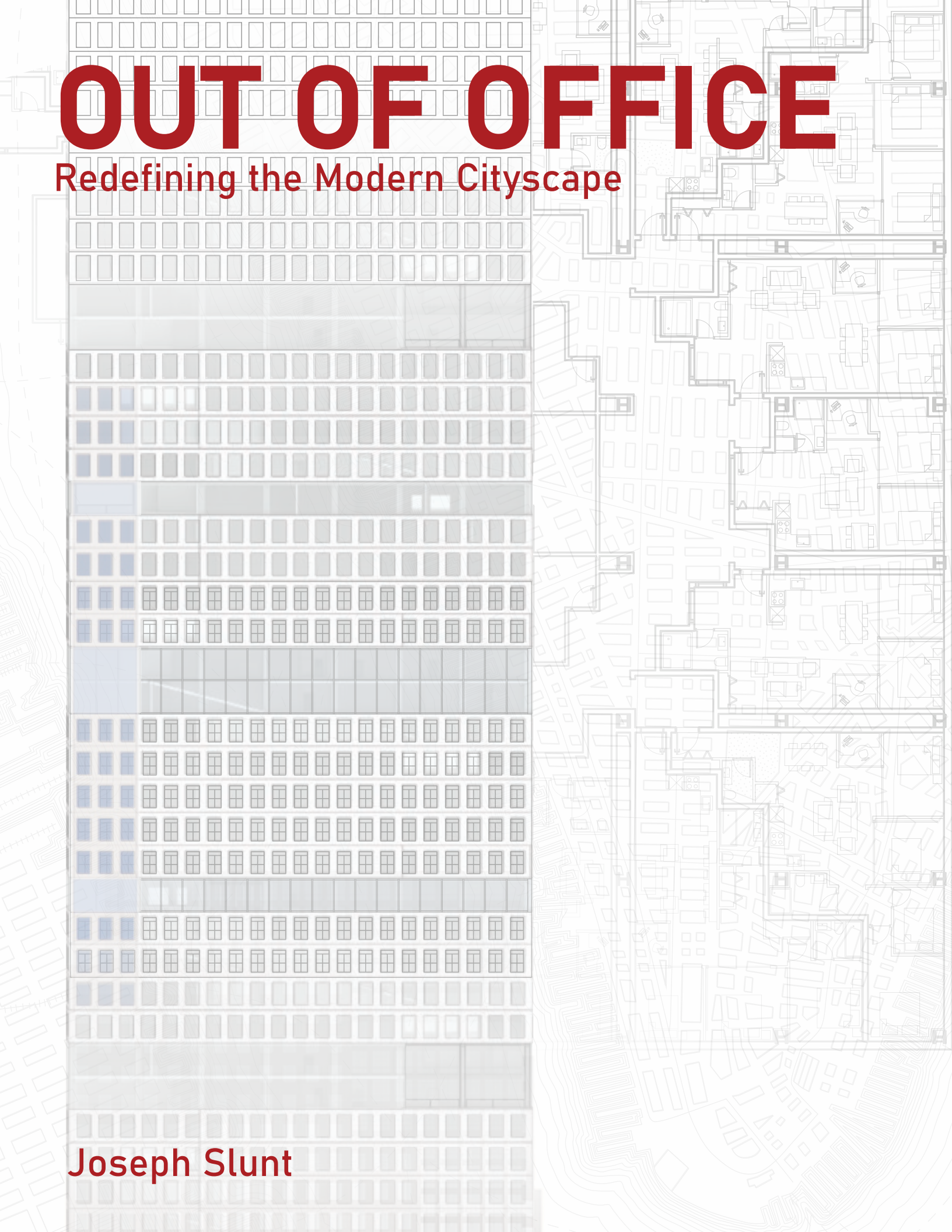

OUT OF OFFICE

Redefining the Modern Cityscape

Joseph Slunt

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Abstract

Through the implementation of several design strategies, diminishingly utilized urban office spaces can be redefined to better serve communal, economical, and spatial paradigms in dense urban fabrics.

Office spaces are being underutilized, exacerbated by the influence of the work-from-home lifestyle. Because of this, multiple design organizations have attempted to create the ideal office-to-residential conversion. Each conversion has its drawbacks and limitations, yet, each of these open office spaces has the potential to redefine city living. The open office spaces scattered across city landscapes present an opportunity to redefine housing in a city, while simultaneously addressing societal shifts and social structures in our day-to-day lives.

200 Vesey Street is a demonstration to test an office conversion that provides new social frameworks and community living. The incorporated design testing works in parallel to create a singular building that encompasses the programming intentions of the typical city block. The reutilization of this representative space will have a cascading effect on downtown Manhattan's existing office park ghost town. Following the adaptation of these large existing floor plates will redefine existing residential arrangements and social experiences to provide a new typology of building.

Keywords: urban revitalization, social connectivity, mixed-use conversion, Manhattan

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Highlighting the areas of interest and design challenges, while also touching on the expectations of the subsequent segments.

Broader Context

Ever since the COVID-19 outbreak in 2020, our world has never been the same, however, our population centers were hit the hardest. While a majority of the world bounced back fairly quickly, certain aspects of how our society functioned changed forever. These changes cannot be fixed, and instead of trying to reverse them, it is time to embrace these differences and revitalize our spaces to fit into these new constraints. One of the most impactful shifts in the mindset of our society was the realization of the practicality of working from home. The rather irrelevance of a physical office was brought to light and our global workforce realized there was no need to be in an office. A fluorescently lit room for 8 hours a day could never compete when sitting on your couch at home produced equal levels of productivity.

This shift in perspective redefined what the working class needed, which in turn, left many companies holding spaces without any use for them. Consequently, these companies dropped their leases or reduced their square footage requirements, which in turn leaves millions and millions of square feet empty and unused.[1.1] Buildings across the globe now lay semi-vacant with no real plan or process for development. These empty spaces are located in the heart of some of the densest and most impactful regions of the world and are simply going unused. For example, New York City reported a close to a 50 percent vacancy rate of office spaces in the heart of their business sectors in as recent as the first quarter of 2023 (Figure 1.1). Factoring in the environmental impacts of having empty spaces, the financial burden being taken on by property owners, and the underutilization of locationally significant buildings, something needs to change. These buildings have the ability to be redefined and reutilized to be used to their fullest potential. These spaces have a duty to be a catalyst for improvement and prosperity in our densest of population centers.

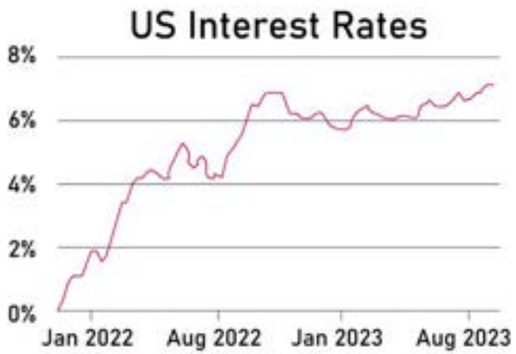
There are numerous issues in our urban regions that could greatly benefit from the possible reprogramming of these empty office buildings. These buildings have the ability to solve a multitude of issues simultaneously. Instituting various levels of programing and circulation would allow for the mitigation of several high-profile issues currently in our cities. These issues can range from social aspects all the way to the inadequate levels of affordable housing. Each of these issues are just as significant as the last and the revitalization of empty office spaces could be the solution to each of them. Designers have the opportunity to solve a multitude of problems with one all-encompassing solution.

Figure 1.1. Digital Illustration depicting the ~25 percent vacancy rate of Downtown Manhattan office spaces in contrast to the ~8 percent pre-COVID vacancy rate (Joseph Slunt CC BY).

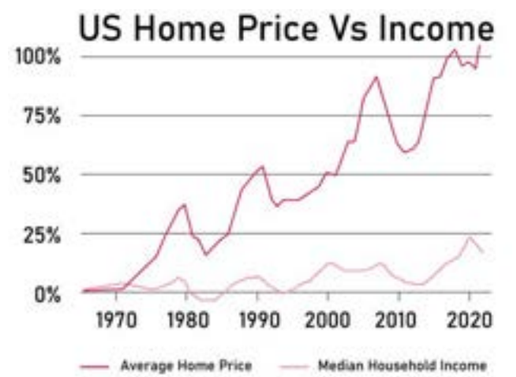
[1.1] Wertheim, Jon, Aliza Chasan, Nathalie Sommer and Kaylee Tully. "How Empty Office Buildings are Setting Cities on a Doom Loop." . https://www.cbsnews.com/news/empty-office-buildings-doom-loop-cities-60-minutes/.

Housing is one of the most critical pieces of infrastructure of a city, and without it, the city itself would collapse. The population of a city is what defines it as a city and the people living and working in cities are the core of what makes them what they are. For a city to grow, it is necessary to be constantly increasing its population and to grow its population, it needs housing. The physical expansion of a city is often directly correlated with its population increases. These increases require housing to be built and developed at a greater rate. However, in the present day, almost every city in the US is having trouble keeping up with the increasing requirements of residential demand.[1.2] Interest rates have been at an all-time high following the pandemic (Figure 1.2), resulting in issues obtaining housing loans and mortgages. Additionally, the relationship between household income compared to housing prices has drifted further and further apart (Figure 1.3). A significant portion of the population has not been able to afford the increasingly high cost of living in the locations, communities, and areas they work and thrive in. This is resulting in longer commuting distances, additional costs, and all the related consequences of traffic, energy use, etc. This problem needs to be rectified or else the population will be forced to relocate to other regions where housing is more accessible.

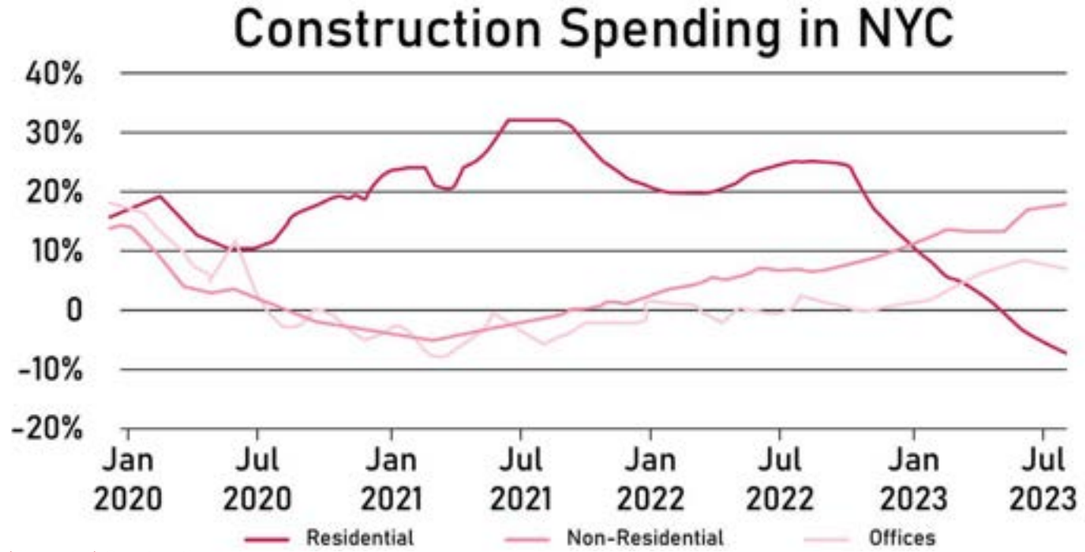
Some developers argue that building new housing structures is the solution to this problem, and with more buildings the supply would increase resulting in a lower demand. While the idea of increasing supply could work, executing ground up construction projects in major cities (especially NYC) is a daunting task. According to research, both residential developments, as well as new construction spending, are dramatically down in current years (Figure 1.4 and 1.5). Additionally, the amount of available land in these dense fabrics is at an all-time low (Figure 1.6). Building new structures is much more expensive than conversions and it would be easy to rectify this housing crisis with the more affordable option. As a result, a very strong argument can be made to support the notion of using the current office vacancy problem to solve the current housing problem. It is conceivable that with the redevelopment of office buildings into residential housing, the supply of affordable homes would dramatically increase. This influx of supply would in theory be able to keep up with the heightening demand for housing and allow for the working class to continue to survive and prosper in these dense urban environments.



(Figure 1.2) United States interest rates from January 2022 to August 2023 (Joseph Slunt CC BY).



(Figure 1.3) Comparison between housing prices verses income over the last 50 years (Joseph Slunt CC BY).



(Figure 1.4) Construction spending broken down by zoning category in New York City from 2020 to 2023 (Joseph Slunt CC BY).

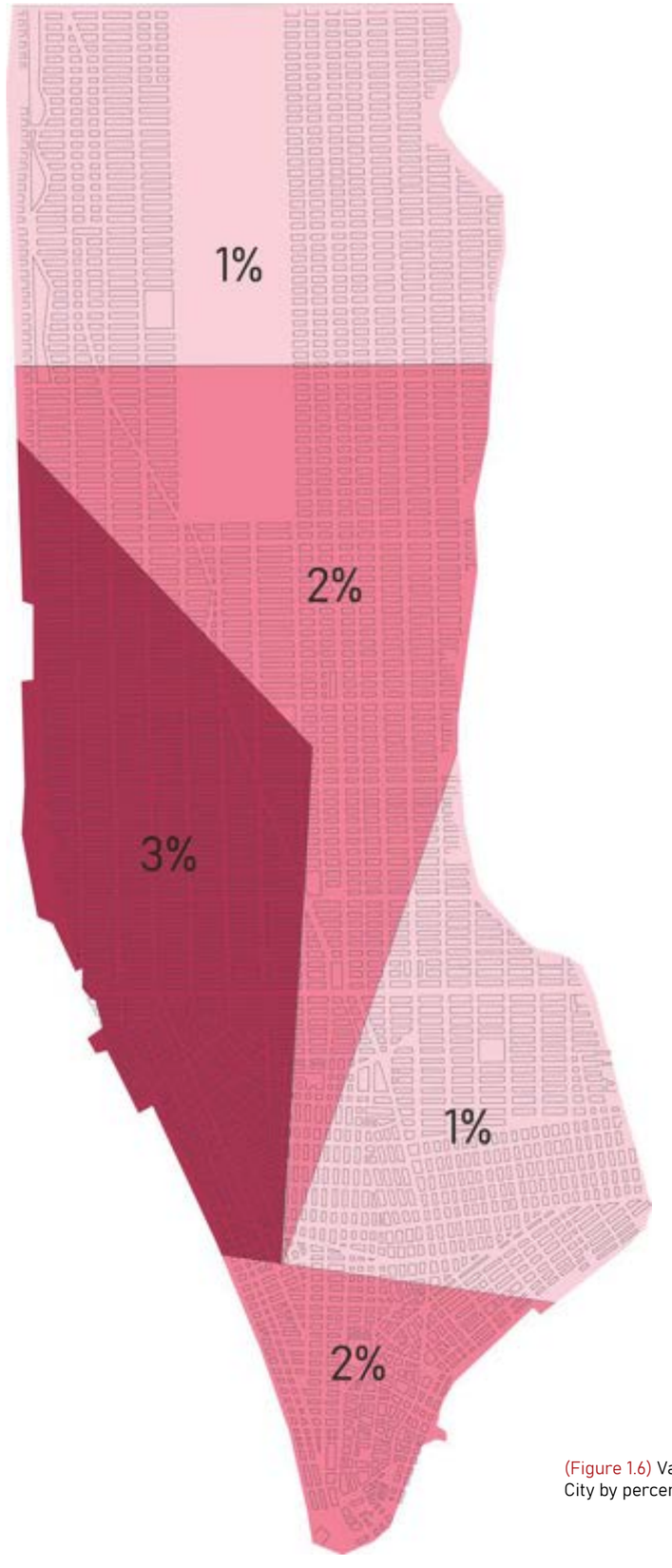
(Figure 1.5) Volume of new construction projects in New York City from 200 to 2023 (Joseph Slunt CC BY).

[1.2] Williams, Zach and Danielle Dunn. "NY Nears Deal for Housing Policy with Tenant Protections, Developer Tax Breaks." . https://www.bloomberg.com/news/articles/2024-04-15/ny-budget-deal-near-with-tenant-protections-developer-tax-break?embedded-checkout=true.

Quality of Life
Another rather insurmountable issue currently plaguing our population centers is the diminishing quality of life. One recently prominent argument made for the support of suburban living is the lower cost of living, but more importantly the increased standards of living. Recent city abandoners claim that they gain more happiness from living outside the city in more remote and quiet regions. However, with the opportunity provided by these large unused office buildings, designers have the chance to redefine the experiential cityscape. There is the possibility to provide a multitude of benefits such as increased social aspects, an overhaul of public green space, and an ample number of amenities for both residents and the public. With the integration of clever design decisions, these spaces could redefine what it means to live in the city. As well as this, some jobs cannot be served by remote work. Making these areas more attractive both functionally and aesthetically, will benefit those who are required to live in these regions.

The primary determining factor for people to stay in cities are the aspects which could never be replicated in places such as the suburbs. Highlighting where population hubs are currently lacking allows for the redevelopment of spaces to keep the city an attractive place to live. Emphasizing the social connectivity along with the accessibility of being in the heart of so many different stores, restaurants, and activities is what gives a city its charm. Building on these aspects of urban design, it would make sense to integrate these attributes into a space which also provides housing. The integration of characteristics which only a city can hold, into the residential spaces people spend a majority of their time in, would allow for the seamless transition between all the attractive aspects of a city. While still keeping the level of privacy people come to expect, it would be very possible to construct public or commercial spaces inside a residential building which would allow for a dramatic ease of movement between the alluring parts of any major metropolitan area.

The opportunities accompanying the issue of having millions of square feet of empty office spaces allows designers to redefine city living both from a residential and commercial side. In the present day, our office spaces are not being utilized to their fullest potential. However, using these spaces to solve even bigger problems in our urban areas is a chance to redefine our cities. It is time to move on from the old notions of what a city can be and revolutionize these critical regions to once again sever the advancement of our ever-growing societies.



(Figure 1.6) Vacant plot heat map in New York City by percentage (Joseph Slunt CC BY).

Audience

The most important group, which would be the primary beneficiary of this urban solution, would be the existing and prospective residents of these regions. The influx of provided housing would allow for thousands and thousands of people to relocate into regions of the city which were previously financially unobtainable. The amount of square footage, which could theoretically be converted into housing, would allow thousands of units to be created with little effort. An increase in the supply of affordable and non-affordable housing would manufacture a severe dip in the housing market. People would have the ability to move into areas of a city that are more practical for them and their families. With lower commuting times and more centrally located spaces, people would be able to live much more productive and efficient lives leading to a higher level of happiness and quality of life.

Following the residents of these prospective multifamily housing buildings, the current property owners themselves would also be inclined to adapt these structures. These landlords currently have hundreds of thousands of square feet of income-less floor space. Having the opportunity to redevelop these spaces into areas that can have purpose again would allow for them to be profitable once more. These buildings are generational investments and hold wealth on a scale that many cannot comprehend. However, currently, these spaces are bleeding value and have potential that is not being tapped into. Additionally, these building conversions would allow these landowners to diversify their holdings and increase the value of any portfolio for the future. Having the ability to swap spaces between commercial and residential would allow for these owners to have seemingly recession-proof investments for the future.

On a more general level, it is clear that an impacted population of people would be the average citizens of one of these cities. With these conversions, it is possible to produce spaces that would not only be exclusively open to tenants but also to the outside world. Feeding into the idea of a places outside of work and home for the general public has been a focus of several design challenges in recent years. Especially since this project builds on the idea of working from home, creating opportunities for people to have an external social space to exist in would be an important aspect of these conversions. This solution could solve so many problems currently affecting these urban regions all at the same time and

groups of people could be the audience for the designs associated with this project.

Structure

Throughout the progression of this project, several aspects will be touched on to produce a concrete argument for the possibility of these office conversions. The construction and design industry has been working for hundreds of years and a look back into what has worked in the past will help to justify and solve the problems facing our future. The first major focus of this proposal is to highlight and analyze past work both in the form of closely related precedent studies as well as seemingly uncorrelated design solutions that can work in parallel to solve this overarching problem. Additionally, a look into the social relationships between people and space will encourage the effective design of critical programmatic aspects which will add to the effectiveness of a solution like this.

Following the justification for this proposal, the wide array of parallel functioning solutions will be highlighted. This section will go into detail about which design decisions are researched and implemented and where they both help and hurt the final design of this project. Specifics such as location and site are be taken into consideration while also touching on more broad categories that have an overarching design theme. The problems will be presented and then followed by a design solution that directly solves that issue. Breaking down exactly how said solution will function, how it will solve the problem, and most importantly, how it can be adapted into different situations is the main focus of this section.

With so many different design solutions acting together in unison, a section for the integration of all these intricate pieces is necessary. The focus of this segment is to analyze the effectiveness and continuity of this proposal. Taking a deep dive into how several different systems work in parallel all inside the same space would be the primary goal. Seeing how effective each piece is for the 'big picture' solution is crucial and will be displayed in a couple of different ways. This will be mainly conveyed via diagrams and drawings along with graphs and data analysis. Proving the plausibility of this design with hard data as well as showing the design justification for it will be important in legitimizing the possibility of success. Justifying all these solutions will be by far one of the most important sections of this project and will ultimately decide the overall feasibility.

There will realistically be pieces that are unfortunately overlooked in this proposal and the final section of this book will be to break down and analyze the shortcomings and pitfalls of the project. There will always be things that can be improved on in any project and this section will be provided to show which of these pitfalls were taken into consideration and why they were not discussed in further detail.

Figure 1.7. (Right) Aeriel photo of downtown New York City at night.

This project is intended to be applicable in every urban hot spot in the US, so while certain pieces will be universally acceptable, other aspects might have to be adapted. Given the timeframe of this proposal production, not every individual piece can be given an equal amount of thought and development. Highlighting which areas would be considered in the future will help give legitimacy to this idea and show that with more time and resources, this project truly has the potential to change the way we see the urban environment.

Perspective

From an author's perspective, this problem hits close to home. I have spent my entire life living in the sphere of influence of a major metropolitan area. I spent many of my formative years traveling into New York city several times a month to interact with the bustling and ever-changing city that many consider to be one of the most influential in the world. I attribute most of my career inspiration to the years I spent traveling throughout New York's five boroughs. Constantly being surrounded by skyscrapers taller than I could ever comprehend is what truly gave me the motivation to pursue architecture and design. I got to regularly experience the parts of New York that many people travel across the globe to see. After close to two decades of influence, when it came time to choose a college, I could not fathom living anywhere but another city and I settled on one in the heart of Boston.

For the next 5 years, I studied architecture and design and had a

Figure 1.8. Aeriel photo of midtown New York City.

focus in urbanism. Due to this increased focus, I was able to finally open my eyes to some of the drawbacks of these dense urban environments. I realized that people, as close to me as my own father, spent several hundreds of hours a year simply commuting into cities for work. I learned it is simply too expensive to practically live and work in one of these cities. My father spent an hour and a half commuting each way for 30 years, and once I realized that was nearly 32 days a year spent commuting, I knew I wanted to be the catalyst for change.

Another formative moment in my decision to pursue this endeavor was after the COVID-19 outbreak. I realized that cities were hit really hard, and it would be challenging for them to rebound. These cities are places I grew up in and considered my home and I was not prepared to let them shrivel away. Proposing solutions to revolutionize the way we develop within these cities could be the saving grace from the plague that is occurring. Housing necessities and office underutilization are going to be the death of the modern city and it is time to make a change. I have a strong personal investment in the prosperity of these urban landscapes. I will do everything to the best of my abilities to make sure that following generations have the opportunity to experience New York City and Boston the same way I did when I was growing up.

Expectations

The cities of today are at a turning point in history and to enable them to be the cities of tomorrow, they must be revolutionized to better serve our ever-changing society. Office spaces are simply not being used to their utmost potential and it is negatively affecting massive portions of the population. Additionally, housing in these dense urban fabrics is struggling and are desperate for a way out of this predicament. Furthermore, the mass exodus of city residents is something that must be combatted and reversed. The combination of these issues is what will lead to the eradication of each. Revitalizing diminishingly utilized urban office spaces to encourage communal, economical, and spatial relationship enhancement, is the way forward.

Figure 1.9. (Right) Reflected photo of the New York City Financial District.

Figure 1.10. Aerial view of Downtown Manhattan.

CHAPTER 2

Discourse

The research and coordination with existing studies and projects and how those have in turn influenced the progression of criteria and problem solving.

Introduction

The solution of leveraging office spaces for conversions are not necessarily new concepts to the design industry. These are conversations that have taken place for as long as office buildings have been around. It is a logical step to consider that converting an unused space into various new pieces of program would solve many different problems and be much cheaper than ground-up construction. However, the issues come along when considering the widening variety of design problems that arise when considering a conversion. There are countless different variations of typology to consider and designing for every single one is very time-consuming and inefficient. Taking into account that every building in every city is a little bit different with certain hyper-specific problems is a fairly insurmountable problem to solve all at once. Working out issues with layout, daylighting, MEP integration, site manipulation, etc. all result in countless hours of iterative design. As a result, these design groups have come to the conclusion that only certain buildings are truly feasible for a conversion.

The issue is, when narrowing down which buildings fall into the category of convertible, many buildings end up being left on the outskirts. These buildings getting left behind are just as vital to the eradication of this housing and office space problem. These firms have, in theory, "solved" the problems of a very specific type of office building, however, the buildings that fall outside of this purview are just as, if not more, important to the betterment of the host city overall. It would be a crucial next step to focus on the benefits and drawbacks of several different working systems and projects to determine which pieces are truly necessary to incorporate into a functional design. Taking a look into the past is the best way to foresee the next steps in the future.

The goal of these precedent studies is to gather information on systems that work verses the ones that do not. Each project will have certain drawbacks, however, the functionality of design solutions and how they interact with varying levels of program and scale is crucial in the eradication of these office related problems. The scales to focus on are both small and medium sized spaces in the hopes that they will shed some light on possible scalable solutions. Additionally, the program of these conversions will be looked at closely; considering the needs of both residential spaces as well as communal and social spaces. Finding a balance between these two drastically different typologies will result in a list of requirements and criteria for a functional design incorporating the best of both worlds.

Small Scale

Daylighting seems to be one of the leading issues when it comes to these types of conversions. Since this is such a tough problem to solve, it would make the most sense to isolate a project that excels in this category. Taking a step back to focus on successful builds, even on a small scale, can help shed light on what has worked and what has not. A fantastic example of this can be shown on a project recently completed by TINA in Breisach, Germany.[2.1] This project was picked due to the dramatically lower price of office space rather than a multifamily building, thus reinforcing the financial legitimacy of this solution. However, the manipulation of daylight into this space is what should be primarily focused on.

Once TINA had control of the site, they designed several different passive lighting systems to work in parallel to achieve their daylighting goals. This building was originally designed as an office building so a private and solid exterior was an important factor during the construction. Naturally, this is where TINA started its process. They began by removing a majority of the existing facade and replacing it with large floor-to-ceiling windows to both increase sunlight and social connectivity (Figure 2.1 and 2.2). Additionally, large skylights were installed in the ceiling to allow for ample lighting into the center of the building. Due to the floor plate size, a majority of the central components of this structure would be dark, but because the designers implemented these skylights, light is able to pass throughout the core.

The interior of this building also assists in the movement of light in several different ways. The interior core consists of primarily glass, or mostly transparent walls which help with the circulation of the limited light provided (Figure 2.3 and 2.4). Additionally, these designers made the choice to remove a portion of the 2nd floor to enable the installation of a double-high space (Figure 2.5). The studio describes this area as, "semicircular stair landing breaks the clear geometry of the volume, marks the entrances to the individual usage units and serves as a communicator into the surrounding urban space."[2.2] This area lets light travel more effectively into the ground floor thus enabling even lighting throughout the building. Finally, when it comes to safety, the team at TINA chose to place the exit stairs on the edge of the building in an open fashion which adds to the facade design as they are visible from multiple exterior angles. Placing exit stairs in a well-lit location was an interesting choice because often exit stairs are the one piece of circulation that do not need sunlight and in a space as limited as this one, you would assume that valuable sunlight should be conserved. However, due to this design choice, it not only makes the stairs better lit, but it also adds a sense of openness to the building, making it more connected to the surrounding sites.

There are several aspects that can be taken away from a successful conversion like this one. The implementation of walls with a certain level of opacity is an interesting concept that if used correctly, could redefine the luminosity and visual/social connections of a given space. Additionally, the design benefits from having double-height spaces which clearly are very valuable. These floor plate cuts lead to a more seamless transition between floors as well as allow for sunlight to travel unobstructed deep into the core.

[2.1] Pintos, Paula. "TINA - Flexible Office and Residential Building / STUDIO SOZIA." Mar 13, [cited 2023]. Available from https://www.archdaily.com/997787/tina-flexible-office-and-residential-building-studio-sozia.

[2.2] Fohmann, Kim. "TINA - Flexible Office and Residential Building." [cited 2023]. Available from https://studiosozia.com/tina/.

Figure 2.1. Exterior elevation of the TINA office-to-residential conversion.

Figure 2.2. Exterior elevation of the TINA office-to-residential conversion.

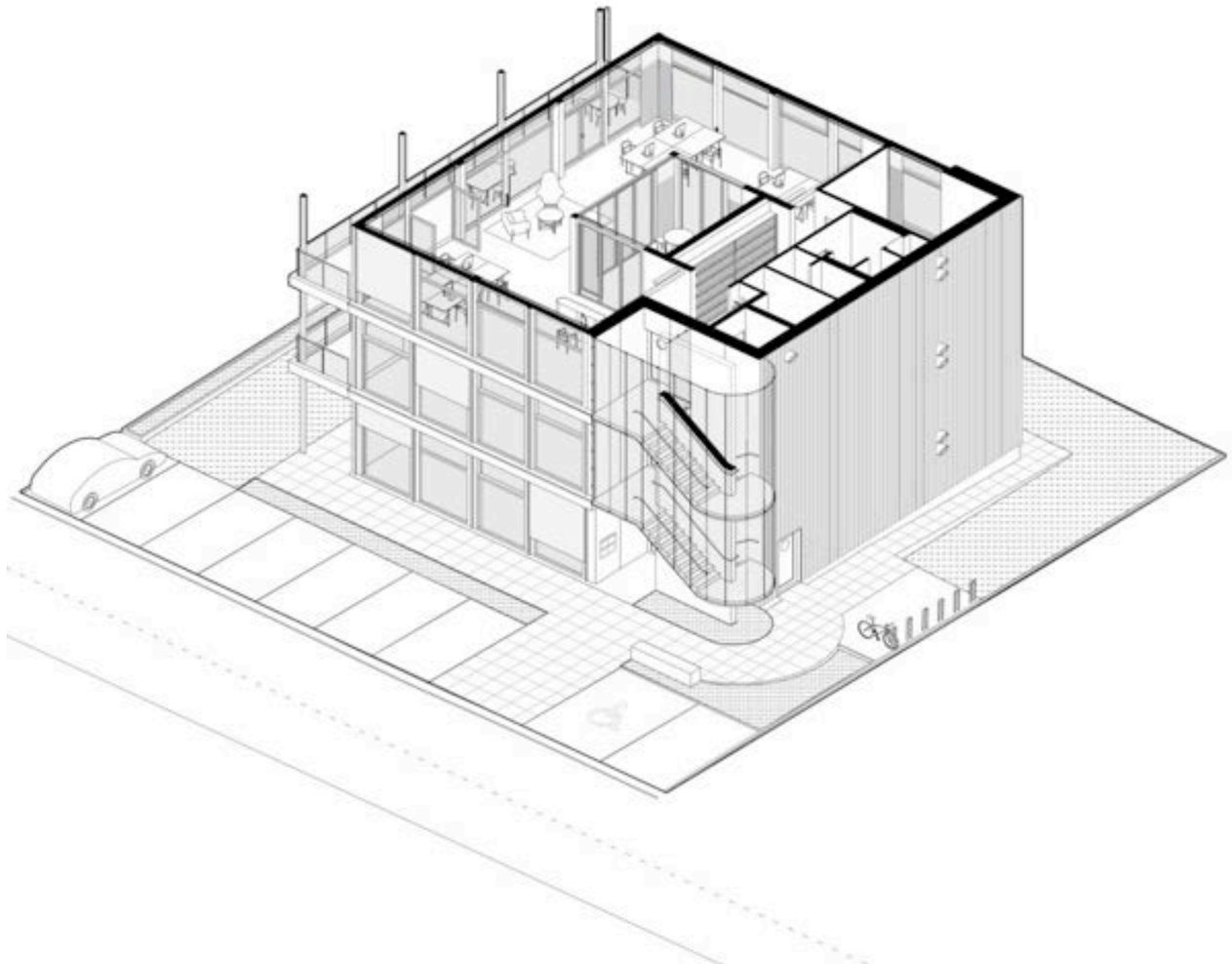


Figure 2.3. Depiction of the transparent interior walls inside of the TINA office-to-residential conversion.

