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Comprehensive Studio - Honors Thesis

6 May 2015

Comprehensive Design Studio: Uptown 23rd Library

Located in the up and coming Uptown district along Northwest 23rd street in Oklahoma City, the Uptown Municipal Library addresses the longevity of the surrounding community while supporting the family friendly shopping vision of the clients. Historically, the Uptown District was a primary retail corridor, but eventually declined. It is now being rejuvenated with restaurants, retail, and a revitalized Tower Theater as a music venue, which is located across the street from the library's site. It will help re-establish the neighborhoods vitality through a resilient civic facility. Resiliency is achieved by satisfying two criteria: economic resiliency and energy independence.

A library dependent entirely on city funding is vulnerable, so it needs to operate more as a business in order to stay economically viable. To achieve this goal, the entire first floor is rentable retail space that visually engages pedestrians with open storefront and masonry walls that relate to surrounding storefronts.

The library proper is a floating, transparent mass occupying the third level that is juxtaposed dramatically with the masonry first floor. Lifting the library off the ground results in higher wind speeds, allowing southern prevailing winds to naturally ventilate the building and dissipate heat. The second floor is left open as a community outdoor space with visual connections to the community room. Large steel vortexes support the library next to the street,

contain vertical circulation, and create an energetic entry. Both the retail and library are visually connected with an offset core on the east side of the site. The library interior is an open plan with a raised floor system in order to account for the changing nature of information from books to digital, and technology's role in learning.

The Uptown 23rd district, located north of downtown Oklahoma City, OK, is aiming to become one of the city's premier business, arts, and entertainment districts. At its heart is the historic Uptown Theater. This area has gone through several stages of various economic levels and popularity. In the 1930's, it was a bustling shopping area. It ended up falling into decline, hitting a low in the 1960's/1970's. This is when crime was very present in the area, the Uptown Theater was a theater for adult films, and the surrounding neighborhoods were stricken with poverty. In surrounding neighborhoods, various ethnic groups came into the region. These ethnic areas started to develop into the present Asian District and the Paseo Arts District. Only recently have these areas started to develop into popular shopping/retail areas, which is more than likely due to Oklahoma's economic growth in the past decade.

According to the census data, Oklahoma City's downtown area saw the 3rd highest rate of employment growth. Oklahoma City has also received numerous other high rankings responding to its growth from publications, such as Forbes ranking it as one of the fastest growing cities in 2015¹. Economic growth and community growth will lead to much more development in Oklahoma City, meaning that future buildings will need to provide value for the future communities of Oklahoma City. Uptown 23rd will be one of these communities that

¹ "OKC Accolades." *OKC Chamber*. Oklahoma City Chamber of Commerce, 23 Apr. 2015. Web. 3 May 2015.

needs to provide for the future growth of surrounding neighborhoods. Economic growth from the oil/energy sector has created a huge impact on the built environment. Devon Tower, standing as a beacon in downtown Oklahoma City, is a symbol of this growth. Civic projects, such as the Skydance Bridge, have started to define an aesthetic for Oklahoma's energy driven architecture. High-tech creations of glass and steel from the energy sector blend with the historic brick buildings, dating back to Oklahoma City's creation. A library can embody this materiality and begin to look to Oklahoma City's future through form and the way communities operate. Other libraries being built at this time can be looked at to define what the library's role in other communities will become.

One of the newest additions to the Oklahoma City Library networks is the Northwest Library by Richard-Bauer architects. Richard-Bauer architects specialize in designing libraries, and, as a general trend, many of them operate with an open floorplan. This allows for libraries to be adjusted based on the needs of the future. The Northwest Library takes this to heart, with the only spaces defined by walls being the staff spaces, community/meeting spaces, children's story time area, and several enclosed group study areas. These study areas are scaled versions of oil rigs, interjecting throughout the open library space. They allow light into the main space and start to give the library character. A steel exterior turns into a wooden interior, defining a warm interior. These libraries aim to be comfortable for users. A place that holds knowledge, while taking on the feel of a large living room. They do not attempt to be the grand spaces of years past. Current libraries embody the idea that knowledge is accessible, no matter the age or background of users. The South Mountain Community Library has even merged the South

Mountain Community College into its space. They aim to make knowledge and education accessible.

The site for the Uptown Library has a lot of positives that make it possible for it to reach a large audience from various ethnic backgrounds. Wilson Elementary school is located directly to the south, and neighborhoods surround the Uptown 23rd District on all sides. The site itself is on the corner of North Walker Avenue and Northwest 23rd Street and is 150 feet along the East-West axis and 104 feet long the North-South axis. This opens up options for southern sun exposure to be controlled and the north façade to be opened up with little implications to direct solar heat gain. The east and west facades will need to control solar heat gain to decrease energy use. Across NW 23rd is the Uptown Theater and older retail storefronts. Diagonal from the site is a newly constructed retail area. To the west is a diner. On a macro scale, Oklahoma City University is located a mile to the west, and the Capitol building along with Interstate-Highway 35 located a mile to the east. Visiting users will approach Uptown from the highway. Northwest 23rd street is one of the busiest streets in Oklahoma, making noise from traffic an issue in the library.

All of these factors can be directly used to find a meaningful solution for a library that needs to be economically resilient and energy independent. The conceptual design process of this library can be put under the school of thought that is more recently referred to as diagramism. Diagramism is the idea that a certain set of parameters or site factors can be utilized to make simple design moves to a mass that result in the form of the building. This way, the building is formed based off of the single concept of the building: resiliency.

These series of alterations can be easily understood through diagrams showing the building form. The first move was to divide the mass into two programs: retail and library. The aim of the Uptown district is to be a premier retail area, so it is in the developer, library, retail, and district's best interest to maximize the value of the street retail. This will result in higher income for the library and developer from the retail spaces. After calculations, the 14000 sf of rentable space on the first floor would provide almost a 12% rate of return on the building. A high income rate would allow the library to provide better services and programs, such as outreach to the local neighborhoods. The next transformation moves the library up a level in order to create a dramatic differentiation between the library and street level. The void space in between the retail and library becomes a community driven space, housing more rentable space: the multipurpose community room and the exterior courtyard. These spaces can be used for events ranging from classes, banquets, to weddings. It results in an exciting architecture that has the ability to create buzz in the community and become an architectural icon.

