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Challenges and Benefits of Integrating Public Space into Tall Buildings



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Abstract

The integration of publicly accessible amenities into tall buildings is a desirable approach to expand the use of a given building to ever-broader segments of the surrounding urban populations – creating a sense of community that centers on the public amenity and dispelling the notion that the building is devoted to a privileged few. Space typologies including restaurants, viewing platforms, and sky gardens are common. Dedicated, segregated circulation systems for visitor access, service access, and egress, may be required depending on the size and nature of the amenity, augmenting core requirements of the building as a whole. Rafael Viñoly will elaborate on this theme, including varied planning approval processes and agency requirements worldwide, with a focus on three examples: Samsung Jongno Tower in Seoul, South Korea; Mahler 4 in Amsterdam, Netherlands; and 20 Fenchurch Street in London, United Kingdom.

Keywords: Community, egress, green roofs, public space, sky garden, vertical transportation

If skyscrapers are indeed “built equations,” it can be fairly said that public amenities are often left out of the calculus. Though it is a logic of pure economic interest – the need to maximize the potential of a piece of real estate – that propels skyscrapers skywards, there is an obvious public interest in holding these majestic structures to account; that is, demanding that they somehow contribute to the public realm. Though it is common to treat these as oppositional goals – profit and public benefit – our experience and that of other socially conscious architects and developers of tall buildings suggest otherwise. Here we present several designs and built projects that definitively integrate the public realm into tall buildings, invigorating a sense of citizenship both in their occupants, and in the design ambitions of future tall buildings.

A Philosophy of Tall Buildings as Public Assets

Amid all of the discussion about the technical engineering and acrobatics needed to pass zoning or code regulations, a fundamental aspect of the relationship between tall buildings and their public has been omitted; how does a massive capital investment in a massive structure support an enlightened approach to density that elevates the shared experience of cities? We hardly ask these questions because the basic civics education we receive in most parts of the world lacks any kind of instruction on the definition, role and importance of public space. As citizens, consequently, we are generally ill-equipped to deal with the complexities and the implications, both positive and negative, of density.

In many jurisdictions, the form and massing of tall buildings are governed by a system of arcane limitations that seem to have been devised primarily to curtail litigation or overwrought design, and have very little to say about the quality of urban space. The public realm usually suffers as a result.

All of the projects depicted here represent an attempt to advance the dialogue between tall buildings and their public in order to enhance the public realm. They are informed by a belief that urban space is more than a blank plaza that happens to surround a tall building. There is an interaction, a conversation, an integration that needs to happen if these buildings are ever to be deserving of the cities they inhabit.

While it may take generations to thoroughly educate the citizenry about the value of public space and how it can be integrated with large, capital-intensive constructions that are inevitably yoked to the bottom line, the relatively short-term process of designing and constructing tall buildings that address these issues today, should set examples that drive us towards that future enlightenment.

Samsung Jongno Tower Tower, 1999, Seoul, South Korea

In 1994, Samsung Corporation halted construction on a 20-story tower that was planned as a vertical shopping mall and launched a competition that would salvage the tower's frame and floor slabs and create a mixed-use facility incorporating cultural, educational and retail space.

The architects focused on the context of the site at a major intersection in downtown Seoul. The location inspired a radical reinterpretation of the program and its physical constraints. The initial proposal expanded the existing steel frame and tripled the structure's height. Although, as finally built, the tower is only 17 stories taller than the original structure, this departure from the client's expectations helped RVA secure the commission.

The existing building's triangular plan was oriented toward the center of the city by the convex curve of its longest façade, set back from the prime intersection and leaving approximately one-third of its total area unbuilt. Stair and elevator cores at the corners constituted the building's circulation system (see Figure 1).



Figure 1. Samsung Jongno Tower in Seoul, South Korea (Source: Rafael Viñoly Architects)

The design centered on three primary massing interventions: first, the vertical extension of the three cores to support a two-story volume containing restaurants and a night club; second, the addition of a cantilevered steel-frame cornice at the top of the original building, extending over the unbuilt corner of the site and sheltering an open public plaza; finally, the addition of a separate volume above the new cornice for the corporation's administrative offices. The addition's flat façade distinguishes it from the curved façade of the original structure.

The tower's distinctive enclosure, which features exposed steel girders and large-scale aluminum louvers, is noteworthy for an innovative structural glass curtain wall system. The steel-bezel technique for joining sheets of glass makes possible a transparent façade whose weight is carried by vertical glass blades reinforced only by delicate stainless steel rods.