Figure 2.4. Sectional axon of the TINA office-to-residential conversion.

Figure 2.5. Interior view of the double height space inside of the TINA office-to-residential conversion.

Each of these would be highly beneficial if implemented in a more urban environment.

Even though there are several pieces of this building that function very well, there are several pieces that prove how difficult a truly 'universal' office conversion is. There are a few pieces of this building that are not necessarily ideal and would have to be addressed. Primarily the skylight implementation works well in this specific structure, but placing skylights in buildings that are 25 times the height and size of this project would be completely ineffective. Light only travels about 10-20 floors downwards before fading, so on a three-story building like this one it works excellently, but in a larger space, it simply would not be even remotely effective. Additionally, the construction costs of this building were likely very high. The entire facade, program, and structure had to be rebuilt which would not be feasible for certain projects, simply due to the return on investment.

As a result, this building is a very good example of how light can be manipulated into spaces for the maximum benefit of users. Certain aspects of this project should carry on such as the wall opacity and floor plate subtractions. However, there are also certain pieces that prove this is not the 'one size fits all' solution we're looking for. Other more scalable solutions should also be researched when it comes to lighting up an isolated space. There are countless different types of systems that can be installed into an underlit area. The one most notable in this project was the skylights, however other systems such as light tubes and light shelves are also very common and possibly encouraged in most applications like this one.

A study published in a journal titled Advanced Optical Daylighting Systems[2.3] really goes in depth in the functionality of these other daylighting systems. A test was performed by L. O. Beltrán in which he tested several different light shelf and light tube designs to determine the optimal design strategies for each. He provides several different numerical comparisons between each of the tested systems. He eventually concludes that with the correct characteristics of one of these systems, a very dramatic improvement can be made deep within a poorly lit space. With the correct angle of reflective materials, as well as with the correct spacing between systems, these solutions could increase the volume of light in a space anywhere from 18 percent-70 percent (Figure 2.6 & 2.7). Beltrán directly states "...if both energy and non-energy benefits are considered, we believe that these advanced optical systems solve the problem of inadequate daylighting levels at the core of the building without exacerbating the problems of cooling and visual comfort".[2.4] This dramatic increase would be well worth the investment in a converted building which lacks the necessary daylighting, such as the TINA project. Implementation of these individual systems all in parallel with each other could truly transform a space.

For a small project such as the one completed by TINA, the solutions

[2.3] Beltrán, L. O., E. S. Lee, and S. E. Selkowitz. "Advanced Optical Daylighting Systems: Light Shelves and Light Pipes." Journal of the Illuminating Engineering Society 26, no. 2 (1997): 91-106.

implemented are perfect and some are most definitely scalable. However, implementation of studied and proven systems such as the ones highlighted by L. O. Beltrán would be very beneficial as well. The combination of systems in a conversion is the clear key and not one singular solution will work on its own or in every type of project. As a result, studying small scale at a large quantity could help slowly narrow down what works in the greatest number of projects, however, looking at a larger scale could also assist in this endeavor. Looking at a building that is already at a larger scale could give more insight into what works on the scale of a major city. Impactful design choices at this larger size could make it easier to decern between solutions that just work in a small German office building verse solutions that work in the heart of New York City.

Large Scale

While the smaller scale studies give a glimpse into the functionality of specific systems, such as daylighting, another type of project to study would be one attempting to achieve this level of conversion at full scale. Several cities have recently adapted their zoning laws in major areas of their cities to allow for office-to-residential conversions to be possible. The companies that are taking advantage of these zoning adaptations are the ones that are a step ahead of the competition. Taking a closer look into what works and what does not in a design framed like these large-scale structures would give a better insight into the types of solutions that fall inside the purview of design.

Gensler is a very large architecture and design firm which has a wide-reaching influence across the globe. They are one of the firms which has taken a lot of time to research the feasibility of specifically office to residential conversions and they seem to be the front runners when it comes to the breakdown and analysis in this sector of design. Focusing on one of the buildings they have recently worked on is one of the more helpful ways of research in a field as saturated as this one. Luckily, they are currently underway constructing an office-to-residential conversion in downtown Manhattan, New York. Lead by architect Avinash K. Malhotra, this building boasts a full conversion with the implementation of about 600 housing units along with a multitude of amenities. Located at 160-180 Water St, New York NY, 10038, titled Pearl House (Figure 2.9).[2.5] This building is right in the heart of the zoning regulation relaxation region and is

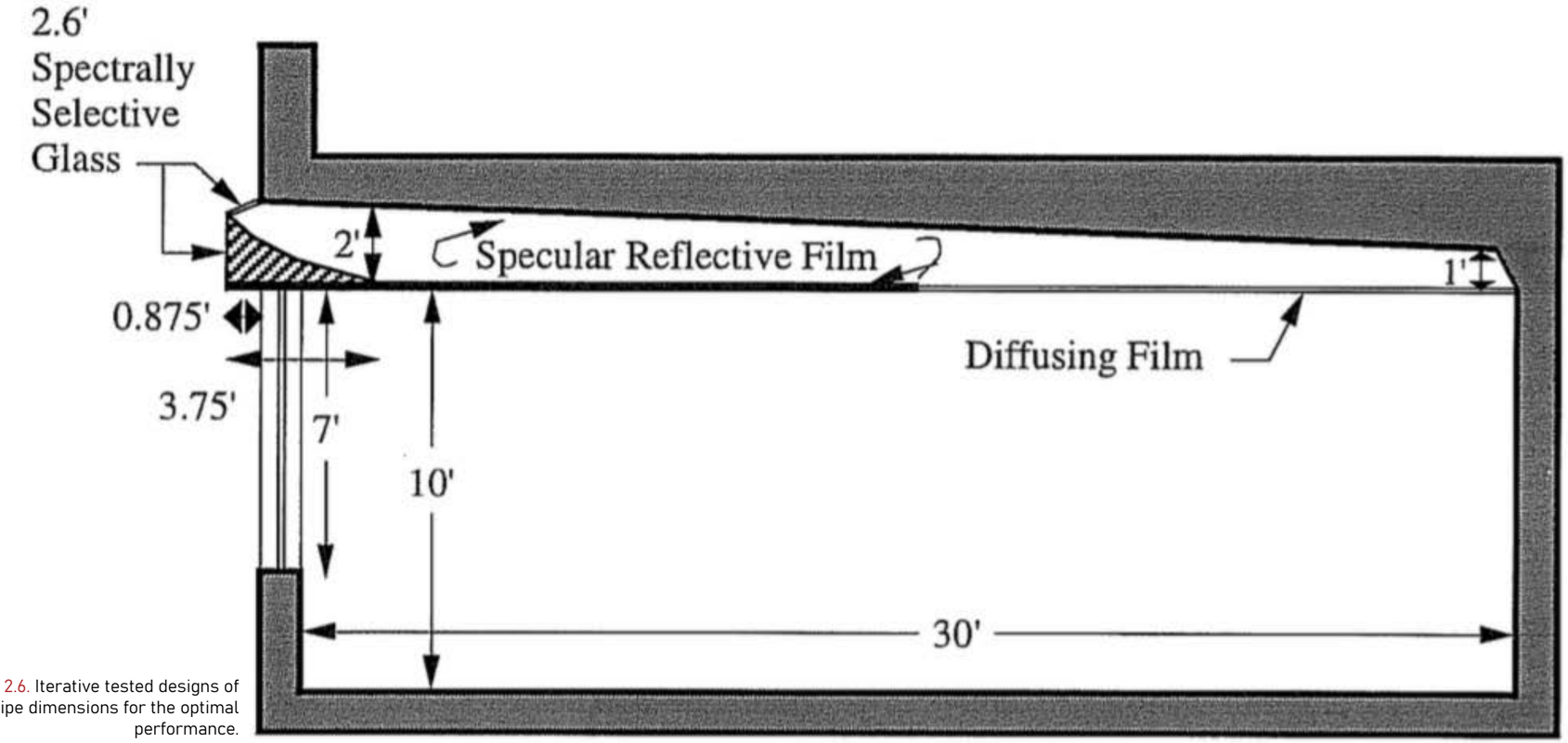


Figure 2.6. Iterative tested designs of light pipe dimensions for the optimal performance.

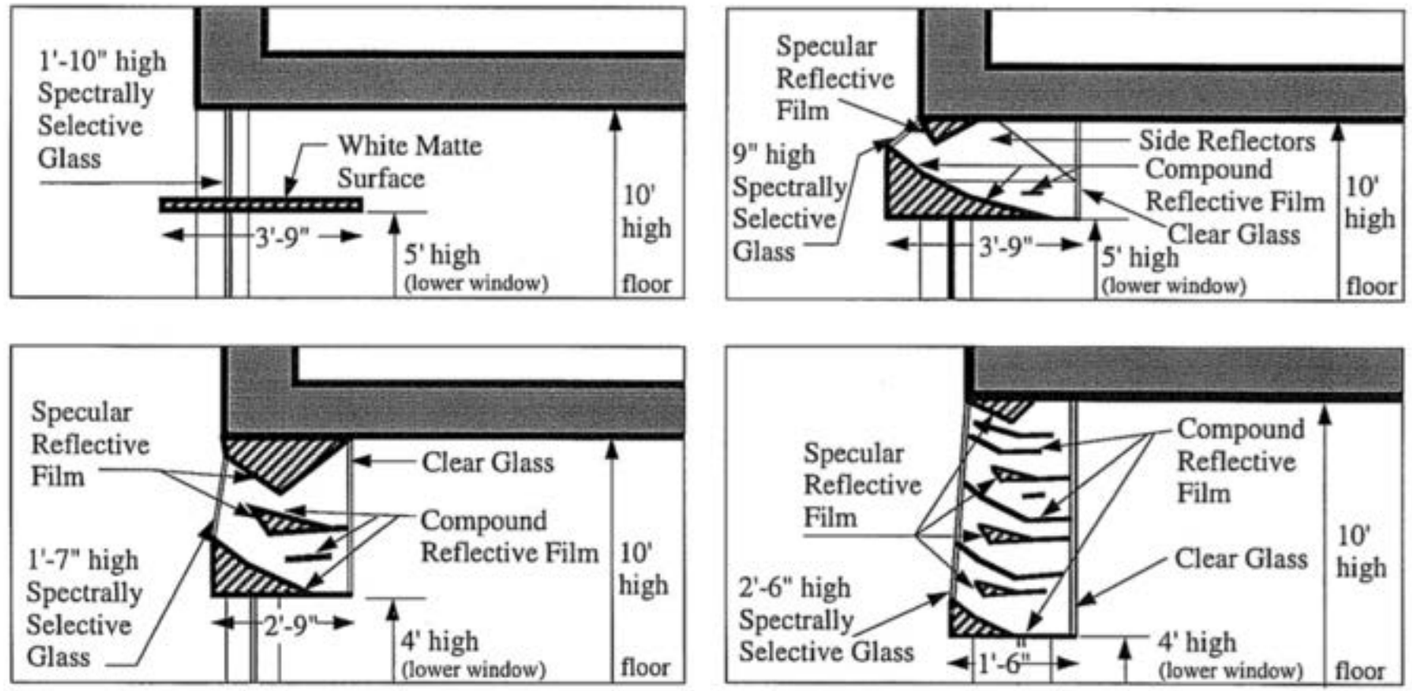


Figure 2.7. Iterative tested designs of light shelf dimensions for the optimal performance.

[2.4] Beltrán, Advanced Optical Daylighting Systems, 104.
[2.5] Gensler. "Pearl House (160 Water Street)." [cited 2024]. Available from https://www.gensler.com/projects/pearl-house-160-water-

Figure 2.8. Manhattan Skyline.

a perfect case study on the working and non-working aspects of a project at this scale.

This building was previously a 25-story office building which was contracted to be converted into a residential multi-family housing project in early 2020. It was taken on by Gensler and Avinash K. Malhotra Architects and is slated to be completed in late 2024. This building has the typology that falls right on the cusp of what Gensler considers to be possible for a conversion of this scale. This structure is laid out in a 'U' shape with windows on three sides and the core on the fourth windowless wall. The building has a unique 72-foot span from the windows to the core, and that alone comes with a multitude of design complications that Gensler and Avinash K. Malhotra Architects had to work to solve.

This idea of deep floor plates is what holds back a majority of designs. Gensler has released reviews on the feasibility of different types of floor plates. They're quoted saying that "... [deep floor plates] has a lease depth greater than 40 feet. This dimension exceeds residential planning depths, which limits conversion opportunities,"[2.6] which drives home the challenges accompanying these structures (Figure 2.10). However, in the case of 160 Water St, they were able to overcome this design challenge with a creative punch right through the middle of the building. They carved out a square on every floor plate in the structure to create a courtyard traveling from the roof down to the ground (Figure 2.11). This of course allowed sunlight to reach many areas of the building which were previously shrouded in darkness. This subtraction allowed for the internal program and circulation of the building to take a drastic turn for the better. Avinash K. Malhotra Architects was mostly in charge of the interior layout, and they were able to design the building to hold over 600 units once all was completed. This massive number of units was only made possible by the implementation of this light well because without it, almost every single unit would have had to be on the perimeter. This restraint would have made this conversion financially impossible and inefficient simply due to the dramatically reduced number of units able to be implemented.

When Avinash K. Malhotra Architects took over the interiors and unit layout, they had to be creative in the shape and design of each individual space.[2.7] Not a single unit is a perfect square and to ensure each unit was able to receive an ample amount of sunlight, these spaces required some oddities in their placement. These unusual

Figure 2.9. Exterior view of 160-180 Water St..

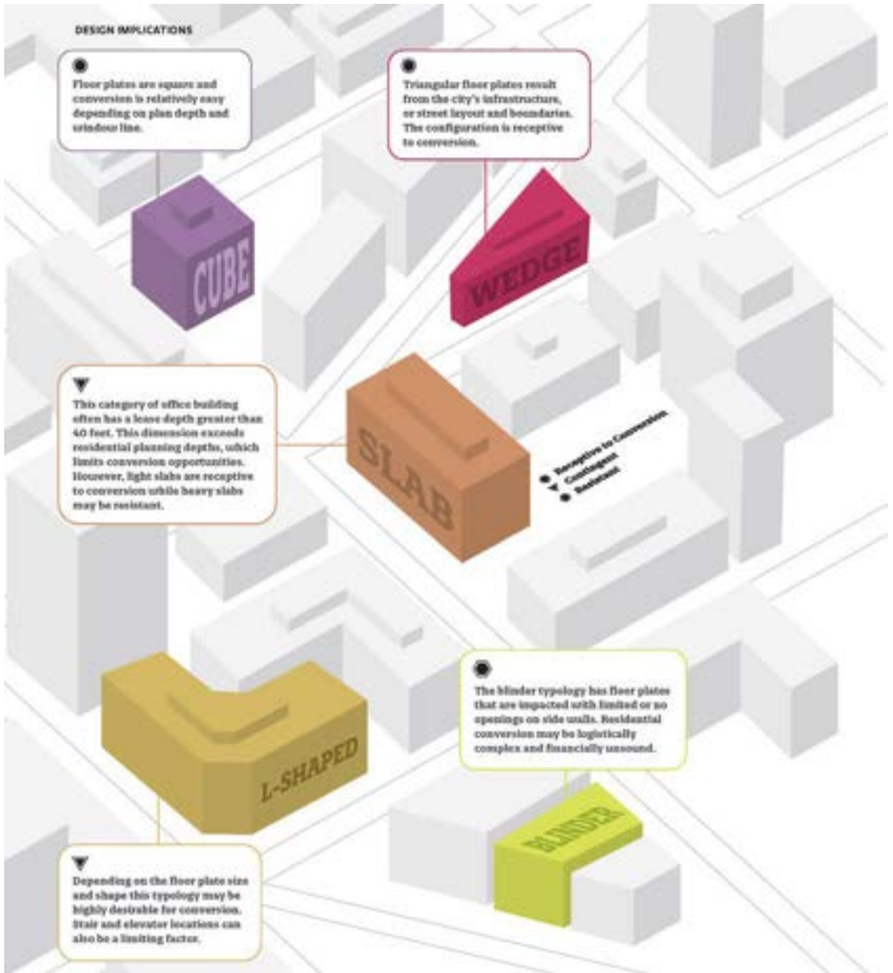


Figure 2.10. Gensler publication showing their in-depth analysis of differentiated floor plate properties and their ability to be converted. Gilly,

[2.6] Gilly, Derek, Greg Zielinski, Sarah Palmer, Duncan Lyons, Jeff Barber, and Bill Talley. Design Parameters for Urban Office to Residential Conversion. Gensler, 2018.

design choices are highlighted in a New York Times article titled Here's How to Solve a 25-Story Rubik's Cube and its said "... conversion forces some oddities: a wall that zigzags to avoid hitting a window, a pair of side-by-side bathrooms, a structural column in the middle of a bedroom wall."[2.8] However, with the addition of some strange design choices, and the implementation of the internal courtyard, the group was able to install a double loaded corridor around each floor with a mix of studio, one-bedroom, and two-bedroom units all at market rate (Figure 2.12). As well as a multitude of public amenities, "a gym, coworking space, dining areas, bike storage, and more,"[2.9] according to Gensler. about 45 percent of the units were also able to have windowless office spaces for residents.

Consequentially, to make up for the reduced square footage lost by the cut outs on each floor plate, a series of floors were added onto the roof (Figure 2.13). A 6-story addition was implemented to make up for the reduction in leasable square footage due to the courtyard construction. This addition to weight at the top of the building of course lead to several other issues inside of the building. Primarily, the issues accompanying these additions are the structural considerations. Several different methods were required such as lateral bracing and shoring of the columns used in certain areas of the building (Figure 2.14). This rather substantial renovation was necessary but did end up adding a large amount to the construction price. However, the economic benefits of the additional square footage gained on the roof must have been worth the investment.

This project has several pieces to it which are extremely desirable when considering a conversion. The spaces that are being used seem to be optimized for peak levels of efficiency both in leasable square footage as well as spatial layouts. The number of units that were able to be placed inside of this rather small office building is very impressive and the financial rewards are likely very attractive for a project of this scale. Realistically, a majority of the success of this project can be attributed to the addition of the interior courtyard.

While the idea of a courtyard is not new, in this project, the implementation of one is perfectly executed and completely necessary for the success of this structure. The increased functionality which is provided by the removal of this section of undesirable floor space, allows for the building to be truly transformed. However, there are a few concerns about the functionality of this light well, especially once you reach the lower floors.

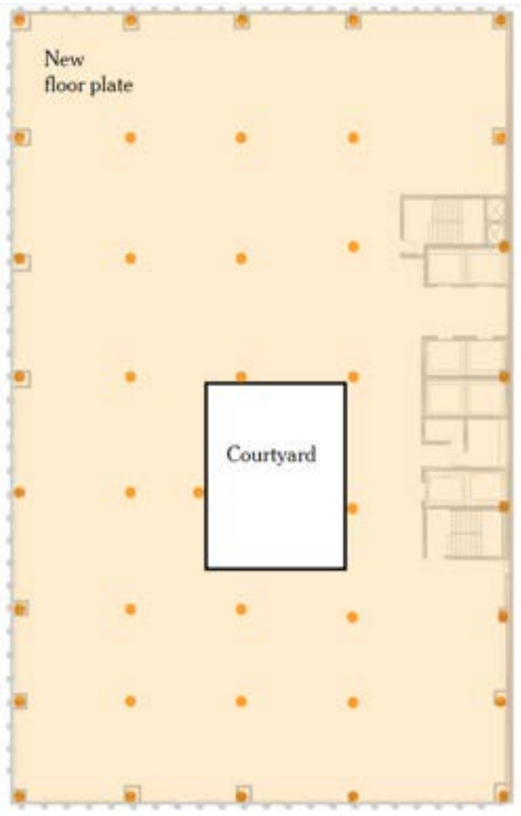


Figure 2.11. Location of the subtracted courtyard space in plan.

Figure 2.12. Analysis of the oddities required for the layout of this structure.

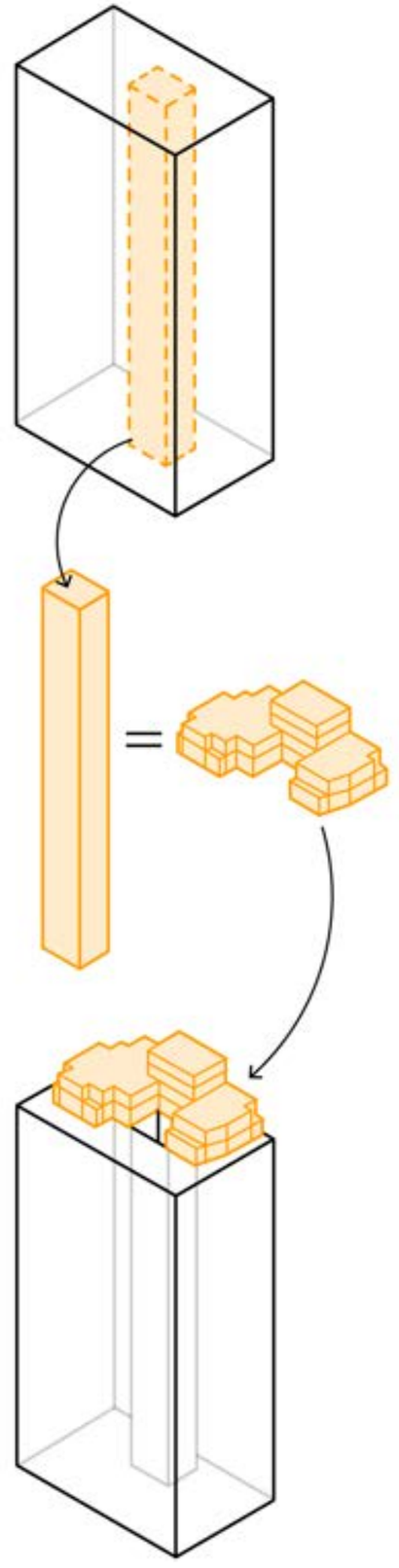


Figure 2.13. Addition of 6 floors on the roof to replace the subtracted square footage.

[2.7] Malhotra, Avinash K. "180 Water Street." [cited 2024]. Available from https://www.akmarch.com/180-water-street/.
[2.8] Badger, Emily, and Larry Buchanan. Here's how to Solve a 25-Story Rubik's Cube. New York Times:2023.
[2.9] Gensler, "Pearl House."

Figure 2.14. Photo of the lateral bracing being added to 160 Water.

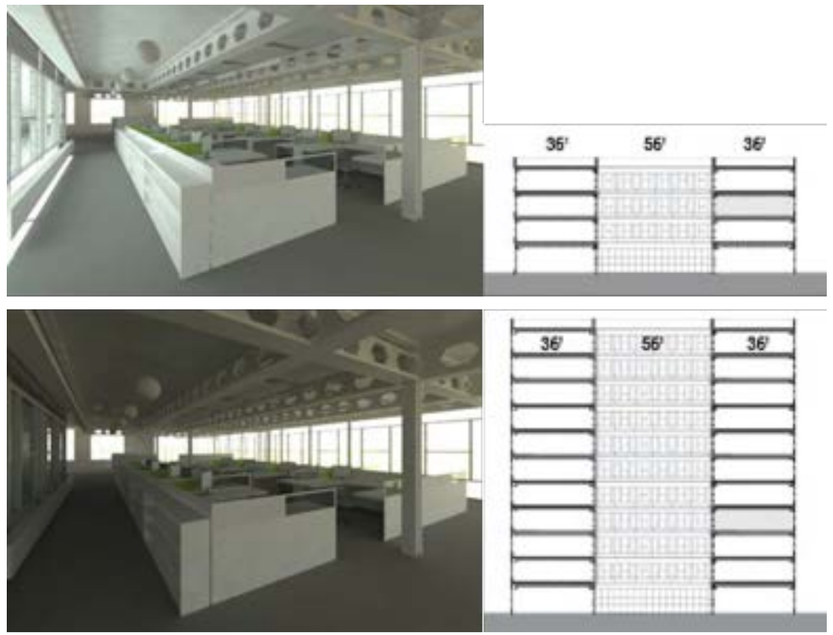


Figure 2.15. Advanced Building's analysis of courtyard depth verses light levels available.

Sunlight realistically only effectively travels approximately 40 feet before it disperses enough to be inconsequential. This means that with 30 floors each being over 10 feet high, it is difficult to imagine an overwhelming success of functional daylighting at floors 1-10. A study done by an organization called Advanced Building released an article breaking down the effective depths of courtyards (Figure 2.15). They show several lighting results from multiple depths and then are quoted saying "At six floors below the aperture, courtyard glazing starts to lose its effectiveness in providing diffuse sky illumination."[2.10] This means that while this is a possible solution for this specific space, any bigger of a building and this courtyard idea would be almost nullified.

Courtyards in structures like this simply do not act as a very plausible solution for any building even remotely larger than 160 Water St. The distance light can realistically travel is not massive and especially once you consider the vertical density and shadows in New York City, it becomes even more farfetched. This coincides with the restrictions Gensler places on which type of buildings are feasible for conversion. It is clear this building is right on the edge of their 'possibility framework'. While an argument can be made for this building's success, this solution is not 'one size fits all' by any stretch of the imagination, and while it is effective at certain scales, it is not perfect.

Taking a look at another design in a similar scale is helpful in framing the critical points of this specific typology. From a more theoretical view it is interesting to look at the relationships of different architectural aspects of a structure. In the 160 Water St building, the relationships between units and private spaces are the driving factor of design, however, studying the relationship between social spaces at this scale could also be eye opening. The interaction of human experiences in a building which is designed around the social functions of a building are critical in quantifying the main focus points when designing at such a scale. Jim Keen is credited with designing this building concept for KPF Architects titled Full Stack.[2.11] In this design he leverages the mixing, and integration of circulation systems, inside a singular structure to prioritize social interaction (Figure 2.16).

This building achieves the ideal level of human experience in space due to the horizontal and vertical circulation of each piece of programing. There are several aspects of the horizontal circulation strategies which play a major role in the success of this design. Primarily, the perimeter placed walkways both on the upper levels as well as on the lower levels of the erected towers. These circulatory spaces provide connection to all areas of the space as well as lead to connections to the adjacent tower via green bridges. Along with the horizontal relations, the vertical connections are also quite important. Two areas in this structure earn some focus, those being at the base of the left tower, and at the bottom left of the entire complex. At the base of the tower, there is an emphasis between the lofted second floor, overlooking the first floor of a

2.10 "Pattern 6: Courtyard Depth and Width." Available from https://patternguide.advancedbuildings.net/pattern-slideshow/Pattern%206_%20Courtyard%20Depth%20and%20Width.html.

2.11 Jim Keen. KPF - Full Stack. https://jimkeenillustrations.com/2017/9/15/kpf-full-mri: Jim Keen Illustrations, 2017.

workout space; all with the ability to be observed from the exterior green terrace through large double height windows. This visual connection of spaces from multiple levels creates a strong bond between the two spaces not only because of the lofted level but also due to the consolidation and separation of space due to the exterior walls boxing in the room. Moving downwards to the bottom left of the structure, we can see another similar space with multiple floors stacked in the corner dropping from the rooftop terraces down to the public sidewalk. The materiality of the glass facades executing this drop gives this strong vertical visual connection to pedestrians as they pass. Additionally, the repetition of layout and shape, possessed by these corners, gives all three differentiated programs a sense of conformity with each other even though they are on separate vertical planes. The visual, physical, and special connections between these spaces, both horizontal and vertical, allow for the occupant to communicate between program via well planned out forms of circulation. Emphasizing and incorporating this level of connection is what makes this building so successful and stimulates the interaction and experience of the people.

This design test by Tim Keen was designed for housing but with a different end goal focus. Rotating around the idea of social aspects instead of volume of units is a more freeing way to create a structure. This design of course has some issues in terms of feasibility. Primarily the fact that it is being proposed as a ground up construction process. However, even with this in mind, a combination of both building studies could be an excellent culmination of the private focus of 160 Water St, with the public focus of “Full Stack”. Taking the good parts of each could in theory create the ideal functional yet social space inside this large-scale typology that needs some focus.

Social Interactions

The study of scales in conversion projects has been mostly revolving around the idea of residential conversions. This is ultimately the main driving force for the justification of these conversions as housing is a growing issue in today’s urban environments. However, our city landscapes are suffering from many more problems other than just housing and these office buildings offer a unique opportunity to not only allow for residential solutions but also social ones. And while Tim Keens “Full Stack”[2.12] ties to incorporate the social aspect of spaces to one another, more of an emphasis could be placed on the social relations inside the individual spaces themselves. It has been a widely known, growing issue that social and personal spaces are necessary for the happiness and well-being of a society. Ever since COVID, the population of most metropolitan areas have realized that we do not have this idea of a ‘third space’ anymore. There is a decreasing division between the work-life balance that was once so coveted and especially with the implementation of work from home, this line has become increasingly blurry.