In order to make a dramatic design decision like this work with other building systems, an offset core is erected on the east side of the building that is situated next to another building. An offset core houses the fire staircases, mechanical spaces, service elevator, and plumbing systems. On the exterior, this core acts as a visual weight for the rest of the building. By having a visual weight, it creates a heightened sense of the library being a floating element. Materiality can be introduced to overdramatize this differentiation. After organizing the primary masses, those forms need to be altered to address site conditions. The top library mass is subtracted from in order to allow light onto the exterior courtyard. Plant life that grows in low lighting conditions might be able to grow in this center area. Light can then penetrate into

the unreached spaces of the library mass, naturally providing daylight to the entire open space. Interior daylighting control needs to be used in order to obtain the correct level of lighting for reading activities. This subtractive form provides a focus on the interior of the space as opposed to the surroundings of the library. An interior focus means a tranquil reading space.

The next transformative solution adds structure to the library in a way that roots the building in Oklahoma's culture and adds to the iconic nature of the library. Two vortex shaped structures pierce through the library and carry the load of internal trusses to the ground. Each one houses the vertical circulation of the building, creating an experience that defines the way users interact with the building. These vortexes are comprised of two main steel elements: horizontal circles that are spaced according to a logarithmic function, and vertical truss members. Each mass is parametrically controllable. Size and position of each horizontal ring, number of vertical truss members, and gauge of steel are all easily adjustable based on fabrication requirements. Steel mesh panels are offset from the structure in a pattern that accents the twisting nature of each mass. Each panel has four attachment pints on each side and limits the amount of light let into each space. Glass panels fit between each triangulated truss structure.

The final move is to activate the street for pedestrian usage. The west side of the first floor is removed to make room for the structure to touch the ground and engage library users at the street level. This makes a formalized courtyard that acts as a transition space between the retail and library. Retail storefronts are an abstracted version of vernacular storefronts. Vernacular storefronts essentially form into the building in a triangular form with an entrance in the middle. These new storefronts are inverted versions that fold along the perimeter of the

entire building, and terminate at the offset core and the coffee shop. The openings for each retail face the west in order to engage pedestrians walking from the primary parking and other storefronts. The east-facing wall corresponds to the heavier car traffic. These walls can be used for signage and planters. The fire staircase in the core is accented with the same curtain-wall that is on the entrances to each storefront. This visually draws user's eyes up to the library level.

Each retail space is sized off of a 25 foot grid. Taking the plaza into account, a total of four retail spaces exist (three 2000+ sf spaces and one 4000+ sf space). A mechanical space is located on the southeast corner, along with a small loading dock for the library. This grants direct access to the service elevator. The community space is largely open, with a service corridor on the east side. This way during any events, the service corridor can access both the event room and the storage space without interrupting the events. The multipurpose room can be divided into three even spaces using foldable dividing walls. Glass curtain wall provides direct access and views from the multipurpose room to the exterior courtyard. The ceiling of the exterior courtyard is a metal panel system that has openings for light. The openings increase in size around the opening to the sky, putting directional emphasis on the east-west axis of the building. This ceiling bleeds into the multipurpose space, blurring the line between interior and exterior.

The main staircase for the library lets out through the open structure of the vortex forms and lets users into the lobby. The circulation desk is the center point between the adult stacks/reading area and the children's area. Due to the open nature of the floorplan, the furniture becomes extremely important because it defines the space and user experience. The

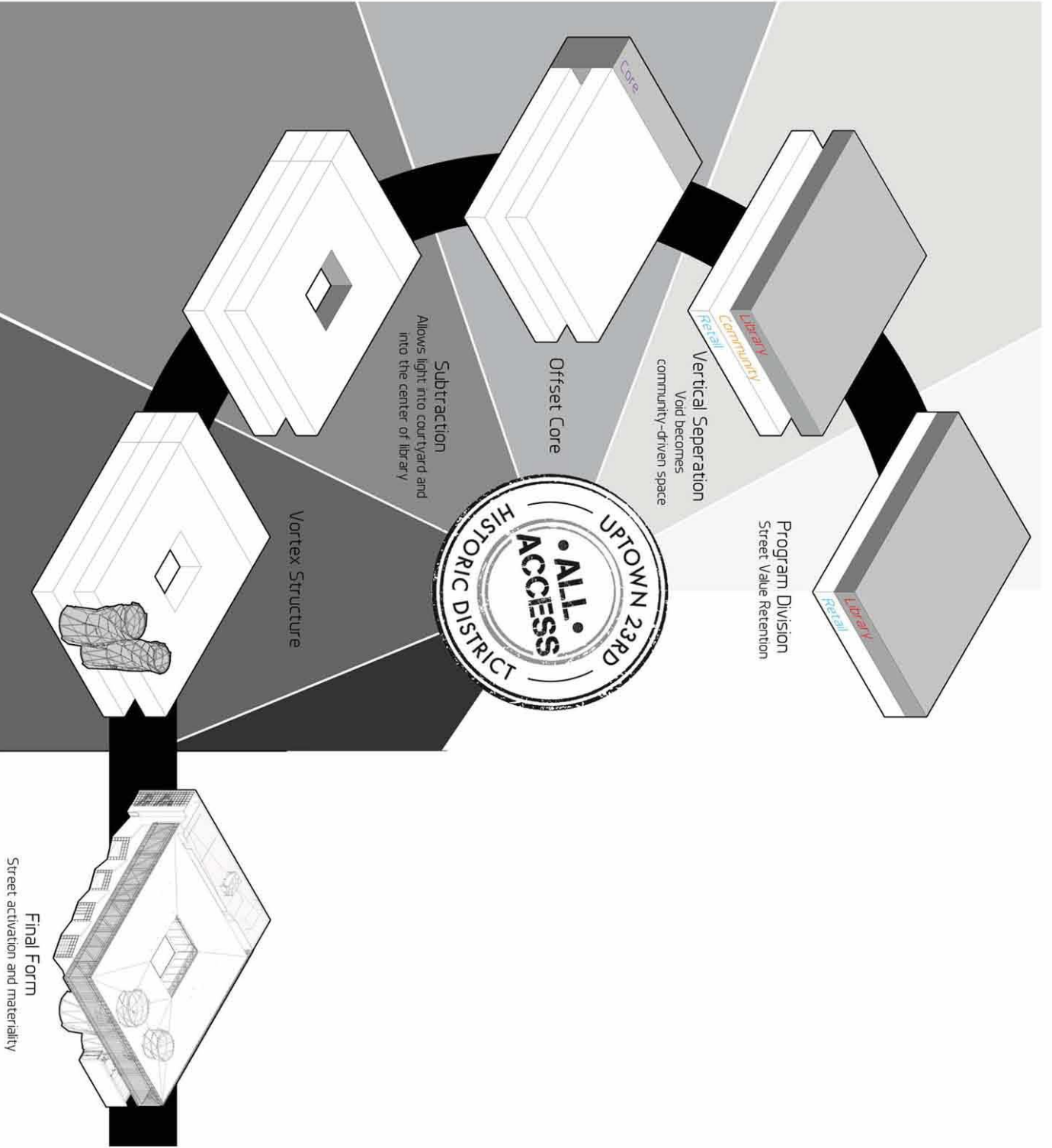
stacks used are circular in form to mimic the shape of the vortex. Within each circular stack are group study spaces or soft seating furniture. Each stack corresponds to a color and book organization, making way finding through the stacks easy. Computers are dispersed throughout. On the side facing NW 23rd Street, a massive circular computer desk space encloses individual study tables. Tall periodical shelves divide this space from the children's reading area. The children's reading area is defined by introducing new geometries and bright colors. This gives the children's area a more whimsical feel along with a reduced scale. Dropped panels add acoustic buffering to the space.