The building is integrated into the city below grade, with links to the subway system through an underground retail plaza.

World Trade Center Competition, 2002, New York, USA

This project, while unrealized, nevertheless makes the argument for the public realm in tall building design in a significant way and presages several key projects that subsequently executed on this idea, albeit at a smaller scale.

In our design, the World Trade Center is reborn as the World Cultural Center. Built above and around the footprints of the World Trade Center towers, two open latticework structures create a "site" for development of the World Cultural Center (see Figure 2 and 3). The global program of the World Cultural Center would include: the Memorial 9/11 Interpretative Museum, Performing Arts Center, International Conference Center, an amphitheater, viewing platforms and public facilities for exploration and discovery in the Arts and Sciences.

Within the soaring structures, distinctive buildings designed by different architects complete a program of innovative cultural facilities and memorial spaces, while reconstructing the skyline with new icons for the public realm. The Towers emerge from



Figure 2. World Cultural Center rendering (Source: Rafael Viñoly Architects)

REMEMBER

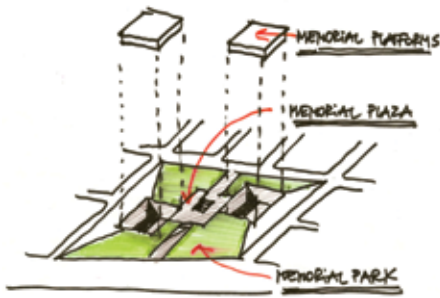


Figure 3. World Cultural Center site plan (Source: Rafael Viñoly Architects)

large glass reflecting pools that bring natural light to the retail and transit concourse located below grade.

The Transportation Center occupies the memorable space between the towers. Retail space is located at both the concourse and street levels. Public buildings such as galleries, exhibition halls and gymnasiums complete the program.

The overriding premise of the proposal was to give the space in the sky to the people. The lattice work towers 'heal' the skyline, and New York's horizontal development grid becomes vertical. This verticality is then given to buildings of culture, education and remembrance designed by different architects, rather than to commerce. (The commercial brief is resolved through a series of perimeter buildings). The result would have been the creation of a truly public realm of unprecedented scale in the sky.

Mahler 4, Amsterdam, Netherlands, 2005

Amsterdam's new Zuidas district, an ambitious urban regeneration project, lies approximately halfway between the Amsterdam city center to the north and the Schiphol airport to the southwest, and between the Amstel and the Schinkel rivers to the east and west, respectively. Zuidas was master-planned as what the city calls a "business, cultural and residential center with

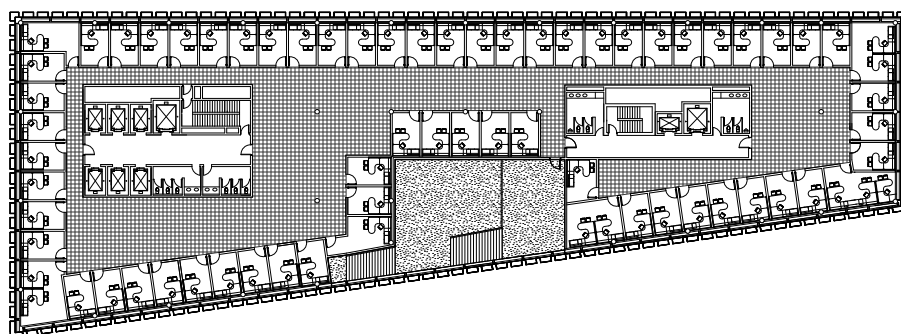


Figure 4. Mahler 4, Amsterdam, typical floor plan (Source: Rafael Viñoly Architects)



Figure 5. Mahler 4, Amsterdam, exterior (Source: Rafael Viñoly Architects)

international allure," and the district's location, centered on the busy Amsterdam Zuid rail station, means that developers consider it a very attractive market.

Within Zuidas, the Mahler 4 complex – named for its location on the road Gustav Mahlerlaan – is a mixed-use project that creates some 1.7 million square feet (160,000 square meters) of office space (see Figure 4), 160,000 square feet (15,000 square meters) of retail, 200 apartments, and nearly 2,000 parking spaces. In this cohesive, nine-building assemblage, with each structure linked by an underground parking garage and facilities at street level, the buildings are all designed by internationally-recognized architecture firms in a collaborative effort: teams from the firms met at an initial kick-off workshop to explore the numerous possibilities of the master plan and to ensure that the relationship between the buildings was as fluid as possible.