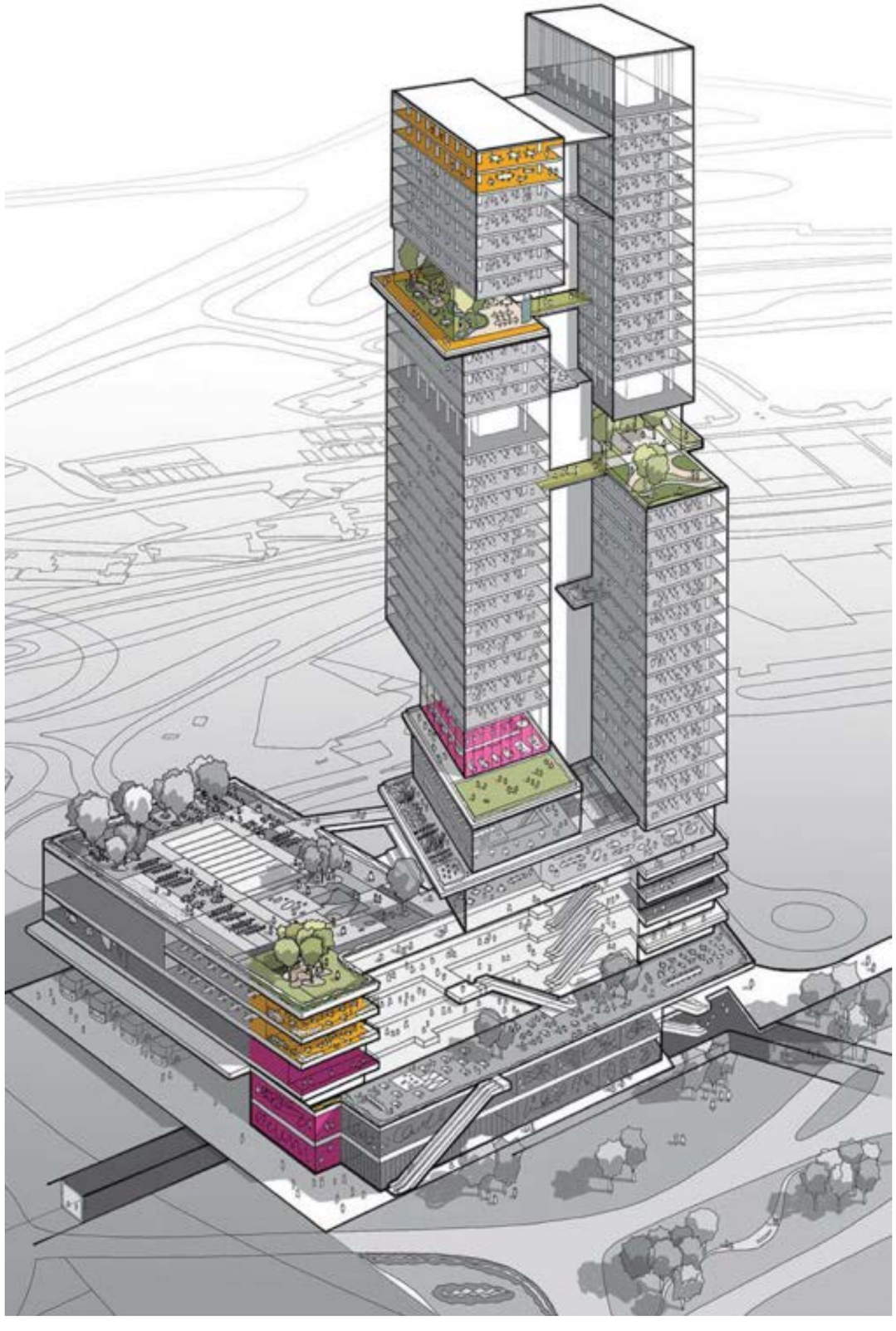


Figure 2.16. (Right) The mixing, and integration of circulation systems, inside a singular structure to prioritize social interaction. Aerial sketch of 2017 KPF - Full Stack (Joseph Slunt CC BY).

[2.12] Keen, “Full Stack.”

This notion of the 'third space' refers to the third physical location you can go to in your life. Most people have a separation between work (one), home (two), and ideally a relaxation or social space (third). This third space in life can be anything but usually is a social or interactive space which allows for people to unwind and relax either in isolation or with friends and neighbors.[2.13] The necessity for a 'third space' has become more apparent with the success of work from home as people are living and working from the same room or building without much need to leave the house. This is resulting in people feeling isolated and alone and the social interactions they once cherished are diminishing. The implementation of these 'third spaces' inside one of these converted office buildings is the solution.

Studying different types of existing 'third spaces' would allow for designers to get a better understanding of what people are looking for in a space like this. The physical space is available for conversion and now just the program must be determined. There have been several articles written on this topic and there are countless different ways in which people want to relax and interact. Determining the ideal form and function of a space of this nature is imperative.

This term of a third space was originally coined by sociologist Ray Oldenburg. He has written several books on the topic, but his most in-depth breakdown of these spaces is in his book The Great Good Place.[2.14] Here he identifies the seven criteria for a third space and these criteria are the same qualifications which should be used when designers create spaces like this. The seven criteria are highlighted and broken down by Peter John Sandiford as:

1) Neutral ground (offering a comfortable welcome)
2) A social leveler (minimizing external sociopolitical divisions).
3) Conversation is the main activity (frivolous, light-hearted, idle, eloquent talk reinforces sociability).
4) Regular customers (offering stability, but newcomers are welcomed and can become regulars).
5) A low profile (modest, unpretentious spaces that become ordinary and routine in users' lives).
6) A playful mood (the safety suggested by light-hearted conversations and low profile encourages more, longer visits).
7) Home-away-from-home (paradoxically homeliness offers a refuge from actual home)[2.15]

These criteria along with specific aspects of programing could produce a space which perfectly encapsulates the needs of a third space. Highlighting the ideal program of one of these spaces would be a critical next step.

Analyzing what people consider a third space through experience is a tough study to operate due to the wide range of demographics that interact with a space like this. Ray Oldenburg highlights how important this interactive space would be for students on a college campus,[2.16] which could in theory solve this demographic problem. As a result, a group at the College Study Journal[2.17] produced a study to identify where these third spaces were for students on a campus. Attempting to identify where they would go for not only a social interaction outside of their responsibilities, but also a restorative space for them to personally (and privately) unwind from the toils of being a student. The outcomes of this study were very conclusive with the idea that almost every student needs a place to exist and thrive and within these campuses, your average student simply cannot function to their fullest potential without a third space.

The areas that these students highlighted were surprisingly different for both social and regenerative spaces (Figure 2.17). When it came to the social aspect of a third space, many of the interviewed students stated that they most prefer to be in a place with food or drinks and that these spaces were often where they met up with friends or peers to converse and unwind. This highlights and feeds into several other reviews of third spaces showing that a simple bar or restaurant could be the answer to a space like this. However, both come along with their own issues mostly attributed to audibility problems so possibly a solution more in line with a café could be more effective.

The second, and arguably more important space is the regenerative spaces that students search for. In the study provided by the College Study Journal, they identified these regenerative spaces as often being greener and more ecological. (FIG) On campuses, these spaces were highlighted as being fountains, statues, or green patches often isolated from the rest of the school. However, when it came to off campus, these spaces were often parks, recreations sites, wilderness regions, and hiking areas. This is interesting because it would be rather difficult to include a space like this inside of a dense urban landscape, however, the challenge with it almost encourages the effectiveness it would carry.

In a deeper analysis of this idea of a created space, it becomes more difficult to understand what truly creates what we think of as a 'space'. In a more paradoxical sense, it has been theorized that these 'third spaces', cannot feel forced or 'made'. The idea that they cannot be constructed but instead inhabited and organically created by the occupants of these spaces is highlighted in some research by Henri Lefebvre. He states in his research titled The Production of Space, "...space is neither a subject nor an object but rather a social

[2.13] Liddy, Kaetlyn. "Do You have a 'Third Place?' here's Why Finding One is Key for Your Well-Being." Aug 2, [cited 2023]. Available from https://www.today.com/life/inspiration/third-place-meaning-rcna94279.
[2.14] Oldenburg, Ray. The Great Good Place. 2nd ed. New York: Marlowe, 1999.
[2.15] Peter, John Sandiford. "The Third Place as an Evolving Concept for Hospitality Researchers and Managers." Journal of Hospitality & Tourism Research 43, no. 7 (2019): 1092-1111.
[2.16] Oldenburg, Ray. "Making College a Great Place to Talk." Planning For Higher Education Journal 20, no. 4 (1992).
[2.17] Banning, James H., Stephanie Clemons, David McKelfresh, and Richard W. Gibbs. "Special Places for Students: Third Place and Restorative Place." College Student Journal 44, (2010): 906+.

Table 1
Locations of Third and Restorative Places in Percentage

Place Location	Third Place (n=91)	Restorative Place (n=67)
On Campus	19	45
Interior	100	56
Exterior	0	43
Off Campus	81	55
Interior	98	42
Exterior	02	58

Table 2.
Number of Place Types Associated with Primary Third and Restorative Places

Type of Place	Third Place	Restorative Place
Built Landscapes (parks and designed areas)	2	17
Natural Landscapes	1	10
Coffee Shops	60	8
Campus buildings/programs	13	12
Retail settings	4	4
Home settings	2	10

Table 3
Number of Times Primary Activities Mentioned in Third and Restorative Places

Type of Activities	Third Place	Restorative Place
Socializing/Conversation	77	14
Eating & Drinking	62	11
Reading/Studying	59	36
People Watching	12	3
Listening to Music	10	9
Play	10	15

Table 4
Frequency of Visits by Percentage to Third and Restorative Places

Frequency of Visits	Third Place (n=91)	Restorative Place (n=67)
Everyday	15	20
Several times a week	30	30
Once a week	29	17
Several times a month	16	14
Once a month	9	3
Other or missing	1	16

Figure 2.17. Tables breaking down the research results for 'third space' and 'regenerative spaces' in college student preferences.

reality...."[2.18] He gets at the point that these spatial relationships that are created are not necessarily built by a designer or an architect but instead created by the people that inhabit them. Designers can give the location and the physical attributes of a space, but then the residents and occupants of the space need to make it into a location and a place to exist and interact. This is a bit of a curve ball when it comes to designing but it highlights the importance of keeping in mind what the end goal is of this program.

After taking a look into the relationships between people and space it seems as though a high bar has been set for the criteria required to create this 'third space'. However, along with the criteria, its severe importance has also been highlighted and their position in specifically young and growing cities are ever more important. The criteria to be considered a third space was highlighted by Ray Oldenburg. Along with this, the study of college students can be leveraged to determine the nature of program in these created

Conclusion

After a deeper analysis of the systems and methods currently being used in the industry today, there are several main takeaways. Primarily, no one has figured out the perfect concoction of systems to perfectly solve this problem yet. If these conversions are going to become a widespread solution to the urban issues in our modern day, a more universal plan must be laid out. While it would be theoretically impossible to have a truly 'one size fits all' answer, it would be possible to have a solution which checks a majority of boxes with only a limited amount of specific design manipulation. To obtain this solution which checks most boxes, analyzing past projects helps in determining the systems and methods that work at each required scale.

One the small-scale side, it's been noted how important daylighting is. The different methods of design on these tests were critical in determining which pieces are most critical for implementation at larger scales. The installation of double heighted spaces as well as transparent partitions create a wide open and social setting the TINA project located in Germany. Additionally, the study of light tubes and light shelves by Beltrán, highlighted the critical focus to detail when it comes to the efficiency of light movement. Taking into account both of these studies, it is possible to come to the conclusion that while difficult, the movement of light deep into floor plates is possible. With the possibility of this, the dimensions of projects able to be studied dramatically increases.

On a larger scale project, the interaction and design intention behind the communication of large spaces was emphasized. The Pearl House by Gensler was designed with the intention of putting as many units on a floor plate as possible. The intricacies of this requirement left some odd spatial layouts as well as undesirable

[2.18] Lefebvre, Henri. The Production of Space. Oxford: Blackwell, 1991.

courtyards. However, it shows how efficiently space can be used and more importantly highlighted the focus these large firms have on return on investment. On the other side, Tim Keen designed his Full Stack building in a design sense more angled towards spatial compatibility and connection. He prioritized the visual and physical connectivity of spaces to create a more social structure. This project fell short in the areas of financial optimization but excelled in creating the relationships between social spaces. Each of these projects highlighted a separate style of design and each has their important aspects. They show the need to balance the practicality of financial gain, while also implementing the social and 'quality of life' aspects in a design.

Tim Keen's emphasis on social connectivity leads right into the analysis of the 'third place' that many cities' residents lack in their lives. A breakdown into the intricacies of this theory was led by Ray Oldenburg. He provided the criteria for one of these spaces while also encouraging a survey of college students to determine the ideal programmatic requirements of a space like this. The 'third place' theory is more prevalent than ever, and the implementation of these stipulations will be used to construct a space that can be used and enjoyed by thousands.

Criteria of Design

After analyzing the pros and cons of several different projects that have taken place in the past, as well as breaking down the deep-rooted issues in many of our urban environments, a clear set of problems present themselves. These are problems, which if not solved soon, could slowly dismantle the infrastructure holding up our beloved cities. These big picture issues are broken down into three basic categories, each with subcategories involved. The three main areas of focus are the technical issues of conversion in large office buildings, the quality-of-life problems that plague every resident of a major metropolitan area, and finally the space making challenges necessary to facilitate a functional conversion and contempt occupants of a structure.

When breaking down the issues that cause the difficulties behind an office to residential conversion, there are an incomprehensible number of hurdles to cross. However, these issues can realistically be broken down into 3 categories. Firstly, as highlighted throughout most of the small-scale studies, the effective manipulation of daylighting into these large floor plated structures is a must. The implementation of a multitude of systems all working in parallel will all have to be integrated into one cohesive design for it to be considered a success. Secondly, the conversion of the existing building systems such as MEP and structure will also have to be addressed. The issues that come along with new weight distribution and utility requirements will be challenging but incredibly necessary to even occupy a converted building. Finally, as highlighted primarily in the Gensler study, the attention to cost and financial return on the investment of converting must also be taken into account.

Building owners will not be jumping at the opportunity to spend tens of millions of dollars on conversions if there is no guarantee for eventual financial compensation. Implementing cost-saving techniques as well as keeping construction costs down will be imperative. The physical conversions of these buildings are arguably one of the substantiated and technical aspects of this project. However, it is also the keystone to a project of this caliber and must be heavily focused on.

Following the conversion problems of one of these office buildings, problems have arisen from a more 'big picture' point of view when considering city life. The continued evolution of these urban hubs will dramatically shift both physically and socially if certain issues are not addressed. Recently, many regulations have been passed which are forcing designers to take the environmental impacts of their projects into more of a consideration. Organizations such as LEED, PHIAS, and WELL are designed to benefit the recipients of these strategies and the implementation of environmental conscientiousness will be crucial to the longevity of these conversions. The next big area of contention is the social factors of the residents of places like New York City. The construction of more areas that can be constituted as a 'third place' could dramatically increase the quality of life and happiness of residents. The returns on providing spaces like this could keep several generations from moving out of city environments. Along with the social aspects, another quality-of-life improvement which will be focused on is green space. Almost every city in the world has a lack of green space and the lack thereof is a common criticism when people relocate outside of the city. The implementation of green spaces at various scales will be impactful on the mental health and well-being of all big city residents. With these focuses in mind, the conversion of structures will use their ample square footage to achieve something cities have been trying to accomplish and reverse for decades.

The final area of focus revolves around the happiness and success of the residents inside one of these office conversions. The challenge of keeping prices down to ensure the occupation of these newly created housing units is a big focus. Possibly implementing affordable housing to bring costs down as well as just increasing the supply of housing in metropolitan areas would be crucial. Even with the addition of affordable units, these buildings would still be relatively expensive as city living is simply more expensive than any other type. As a result, a focus will be put on the other amenities and opportunities inside some of these conversions. Making spaces such as these more attractive to renters and leasers will allow for higher prices to be requested while simultaneously providing spaces within arm's reach that are not available anywhere else in a host city. Closing out the attractiveness area of focus, there will be an emphasis placed on spatial availability. Space is one of the main things that are severely lacking inside of most dense urban areas. If there is a way to leverage these spaces and provide areas that feel open and ample with extra room, people will come flocking and

rushing to fill the given area. All of these are methods that will be implemented to give the perfect experience to both residents and visitors every time they step inside one of these office conversions.

The conversion of office spaces into various different levels of unique programming is a daunting task which will require the implementation of a multitude of design solutions. However, the success of finding the ideal universal conversion system will result in the revitalization of our urban environments.

Figure 2.18. (Right) Ariel image of New York City's downtown financial district.

CHAPTER 3

Design Research

Focusing on the extensive research done into the parallel functioning solutions which are implemented into the full scale design proposal.

Introduction

The redevelopment of office spaces in dense metropolitan regions can redefine what existing inside of a city can mean. With the reworking of some of our most populated centers, the possibilities of societal progress can grow exponentially. Our current cities are not functioning at their fullest capacity and considerable changes must be made to the way we design and interact with space. The first step in this redevelopment of our urban hubs is to use the failing infrastructure which currently exists and reconstruct it to fit our ever-changing needs.

Highlighted in previous sections, there are multiple organizations attempting to create the ideal office to residential conversion. However, each conversion has its own drawbacks and each of these open office spaces offers more potential than just a reiteration of housing. The open office spaces scattered across city landscapes present an opportunity to redefine housing in a city while simultaneously addressing societal challenges as well. The implementation of a multi-faceted design proposal, which could hit each one of these areas of focus, would be more beneficial. These designs would serve not only current residents but also the city, investors, and future residents/visitors.

The success of a design proposal such as this one would consider each stakeholder that would be impacted by a project of this scale. It would be clearly successful if several different criteria were met. The primary area of focus would be on the physical conversion of an abandoned office building. Several firms have executed various conversions in the past; however, a multitude of different building typologies fall outside of the realm of possibility of many design organizations. Working out a theoretical perfect solution to include the structures outside of this purview of those restrictions would be imperative to the success of this project. The redesign of physical characteristics such as daylighting, mechanical, electrical, and plumbing (MEP), and structure would be important areas to focus on and solve. Additionally, unit layout and financial feasibility would also be of the utmost importance during this physical transformation as these aspects would be a make or break for property owners.

An arguably more important set of standards which must be met are the notions surrounding social and experiential construction and space making. From a design perspective, these spaces are just as vital to the success of a project and without these, a proposal would be seemingly inconsequential in the betterment of these dying cityscapes. The focus placed on creating spaces in which people can feel connected, while also having a sense of privacy, would be the differentiation between success and failure. The purpose of redefining spaces in cities is to reconstitute what it means to live in one of these spaces. The experiential aspect of housing structures is often overlooked when large firms take on projects of this scale. With the integration of social aspects, the opportunity for a revolutionary design skyrocket. If it is possible to add a balanced sense of sociality while still maintaining privacy and comfortable living conditions, this project will be seen as a success.

The creation of this perfect space will take a multitude of design systems all working in parallel with one another. Ideally, each piece of the puzzle will fit together to create a project which could be used universally in any city around the world. This proposal would redefine what it means to live and work inside of an urban landscape and would solve this major issue of vacant office spaces. The development and implementation of a proposal of this nature would allow for our cities to thrive and prosper once again without the threat of this massive population exodus to the suburbs. The fate of many cities is on the line and unilateral solutions between many seemingly unrelated problems could be the logical next step.

Site Analysis

Design groups across the country are realizing the financial incentives that come along with office conversions. The ability to convert offices into residential units is an extremely profitable endeavor if it is done correctly. However, to achieve this efficiency, many design institutions have declared certain types of buildings viable, while leaving the rest to remain untouched (Figure 3.1). These criteria for conversion are very strict and while a lot of buildings fall into this category, many buildings do not. Without the possibility of conversion these buildings left on the outskirts remain underutilized.

The primary typology of buildings that fall into this category are often very large-scale structures. Office buildings that are hundreds of feet wide on each floor plate are almost always skipped over and avoided when considerations of conversions are mentioned. These types of buildings come with many problems such as daylighting, MEP concerns, and structural integrity. Additionally, the financial aspects of these buildings are hard to overcome because as the building gets larger, the renovation costs also increase. However, these types of buildings have the most potential and would have the largest impact on a city if they were to be redeveloped. The sheer scale of each floor plate is its curse but also its blessing. With ranges from 20,000 square feet to 60,000 square feet, it is increasingly difficult to determine the correct renovative approach. However, if a solution was found, the amount of program and utilization that could be placed into one single structure could be the savior many dying cities need. If a method of conversion is determined to be possible for this typology, the benefits would be both extremely profitable and very beneficial to all impacted parties.

Unfortunately, once buildings reach a certain size, there are practically no completely vacated options. In many of these large-scale buildings, hundreds of thousands of square feet of floor space are unoccupied and unleased. However, 100 percent of the space inside these buildings will realistically never be empty in a majority of sites in major cities. This means that if a proposal on a building of

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Unfortunately, once buildings reach a certain size, there are practically no completely vacated options. In many of these large-scale buildings, hundreds of thousands of square feet of floor space are unoccupied and unleased. However, 100 percent of the space inside these buildings will realistically never be empty in a majority of sites in major cities. This means that if a proposal on a building of this scale is ever accepted, a small number of tenants would be required to vacate. As a result, a proposal of this caliber will have to be extremely attractive and offer a large number of incentives. This also means that when deciding on a site to focus on for this proposal, there are no perfect options since there are no fully vacated structures to pick from. A place holder building would have to be chosen to act as a stand in. Fortunately, this does not cause many issues as this proposal is intended to be replicable. Ideally, it is a solution which could be placed in any building across the country without much variation. While a structure is being chosen as reference point, this proposal itself is intended to be placed anywhere and is simply using the given site as proof of concept.

When choosing a site to focus on for this proposal, it would reason that if this proposition can work in one of the most competitive and expensive cities in the world then it would feasibly work in almost any other city with even more success. As a result, the region

[3.1] Mandel, Michael. "3 World Financial Center - 200 Vesey Street, New York, NY." [cited 2023]. Available from https://property.compstak.com/200-Vesey-Street-New-York/p/1411.

Core Considerations	Use Types													
	Residential	Hospitality	Academics	Life Sciences / Lab	Entertainment	Retail / F&B	Industrial / Manufacturing	R&D / Tech	Storage / Last Mile Distribution	Medical Office / Healthcare	Cultural / Civic	Transportation / Transit	Data Center	Mixed Use
Structural Considerations														
Structural Grid Layout Constraints	●	●	●	●	●		●	●	●	●	●	●	●	●
Transfers Likely Required					●		●		●			●		
Lateral Upgrades Likely Triggered					●		●					●		
Slab Capacity (Live Loads / Dead Loads)														
250 PSF +							●	●				●		
150 PSF				●	●				●				●	
100 PSF			●			●								●
80 PSF											●			
50 PSF										●				
40 PSF	●	●												
Roof Capacity (Live Loads / Dead Loads)														
150 PSF				●										
100 PSF	●	●												
20 PSF			●		●	●	●	●	●	●	●	●	●	●
Vibration Criteria														
4 MIPS+ (More Rigid)				●										
6k MIPS										●				
8k MIPS	●	●						●					●	
16k MIPS- (Less Rigid)			●		●	●	●		●		●	●		●
Floor-To-Floor Heights														
10 Ft. Min.	●	●												
12 Ft. Min.			●							●				
15 Ft. Min.				●		●		●			●		●	●
18 Ft.+ Min.					●		●		●			●		
Slab Penetrations and/or Modifications														
Additional Shafts for MEP/FP			●	●	●	●	●	●		●		●	●	
Additional Shafts for Vertical Transportation	●	●			●						●			●
Light Wells	●	●									●			●
Perimeter Slab Modifications	●													●
Envelope Penetrations / Structural Modifications	●	●				●								
Vertical Addition(s)														
Mech. Penthouse / Screening				●			●	●		●		●		
Programmed Area to Maximize Far	●	●												●
MEP/FP Infrastructure Considerations														
Increased Air Exchange / CFM														
5 CFM / Person	●	●												●
7.5 CFM / Person			●			●		●			●	●		
10 CFM / Person				●	●		●			●				
15+ CFM / Person														
HVAC Redistribution / Increased Distribution	●	●		●	●	●	●	●		●	●	●	●	
Increased Energy / Power					●			●					●	
Increased Redundancy														
Whole Building Generator	●	●					●			●		●	●	●
Individual Tenant Generators				●				●						
Additional Metering	●									●				●
Specialty Exhaust				●		●	●			●		●		
AV / Tel-Data / Security	●	●	●	●	●	●		●		●	●	●	●	●
Code Considerations														
Additional Means of Egress														
Elevators	●	●	●		●					●	●			●
Stairs	●	●	●		●					●	●			●
Exit Discharge			●		●	●					●	●		
Increased Fire Resistance & Ratings				●			●	●		●			●	
Restroom Counts		●	●		●	●					●	●		●
Envelope Considerations														
Window Operability / Replacement	●	●								●				
Sound Attenuation	●	●	●	●	●	●	●	●		●	●	●		●
Roof Upgrades	●	●		●			●	●						
Servicing & Operational Considerations														
Additional Loading Requirements				●			●	●		●				
Secure Site or Chemical Storage				●						●				
Hazardous Waste Requirements				●			●			●				

Figure 3.1. Qualifications kept in mind when considering an office to residential conversion from SGA Architect's point of view.

Figure 3.2. New York Stock Exchange.

Figure 3.3. One World Trade.

Figure 3.4. Flat Iron Building.

Figure 3.5. Highlighting Downtown Manhattan (Joseph Slunt CC BY).

Figure 3.6. Highlighting 200 Vesey Street in Downtown Manhattan (Joseph Slunt CC BY).

Figure 3.7. 200 Vesey Street from the water.

of focus is being placed on New York City, more specifically in Downtown Manhattan. This region of the city is where some of the country's most prominent buildings are placed such as the New York Stock Exchange, One World Trade, and the Flat Iron Building (Figure 3.2, 3.3, & 3.4). More importantly, it is the location of New York's financial district (Figure 3.5). This region of the city is populated by some of the most well-known and impactful buildings in history. It has consistently been associated with prosperity and business prowess for hundreds of years. However, in recent decades, many large tenants have begun moving their offices to midtown, closer to central park. Additionally, the work from home revolution has resulted in offices across the board becoming vacant. Between these two societal shifts, millions of square feet of office space have been left vacant in one of the most prominent and densely packed areas of the city. Converting a building in this region would be extremely impactful and would make a difference that would ripple across the entire city.

There are countless structures which could fall into the category of large floor plated office buildings in this area. However, one building that would greatly benefit from a conversion of this scale would be the existing Amex Building. Located at 200 Vesey Street, New York, NY 10285, this 1980s Art Deco style building is a part of the Brookfield Place Complex and is one of four similarly designed towers (Figure 3.6 & 3.7). Each of these buildings are prime for conversion, however, 200 Vesey Street is one of the largest and currently has multiple existing tenant leases about to expire.[3.1] This means that the possibilities for conversion are much higher and once one building in this complex is proven to be viable for renovation, a realistic outcome would be the next three following in its wake.

Physical Interventions

The design solutions necessary to properly convert 200 Vesey Street would be extensive. There are two major categories of design when considering which areas of focus would be most beneficial. The first category would be the physical conversion of these spaces. Converting an office into any other form of program would be possible as long as multiple design solutions can work seamlessly together. The main areas of focus would be increasing daylighting, shoring structural concerns, and MEP reorganization. Each of these aspects are vital to the function of this building and without any one of them, this proposal would be completely impossible.

Daylighting
One of the largest hurdles to overcome in a conversion of this scale is daylighting. The distance from façade to core in these large floor plated buildings makes the distance light has to travel too large. This is the primary reason why so many design firms decide this typology of building is unapproachable. 200 Vesey Street has this exact problem and without solving this design challenge the building

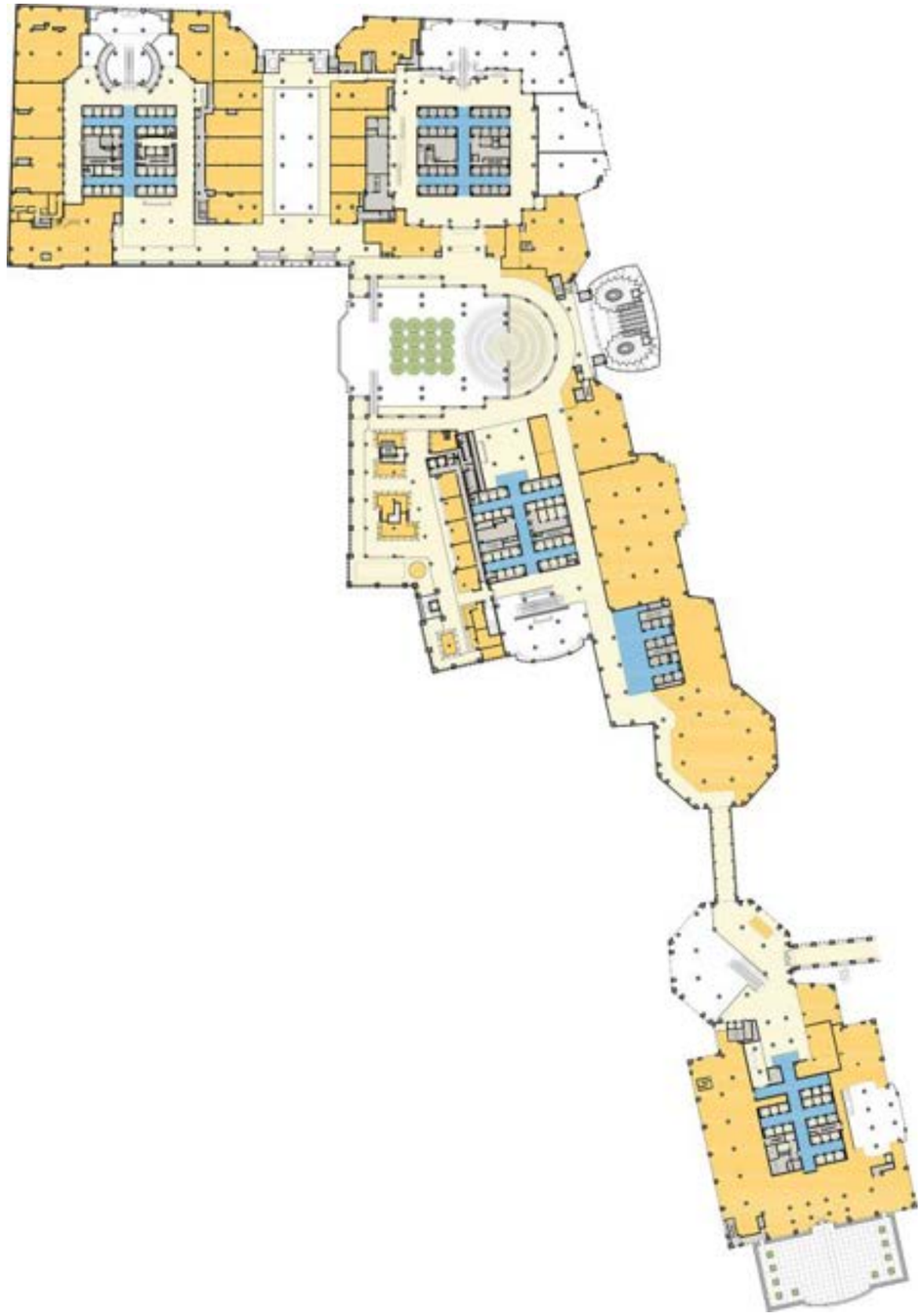


Figure 3.8. Second Level floor plan of the Brookfield Complex.

