**Triad**
**Foster + Partners**
**Atelier Dreiseitl**
**GGLO**

**601 Fourth Avenue**
Design Board Review
August 12th 2008

# Contents




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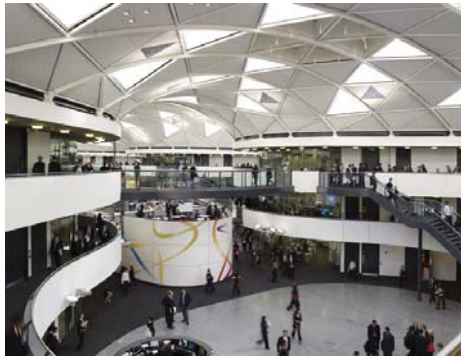
## Foster + Partners
Architectural Philosophy

Foster + Partners has always been guided by a belief that the quality of our surroundings has a direct influence on the quality of our lives, whether that is in the workplace, at home or in the public realm. Allied to that is an acknowledgement that architecture is generated by the needs of people - both material and spiritual - and a concern for the physical context and the culture and climate of place. Equally, excellence of design and its successful execution are central to our approach.

We believe the best architecture comes from a synthesis of all the elements that separately comprise and inform the character of a building: the structure that holds it up; the services that allow it to function; its ecology; the quality of natural light; the symbolism of the form; the relationship of the building to the skyline or the streetscape; the way you move through or around it; and last but not least its ability to lift the spirits. This holistic approach is augmented by a strong commitment to the clients we serve, and also to the public domain and the many users involved. A high degree of personal service, coupled with respect for the precious resources of cost and time, therefore characterises our client relationships.

The scale, diversity and global reach of our new projects were unimaginable 40 years ago, yet many of the issues that excited us in the early days continue to inform what we do today. We work in the spirit of enquiry, challenging preconceptions and testing conventions. The process of 'reinvention' distinguishes all of our work – past and present – and rests on a duty to design well and to design responsibly – whether that is at the scale of an airport or a door handle. The last decades have witnessed key shifts in public attitudes to ecology and energy consumption. We have always anticipated these trends, pioneering design solutions that use totally renewable sources of energy and offer dramatic reductions in CO2 emissions. Environmental awareness is an integral part of the practice's culture as it evolves to meet the challenges of the next forty years.

Foster + Partners studio, London

Foster + Partners is an international studio for architecture, planning and design led by its founder and Chairman, Lord Foster together with Chief Executive, Mouzhan Majidi, two Senior Executives: Spencer de Grey and David Nelson as Heads of Design, Matthew Streets as Chief Financial Officer and two Executive Directors, Grant Brooker and Nigel Dancey. The practice's work ranges in scale from the largest single building on the planet - Beijing International airport - to its smallest commission, a range of door furniture. The scope of its work includes masterplans for cities, the design of buildings, interior and product design, graphics and exhibitions. These can be found throughout the world, from Britain, Europe and Scandinavia to the United States, Hong Kong, Japan, China, Malaysia, Saudi Arabia and Australia.

The studio has established an international reputation with buildings such as the Hearst Headquarters in New York, Swiss Re's London Headquarters, Millau Viaduct in France, the new German Parliament in the Reichstag, Berlin, The Great Court for the British Museum, Headquarters for HSBC in Hong Kong and London, Commerzbank Headquarters in Frankfurt, the Metro Bilbao, the Carré d'Art Nîmes and research centres for Stanford University, California. The practice has designed nine City Academies, a new type of school that provides innovative and inspirational learning environments with the aim of improving educational standards in Britain. There is also a strong interest in city planning and the infrastructure of communication.

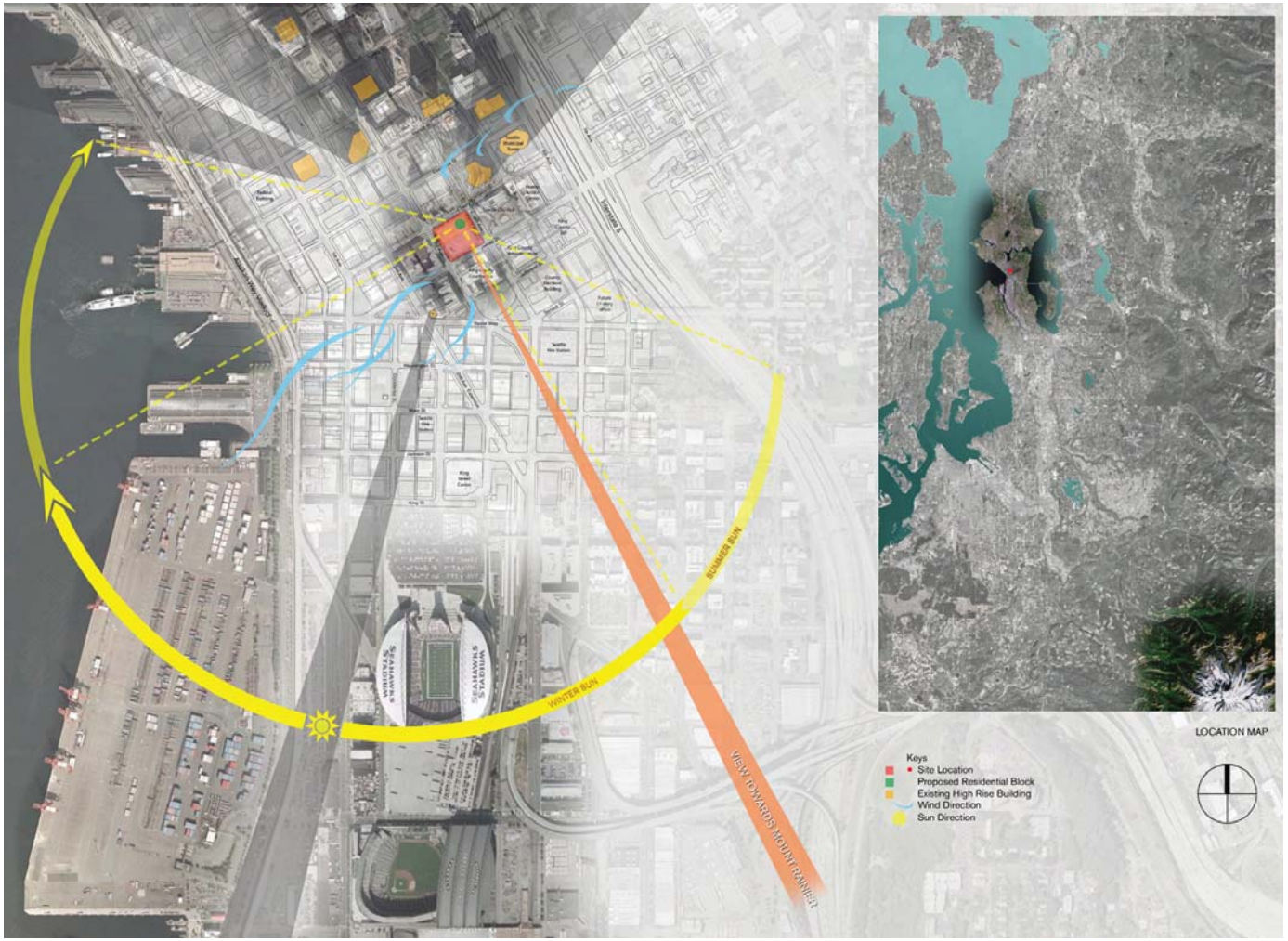
The central concern of the practice is design excellence, and a belief that the quality of our lives is directly influenced by the quality of the spaces around us. Achieved through active collaboration with clients and specialists – from structural and environmental engineers to cost consultants - this is allied to an acknowledgement that architecture is generated by the needs of people, which are both material and spiritual. Management of cost and time is an important discipline and many of the practice's award-winning projects have resulted from demanding commercial circumstances. A wide range of supporting skills underpins the work of the practice, including model making, materials research, specialist computer modelling, visualisation, as well as in-house communications, photographic and printing systems.

Established as Foster Associates in 1967 the practice, now known as Foster + Partners, has project offices world wide with its main studio in London. The practice has worked in 73 countries and currently has projects across 51 countries. Since its inception it has received more than 480 awards and citations for excellence

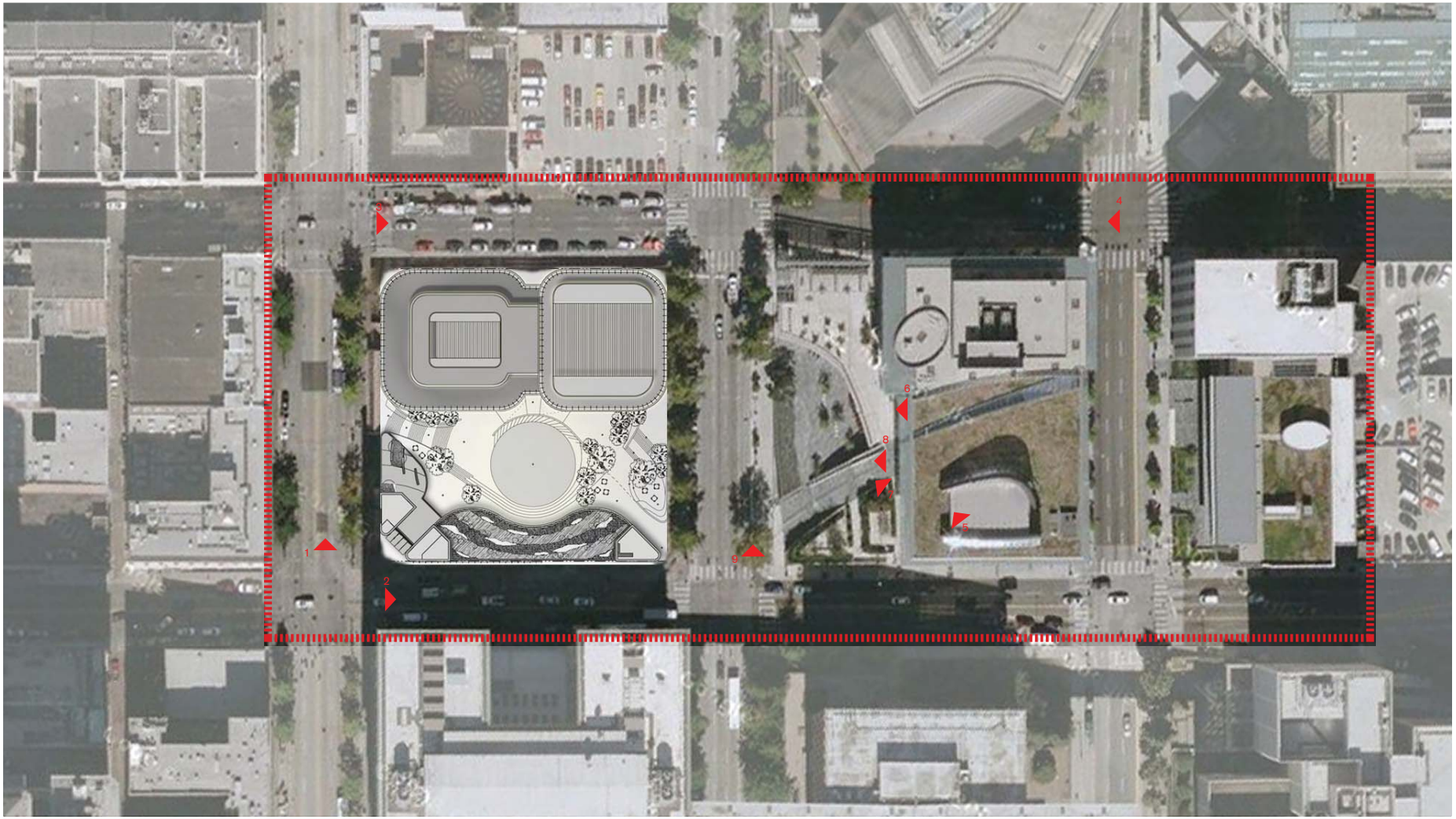
## Project Context

# 1

## 1.1
## Site Context



**1.1**
**Site Context**
Aerial View and Surrounding Context



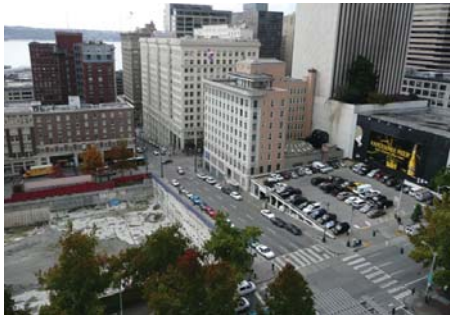
## 1.1
## Site Context
Streetscape views

View 1 - North along Third Avenue

View 4 - West along Cherry Street

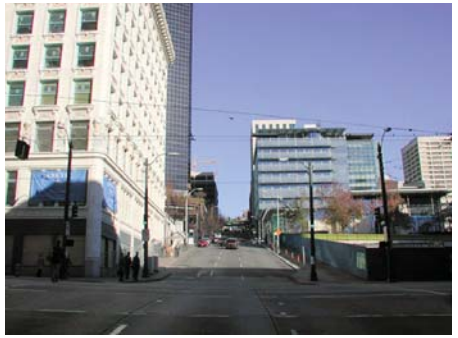
View 7 - View of City Hall Plaza

View 2 - East along James Street

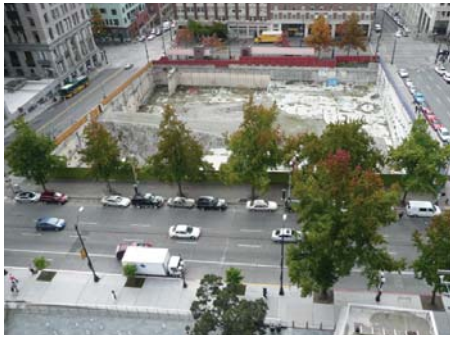


View 5 - Fourth Avenue form City Hall

View 8 - View from City Hall Steps



View 3 - East along Cherry Street



View 6 - Water feature Along Fourth Avenue

View 9 - View of City Hall Water Feature

**Streetscape Views**

The project site is surrounded by a tremendous variety of building types, both historic and contemporary, ranging in scale from multi floored office buildings down to single story parking structures. As such, the site and its immediate context are typical of a dense downtown urban zone that has undergone varied redevelopment over previous decades, resulting in a diverse, inconsistent, and in some instances incoherent urban context.

Of primary importance to the site is City Hall, located on the north east boundary. Its raised external terraces address the site and create a strong physical and visual link to the south west. The Masterplan for City Hall portrays desired continuity of external landscaped space and an extension of the use of water cascading across the site. This treatment is intended to draw pedestrians through the building and across its landscaped external spaces.

To the south east of the site lies the imposing 15 story structure of King County Courthouse. This austere building has a deep recess at the centre of the city block with no street level activation. These characteristics reinforce James Street as a primary vehicular route rather than a pedestrian one.

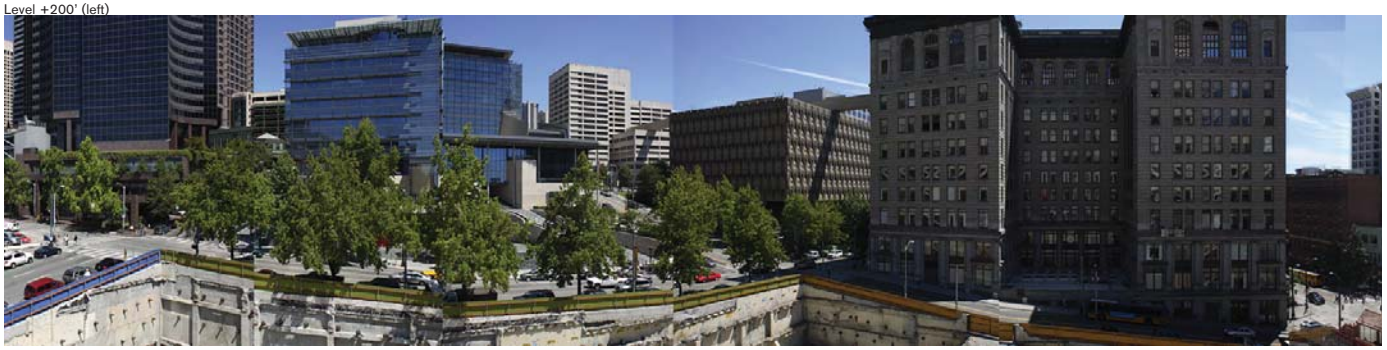
The buildings to the south west of the site that front Third Avenue are of an intermediate scale (8 to 9 stories) and are of limited architectural distinction. At street level, Third Avenue is activated by continuous retail. This remains a highly viable function given the significance of Third Avenue as a primary pedestrian artery.

The north west boundary contains elegant 10 story Arctic building to the west that is currently being redeveloped as a hotel. Beside it to its east lies a contrasting, low quality, single level parking structure.

**1.1**
**Site Context**
Site Views - 360 degree views

Level +400' (left)

Level +200' (left)



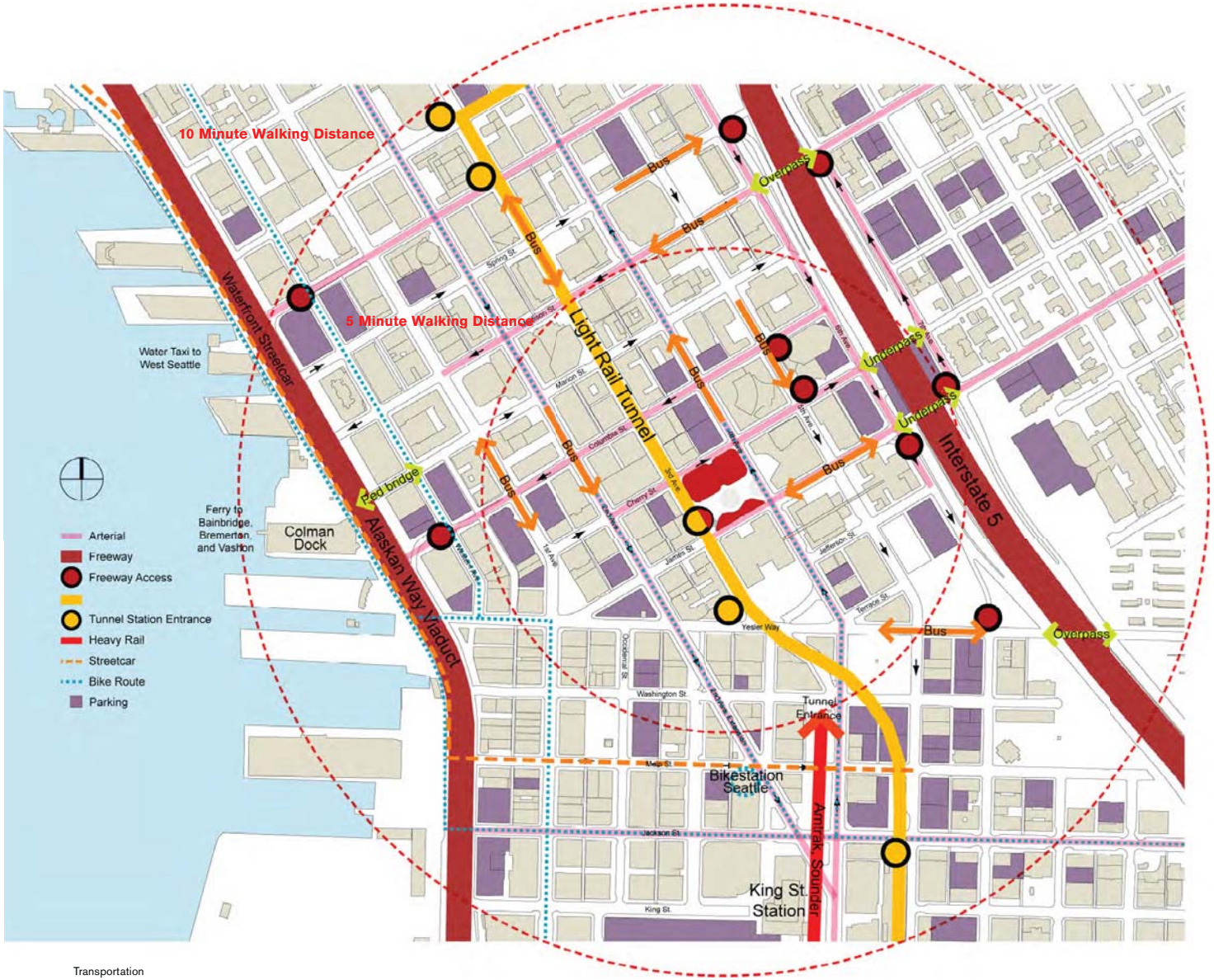
Level +50' (left)

Level +400' (right)

Level +200' (right)

Level +50' (right)