The enclosure of the entire library is a channel glass system with insulation. Channel glass diffuses light and has very high insulation value. The unique aesthetic channel glass provides will accent the floating nature of the library and will be a beacon in Uptown at night. Limestone panels are used on the first floor because of its local availability and its high aesthetic quality in civic projects. It will also act as a visual anchor for the ground level. Openings are clear float glass and black curtain wall.

Typical steel beam construction spaced 25 feet apart occupy the first floor. Several columns span into the courtyard and up to the library. On the bottom of the library level, there are beams spaced 12 feet apart. Roof joists are exposed on the interior of the library and are spaced 6 feet apart. The primary structure spanning between the offset core and the vortexes are four pratt trusses. The two on the north and south occupy the full height of the library level, while the interior trusses are 6 feet tall. Another truss spanning perpendicular to the four trusses transfers the load to the vortex structure, which laterally resists loads and transfers loads to the ground.

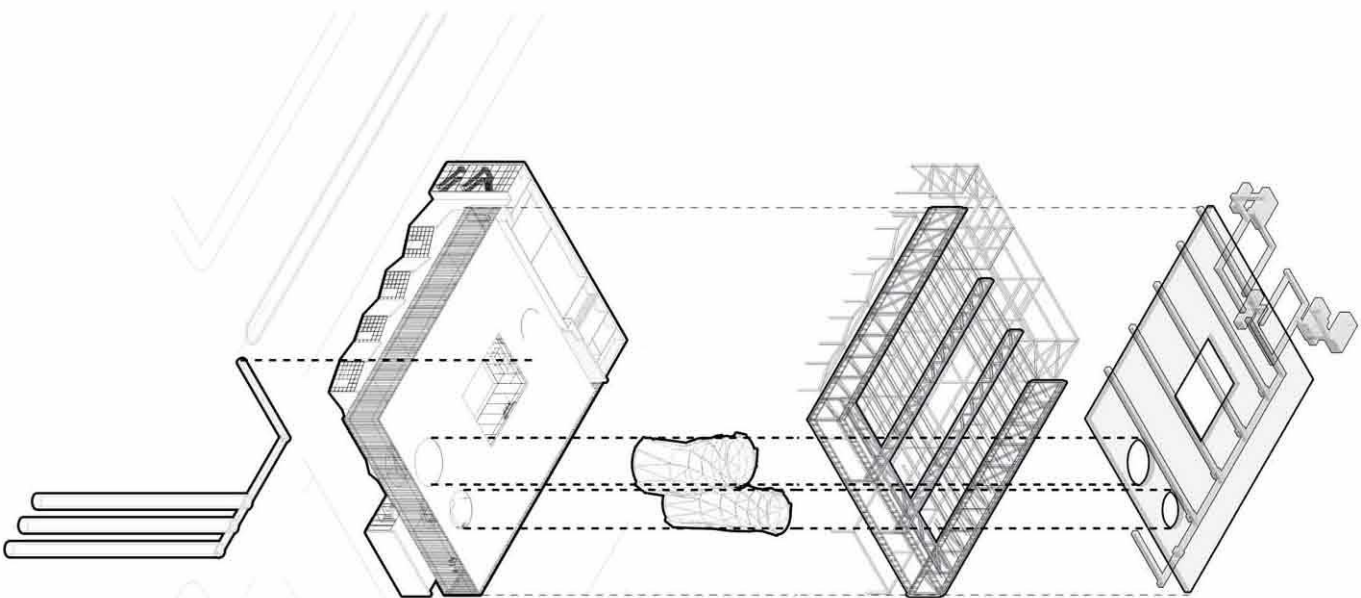
The HVAC systems service each floor in a different way. The first floor has its own typical ventilation system servicing each retail space individually. The second floor feeds from two air handling units in the third floor mechanical spaces, and has a variable air volume box servicing each multipurpose space individually. A raised floor system is used on the third level and allows electrical systems to occupy this space. The ceiling of the library will be cleared of all mechanical systems and can highlight the exposed structure as the aesthetic for the space.

By making simple moves responding to the library concept and integrating building systems that reinforce the concept of resiliency, this library can successfully serve users while setting a foundation for the Uptown community. By making an open floorplan and maximizing leasable spaces, a library can continue to add civic value and create a unique, exciting experience. Economic resiliency and cutting energy costs provides for future generations of the Uptown community, and will create the foundation for future generations in Oklahoma City.