Figure 3.9. Highlighting 200 Vesey Street in Brookfield Complex and its surroundings (Joseph Slunt CC BY).

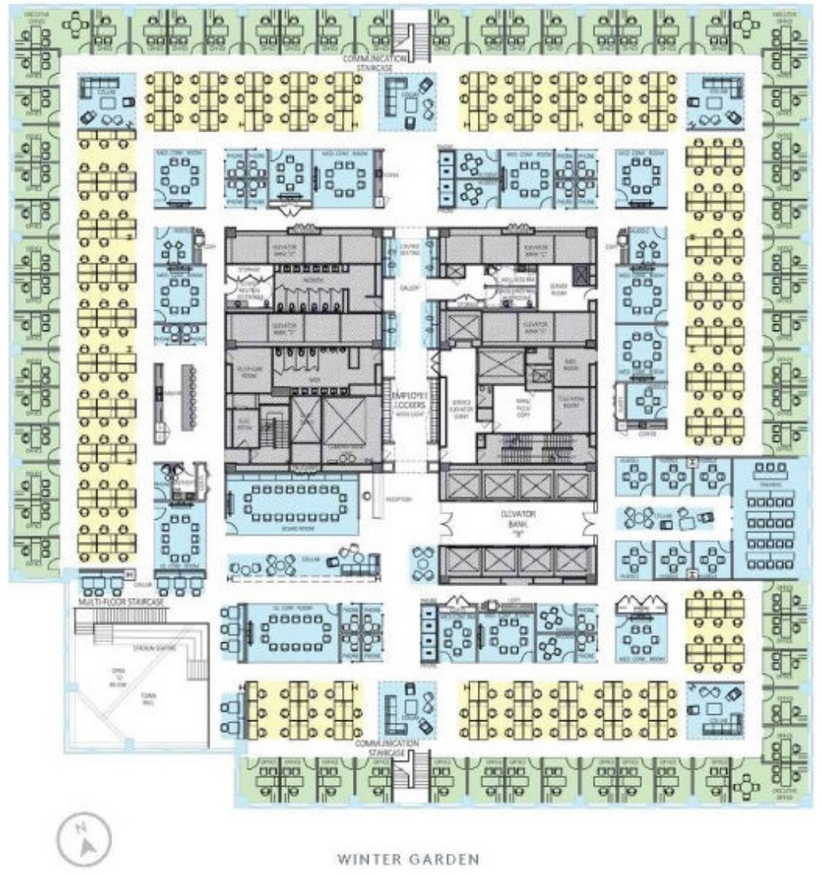


Figure 3.10. 200 Vesey Street 17th level floor plan.

Figure 3.11. 200 Vesey Street.

could never be converted into anything away from its current state. The issue arises when considering how far light travels into a structure. There is about a 30-foot span (unassisted) from the window before the effective range of the light diminishes to the point where it is inconsequential. With spans as far as 80 feet inside 200 Vesey Street, this is close to triple what would be feasibly possible (Figure 3.12). As a result, multiple systems must work in parallel to achieve an even and suitable level of lighting in these central spaces.

The benefits of natural light on building occupants is a well-researched topic and it is clear that without enough natural light, these spaces would be extremely unpleasant. Ing Liang Wong is a researcher at Glasgow Caledonian University and wrote a paper discussing daylighting design and implementation. In this paper he states "Despite artificial lighting has long been used to supplement lighting in the interiors of buildings, reports suggest negative effect of artificial lighting on health. Using natural light, it can help to maintain a good health, cure some of the medical ailments, and reduce psychological sadness related to the Seasonal Affective Disorder."[3.2] This analysis on the importance of natural light over artificial lighting proves its importance to the functionality of this design proposal.

Daylighting solutions in this proposition are broken down into two main categories. The first being how to get more 'physical' light through the façade and into the perimeter of the space. The second section describes the systems of movement and transparency once the light is inside the structure and how it can be used to sever our greater goals. With both areas of focus, daylighting problems inside the site disappear and allow for the functional lighting of each aspect of this project.

The primary issue causing the lighting to be so poor inside large towers such as 200 Vesey Street is the issue of the angle at which the sun enters the building. The angle at which sunlight enters the building is too steep to make it a considerable distance inside the perimeter. When the sunlight comes in through the façade it can only travel 12 feet downwards before it hits the floor and disperses. This dispersion takes place at best about 10 feet deep into the building. However, if the floor was not in the way, the sun would be able to travel tens of feet deeper into these spaces due to the original angle of light (Figure 3.13). The subtraction of certain pieces of floor plates would allow for this outcome to be possible (Figure 3.14). With the subtraction of sections of floor plates on three consecutive floors, small atriums would

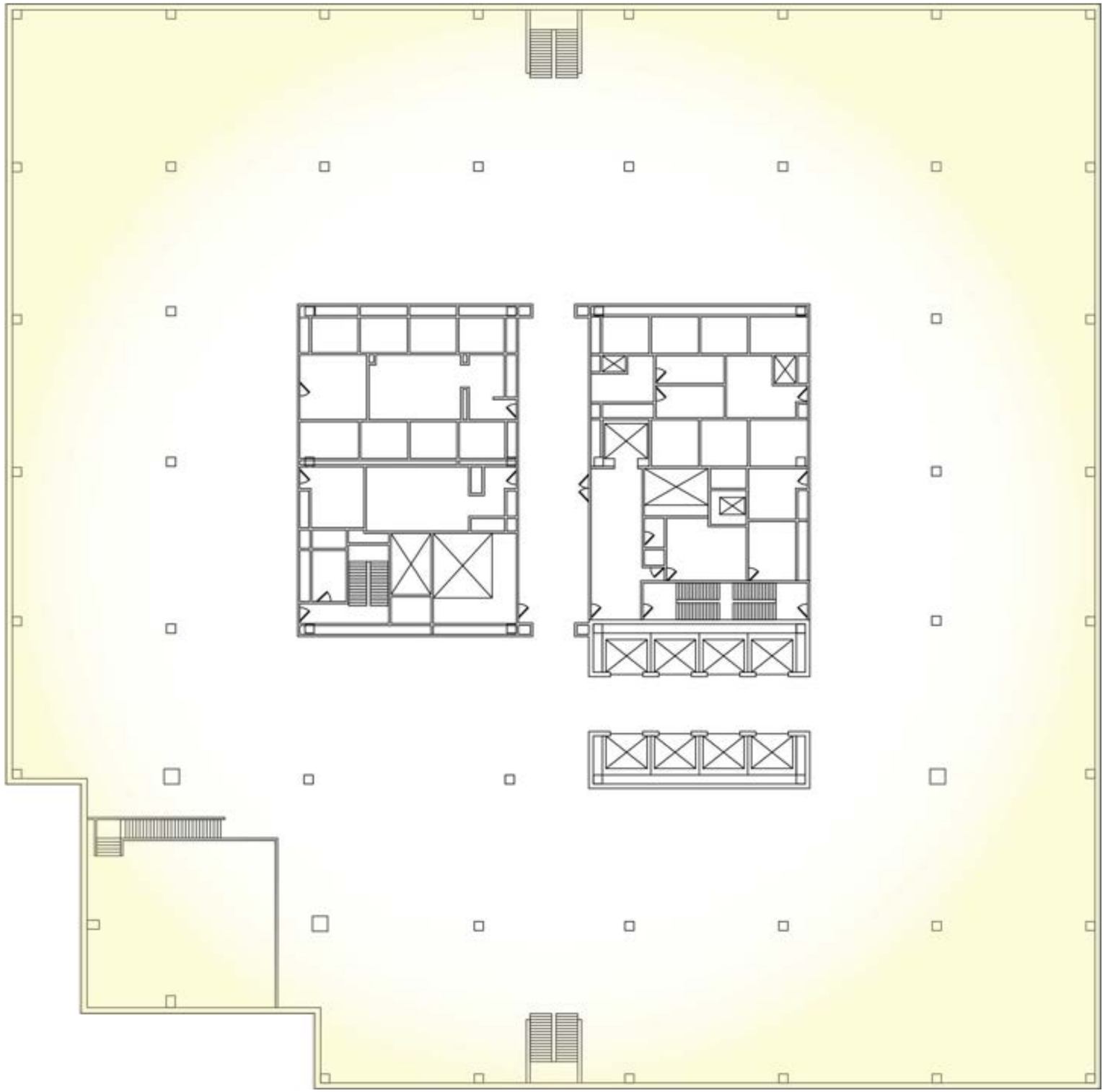
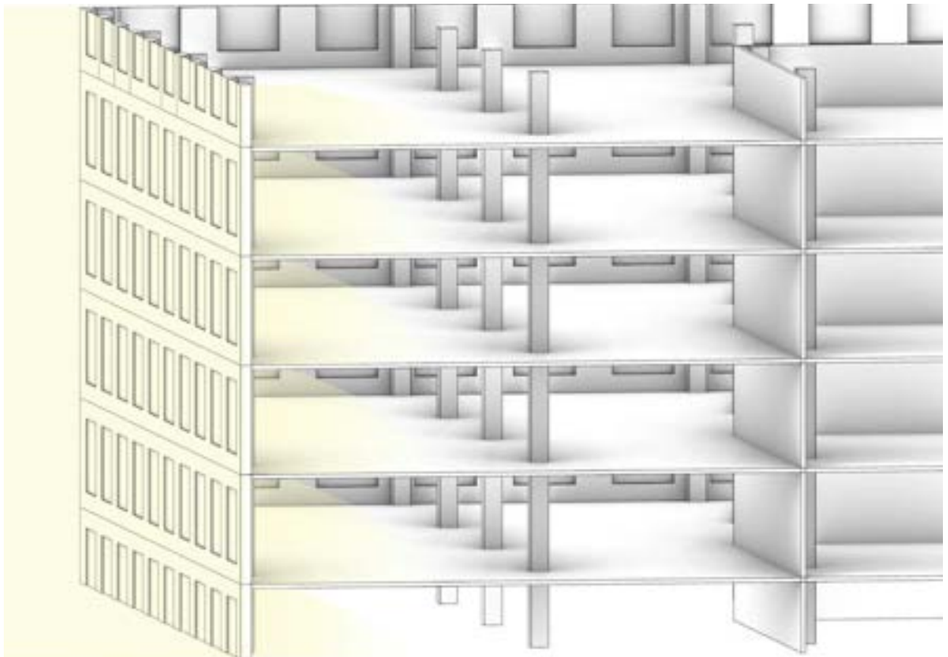


Figure 3.12. Distance light can travel into a building.



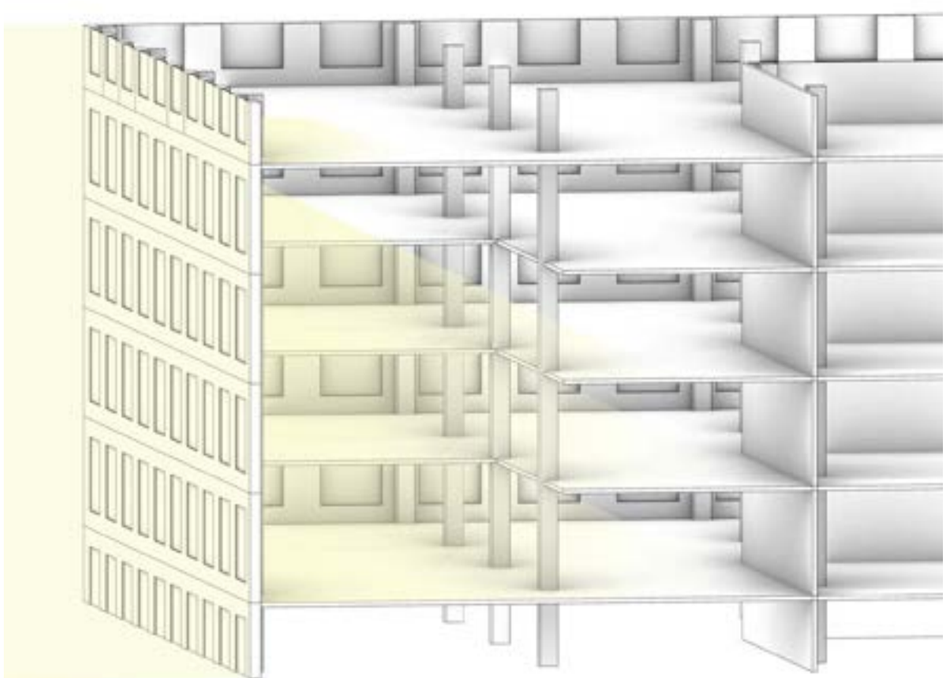


Figure 3.13. Sunlight penetration without floor cuts (top) verses with floor cuts (bottom).

Figure 3.14. Example of possible floor cut locations.

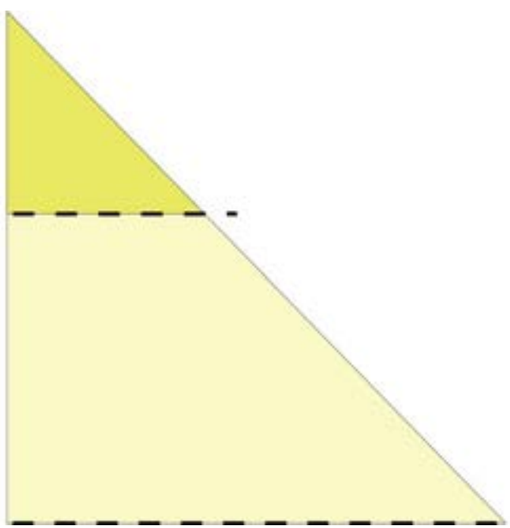


Figure 3.15. Example of possible floor cut locations.

be able to be created which would be doused in light throughout the day.

If the penetration of light is thought of as a right triangle it is simple to imagine the functionality of this solution (Figure 3.15). The slope of the triangle would never change, and the Y-axis would also never change. With the current layout of this triangle, the sun would be the hypotenuse or the sloped angle. The Y-axis would be the windows of a building and the X-axis would be the floor plate. The sun, or hypotenuse, would hit at a very specific point on the X-axis. However, move the X-axis downwards and things change. Since the slope is not changing, the point at which the hypotenuse intersects with the x-axis would be much further away from the Y-axis. The removal of a section of the floor plate would allow for more sunlight to get deeper into the building while also creating several large atriums around the façade of the structure.

Another solution that could be implemented in a project like this is window replacements. More transparent windows lining the façade would allow much more sunlight to serve each of the daylighting improvement methods. This building was constructed in the 1980s, which in turn means many of the windows are close to 50 years old (a percentage of windows were replaced after the terrorist attacks that took place on September 11, 2001). Window technology has progressed a considerable amount since the 80s and better options exist and are often used in new construction in the region.

Two of the primary glass properties that need rectifying are the clarity levels and the reflectivity levels. Reflectivity levels are very high on panes of glass such as the ones on this site. This means that more sunlight is bounced off of the building than is being absorbed by it. These levels of reflectivity are high due to internal computer screen glare concerns as well as a focus on passive cooling. The sun's glare on computer screens will no longer be a consideration due to the offices being removed from these floors. The environmental impacts of more sunlight entering the space will also not be as prominent. With modern window technology, windows are much more efficient and environmentally friendly. Most commercial windows now have multiple layers of glass with solid and gas thermal barriers between each pane (Figure 3.16). The installation of these windows would offset the negative cooling impacts that could come along with reducing the reflectivity levels. With lower reflectivity levels, more light will easily be able to enter into our building. The other property of more modern glass is

[3.2] Wong, Ing Liang, Liang, and Ing Liang. A Review of Daylighting Design and Implementation in Buildings. Elsevier BV, 2017.

the clarity of it. When this building was constructed the glass type used was called clear glass. This type of glass has a slight green hint to it, which is especially visible when multiple panes are stacked against each other. However, in the early twenty first century, the production of low iron glass was perfected. This low iron glass is much clearer and does not possess the green hint that clear glass had (Figure 3.17).[3.3] As a result, even though replacement windows would contain more individual panes of glass (for the environmental benefits), the level of transparency would still increase from the existing window systems.

The second section of daylight solutions to focus on in this building revolves around what to do with the light once it has entered the building. Focusing on methods of manipulation once the light is on the interior of the building would allow for an even coverage of lighting in any region that requires it. This section is also broken up into two separate categories of focus: those being light shelves and wall properties. Each of these plays a very different role, however, with the implementation of both, it would be conceivable to put natural light in almost every area of this structure.

The structure of this building leaves approximately 12.5 feet from the top of each floor slab to the underside of the floor slab of the next floor above. This is much more vertical height than most aspects of program need so it would be reasonable to utilize this large space for daylighting solutions. The top one to two feet of each floor will be reserved for MEP organization, however, the next two feet can be commandeered for daylighting manipulation. With this much space, the feasibility of light shelves dramatically increases. As mentioned by L.O. Beltran, light shelves can produce anywhere from an 18 percent to 70 percent bump in light levels.[3.4] This dramatic improvement in accessible daylighting would be very helpful in deeper areas of the building that do not have a visual connection to the façade.

These light shelves could easily take up a large portion of the ceiling plan because all aspects of MEP and interior program would be separated either above or below. The shelves would range from the nine-foot mark to the eleven-foot mark off the floor. At this height, they would fully lay overtop the upper portion of the existing windows. By adding in a convex piece of glass to these windows, a percentage of the light would be directed into these light shelves lining the ceilings. Once the light is inside these shelves, reflective material lining the top and bottom would bounce the light deep into the structure. Due to

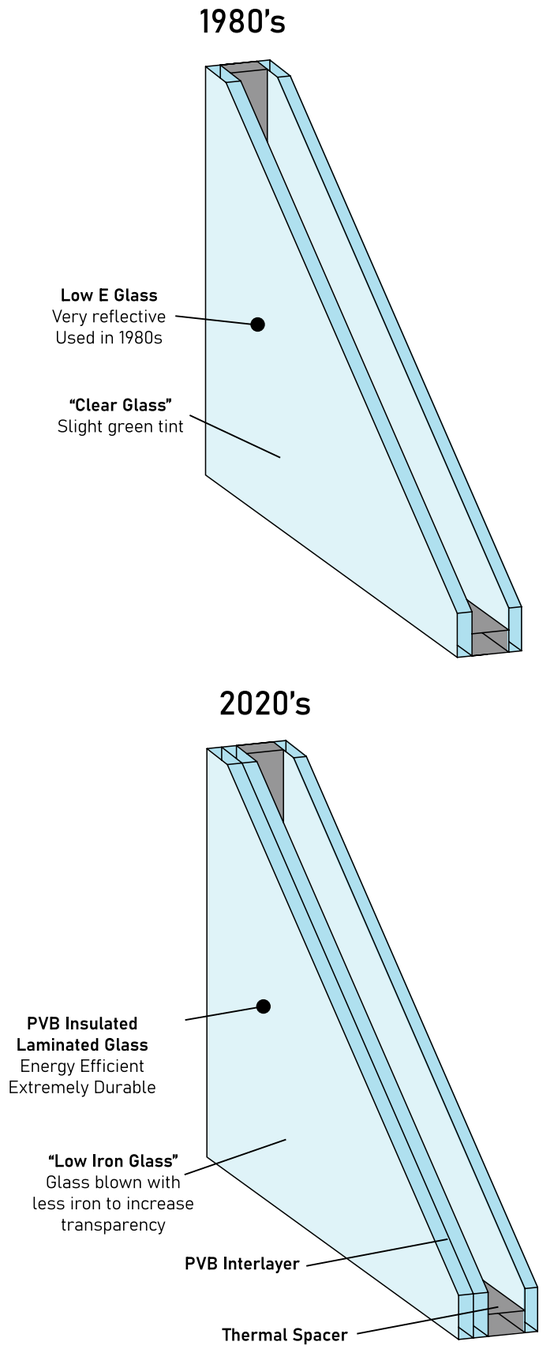


Figure 3.16. Comparison between older window construction (top) and newer window construction (bottom).

the reflectivity of the material inside these shelves, the natural light would be able to travel much further than the normal travel distance (30 feet) that light usually does. As the light moves horizontally in this space, it would come across concave glass panels which lead directly into the units and corridors of the building. Once the light hits these panels, it would be evenly dispersed into whichever room it is attached. This would provide lighting to those spaces even if they do not have direct visual connection to a window (Figure 3.18). These lighting shelves would be able to be constructed across the entirety of almost every floor and with their inclusion, a majority of the lighting concerns dissipate.

Along with the implementation of light shelves in the ceiling, another aspect of design can impact the manipulation of light. Wall properties will play a major role in the effectiveness of light movement. With the construction of several uniquely designed walls, light will be able to freely move throughout units and corridors. A proposal for the wall design inside specific units would be the most impactful. Due to code requirements and daylighting concerns, each bedroom must be connected to a window in some way. As a result, the sunlight what would normally be provided to an entire unit would be taken up by all the bedrooms. A possible solution to this would be the impermanence of specific walls. Instead of construction walls in a typical fashion, constructing them in a way that could be moved and rearranged would benefit several different aspects of this proposal.

Figure 3.17. The difference between clear glass (left) and low iron glass (right).

3.3 "The Difference between Clear & Low-Iron Glass." Aug 01, [cited 2023]. Available from https://www.dillmeierglass.com/news/the-difference-between-clear-glass-and-low-iron-glass.

3.4 Beltrán, L. O., E. S. Lee, and S. E. Selkowitz. "Advanced Optical Daylighting Systems: Light Shelves and Light Pipes." Journal of the Illuminating Engineering Society 26, no. 2 (1997): 91-106.

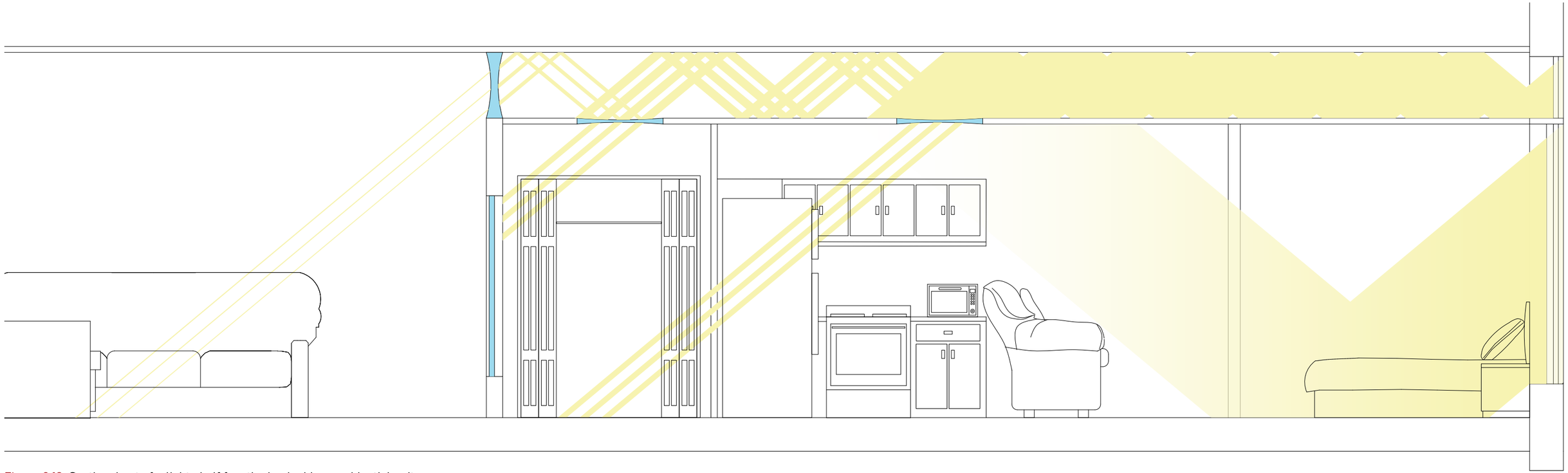


Figure 3.18. Sectional cut of a light shelf functioning inside a residential unit.

However, most importantly it would allow residents to wake up in a well-lit bedroom and instead of walking out the door, they could effortlessly move an entire bedroom wall out of the way. This would then allow all the natural light being kept in the bedroom to flow out into the living room or kitchen of each unit. This increased volume of light, in addition to the light shelf recesses lining the ceiling, would provide natural light as far as 40 to 60 feet deep into the structure.

The culmination of these daylighting solutions all working in parallel would allow for a dramatic increase of interior light. This influx of natural light would decrease the amount of artificial lighting required throughout the day. Additionally, several positive impacts on the physical and psychological health of occupants would be observable. This introduction of lighting systems is one of the largest hurdles to get over when considering this building for conversion. With the development of these methods, daylighting is no longer a debilitating issue but instead something visitors can look forward to.

Structure

One of the most crucial factors taken into consideration during the design aspect of a building is its structure. The structural engineering of a building will determine its success but more importantly has dire side effects if it is incorrect. The intricacies of a building supports are often focused on for a large portion of the design process and without a substantial eye on this aspect, a project cannot move forward. The structural integrity of a conversion is even more important. Shifting weight distributions in a building designed for a completely different use can be extremely dangerous. A lot of thought and attention to detail is often required to ensure that long after construction is completed, the building will continue to be secure and stable (Figure 3.19).

Since this proposal at 200 Vesey Street is dramatically changing the distribution of weight inside the building, certain aspects of the structural integrity of the space need to be analyzed. Structural shoring will be required in multiple areas of the building to ensure the longevity and continued prosperity of this project and any other project that follows in its footsteps. National and municipal codes require a certain level of stability to be maintained during the design of projects. These codes are based off the intended risk of the building itself. Thankfully, the risk level for commercial buildings is equal when compared to residential projects.[3.5] As a result, minimal renovations will have to be done for conversion projects like this one. However, since this proposal will be distributing loads differently, it will require several fairly non-invasive adaptations.

The primary addition to the structural aspects of this building would fall into the category of lateral bracing. Prevention of buildings of any scale from swaying side to side is paramount in its practicality. This is exponentially more important as buildings grow in size due to higher wind speeds at increased altitudes, along with the increase in flexibility as buildings get further off the ground. Due to this issue, lateral bracing in 200 Vesey Street currently exists and was implemented when it was constructed, however, it is not sufficient for the new proposed uses. With this proposal, a large amount of weight will be more evenly distributed across the entirety of each floor plate. Currently, the building has most of its weight located in the center, so while the center is properly shored up, the perimeter regions will be severely under supported. As a result, bracing will be a necessity in these outer areas. Beams will be placed onto the existing structural support columns that currently run from the base to the top of this tower. They will meet the columns at the base of where they meet the floor plate and travel diagonally upwards. They will intersect the next consecutive column where it meets the bottom of the next floor slab above. This shoring will be required on every floor in each axis to a certain degree (Figure 3.20). This lateral shoring will not affect the layout or circulation of the interior much as a majority of columns will be incased in wet walls to assist the MEP circulation.

The second structural aspect of focus would be the adaptations applied to the existing structural columns. These columns are already very large and the volume of the means the building is very shored in most areas. However, with the removal of certain floorplate sections for daylighting, the integrity in some regions of the grid would require attention. The current columns will have

Figure 3.19. Depiction of structural steel being assembled.

[3.5] Dean, Edwin, Joe Gulden, and Doug Sweeney. "Structural Engineering Solutions for Office-to-Residential Conversion." Sep 28, [cited 2024]. Available from https://www.bdcnetwork.com/blog/structural-engineering-solutions-office-to-residential-conversion.

the addition of stiffeners in between the flanges (Figure 3.21). Stiffeners are steel plates added in between beam webs or flanges to prevent several different structural stresses (Figure 3.22). Primarily, this building would call for transverse stiffeners. This would prevent buckling in areas of the structure that are under new compression stresses after the conversion. These transverse beams would also be the medium for attachment to the lateral bracing components being added.[3.6]

200 Vesey Street is already a very structurally sound building, however, with the inclusion of several small additions, engineers can be positive the building will remain safe post conversion. The stress reductions being added due to the lateral bracing and column stiffeners will allow for very minimal movement of the building and would keep the structure well inside the safe zone for code requirements and comfortability metrics. The fairly non-invasive additions would be a small but important aspect of the longevity of this design.

Mechanical, Electrical, and Plumbing

The issues accompanying the swap of the programmatic layout in 200 Vesey Street are substantial. One of the most glaring problems with such a prominent swap in the functionality of the building is the mechanical, electrical, and plumbing (MEP) systems. Due to the drastic change in the use of the building, all three of these extremely important systems must be completely reworked. The requirements for each of these individual systems dramatically will shift to sever the different base of occupants. Due to this reorganization, certain aspects of this proposal have been designed in a way to best serve this purpose.

The existing building design possesses very large gaps between floors. There is a 12.5-foot gap from the top of the floor slab to the bottom of the floor plate above it. This is a very tall floor and allows for the reutilization of a portion of this height. Since the average residential unit will only require a height less than 9 feet, about 3.5 feet can be separated and readapted (Figure 3.23). The MEP systems will primarily reside in this empty space between the 11-foot and 12.5-foot height marker from the floor (daylighting will use up the remainder before the 9-foot threshold). This adaptation will allow for the entire footprint of the building to be used for the reorganization of MEP systems.

Along with the addition of MEP sections on each floor, the larger mechanical parent systems require a place to be housed as well. The current systems are located

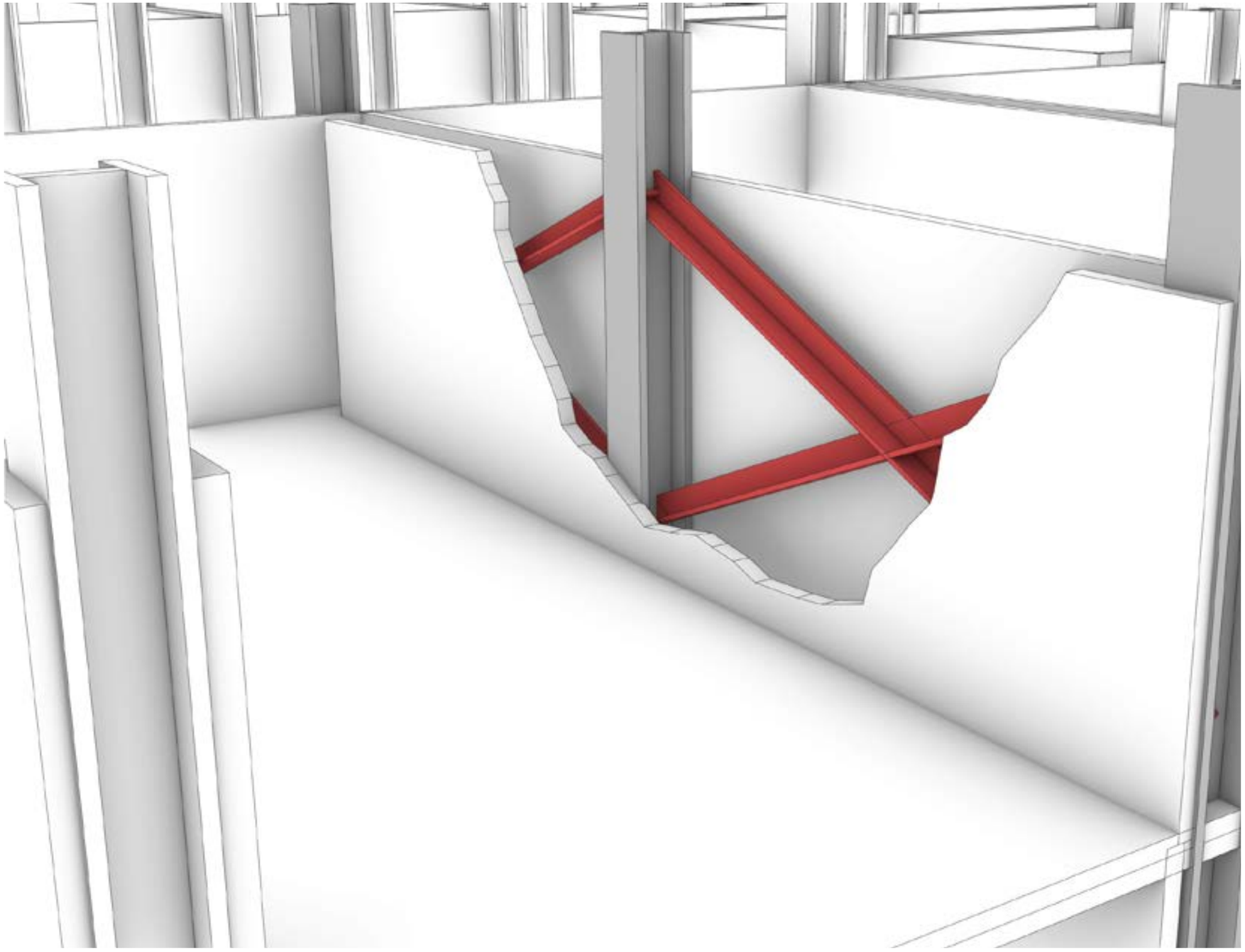


Figure 3.20. Depiction of structural bracing being implemented between columns inside of the wall.

