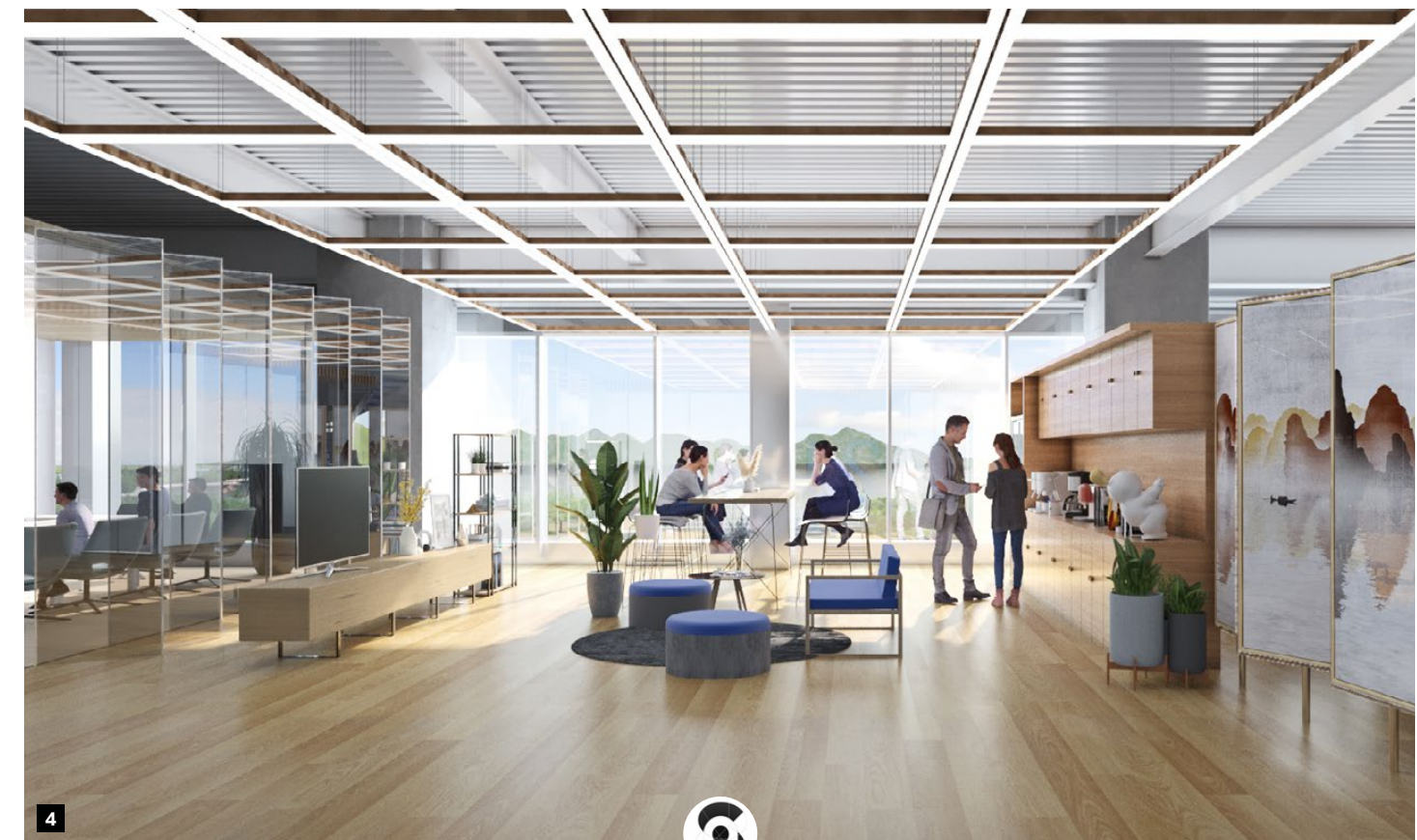
(continued), BYTEDANCE HOUHAI CENTER

The typical floor is cheaper and faster to construct, with regular and reasonable column spacing for lighter floor framing. Reasonable structural member sizes match the façade layout. Vierendeel trusses are utilized for the “Bytes”. The frames perfectly align with the curtain wall modules, and do not obstruct views. Interior open stairwells provide possibility for occupants to travel between immediate floors by stairs.



3

The metal panel façade brise-soleil system shades the interior, reducing glare by 25% while lowering energy costs by up to 15%. For the best performance on the south façade horizontal shading will be installed, while east and west facades will have both horizontal and vertical shading. The tower brise-soleil frames deepen on higher floors at the south and east facades to reduce solar radiation and optimize daylighting.

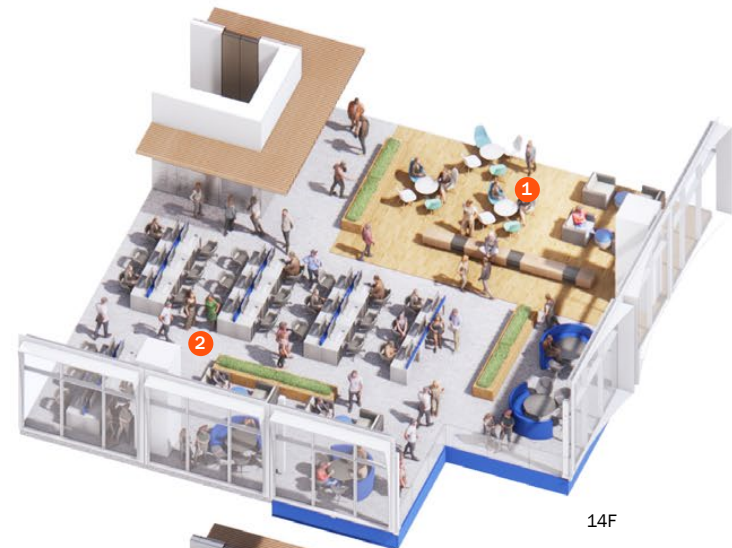
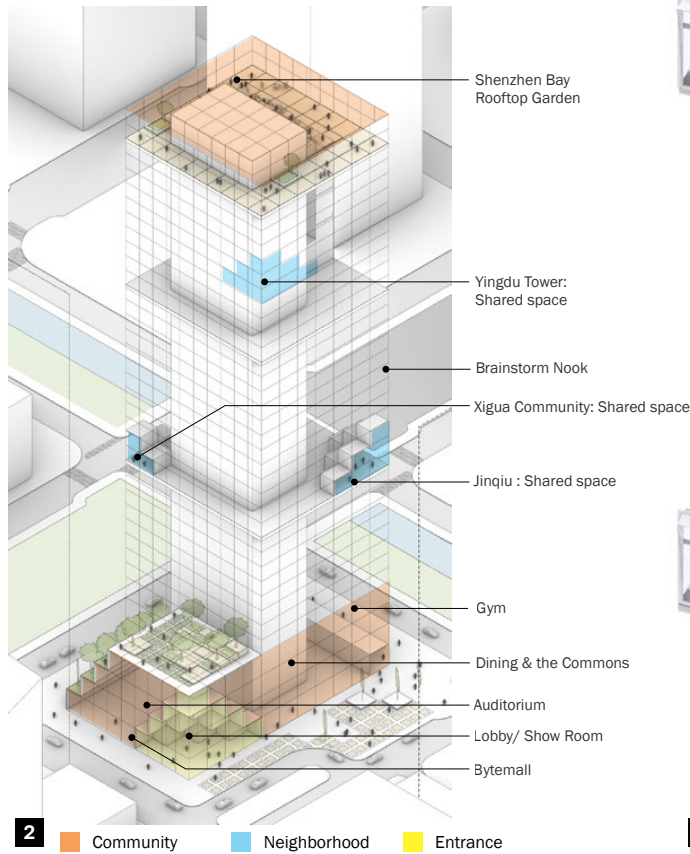
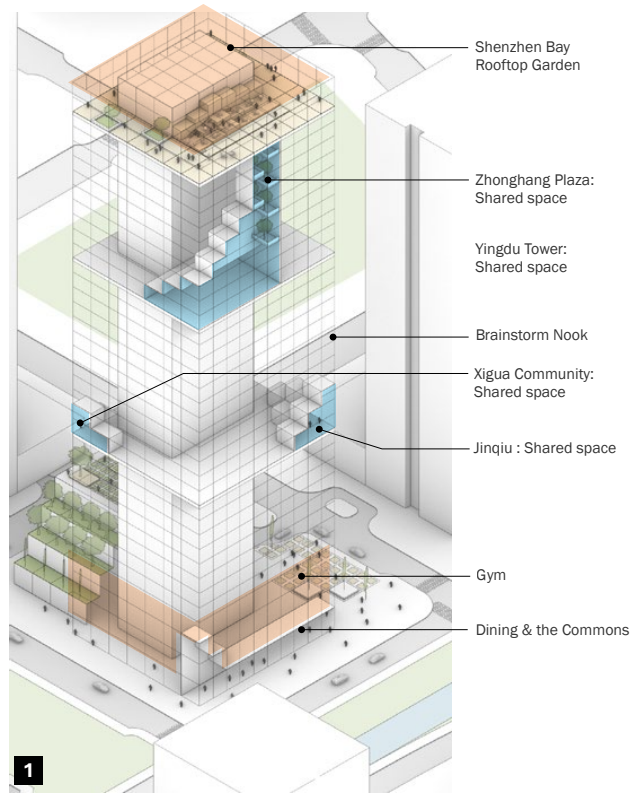


4



BYTEDANCE HOUHAI CENTER, (continued)

The exterior common areas at the rooftop and roof terrace will be comfortable for a majority of the year due to the louvered and self shading systems and the positioning of these outdoor spaces with respect to favorable prevailing breezes. These exterior common areas provide possibilities for outdoor working and outdoor dining. The Tiktok outdoor theatre provides outdoor entertainment space.



- 1 Pantry
- 2 Open Floor Office
- 3 Brain Storm Nook
- 4 Library
- 5 Internal Stair
- 6 Meeting Room

1. Diagrammatic Axon - NE 2. Diagrammatic Axon - SW 3. Rendered Public Space 4. Interior Public Render
 5. Interior Lobby Render

(continued), BYTEDANCE HOUHAI CENTER

The Houhai rooftop bar offers employees social venue after work. The enclosed conditioned room on the roof, the Canal Room, allows for a protected space from the rain and the wind. Thermal comfort and glare were simulated and evaluated during design to ensure that spaces will function as intended. A 5,900 sm dining and kitchen area is provided on site for 6,100 building occupants.

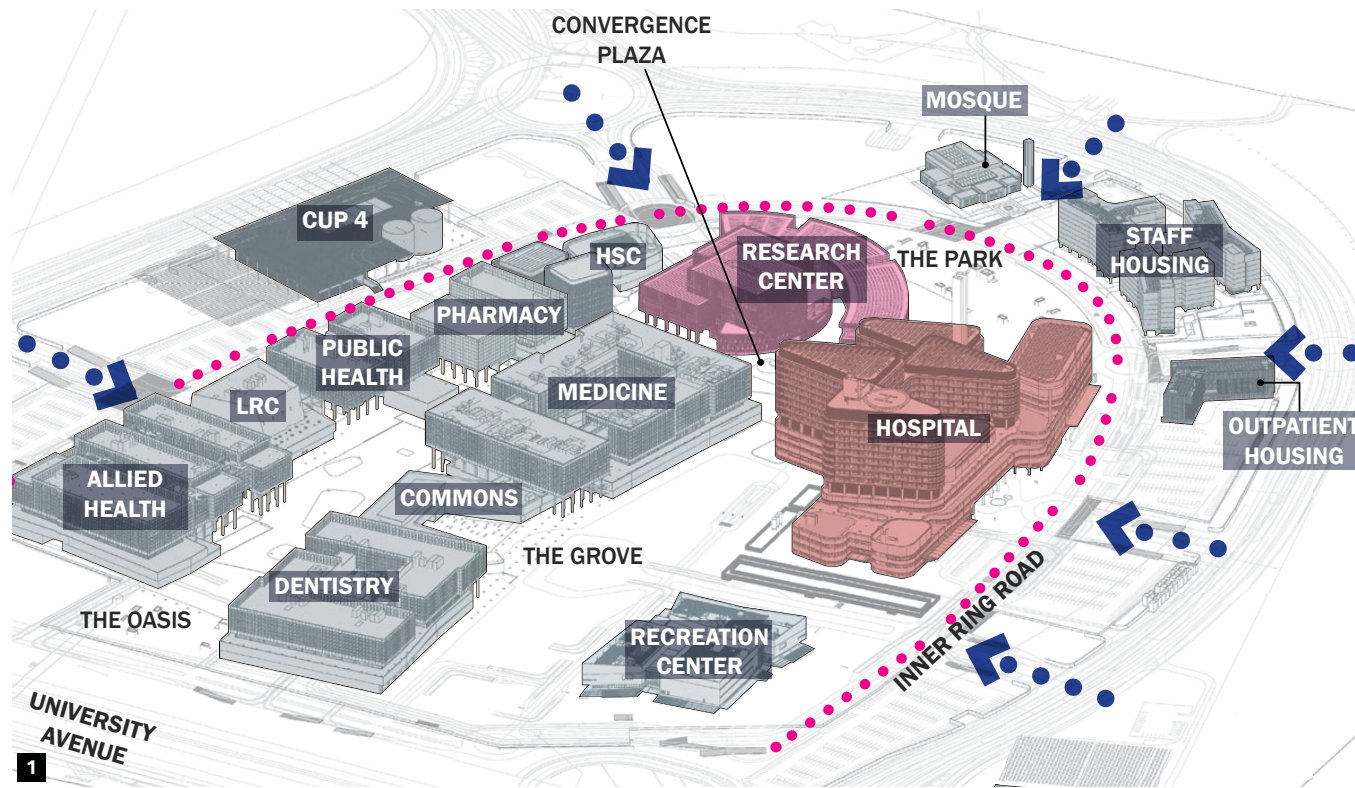


Over 95% of total building materials will be locally harvested and produced. Light wall materials, recyclable materials, low-e glass, and cooling exterior wall paint are intended to be applied. Given Shenzhen's hot summers, roof garden amenity spaces atop every building feature high-albedo materials, low water-consumption plantings, and areas of shade to ensure access to comfortable outdoor spaces year round.