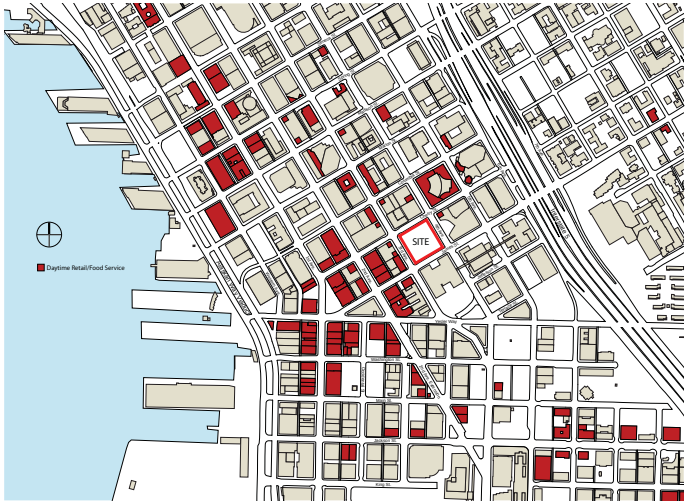
## 1.2
## Urban Connections



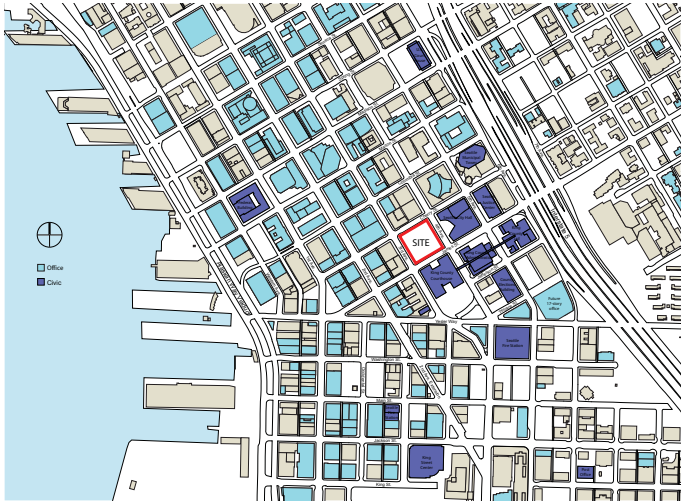

Transportation

## 1.3
## Land Uses

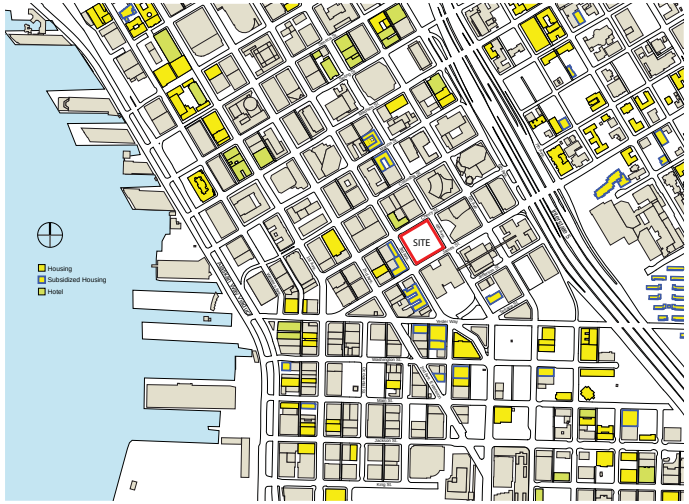

Green Spaces




Retail

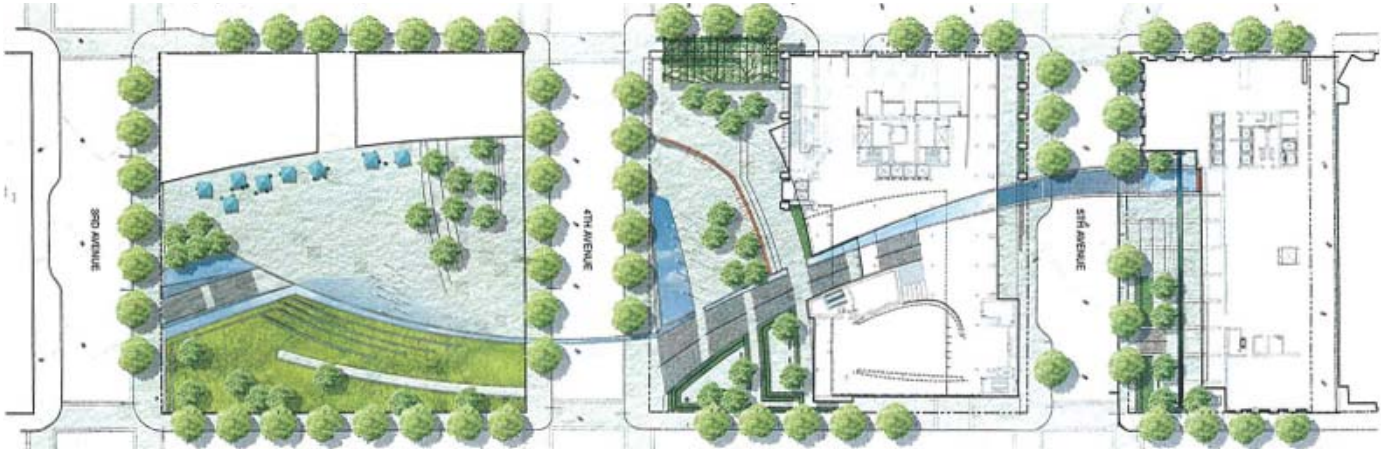



Civic Offices

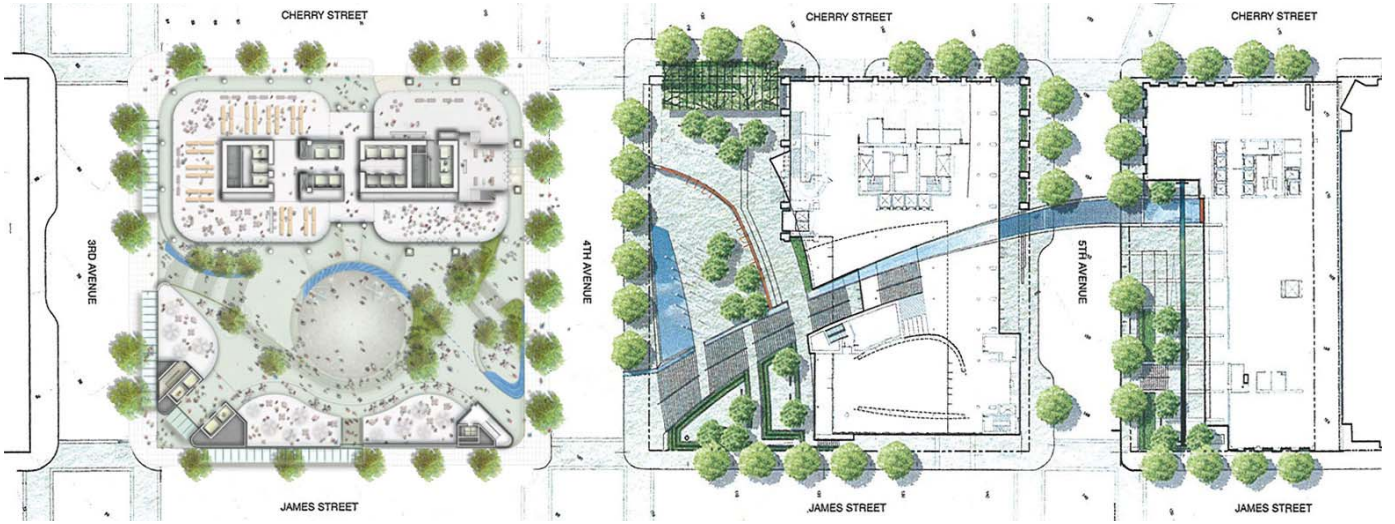



Housing and Hotels

## 1.4
## Site Masterplan
Masterplan and Proposed Scheme




Civic Centre Site Plan, GGN, NBBJ, Bohlin Cywenski Jackson, 1999




Proposed Scheme F+P, GGLO, Atelier Dreiseitl

## Design Response

# 2

## 2.1
## Design Response
Site Strategy- Masterplan

**Project Strategy**

In response to the concerns raised at the last DRB presentation, the current proposal for 601 Fourth Avenue creates a stronger physical relationship to the surrounding city context and to the variety of physical structures proposed for the development site. The landscaping proposal further reinforces these contextual relationships, encouraging the integration of the pedestrian realm into the wider city environment.

The underlying theme of these refinements is to facilitate pedestrian flow to, through, and around the site, highlighting the plaza as a civic space. The design intention of encouraging movement will heighten activity amongst the buildings focused on the plaza and create several points of interaction within the space. The scale, permeability, orientation, and massing of these new structures create an energetic dialogue with the varying local context and improve the legibility of pedestrian motion.

It is anticipated that the key pedestrian movement patterns will be diagonally across the site, linking each of the four corners. Therefore, both the architecture and landscape are designed to entice at these nodes. This approach is described in greater detail in subsequent sections of this report.

Of equal importance is the relationship of these proposals to City Hall. The new proposals seek to form a stronger and more coherent relationship to the external terrace areas of City Hall and the implied continuity of pedestrian movement across Fourth Avenue onto the site.

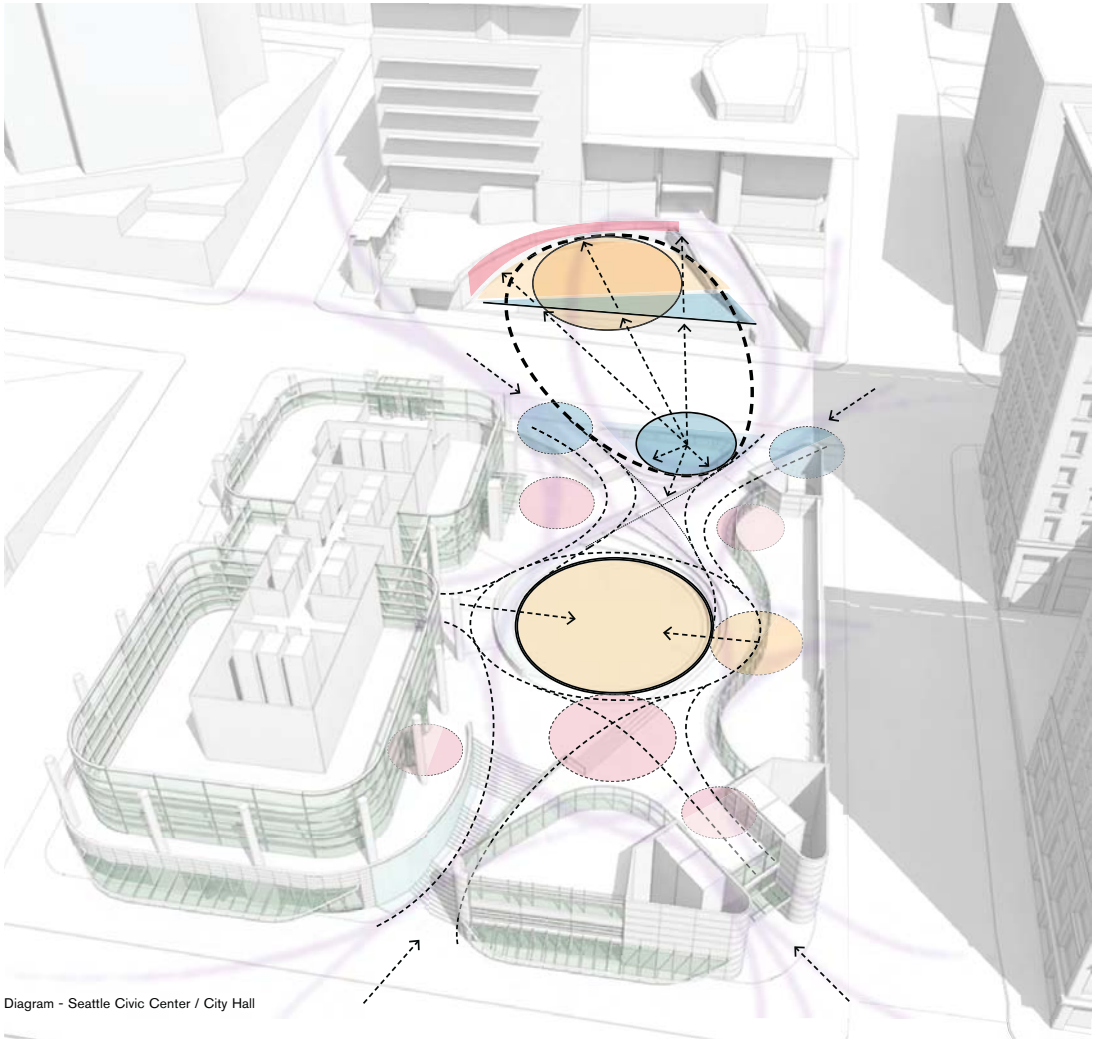


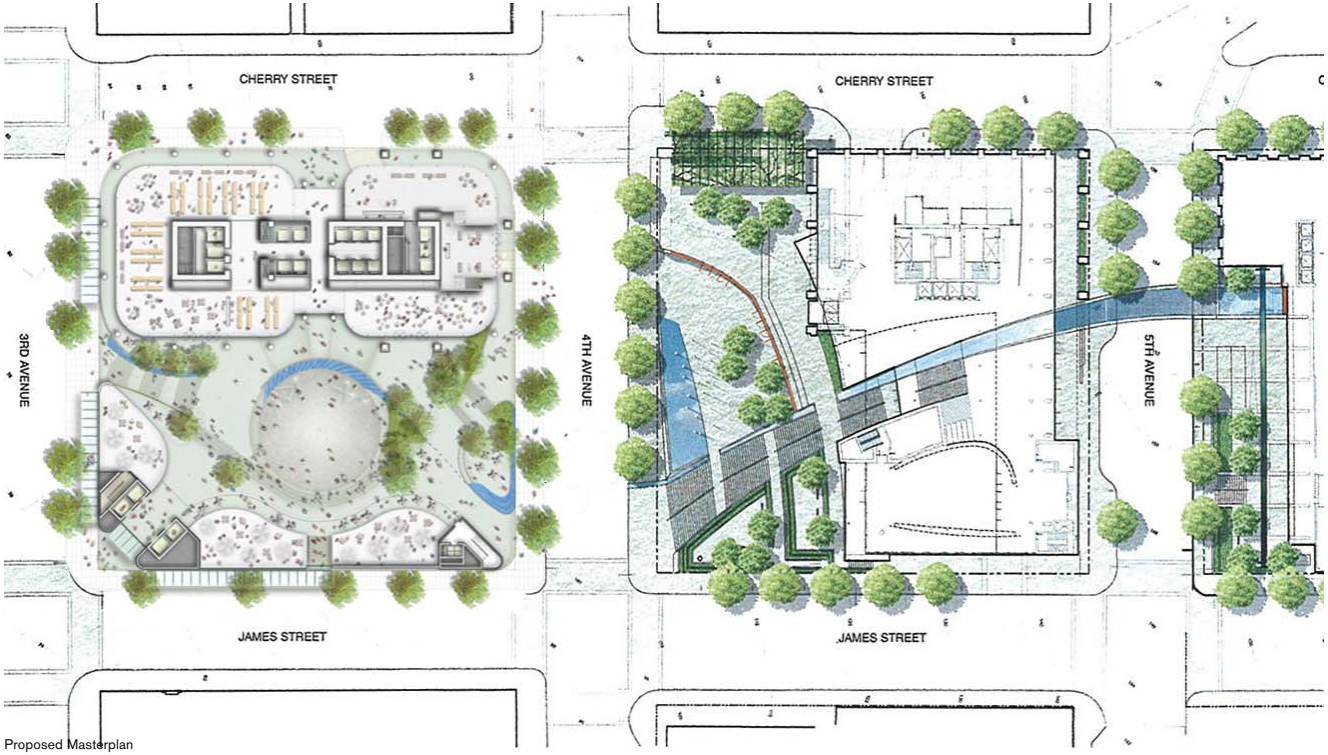
Diagram - Seattle Civic Center / City Hall

## DRB Comments- 10th June 2008

**A1- Respond to the physical environment.**

In plan and in elevation, the plaza and the buildings continued to become more curvaceous in appearance as the massing of the retail pavilion began to embrace or wrap around the central plaza and amphitheater. Pedestrian movement through the proposed plaza would follow sinuous paths along the retail pavilion and diagonally sweep across the site from Fourth and James to the steps leading to Third Ave. The base of the tower, the Board suggested, could be further rounded to enhance the sense of enclosure surrounding the plaza.

## 2.1
## Design Response
Site Strategy- Masterplan




Proposed Masterplan

Seattle's 1999 Civic Center Master Plan expressed a "vision to bring to life a new heart for the City – a legacy of future generations that can inspire a physical and philosophical relationship between citizens and their government".

The Master Plan offers a coherent civic campus identity for the blocks between Cherry and James Street, from 6th Avenue down to 3rd Avenue, including the Seattle Justice Center, City Hall and the Seattle Municipal Tower, providing for accessibility, uses that support 24-hour downtown life, clear connections to adjacent neighbourhoods, and a strong commitment to sustainability. The Civic Center blocks extend across a dramatic slope with broad views and connections to many neighbourhoods that also help guide the Master Plan principals.

The revised proposal responds positively to these objectives, providing continuity of the pedestrian movement patterns across the site. As an extension from City Hall, it offes spaces both formal and informal, grand and intimate, expressive of nature and urban life.

As a defining character of Seattle, nature, and movement, water is inherent in the design. Highlighting the topography of the site, the new proposal creates a strong link back to City Hall with cascading water features defining and reinforcing the pedestrian flow from Fourth to Third Avenue.

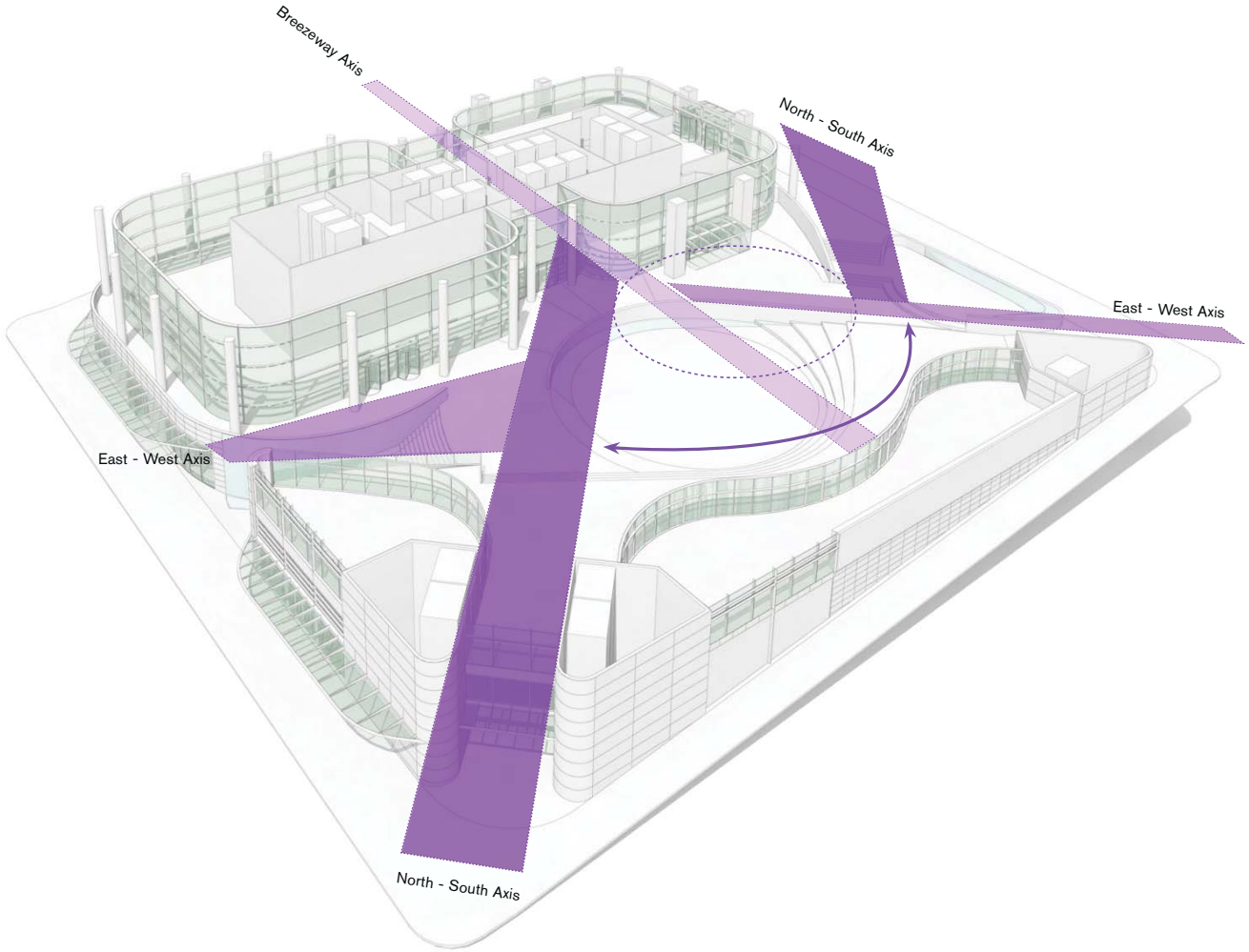
## 2.1
## Design Response
Site Strategy- Access

The proposals now directly respond to the anticipated pedestrian movements from surrounding Avenues and Streets. They create a multitude of opportunities for pedestrians to move across the site in a relaxed and informal manner with several points of access to the commercial facilities that surround the central plaza.

From the south west, it is envisaged that there will be significant pedestrian movement from Pioneer Square to the corner of Third Avenue and James Street. The revised proposal responds to this movement pattern by relocating the Metro/Plaza lifts to the corner of Third and James, their presence and purpose more easily recognised. Positioned diagonally to the corner, the elevators will naturally orientate pedestrians into the plaza with the option of moving either along the southern edge of the commercial facilities or around to the cascading water feature to the north. The natural extension of this movement is to the corner of Fourth Avenue and Cherry Street via the staircase located in the north west area of the plaza. Of equal importance, this orientation addresses the reverse flow from Fourth Avenue, particularly with respect to office workers leaving Columbia Tower wishing to access the Metro.

From the north west, pedestrian may access the plaza by means of a grand staircase that fronts Third Avenue. In a similar manner to the movements from Pioneer Square, pedestrians can circulate to the north and south of the central plaza and exit to the corner of Fourth Avenue and James Street. This circulation route is accented by continuous water features that trickle from one to the other across the site.

The breezeway within the building provides secondary access to the plaza from Cherry Street and is now aligned with the notch of the tower. This route also provides access to the car parking lifts and residential lobby.