Within the Mahler 4 complex, therefore, each building is designed to combine the elements of medium-rise, low-rise, and high-rise buildings to create various layers of architecture. There are

two high-rise buildings in the first phase, both containing over 323,000 square feet (30,000 square meters) of floor space and both over 295 feet (90 meters) high. The 24-story, 312-foot (95-meter) tall tower by the author's firm was the first to be constructed in the Mahler 4 complex, and was also the firm's first built project in Europe.

As is common practice with large-scale developments in the Netherlands, the municipal government takes the initiative to develop a suitable area within its jurisdiction. The local planning department then develops a master plan of the site, which in the case of Mahler 4 was developed to a very high level of resolution. Not only were plot envelopes and height restrictions specified, but a vertical zoning envelope was also imposed, outlining the space designated for specific volumes, and a program was set for materials and transparency ratios.

Building masses in the Mahler 4 complex were derived by subtracting volumes from the overall development envelope in order to create interstitial spaces between the structures, beginning with the pedestrian path that cuts diagonally east-west through the development. A series of subsequent subtractions was designed to rearrange the traditional base, shaft, and crown structure of typical high-rise buildings, thus yielding a more dynamic urban composition.

The design sought to reinvent this tripartite structure altogether by unifying the three volumes into one singular, dynamic composition, a goal accomplished through the exterior stair and the vertical aluminum mullions (see Figure 5). Instead of conforming to previous typologies by

rote, the building takes on a dynamic public role from the street by encouraging a less linear process of looking at it: the exterior open stair moves the eye around the building. The development of the open stair offers the possibility of exterior spaces that can be used as gardens and outdoor expansions at each level.

Subtracting a narrow, spiral volume from the building mass that animates each elevation, an exterior fire escape wraps the structure. This staircase provides a fair-weather alternative to the two elevator cores and creates exterior spaces that office workers can use as informal gathering spaces, or that can be programmed as small gardens and outdoor plazas. A small terrace set into the south elevation of the fourth floor provides one such elevated "pocket parks." The staircase is designed to provide access to a possible rooftop public terrace on the sixth floor, or to a private terrace on the 16th floor.

20 Fenchurch St., London, UK, 2014

This 160-meter office tower provides the City of London with a new landmark that is unique, not by being self-referential, but because it provides a genuinely new opportunity to elevate the public realm to the domain of the most coveted office space, space which itself makes this contribution possible.

The building's shape emerges as a physical extension of the outcrop of the natural topography of this particular site near the River Thames (see Figure 6). Its sculptural form reflects the weaving character of the surrounding

streets. It also helps to define the south with a new pocket park. This park forms the culmination of the path of the Art Walk next to Plantation Place. The listed buildings on Eastcheap are "lined" by a new structure that obscures their undistinguished backs to provide a planted edge that opens on to a public café.

The question arises as to where the public realm resides in the City: where is the space for the citizen and what space is the proper preserve of the few? This building achieves a remarkable feat which is not repeated anywhere else in a private development in the City. Space equivalent to the area of the site is given over to public access. It is the best space at ground level, where people walk, and at the top of the building, where many aspire to be (see Figure 7).

The experience of going to the top of a tall structure has always been a natural human desire. People wish to be able to point out landmarks, where they live or work. But despite the emerging number of tall buildings in the City, few have real public access. This is illustrated by the fact that, when access is granted once a year to a building like 30 St. Mary Axe, people are prepared to queue for hours to get that experience. Similarly, parts of buildings like Tower 42 are accessible, but only if you buy a drink or a meal.

Access to 20 Fenchurch Street is free. The garden at the top of the building is accessible to all. London is famous for its countless green spaces. But no borough can boast a real garden at the top of a tall building, with London laid out in front of it.

Design is an iterative process: one seldom comes up with the right solution immediately; it is the result of a continuous re-evaluation of the problem and revision of the design. It is also an interactive process between the architect and all the other stakeholders in the project. They each have their own views and bring a particular perspective to the design. The result is a process which adds successive layers of complexity and richness to the overall result. The project team was fortunate to have a wide group of consultees on 20 Fenchurch Street, including the Planning Department at the City of London, Commission for Architecture and the Built Environment (CABE), the GLA (Greater London Authority) and English Heritage, as well as local heritage groups, individuals and neighbors.