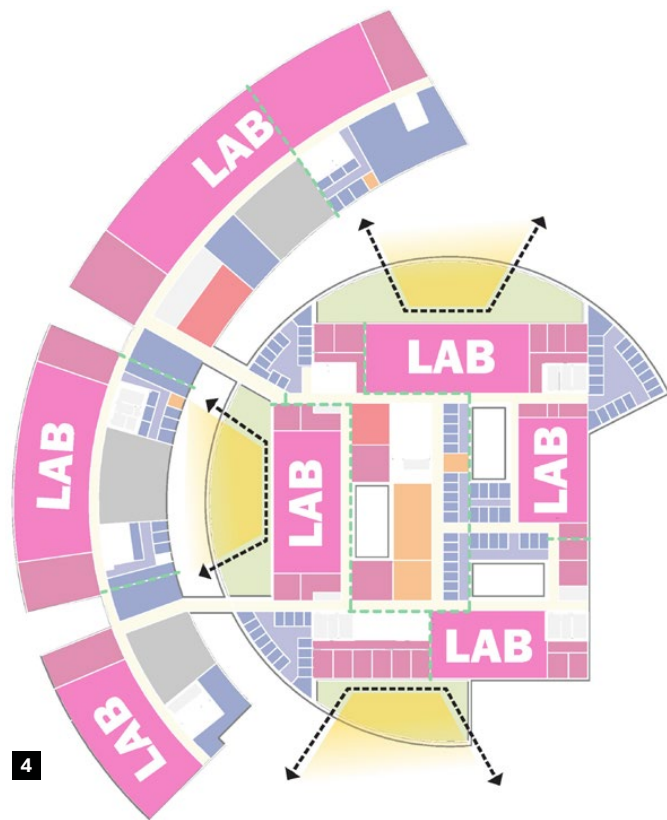


RESEARCH CENTER & TEACHING HOSPITAL, (KUWAIT CITY, KUWAIT)

Included amongst a masterplan for 140 acres of new construction located south west of Kuwait City, Kuwait and adjacent to the Kuwait University Main Campus is both a 100,000sm Research Center facility that anchors the western edge of the Health Sciences Campus as well as a 200,000sm teaching hospital design proposal set to facilitate 696 staffed beds along with a plethora of other healthcare departments.



The building is designed as a destination building, with state of the art lab facilities which will provide a much needed educational facility to assist cutting edge academic research within the country and the sub-continent. Designed as a destination building - as a porous entity at the base allowing for pedestrian integration and accessibility from all areas of the campus & innovation in the



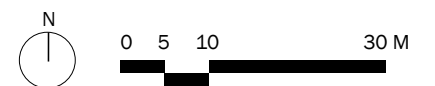
1. Diagrammatic Site Aerial 2. Exterior Perspective Render 3. Aerial Perspective Render 4. Program Concept Diagram

5. Fourth Floor Plan

(continued), RESEARCH CENTER & TEACHING HOSPITAL

The interlocking form made up of various platonic shapes creates break out spaces in a multitude of scenarios in order to provide a lively academic experience through out the building. The building has been sensitively designed keeping environmental and sustainable principals in mind. The use of courtyards and peripheral gardens enhances the quality of natural light throughout the building, enhancing user experience.

- 1 Shared Special (Labs)
- 2 Collaborative Spaces
- 3 Administration Spaces
- 4 Courtyard
- 5 Elevated gardens
- 6 Mechanical



5



RESEARCH CENTER & TEACHING HOSPITAL, (continued)

The idea of porosity and accessibility to the research center is further enhanced by planning the core facilities to overlook the access corridors to the building - thus creating a moment of Science on Display. Academicians and students on campus can walk through this 'innovation corridor' to get a glimpse on the latest research being explored within the research communities, further exemplifying ideas of collaboration.



All floor plates are designed to provide flexibility, accommodating individual zones per faculty or multidisciplinary collaborative research neighborhoods, allowing space to ebb and flow in function according to research needs over time. The large floor plates with their strategic courtyards and terraces has successfully managed to introduce natural light to all parts of the building complex.



1. Exterior Promenade Render 2. Interior Workplace Render 3. Building Elevation 4. Building Section
5. Section Perspective 6. Interior Atrium Render

(continued), RESEARCH CENTER & TEACHING HOSPITAL

This further reduces the dependency on artificial lighting for deeper lab spaces and admin spaces. All lab spaces have been provided with 'perimeter gardens' to bring in adequate light, shade and respite. The gardens and the circular wall that outline these spaces provide these 'urban balconies' which look out and engage the rest of the campus while simultaneously creating a multitude of climate controlled spaces.



At the heart of the research center is the collaborative space-a series of triple height interlocking volumes created out of strategically programmed 'hyperstair' volumes that allow for flexible gatherings to take place. Here the researchers come together in a more informal condition to discuss, share and comment upon the work being carried out by their fellow colleagues in the building and elsewhere on the campus.



RESEARCH CENTER & TEACHING HOSPITAL, (continued)

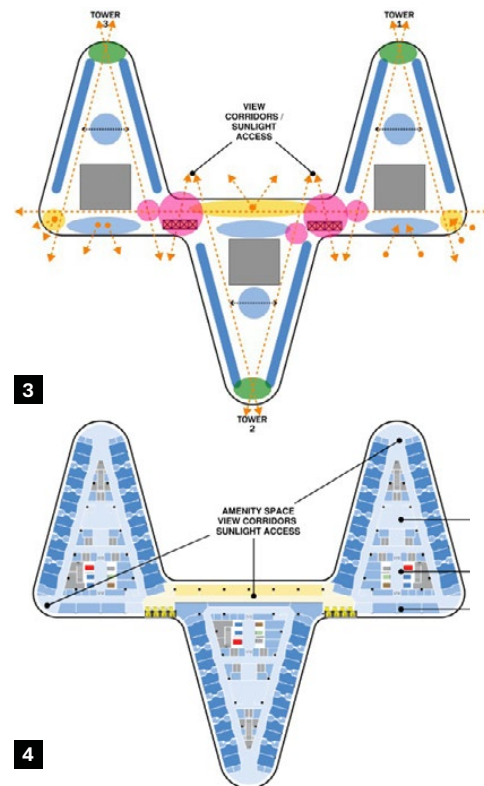
The form and massing of the hospital creates a sculptural focal point while also reconciling and responding to the forms, axes and space-making of the master plan and in particular its relationship to the "Convergence Plaza" and adjacent buildings. The cascading towers take into account potential phasing considerations, while creating a dynamic composition in the round, as seen from all approach/sight lines on campus.



Overall experiences for patients and family is central to the design allowing for optimal user satisfaction. While maintaining the flexibility of rooms, patient beds are designed as universal rooms to enable service line flow and to accommodate different levels of acuity. Nurse stations are situated at critical points on floors offering clear sight lines to key patient areas, facilitating effective care.



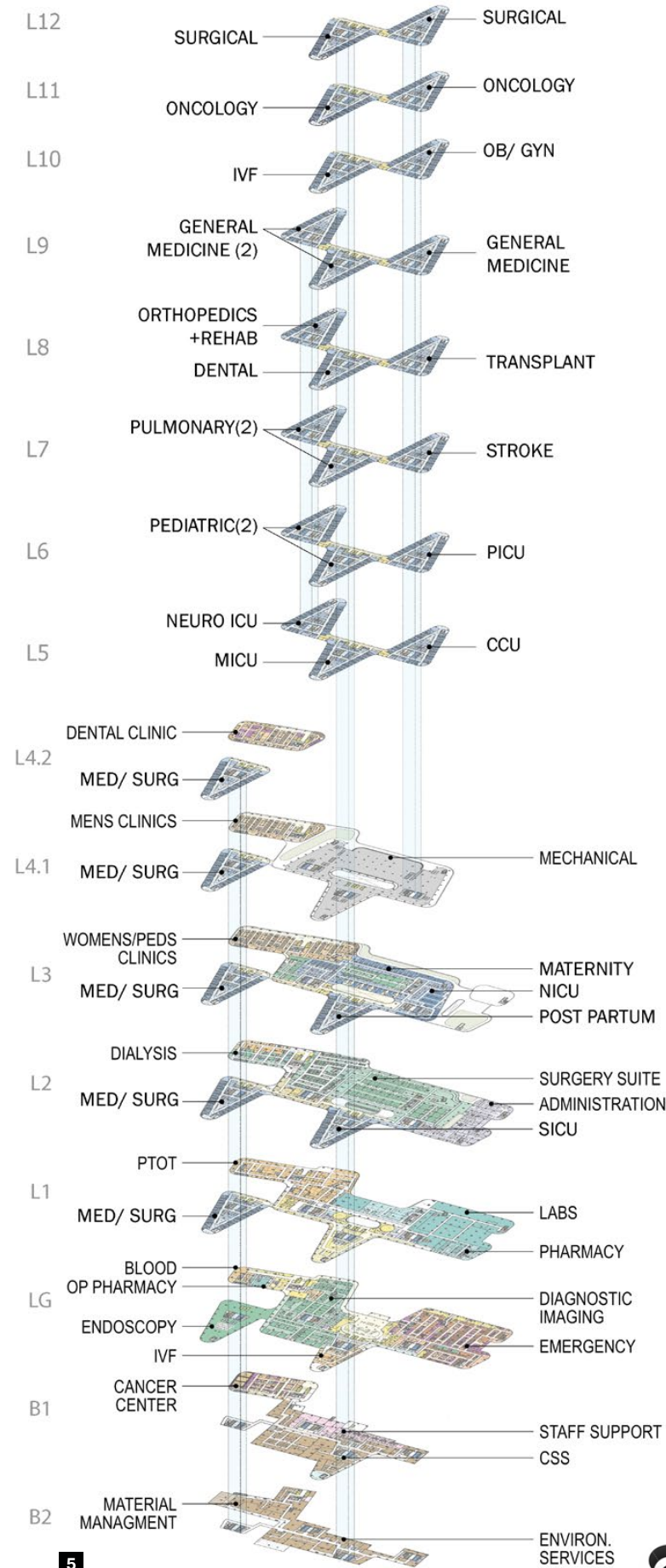
1. Exterior Aerial Render
2. Site Map
5. Service Line (Department) Diagram



3. Bedtower Concept Plan
4. Typical Bedtower Plan

(continued), RESEARCH CENTER & TEACHING HOSPITAL

The teaching hospital contains 696 staffed beds, in addition to NICU bassinets, and patient care areas dedicated for observation, prep, recovery, or any activity culminating in less than a 23-hr patient stay in the hospital. The distribution ratio between acute care and critical care inpatient beds is 83% : 17% per Hospital End-User Committee allocation of beds & consistent with global best practices for teaching hospitals.