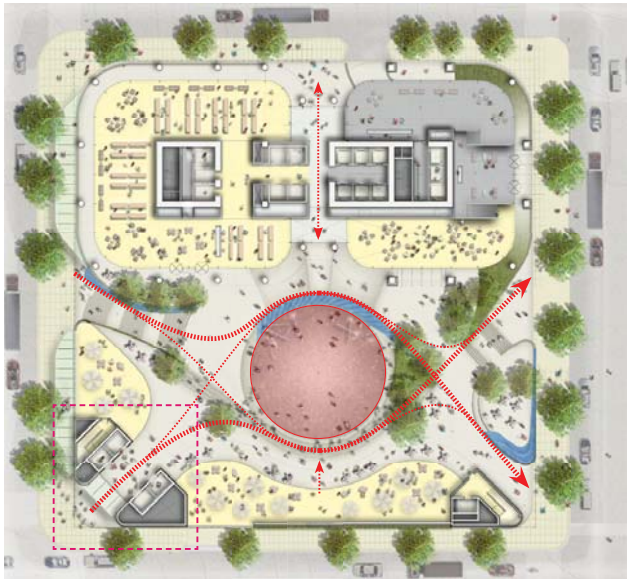


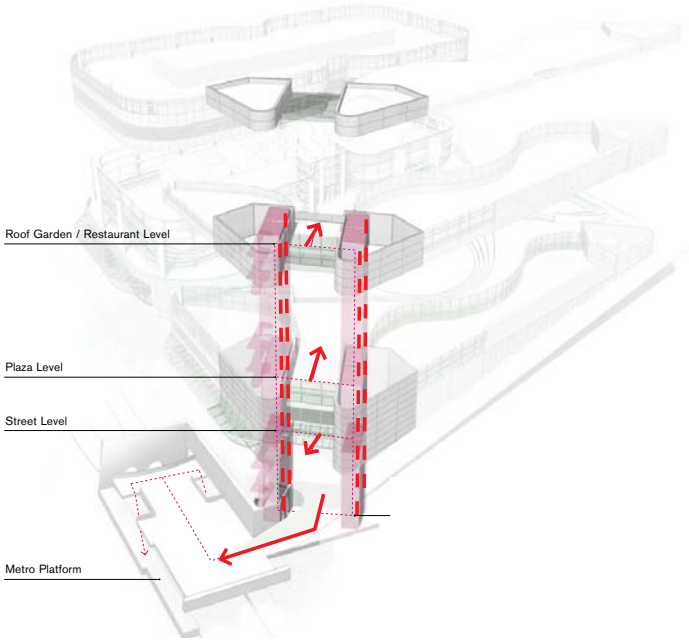

## DRB Comments- 10th June 2008

**C-1 Promote pedestrian interaction.**

In plan, the scheme remains internally focused around the plaza. Proposed entries into the office and residential lobbies would be located on Fourth Ave and Cherry St. respectively. Third Ave. would have entries into the retail spaces and the Metro pavilion. Access to the proposed retail pavilion would occur within the plaza and not from the surrounding streets including James. The Board did not question the placement of the entries.

## 2.1
## Design Response
Site Strategy- Metro Access Diagram






As previously proposed, access to the metro station will be via four dedicated elevators. This design proposes they be located on the corner of Third Avenue and James Street. Their arrangement of two opposite-facing couples provide interstitial lobby platforms that serve the metro mezzanine level and importantly, the plaza and upper commercial levels of the site.

This approach will ensure simplicity and ease of use for both metro users and those wishing to access the plaza and will visibly provide equality of access.

### DRB Comments- 10th June 2008

**B-1 Respond to the neighbourhood context.**

Elevators would access the Metro station and the plaza. Several of the Board members noted that escalators would provide a stronger visual connection to the plaza. Although the directness of the route from station to plaza has improved in the most recent scheme, the Board noted that lack of visual clues to the plaza hindered the current design. The Board members commented that the massing of the metro pavilion needed a stronger expression of verticality and an identity distinct from the general design of the overall complex. The Metro pavilion and the retail pavilion on Third Ave. look large when in reality these structures would be small structures particularly in contrast to the tower and nearby buildings. The Board asked that the design for these structures be reconsidered to reflect their intimate size. The elevator tower could also be quite fun---a more whimsical structure than the others.

In a related issue, the Board, noting the removal of the proposed escalator at the Metro / retail pavilion, requested a direct connection to the plaza from the southwest corner of the site. Passage through the site without the use of an elevator was important.

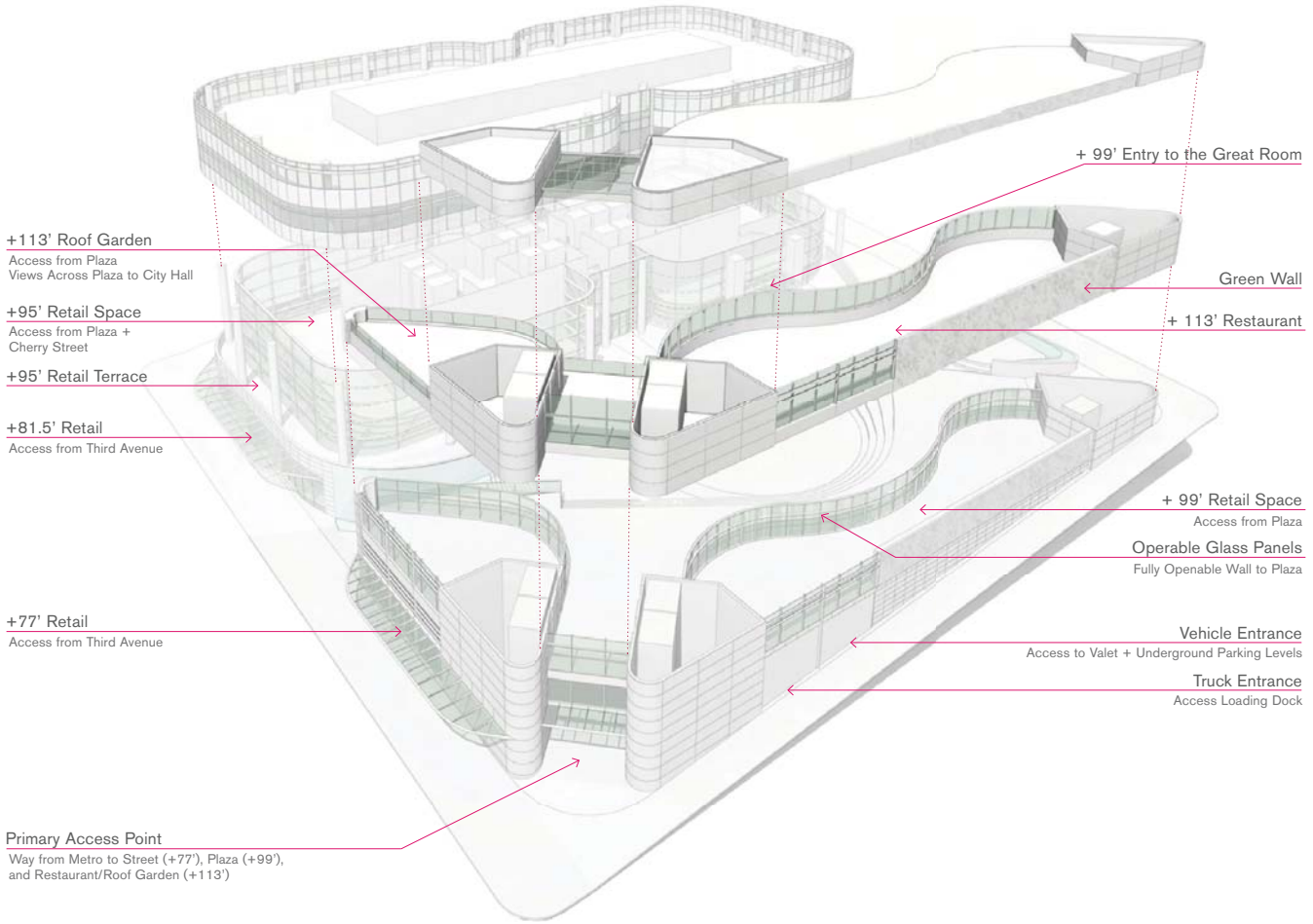
The placement of stairs above the garage entry on James St. appeared confusing to the Board due to lack of access from the street.

## 2.1
## Design Response
Site Strategy- Access and Orientation

The exploded axonometric diagram opposite illustrates the access points and distribution of accommodation viewed from the south west.

Primary vertical access to the site is provided by the main lift bank that serves the metro station and plaza levels above. At street level access to the elevator bank occurs at the corner of Third Avenue and James Street. The four elevators serve down to the metro Mezzanine and up to the plaza, upper level commercial facilities, and accessible green roof. To the north east of this elevator core lies a two story commercial pavilion providing retail accommodation at the plaza and upper plaza levels. It is envisaged that the plaza level accommodation will house a lively farmers market and that the upper level floor a destination restaurant. Below this structure along James Street, there is access to the underground parking facility and loading dock. To the north west of the elevator core lies a three story retail pavilion that is accessed directly from Third Avenue at the +77' level and from the Plaza at the +99' level. This pavilion also provides an accessible green roof at the +113' level. This green space is directly linked to the upper level destination restaurant via the elevator lobby and overlooks the plaza, towards City Hall and opposite towards Third Avenue.

To the north west beyond the grand staircase and below the main tower structure, further commercial facilities are provided. They are directly accessed from Third Avenue. At the plaza level, retail accommodation below the tower is arranged around the main service cores with generous external terraces that overlook the plaza, Third Avenue, and Cherry Street.



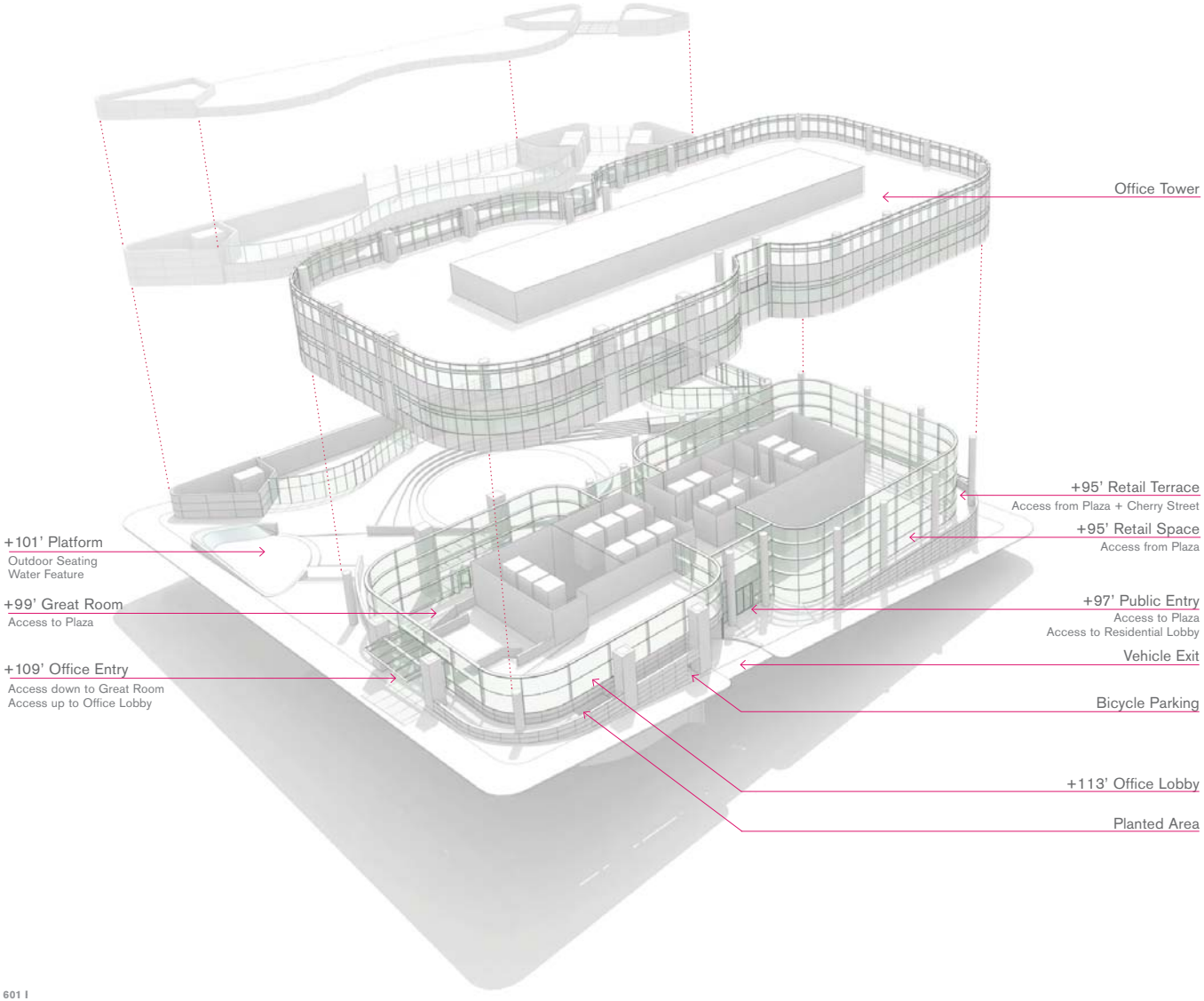

## DRB Comments- 10th June 2008

**C-4 Reinforce building entries.**

The lack of an entry or a visible gateway to the plaza from Third and James troubled the Board. During the EDG process, the development team emphasized the importance of the Third and James corner for pedestrians from the Pioneer Square neighborhood. The loss of the steps proposed at the third EDG meeting, the lack of a door into the retail space and the blank walls along James St. suggested that the design was turning its back upon this area and its pedestrians.

**D-6 Design for safety and security.**

With the use of elevators as the primary connection to the Metro tunnel, the applicant should respond to perceptions of security concerns not associated with the openness of escalators. Lighting concepts for the plaza will be important in order to evaluate security issues.




The exploded axonometric diagram opposite illustrates the access points and distribution of accommodation viewed from the north east.

At the +109 level, an entry vestibule along Fourth Avenue provides access both up to the office lobby at the +109 level and down to the Great Room at the +99 level. At these lower levels, the glazed façade of the tower has been set in from the curtilage of the site to create a landscaped terrace that flows around the city block onto Cherry Street. From Cherry Street there is dedicated access to the bike storage facility and beyond this the vehicular exiting point from the underground car parking facility. The indent that responds to the notch of the tower above becomes the access point to the 'breezeway' and plaza beyond and also provides secure access to the residential lobby. To the south west, the plaza level retail accommodation can be accessed from Cherry Street together with the external terrace that overlooks the street.

As evidenced through these diagrams, this proposal is highly considerate of the diverse amount of potential approaches to the site by an even more diverse group of users.

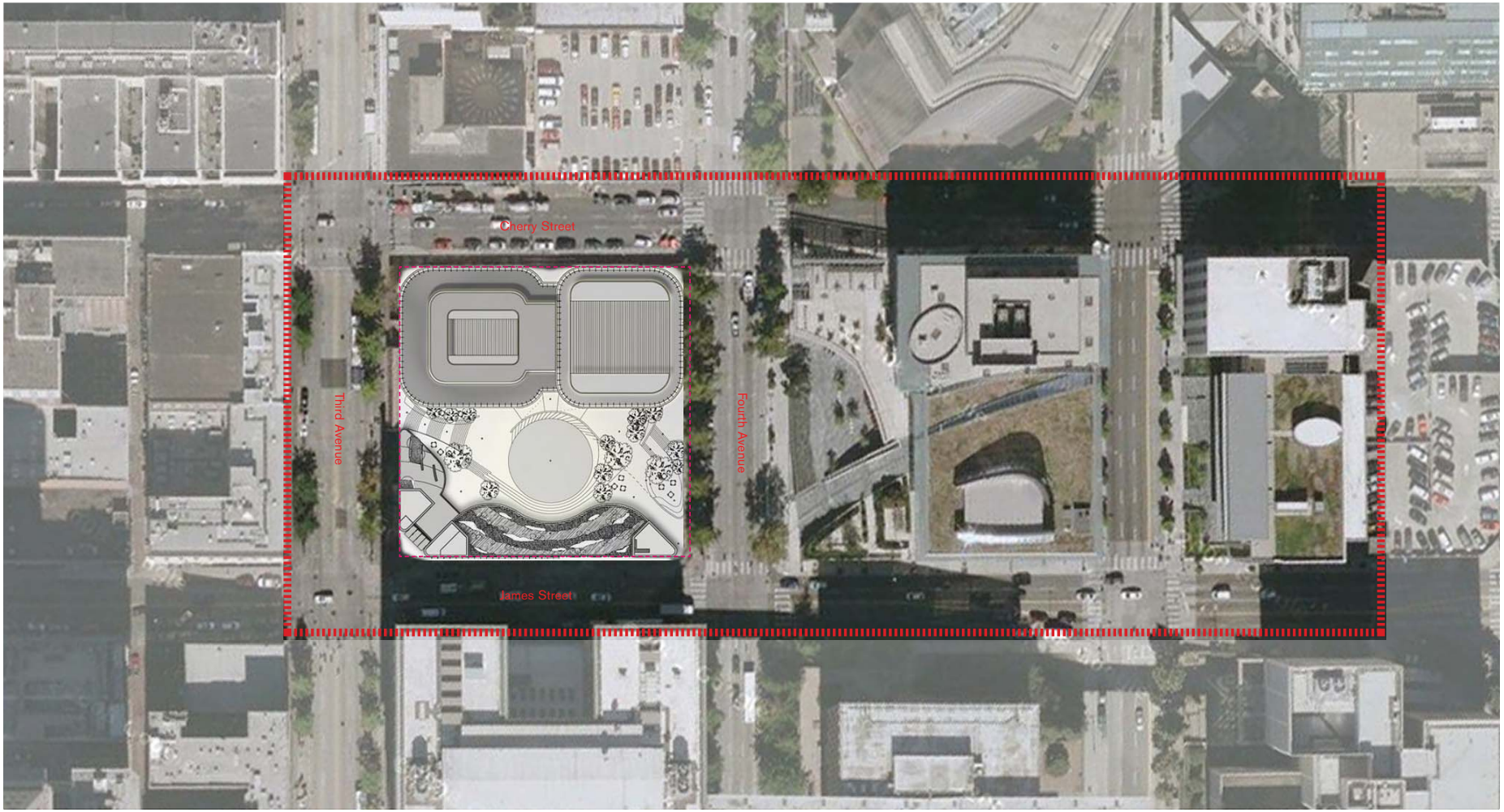
## DRB Comments- 10th June 2008

**C-4 Reinforce building entries.**

The introduction of the crease separating the office block into two halves potentially creates confusion in plan and elevation in terms of the legibility of entrances. The former breezeway functions as an entry and enclosed pass-through connecting Cherry St. and the plaza. Yet, the creases on both north and south elevations suggest major building entrances as well.

The breezeway should be a compelling space. It should carry the plaza into the building and out onto Cherry St. The drawings did not convey that it is meant to be a wonderful space.

**2.2**
**Design Response**
Neighbourhood Context



## 2.2
## Design Response
Neighbourhood Context

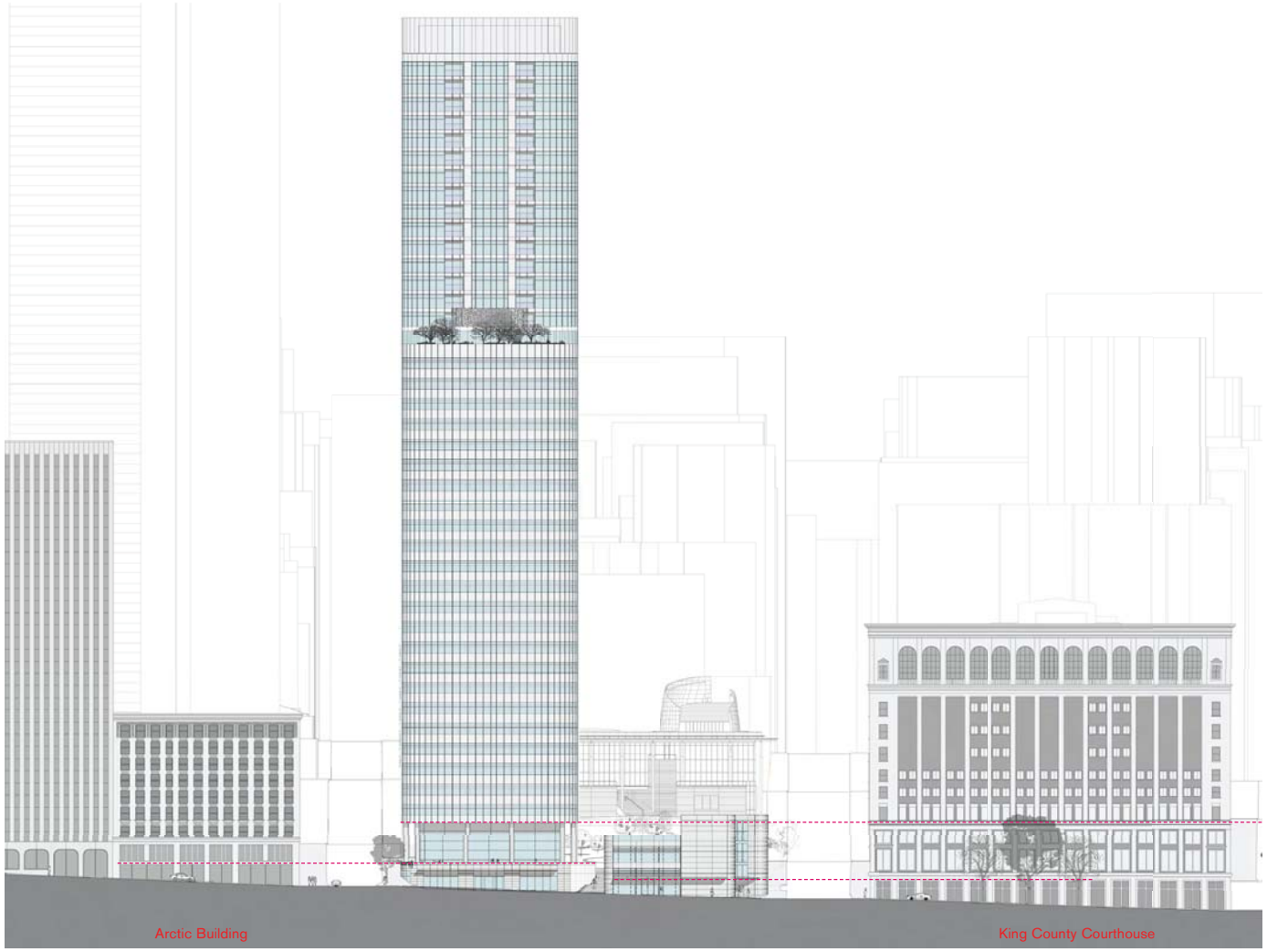

The location, massing, and architectural fenestration of the new proposals respond to the local context and respect the richness of texture, patterning, rhythm, and scale of the surrounding buildings. Each face of the development now acknowledges the existing adjacent buildings and responds in either a 'sensitive' contextual manner or as a counterpoint or 'foil' to the adjoining buildings massing and architectural fenestration.

The relationship to the recently completed City Hall project has been of particular interest. The material palette, detailing, and scale of the new proposals aim to strengthen the connection between 601 Fourth Avenue and City Hall.

## 2.2
## Design Response
Neighbourhood Context- Third Avenue

The proposal's response to its urban context along Third Avenue lies in its relationship to the datum levels of the Arctic and King County Courthouse buildings. To the north west, the stone plinth below the tower aligns with the horizontal modulation of the Arctic building's retail shopfronts. Its own shopfront glazing is framed by limestone that follows the rhythm of the tower columns above and provides scale to the commercial spaces from the pedestrian perspective. Above this plinth, the tower face is inset 10' creating an external terrace that overlooks Third Avenue. This further articulates the façade and activates the streetscape.