[3.6]"Stiffeners." [cited 2024]. Available from https://www.steelconstruction.info/Stiffeners.

at the very top of the structure and this will stay the same in this proposal. However, the systems will be relocated several floors down to allow for the top floors to be reused in various programmatic improvements. Since these systems are already being removed, replacing them with more efficient and environmentally friendly alternatives would be ideal.

Mechanical systems, or Heating Ventilation and Air Conditioning (HVAC), will be one of the easier systems to adapt to the new uses. In office buildings, the airflow requirements are fairly standard and both supply and returns are located consistently throughout the building interior. As a result, a majority of the infrastructure required to convert these spaces is already in place. Small additions will be made to individual extensions to ensure that supply is coming into the units at the correct location and that the returns are located in an equally beneficial place. Air flow in buildings of this scale is extremely important because the use of windows is limited. In addition to the ductwork circulating the air around each individual floor, some of the main supply lines from the primary HVAC units will have to be upgraded to support the increased level of precision of supply and return. These large primary lines will circulate vertically through the core of the building in place of existing programs such as bathrooms, kitchens, and personal offices that currently reside in these areas.

The electrical modifications needed to convert these buildings are by far the simplest adaptive work for all of the MEP system requirements. The existing office spaces require a considerable amount of connectivity both for powering devices and for providing proper wifi and connectivity functionality. As a result, a majority of the existing wiring throughout each floor can continue to be used with minor changes in placement and orientation. A small number of new electrical lines will have to be run due to code stipulations requiring outlets to be placed every 12 feet (Figure 3.24).[3.7] However, the existing infrastructure containing these cables will remain in place. Additionally, some wires will have to be run for the new lighting fixtures which will be installed in each unit. Due to the swap from commercial fluorescent lighting to residential levels of lighting, the power requirements would also change (Figure 3.25). According to IMEG, commercial electrical systems use 460 volts, while residential systems use 208 volts.[3.8] This in turn means that transformers must be added to the mechanical floor to serve the new voltage requirements. Finally, all residential units would require their own electrical panels in the unit which will require minor additional wiring. The existing electrical systems in place will easily be able to be repurposed and all of the additional wiring required will sit alongside the rest of the MEP systems in the top ceiling section of each floor.

One of the larger issues when it comes to MEP systems is the plumbing requirements. The plumbing adaptation will unfortunately require a complete rework throughout the entirety of the building.

[3.7] 2.1, Power and Lighting Distribution.

[3.8] Campagna, Scott. "Developing an Office to Residential Conversion? Engineering it Will Bring Opportunities and Challenges." [cited 2024]. Available from https://www.imegcorp.com/insights/blog/developing-an-office-to-residential-conversion-consider-the-engineering-challenges-early/.

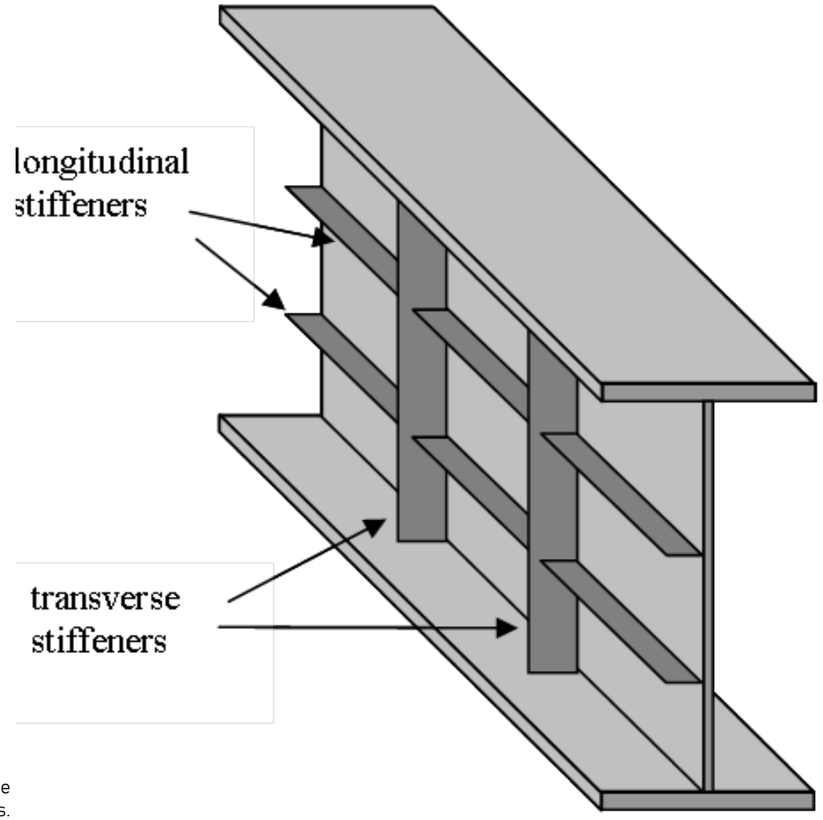


Figure 3.21. Diagram of tranverse stiffeners.

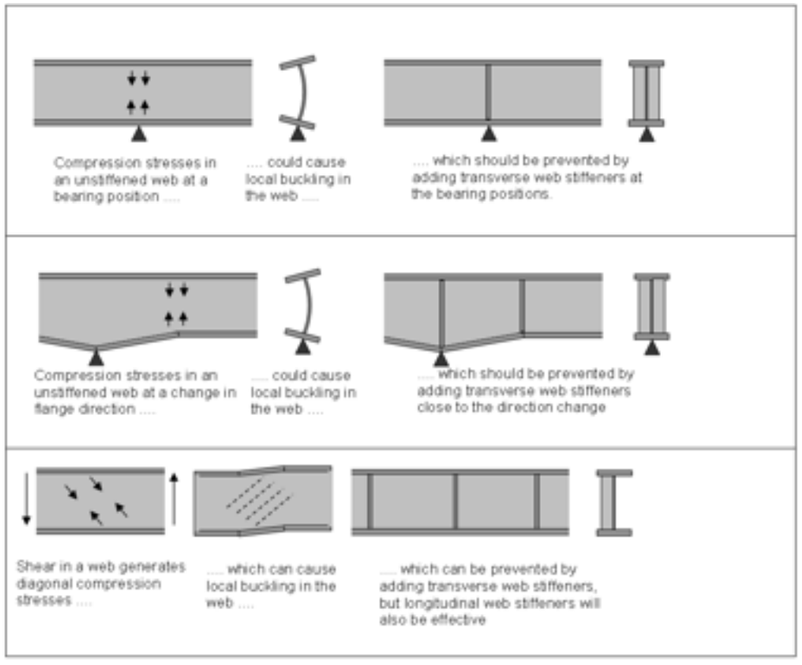


Figure 3.22. Examples of possible structural failures.

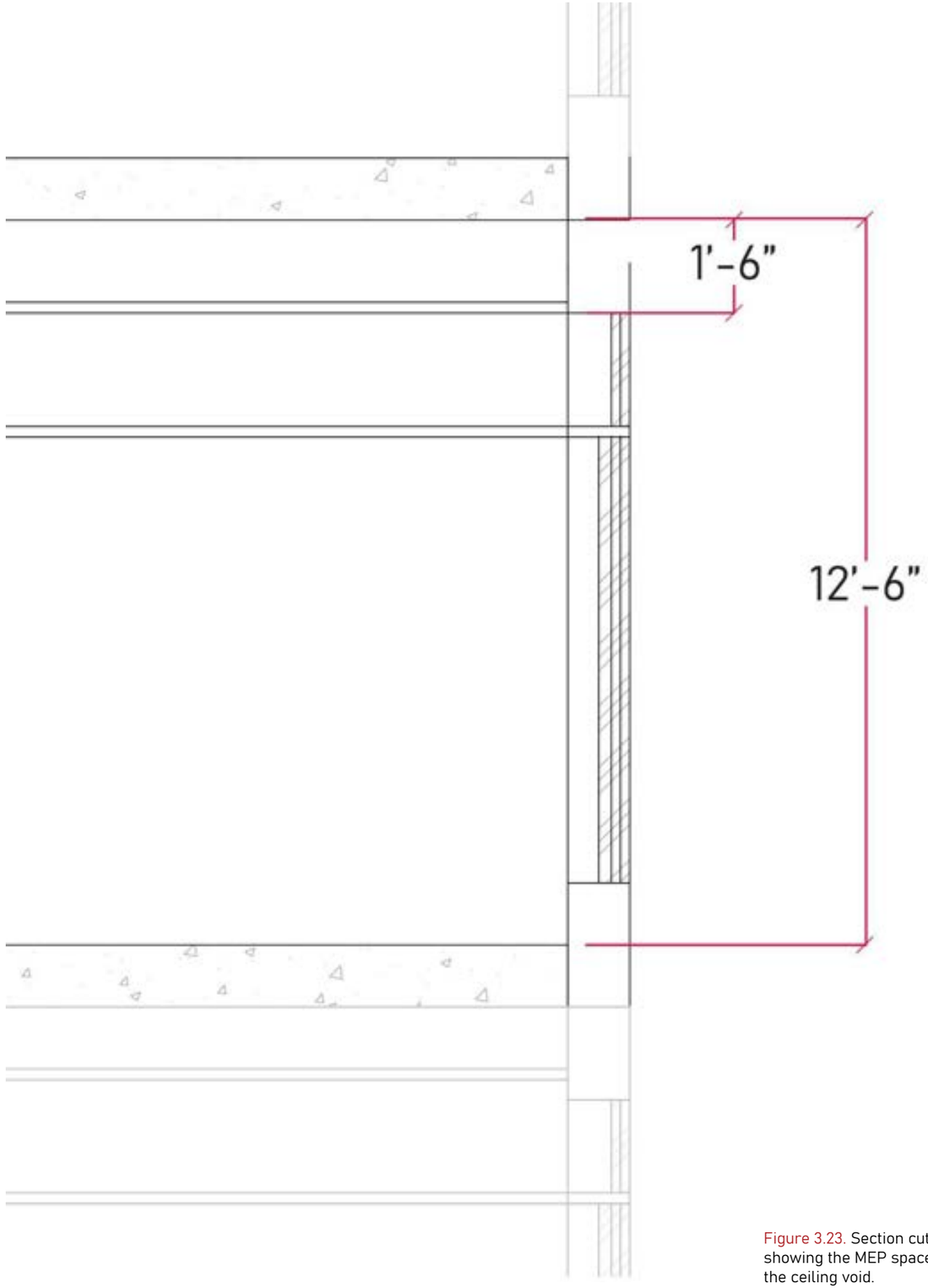


Figure 3.23. Section cut showing the MEP spaces in the ceiling void.

Since the existing office building was designed to simply hold as many desks as possible, all of the bathrooms and kitchens are located in the central core. Additionally, these bathrooms are only designed to serve a small number of people at a time. However, since all of the new units will be placed along the exterior of the structure, new piping will have to be run. These new pipes will make use of implemented "wet walls," which are walls designed with a large gap inside for MEP circulation (Figure 3.26). These wet walls will be in between the structural elements to hide each of the columns while also providing a vertical shaft for plumbing requirements. Piping will be placed inside these walls and run up into the ceiling into the 1.5-foot gap reserved for building systems. The heightened plumbing requirements will also dictate the installation of larger capacity piping in the core. This will not be an issue as large portions of the core are now free to be used due to the removal of those large existing public bathrooms. The requirements for plumbing modifications are large, however, by providing space and access for any pipe that must be run, the construction of these modifications will be fairly simplistic.

Conclusion

The physical modification of a conversion is the primary reason why so many different typologies of building fall outside of the practicality standards most design firms hold. 200 Vesey Street in all senses would not be considered reasonable to convert into any program other than office spaces. The large floor plates make it a challenge to renovate due to the daylighting, structural, and MEP concerns. However, with the implementation of several different design solutions such as window replacement, sectional floor plate subtraction, light shelf installation, and unique wall properties, natural lighting has the ability to reach even the deepest sections of the floor plate. On the structural side, a majority of the building will be up to code currently and only the addition of certain beams and steel plates are required to shore up the building entirely. Finally, due to the lack of height restrictions on each floor, MEP building systems will have plenty of space to run throughout the structure without interruption. The physical conversion of this proposal can be easily reproduceable and can be viable in almost any office building. The physical aspect of converting this building is not an insurmountable challenge as long as the implementation of several design aspects are all constructed to work hand in hand with each other.

Experiential Interventions

The physical qualifications for an office conversion are what deter a majority of design groups from taking on the challenges of renovation. However, the potential inside these structures can heavily outweigh the possible risks simply due to the opportunities created by square footage. These large floor plated office spaces cause complications in terms of certain physical design strategies, solved earlier in this proposal, but the large floor plates also offer the opportunity for improvement. With such an excess of space

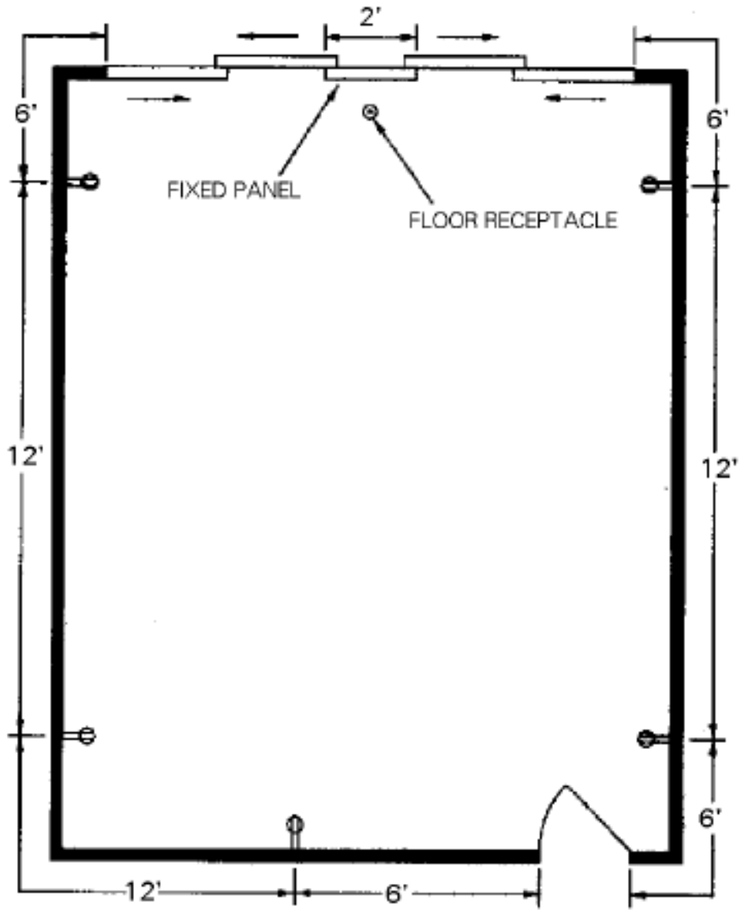


Figure 3.24. Distance requirements for outlet placement.

Figure 3.25. Fluorescent light fixtures in an office setting.

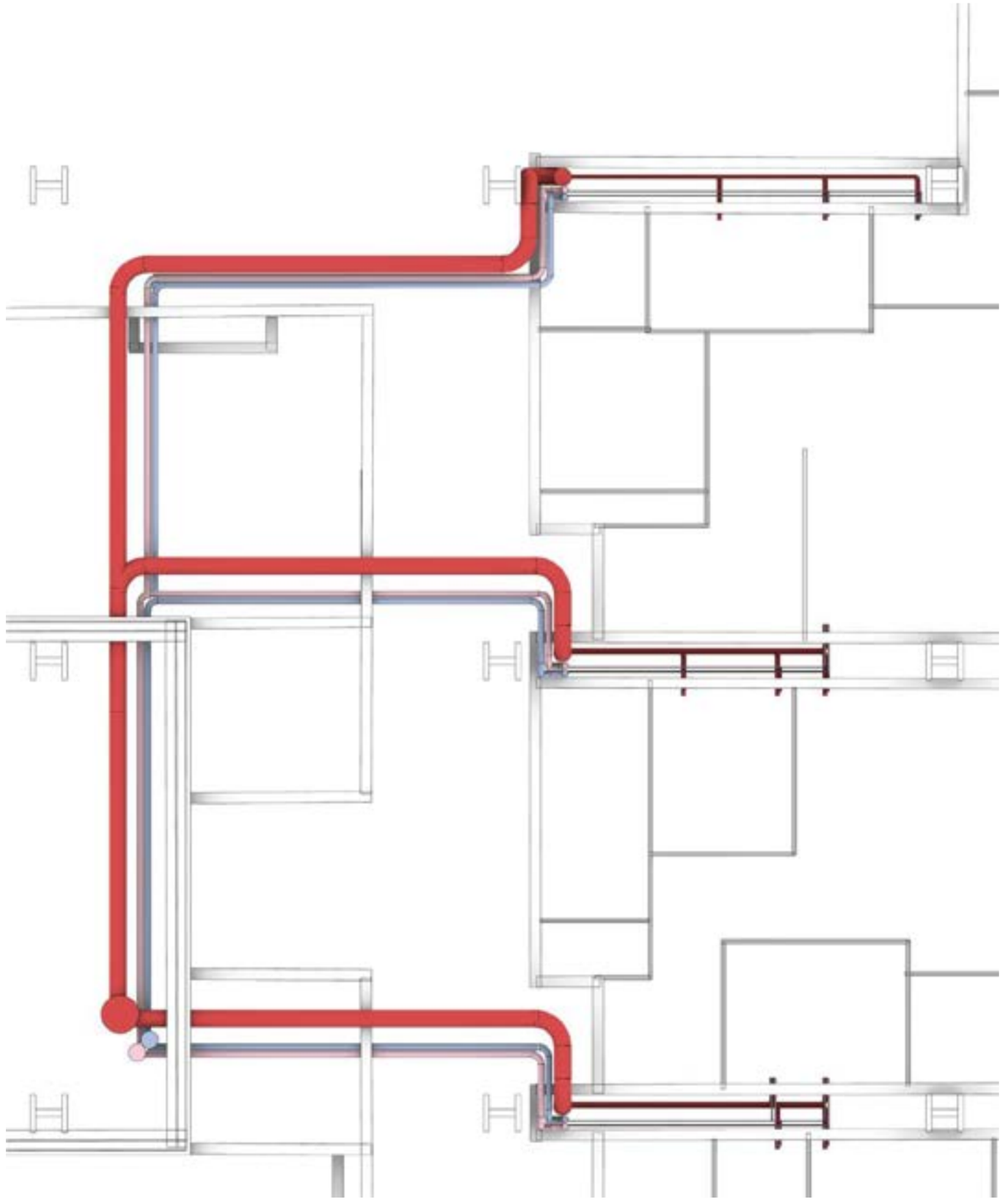


Figure 3.26. Plumbing diagram.

inside one of these conversions, the opportunities to reinvent what a space can exist as are endless. These tower conversions do not have to revolve around cramming as many housing units into a box as physically possible. There are countless other ways to make conversions like this attractive and viable.

The value of the human experience is what many people weigh when they consider moving in or out of a city. In recent years, hundreds of thousands of people have decided that since professions can be taken on remotely, there is no need to live in a city. This mass exodus of city dwellers is the result of people determining the human experience inside of a city is not worth it anymore (Figure 3.28). As a result, it is the job of designers to take this fatal urban flaw and morph it into a solution. If it is possible to take these empty spaces and offer aspects of living that are unobtainable anywhere else in the world, people would be happy to move back into and stay inside these cityscapes. By leveraging the millions of square feet inside an office building like 200 Vesey Street, designers would be able to redefine what it means to live and work in a city center.

Social Connectivity

The social connectivity of species across the globe is one of the fundamental aspects of success and prosperity. Without a level of connectivity and communication, it is extraordinarily difficult for any type of animal to thrive. Humans are the exact same way in this case, and it is obvious how much a social structure impacts day to day life. During the COVID-19 pandemic, countless people across the world were struggling due to the severe isolation from friends and family. It was proven just how much a level of sociality impacts lives and the necessity for it has only increased in recent years. Leveraging the amount of empty real estate available inside old office buildings to create spaces to catalyze communication and connectivity would be a very important goal. If spaces are able to be created where residents and visitors alike can come to cohabitate and communicate, the positive human experiences in these conversions could multiply exponentially.

Unfortunately, the sheer vertical scale of 200 Vesey Street leads to difficulties in communication between spaces (Figure 3.29). Each floor feels like its own community and rarely in multi-family housing structures do relationships ever get built with tenants above or below. However, this provides the opportunity to make drastic modifications to aspects of the existing building to ensure that a level of communication and relations are maintained throughout the building. By constructing a vertical component of circulation, while also creating areas for people to interact and communicate, this level of social development can be started.

The implementation of a staircase traveling throughout the entire structure would allow for the vertical circulation aspect to be satisfied. However, if the staircase is made considerably larger, this would allow for the stairs to become a destination (Figure 3.30). These stairs, being a location to exist in, would allow for residents to interact daily as they move upwards and downwards throughout the vertical span of the building. Having the opportunity to stop in the middle of the stairs and converse with your neighbor, without having to worry about the obstruction of foot traffic, allows for the freedom to connect on a more personal level. The placement of this staircase would be located on the inside perimeter of the building to allow for a large quantity of natural light to enter the space. Additionally, from the street, this large winding staircase could be clearly visible to observers (Figure 3.31). This visual connection to the inside would invite more pedestrians to enter and attempt to explore these aspects of design.

Due to the layout and placement of these staircases, small atriums would be created inside each residential floor (Figure 3.32). These atriums could be private 'residential only' lounges or publicly accessible common rooms. To ensure the security of residents, these stairs would be blocked off by large glass partitions and doors to allow for a visual connection to remain, while still providing the chance to circulate through and interact with passersby's. The lounges themselves would offer seating and quiet working spaces for those that work from home. It would also be reasonable to implement spaces like gyms, coffee bars, and small libraries to ensure the comfort of residents on that floor.

From a residential point of view, the idea of having a floor dedicated lounge space to interact with floor neighbors would be beneficial. However, the interactions between these spaces and the individual units would feel separated and divided. As a result, the installation of slightly opaque windows between corridors and units would be ideal (Figure 3.34). These windows would have specific types of

Figure 3.27. Brookfield Place Complex.

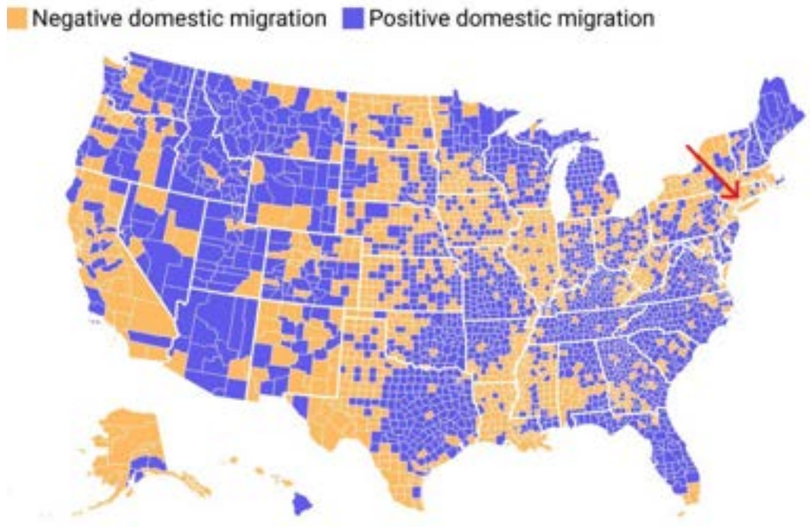


Figure 3.28. Diagram showing the mass exodus of residents from densely populated spaces to lower density areas. Stacker.

Figure 3.29. 200 Vesey Street from the ground.

glass which would enable residents to see activity outside their unit. If they make out the silhouette of a person, they will then have the prerogative to go out and interact with that person directly. However, since these windows are only partially transparent, the resident in their unit would still maintain their privacy and it would be impossible for another resident to see into any given unit. This would allow for the line between privacy and connectivity to be very clear while still inviting the possibility of each.

Since the arrangement of the existing building requires the core to remain in the center, these unit windows into the corridors would not necessarily be pointing at the common lounge space on each floor. As a result, a lower level of lounge could be created for each cardinal direction. These lounges would be primarily for the units placed on that directionally facing façade (Figure 3.33). The orientation of units on each exterior wall results in the core being fairly empty. This space could be used to create a secondary space for a more select group of residents. These levels of lounges would create a public versus private gradient moving through the building. Starting from the unit's living room, to the small lounge outside their apartments, to the floor wide lounge on each floor, to the fully public lounges. These levels of privacy mean that each resident would have the ability to decide what level of interaction or privacy they desire as they are moving through the building (Figure 3.35).

Due to the building layout creating large amounts of open space in the central sections of each residential floor, there are ample amounts of space for additional programing (Figure 3.36). Along with the secondary lounges, other amenities would be implemented to foster more social interactions. Spaces such as health and wellness centers, professional productivity centers, recreation rooms, and quality of life spaces could be added. Spaces such as gyms, spas, and yoga studios could be built for health and fitness for residents to allow for decompression. As well as work-from-home pods and computer labs for residents that choose to work remotely. Certain floors would also contain spaces for game rooms or child and pet care. Each aspect of programing would be accessible to all residents regardless of floor. As a result, a very large number of layout possibilities exist. These residential blocks are intended to act as a city in a building. Each resident would not be required to leave the building for the ease/quality of life aspects that people moving out of the city desire.

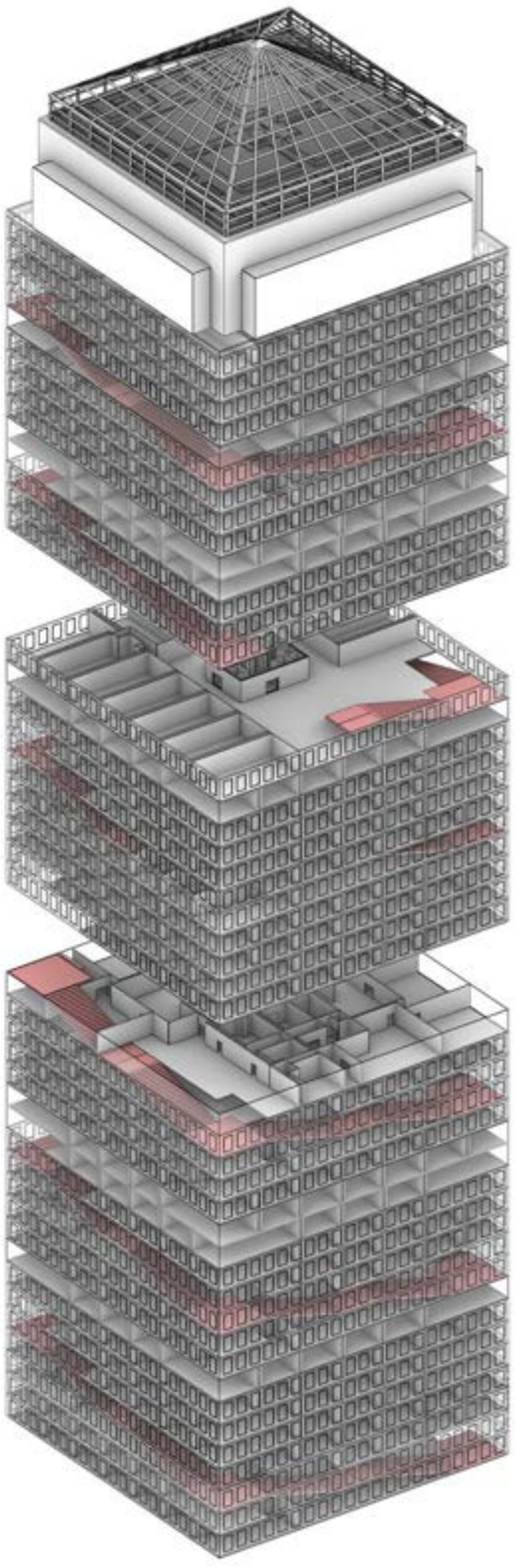


Figure 3.30. Diagram depicting the spiraling staircase throughout the building.