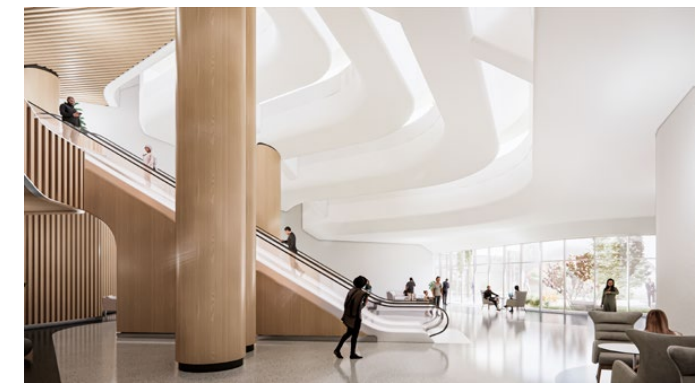
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Biophilic design & sustainable materials has been shown to greatly improve stays & reduce negative environmental health impacts.



Neutral earthy tones drawn from surrounding landscapes mixed with brilliant accents offer continuity with the rest of the campus.



Two grand curve-linear staircases designed to mimic the natural lines of the form to connect the garden with the amenity spaces.

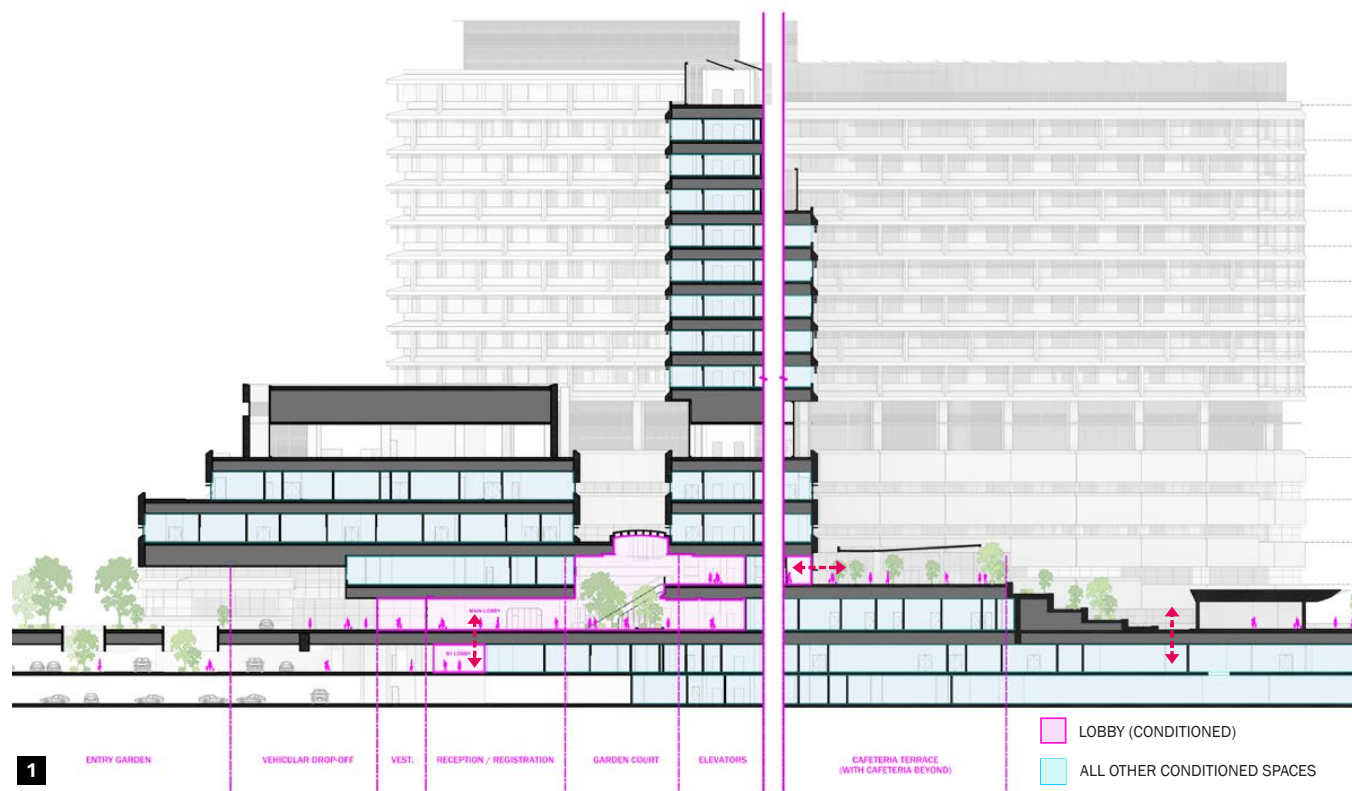


The café's ample seating and unobstructed views to the landscape outside provide an optimal spot for dining and relaxation.

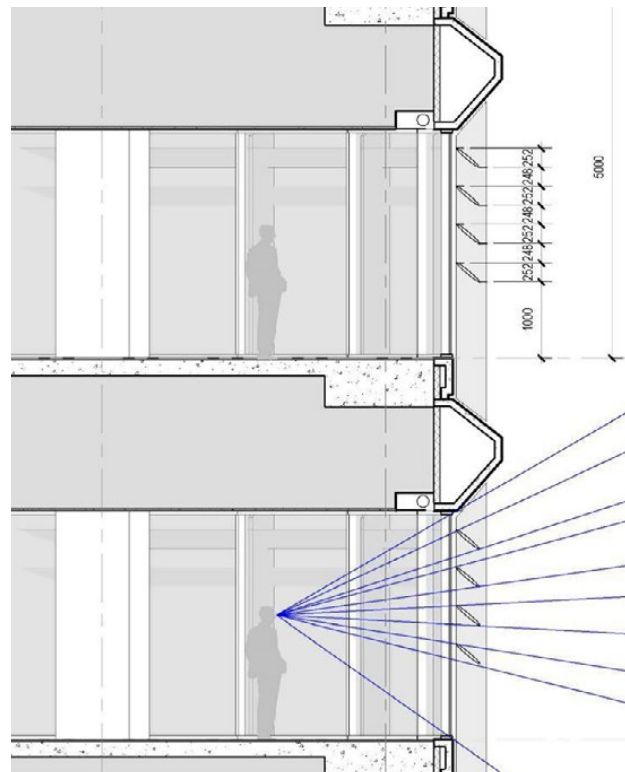
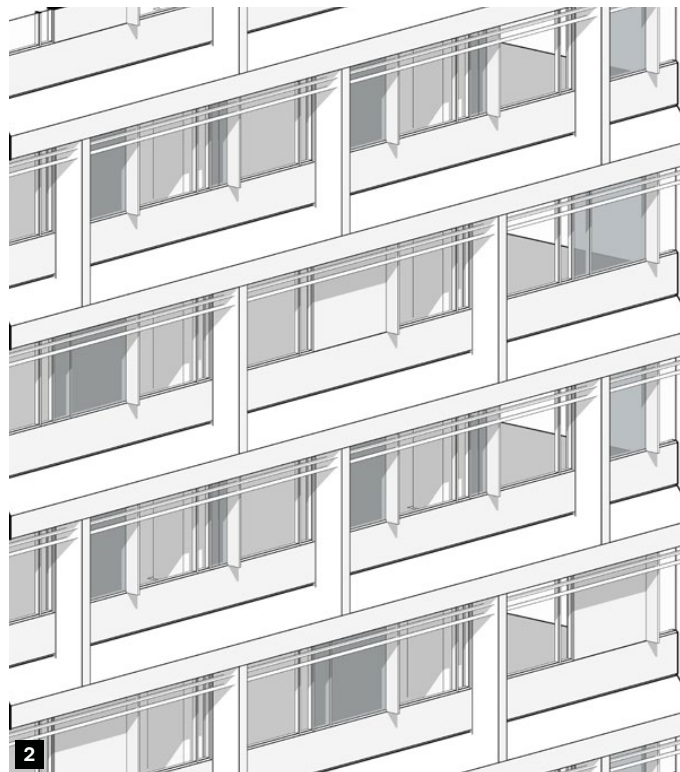


RESEARCH CENTER & TEACHING HOSPITAL, (continued)

The main lobby features a large garden area accompanied by central reception. Adjacent amenities are thoughtfully configured to achieve ideal patient flow and navigation. Clear walkways and a variety of seating for patients and their families within the garden not only connect with the surrounding nature but serve to facilitate and promote well-being and healing throughout while creating a timeless design aesthetic.



A parametric approach to the design of the varying facade conditions in relation to their orientation and expected thermal performance was applied to the hospital's forms. As a result, the established system shading devices are deployed across the facades, all at different depths and orientations as required to achieve desirable levels of performance as well as daylight, views and comfort.



1. Entry Lobby Section 2. Exterior Facade Vignette 3. Facade Section 4. Exterior Entry Render

5. Exterior "Grove" Render

(continued), RESEARCH CENTER & TEACHING HOSPITAL

The measure of a building's flexibility is the ease with which floor areas in the building can be reconfigured to respond to changing needs. For hospital and outpatient building types change is expected and desired as new advances in equipment, procedures and delivery care models evolve. In this ever-evolving environment attention to flexibility and modularity and a systematized approach to planning will go a long way.



The choice of materiality in finishes in and out of the hospital and outpatient building reflect a healthy environment both in the production of materials scheduled for use and in the sustained use of health materials throughout the hospital and campus environs. A health care setting for patients, families and medical personnel will all thrive in a healthy environment and the material selection needs to play a thoughtful role.

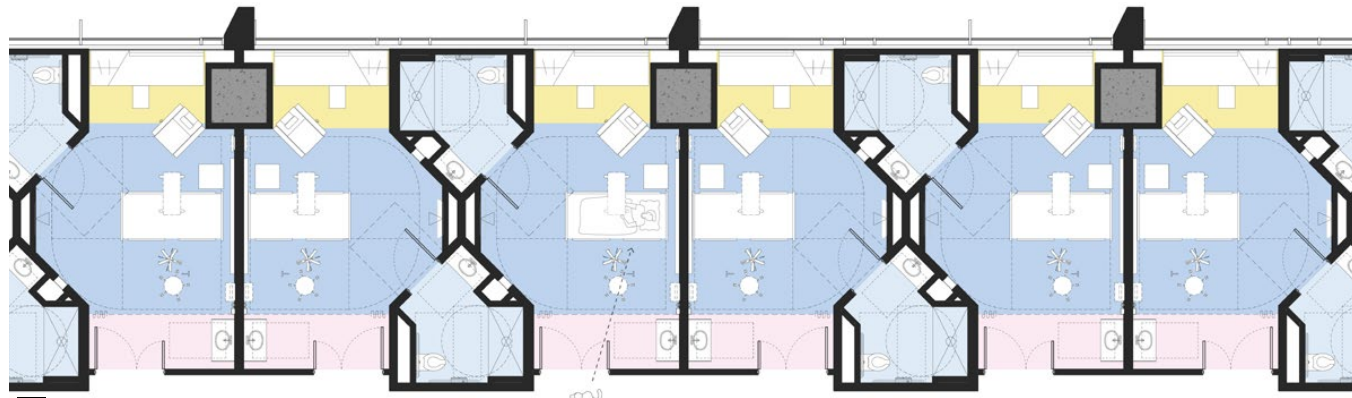


5



RESEARCH CENTER & TEACHING HOSPITAL, (continued)

The overall experience for patients and family is central to the design allowing for optimal user satisfaction. While maintaining the flexibility of patient rooms, patient beds are designed as universal rooms to enable service line ebb and flow and to be able to accommodate different levels of acuity. Nurse stations are situated at critical points on each floor offering clear sight lines to key patient areas, facilitating effective care.