To the south east, the main tower acknowledges the cornice of King County Courthouse by virtue of the setback and overhang of the office floorplates. At a lower level, the canopy of the retail and elevator building accords with the lower level datum of the Courthouse street fronts. In order to respond to the scale of this building, the elevator core is expressed as a physically dominant element, intended to act as a 'transition' to the monolithic Courthouse. These stone elements may become the backdrop for large scale artwork or for engraving the name of the Civic Plaza. The commercial spaces to the north west of this core are glazed with bronze framing elements and limestone panels expressing the floorplates. At the upper level of this structure, there is an accessible roof that overlooks Third Avenue and across the plaza to City Hall.




### DRB Comments- 10th June 2008

**B-2 Create a transition in bulk and scale.**

Elevators would access the Metro station and the plaza. Several of the Board members noted that escalators would provide a stronger visual connection to the plaza. Although the directness of the route from station to plaza has improved in the most recent scheme, the Board noted that lack of visual clues to the plaza hindered the current design. The Board members commented that the massing of the metro pavilion needed a stronger expression of verticality and an identity distinct from the general design of the overall complex. The Metro pavilion and the retail pavilion on Third Ave. look large when in reality these structures would be small structures particularly in contrast to the tower and nearby buildings. The Board asked that the design for these structures be reconsidered to reflect their intimate size. The elevator tower could also be quite fun---a more whimsical structure than the others.

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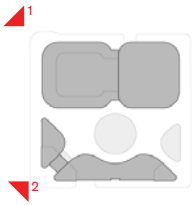
## 2.2
## Design Response
Neighbourhood Context- Third Avenue

View 1- Corner of Third Avenue and Cherry Street

View 2- Third Avenue retail facade as possible location for artwork




Third Avenue Elevation

## 2.2
## Design Response
Neighbourhood Context- James Street

As a result of the steep incline of James Street, it is not intended to attempt to link datum levels of the new proposal to adjacent buildings. The strategic objective is to introduce two 'bookends' at the intersection of Third and Fourth Avenue that respond to the scale and massing of King County Courthouse.

The south western end of James Street contains the elevator core. This element is conceived of as a physically dominate component, clad in limestone and framed in stainless steel. This sculpted volume expresses its function as a lift bank with the elevator vestibules fully glazed, affording visitors views across Third Avenue and importantly advertising its function as location for vertical movement. Next to the core at street level there are two vehicular entry points: one for delivery vehicles and the second for cars accessing the underground parking facility. Above this entry point the facades are glazed, articulated by limestone spandrel panels expressing the floor plates and bronze framing elements. These windows relate to the commercial facilities beyond and will animate and activate the upper level streetscape.

Adjacent to these openings is the 'green wall' or 'vertical garden' that is now expressed as a single panel framed in limestone. This feature will add interest and a unique dynamic to the streetscape. It resonates with the architectural and landscaping treatment of the adjoining City Hall as well. On the corner of James Street and Fourth Avenue is the second 'bookend'. It contains service elevators and access stairs for the retail accommodation. This sculptural limestone element will draw pedestrians into the site from James Street and Fourth Avenue

## 2.2
## Design Response
Neighbourhood Context- James Street

View 1- Corner of Third Avenue and James Street

View 2- Corner of James Street and Fourth Avenue

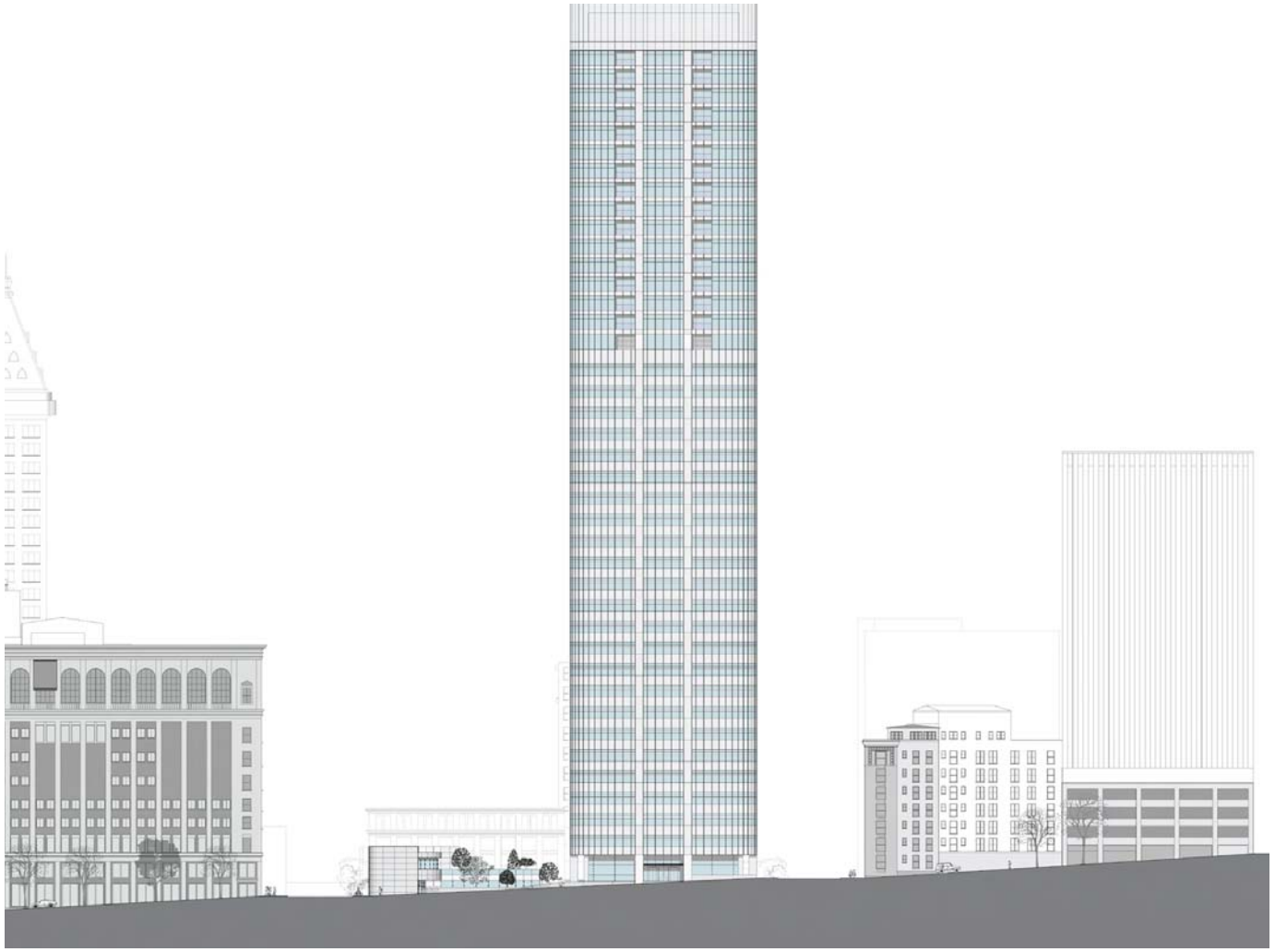

Elevation - James Street

## 2.2
## Design Response
Neighbourhood Context- Fourth Avenue

The Fourth Avenue streetscape is characterized by the significant open area that provides access to the plaza and addresses the landscaped terraces of City Hall.

To the south west, the limestone 'bookend' orientates pedestrians towards the plaza and the curvilinear circulation routes that traverse the site. It is envisaged that the dominate limestone walls could form a backdrop for artwork or signage and would become a 'beacon' for pedestrian and vehicular traffic along Fourth Avenue. To the north west, the plaza opens out to the streetscape with a low water wall introduced to connect the site to the water features of City Hall.

The main tower is located on the north western end of the site and is articulated by the introduction of a 10' setback at its lower levels. This creates a more sensitive relationship of the human scale to the façade whilst acknowledging the importance of the accommodation beyond as the primary access point for the office. On the curtilage of the site a low limestone wall forms a continuous raised landscaped area that wraps around the corner of Fourth Avenue and Cherry Street.



DRB Comments- 10th June 2008

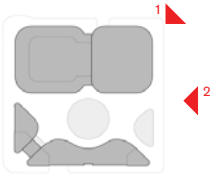
**B-3 Reinforce the positive urban form and architectural atributes of the immediate avenue.**

Without the circular stair leading to the retail pavilion roof and the introduction of water at the amphitheater, the Fourth Ave. frontage lacks a strong civic response to City Hall and its plaza. The gesture of the stream moving downhill from its source at the Justice Center and the grand stairs that define the character and section of City Hall's exterior and interior should be received by the proposed complex and it, in turn, should contribute its own civic reply beginning at Fourth Ave.

## 2.2
## Design Response
Neighbourhood Context- Fourth Avenue

View 1- Corner of Cherry Street and Fourth Avenue

View 2- Plaza from City Hall




Fourth Avenue Elevation

## 2.2
## Design Response
Neighbourhood Context- Cherry Street

As a result of the steep incline of Cherry Street, it is not intended to attempt to link datum levels of the new proposal to adjacent buildings. The strategic objective is to develop an architectural response that creates an urban and intimate scale to the streetscape whilst acknowledging the scale and importance of the main tower building above.

The primary datum level of the tower has been set at +125 which responds to the King County Courthouse datum, the governing contextual relationship described earlier in this report. Below this level, the tower facades have been inset by 10' articulating the facades and providing stepped terraces that ascend Cherry Street. It is proposed that these terraces are landscaped with soft vegetation and provide an intimacy to the streetscape and a visual softness to the urban context.

Descending Cherry Street from Fourth Avenue, there is access to the dedicated bicycle storage facility and the exiting point for vehicles using the underground car parking facility. The tower notch then becomes the single point of entry for pedestrians on Cherry Street seeking to access either the residential lobby, car parking lifts or plaza beyond. As described above, the retail accommodation at plaza level on the south western end of Cherry Street is accessed by an external terrace overlooking the Street. Below this, a second level of retail accessed from Third Avenue creates visual interest at street level with large display windows puncturing the limestone plinth of the tower.

### DRB Comments- 10th June 2008

**C-2 Design facades of many scales.**

The Board reiterated its desire to see more architectonic detail at the tower base fronting Cherry St. in order to have the structure acknowledge the building's relationship with the landmark Arctic Building.

The applicant introduced the use of limestone and onyx at the base, the former as a means of continuity with the Justice Center and Seattle City Hall. Extensive amounts of onyx as shown at the base (see Cherry St.) would require departures from the Land Use Code due to the extensiveness of blank walls along the street edge.

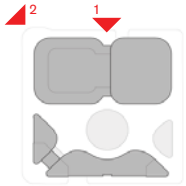
**C-3 Provide active, not blank facades.**

The extensive use of onyx along Fourth Ave. would require departures from the Seattle Land Use Code. It is unlikely the Board would grant a departure for blank walls along Cherry Street.

## 2.2
## Design Response
Neighbourhood Context- Cherry Street

View 1- Cherry Street Entrance

View 2- Corner of Third Avenue and Cherry Street




Cherry Street Elevation

## 2.2
## Design Response
Neighbourhood Context-
Overhead Weather Protection

The proposed strategy for providing weather protection on a site wide basis has been to consider where the provision of such features provides a utility to the citizens of Seattle, and importantly, where the such elements can be elegantly and satisfactorily introduced into the architecture of the project. Furthermore, alternative strategies for the provision of weather protection are proposed that seek to encourage pedestrian movement through the plaza rather than on surrounding streets.

**Third Avenue**

Continuous weather protection is provided along Third Avenue and has been integrated into the design of the buildings. It is proposed that the canopies 'flow' naturally and tangentially from the building creating a unique and distinctive feature to the streetscape.

**James Street**

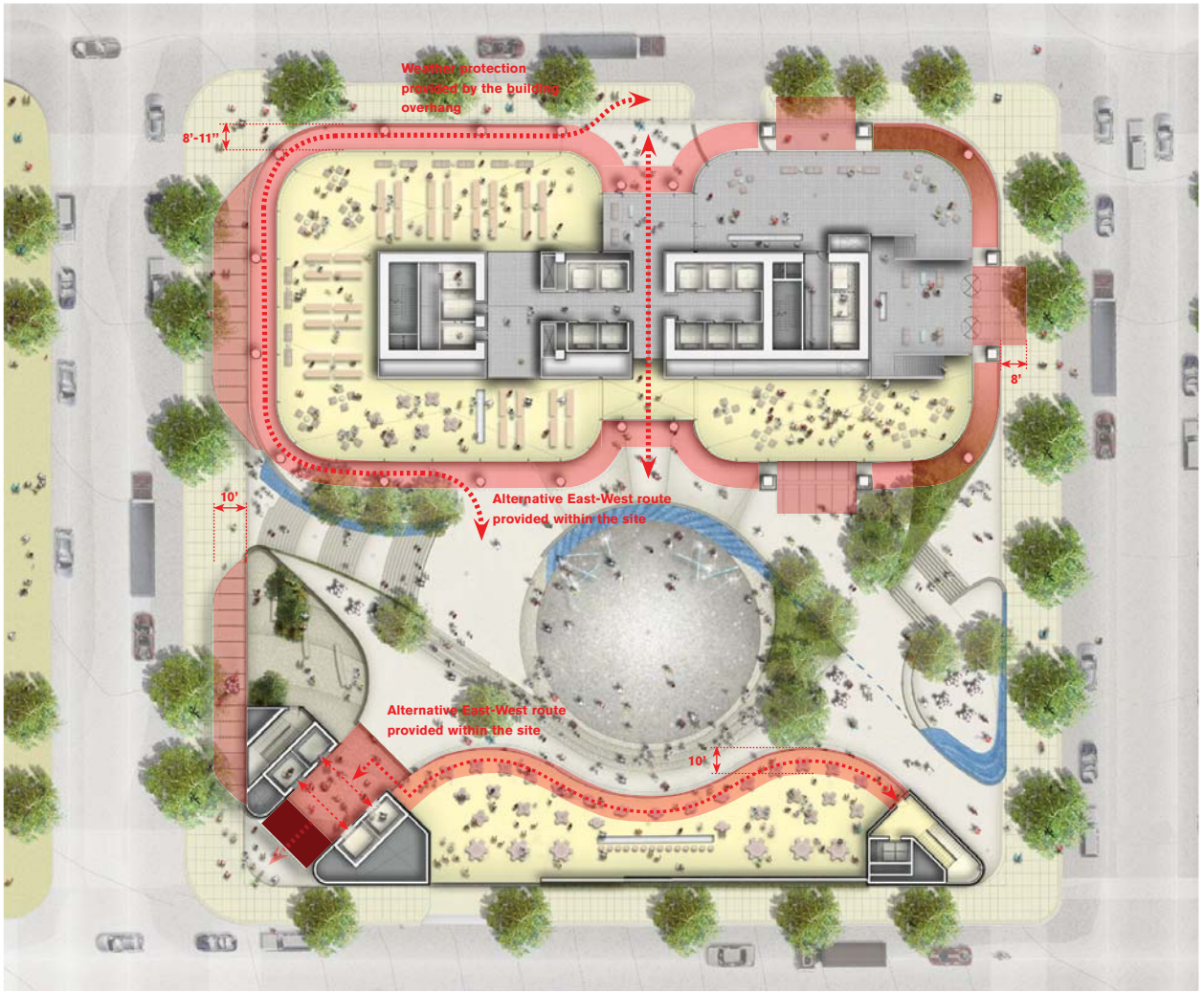
It is proposed that weather protection is omitted from this elevation as the steep incline of the street generates unsatisfactory relationships to the architectural fenestration of the building. Furthermore, continuous overhead weather protection is provided within the plaza area by virtue of the overhang of the commercial building along James Street. This alternative route is more desirable from a users perspective since the plaza is at a constant level, and vertical descent/ascent can be achieved more safely utilising the main stair/elevator lift core.

**Fourth Avenue**

A substantial length of fourth Avenue is open to the street and therefore overhead protection is not required. On the north western end of the frontage, overhead protection is provided by a canopy over the entrance to the main office entry vestibule.

**Cherry Street**

It is proposed that weather protection is omitted from this elevation as the steep incline of the street generates unsatisfactory relationships to the architectural fenestration of the building. As an alternative, overhead weather protection is provided by virtue of the overhang of the main office tower, enabling pedestrians to circulate around the tower base at the same level.



View 1- Overhead weather protection- Third avenue tower retail.

View 2- Overhead weather protection- Third avenue metro entrance and retail space.


## DRB Comments- 10th June 2008

**C-5 Encourage overhead weather protection.**

The applicant proposes a significant departure from the Land Use Code's requirement to provide overhead weather protection along the street fronts. The proposal shows Third Avenue in partial compliance. The applicant argues that installation of canopies on the western half of Cherry St. would be awkward requiring that they hang them from columns. The eastern half of Cherry St. would not have an upper level building overhang or a canopy to protect pedestrians. In the same scheme, the only other street facing canopy would be located at an entrance to the office tower on Fourth Ave.

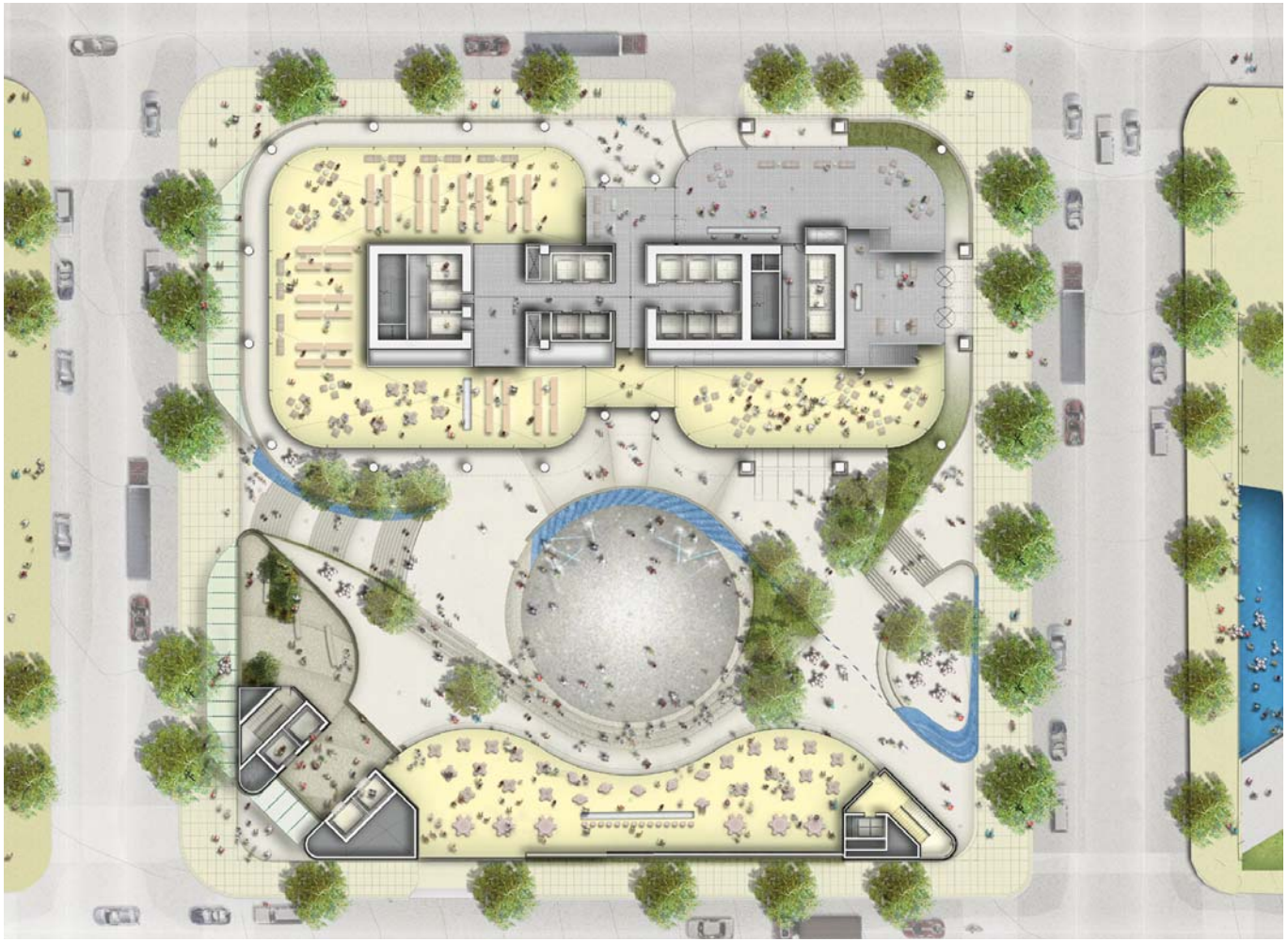
The development team argues that the lack of overhead weather protection on James St. is justified by the proposal of an alternative pedestrian route, albeit less direct, using an elevator and continuing underneath a continuous balcony along the retail pavilion. If used in this way, the alternative route would bring pedestrians past retail spaces and into the central plaza. The reasoning suggests either one route or another rather than promoting multiple routes equally compelling dependent upon the pedestrian's need at the time.

The Board requested canopies at Third and Cherry as well as along Cherry St. The Board expressed a readiness to approve the departure for James St. but held off approving it based on more information about the green wall and further analysis from DPD.

## 2.3
## Design Response
The Civic Plaza

The central plaza space serves as the focal point of the proposal. The architecture of the tower and surrounding commercial functions are designed in relation to the plaza geometry, each with adjacent external space. This strategy encourages heightened pedestrian movement and interaction with external and internal commercial spaces, promoting a limitless range of activity in the plaza and its related outdoor spaces throughout the year.

The landscaping design has been integrated into the architectural strategy for the site and responds to the anticipated pedestrian movement and flows from the surrounding neighbourhoods. These urban routes are reinforced with the introduction of water features and soft planting, creating unique and distinctive spaces for Seattle .