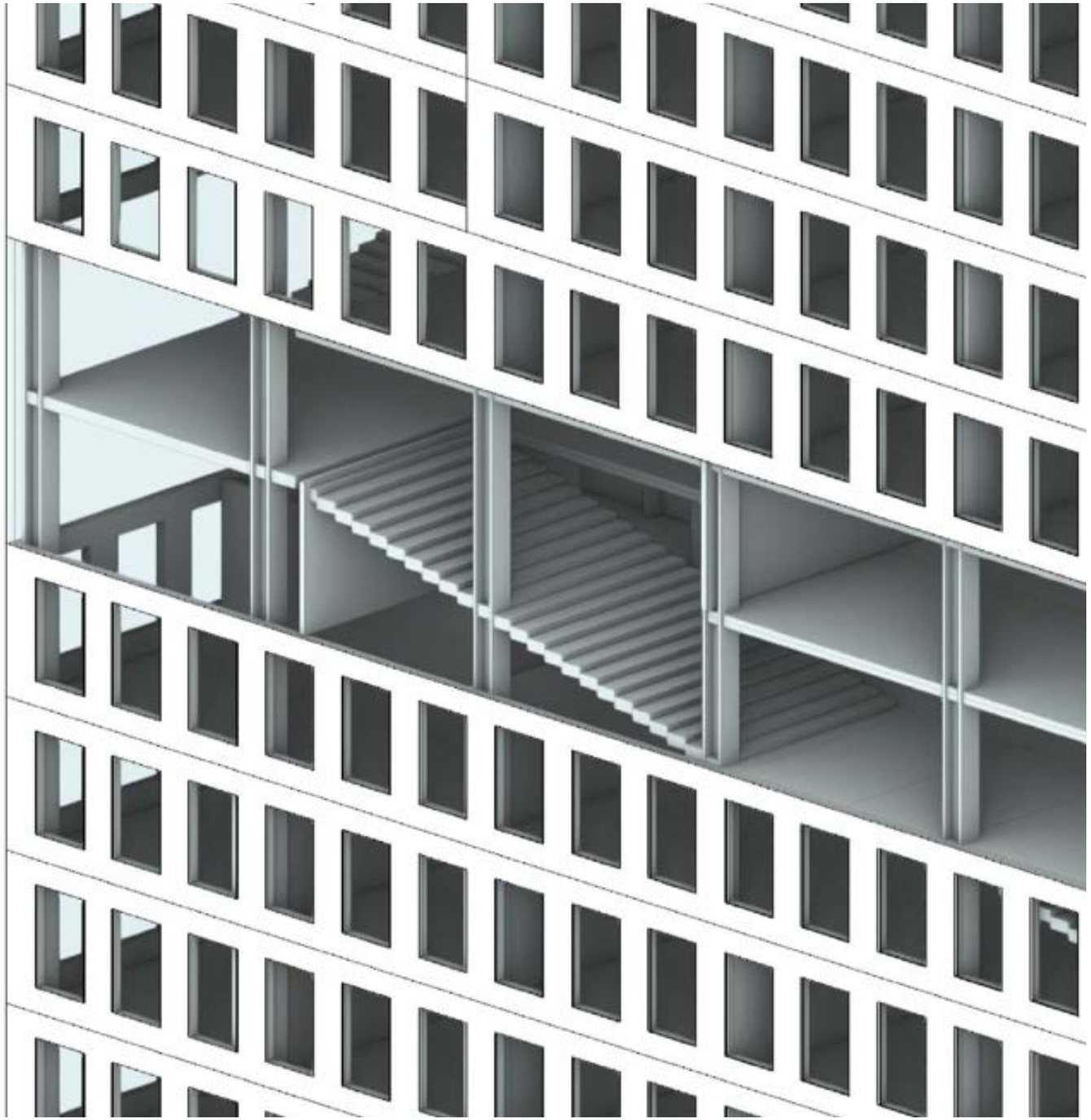


Figure 3.31. Depiction of the staircase from an exterior view.

Figure 3.32. Image showing the lounge space adjacent to the spiralling staircase.

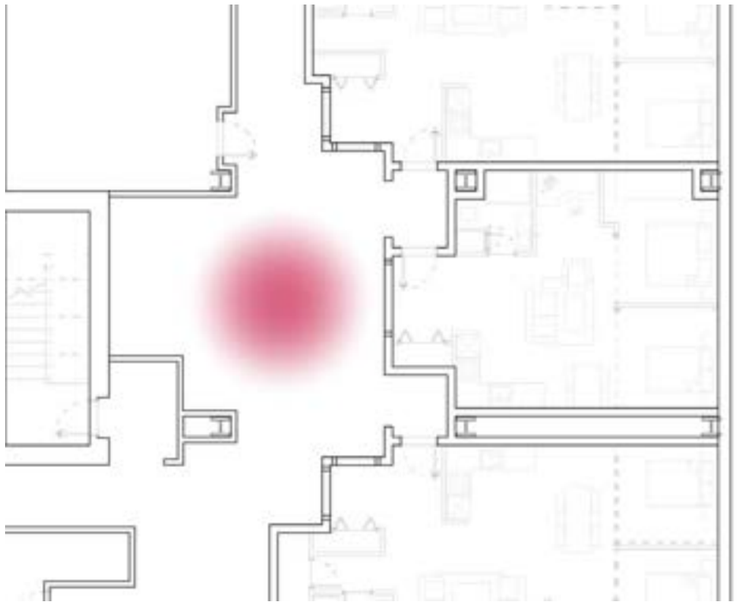
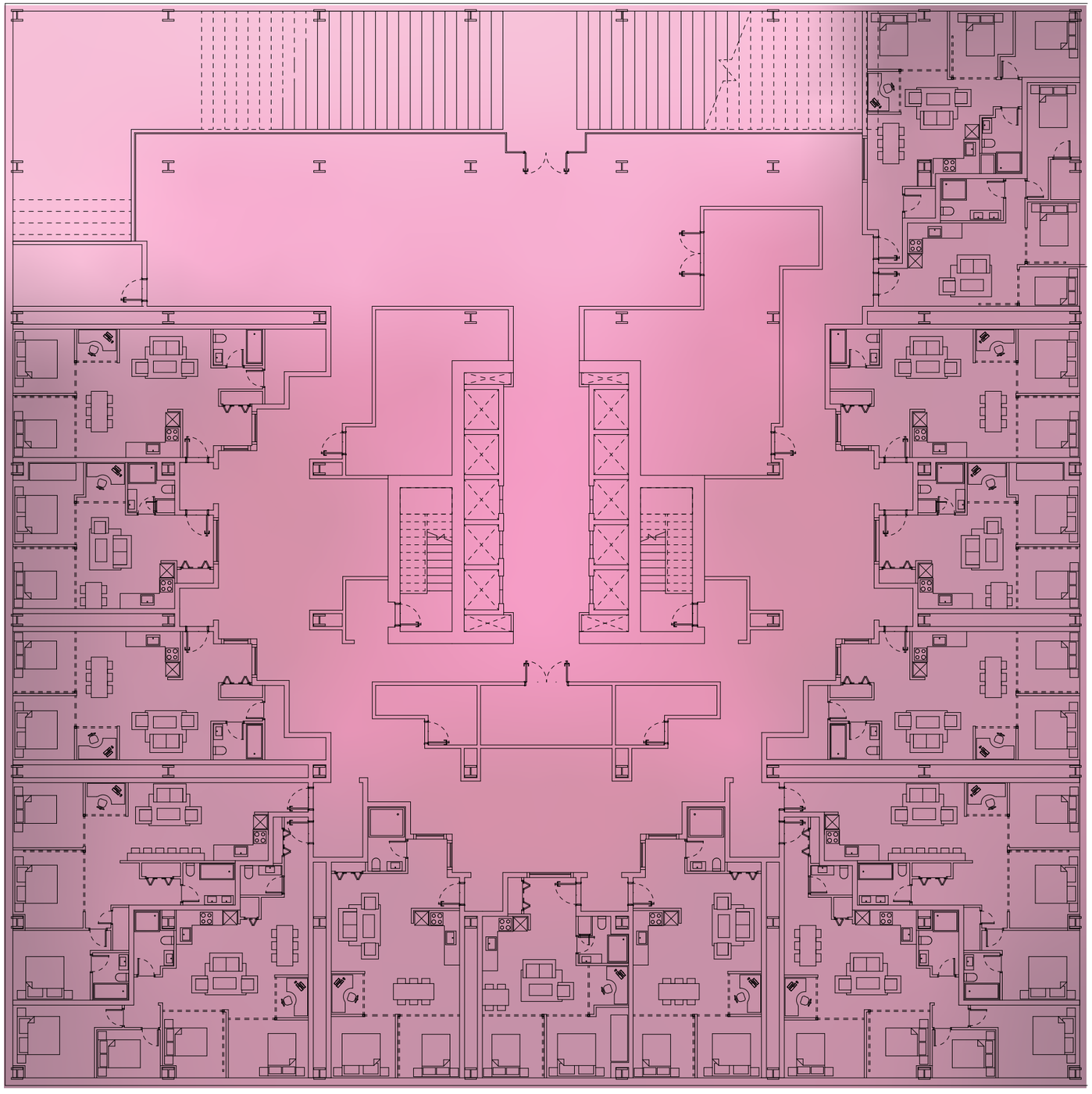


Figure 3.33. Diagram showing the location of possible residential lounge space.

Figure 3.34. Image of slightly opaque glass being used for privacy.



Private

Public

Figure 3.35. Public vs Private level diagram.

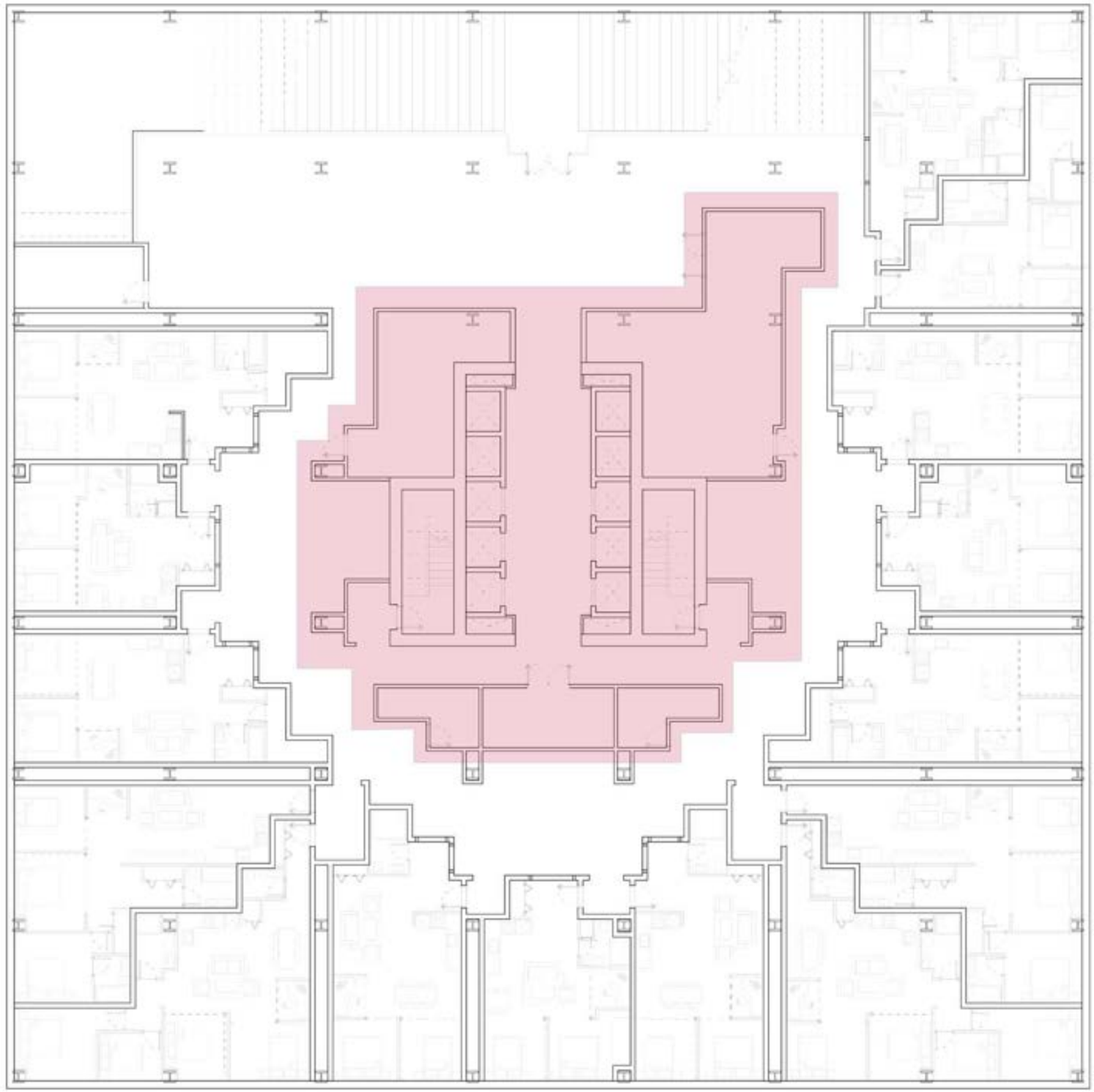


Figure 3.36. Plan view of the internal program for each resident.

Especially in the location surrounding 200 Vesey Street, it is difficult to locate real estate that is open to new development. This means that many modernized amenities that residents in other cities or regions can enjoy, downtown Manhattan cannot. Providing spaces such as these in a way that feels fluid and easily accessible is of the utmost importance. Allowing for the convenience of easily accessible activities, as well as escapes from everyday life, it would be a major benefit in a region as dense as New York City. By creating spaces such as theaters, galleries, family sporting destinations, bars, restaurants, and auditoriums all under one roof, almost anything an occupant could possibly want would be right nearby.

However, with so many opportunities for growth, as well as the ability to welcome in the general public, it would benefit residents and visitors if these spaces were separated from the rest of the building. By implementing entire floors dedicated to commercial uses, the safety and security of residents would stay intact, while still allowing for the freedom and accessibility of these programmatic designs (Figure 3.37 & 3.38). This will be achieved by constructing the interiors of this building in a way where experiential floors are located periodically throughout the vertical ascent. Four to five levels of residential floors would stack atop each other, topped with a commercial floor (Figure 3.39). This means that from any residential floor, no tenant is ever more than two or three floors away from a large amount connectivity and entertainment. From a resident's perspective, just circulating through the large perimeter staircase allows for an experiential shift at any point in time.

Experiential levels like these would alternate between taking up one or two consecutive floors. These double stacked commercial floors would allow for programs which would require a double height space such as auditoriums or theaters. These double heighted floors would also be constructed to implement balconies or mezzanines inside large common areas. Additionally, each commercial floor would include a public terrace for the opportunity to access fresh air even when on higher floors. These terraces would benefit from the double heighted spaces as well, allowing for balconies to overlook the balconies. These green spaces could be used as rooftop gardens or for lounging and relaxation (Figure 3.40). Due to the height of 200 Vesey Street, these spaces could also serve as observation decks, thus adding another popular attraction for the public to interact with (Figure 3.41).

To ensure privacy is maintained between commercial and residential floors, specific sections of the centralized elevator core would be dedicated to each (Figure 3.42). Residential elevators would have the ability to travel between all 54 floors of the structure. The commercial designated elevators would be restricted to only traveling to the floors that serve commercial uses. The public would still have the ability to access the perimeter winding staircase, however, these occupants would be technologically restricted from entering these floors. These commercial floors would feature most of the available

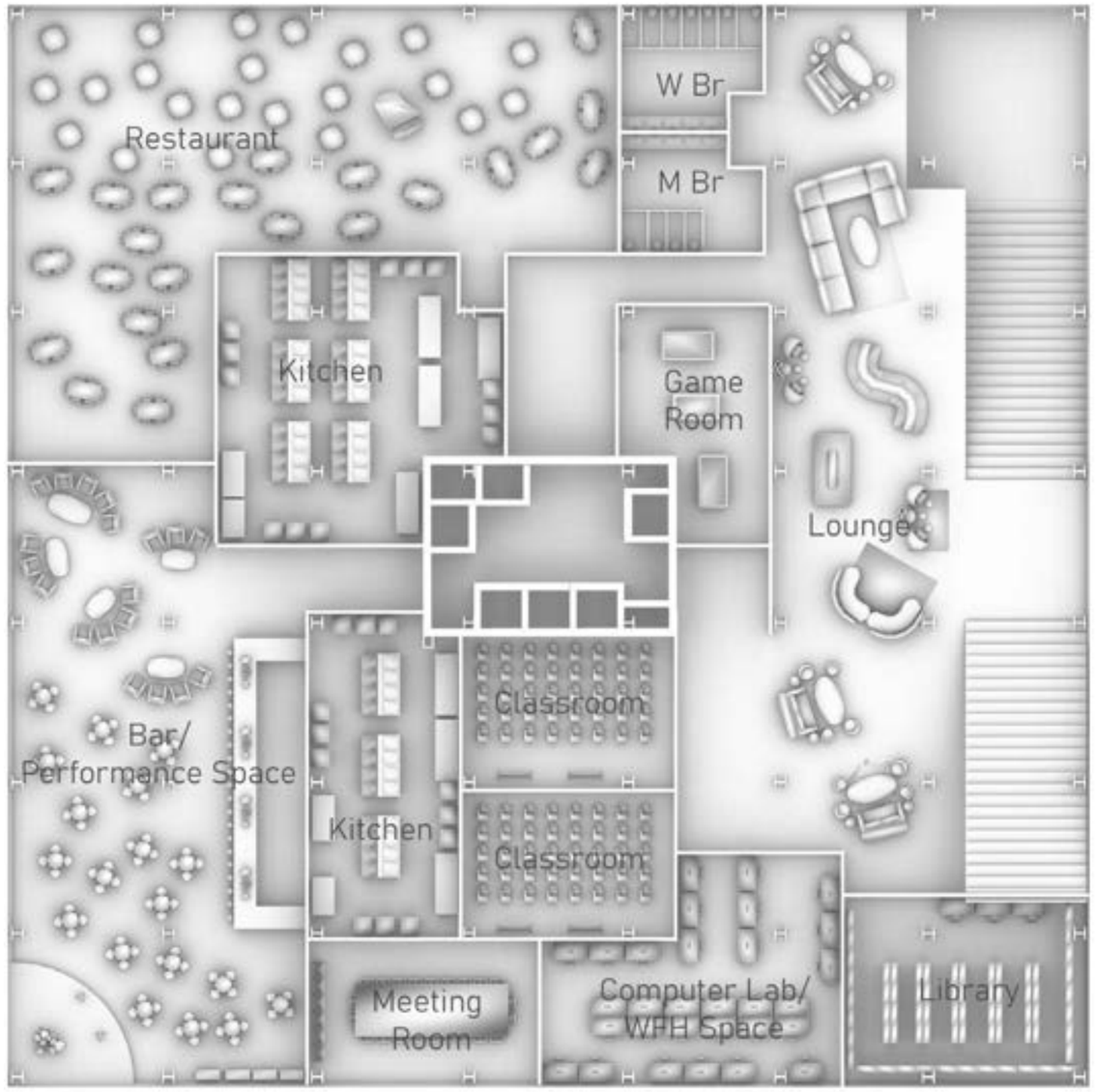


Figure 3.37. Commercial floor plan layout with labels for each aspect of programing.

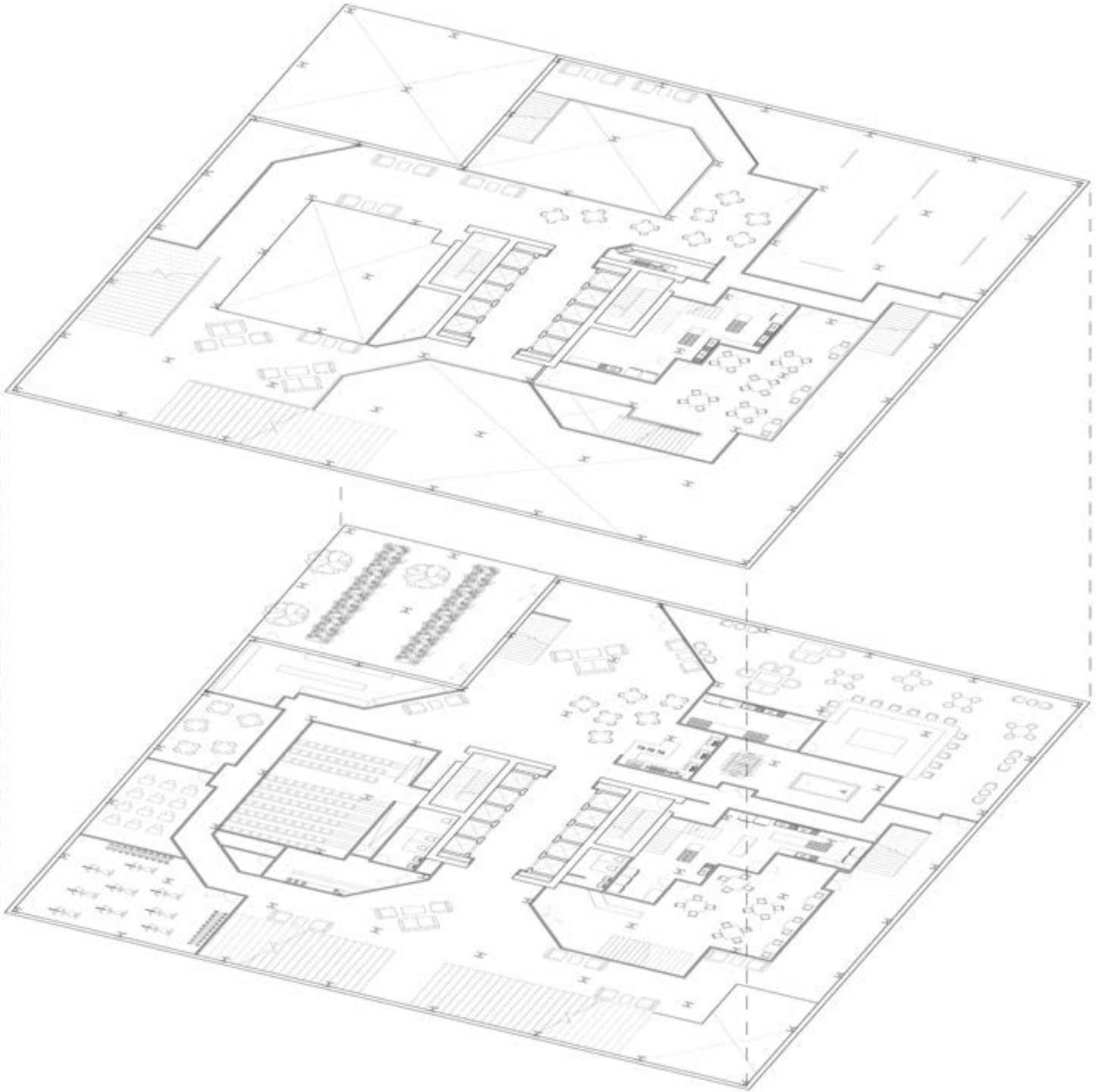


Figure 3.38. Axonometric view of a commercial floor plan layout.

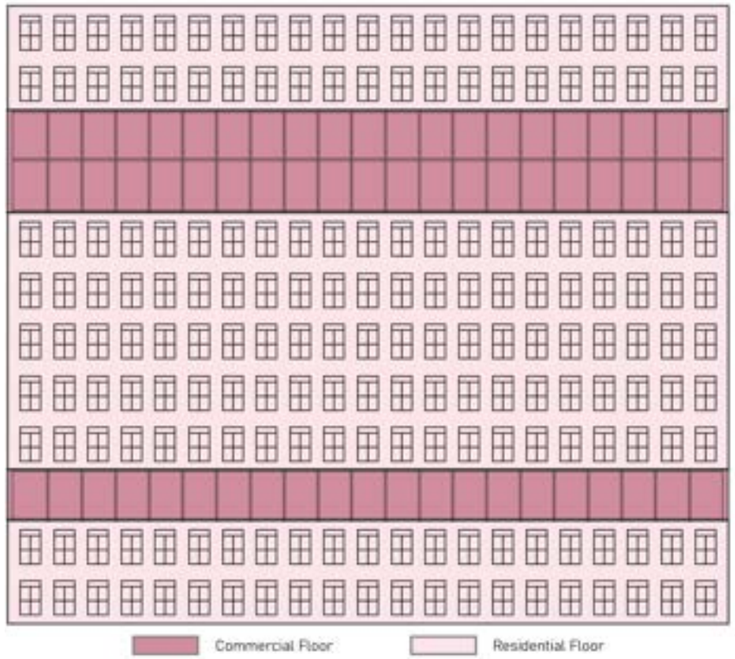


Figure 3.39. Commercial versus Residential floor proportions.

Figure 3.40. Green terrace implementation.

Figure 3.41. Example of the views to the Hudson River from the top of a terrace.

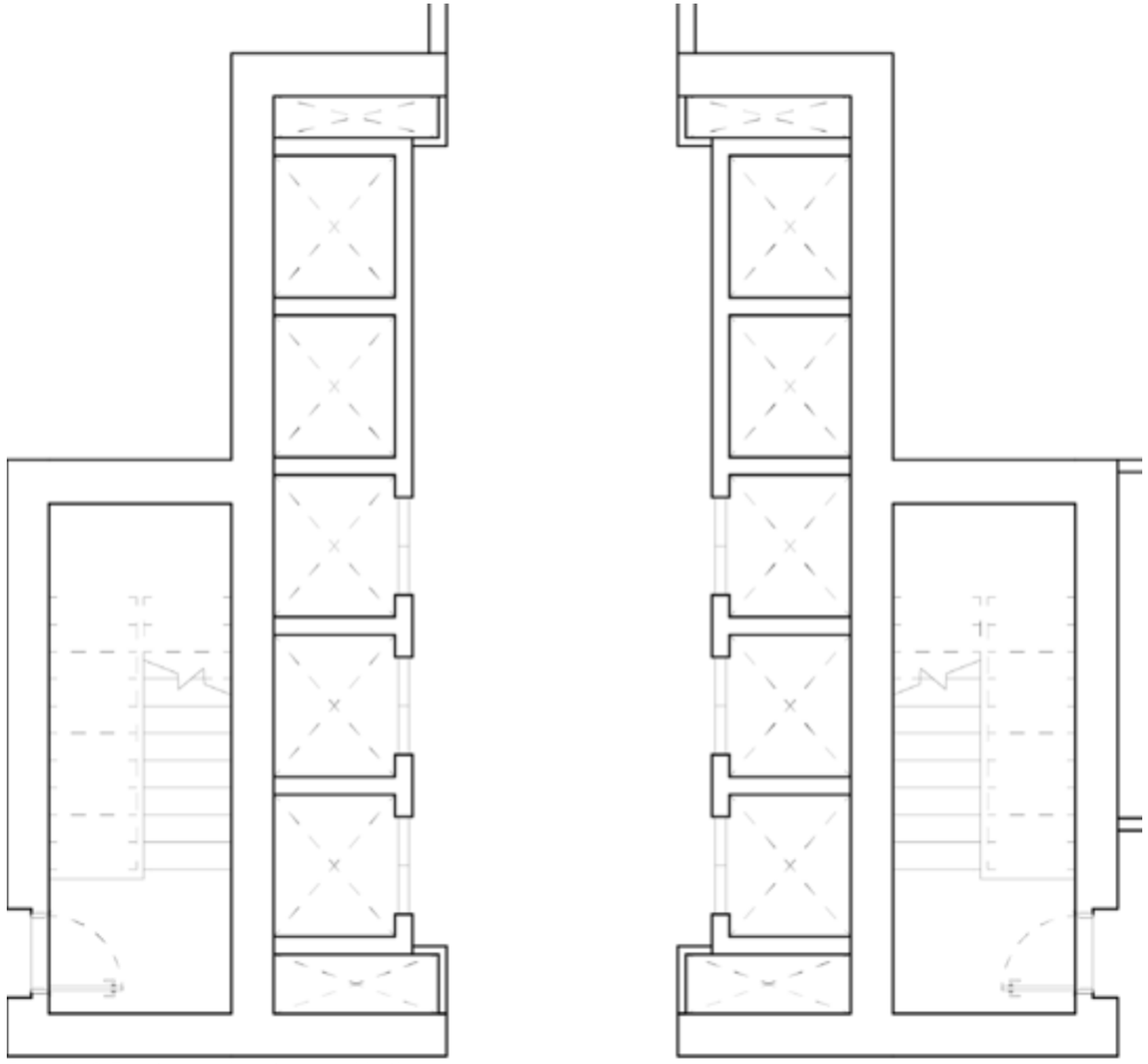


Figure 3.42. Elevator core layout on a residential floor.

program of multiple city blocks, all compacted down into one singular building. With the implementation of these spaces, an experience for residents and visitors would allow for the human experience to be brough to the forefront of people's minds.

Some spaces could also satisfy the needs stemming from the current trend of seeking out a 'third space.' The term 'third space' was coined by sociologist Ray Oldenburg and describes the location in people's lives where they are not working, or living, but a third place.[3.9] People yearn for a place to relax, socialize, and exist without any weight or responsibilities on their shoulders. Providing a multitude of spaces for people from all around the city to come to would not only increase the interactive aspects of these locations but would theoretically boost mental health and happiness levels.

The physical location of 200 Vesey Street would assist in the success of these third spaces. A majority of Gen-Z and Millennials claim they would rather not go directly home after a day of work and would rather unwind and exist in a place such as a third space.[3.10] Since 200 Vesey Street is located adjacent to the financial district of New York City, a large portion of the workforce is young and thus the implementation of spaces like this would be easily accessible and impactful. Having the opportunity to go directly from work to a place to decompress with colleagues or with friends could be invaluable to this demographic.

The creation of these third spaces would be able to take place in almost any context. Due to the nature of the idea of a 'third space', these areas could be different for everybody. Providing a space for people to drink, sing, and eat would be just as impactful as providing a space for people to sip coffee quietly and read. Constructing multiple spaces which can serve both audiences would be ideal. However, with certain design aspects, the possibility for spaces to morph between the two would be reasonable. The implementation of kinetic partitions would allow for spaces to be swapped from one program to another based on time of day or expected demographic attendance. As well as providing an experiential place, the creation of third spaces would make this structure attractive to the private and public occupants.

The connectivity aspect of this proposal is one of the most crucial. If the cities in the present day do not adapt to the changes that have occurred over the last ten years, they will not survive. Space that encourages the social aspects of life will change the way people live and exist in a city. These conversions' main goal is to make these existing unused spaces in areas of a city that people flock towards. With the implementation of commercial floors, third spaces, and a focus on the human scale, this is a very achievable goal.

Unit Analysis

This proposal provides this structure with a multitude of different functions simultaneously. However, the primary focus of this project is to rectify the housing demand in major cities by increasing the supply. As a result, the majority of the program in the building would be dedicated to housing. 80% of the overall program would be slated as exclusively private housing floors, with accessory public programming dedicated to residents.