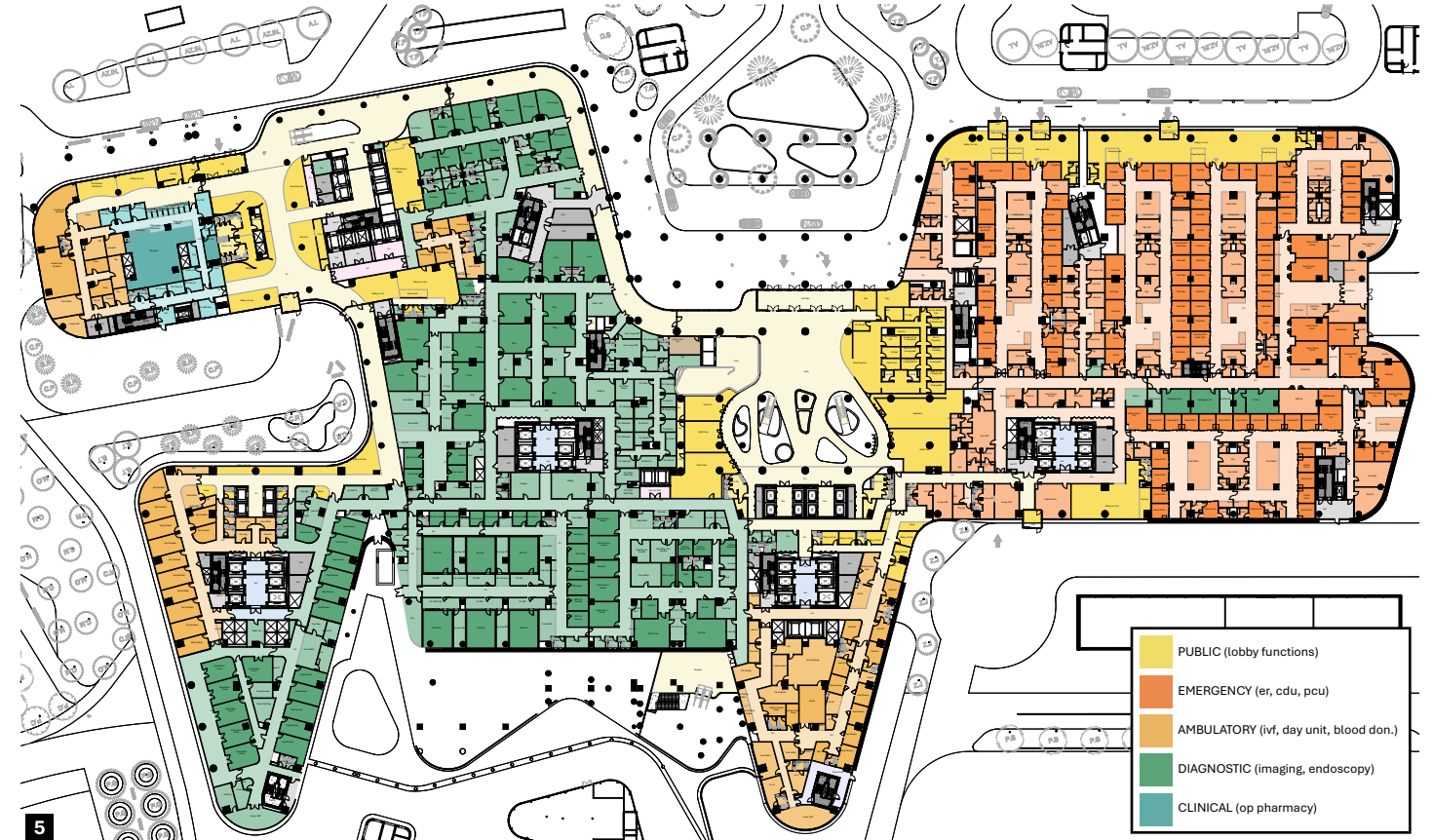


1. Typical Patient Room Line 2. Typical Patient Room Render 3. Patient Room Render 4. Nurse Station Render

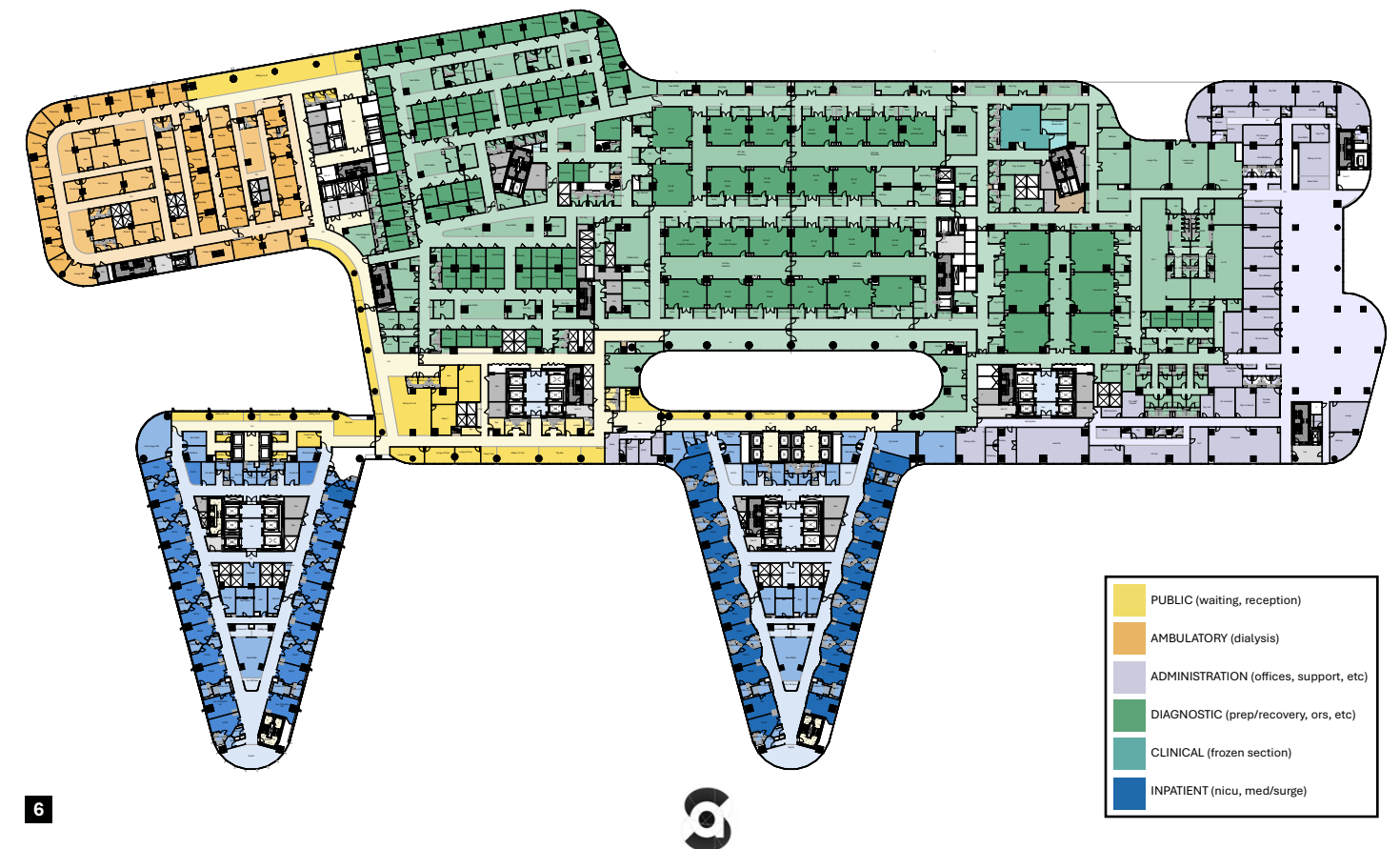
5. Ground Floor Plan 6. Third Floor Plan

(continued), RESEARCH CENTER & TEACHING HOSPITAL

Flexibility is most apparent in the podium where the diagnostics and procedure programs and support services are located in terms of repetition of space types and room sizes, interconnectedness and flexing of adjacent clinics, and key facilities and major medical equipment being located so as to maximize the benefits of its use by surrounding programs. Flexibility as it relates to inpatient accommodation, flexibility can



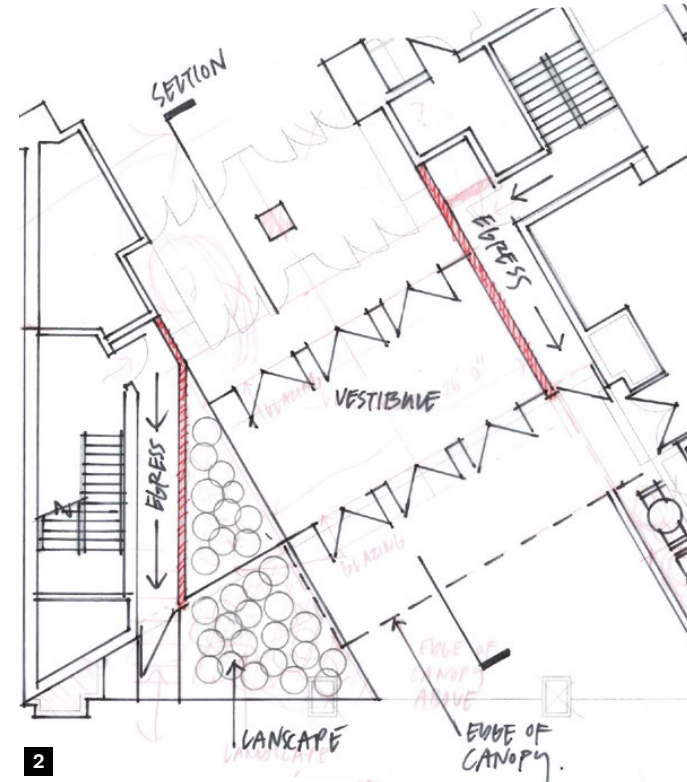
be described with an alternate meaning. The essential attribute is bed surge capacity and the capability to have considerable bandwidth to treat higher acuity patients in settings and spaces that on an average day would be designed as a lower acuity level. This is a post-pandemic and disaster-planning feature that is very vital for any healthcare center to address current and future healthcare emergencies and anomalies.