Plaza Plan

### DRB Comments- 10th June 2008

**D-1 Provide inviting and usable open spaces.**

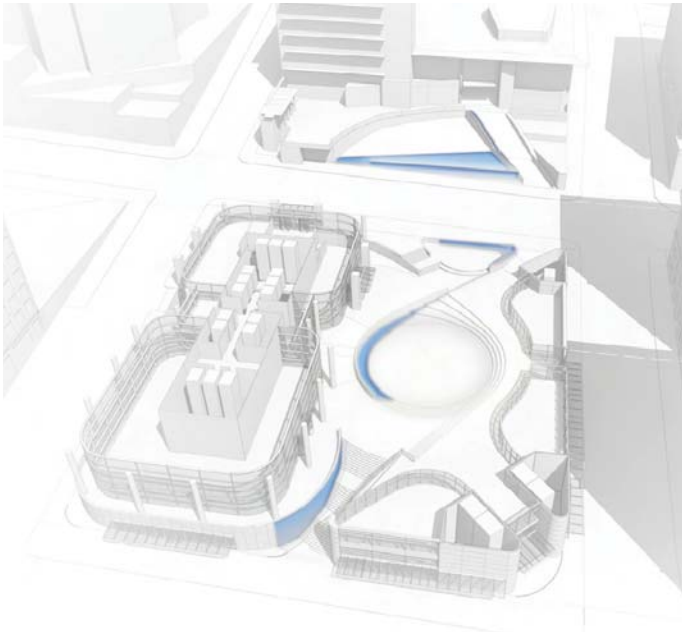
The Board praised the singularity of the designer's vision of the plaza since its introduction to both Boards over a year ago. The plaza concept has not significantly changed.

The Board generally favored public access to the green roof above the retail pavilion. In spite of the applicant's argument that public access would diminish the amount of functional green space, the Board felt that access would provide an alternative place to enjoy the outdoors and witness the spectacle on the plaza. The Board further cited the opportunity to learn about a fully green rooftop.

The pedestrian path along the retail pavilion would likely be dark much of the day due to its northern exposure and the balcony overhead. Solar studies of the path and plaza analyzing conditions should be provided for the next Recommendation meeting. The Board also noted the narrowness of the pedestrian passageway and the risk of compromising it further when retail tenants push carts or racks outside toward the plaza. The addition of more exciting landscape elements along with added planting to the plaza's south edge was encouraged.

The Board complimented the design of the plaza's north end with its ramp, adjacent retail uses and water features.

## 2.3
## Design Response
The Civic Plaza- Landscaping Strategy



Waterscape Diagram

Landscape Diagram

The two key components of the landscaping strategy are water and planted areas. The vibrant water installations of City Hall extend across the Plaza and down the water wall of the Third Avenue grand stair. Through the use of hard and soft materials, the greenery swoops across the site to create an array of intimate and civic spaces, complimentary to the water path.

### DRB Comments- 10th June 2008

**D-2 Enhance the building with landscape.**

The landscape architect's strategy has been to minimize the amount of plants and trees on the plaza and have copious amounts of plant material on the roofs. Recycled granite pavers and curbs, terrazzo, concrete and stone would be used in the central plaza. Along Cherry St., the planting area would have cobblestones, ferns and grasses in the terraces.

Several other elements of the plaza should be reconsidered. The back side of the Metro pavilion will be quite visible and important. The installation of a large video screen should not replace good design for the wall. The height of the water wall could inhibit use of the steps into the plaza. Future drawings should depict the view into the plaza from Third Ave.

Mentioned in earlier guidance meetings, the need for small intimate places within the larger plaza is a paramount concern. The design continues to improve but the landscape architects should add more distinct spaces. Board members noted the baroness of City Hall plaza with its copious amounts of concrete and too few trees to shade its users.

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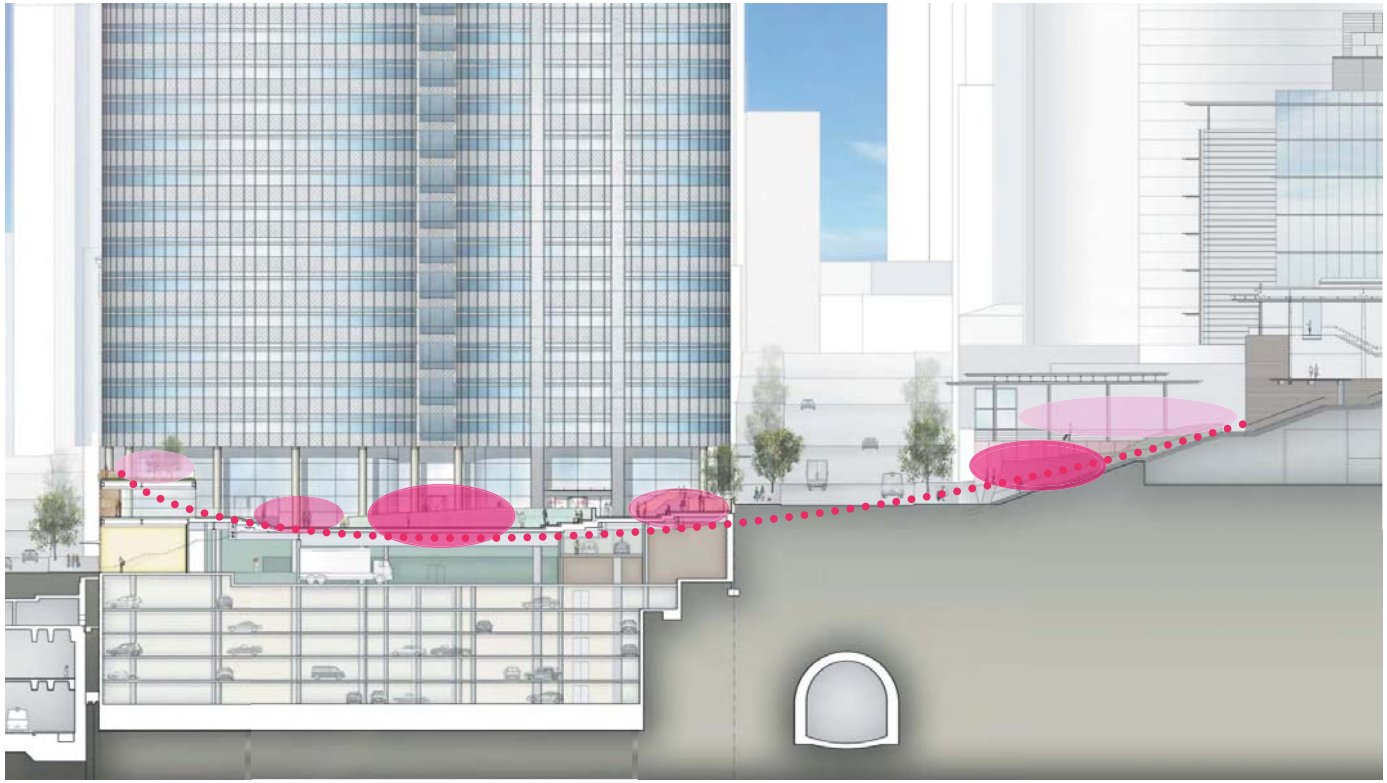
## 2.3
## Design Response
The Civic Plaza- Context Strategy

Of primary importance to the design of the Civic Plaza has been its relationship to City Hall. In order to create a series of spaces that have repose and are conducive to pedestrian use, the plaza has been raised to create a level surface. The result is an accessible environment for all with the external railed terrace of City Hall, forming an urban amphitheatre.



View of Plaza from Fourth Avenue

Plaza Seating

Reference Images

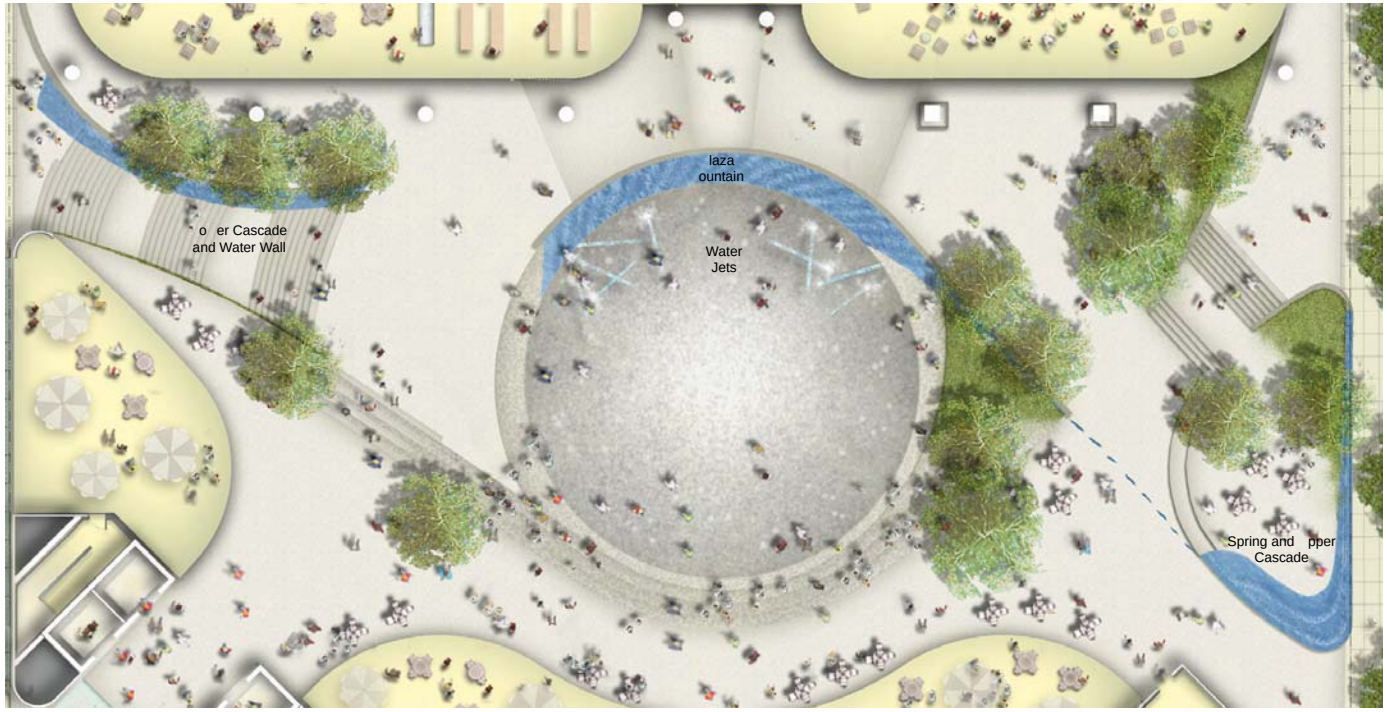
## 2.3
## Design Response
The Civic Plaza Waterscape

Seen in its entirety, the water feature extends from City Hall to the Square and flows down the site's topography, providing different experiences for people along the way.

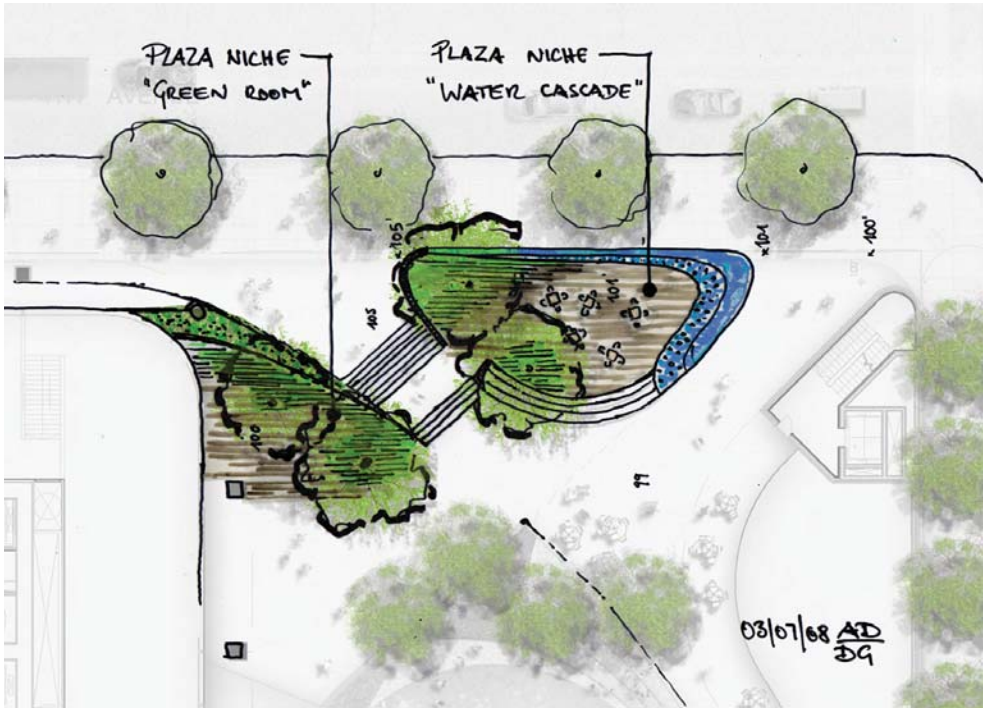
Integrated into the stepped structure of the plaza, the water feature is seen to be its central art piece. Much more than just a water feature, it is a uniquely shaped urban landscape sculpture. It will offer various opportunities for physical and mental interaction with water, and strengthen the overall structure of the plaza. It will also operate to the greatest extent possible, using collected and cleansed stormwater coming from the plaza and tower. Finally, it is a figurative continuation of the flow of water through the Civic Center Master Plan area.

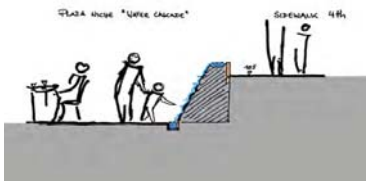
Due to the importance of flexibility for events, climate, and general daily/weekly/monthly change, the water feature will be designed to work with the fluctuating life of the plaza, being temporarily turned off if necessary.

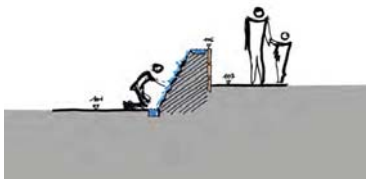
The waterscape of the plaza could be interpreted as three separate, unique features. Each is subtly symbolic of the three regional landscape types found in and near Seattle and will be designed to work with the adjoining architecture and plaza.

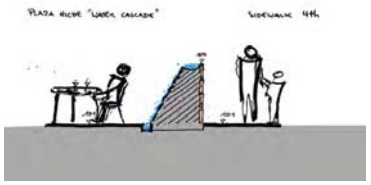


## 2.3
## Design Response
The Civic Plaza
Landscape- Upper Water Cascade







The Upper Water Cascade provides a sheltered terrace. Protection is given with a watercascade from the Fourth Avenue. The sound of the water filters from the traffic noise. Thus even close to the traffic corridor, a comfortable atmosphere will be created.

The intimate space with an overlook to the main plaza level can be seen as a public gathering space oriented towards the center. It also creates a dialogue across to City Hall.

Potentially, it is operated as an outdoor seating area from the southern retail building, and it is inhabited by those who may want to pause next to the primary pedestrian route.

## 2.3
## Design Response
The Civic Plaza
Waterscape- Plaza Fountain

To help reduce the scale of the Tower and surrounding buildings and create a 'human-scale' environment, a rich water structure accompanied by native plants and natural boulders, a space for relaxation, leisure, and contemplation will be introduced. A tranquil water sound helps to create an area that will be a preferred usable place for lunchtime activity, to stay and 'hang out'.

Beginning at one of the highest points on the site, at elevation 100' near the intersection of 4th and James, the Upper Cascade represents the flow of water from the Cascade Mountains above. A more idyllically designed feature, with water moving peacefully over its approx. 100' stretch, with only approx. 5' of drop, rippling and tumbling down the stepped levels, it will compliment the contemplative, human scale atmosphere of the adjacent softscape area. M plant materials will help to create this intimate atmosphere.

The upper cascade will terminate as it flows into the People's Plaza Fountain, a large, shallow and inwardly sloping pool of water located on the northern side of the central plaza circle at elevation 95'. This feature is meant to reference water in the civic environment, where its reflective pool elegantly compliments the tower behind. And during events this feature becomes a part of the central stage performance area, adding to the drama with lighting and movement.

Intermittently active water jets located within the paving of the central circle are integral to this feature, as they playfully arc through the air and onto the plaza surface before draining into the plaza fountain.

North-East Plaza Retail Elevation




Reference Images

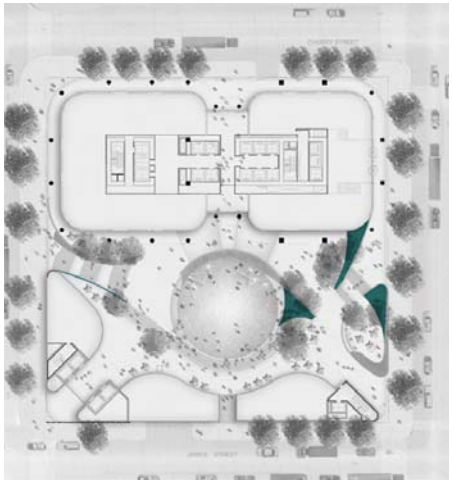
## 2.3
## Design Response
The Civic Plaza
Waterscape- Lower Water Cascade

The Water Wall and adjoining Lower Cascade combine to form the expression of water as it moves from city to sea. Both of these features begin at plaza level, which is 95' and fall in 2 distinct fashions all the way to elevation 80' on Third Avenue. Both are designed to display the majesty of water as it finally falls to the sound. This fall will dramatically unfold on the vertical surface of the water wall, as well as down the cascade's approximately 15' of elevation drop over a length of approx. 65'. These two features together will serve as an iconic element for this busy pedestrian intersection that will be one of the main access points of the project. People coming and going from Third Avenue will first hear the Cascade, and then be pulled into the plaza as they gaze upward to its origin at the main level of the plaza.

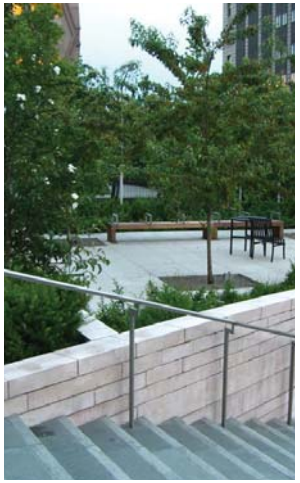
Because the water wall and cascade are located directly on the façade of the retail building and very near to the Tower, their design language is meant to take on a more architectural quality. In appropriate locations, the design will invite people to enter this exciting water environment, to feel the water rushing by and to interact with the Water Wall surface.

## 2.3
## Design Response
The Civic Plaza
Softscape- Materials Board

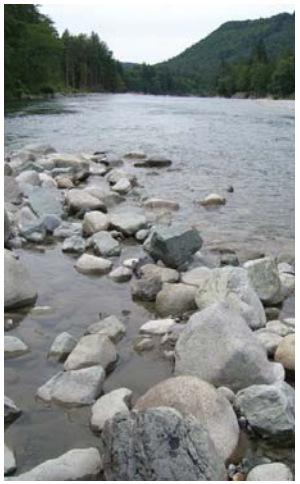
A selection of 'softscape' materials have been chosen. Each element draws its inspiration from the natural and unique vegetation of Washington State.



Plaza Level Softscape

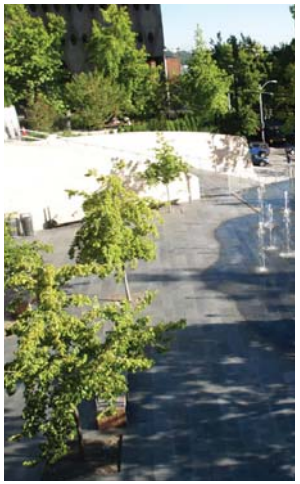


Green Roof Level Softscape



Regional

Seattle



City Hall

T EES
Acer buergerianum Trident Maple
Amelanchier alnifolia Western Serviceberry
Cornus Eddies White Wonder Eddie s White Wonder og ood
opulus tremuloides uaking Aspen

S S
ergenia Evening lo Evening lo ergenia
aultheria shallon Salal
ieris aponicus Japanese ieris
olystichum munitum Western S ord ern
Ribes sanguineum / Red-Flowering Currant
osa gymnocarpa aldhip ose
Spriaea aponica Japanese Spiraea
Symphoricarpus albus Common Sno berry

O COVE S E E IA S ASSES VI ES
Agrotis exarata Spike entgrass
Arctostaphylos uva-ursi / Kinnickinnick
Camassia leichtlinii reat Camas
Carex morro ii Ice ance
Crocus sp. Crocus
estuca idahoensis Idaho escue
ragaria chiloensis each Stra berry
ordeum brachyantherum Meado arley
Iris tenax Oregon Iris
Juncus patens lue ush
Mahonia repans Creeping Oregon rape
arcissus sp. affodil
Scirpus americanus / Three-Square Bulrish


Trident Maple


Western S ord ern


lue ush

Plaza/Lowland Riverbed

T EES
Acer circinatum Vine Maple
Amelanchier alnifolia Western Serviceberry
Crataegus douglasii ouglas Ha thorn
inus contorta Shore ine

SH S
Cistus ockrose
Corylopsis pauciflora / Buttercup Winterhazel
arrya elliptica Silk Tassel ush
amamelis x intermedia Arnold romise Arnold romise Witch a el
Myrica Californica
Rhododendron albiflorum / White-Flowered Rhododendron
osa gymnocarpa aldhip ose
Vaccinium ovatum Evergreen uckleberry

O COVE S E E IA S ASSES VI ES
Arctostaphylos uva-ursi / Kinnickinnick
Artemesia abrotanum Sage ort
ergenia ciliata airy ergenia
eschampsia caespitosa Tufted airgrass
onicera sempervirens Trumpet oneysuckle
Luzula multifolora / Many-Flowered Wood Rush
annicum virgatum Shenandoah Shenandoah S itch rass
ennisetum alopecuroides compressum ountain rass
enstemon superbus Superb Coral enstemon
Stipa cernua odding eather rass


Western Serviceberry


Cistus


ountain rass

Retail Roof Garden/Mountain Grassland

T EES
Acer circinatum Vine Maple
Amelanchier alnifolia Western Serviceberry
Crataegus douglasii ouglas a thorn
inus contorta Shore ine

S S
Cistus ockrose
Corylopsis pauciflora / Buttercup Winterhazel
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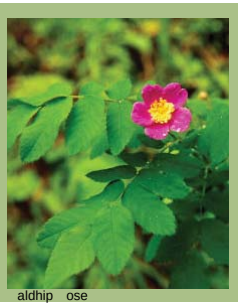
Myrica Californica
Rhododendron albiflorum / White-Flowered Rhododendron
osa gymnocarpa aldhip ose
Vaccinium ovatum Evergreen uckleberry

O COVE S E E IA S ASSES VI ES
Achillea millefolium Yarro
Achnatherum hymenoides Indian icegrass
Allium cernuum odding Onion
Anenome multifida / Cut-Leaf Anemone
Antennaria neglecta ield ussytoes
Arenaria capillaris Sand ort
Calamagrostris rubescens ine rass
elphinium glareosum Olympic arkspur
Epilobium latifolium / Broad-Leaved Willowherb
eucanthemum vulgare Oxeye aisy
enstemon davidsonii avidson s enstemon
Saxifraga caespitosa Tufted Alpine Saxifrage
Sedum spathulifolium Stonecrop
Silene acaulis Moss Campion


Shore ine


aldhip ose


Tufted Alpine Saxifrage

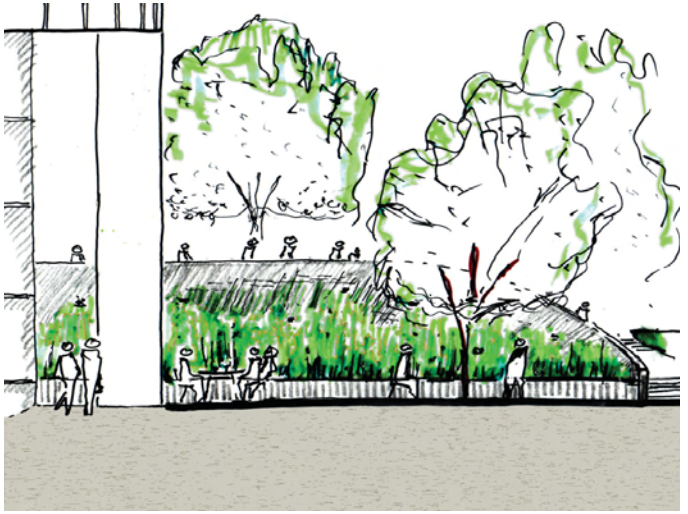
Amenity Level Green Roof/Rocky Alpine

## 2.3
## Design Response
The Civic Plaza
The Great Room- The Green Room

The Green Room is arranged as as an intimate place to relax and enjoy during breaks throughout the day and is directly linked to the Great Room.
The wall is structured with plants like mosses, ferns and other shadow resistant species which cope with the meagre and unique habitat.