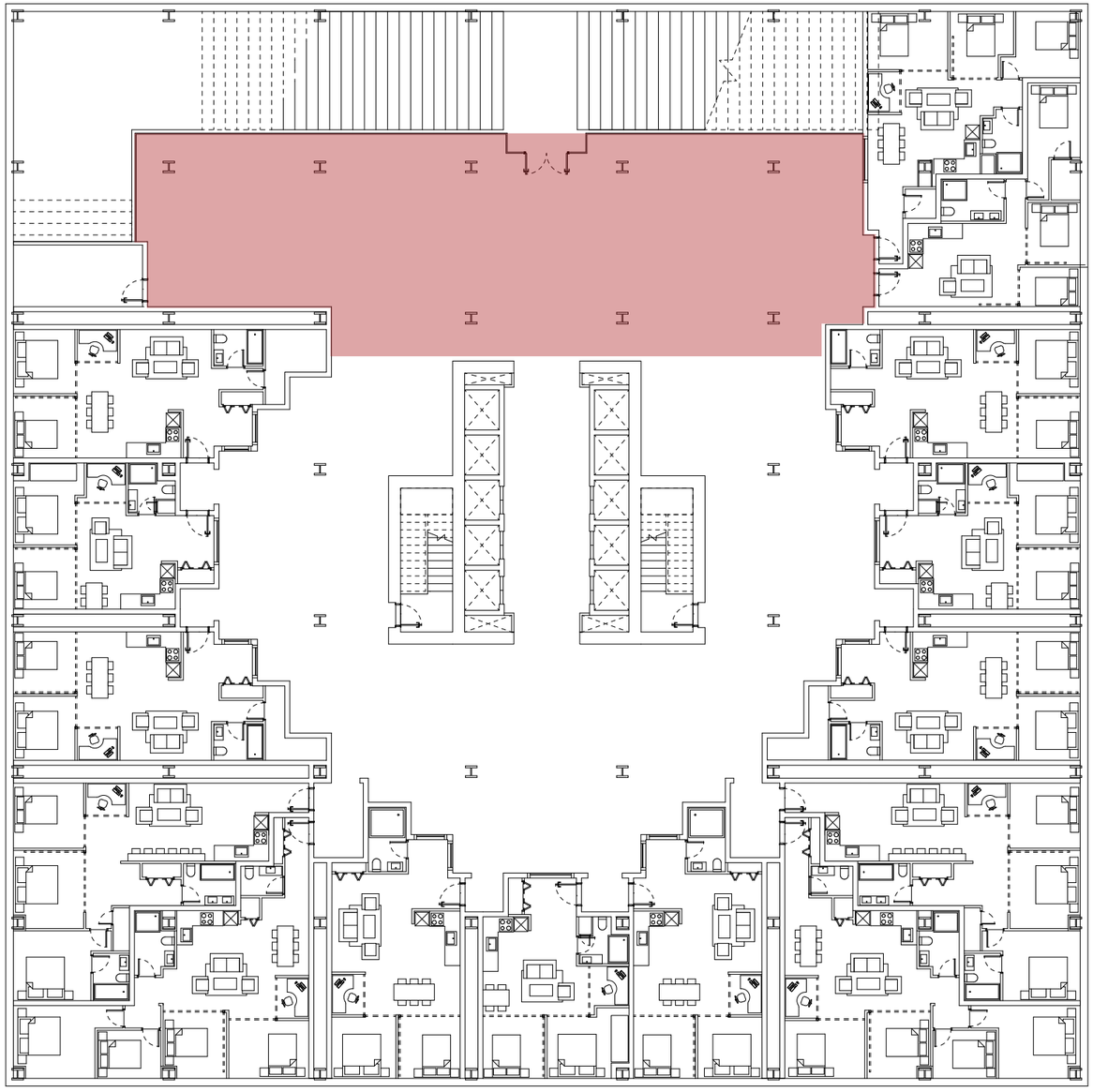
The unit placement on every floor will remain rotationally symmetric to the floor below. Due to the relationship to the rotating staircase, each floor will be a quarter of a turn to the right compared to the floor below it (Figure 3.43). The only piece of each floor which will not rotate is the core, which would travel uninterrupted from grade to the max building height. These copied floor plans on each level would allow for the ease of movement of mechanical systems but more importantly allow for residents of different floors to feel familiar when accessing programs specific to a certain level. These layouts would consist of units lining the perimeter of the building, with the core and resident dedicated program in the center. Accompanying this central program would be the lounges adjacent to each vertically circulating staircase.

Due to the goal of providing housing for as many different types of demographics as possible, a wide array of unit sizes would be available on each floor. Every level consists of four-, three-, two-, and one-bedroom units all with one to two bathrooms and a fluid office workspace. Across the entire building, approximately 700 units would be produced, with the ability to house over 2,000 individual residents. Every unit would also have its own living room and kitchen to ensure that if residents choose a more private lifestyle, this is a possibility.

To ensure that these shared spaces of each unit are comfortable and functional, each unit would have kinetic walls making up a portion of each bedroom (Figure 3.44). Due to code requirements, and quality of life, each bedroom is placed up against a window. However, this in turn means each living room and kitchen would be shrouded in darkness for the entirety of the day. To avoid the overuse of artificial lighting, each wall separating the bedrooms from these shared spaces would be movable.

[3.9] Oldenburg, Ray. The Great Good Place. 2nd ed. New York: Marlowe, 1999.

[3.10] Macheska, Ryan. Gen-Z's Opinions on Third Spaces. Edited by Joseph Slunt. 2024.



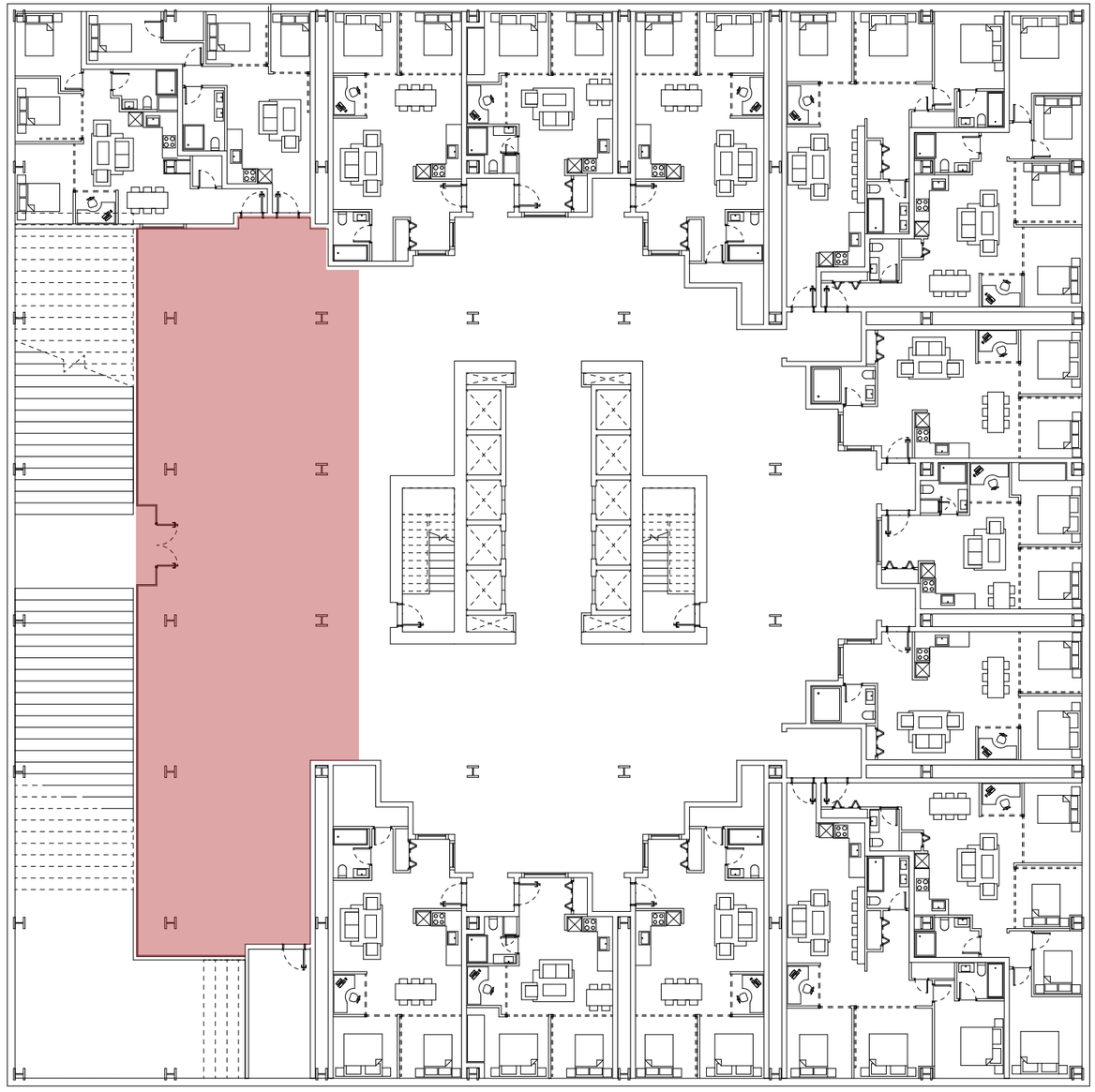
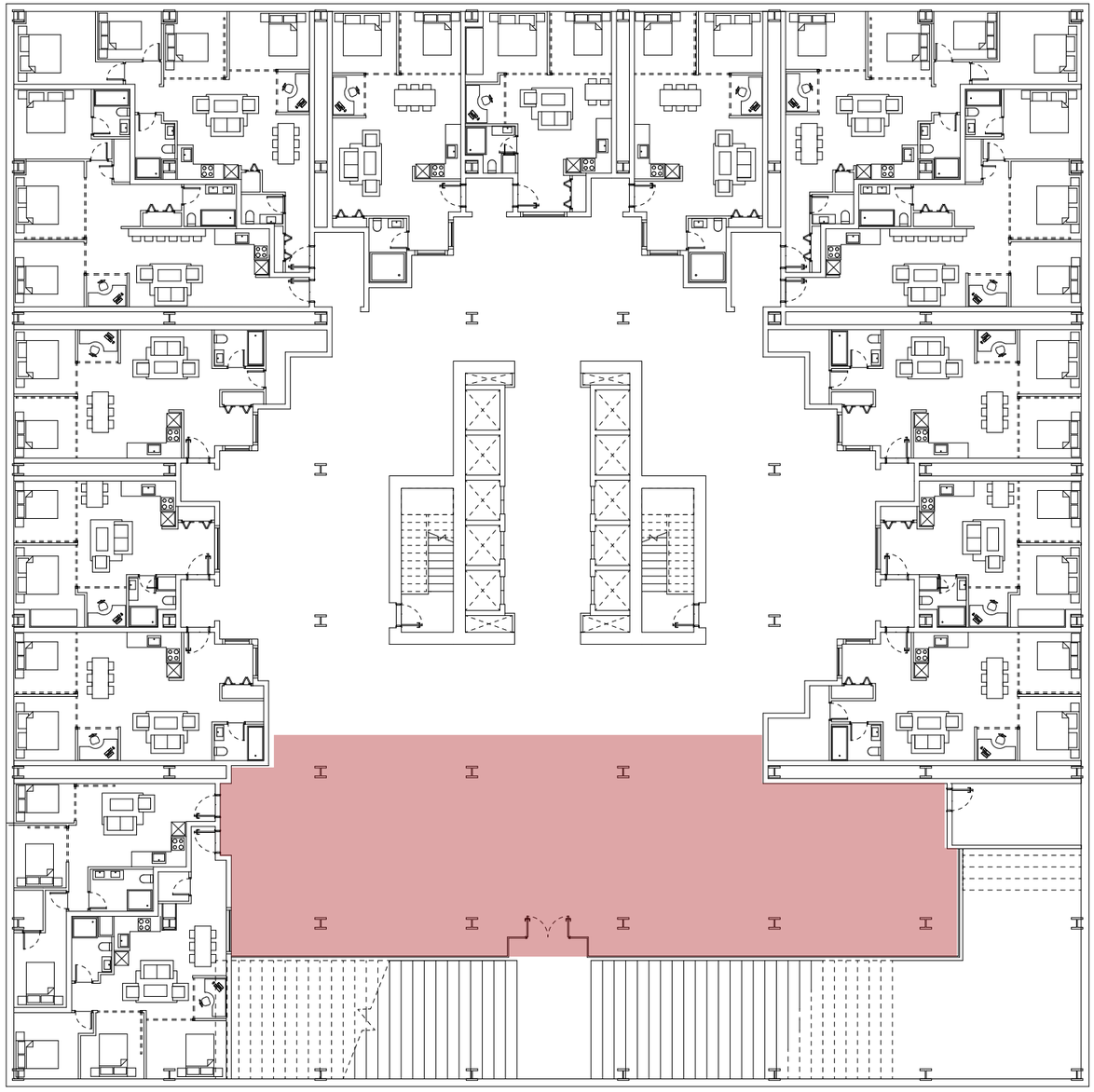


Figure 3.43.1. Rotated floor plans of a reoccurring residential floor with highlighted differing primary lounges.



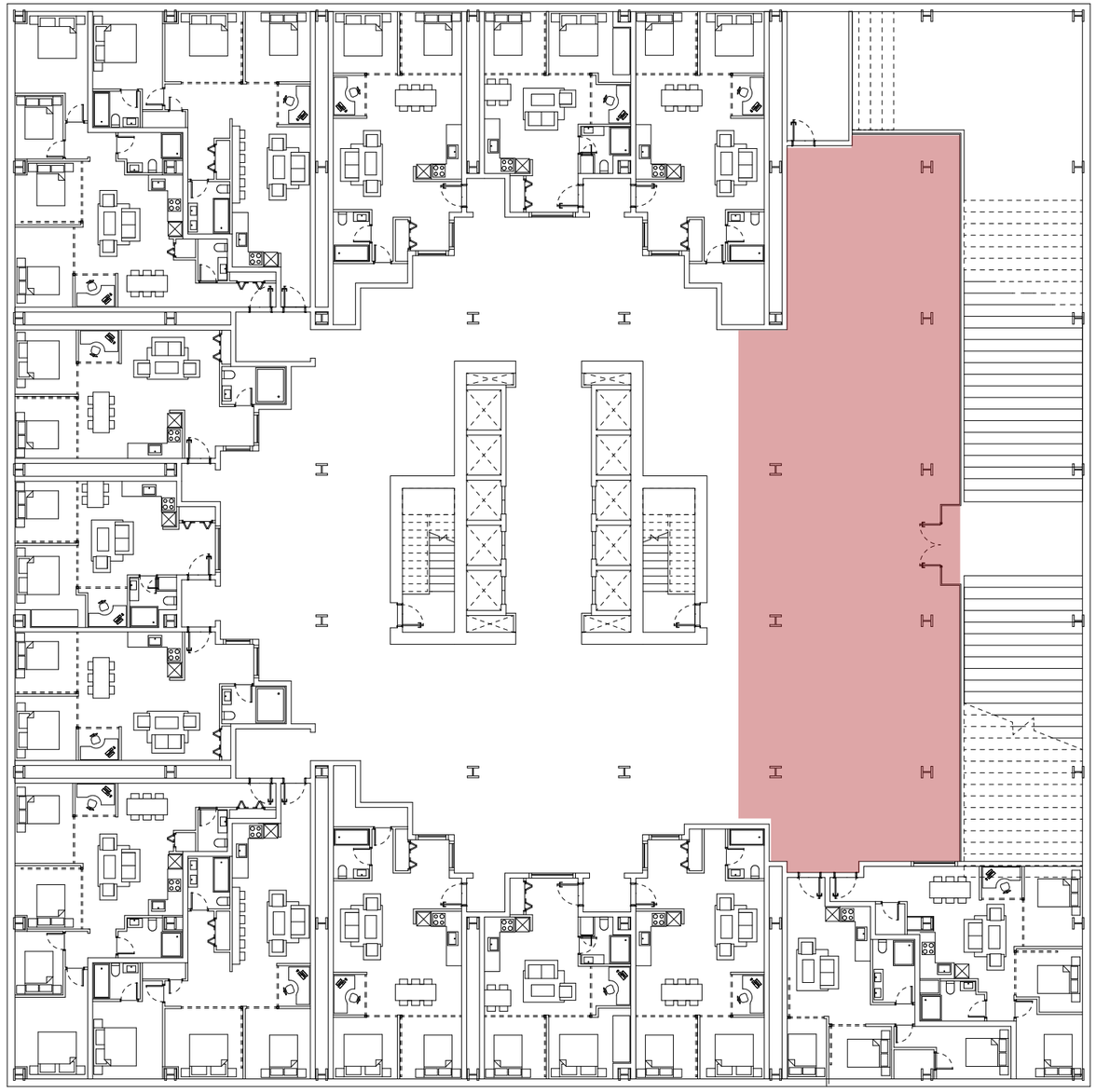


Figure 3.43.2. Rotated floor plans of a reoccurring residential floor with highlighted differing primary lounges.

Figure 3.44. Example of movable wall.

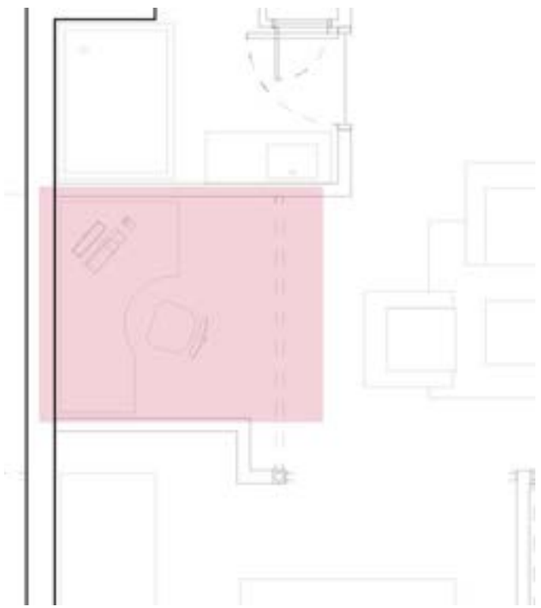


Figure 3.45. Diagram showing the possible wall locations and the amount of space possible for an in unit office.

These dynamic walls would enable tenants to wake up in the morning and instead of going out their bedroom door, they would simply push their bedroom wall out of the way. This would not only allow for sunlight to flow throughout the entire unit, but it would also enable you to have fluid spaces in each apartment.

A large percentage of workers are currently on hybrid or fully remote schedules. As a result, there are necessities for privacy and seclusion even inside your own living space. While each block of residential floors would offer sound isolated spaces for residents, a portion of people would want to remain in their unit. The implementation of kinetic partitions in each unit would heavily assist in this capacity. Residents would be able to move their walls into certain orientations to create rooms separated from the rest of the unit (Figure 3.45). Being able to create spaces wherever you may need them is a luxury that units often do not have. This means that each unit would be extremely spatially efficient. Adding the ability to customize rooms to the tenant's preference is not available in any other housing options.

In addition to the daylighting benefits of the movable partitions, other aspects of movement are being implemented. Light shelves would run across the entirety of the ceiling in each unit with outlets in the kitchen and foyer of each unit. These light shelves allow for soft even lighting throughout the day even in spaces that would exceed 30 or 40 feet from the nearest window. The level of control over the space that each tenant would have means each unit would be used to the highest possible level.

On the more technical level, each unit will have access to a wet wall on at least one side which would be shared with the neighboring unit. This wet wall will carry a majority of the plumbing and electrical components throughout the structure. Along with the electrical pathing through the wall, each unit will also be fitted with individual circuit breaker boxes. In terms of environmental conscientiousness, this building will be designed in a way that is full electric ready if code requirements change as expected in the following decades.

The unit designs in this proposal are simple, however, they contain several aspects which will make the standout amongst any other property. These spaces are where most tenants will spend a large portion of their time and in turn should be perfect for each and every use case. This flexibility in each personalized space is what makes this project so attractive to both renters and rentees.

Facade

There are few aspects of an architectural project that leave a lasting impression on people across an entire region. However, one of the most impactful areas of design, especially in a building the size of 200 Vesey Street, is the façade. The exterior of a building is the very first thing most people see when originally interacting with a project. Without an emphasis on the façade of a building, the interior becomes

seemingly inconsequential. 200 Vesey Street is a building that was constructed during the 1980s. It is in an Art Deco style, which was very practical for its time (Figure 3.46). However, cities are developing, and the tastes of the general population are as well. This proposal would not be thorough if it did not address the out of place, and severely out of date façade on this project.

200 Vesey Street is part of a complex of six buildings, four of which share the same general characteristics. Each of the four buildings possess stone clad facades with even and symmetrical window punchouts gridded all the way up the exteriors. However, the most recognizable aspect of this complex is their roof systems. The top of each one of the four in this complex is adorned with a different dark green geometrical shape. 200 Liberty Street is a truncated square pyramid, 225 Liberty Street is a round dome, 200 Vesey Street is a Pyramid, and 250 Vesey Street is a ziggurat (stepped pyramid) (Figure 3.47). These four buildings are extremely recognizable due to these building toppers and this aspect of 200 Vesey Street must remain. The goal of this proposal is not to redefine the characteristics that make New York City what New York City is. Instead, it is to reevaluate where the priorities lie in terms of office vacancies and housing inadequacies in the city. As a result, 200 Vesey Street will gain a modern face lift on the façade while still maintaining its continuity with the 3 neighboring structures.

To execute this face lift several different aspects of the building will be touched on. A majority of the renovations will be in order to have 200 Vesey Street match some of the neighboring buildings which have been constructed within the past ten years. One of the primary sources of inspiration for this is the new One World Trade Center located across the street from this proposal (Figure 3.48). The slim and uniform design of One World Trade gives off a new sleek and clean perspective. 200 Vesey Street on the other hand, has very heavy construction and includes stepping at its base which makes the building appear weighed down and old (Figure 3.49). As a result, the base of 200 Vesey Street will be flattened out to allow for the façade to have a straight vertical drop from the 52 floor down to the roof of the winter atrium (Figure 3.50). This modification will help streamline the structure from an outside perspective and give it a feeling of lightness.

Additionally, to conform to the modernality of One World Trade, along with the trends of most newly built towers, portions of the façade will be replaced with full glass curtain walls. The essence of the building should not change as to ruin the continuity with the rest of the

Figure 3.46. 200 Vesey Street.

Figure 3.47. 250 Vesey Street (front left), 200 Vesey Street (back left), 225 Liberty Street (center), and 200 Liberty Street (right).

Figure 3.48. One World Trade Center building.

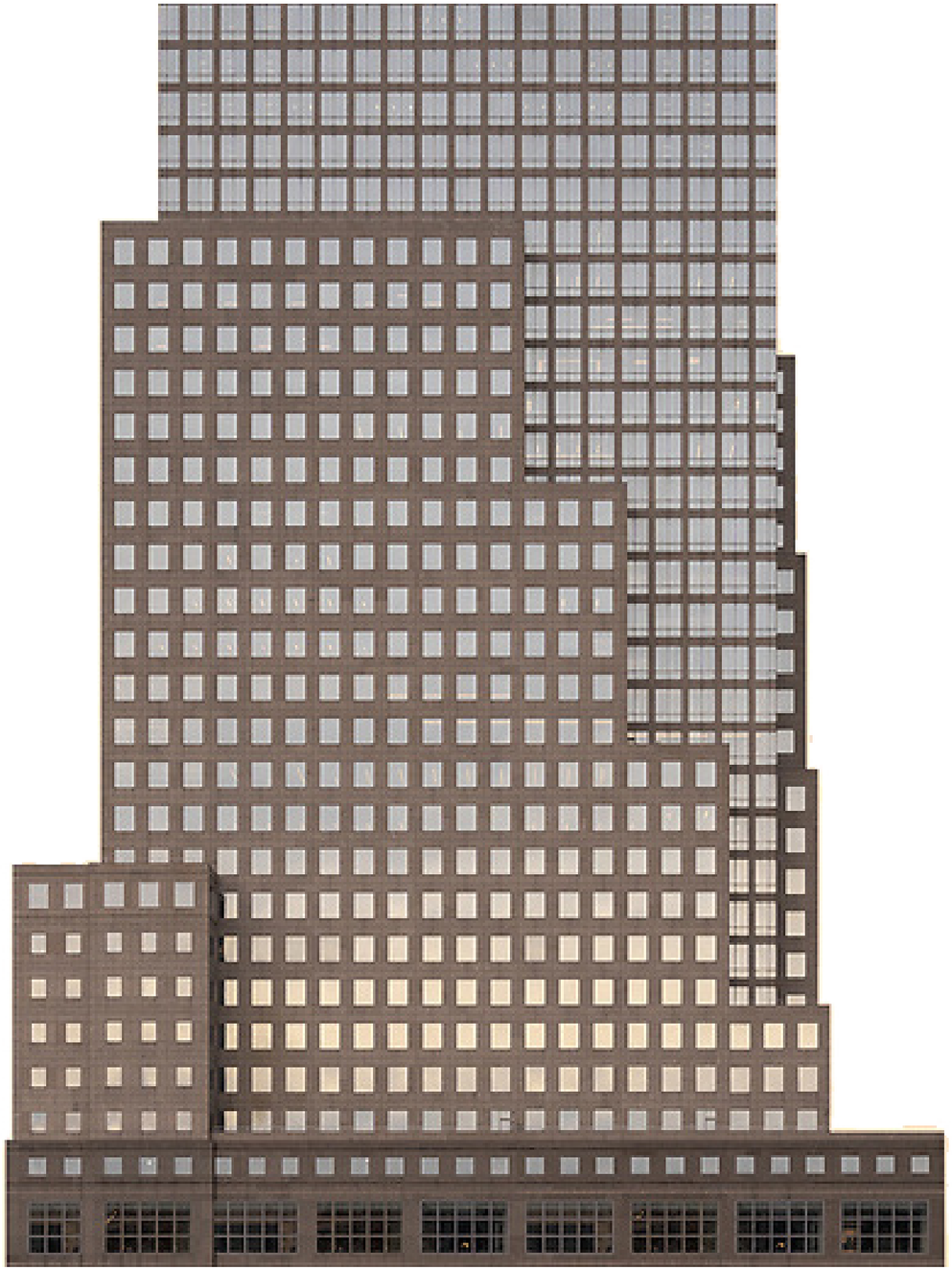


Figure 3.49. Existing base of 200 Vesey Street in elevation.

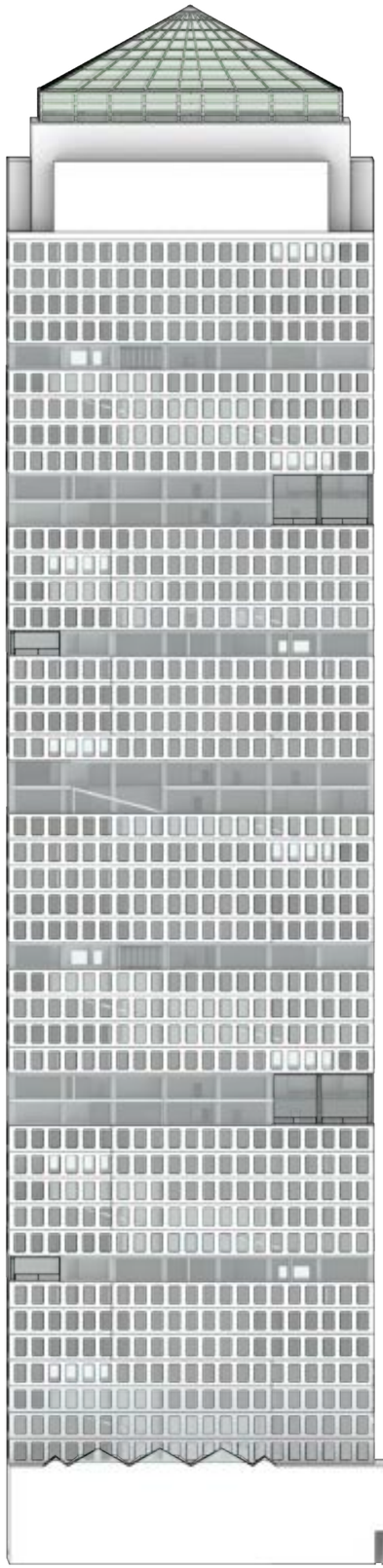


Figure 3.50. New Facade of 200 Vesey Street.

Figure 3.51. Example of the reflectivity gradient on each window (stretched for easier visibility).

building complex. Instead of replacing a large portion of the façade with glass, only minor aspects will be renovated. Each commercial floor from the base to the top will have each layer of its façade removed and replaced with one, seemingly continuous curtain wall. This wall will span from corner to corner on each side of the building. The primary goal of this substitution is to work towards the modern aspects of newer construction projects in the area, while still staying in the same realm of design as the original architects intended.

Due to the construction methods used when this building was built, the façade of this building was built in a modular fashion. This will benefit both the curtain wall implementation as well as the reconstruction of the base of the tower. Each window is part of a panel consisting of the window and the surrounding stone façade. Each aspect of the wall can be removed and replaced in one piece without necessary demolition and reconstruction of large areas of the building. This means that the renovation of the base and addition of curtain walls will not be very costly in terms of construction and will end up being fairly unobtrusive to the overall style of the building afterwards.

Along with adapting the base and commercial layers, the glass across the entire façade will be transformed with specific layers of film. The slow taper of One World Trade is a very modern and futuristic design that would be financially impossible to replicate at 200 Vesey Street. However, with layers of varying levels of reflective film placed on the windows, this design choice would be replicated. As the building rises, more and more reflective film will be placed on the windows (Figure 3.51). This will have multiple benefits to the overall design of this proposal.

Primarily, this gradation of reflectivity will allow for the building to seemingly blend in with the sky more and more as it moves upwards. This means, if you were standing at the base of the tower, it would appear as though the building was fading out of view the higher up you looked. This would have a similar effect to the One World Trade tower and would complement that project perfectly. Secondly, this film would prevent the top of the tower from receiving too much direct sunlight and heating up the structure during the summer months. On the other hand, a low reflectivity towards the base of the tower would allow for as much light to enter these spaces as possible. These regions of the building already receive much less direct sunlight than the upper floors due to shadows cast by neighboring buildings. Additionally, the

lower reflectivity towards the base means pedestrians, and more importantly drivers, will not be blinded by sunlight reflections as they pass by the site.

The final major façade change would take place on the roof. 200 Vesey Street's rooftop geometrical shape is a pyramid. Completely removing this roof design would take away the charm that the four-building complex has built up with new Yorkers over the past 40 years. As a result, instead of completely removing it, this shape will simply be replaced. Due to the color and location of this green roof top pyramid, it would make logical sense to replace this wasted mechanical space with a green house. By moving the mechanical building systems down 2 floors, over a 20,000 square foot footprint would be open to reutilization. This spot would be ideal for a public space or observation deck. The implementation of a greenhouse and botanical garden would be ideal for this area (Figure 3.52).

A botanical garden this high up would act as a beacon for anyone in the city and would bring in large amounts of outside visitors (Figure 3.53 & 3.54). This project would set the record for the highest elevated botanical garden in all five boroughs. Due to the new functionality of this space, the dark green sheet metal pyramid would need to be replaced. However, to stay consistent with the original design intentions, this roof would be replaced by another pyramid. This one would be made up of a series of reinforced green glass panes. This would be to not only benefit the functionality of growing plants, but also to mimic the 3 matching structures in the complex.