6

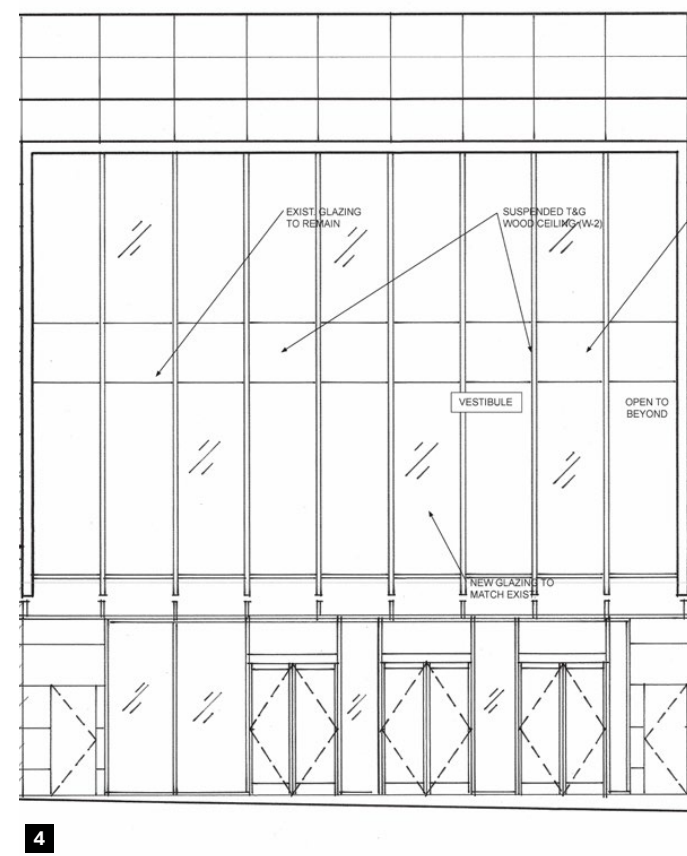
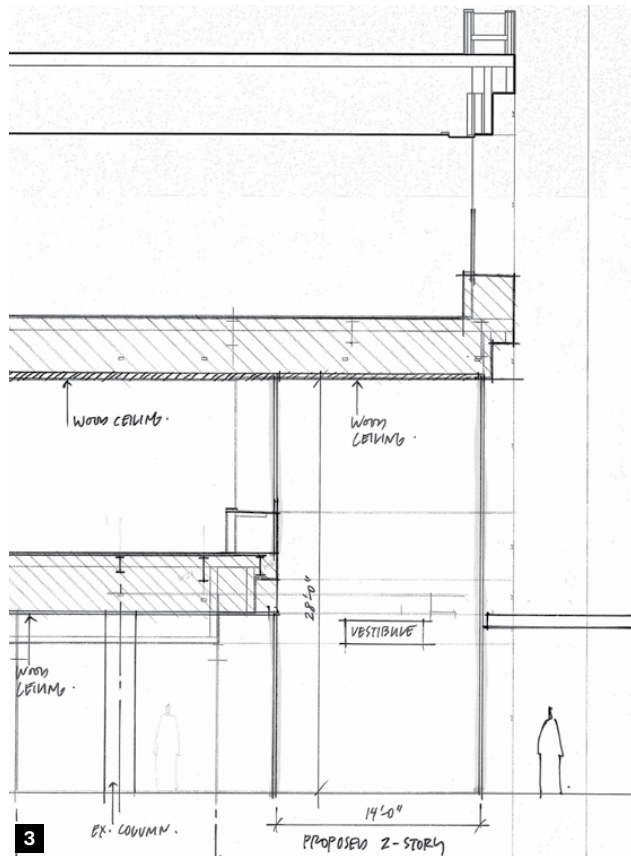
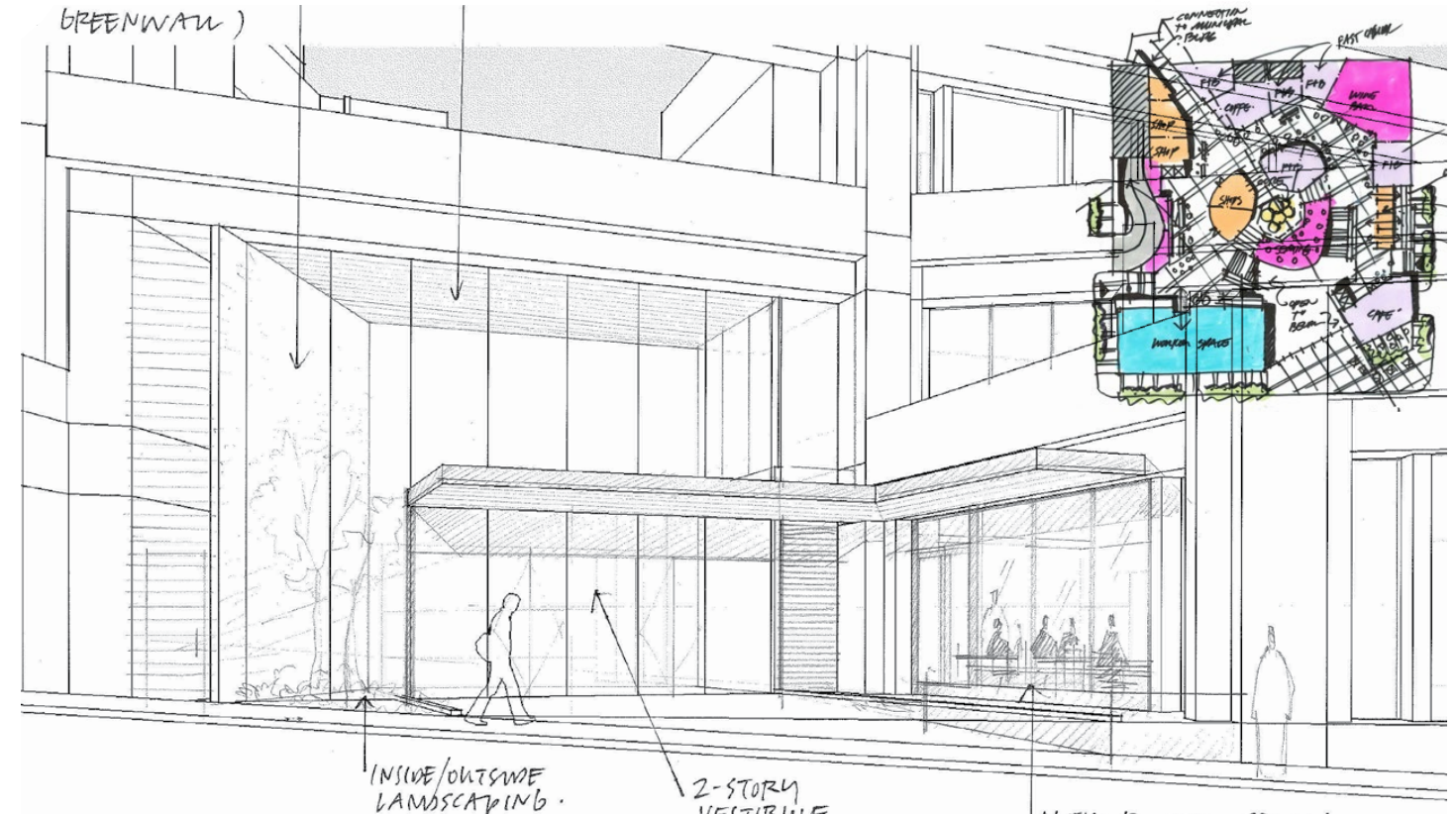
COLUMBIA CENTER PODIUM REMODEL, (SEATTLE, WASHINGTON)

The podium remodel of the Columbia Center (a 76-story 933ft tower) focused on the plaza, lobby, and under-performing retail spaces located on the lowest levels of the building. To appeal to prospective tenants, a new co-working “urban room”— a grand, active space was created to serve as both the building tenancy and the immediate neighborhood as a central meeting and gathering hub.



(continued), COLUMBIA CENTER PODIUM REMODEL

Other changes include the renovation of the two-story Fourth Avenue entryway with a decorative green wall; new flooring, lighting and a suspended baffle ceiling for the retail concourse and dining terrace. The fourth level terrace also includes a new fireplace; and a covered patio, generous stadium seating and firepit, along with new and refurbished planters with integrated lighting located at the Fifth Avenue entry plaza.



5 COLUMBIA CENTER 4th AVE ENTRY .

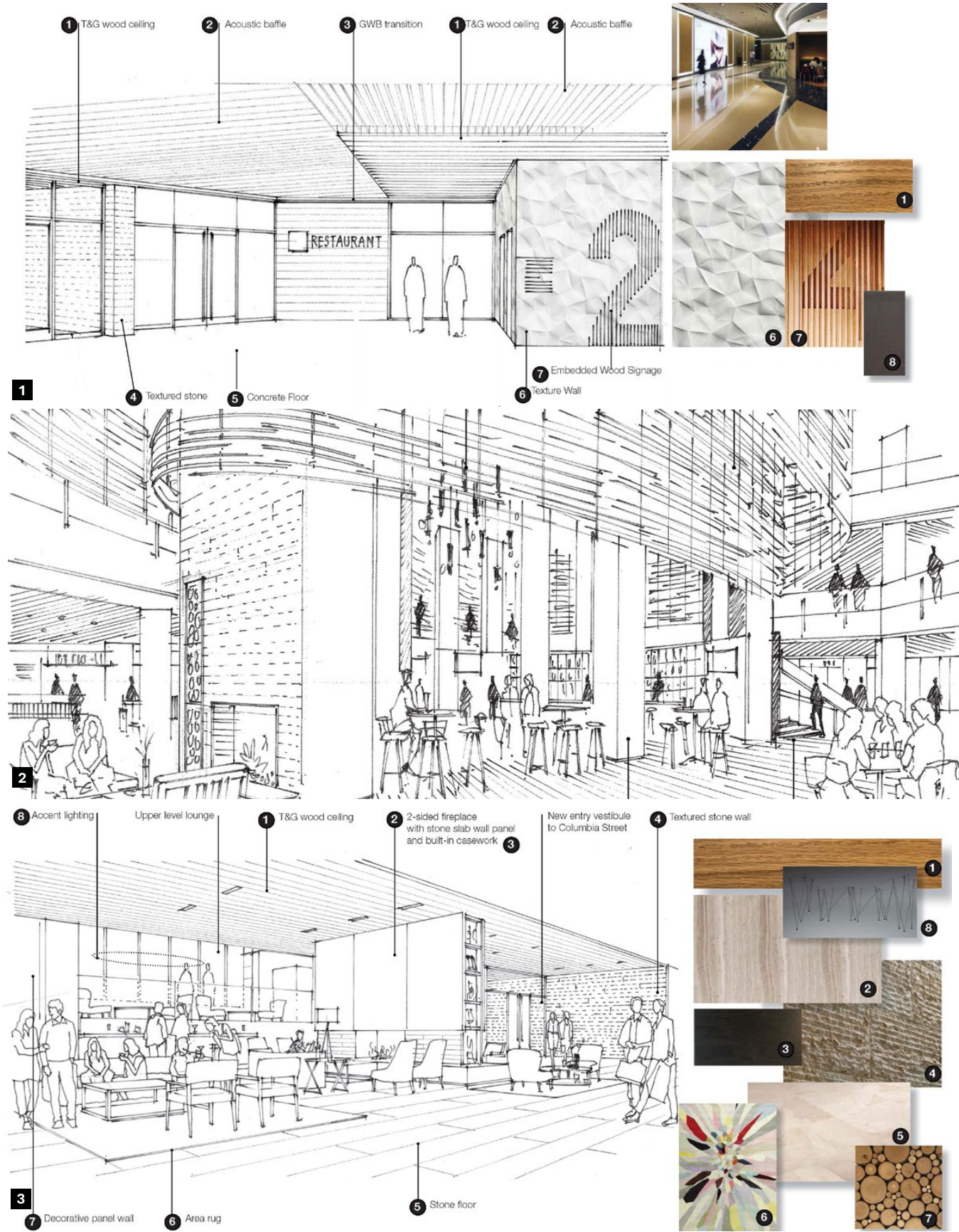


1. Finished Entry Photo 2. Entry Plan Sketch 3. Entry Elevation Sketch 4. Entry Section Sketch
 5. Entry Perspective Sketch 6. Entry Render



COLUMBIA CENTER PODIUM REMODEL, (continued))

Additional improvements and amenity upgrades encompass elevator lobbies, tenant corridors, restrooms, other common areas, a lounge and conference center, HVAC/MEP upgrades, energy efficiency improvements, and exterior window repairs. The repositioning strategy also updates the building storefront and the exterior plaza to improve connections between the street, the first floor, and lower level retail spaces.



1. Interior Lobby Sketch 2. Interior Atrium Sketch 3. Interior Lounge Sketch 4. Section Perspective Sketch
5. Interior Atrium Render

(continued), COLUMBIA CENTER PODIUM REMODEL

A key design feature is the new grand staircase within the atrium space that integrates and expands seating options between the building's renewed entrances. This creates a strong sense of orientation amongst Columbia Center's retail environment, while facilitating vertical circulation in the space. In addition, it serves as a communal gathering space that allows tenants, shoppers and visitors to mingle and socialize.



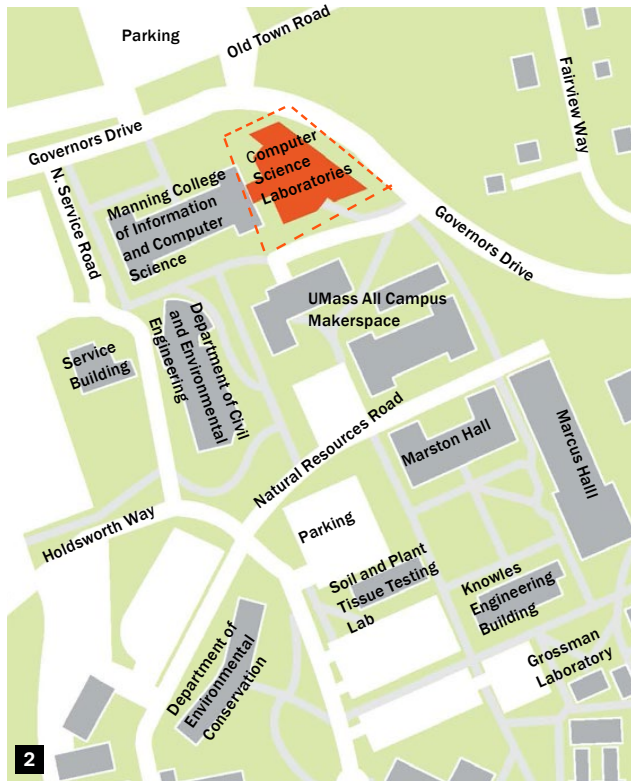
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UMASS AMHERST SCIENCE LABORATORIES, (AMHERST, MASSACHUSETTS)

The project will be a research and teaching building, located at the north edge of the UMass Amherst campus. It will provide for a significant increase of faculty plus associated students, staff, and researchers. It will address existing program deficiencies, provide critical research facilities and teaching space, create community to foster synergy and collaboration, and support the University's present and future needs.