Water spills out of the wall and moisturizes the vertical surface.
The planter is designed to clean the water in order for it to be re-used for other water features.

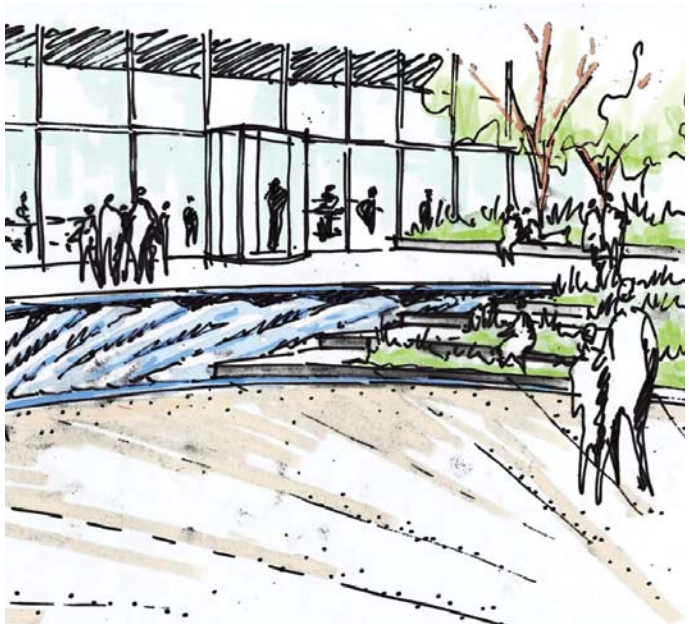
This green edge creates a distinctive "room" ambience within the overall civic square.

Terrace with temporary furnishing under a tree canopy



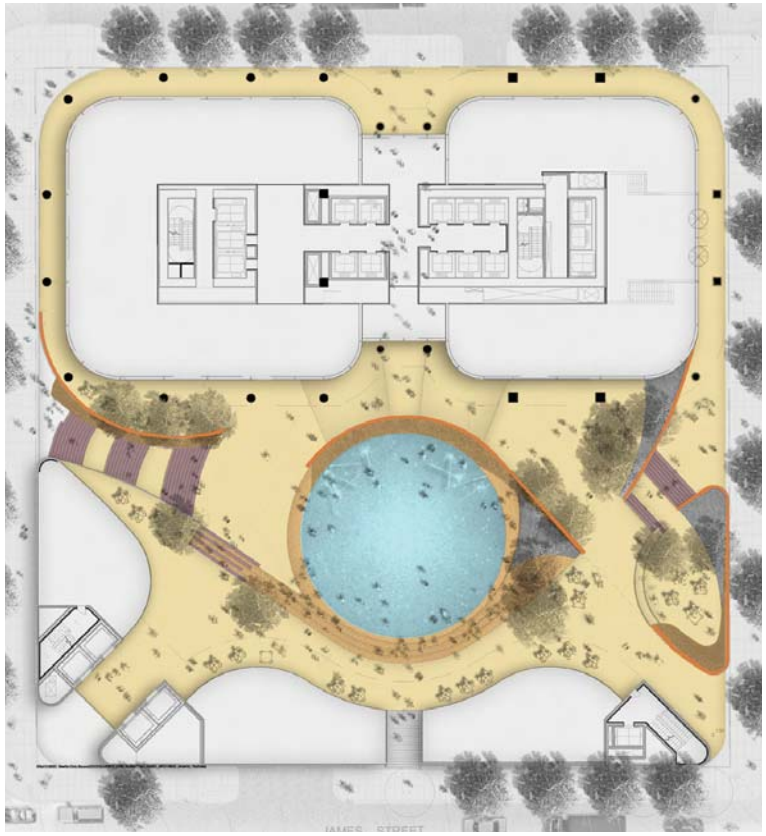




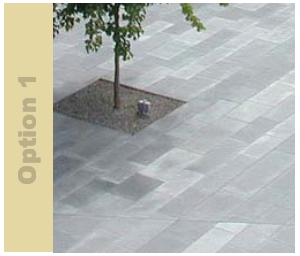
## 2.3
## Design Response
The Civic Plaza
Hardscape Material Board and Key Plan

Materials chosen for the site are inspired by indigenous materials within the region as well as with the intention of creating a seamless transition from the City Hall to the new plaza. Incorporating sandstone and granite in the form of boulders, salvaged blocks and cobbles, the materials on the walking surface, seating and vertical walls speak to the City of Seattle and the greater Puget Sound region.

The walking surfaces within the plaza will echo that of the City Hall to provide a seamless transition across Fourth Avenue, unifying the two outdoor spaces. The low traffic surface and seating areas throughout the plaza reach back into Seattle's history when the streets were paved in cobblestone. These surfaces will reuse old, salvaged cobbles, varying in size, from the old streets that are now paved in asphalt. In the Puget Sound region, granite and sandstone are naturally occurring materials that will be represented within the plaza. Refined stone will give way to salvaged granite blocks as the amphitheater steps curve around into the biotope planting and water feature area. These blocks will give shape to the water as it cascades over the granite like the natural rivers within the region. Sandstone, like that occuring in rock walls along western Washington rivers, will provide the finished surfacing for all vertical walls within the plaza.



Hardscape Location Plan, Plaza




Stone Paver


Concrete Unit Paver


Poured-in-Place Concrete

**Walking Surfaces**


Salvaged Cobblestone Paver

**Amphitheatre/Low Traffic Surfaces**

Regional

Seattle

City Hall

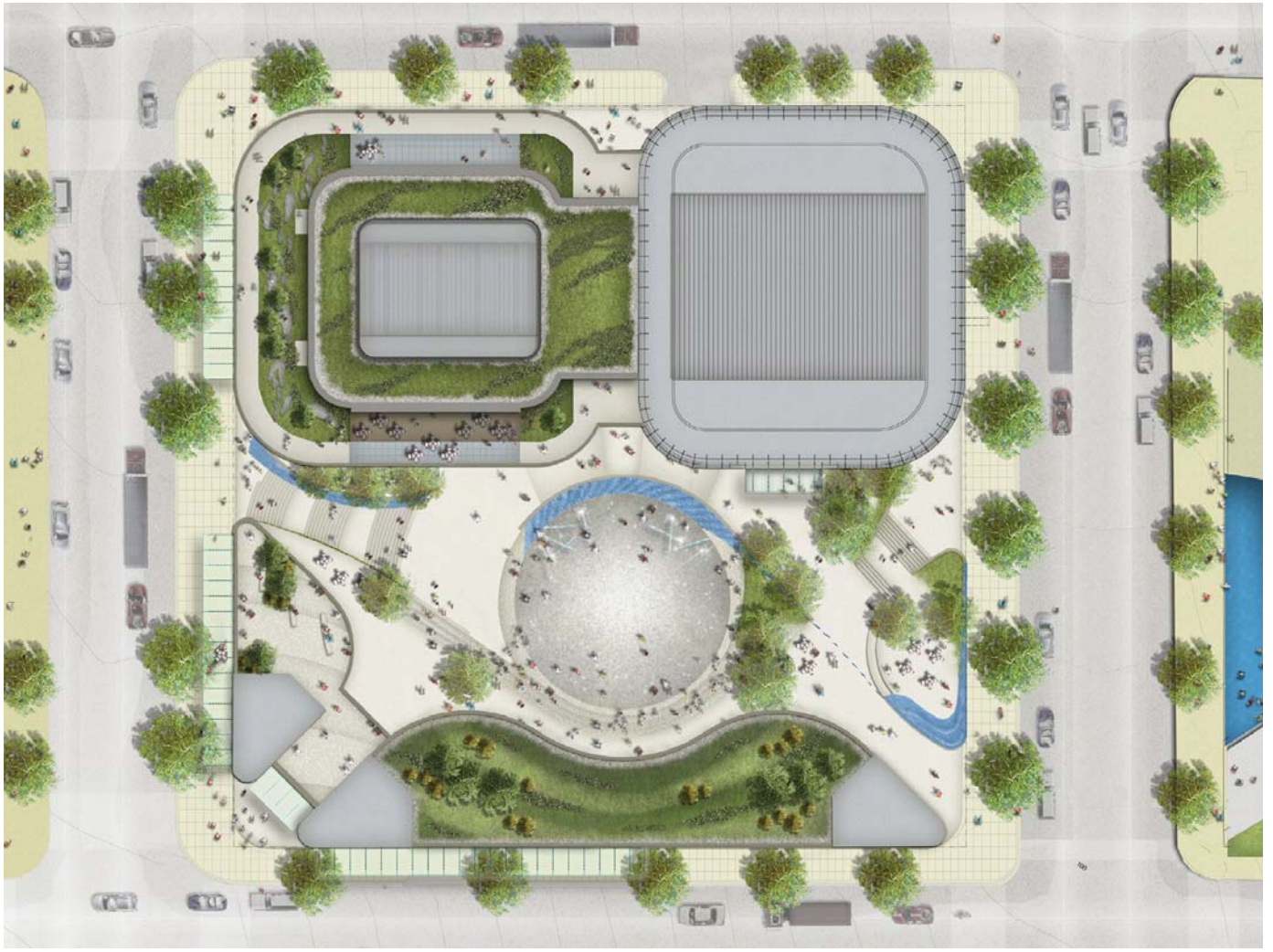
## 2.3
## Design Response
The Civic Plaza- Green Roof

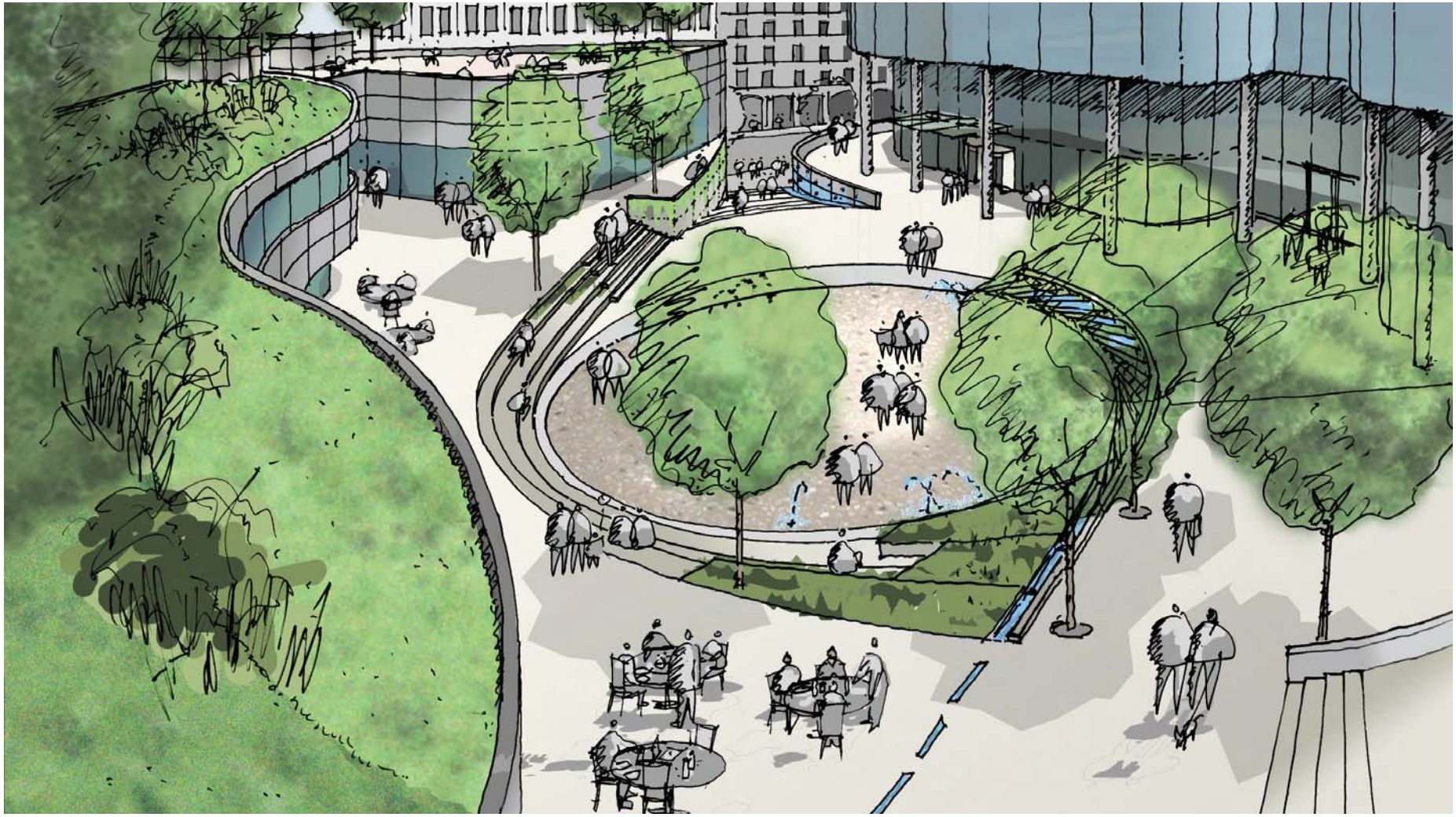
The proposal provides a variety of accessible and non-accessible green roofs that are either fully accessible to the public or directly related to the private residential apartments.

Above the plaza, a single green roof is provided above the retail building that is fully accessible via the main elevator core.

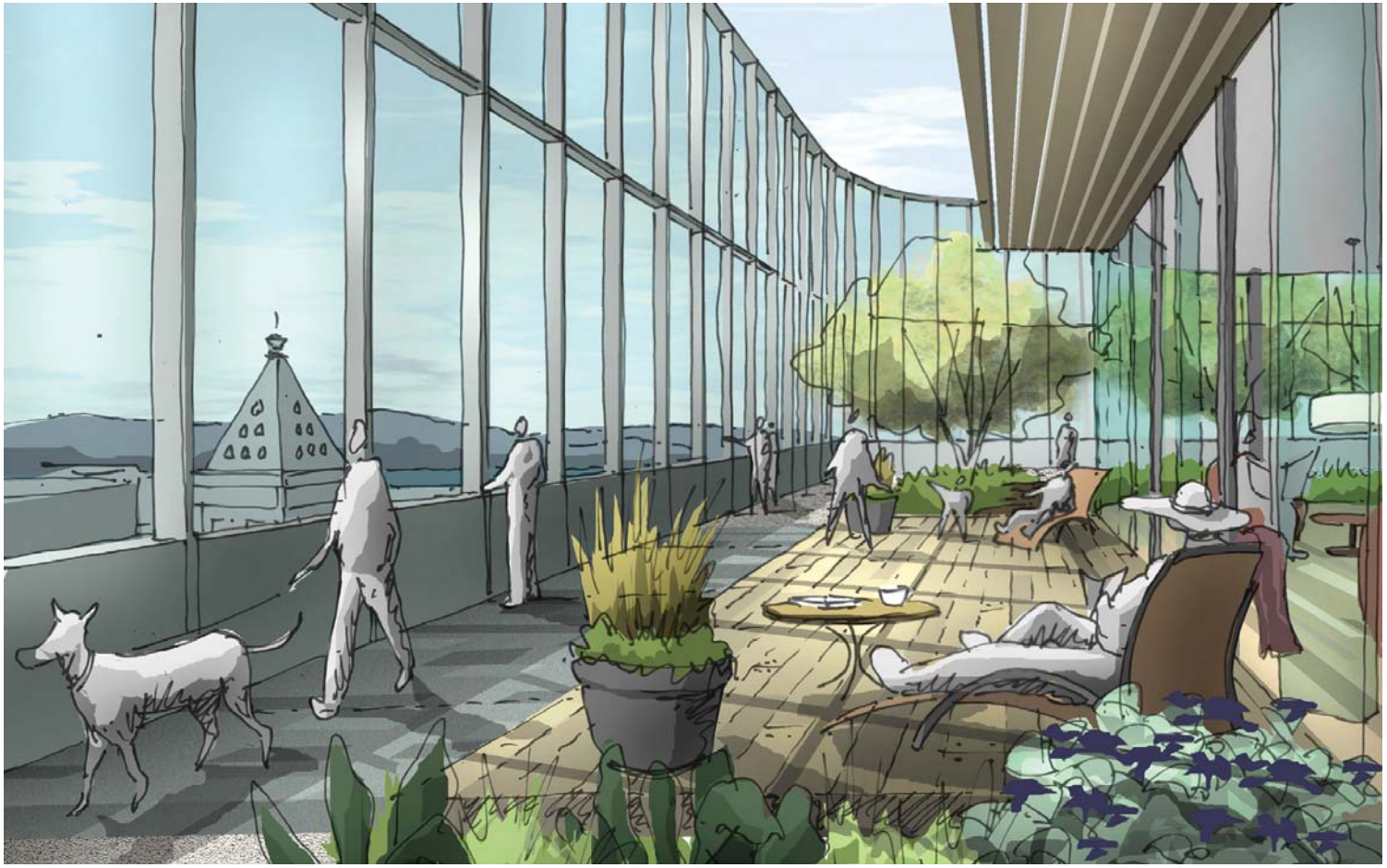
Above the main southern retail pavilion is a non accessible green roof that will be lanscaped with distinctive regional plants and will be highly visible from City Hall.

Finally, at the amenity level of the tower, an extended terrace will be lanscaped to provide high quality external space for apartment owners.

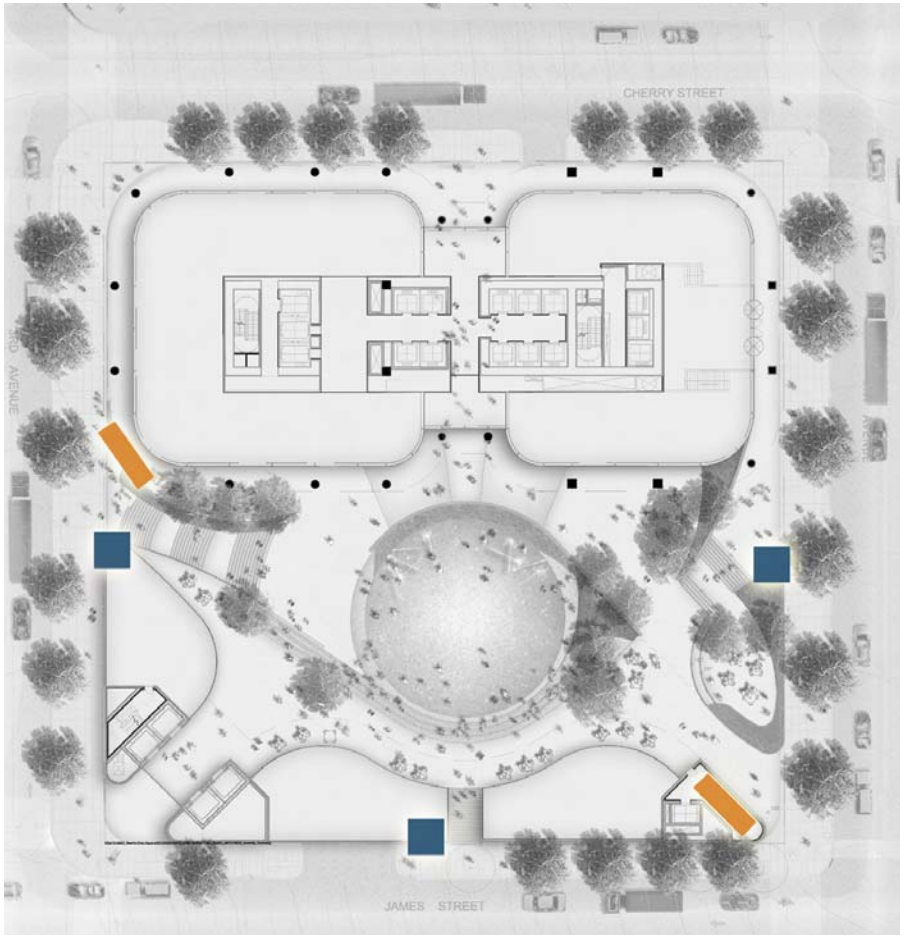




**2.3**
**Design Response**
The Civic Plaza- Amenity Level Green Roof



## 2.3
## Design Response
The Civic Plaza- Signage





Accessible signage

Plaza signage

Appropriately scaled signage displaying the name of the plaza would be placed in areas within the site that provide good orientation for viewing by both pedestrians and vehicular traffic. Signage would depict entrances as well as the location of accessible routes. Small plaques on the side of walls or buildings near both staircase entrances, 3rd Avenue and 4th Avenue, would display the location of the nearest accessible routes.