Northwest Corner Exterior



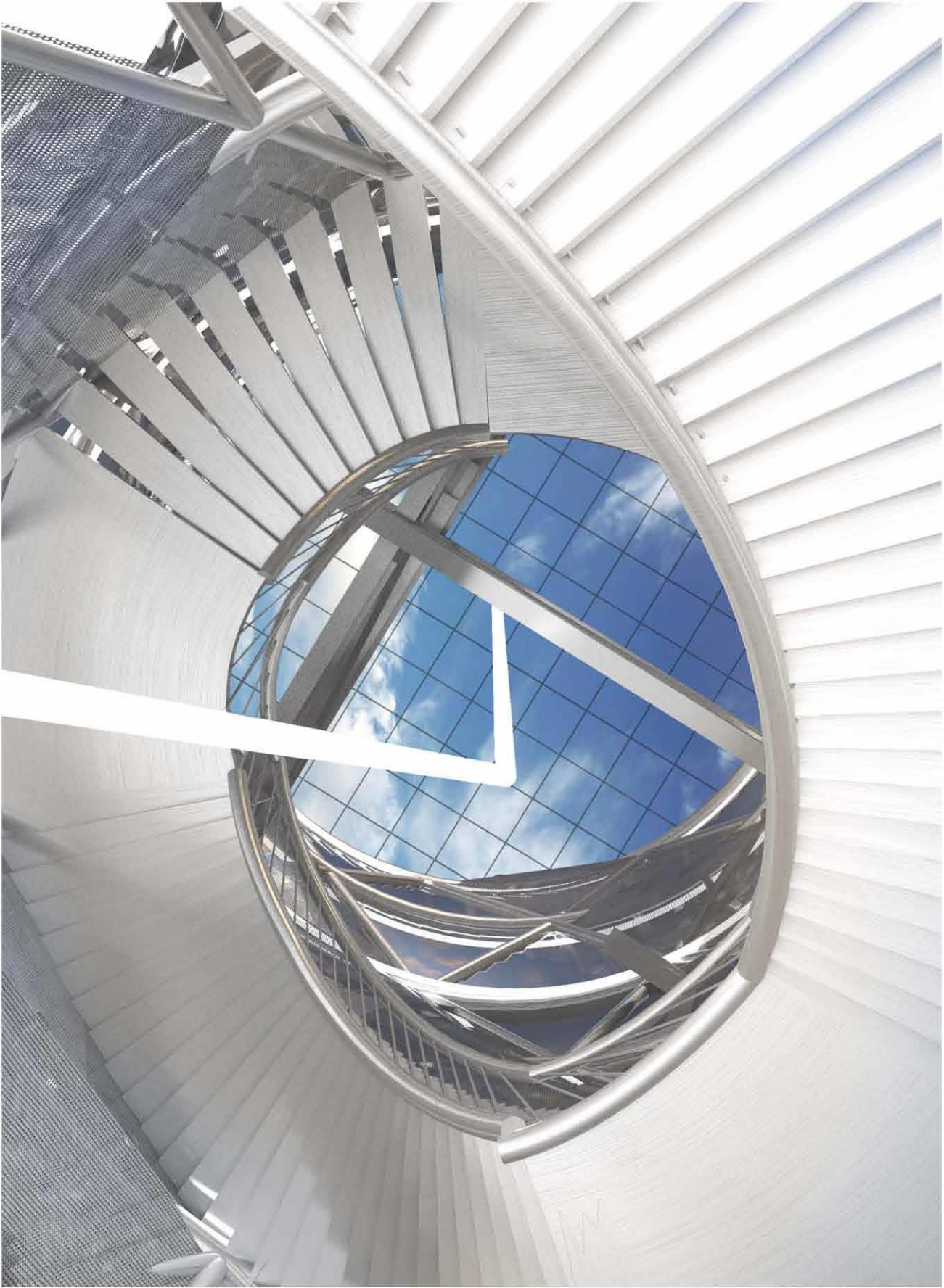
HVAC

STRUCTURE

VORTEX

SKIN

HEAT PUMPS

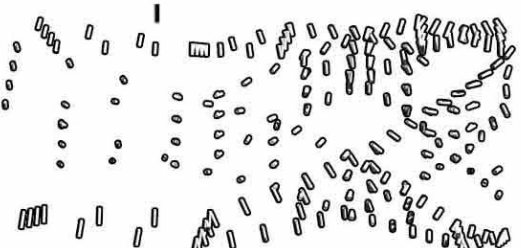
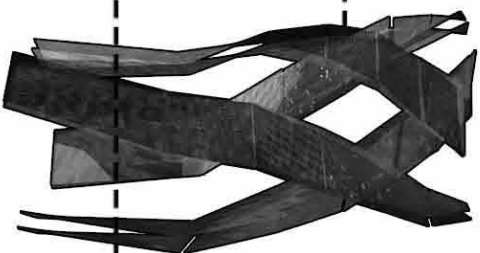


Eye of the storm

VORTEX STRUCTURE

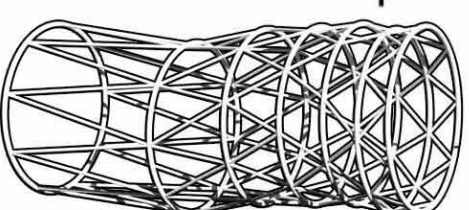
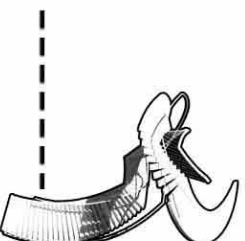
Mesh panels accent the twisting nature of the form and shade the interior