The new building to the east of the existing is comprised of two forms: a "bar" to the east, and a 'crystal' to the southwest. The bar contains faculty offices, computing research laboratories, huddle and meeting spaces, and Dean's Suite. The bar tilts toward the north to minimize glare and fill out the site. The crystal at the southwest of the addition has the auditorium carved into the hillside.

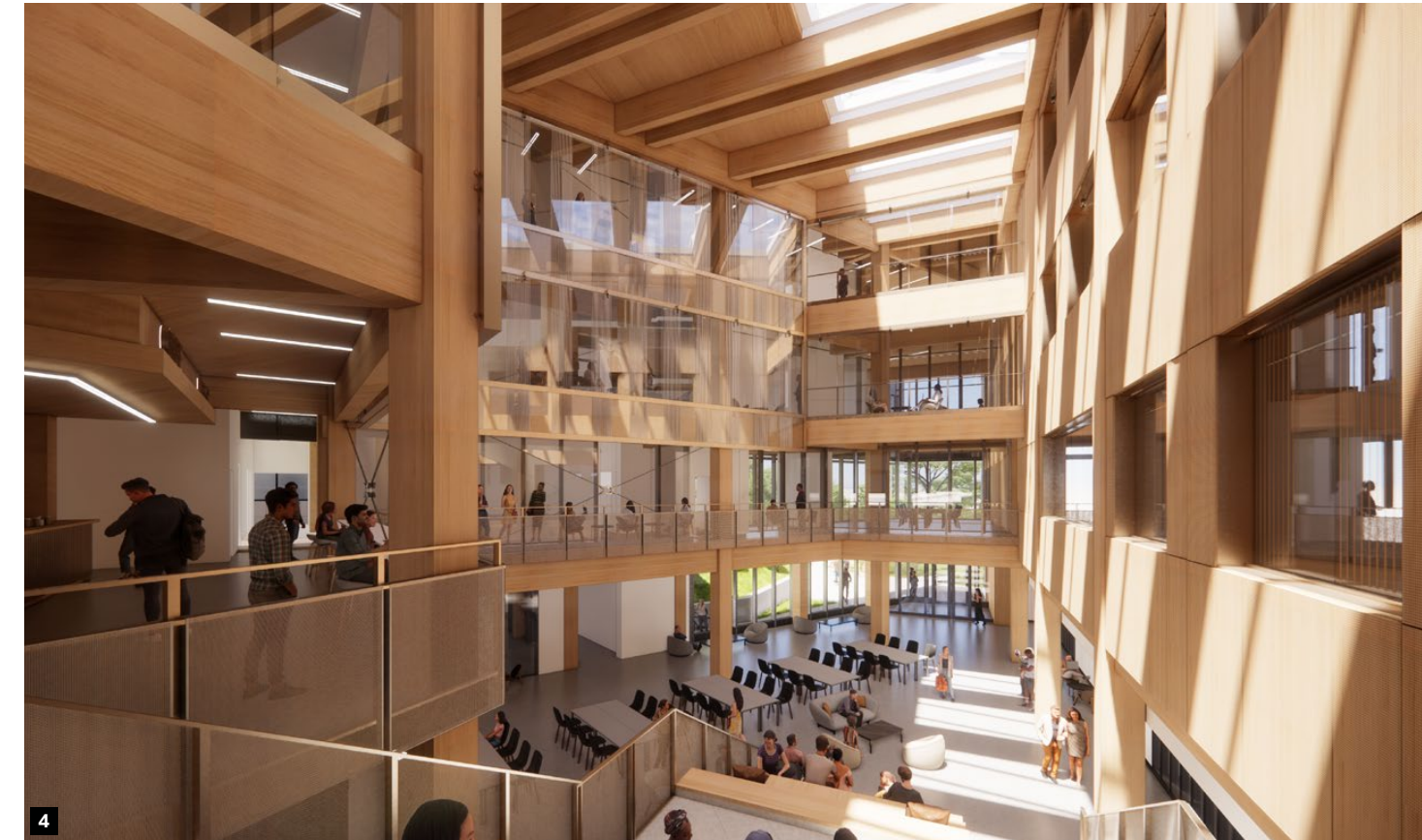


1. Exterior Render (Southwest) 2. Site Map

3. Conceptual Plan Diagram 4. Interior Render

(continued), UMASS AMHERST SCIENCE LABORATORIES

The new four-story building will encompass 92,000sf and will be located to the east of the existing Computer Sciences building with a physical connection at all three floors. A visual and pedestrian connection to a research center to the southeast is an important campus link. This will preserve service and emergency access and create a unifying and accessible connection between the exterior of the two buildings.



As a Hub for scientific exploration, the building will augment the largest single Health Science District in the city. With ideally sized & flexible infrastructure, the building will allow for specialized & adaptable research space, office clusters, & user amenities provided for in a network of interconnected, collaborative neighborhoods. This mix of uses will be a catalyst for continued advanced research & innovation in the District.



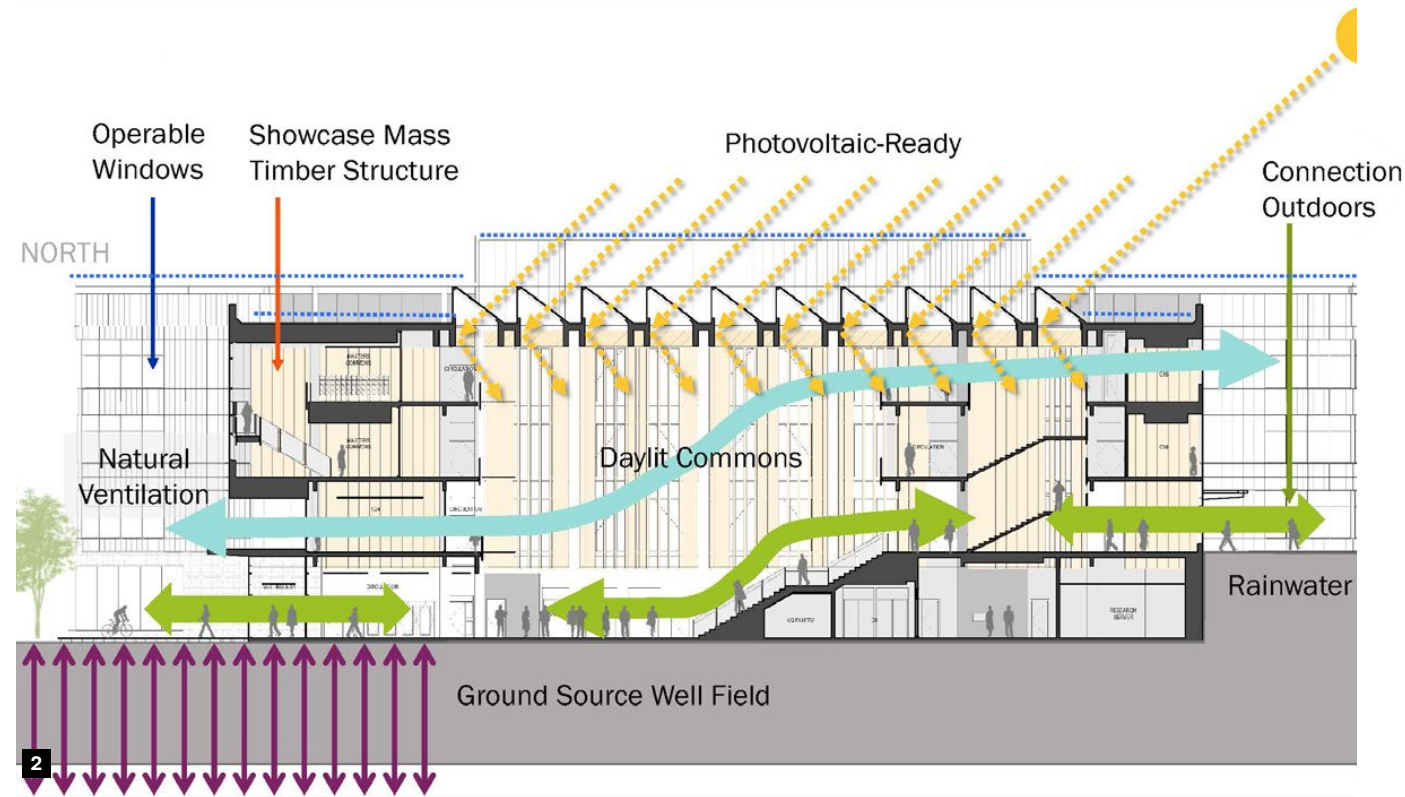
5. Exterior Render (South)

UMASS AMHERST SCIENCE LABORATORIES, (continued)

The building would be energized by a ground source well field. Eventually, this was moved to a district-wide heat pump plant while the design utilizes low-temp hot water and high-temp chilled water supplying a combination of radiant floors and ceilings and chilled beams. Extensive and continuous energy and daylight modeling helped refine the design of the building and careful attention was paid to the window wall ratio.



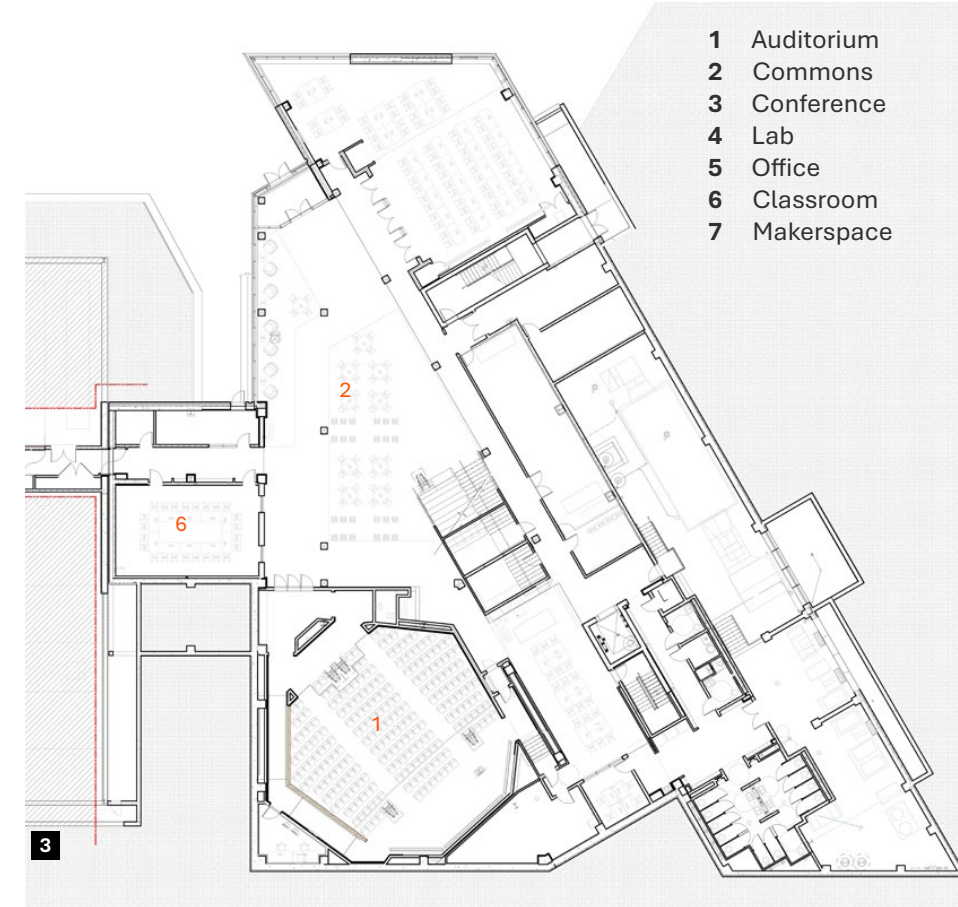
With the express intent to be as efficient as possible, the building structure will be approximately 85% mass timber, with just 15% being composite steel and concrete, thereby reducing the total embodied carbon. Solar shades were replaced with electrochromic glazing to further control glare, reduce peak loading & mechanical system size, and eliminate exterior and interior shading devices.



1. Atrium Render 2. Sustainable Practice Section 3. Ground Floor Plan 4. Second Floor Plan

(continued), UMASS AMHERST SCIENCE LABORATORIES

The student commons will be a meeting place along a north-south pathway that manages terrain and falls away to the north. The lower level houses a 240-seat auditorium and a flexible colloquium room adjacent to student commons. A feature stair rises from the north to the south. A campus entrance and Café activate level 2. Research labs and meeting spaces surround and activate the 4-story space.