### DRB Comments- 10th June 2008

**D-4 Provide appropriate signage.**

For the next Recommendation meeting, preliminary signage concepts should be presented to the Board.

## 2.3
## Design Response
The Civic Plaza- Lighting

The lighting design will be developed to ensure adequate ambient illumination of the plaza levels. Mood lighting will be introduced in the key activity spaces creating an elegant environment for night time visitors.

Proposed plaza lighting aspects

Existing standard street lighting poles

DRB Comments- 10th June 2008

**D-5 Provide adequate lighting.**

For the next Recommendation meeting, preliminary plaza and tower lighting concepts should be presented to the Board

## 2.3
## Design Response
The Civic Plaza- Public Art- Ned Kahn

**Artist Ned Kahn**

The City of Seattle led the artist selection process and chose Ned Kahn on June 11, 2008. Four finalists were interviewed that day, and Mr. Kahn's work and team spirit led the panel to his selection.

Mr. Kahn's work is not only creative, but also inventive. He works in atypical and unusual mediums including wind, light, sand, and sound. His problem-solving nature and willingness to join a team design process will be of great value to the project.

Artist Ned Kahn's work focuses on the physical world. From the harmonies of randomness to the dynamics of the Earth's crust, Kahn uses scientific principles to create mesmerizing works of art.

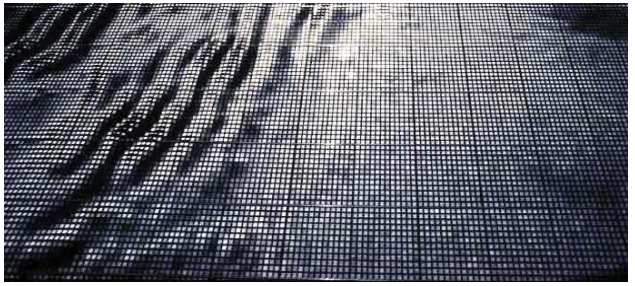
His work usually involves capturing an invisible aspect of nature and making it visible. Examples include building facades that move in waves in response to wind, indoor tornadoes and vortices made of fog, steam, or fire, a transparent sphere containing water and sand which, when spun, erodes a beach-like ripple pattern into the sand surface. Kahn won a MacArthur Foundation "genius grant" fellowship in 2003, and the National Design Award for environmental design in 2005.

Ned Kahn says, "I've tried to create things where I've basically framed a phenomena, and I'm letting nature do the sculpting."

Seeing that nature and landscape have been valued design components from the onset of the 601 Fourth Avenue project, the integration of Ned Kahn's art will greatly enhance the project's concept.


Water Art and Light Traces by Atelier Dreiseitl







Artwork by Ned Kahn

## 2.4
## Design Response
City Context- Tower Facade

In order for the tower to read vertically as a whole while it consists of horizontal office façade panels, the insulated spandrel panels are clad with fritted glass and the vertical mullions accented by using 4" tapering mullion caps. Additionally, the outrigger columns of the building on the east will be clad with a second type of fritted glass panel. The fritted and vision glass panels read quite similarly in the sun and provide an interesting texture where the frits become more perceptible as one approaches the building. The typical spandrel will contain larger frits, and the outrigger columns will be clad with a much finer frit. These columns will also be clad with extra large vertical profiles to further increase the vertical expression. The play of light on these cladding elements will lend the tower a jewel-like appearance.

Third Avenue Elevation

James Street Elevation

### DRB Comments- 10th June 2008

**B-4 Design a well-proportioned and unified building**

The vertical crease or modulation in the façade to differentiate two vertical shafts within the overall massing met with the Board's approval. The Board asked for greater differentiation of the building's skin in order to create a livelier and less monotonous façade. Two Union Square represents a local example of a tower in which the façades vary from one another yet remain part of a strong compositional idea.

**C-2 Design facades of many scales.**

The facades of the building should respond to variations in solar and climatic conditions, to views, and to other potential influences that would imbue the structure's skin with interest and meaning. Board members found the ribbon widows, spandrel banding and brise-soleils too insistent. In spite of the visibility of the piers on the tower's eastern half, the crease in the north and south elevations, and the change of window treatment at the residential levels, the Board sought more variation and an increased sense of verticality in the desire to provide a building of many related scales.

## 2.4
## Design Response
City Context-
Facade References and Details

Foster + Partners' Leslie L. Dan Pharmacy Building, Toronto, Canada

View 1- Office Tower Facade

In order for the tower to read vertically as a whole while it consists of horizontal office façade panels, the insulated spandrel panels are clad with fritted glass and the vertical mullions accented by using 4" tapering mullion caps. Additionally, the outrigger columns of the building on the east will be clad with a second type of fritted glass panel. The fritted and vision glass panels read quite similarly in the sun and provide an interesting texture where the frits become more perceptible as one approaches the building. The typical spandrel will contain larger frits, and the outrigger columns will be clad with a much finer frit. These columns will also be clad with extra large vertical profiles to further increase the vertical expression. The play of light on these cladding elements will lend the tower a jewel-like appearance.

Facade Detail , Leslie L. Dan Pharmacy Building

Facade transiftion between office and residential towers

**2.4**
**Design Response**
City Context

**2.4**
**Design Response**
City Context- Tower Facade

## 2.4
## Design Response
City Context- Tower Top

The tower top has also been designed to enhance the verticality of the tower and provide an elegant and well proportioned conculsion. The top will be clad in glass screens continuing up in the same volume as the residential tower which will serve to shield the mechanical equipment located there from view.

There will be a small horizontal break at the top of the residential tower created with expressed profiling. The outrigger columns will conclude at this point.

The glass screens on top of this band will be treated with a special gradient frit which will be almost opaque at the bottom, but completely transparent at the top. The transparent glass above the gradient frit at the top will cause the tower to appear to merge with the sky above. This treatment will shield the mechanical equipment while still providing an interesting texture an opportunities for dramatic night time lighting effects. The light will shimmer from behind the fritted glass and could change in color and intensity. There is a desire to achieve the lighting at the top by means of solar LEDs or similar technology.

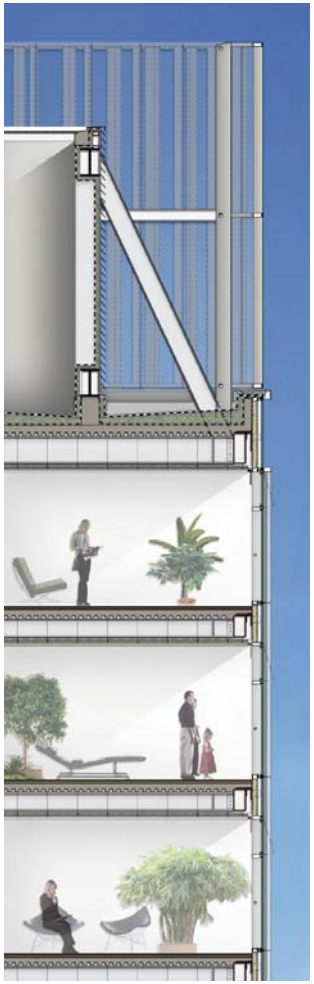

View 1


## DRB Comments- 10th June 2008

**A-2 Enhance the skyline.**

The Combined Board emphasized the need for a greater commitment to expressing the tower's verticality. Shaping the apex of the tower should enhance the sense of vertical lift. The concept of a box within a box (the mechanical penthouse surrounded by green walls within a glass enclosure) met with little enthusiasm by the Board members. A roof better expressing the technology of sustainability would be welcomed. The alternative concept of a halo appearing to float above the tower did not elicit reaction. The Board envisions a more powerful image on the city skyline.

**2.4**
**Design Response**
City Context- Tower Top




**2.5**
**Design Response**
Arup Sustainability Report

## DRB Comments- 10th June 2008

**D-3 Provide elements that define the place.**

The Board questioned what made the proposed complex an attraction. The tower appeared to them as not memorable and the retail / Metro pavilions as too similar to the tower in material choices.

The notion that the entire complex had a significant sustainability strategy seemed, to the Board, to be diminished due to the removal of the "sustainability pavilion" and the lack of information in the design review packet covering installation of green technologies. An important green element, the retail pavilion roof, would no longer be accessible and the green wall on James St. seemed devoid of context. At the next Recommendation meeting, more information, similar to earlier presentations, should elucidate the use of green strategies and specific technology. Guidance by the Board suggested wrapping portions of the green wall to Third and Fourth Avenues and allowing the green roof to spill over onto the wall.

## Contents



## Tables



## Figures

# 1 Sustainability

## 1.1 Overall Sustainable Approach

The design of 6 1 ourth Avenue embraces sustainability as a core value ith a hole systems approach that balances social economic and environmental factors.

The pro ect is evaluating sustainable measures based on the triple-bottom-line approach that values environmental social and economic sustainability. The technical approach to sustainability on the pro ect ill be one of each component stands on its o n. To be truly sustainable all aspects of the pro ect must be individually sustainable. To achieve a high level of sustainability as indicated by a EE old or latinum certification the pro ect cannot afford to have poorly performing aspects propped up by other aspects. This is most certainly true for areas of ater and energy consumption but also true for other aspects such as construction materials.

### 1.1.1 Evaluation Criteria

ro ect decisions particularly ith regards to energy related systems ill focus on four main evaluation methods looked at holistically and in relation to the pro ect financial performance sustainability goals and market factors. These key factors include

- Comprehensive life cycle cost analysis that include maintenance productivity and replacement costs along ith first costs and energy resource costs
- Site energy consumption to ensure compatibility ith the pro ect goals
- Source energy consumption to ensure that true energy efficiency is included in the decision making process
- Carbon-emissions to ensure that carbon emissions are factored in along ith energy costs to make systems decisions that best address the pressing environmental concerns regarding global arming and the building s environmental impact.

In addition here possible given available data embodied energy ill also be ackno ledged during system decision making. o ever given the lack of available data for many materials and components this ill only be able to be factored in for certain decisions.

### 1.1.2 Priorities

#### 1.1.2.1 Commercial Office Space

- Indoor environment vie s daylight high indoor air quality, flexible systems acoustics
- Active pla a and retail an enlivened sense of place that is the differentiator bet een this pro ect and other commercial developments
- Energy ater systems a priority for the developer to reduce operating costs and maximi e profits

#### 1.1.2.2 Residential Units

- Indoor environment particularly lo emitting materials air filtration high levels of ventilation and vie s.
- Energy systems that result in lo utility bills. ene able energy systems visible in their units that communicate their values may also be of significant importance.
- Active pla a and retail an enlivened sense of place that is the differentiator bet een this pro ect and other residential developments
- reen site amenities such as the high level green roof a sustainable spa bicycle facilities etc.

## 1.2 Sustainability Metrics

### 1.2.1 LEED® Core and Shell v 2.0

The project sustainability requirement is for LEED Core and Shell v 2.0 Gold certification. The project is aspiring to latinum certification if achievable ithin the pro ect s financial schedule and programmatic constraints.

The pro ect aims to achieve old pre-certification before the start of construction in order to demonstrate its achievements to the broader client body including the City of Seattle as ell as to aid in marketing of the pro ect to potential tenants. The project will submit for pre-certification based on the 50% Design Development documents.

The entire pro ect ill be considered a single EE Core and Shell pro ect including the site development interface ith Metro retail program parking garage commercial office space and residential units.

The pro ect is currently registered ith the S C.

### 1.2.2 Other Metrics

In addition to EE Core and Shell the pro ect team ill also be using several other sustainable design tools and metrics to evaluate the design guide the design and or set pro ect goals.

The t o main metrics e ill be using are ASHRAE Standard 189-P and the Architecture 2030 Challenge. oth of these metrics are actively supported by the City of Seattle – both by the Mayor's office as ell as the epartment of lanning and evelopment.

The pro ect is also considering the adoption of certain measures contained ithin EE for omes and the American ung Association ealth ouse no discontinued programs for application to the residential units.

In addition the pro ect is ensuring that the base building systems are suitable for tenant certification of EE latinum for Commercial Interiors.

#### ASHRAE Standard 189-P

ASHRAE Std. 189-P is current a draft standard being ointly developed by AS AE the American Institute of Architects the S reen uilding Council and the Illuminating Engineering Society of North America. It is an attempt to provide standard-level language to ensure project sustainability – language that can be incorporated into local state or federal codes to enforce all aspects of a pro ect s sustainability. While it dra s heavily from EE it has important differences in that it removes some of the flexibility of EE to enforce a greater level of minimum performance standards in each main area of sustainability – site, water, energy materials and the indoor environment.

While still in the draft stage the Standard is anticipated to be approved in 2008. The City of Seattle has indicated that it may bring the standard into its code language ithin the code cycle. It is possible that the standard ill be adopted into Seattle code before the completion of the 6 1 ourth Avenue pro ect though likely after it has gone through the permitting process.

ue to the strong role Seattle is playing in the development of the standard and its likelihood of adoption this pro ect ill also track itself against the standard.

#### Architecture 2030 Challenge

The Architecture 2030 Challenge deals entirely with the issue of carbon emissions and site energy consumption of buildings. The goal of the Challenge is to have all new buildings built by 2030 be carbon neutral. As such it has set intermediate benchmarks to guide the industry to ards that ultimate goal. The Challenge's goal for buildings built in 2010 is that they achieve a site energy consumption of 60% less than the average for its building type, as defined by the 2003 US EIA Commercial Building Energy Consumption Survey.

The Architecture 2030 Challenge has been endorsed and supported by AS AE the American Institute of Architects AIA and many local and state level organi ations including the City of Seattle. As such the pro ect is tracking its performance relative to the 2010 energy savings of the Challenge.

The Architecture 2030 Challenge has several design and implementation challenges for the project:

- The energy savings goals include all end use energy of the building, including non-regulated energy consumption such as tenant plug loads and residential energy consumption
- The baseline for the Challenge, the 2003 Commercial uilding Energy Consumption Survey C ECS database does not include any information on residential performance.
- True demonstration of achievement is only feasible after at least one year of occupancy.

To demonstrate achievement prior to occupancy several assumptions ill be made

- Office and retail energy consumption ill be estimated based on typical data
- esidential energy consumption ill
  - benchmark against average energy consumption for Seattle condominiums. The pro ect team aims to ork ith Seattle City ight to get this data to set the benchmark.
  - include estimates of non-regulated energy consumption based on data from Seattle City ight as ell as data from selected appliances, lighting, and other equipment that will be installed.

**Table 1: Preliminary Baseline Energy Consumption Estimate for 2030 Challenge**

| CBECS/RECS & Target Finder Data for SCS Concept Design | | | | | | |
|---|---|---|---|---|---|---|
| Total Site Annual Energy Consumption | | | | | | |
| Existing Buildings Data – Baseline for Architecture 2030 Challenge & Project Energy Targets | | | | | | |
| Program | Area (SF) | % Area | # units | EUI (kBtu/sf) | Annual Energy Consumption (MMBTU) | % of Annual Site Energy Consumption |
| Office | 613,486 | 52% | | 72.1 | 44,232 | 62% |
| Retail | 50,304 | 4% | | 153.5 | 7,722 | 11% |
| Residential | 209,741 | 18% | 180 | 45 | 9,438 | 13% |
| Garage | 314,319 | 26% | | 31.3 | 9,838 | 14% |
| *Total* | *1187850* | *100%* | | *59.9* | *71,230* | *100%* |

The baseline energy estimate in Table 1 is based on C ECS data for the commercial office and retail programs S ept. of Energy s Energy Information Administration and Seattle City ight data for the residential program. To meet the 60% reduction in 2 1 the target Energy se Intensity E I for the composite project is 24 kBtu/SF-yr.

**American Lung Association's Health House® Program**

While not specifically ritten to address a high rise condominium residential complex the underlying principles are complementary to EE and help address additional concerns in residential construction that are not specifically addressed by EE Core and Shell. The main program has recently been discontinued by the American ung Association A A as a certification for homes. o ever the fundamental principles are still sound and applicable to many aspects of multi-family residential design and construction.

The key areas of focus for this program are

- moisture control
- air-sealing and insulation performance
- high performance facades
- sealed combustion appliances
- high levels of air filtration
- hole house ventilation control
- humidity control
- interior finishes
- acoustic control – use of low sone fans to promote use and improved ventilation

Some aspects of this program s requirements have already been included in the pro ect e.g. the mechanical systems design.

**LEED® for Homes**

While EE for omes is not directly applicable to the pro ect the pro ect team ill also be using it as a source of guidance for sustainability ithin the residential units. Specific aspects that are being considered in addition to EE Core and Shell requirements are:

- Unit size – evaluate unit size relative to the neutral size range
- Lighting design – incorporation of high quality hard- ired compact fluorescents to reduce usage of incandescent lightning in high use rooms such as kitchens living rooms dining rooms hall ays and restrooms. EnergyStar rated fixtures. Enhanced lighting controls vacancy sensors
- Appliance refrigerant management
- Appliance energy efficiency. EnergyStar rated appliances refrigerators ine coolers dish ashers clothes ashers
- Ensure compliance ith ventilation and IA procedure here they exceed EE Core and Shell requirements
- Air leakage testing
- Ventilation system automatic controls

## 1.3 Sustainable Design Concepts

The follo ing sections outline the key design impacts of sustainability for the pro ect in each ma or EE category. The EE requirements are based on an initial assessment of ho the pro ect ill achieve its Gold certification requirements and aspirations for latinum. The exact path to EE compliance will evolve throughout the design phase and may change due to additional requirements, constraints opportunities or desires.

### 1.3.1 Site

Many aspects of the EE site requirements are set by the project's location. These issues are not discussed in detail as they have little to no impact on the design of the pro ect.

#### 1.3.1.1 Base Project Design Strategies for LEED® Gold Certification

**Construction**

- The construction team ill create and implement an erosion and sedimentation control plan conforming to the requirements of the 2003 EPA Construction eneral ermit or City of Seattle requirements, whichever is more stringent. The main focus of this effort is to reduce construction-based pollution at the site, including run-off, erosion dust and particulate matter and contamination of the storm se er system.

**Transportation**

- icycle storage and changing facilities
  - esidential portion provide covered storage facilities for 15% of the residential building occupants. ockable bike lockers are recommended.

- Commercial retail portion provide secure bicycle racks or lockers for 3% of the occupants for the first 300,000 SF, plus an additional 5% of the occupants for area over 3 S plus provide sho er and changing facilities for 5% of the full time equivalent occupants. A mix of bicycle racks and lockable bike lockers are recommended to accommodate both transient bicycle commuters and tenant employees.
- The design team is also considering bicycle traffic in planning the garage layout including ramp slope and bicycle entrances lanes shoulders location of storage and sho er facilities and paving materials to ensure that bicycle commuting is a safe and en oyable experience.
- inal location of all bicycle parking areas is not finali ed ho ever the predominant location ill be a secure location ithin the garage near the sho er and changing facilities. In addition the pro ect is considering smaller parking areas at the pla a street level for short duration users.

- referred parking provide preferred parking spaces for 5% of the total parking capacity for low-emitting and fuel efficient vehicles. referred parking can be either preferred locations near elevators or other entrances or discounted passes.
- Carpools and vanpools preferred parking provide preferred parking spots for car and van pools that total 3% of the total parking capacity. referred parking ill be either preferred locations near elevators or other entrances or discounted passes.
- Car-share facilities: Provide spaces within parking garage for use by local car-share programs, such as ipcar .

**Stormwater**

- tili e green roofs and storm ater harvesting to reduce stormwater runoff volume by 25% compared to previously existing conditions (completely hard-scaped site).
- tili e green roofs storm ater harvesting pervious materials mechanical filtration management bio-filtration, etc to reduce pollutant load from stormwater run-off.

**Green Roofs**

- The green roof area ill utili e native or adapted species.
- reen roofs are currently located on the t o retail buildings as ell as the office to er roof. In addition there are planting on the roof of the garage that also contribute to storm ater retention and site shading reduced heat island effect.

**Heat Island**

- The pro ect is aiming to utili e paving materials on the pla a ith a Solar eflectance Index of at least 29 – e.g. utilize white concrete instead of gray concrete no utili ation of asphalt
- The pro ect is aiming to utili e pla a vegetation to shade hardscape areas to reduce local temperatures local heat island effects and improve summer thermal comfort. Care ill be taken so as not shade too much in the cool seasons as this ill have the opposite effect on personal thermal comfort and utili ation of the pla a in those seasons.
- Non-green roof surfaces should be high albedo with a Solar reflective Index S I of at least 7 . This ill need to be balanced ith occupant visual comfort and space utilizability for non-green roof occupied roof areas such as patios observation decks etc. If the green roof area exceeds 50% of the roof area this requirement is not necessary to meet EE requirements.

**Light Pollution**

- Interior lighting: requires automatic controls to either dim lights at night by 50% or automatically draw shades at night. This will require interface ith tenant lighting and or shade control systems

- Cannot exceed 80% of ASHRAE Std 90.1-2004 maximum lighting power density
- Cannot exceed 50% of ASHRAE Std 90.1-2004 maximum lighting allowance for building facades and landscape features.
- Will meet IESNA RP-33 requirements for LZ4 regarding light trespass at site boundary.

**Tenant Guidelines**

- evelop a tenant guideline and manual to enable coordination ith core and shell systems and facilitate tenant improvements that are EE certifiable under Commercial Interiors program. The tenant guidelines ill contain additional tenant sustainability requirements, which may include items such as efficiency of tenant-provided HVAC equipment, tenant lighting requirements, tenant plumbing fixtures etc.
- The developer is considering funding and pro ect management such that every tenant improvement is EE certified under the Commercial Interiors program.

### 1.3.2 Water

#### 1.3.2.1 Base Project Design Strategies for LEED® Gold Certification

**Landscaping**

- tili e rain ater storm ater harvesting irrigation systems and plant selection to reduce potable water demand for landscape irrigation by 50%.
- The pro ect includes a rain ater collection system that ill serve the irrigation on site including the green roofs. Because the quality of water required for sub-surface irrigation is less than that for other reclaimed ater uses such as toilet flushing or water feature make-up), utilizing rain ater collection solely for irrigation expands the available surface area from hich rain ater can be collected further saving ater resources.