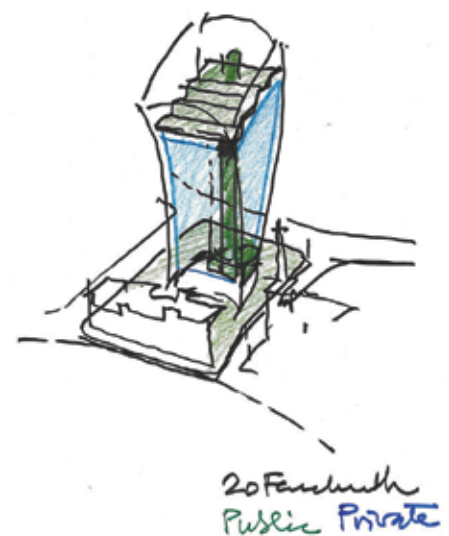


Figure 7. 20 Fenchurch, London, public / private space distribution (Source: Rafael Viñoly Architects)



Figure 6. 20 Fenchurch, London, exterior (Source: Rafael Viñoly Architects)



Figure 8. 20 Fenchurch, London, sky garden (Source: Rafael Viñoly Architects)

During the design evolution of this building, the form and size of the building varied considerably. But it is fair to say that the principles of the design intent remained constant. From the earliest models it has been possible to discern the attempts to create public space at the base of the building and to create a garden space at the top. The nature and size of these spaces have varied with the design development, but their existence has not.

Site / Ground Floor Organization

The ultimate design featured a self-contained lobby for the sky garden, located in the southwest corner. A separate Class A retail unit was placed in the southeast corner of the building, also accessed from the pocket park. This solution increases animation within the pocket park and provides a natural synergy with the retail accommodation in the Annex building, while providing a vibrant ground floor plane and a similar quantum of area with public access. The extra lobby for the sky garden and retail unit activate the pocket park with their associated pedestrian flows.

Design adjustments to the building footprint at street level and its position within the site, 2 meters to the south, resulted in a small reduction of 170 square meters to the pocket park. However, this space was regained in an increase of space in the sky garden of approximately 491 square meters, and a net gain of 390 square meters of public space.

The North Plaza extends the public realm to the entry of the building and establishes a new space along the Fenchurch Street entrance. The line of 10-meter-high trees in raised planters along the east and west define the space of the north plaza. The paving

material of the Fenchurch footpath extends access into the north plaza to the face of the building, connecting the plaza to the surrounding public realm.

There is an accessible walkway along the east and west sides of the lobby, which connects the North Plaza to the pocket park. This walkway is at the same level as the interior lobby floor and serves to connect the lobby, visually to the exterior public realm. There is a curved band of planting along the walkway within the public right-of-way. The planting provides wind mitigation for the building and negotiates the difference in levels between the walkway and public right-of-way, which slopes down along Rood and Philpot Lanes to the steps that lead up to the pocket park to the south.

Sky Garden

When visitors take the express elevator from the lobby in the northwest corner of the pocket park, they arrive on level 35 in the sky garden and are immediately greeted by striking views to the south across the River Thames. Level 35 is open in character, with varying density of hard and soft landscape creating the sense of an urban green in the sky (see Figure 8). There is a cafe/bar on level 35 along with movable chairs and tables, both for general and public use. The open area allows the flexibility to set up a variety of public gatherings. Beyond the southern fully glazed wall is an outdoor terrace to further bring the viewer and the view closer.

Generous stepped walkways ascend along either side of the space, lined with seating areas at the landings, which lead the visitor up the sloping garden to the north terrace

on level 36. Along the stepped path, the density of planting increases; visitors receive views to the east or west over the city and can also step off the path and into the garden to engage in a more intimate setting.

Level 36 has a garden terrace to the north, which is more heavily planted than the south terrace. There is a publicly accessible restaurant, which is enclosed in glass to optimize the natural light and views. This level is accessed by the east/west routes through the garden as well as a shuttle elevator up from level 35.

The restaurants are organized as a central terraced pavilion, with seating at levels 36 and 37, and a public terrace at level 37 providing varied views of the City and experiences of the sky garden itself.

The pavilion sits atop the main building physical plant core to reduce service transfers and create an efficient layout. This also masks the mass of the building service core and minimizes its visual impact within the garden and maximizes the public area. The gentle steps along the east and west façades provide more extensive views to the City, while also providing access to contemplative areas of the garden.