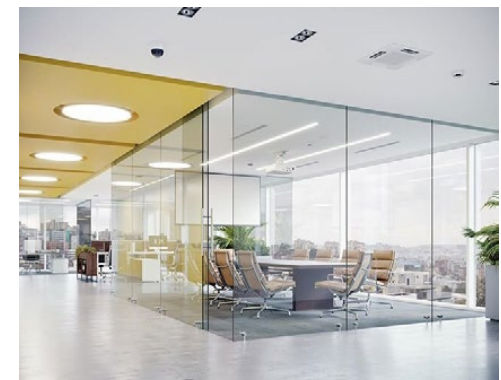
State of the art lab facilities design for functionality and equally to prioritize the user experience.



An abundance of common areas for staff to meet, collaborate, discuss and review projects.



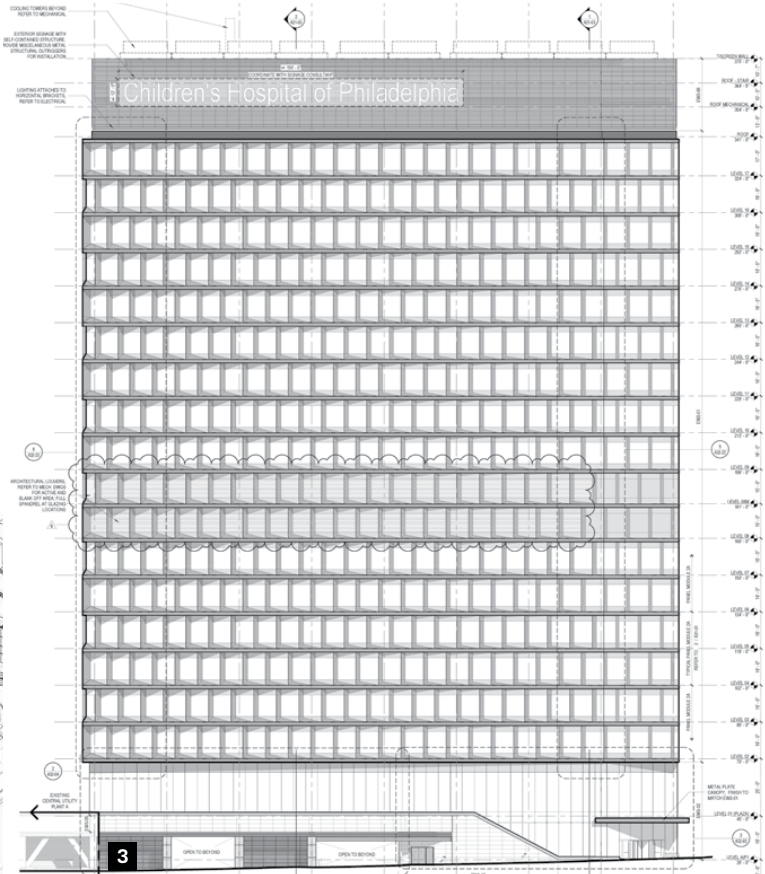
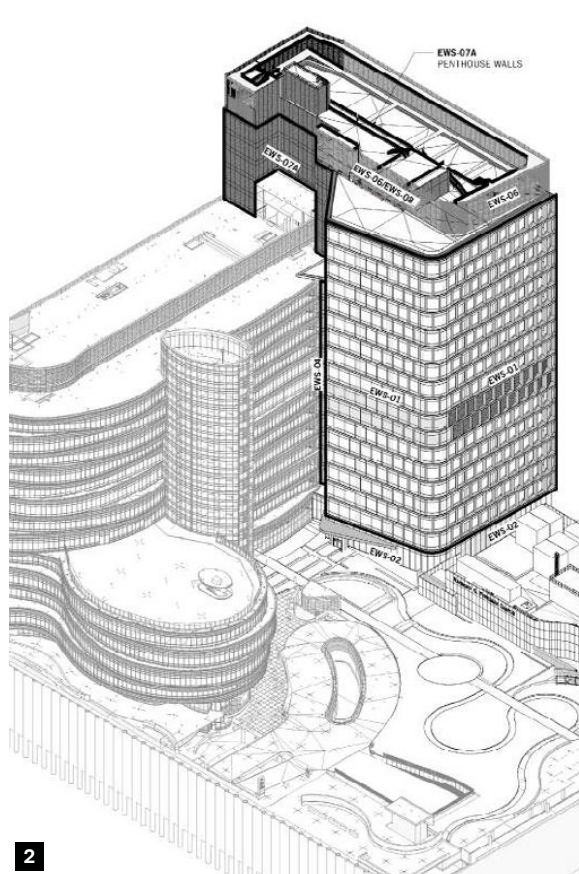
Reception area found within the lobby incorporated a vibrant color scheme and modern feel.



The openness of the floor plan is further expressed through transparency & visualization.

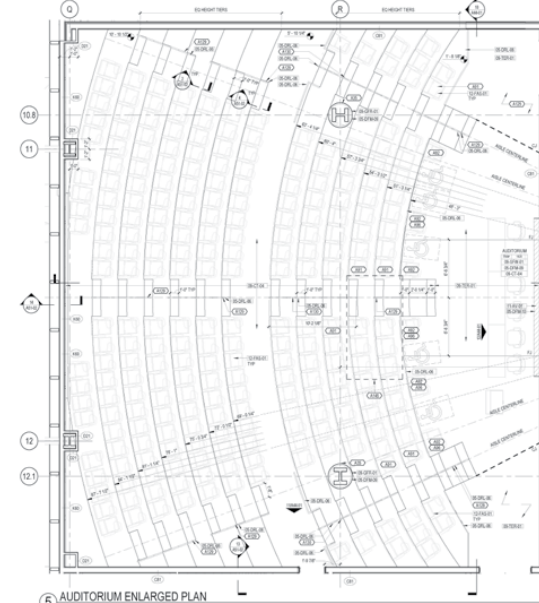
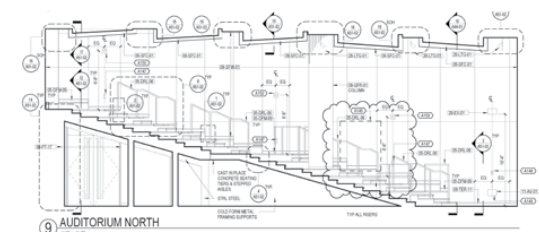
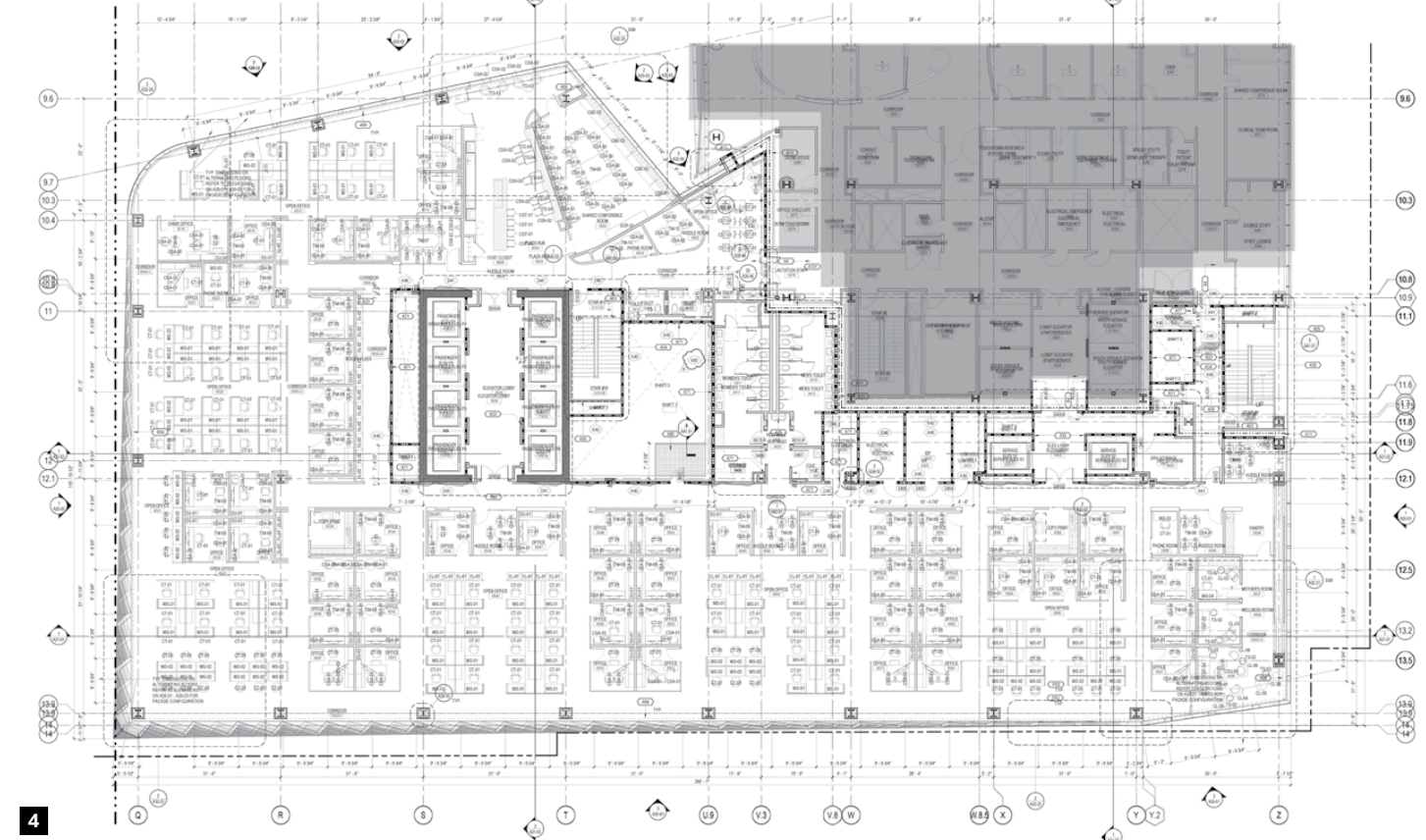
CHILDRENS HOSPITAL PHYSICIANS BUILDING, (PHILADELPHIA PENNSYLVANIA)

A 17-story (565,000 square foot) academic office tower at Children's Hospital of Philadelphia's (CHOP). It's located on the Perelman Plaza, which integrates into the CHOP Philadelphia campus and connects to other buildings with clinical and research functions. All floors of the Hub align with the adjacent Buerger Center and provide intentional pathways for CHOP staff to move efficiently between the two buildings.



(continued), CHILDRENS HOSPITAL PHYSICIANS BUILDING

Practitioner well-being is integral to providing quality patient care; the new office and administrative building aims to support CHOP's ability to attract and retain the best clinical talent through a collaborative workplace with design that encourages and supports wellness. The interior layout prioritizes transparency, access to natural daylight, and ease of mobility for care teams to enhance and facilitate cross-collaboration.