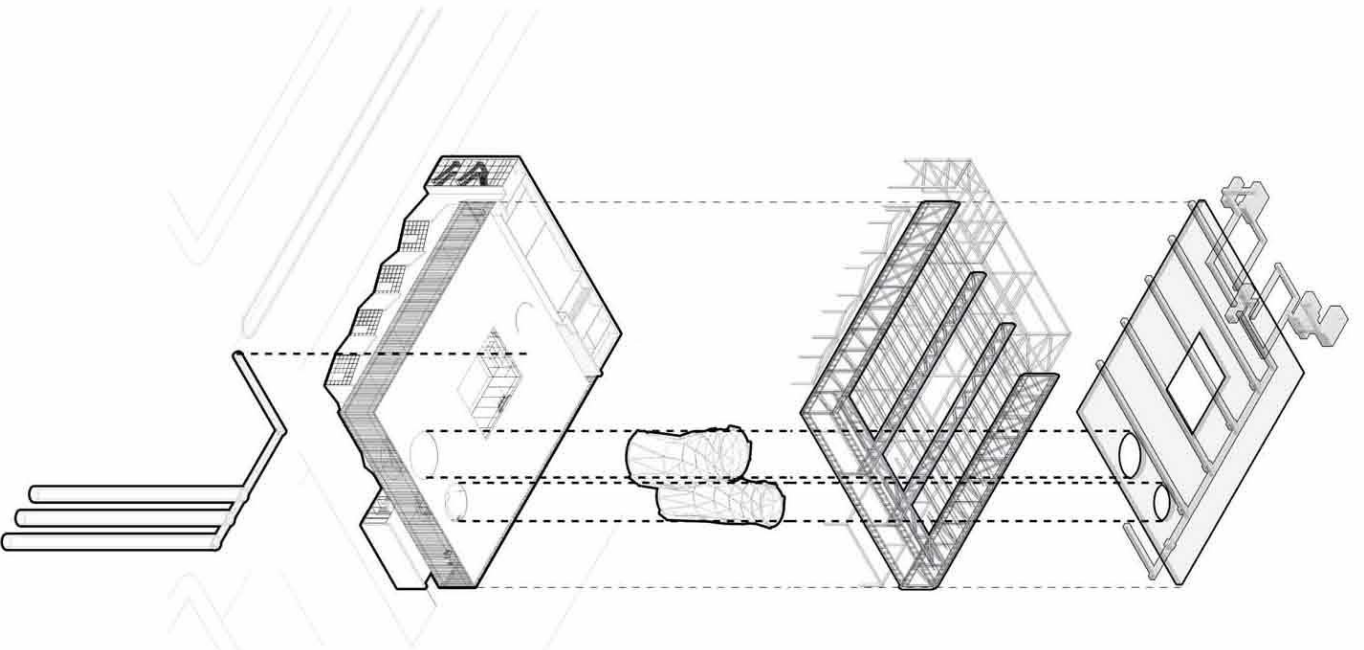
Metal connectors attach to the primary structure and hold the mesh panels



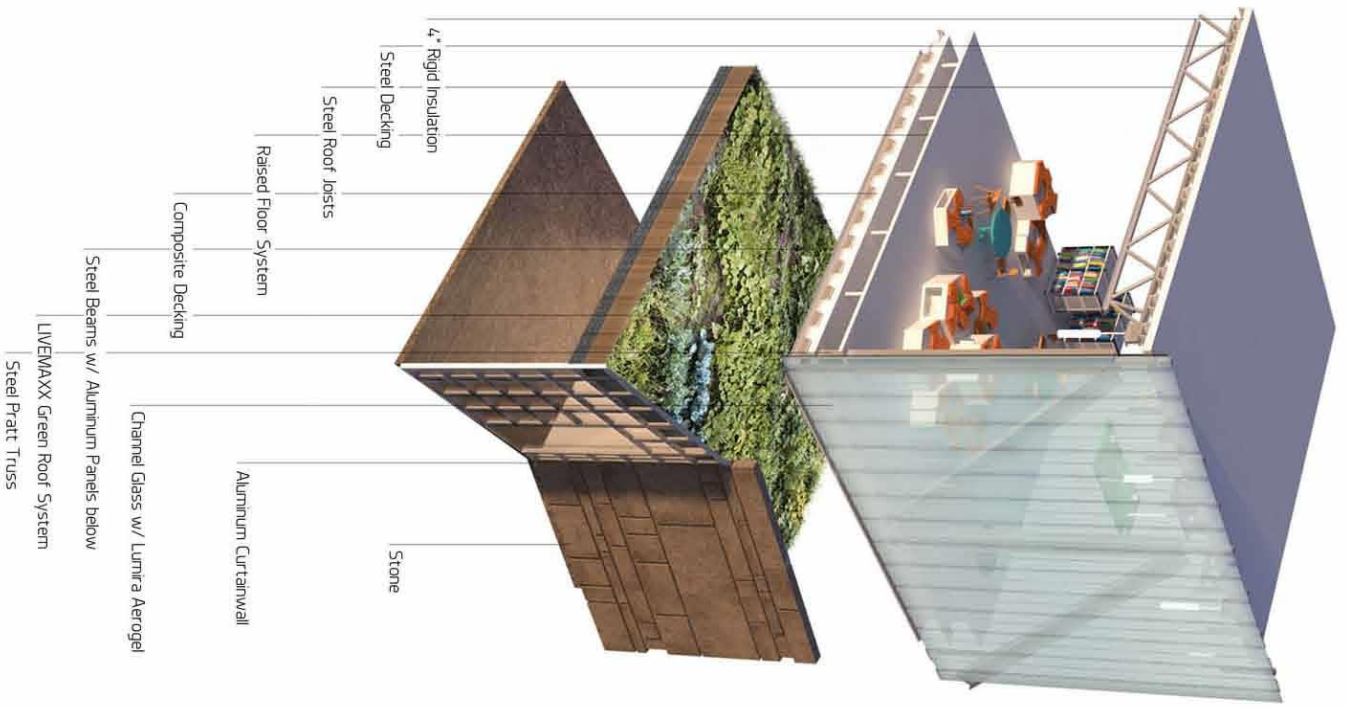
Triangulated steel structure transfers loads to the ground and acts as a lateral resisting element

Spiral staircase is connected to the structure and adheres to the form of the structure