The last minor subtraction to the existing façade would be the punch out of a single corner on each commercial floor for terracing. These cutouts would spiral up the building to mimic the spiral notions created by the public staircase. These spaces would allow for occupants to get fresh air while still remaining safe due to large glass

Conclusion

The revitalization of our modern-day cities is a necessity that must occur sooner rather than later. The idea that office spaces will last forever and will never go out of style has been proven wrong and has left behind skeletal remains in its wake. These half empty buildings must be redefined as the new way forward for the further development of our cityscapes. This evolutional change in design can start with only one project and grow until it completely redefines what it means to live, work, and prosper inside of a city. 200 Vesey Street is a building

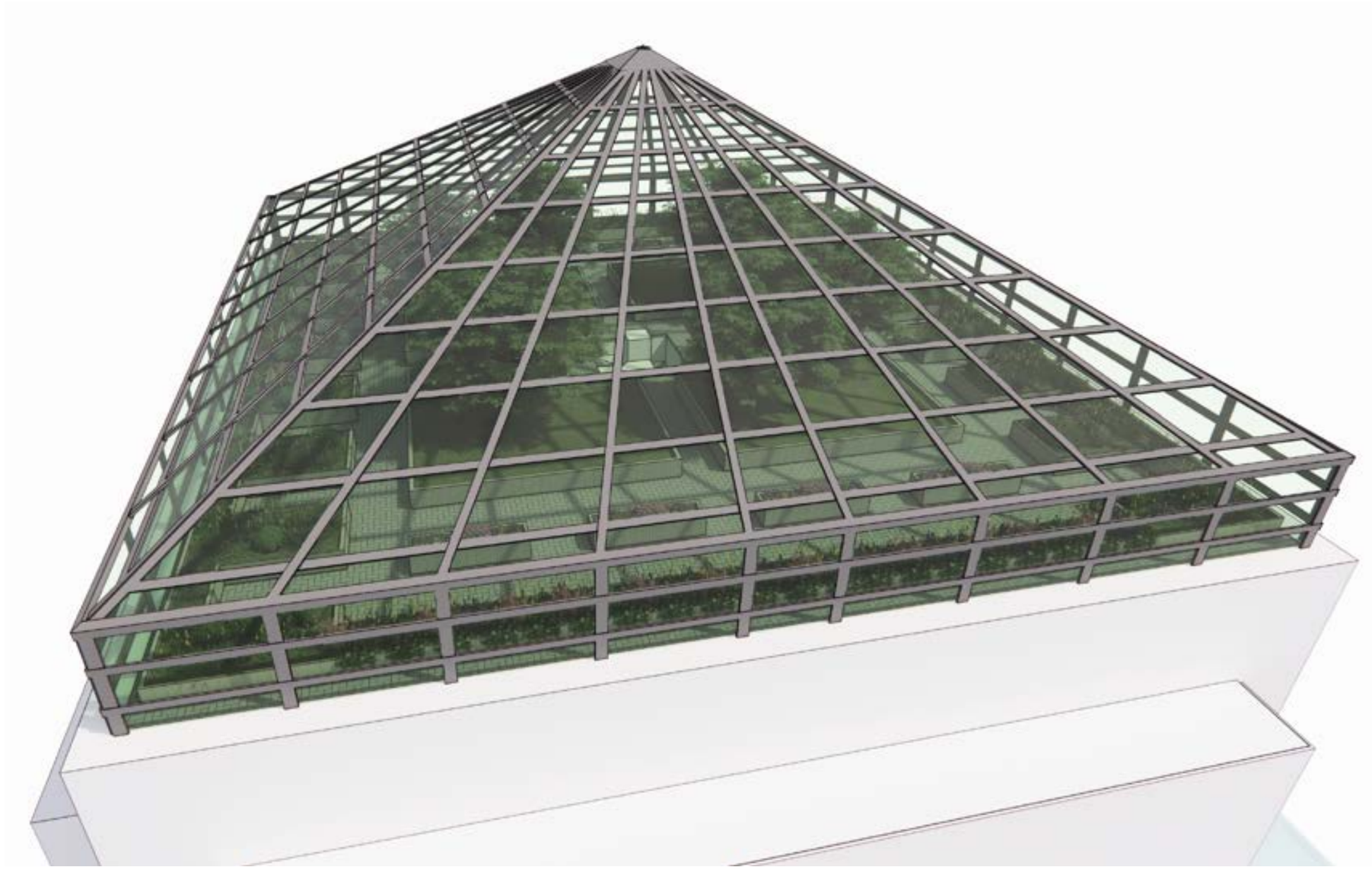


Figure 3.52. Axon view of the rooftop botanical garden.

Figure 3.53. Interior view of the botanical garden.

Figure 3.54. Interior view of the botanical garden.

located in downtown New York City. It is an office building in a prime location that desperately needs renovation. With the implementation of a series of design methods and systems, this building can overcome the large amounts of negative views it gets from most design firms looking for conversion possibilities.

The large floor plans of this site means that several aspects of its physical conversion are rather challenging. Daylighting from the façade to the center of the building is seemingly impossible. However, with a widescale daylighting solution, this building can be naturally lit on every inch of the site. Implementation of sectional floorplate subtraction along with window replacement will allow for a considerably greater amount of light to enter into the perimeter of the building. Pair this excess light with solutions such as light shelves and dynamic walls, and this project is able to move that light into every corner of the building regardless of window distance.

Due to the drastic programmatic shift of this project, the structural and MEP systems require small tweaks to ensure the safety and comfortability of occupants. Small modifications would need to be made to the structure to shore up spaces which will carry newly divided loads. This would include adding lateral bracing and stiffeners to the existing structural columns. The MEP reorganization of the building will primarily take place in the ceiling of each floor. Due to the change in program, a large portion of the ceiling height is available to run all aspects of the mechanical systems completely out of view.

While the physical aspects of conversion are crucial in the longevity and functionality of a project, the spaces that make a considerable difference to the end users are the experiential aspects. This proposal has a heavy focus on the social aspects of living and moving through a city. There are multiple large scale design implementations that lean on the importance of communication and connectivity. Creating multiple layers of public spaces at different levels of public versus private are a large part of this design project. Creating areas where the residents can interact with one another in a seamless and effortless manner will in turn make these spaces attractive to renters as well as outsiders. Large portions of the building have also been dedicated to the public. Spaces open to anyone in the city to come in and experience a wide assortment of amenities and activities. These spaces would act as the incentives for people to come into the space and connect with each other and neighbors for a more cohesive community.

The primary goal of this proposal is to develop a large supply of housing for New York City's population. As a result, the design of residential floors and individual units was of the utmost importance. The unit's range in size and shape, however, each space contains very high levels of modifiability. Each unit has a series of kinetic walls which allow the tenant to seamlessly transform their unit into whatever purpose they need it to serve in that instant. This not only allows for a wealth of natural daylighting into each space, but

also allows for layers of privacy to be created in different regions of each individual unit. The spaces that occupants would be renting are areas of the building where they will be spending a majority of their time. As a result, the development of these spaces was crucial to the success of this proposal.

The final major focus of design during the procurement of this proposal was a focus on the façade. The exterior of the existing 200 Vesey Street is old and outdated. Without a refresh, this building would fall into the past. Aiming towards a focus on modernality, large horizontal portions of glass would be implemented at various points along the façade of the building. These additions would add to the effects layered on top of each window giving the building a reflectivity gradient traveling upwards. Giving the building an increase in environmental efficiency as well as mimicking the taper possessed by One World Trade. This structure will look much more modern and sleeker. To decrease the heaviness the building carried, portions of the base would be subtracted along with aspects of each commercial floor to form terraces. Finally, the most recognizable portion of this existing building would keep all its characteristics while still being converted into a city accessible botanical garden.

All of the design testing being carried out on 200 Vesey Street will create a structure which not only redefines the meaning of housing but will redefine the meaning of a city. Having the ability to place entire city blocks into one singular building will allow for the revitalization of this entire region of the city. This proposal is designed to be replicable inside of any office building ranging from a 3-story project all the way up to city limits. With a proposal such as this one, the possibilities are endless for the number of opportunities available inside one empty building. Office spaces have left a lot behind, but with those pieces, a new typology of building can emerge.

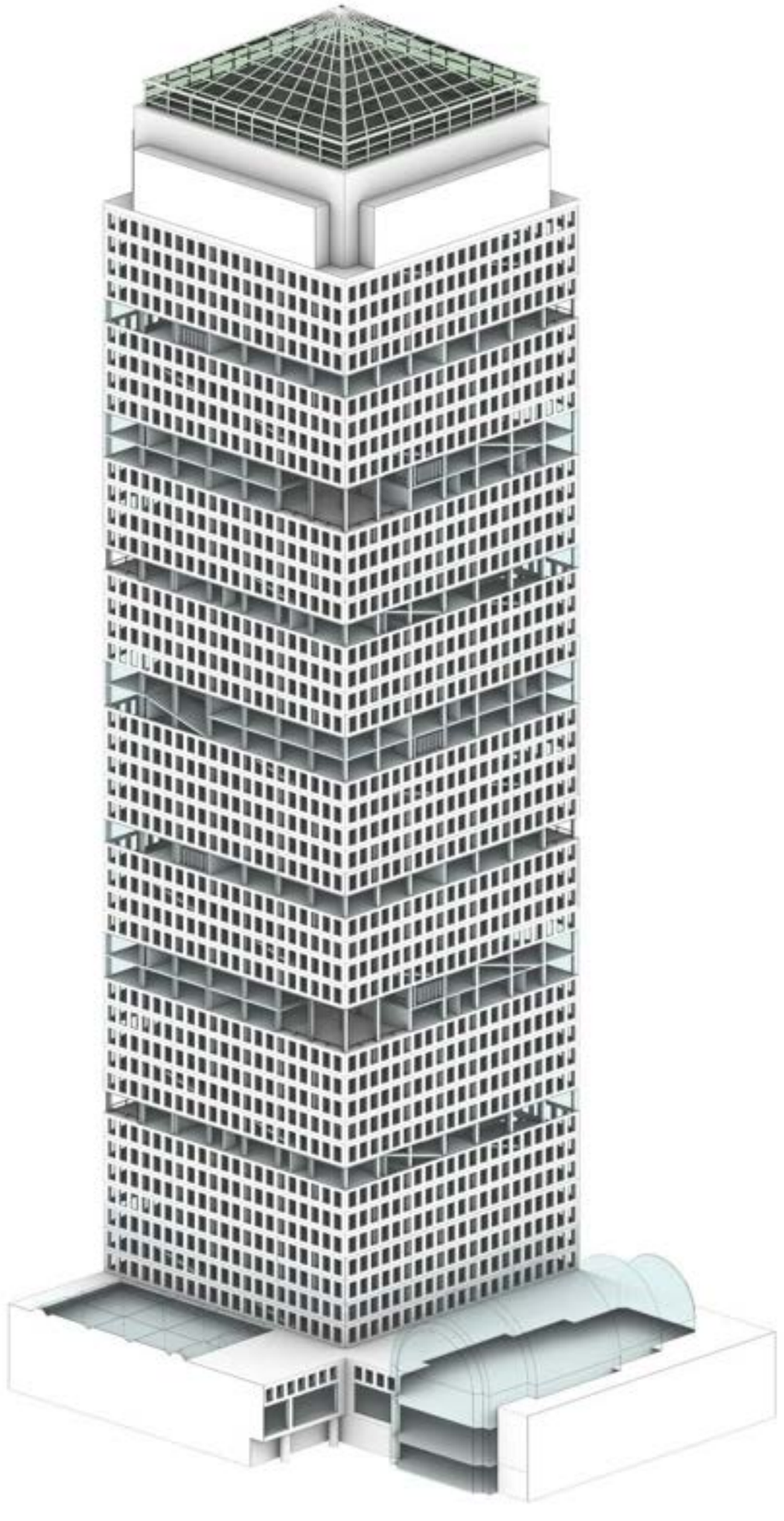


Figure 3.55. Overall axon of 200 Vesey Street proposal.

CHAPTER 4

Outcomes

Breaking down the culmination of each proposed design test and how they interact with on another to create space

Introduction

Not one individual solution would have the ability to completely solve the issues of office conversions. However, with the combined functionality of multiple different aspects of design, several solutions can each work in parallel to achieve a level of functionality that can change office spaces forever. This proposal leans on the implementation of multiple different aspects of design to create a solution which could be replicated and placed inside any urban space. Creating a group of solutions that can be replicated with ease allows for proposals such as this one to be slightly adapted to fit into a specific building but would primarily be instances of drag and drop. The integration of each design test will work in unison to create spaces that are more functional, and more efficient than the existing underutilized office spaces scattered across our urban landscapes.

Physical Aspects

An analysis of the functions and impacts of each test and how they play into the experiences and redevelopment of these spaces is critical. Breaking down the importances of each individual piece and how it plays into the bigger picture of conversion is the primary focus of this entire proposal. The two main focuses, from a design point of view, revolved around the idea of physical and experiential interventions. Each of these plays a pivotal role in the functionality and justifications behind this building redevelopment.

The physical interventions proposed would work seamlessly behind the scenes to transform this building from a functional office building into a hyper efficient mixed-use development. The most important aspect in the category of physical design development would be the daylighting solutions. The implementations proposed would greatly impact the quality of life of residents and pedestrians and would seamlessly integrate with the other proposed physical solutions. The most notable congruently running solutions would be the mechanical, electrical, and plumbing (MEP) design tests. The daylighting solutions and MEP solutions would be running physically parallel to each other while each providing the space with a physical production of light, water, electricity, and air circulation.

The MEP re-organizational aspects of design would all lay seamlessly into the ceiling of every floor, thus keeping necessary building functionality running smoothly while still keeping these systems hidden away. These design tests would keep the entire building running smoothly in regard to water supply and return, air conditioning and heating supply and return, and electrical reliability. These MEP aspects would be very robust to ensure comfortability standards remain high, while still staying out of eyesight so as to not ruin the experiential relationships people would develop within these spaces.

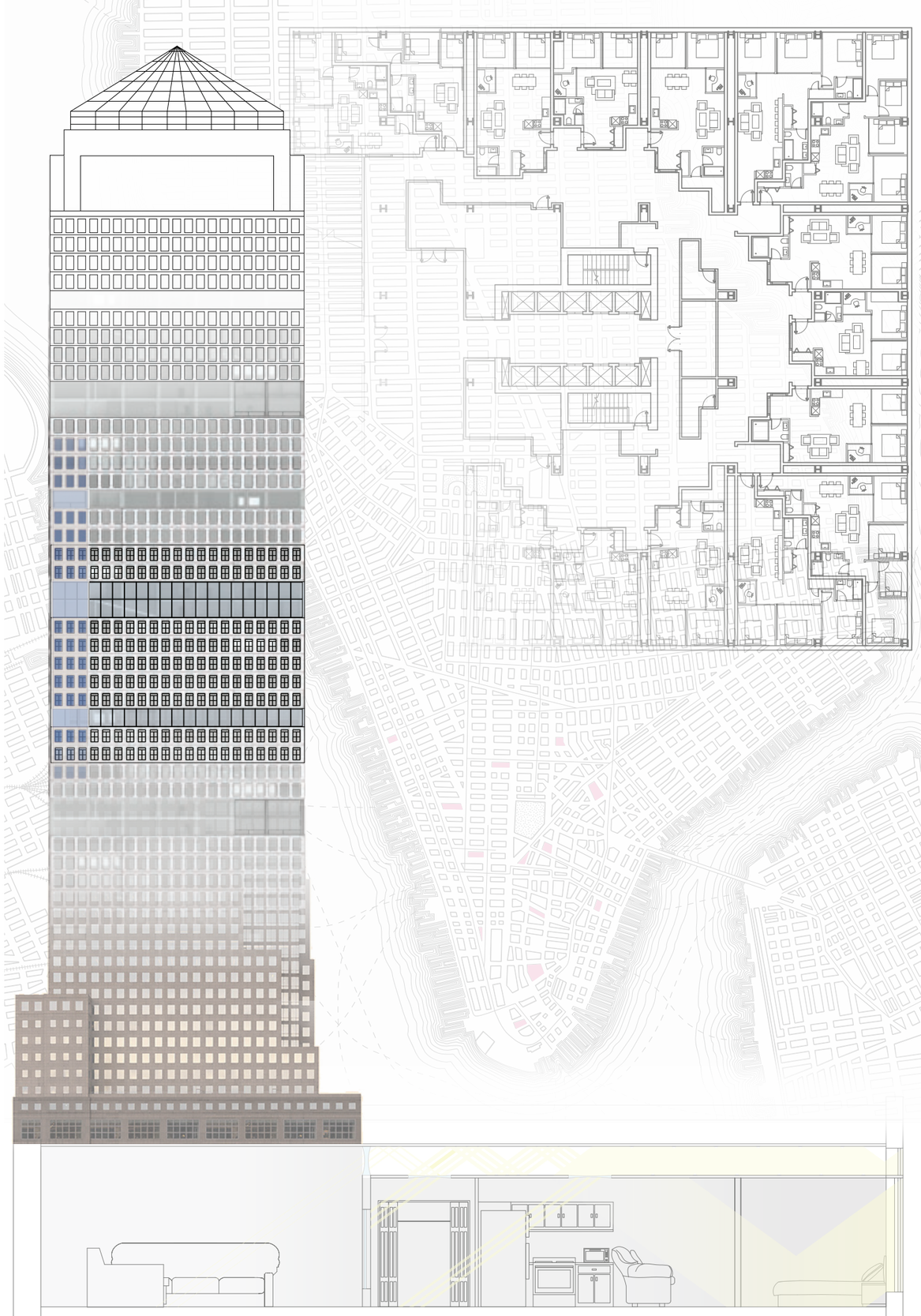


Figure 4.0. Composite image depicting entirety of the proposal scope

Another critical piece of infrastructure, which would also be out of sight, would be the structural shoring of these spaces. The re-engineered structure would support each of the physical integrations proposed in this design while also ensuring the safety and prosperity of each occupant in this building. These spaces would remain safe and sturdy while providing each of the physically necessary amenities for prolonged satisfaction in each area of focus.

The implementation of each physical design intervention would require a considerable amount of organizational focus. However, with the tests in this proposal, this building would easily be converted from a functional office building into a thriving and attractive mixed-use space. It would allow for proposals such as this one to redefine what this typology of building can achieve and could redefine what it means to live, work, and interact inside of an old office building.

Experiential Aspects

The aspect which sets this proposal apart from any other conversion proposal is the experiential interactions of every occupant inside the building. The way in which a resident can move throughout the spaces is a large focus in the justification for a proposal of this scale. The ability to redefine what it means to exist in a space that is designed around the user is not necessarily unique. However, is rarely proposed in situations similar to this one with such a large impact on the society of a cityscape. As a result, a large focus was placed on the perspective of a possible resident as they move through the proposed spaces.

Breaking down and understanding the different levels of interaction between the resident and the proposed experiential spaces would only be achieved by moving through the spaces as they would. A breakdown of a typical day for a resident would achieve this intimate level of analysis which would heavily argue the aspects being proposed. This analytical focus has resulted in the production of a storyline of a possible resident moving throughout the building on a typical day. She interacts with multiple residential and commercial floors and uses multiple different amenities and experience driven design aspects (Figure 4.1). This theoretical resident shows the true possibilities that can be achieved in a building where an entire city block is consolidated into one structure and all of the benefits that come along with it.

The breakdown starts with the resident waking up inside her unit and moving her bedroom wall to allow her, and sunlight, to reach her living room (Figure 4.2). After she prepares for her day, she heads out into the hallway where she bumps into her neighbor in the more private residential lounge (Figure 4.3). Here they have coffee together and discuss their plans for the day before she gets a notification that a package was delivered to her. This resident then goes into the mail room to get her box and then heads through the lobby to head upstairs (Figure 4.4 & 4.5). She then takes a quick stop to ensure her electric bike is charging in the bike room then walks over to a noise isolated work-from-home space (Figure 4.6). Here she sits down and works for a majority of the morning and afternoon since she no longer has to commute to her office (Figure 4.7).

Once work has concluded, this resident moves upstairs onto the nearest commercial floor and interacts with some of the residents and pedestrians lounging here (Figure 4.8). After this she attends a public workout class open to anyone in the city (Figure 4.9). The resident decides to go check on her plants in the nursery and heads over to the terrace located on this commercial floor (Figure 4.10). Once her plants are taken care of, she goes head to meet a friend from uptown but runs into her neighbor from this morning and they get to catch up (Figure 4.11). After that quick interaction she goes to one of the bars and meets her friend who does not live in the building (Figure 4.12). After drinks they head to the second level of the commercial floor and have dinner together and catch-up (Figure 4.13). Once their meal is complete, they head into the art gallery and then relax on the balcony overlooking the city before they say their goodbye and each head home (Figure 4.14).

This experiential analysis is a breakdown of what each day in the life of a resident could look like. The perspectives of each room dedicated to both residents and pedestrians show the wide range of possibilities that these spaces can provide. The redefining of the spaces, but also just how people interact with a building of this scale, is important in this scenario. Providing multiple specific amenities for just residents such as mail rooms, bike storage, and work-from-home spaces allows for a large amount of flexibility when it comes to bending to each residents' specific needs. Along with this, the commercial floors allow for social interaction that would normally never be possible without leaving your building. The integration of workout spaces, entertainment venues, and personal isolated regions allow for these spaces to appeal to not just residents but also pedestrians. These areas are designed to be open to the public to encourage interaction. The ability to interact with multiple people searching for multiple different experiences without ever having to leave a single structure allows for a level of convenience that could not be easily replicated anywhere else. The experiential design aspects of this building work hand in hand to both maintain privacy while also encouraging communal interaction and convenience.

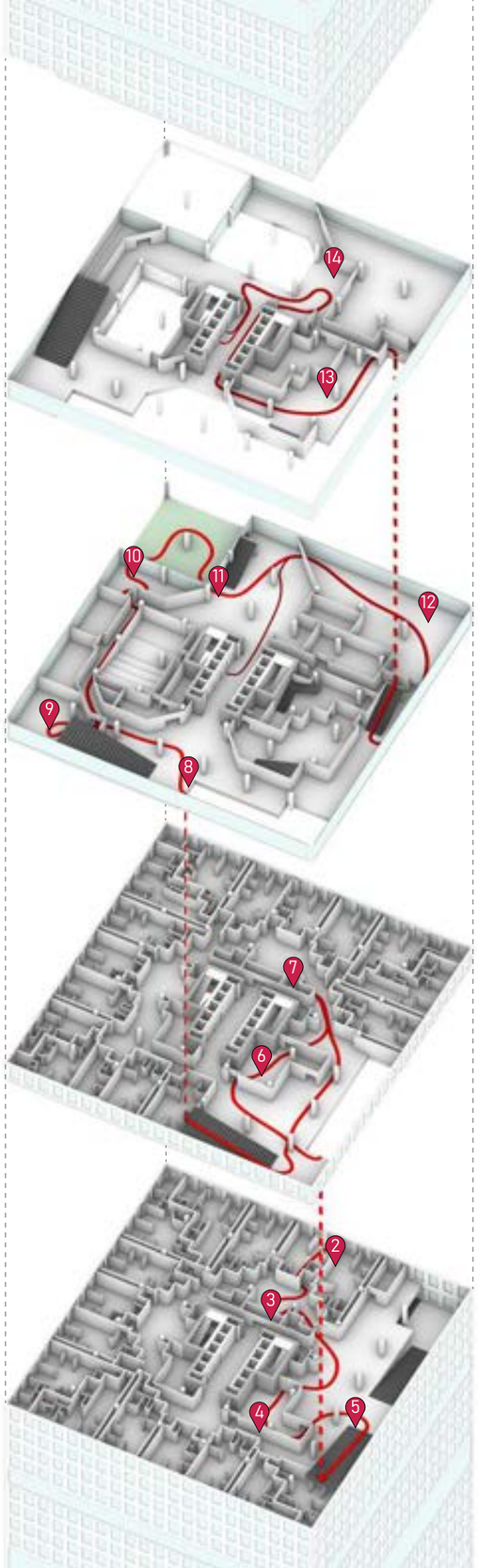


Figure 4.1. Overview of the resident focused analysis walk through of a typical day experiencing this proposal (pinned locations reflect figure positions).

Figure 4.2. The alarm goes off and Jane slowly gets up, opens her bedroom, and begins to get ready for the day.

Figure 4.3. She steps out of her apartment and her neighbor invites her to sit with him and enjoy a coffee while they each do today's connections and crossword mini.

Figure 4.4. As she finished her coffee she got a notification on her phone that her package arrived so she headed over to the mail room.

Figure 4.5. Jane then checks her watch and realizes she should probably log into work soon so she begins to head upstairs.

Figure 4.6. On her way she forgets whether or not she plugged her electric bike in last night so she checks the bike room and double checks.

Figure 4.7. Jane finally gets to her reserved work-from-home room and logs into work for all of her meetings scheduled for today.

Figure 4.8. Finally, work is over and she needs to get some frustration out since an intern messed up a project at work today, so she heads upstairs to the gym.

Figure 4.9. Jane's favorite instructor is teaching today so she participates in a group workout with some other people from a building down the street.

Figure 4.10. After her workout she re-hydrating when she remembers her plans could probably use some water too so she heads over to the nursery and checks in on her flowers.

Figure 4.11. After spending some time on the terrace she hears some piano music and goes into the lounge to check it out and runs into her neighbor from this morning.

Figure 4.12. She then gets a text from her friend Katie that she stopped by so Jane goes and meets her for a drink at the karaoke bar

Figure 4.13. It had been so long since Jane had seen Katie so they decide to sit down for a nice meal on the balcony of the restaurant upstairs.

Figure 4.14. Jane and Katie sit down for some espresso before they say their goodbyes since Katie has to walk all the way uptown to get home.

Financial Aspects

The financial implications when considering any project are at the forefront of every owner and developer's mind. While working through this proposal, a strong focus was placed on the financial justifications of a project such as this one. The primary reason why an office conversion would be necessary, from an owner's point of view, is due to the detrimental financial losses produced by an office building that does not have any tenants. As a result, for a conversion to be financially viable, it would have to produce income that significantly offsets the financial losses currently existing inside empty office spaces.

Multiple areas of focus were taken into consideration when planning out program and circulation of these floors to ensure financial justification is present. Firstly, the city of New York has a housing program named Housing NY which is in place to help increase the number of housing units available to New York City residents.[4.1] Possible stipends and subsidies could be available for projects like this which would be used to offset the high cost of renovation in buildings of this scale. Additionally, if a percentage of affordable housing units are supplied in this design, another percentage of cost could be provided by the city to allow for lower income renters to occupy these spaces.[4.2] Each of these would provide a portion of financial compensation before construction even begins which would lighten the weight of conversion.

From the point of view of construction, the next area of financial awareness plays a role. Several design aspects were implemented solely to reduce construction costs. A new building of this scale would be exponentially more expensive to build, but by designing in a way to take advantage of existing conditions, these costs could be dramatically reduced. By keeping floorplates and façade pieces in relatively the same place, a large amount of cost cutting would take effect. Since the façade was modularly constructed, panels and materials would be reused and recycled to make the slight modifications necessary to implement this proposal. Additionally, the interior floor plates, structure, and core could all remain intact with only slight modifications, thus dropping construction costs even more. Finally, with the implementation of several environmental construction aspects both in design and organization of the process, more subsidies could be provided by the state. These environmental aspects would primarily revolve around LEED, PHIAS, and WELL design strategies which are supported and encouraged by the city of New York. Each of these coordinated before and during construction would allow for a considerably lower bill at the end of conversion.

The final consideration made when designing this space with finances in mind relates to the program and rentable area internally. The residential spaces and associated amenities are designed in a way to justify a possible higher rent payment for certain floors. The number of opportunities and amenities provided all in one single building would make this structure considerably more attractive to renters. This would in turn justify a higher rent compared to equally sized spaces in other areas of the city thus increasing the owner's income. Additionally, the implementation of mixed used on multiple different levels of the building (instead of just the standard ground floor) allows for a larger amount of commercial lease income. These spaces would be large areas able to be rented out to hundreds of separate companies who would all be occupying rentable space.

The financial implications of a conversion such as this one are at the forefront of most people's minds. However, with the strategies implemented by this proposal, as well as the city of New York, it is feasible a design such as this would be practical. While being possible, a focus would also need to be placed on the importance of experience and the implied financial offset provided by it. No price can necessarily be placed on the level of experience someone is willing to pay for. However, the financial kickback of spaces designed in a way to place experience at the forefront of thought, will have a large impact in offsetting any negative financial concerns.

The integration of each design test inside of one building is an extremely important factor when it comes to the feasibility of any project proposal. These designs prove to fit seamlessly together in both the physical, experiential, and financial views of success. This proposal blends each area of focus in different ways to ensure that this conversion can be as successful as possible without making any sacrifices. The construction of a project such as this one would have the potential to be placed in any urban hub around the world and simultaneously redefine what our cities look and feel like while redeveloping what our empty spaces can become.

Conclusion

The integration of each design test inside of one building is an extremely important factor when it comes to the feasibility of any project proposal. These designs prove to fit seamlessly together in both the physical, experiential, and financial views of success. This proposal blends each area of focus in different ways to ensure that this conversion can be as successful as possible without making any sacrifices. The construction of a project such as this one would have the potential to be placed in any urban hub around the world and simultaneously redefine what our cities look and feel like while redeveloping what our empty spaces can become.

[4.1] Alicia Glen. Housing New York - A Five-Borough, Ten-Year Plan. New York City: The City of New York, 2014.

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CHAPTER 5

Reflection

Breaking down the culmination of each proposed design test and how they each interact with one another.

Reflection

A proposal of this scale is something that will always be a work in progress and will always have space to grow. Certain levels of intricacy could be developed for years and still overlook certain aspects of design and method. As a result, an analysis of next steps in terms of the future of a proposal such as this one would be necessary in proving its legitimacy and possibilities moving forward.

This is an extremely important area of design and the discussion around office conversions post COVID will be a conversation for decades to come. As a result, more concrete research will likely come out in the future determining what percentage of office buildings are vacant in dense urban areas. This would not alter the necessity and effectiveness of this proposal but would lead to an increase or decrease in its implementation. Without a doubt, this proposal would still be very necessary for urban spaces simply due to its wide-reaching impact, but where this specific building could be placed would differ depending on future research. Due to this increase or decrease of availability, the process of possible individual floor interventions in terms of conversion instead of an entire building could be explored. Instead of reutilizing an entire office building, it would be thought provoking to determine what would be required for the reutilization of only a floor, or several floors, and how that could redetermine the functionality of a partially vacant office building.

Through analysis of this specific proposal there are also several aspects of design which could be explored further in the future. The integration between floor plates from a residential point of view would be a beneficial process. Researching the feasibility of having multi-level residential floors or units that span three or four separate floors would be very attractive to tenants that require larger amounts of space. This is a design possibility that with time could be very attractive to renters and visitors. This would however increase construction costs, which is another area which could be further developed.

The financial requirements of buildings at this scale are enormous and a deeper dive into the requirements for conversion from a cost point of view would be helpful in enforcing the justifiable nature of a conversion at this scale. There are not many publicly accessible records determining price and costs associated with buildings of this size so a considerable amount of research would have to be done. Additionally, the estimation of renovation costs plays a massive factor in this proposal so researching trends and discussing with experts could help close in on a specific target price for this stage of the project. With a stronger argument based around finances, it would be almost impossible to deny the conversions of these spaces.

These next steps along with the intricacies of design tests proposed, show the difficulty with a conversion at this scale. This proposal could lead to career long research in the area of conversion simply due to the extensive number of decisions that need to be made.

However, the details of this proposal can act as a framework for discussion surrounding what the ‘fix-all’ solution can be for the future. Our cities need a form of intervention, and the existing office vacancies are providing an ideal opportunity to redefine our urban environments. No singular solution will be perfect, but this proposal can encourage a conversation around the positive implications of office conversions in some of our densest urban regions.

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Figure 1.8 Edi Chen, "Midtown and Downtown Skyscrapers of New York Cityscape View from Rooftop Rockefeller Center," Adobe Stock, 10 October 2023.

Figure 1.9 jjfarq, "Cityscape of Financial District of New York," Adobe Stock, 10 October 2023.

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