The sky garden provides a unique experience, unprecedented in the City of London, combining a publicly accessible green space with incredible long distance vistas across the surrounding cityscape. The landscape vision is to capture and enhance this sense of "otherworldliness" within the landscape design. The juxtaposition of the immediate planted surroundings of the sky garden with the expansive views of the city skyline presents an inspiring duality of scale. The infinitely varied textures and contrasts seen within the cityscape from this bird's eye perspective will be echoed in the planting design.

A lush and bold canopy of tree planting wraps around the restaurant pavilion and unifies the garden space. A rich carpet of planting falls in undulation on either side of the restaurant box in long and wide terraces, from the highly planted north to the south, which opens to the predominantly hard surface of the viewing terrace. Flatter areas appear as "cutouts" in the undulated carpet at the location of the landings and contain a mix of hard and soft surfacing, and include provisions for people to sit. Informal groups of tree plantings are repeated along the slopes and within the upper and lower terraces within raised planters.

The solid fins that curve up the building act as the structural elements at the sky garden



Figure 9. 20 Fenchurch, London, street level (Source: Rafael Viñoly Architects)

east and west elevations and span across the roof. This allows the removal of structure from inside the sky garden, making its volume all the more generous.

Pocket Park

The pocket park creates a connection through the block from Rood Lane to Philpot Lane. It also connects the proposed scheme into a larger network of lanes and green spaces in the area. The park extends the passage at Plantation Lane beyond St Margaret Patten's Church to the south entry of the tower and Lobby for the sky garden. The Pocket Park provides an intimate public amenity space for the tenants of the building, users of the sky garden and the surrounding area.

Fixed seating is provided within the Pocket Park to encourage visitors to the space and assists with the identification of the space as a destination. Moveable furniture will be provided during the warmer months within the pocket park cafe fronting the Annex building.

Security

Overall security measures have been integrated into the public realm and designed to work with

the City of London's security plan for the area. Along Fenchurch Street protection is provided by 210-mm-diameter stainless steel bollards and multi-function furniture. The east and west corners have 300-mm-diameter bollards, which continue along east and west to the point where the planter is 800mm in height and serves as a barrier. The 1-meter rise up to the pocket park and structure of the verticals for the handrail protect the pocket park.

The location of street furniture elements to the entire frontage of the site is determined by the technical requirements for high security measures and the required offset for their footings to avoid conflict with tree pits. The number of security bollards required is minimized by furniture, where possible. These are designed to withstand the requirements of security bollards, to reduce the visual impact of bollards within the streetscape, and to provide amenity for pedestrians within the public plaza.

In accordance with the design vision for a sky garden in a publicly accessible space available for the use of the City, security strategy was developed to allow the garden to be successfully managed.

Pre-booking is required to book either a table in the sky garden restaurant or a ticket for the garden alone. The requirement for pre-booking affords a notable degree of security in its own right and allows occupancy levels to be controlled.

Pedestrian Traffic

Pedestrian flows around the building generally come from London Underground stations, Bank to the northwest, Monument to the southwest, Tower Hill to the east, and other transport routes. The design of the site reflected the expectation that 52% of the tower occupants will enter from the north and 48% from the south, via the pocket park.

Green Wall

A green wall, approximately 60 meters in length and 20 meters in height, covers a total area of 643 square meters, located on the northern wall of the Annex building. It is a fully hydroponic system and features a variety of plants, which are selected by considering the localized environmental conditions.

The green wall will be fully visible to the public, overlooking the pocket park and entrance to the Sky Garden Lobby. Situated in front of the retail area of the Annex building, it provides a green backdrop for casual outdoor dining.

Conclusion

Tall buildings are often derided for their "apartness" from the cities they inhabit, and there is plenty of justification for that treatment. But the reason is less to do with an aversion to sheer height than with a lack of engagement with the ground plane and a lack of imagination about how the public realm can be folded into a tall building's very conception (not just on the ground plane). When we've been able to do this, the public realm has been enhanced by height. As cities become denser, more creative solutions will be required to overcome the feeling of overcrowding and the anxiety about the paucity of public space. But this is just one part of the problem. It should also be the mission of good tall building design to counteract the trend toward socioeconomic stratification that emerges from the economic realities of tall buildings by expanding access to their privileged views beyond the narrow cohort of relatively wealthy people who typically live and work at these rarefied heights in every city in the world.