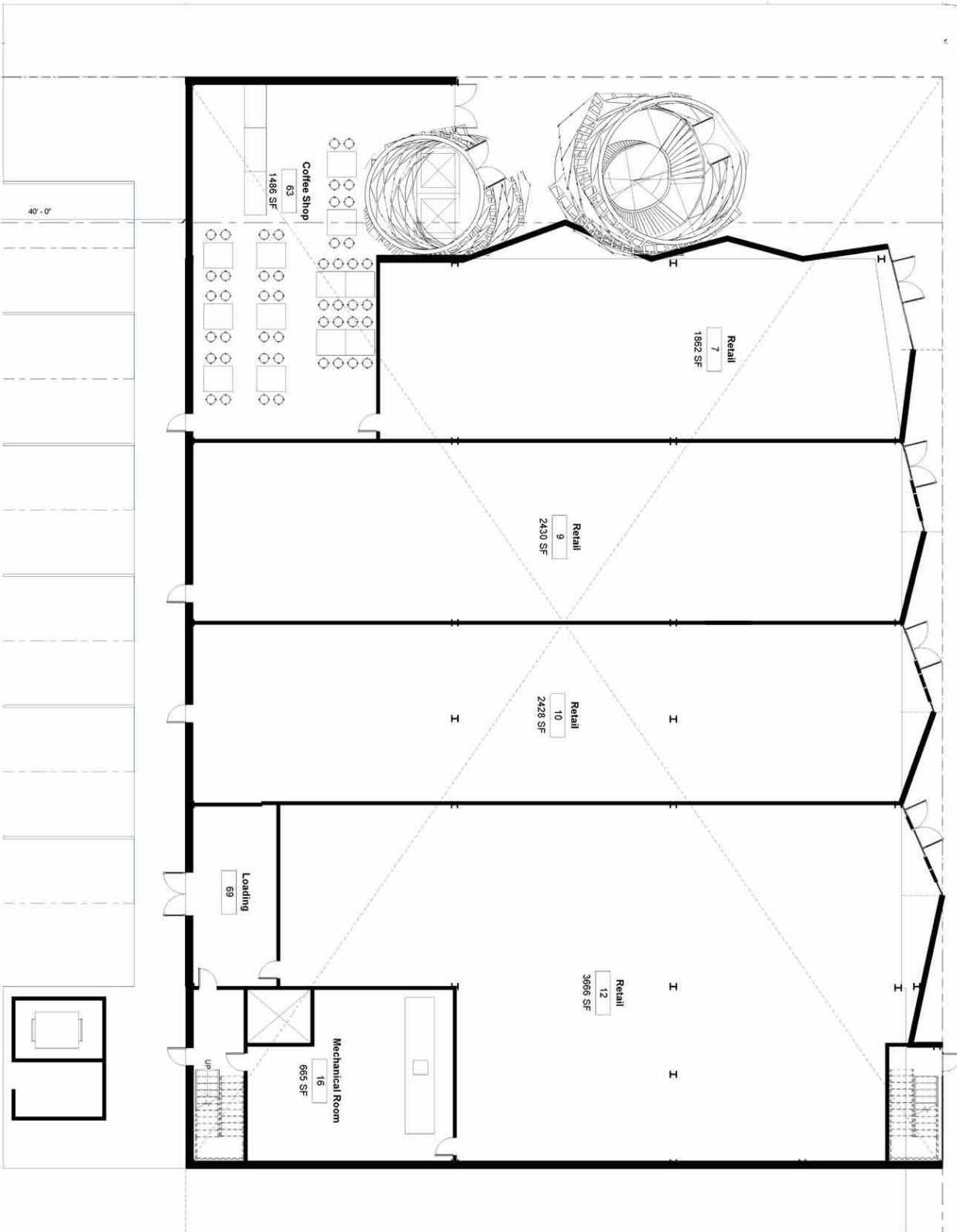


SKIN



First Floor

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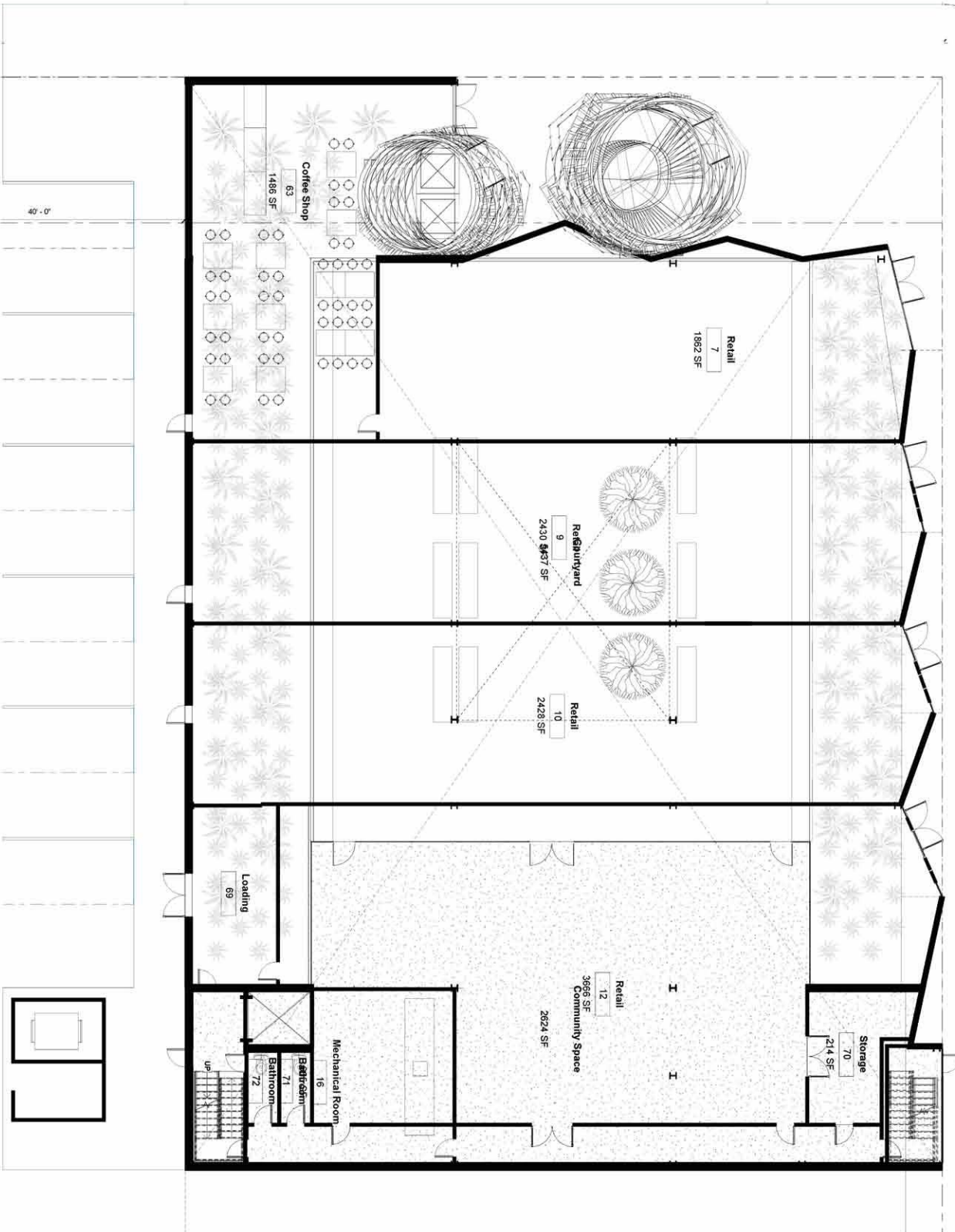