- 1. Exterior Render
- 2. Site Axonometric
- 3. Southwest Elevation
- 4. Typical Floor Plan
- 5. Auditorium Plan/Section
- 6. Lab Render
- 7. Auditorium Render



CHILDRENS HOSPITAL PHYSICIANS BUILDING, (continued)

Spaces are modular and flexible for dynamic shifts in personnel, and are focused on caregiver respite and well-being with access to natural light, views, and break areas. The building's solar-responsive exterior, full-height glazing, and 20-foot ceilings maximize access to natural daylight for tenants. The floorplan, designed to enhance connectivity, balances collaborative workspaces with areas that are conducive to



1

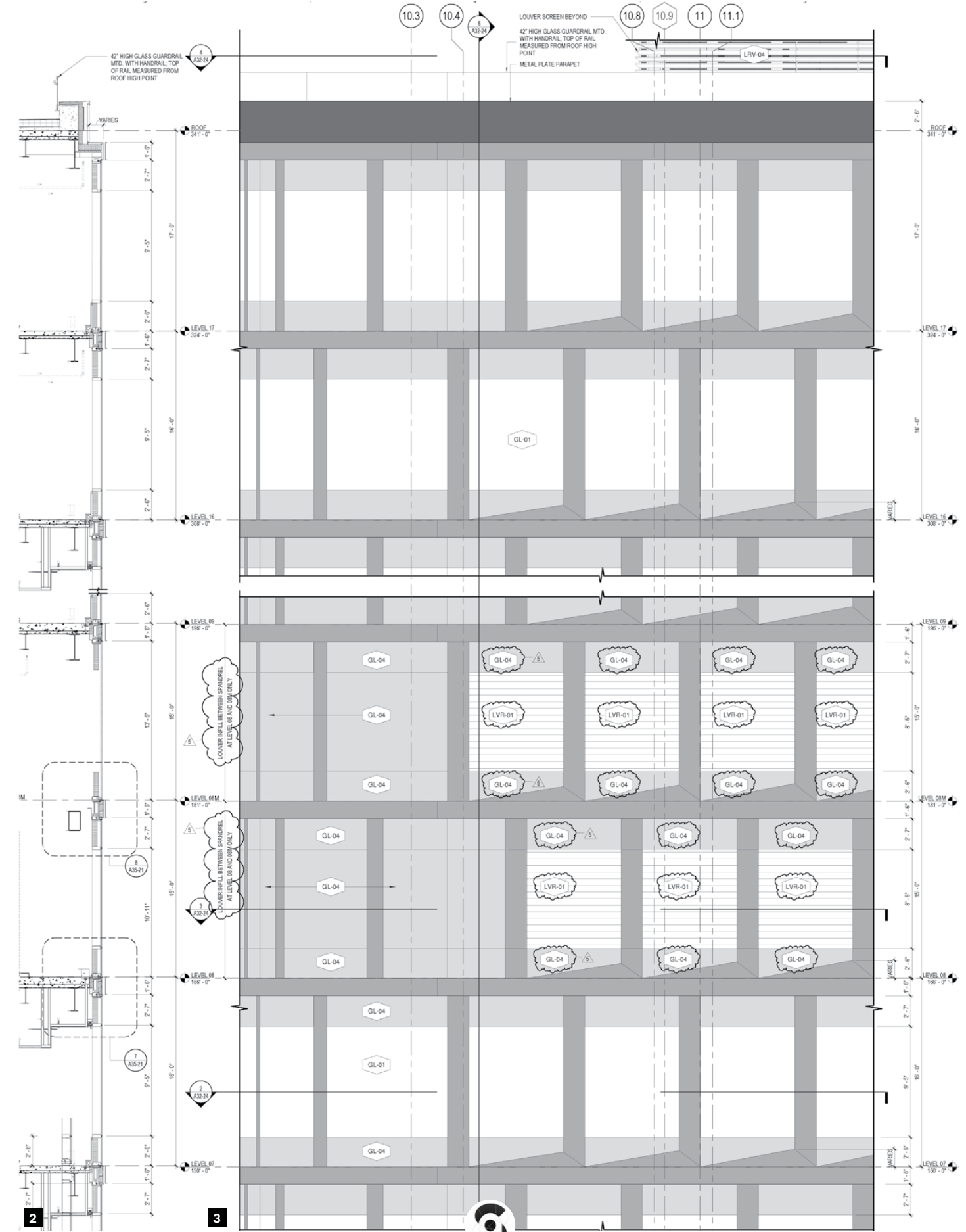
1. Facade Weather Testing

2. Facade Section

3. Facade Enlarged Elevation

(continued), CHILDRENS HOSPITAL PHYSICIANS BUILDING

privacy and individual work. Elsewhere, wellness features like pantries and fitness centers offer staff opportunities to care for themselves throughout the day. Acoustics and ergonomics support the needs of the diverse clinical groups as they carry out their mission-driven days. This resulted in a highly efficient facility that balanced needs for privacy and focus, & tended to the day-to-day health & comfort of care teams.



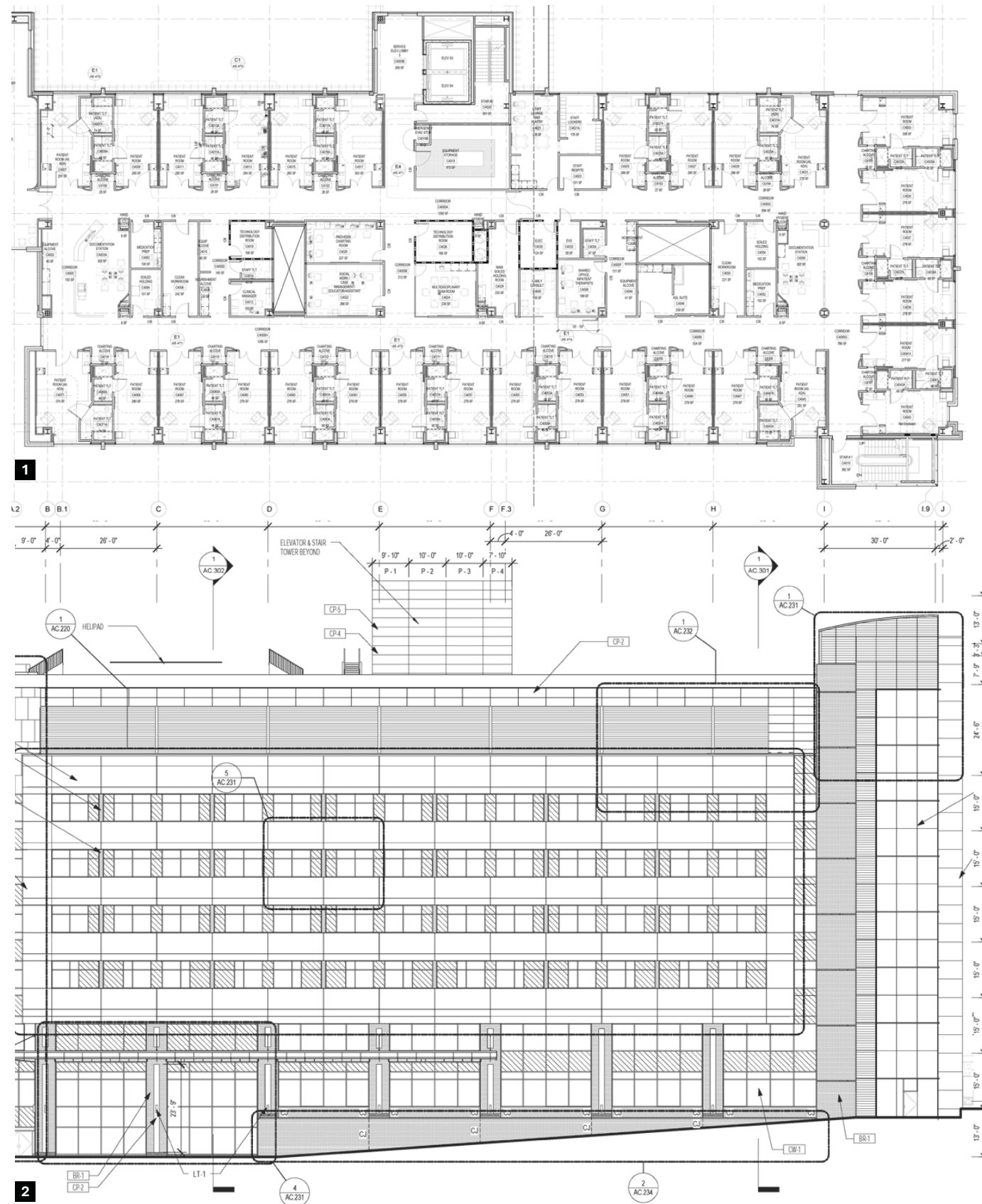
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3



INPATIENT BED TOWER, (CHERRY HILL, NEW JERSEY)

Provided design services for a new six-story bed tower at the Cherry Hill campus. The project focuses on a phased replacement and modernization of aging acute care facilities, as well as repositioning the campus to deliver exceptional outpatient services and private, modern inpatient accommodations. The new patient tower will connect to a five-story atrium lobby, allowing for easy access to the new medical building.



1. Typical Inpatient Bed Floor 2. Elevation

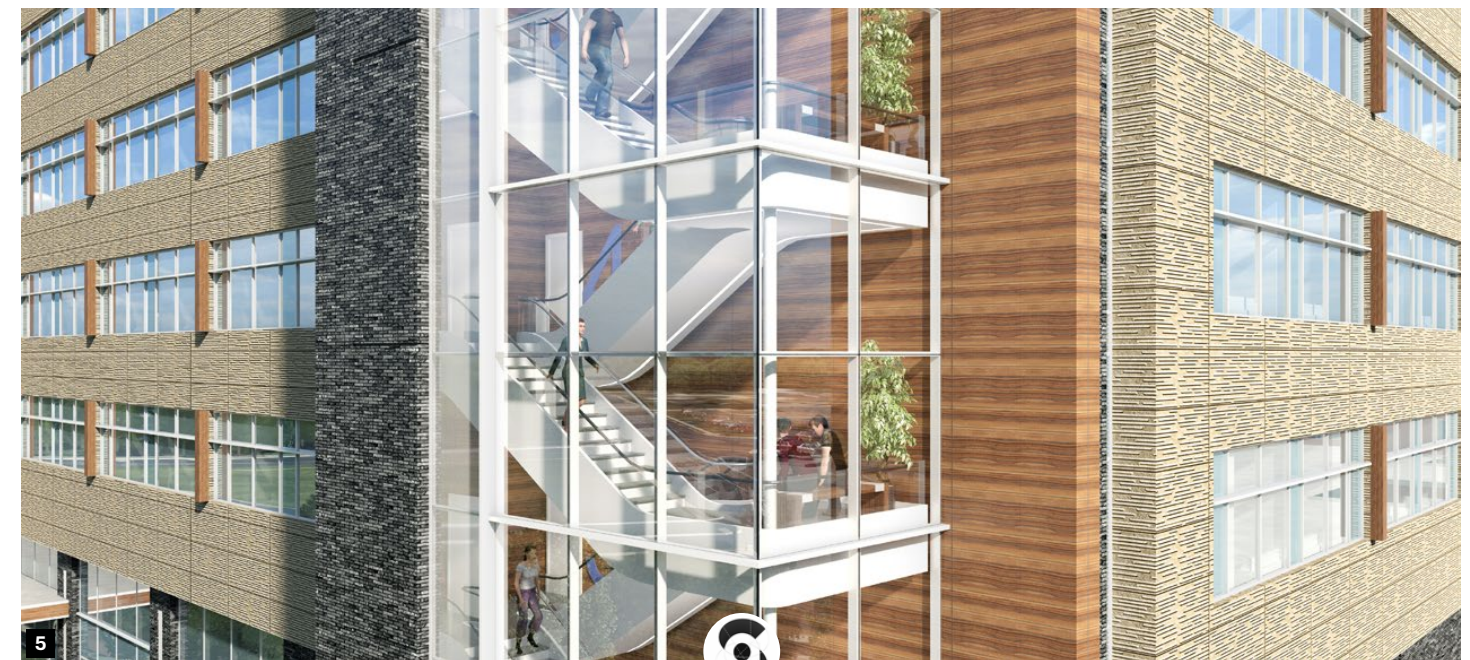
3. Aerial Site Render

4. Exterior Entry Render

5. Exterior Feature Stair Render

(continued), INPATIENT BED TOWER

The new inpatient bed tower is a 230,000-square-foot addition to the existing hospital that adds 90 patient rooms, diagnostics, pharmacy, surgical services, and public spaces, including a cafeteria, outdoor dining, & a healing garden. The facade features a combination of modern & functional elements, large windows for natural light and views, as well as materials that are both aesthetically pleasing & easy to maintain.



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INPATIENT BED TOWER, (CHERRY HILL, NEW JERSEY)

During the initial design stages for the expansion, a study was performed to standardize the patient rooms and nursing units for Jefferson Health System. Using virtual reality to conduct week-long physical and virtual patient room mock-ups, feedback was collected on the room design from staff. The resulting design promotes improved care practices, and the outcome is a shared vision among staff and caregivers.



1. Patient Floor Corridor Render 2. Staff Area/Cafeteria Render 3. Feature Stair Interior Render 4. Typical Patient Room Plan
5. Staff Area/Cafeteria Plan 6. Feature Stair Sections/Enlarged Plans

(continued), INPATIENT BED TOWER

The tower serves as the primary campus entrance, showcasing a unique feature staircase & exterior lighting as visual icons that invite visitors in. The outdoor dining area and healing garden serves as the connection between the building & the Cherry Hill community. Organized around a well-lit, winding path, these spaces provide group seating, intimate spaces for reflection, and private "outdoor rooms" for staff & visitors.