Retail

Second Floor

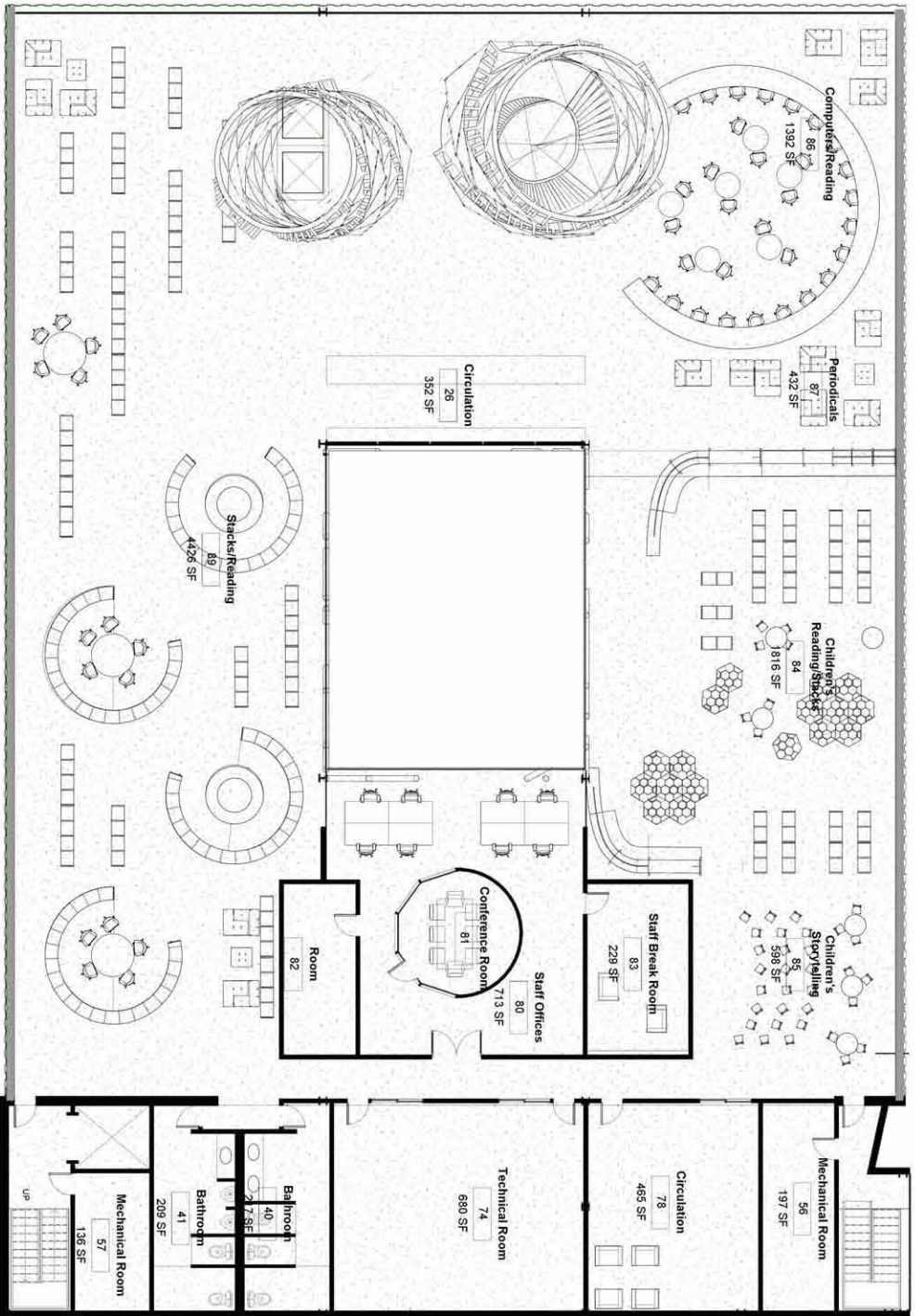
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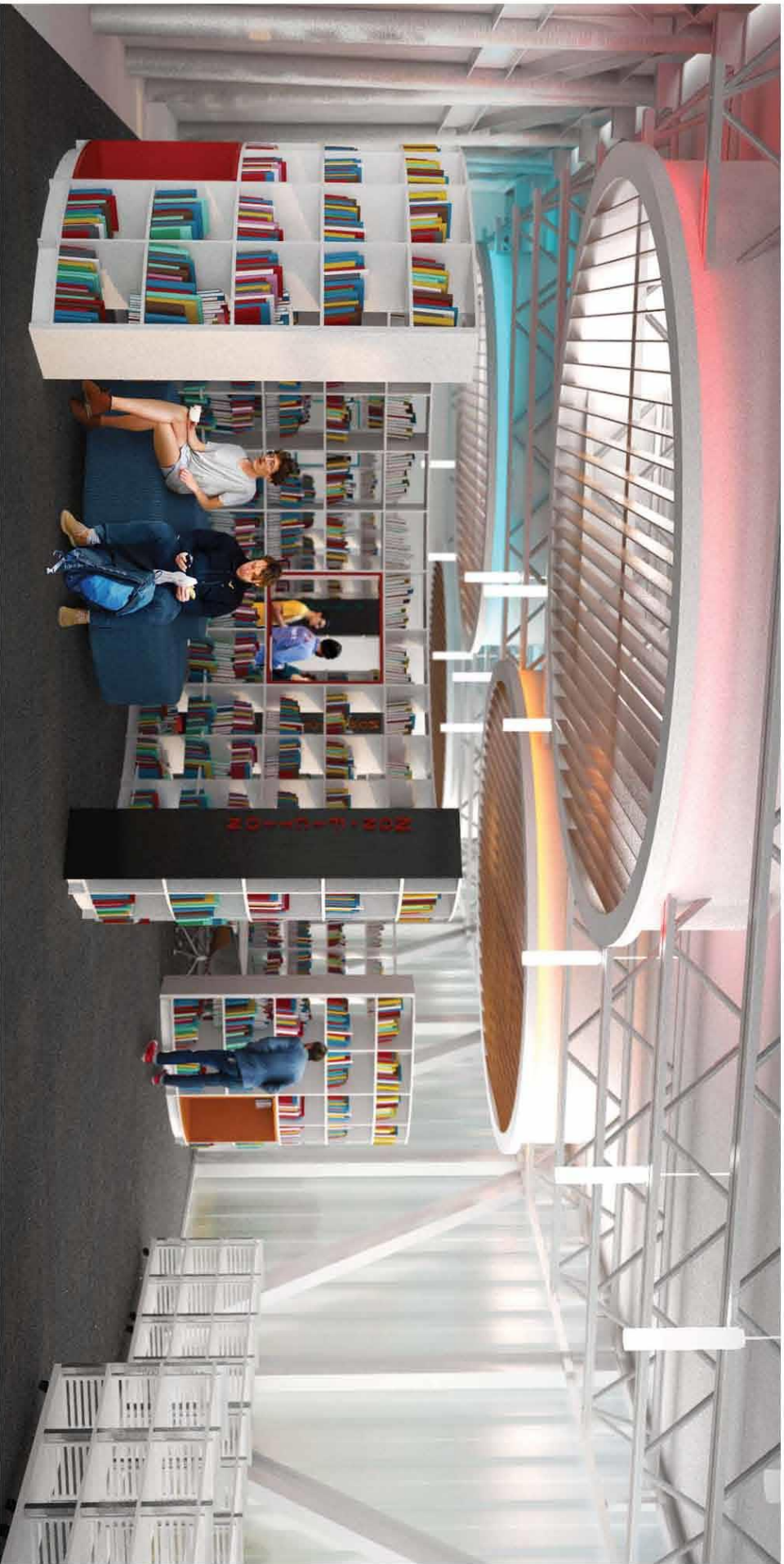




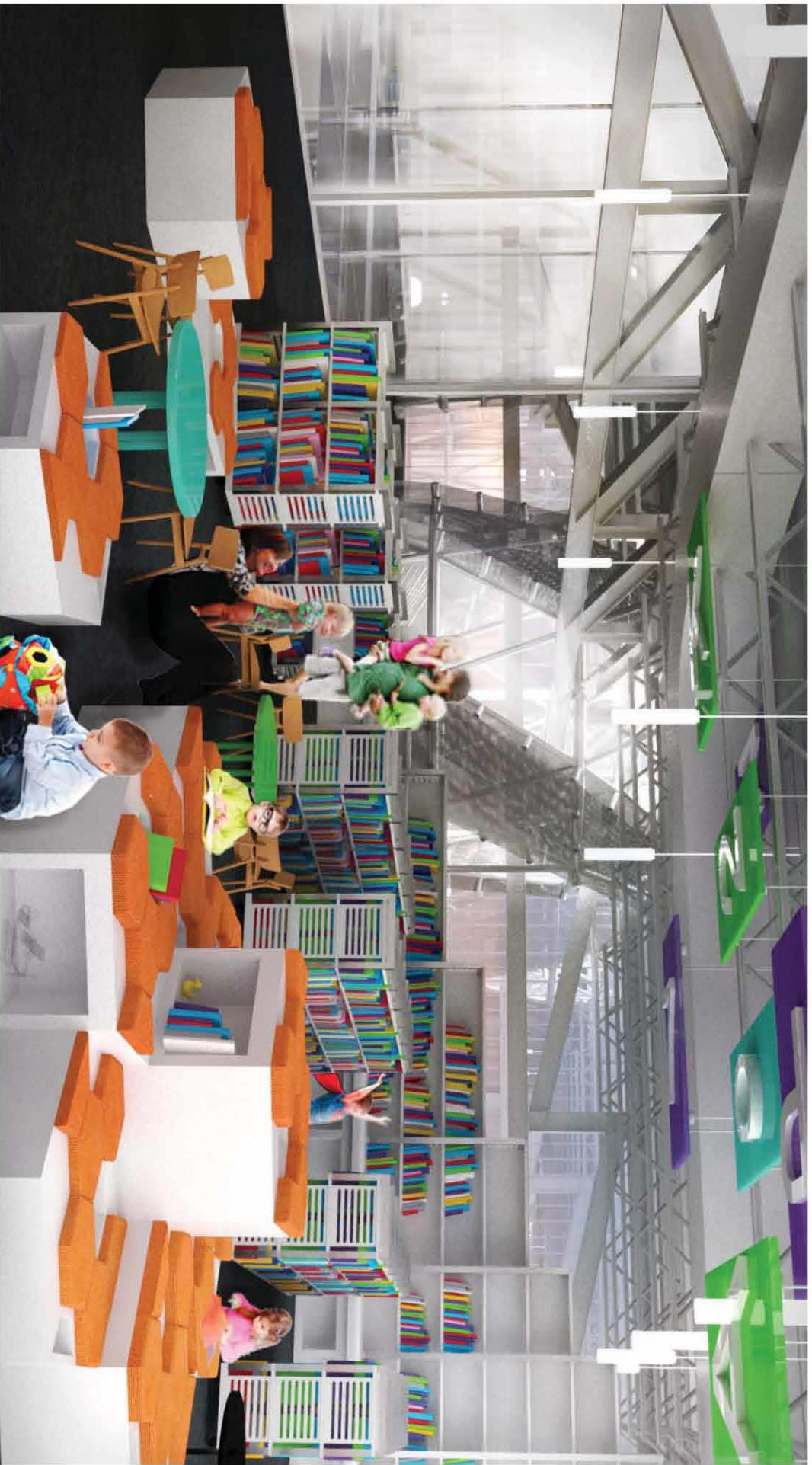
Community Courtyard

Third Floor





Stacks / Reading



Children's Reading