**Fixtures**

- All shell and core and residential fixtures ill be selected to reduce potable ater consumption by 30% compared to the 1992 Energy Policy Act requirements. With appropriate selection savings greater than 30% should be readily achievable. Selections ill focus on technologies such as
  - dual flush and/or low flow toilets - fixtures that have performed ell in toilet performance testing lushStar program and Ma testing of at least 250 grams) to ensure they will deliver good performance and not be replaced in the future ith less efficient models.
  - ultra lo flush urinals
  - lo flo faucet aerators
  - metering faucets
  - lo flo sho erheads
  - there are existing utility incentives to financially assist in specification of these fixtures from Seattle ublic tilities.
- ixture commissioning The pro ect is considering engaging a commissioning agent to commission ater flo s for toilets and other fixtures to ensure rated performance is achieved. This is likely to achieve an innovation credit and also utili es Seattle ublic tilities experience.
- esidential ashers ill meet the minimum ater efficiency standards of the highest level of WashWise rebate program. Incentives are available to financially assist in specification of these appliances.
- esidential dish ashers ill be selected to minimi e ater and therefore energy consumption. Energy Star certification required

**HVAC**

- While not regulated by EE the pro ect is investigating opportunities for reducing potable ater consumption and treatment in VAC systems. This includes the use of dry hybrid fluid coolers during cool periods to reduce ater consumption especially from process load cooling.
- In addition the use of heat recovery ithin the VAC plant systems utili ing commercial and retail aste heat at the residential units reduces the amount of heat re ected and therefore ater used in addition to saving energy and fossil fuel use.

**Metering**

- While not required by Seattle Public Utilities, the pro ect is considering installing multiple revenue meters for the residential and retail tenants. evenue metering is kno n to be one of the most successful ays in reducing ater consumption since it provides direct financial feedback.

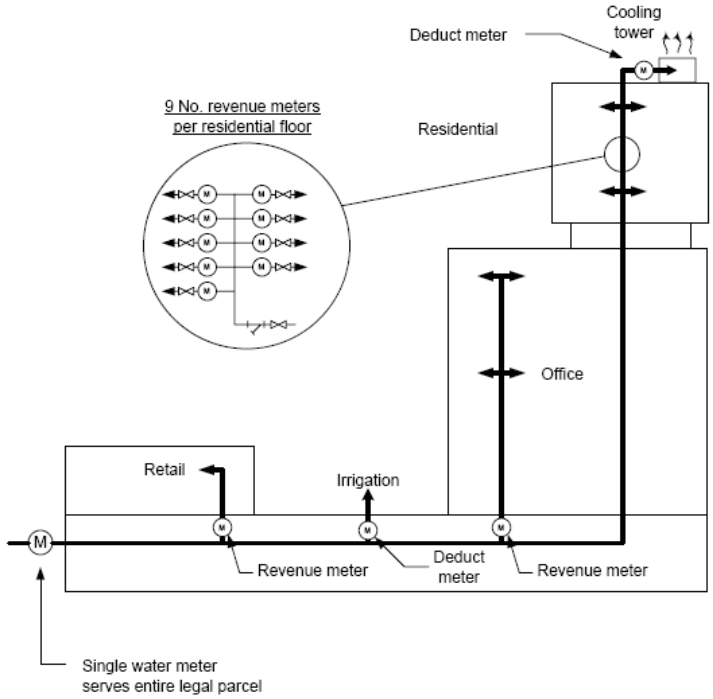



**Figure 1 : Option to include Revenue Metering**

**OFFICE**

**Conventional**

| Flush fixture | Daily uses | Flowrate (GPF) | Duration (flush) | Occupants | Water use (gal) |
|---|---|---|---|---|---|
| Conventional WC (male) | 1 | 1.6 | 1 | 1300 | 2080 |
| Conventional WC (female) | 3 | 1.6 | 1 | 1300 | 6240 |
| Conventional urinal (male) | 2 | 1 | 1 | 1300 | 2600 |

| Flush fixture | Daily uses | Flowrate (GPM) | Duration (sec) | Occupants | Water use (gal) |
|---|---|---|---|---|---|
| Conventional Lavatory | 3 | 2.2 | 15 | 2600 | 4290 |
| Kitchen sink | 1 | 2.2 | 15 | 2600 | 1430 |
| Shower | 0.1 | 2.5 | 300 | 2600 | 3250 |
| Janitors sink | 0.1 | 2.2 | 15 | 2600 | 143 |
| | | | **Total daily volume (gal)** | | 20033 |
| | | | | Annual work days | 250 |
| | | | **Total annual volume (gal)** | | 5,008,250 |

**Low flow**

| Flush Fixture | Daily uses | Flowrate (GPF) | Duration (flush) | Occupants | Water use (gal) |
|---|---|---|---|---|---|
| Conventional WC (male) | 1 | 1.28 | 1 | 1300 | 1664 |
| Dual flush WC (female) | 1 | 1.6 | 1 | 1300 | 2080 |
| Dual flush WC (female) | 2 | 1.1 | 1 | 1300 | 2860 |
| low flush urinal (male) | 2 | 0.5 | 1 | 1300 | 1300 |

| Flush Fixture | Daily uses | Flowrate (GPM) | Duration (sec) | Occupants | Water use (gal) |
|---|---|---|---|---|---|
| Low-flow lavatory | 3 | 0.5 | 15 | 2600 | 975 |
| Low-flow kitchen sink | 1 | 2 | 15 | 2600 | 1300 |
| Low-flow shower | 0.1 | 1.75 | 300 | 2600 | 2275 |
| Janitors sink | 0.1 | 2.2 | 15 | 2600 | 143 |
| | | | **Total daily volume (gal)** | | 12,597 |
| | | | | Annual work days | 250 |
| | | | **Total annual volume (gal)** | | 3,149,250 |

| | | |
|---|---|---|
| Baseline | 5,008,250 Gallons | |
| Design | 3,149,250 Gallons | |
| Saving | **1,859,000** Gallons | |
| Saving | **37 %** | Leed credit 3.1 one point for 20% reduction<br>Leed credit 3.2 one point for 30% reduction |

**Figure 2 : Estimated Water Reduction – Office**

**RESIDENTIAL**

**Conventional**

| Flush fixture | Daily uses | Flowrate (GPF) | Duration (flush) | Occupants | Water use (gal) |
|---|---|---|---|---|---|
| Conventional WC | 1 | 1.6 | 1 | 300 | 480 |

| Flush fixture | Daily uses | Flowrate (GPM) | Duration (sec) | Occupants | Water use (gal) |
|---|---|---|---|---|---|
| Conventional Lavatory | 3 | 2.2 | 15 | 300 | 495 |
| Kitchen sink | 2 | 2.2 | 15 | 300 | 330 |
| Shower | 1 | 2.5 | 300 | 300 | 3750 |
| | | | | **Total daily volume (gal)** | 5055 |
| | | | | Annual work days | 365 |
| | | | | **Total annual volume (gal)** | 1,845,075 |

**Low flow**

| Flush Fixture | Daily uses | Flowrate (GPF) | Duration (flush) | Occupants | Water use (gal) |
|---|---|---|---|---|---|
| Conventional WC | 1 | 1.28 | 1 | 300 | 384 |

| Flush Fixture | Daily uses | Flowrate (GPM) | Duration (sec) | Occupants | Water use (gal) |
|---|---|---|---|---|---|
| Low-flow lavatory | 3 | 1.5 | 15 | 300 | 338 |
| Low-flow kitchen sink | 2 | 2 | 15 | 300 | 300 |
| Low-flow shower | 1 | 1.75 | 300 | 300 | 2625 |
| | | | | **Total daily volume (gal)** | 3,647 |
| | | | | Annual work days | 365 |
| | | | | **Total annual volume (gal)** | 1,330,973 |

| | | |
|---|---|---|
| Baseline | 1,845,075 Gallons | |
| Design | 1,330,973 Gallons | |
| Saving | **514,103** Gallons | |
| Saving | **28 %** | Leed credit 3.1 one point for 20% reduction<br>Leed credit 3.2 one point for 30% reduction |

**Figure 3: Estimated Water Reduction – Residential**

| Combined | |
|---|---|
| Office Baseline | 5,008,250 |
| Resi baseline | 1,845,075 |
| Total | 6,853,325 |
| Office design | 3,149,250 |
| Resi design | 1,330,973 |
| Total | 4,480,223 |
| Saving | 2,373,103 |
| | **35 %** |

**Figure 4: Estimated Water Reduction – Combined Program**

### 1.3.3 Energy

#### 1.3.3.1 Base Project Design Strategies for LEED® Gold Certification

**Commissioning**

- Commissioning of all building systems as required by LEED for the pre-requisite commissioning requirements.
- Commissioning ill include residential systems
- Commissioning of water feature systems and rainwater systems is also required.
- or optimal utili ation of the commissioning agent the o ner anticipates bringing the agent on board early for a revie of the early design documents.

**Energy Systems & Consumption**

- Overall target The pro ect is targeting an overall energy savings of at least 14% compared to the appropriate ASHRAE 90.1-2004 baseline as modeled according to the Appendix G requirements. The overall performance ill also be evaluated against the final version of AS AE Standard 1 and the Architecture 2030 Challenge. While LEED currently requires compliance with the 2004 version of AS AE. The pro ect is aiming to comply with the prescriptive 2007 requirements here possible to ensure compliance ith future versions of EE and AS AE Standard 1 .
  - reliminary energy studies indicate that savings over 25% are achievable, depending on internal loading allo ances and expectations. The team is orking ith the developer to set reasonable limits on tenant cooling capacity expectations such that credit ithin the EE process can be taken for those savings.
- Envelope The envelope ill meet or exceed all prescriptive requirements of the 2006 Seattle Energy Code WA State residential Energy Code, and ASHRAE Standard 90.1-2004. Envelope trade-offs will only be allowed within the envelope component and envelope deficiencies will not be offset by other system efficiencies in order to meet the overall energy target.
  - In general, the above will require high performance glazing and reduced glass areas compared to conventional high rise office design. educing glass areas speaks to both improved energy efficiency as ell as financial responsibility for the project – glazing areas that exceed code allowance require much more expensive and materials intensive gla ing solutions to meet the energy performance requirements. ike ise using other systems to offset sub-code façade performance degrades the overall pro ect performance and increases costs in other areas such as VAC.
    - The project is currently designing for 45% maximum gla ing area by gross exterior all area per Seattle Energy Code calculations at the commercial office and retail areas.
    - The pro ect is currently designing for similar gla ing ithin both the residential and commercial to ers the residential gla ing area ill be set by the code allo ances given the performance of the final gla ing systems.
  - There are exceptions to allow for reduced solar heat gain coefficient and u-factor performance for retail street level gla ing accounting for increased glass transparency and lo er reflectivity ithin both the AS AE Standard as ell as the Seattle Energy Code. However, these exceptions will not allow for single pane glass – a double-pane low-e glass type is required.
  - esidential envelope in addition to the above is striving to meet or exceed the EnergyStar guidelines.
- Commercial Office VAC Systems The VAC systems will comply with all requirements of the 2006 Seattle Energy Code and ASHRAE Standard 90.1-2004 and 2007. The target for HVAC

systems is energy consumption at least 15-20% lower than allowed by ASHRAE Std. 90.1-2004 baseline system according to Appendix . The current VAC system characteristics include

- A chilled ater plant to serve the office to er. High efficiency water-cooled chillers provide significant energy savings over floor-by-floor packaged water-cooled DX air conditioning units due to the part load performance of variable speed driven chillers ith large condenser surface area. The chillers ill be variable speed supplying chilled ater on an outdoor reset curve from 44-55°F, with a peak performance of 0.44 kW/ton and an IPLV of 0.35 kW/ton. Chilled ater distribution ill be variable flo . Chillers ill be non C refrigerant and compliant with all LEED requirements regarding refrigerant type and charge.
- A cooling to er plant and condenser ater loop to serve distributed heat pumps throughout the retail residential lobby areas and chiller plant. The condenser ater system ill be variable flo . Cooling to ers ill be installed open to the outdoors in the Mechanical enthouse at the residential to er roof. The cooling to er plant ill include 3 open cell to ers and one hybrid to er. The three open to ers ill be drained do n in the heating season, leaving the hybrid tower to serve the remaining non-economizer cooling loads, typically operating dry. In heating season the heat extracted from the offices and server rooms will be recovered by the water-source heat pumps at the residential units via the condensing ater loop limiting the need for heat re ection and boiler operation. The condenser ater loop ill also serve the retail portions of the pro ect enabling retail tenants to take advantage of high efficiency water-source heat pump equipment.
- Office floor HVAC will consist of chilled water floor level air handling units with 100% economi er cooling capability. eating ill be provided by electric resistance VAV terminal boxes at perimeter ones. The system ill be designed for lo pressure drop in the distribution systems – structural and other services coordination ensures clean duct runs that minimi e fittings duct velocity and therefore pressure drop.
    - tenant guidelines ill outline tenant responsibilities for TI HVAC fit-out to comply with the project performance requirements, including pressure drop and velocity limits ventilation effectiveness requirements, VAV box turn down requirements, and filtration.
    - VAV terminals ill be single duct to eliminate the fan energy of conventional fan po ered terminals as ell as the maintenance and additional pressure drop of one filters (which LEED requires to be MERV 13).
- Supply air temperature reset chilled ater temperature reset and condenser ater temperature reset ill be employed to further improve energy savings.
- Tenant 24-7 Cooling Loads
    - The office secondary condenser water loop will serve the spaces requiring 24-hour cooling such as tenant server or data closets. Tenants ill provide ater source heat pumps and condenser ater pump capable of circulating ater from the condenser water riser to their unit, to serve their 24-hour cooling or supplemental cooling needs. These units ill meet Seattle Energy Code ith EE of 14. at A I conditions (15% beyond code minimum).
    - erimeter louvers at the north south alls aligned ith the hall ay bet een the low-rise and high-rise elevator cores) will be provided so that tenants can provide exhaust if required. Spaces such as copy rooms require exhaust per LEED® EQ Credit 5, and other areas such as kitchenettes may require exhaust in accordance ith EE Seattle Ventilation code or tenant preferences. These louvers ill also allow tenants to opt for air-side economizer to their 24-hour cooling spaces, although they would have to maintain clearance requirements from any exhaust terminations and this option ould reduce potential savings via heat recovery to the building condenser ater loop.
- esidential VAC Systems
    - A high-efficiency water source heat pump will serve each residential unit. The water source heat pumps ill pull off of the condensing ater loop served by the residential boilers and cooling to ers located at the esidential roof. The heat pumps ill be located in a utility closet or utility room ith the ater heater clothes asher and dryer. Vertical heat pumps have been specified to facilitate regular maintenance and filter changing. eat pumps ill have a minimum efficiency 14.3 EE in cooling and 4.7 CO in heating at A I conditions and include a 4 inch ME V 13 filter. The units ill also feature variable speed ECM motors for additional energy efficiency and improved comfort.
    - A hot ater plant provides supplemental heating to the residential to er condenser ater loop. Condensing boilers are being considered ho ever given that the expected run time ill be extremely minimal due to the heat recovery strategy conventional boilers present cost savings ith minimal impact on energy performance.
    - Continuous ventilation ill be provided by a central heat recovery ventilator located at the esidential roof Mechanical oom. The V ill include a 4 inch ME V 13 filter and operate at a 0.55 minimum heat recovery effectiveness. Air ill be distributed do n a central outside air riser and delivered to the return plenums of each heat pump in each d elling unit. It has been sho n that continuous ventilation is significantly more effective than intermittent ventilation hich is allo ed by code. y ventilating continuously and providing ventilation rates at least 30% beyond ASHRAE 62 requirements, these units will have a high degree of indoor air quality.
    - Non-HCFC refrigerants (R-410a, typically)
    - Operable indo s ill be provided to facilitate natural ventilation hen possible.
    - it is recommended to specify residential systems ith multiple one capability especially for larger units or units ith multiple exposures variable air flo ventilation heat recovery and high levels of air filtration note that residential units will be required to provide a minimum of ME V 13 filtration .
    - esidential systems ill be si ed based on engineering load calculations ith no more than 150% oversizing allowed.
    - esidential systems ill have individual airflo s tested ad usted and balanced. esidential VAC systems ill be commissioned.
- ighting Shell and core lighting systems ill comply with all the requirements of the 2006 Seattle Energy Code and ASHRAE Standard 90.1-2004 and 2007. This may be facilitated through the use of enhanced lighting controls as ell as high efficacy lighting fixtures and lo lighting po er densities. In general the preference is for an emphasis on lo er lighting po er densities over higher po er consumption and sophisticated controls as controls are often changed after occupancy.
    - Care ill be taken in lighting at certain core spaces such as restrooms to ensure lo lighting power densities and high quality lighting design.
    - Exterior lighting will meet the requirements of the site credits listed above.
    - ighting systems ill be set up to facilitate high levels of controls for tenant improvements including the use of daylight harvesting dimming systems.

- Tenants ill be encouraged to utili e lighting designs that beat the current Seattle Energy Code and ASHRAE 90.1-2007 requirements by at least 20%. This level of efficiency may be mandated through tenant leasing requirements in order to maximize energy savings and associated EE EA Cr 1 points.
- aylight harvesting dimming systems are encouraged here high amounts of gla ing ill allo for good potential especially in public spaces such as entry lobbies. These systems should be properly commissioned to ensure that they ill not be overridden post occupancy.
- esidential lighting ill be addressed through the use of as many permanently installed hard-wired fluorescent fixtures as possible. The team is evaluating the use of the California Title 24 residential energy code requirements as a guideline for residential lighting requirements and controls.

- Appliances residential appliances ill be held to a meet a minimum of Energy Star efficiency. Appliances ill also be evaluated based on energy demand and consumption beyond minimum Energy Star requirements.

**Renewable Energy**

- A rene able energy component ill be included in the pro ect. At this time the exact capacity scale technology or location is not yet developed.
- The rene able energy implementation ill be one that is highly visible and its value ill be communicated to the public most likely at the pla a level. Technologies being explored include solar photovoltaics solar thermal and small scale ind turbines.
- or base EE old certification it is not anticipated that an installed rene able energy system ill meet the EE requirements for 1% of project renewable energy. Instead, a smaller system tied to a specific pro ect energy end use ill be explored e.g. a rene able energy system that offsets the garage lighting energy consumption .

**Metering**

- esidential retail All residential and retail tenant spaces ill be individually metered to account for their o n energy consumption to encourage efficient habits. This metering ill meet both EA Cr 5.1 and 5.2 requirements for base building and tenant sub metering requirements. Option D, a calibrated hole building energy model is encouraged as the compliance path for the Measurement and Verification credit EA Cr 5.1.
- The pro ect is investigating the installation of a project wide sustainable dashboard web-based system to allo for individual residents and tenants to view their consumption patterns on a real-time basis and compare their consumption to various metrics, perhaps including the 2030 Challenge targets other tenants or residents or EnergyStar baselines. This system ill likely be a server-based system where each tenant/resident ill be able to call up their o n home page from an internet site. This ebsite may also be able to include other information for building tenants.


**Figure 5: Example of building dashboard display**

**Green Power (Green Tags)**

- The o ner intends to purchase a minimum t o year contract to provide at least 35% of the shell and core system s electricity consumption through Green tags or other Green-e certified retailer.
- Terra-pass offsetting of automobile transit energy consumption and garage energy consumption is being considered to create a carbon-neutral garage

### 1.3.4 Materials

#### 1.3.4.1 Base Project Design Strategies for LEED® Gold Certification

**Recycling**

- ecycling separation ill occur for the aste streams of all programmatic elements of the pro ect
- The residential program ill feature an intelligent recycling trash chute system that ill enable the occupants to sort their aste utili ing a common trash chute at their floor level. This level of convenience ill encourage active participation in recycling efforts.

**Construction Waste Management**

- The general contractor ill develop a construction aste recycling and separation plan that ill divert a minimum of 75% of all construction waste from the landfill.

**Materials**

- einforced Concrete The concrete grades used are outlined on the Structural dra ings. At this stage the intent is to use an average of 40% fly ash or S in the cement admixture. It is anticipated that there ill be a higher percentage perhaps in the foundations and alls compared to the slabs and beams.
- Concrete Reinforcing: A minimum of 75% of reinforcing bar source material by eight is targeted from post-consumer recycled content.
- Structural Steel Steel grades and designations are as outlined on the Structural dra ings. A minimum percentage target pending of reinforcing bar source material by eight is targeted from post-consumer recycled content.

- ue to limitations ithin the scope of a shell and core commercial and retail pro ect the residential program of this pro ect ill be a significant contributor to the materials credits for EE . This is because the residential units ill be completely finished unlike the commercial and retail tenant spaces. uring detailed design the interiors teams ill put together materials palettes that emphasi e the sustainable goals of the pro ect and meet the EE requirements.
- Recycled content: 20%, based on cost. Divisions 2-10 (old CSI) only. Fly ash or slag use in concrete is an obvious choice to make to maximi e the recycled content of the building structure in addition to the recycled content of the steel superstructure. The decisions on percentage mix should be made as soon as possible so that any schedule impacts can be incorporated into the construction schedule. esidential materials also can provide a significant contribution to ards meeting or exceeding this goal.
- Regional materials: 20%, based on cost. Divisions 2-1 old CSI only. ue to the concrete core structure regional procurement of cement aggregate sand and other concrete materials is encouraged. ike ise given our region locally harvested and SC certified lumber and paving materials are other good sources of materials that ill contribute to ards achieving this goal.
- SC certified ood While EE gives credit for 50% of the wood based materials being FSC certified the pro ect team is encouraged to try and meet a goal of 100% FSC certified wood products. If achieved this ill likely earn the pro ect an innovation credit helping it on its ay to latinum.

**Structure and Sustainability**

- Concrete Concrete ill be used as one of the primary structural material for a number of reasons including
  - Its inherent fire resistance.
  - Concrete is highly durable and requires little maintenance.
  - Its acoustic properties.
  - Its dynamic properties in terms of superior performance for floor vibration here needed in office areas.
- Concrete has the follo ing attributes from an environmental point of vie
  - The ma ority of ra materials used are abundant. o ever replacements for cement and natural aggregate to reduce demands on local resources ill be considered.
  - einforced concrete is recyclable crushed concrete can be used as aggregate or road base material. einforcement is generally separated and recycled.
  - Concrete has high thermal mass exploitable to reduce heating cooling demands.
  - Concrete can be left exposed to serve as the finish material, thereby reducing the quantity of materials used in the building.
  - einforced concrete has moderate embodied energy. Most of this embodied energy is from the manufacture of Portland cement. Accounting for only 12-18% of concrete by weight, Portland cement is responsible for about 90% of concrete's embodied energy. The bulk of the eight of concrete is the result of aggregate mining and processing hich accounts for about 5% of the moderate embodied energy in concrete.
- The follo ing methods can be employed to reduce concrete s environmental demand
  - eplace cement ith fly ash
  - Specify the use of coarse aggregate from a recycled source
  - Use non-toxic form release agents
  - Specify cement from more efficient producers
  - Specify sustainable form ork materials e.g. ood from certified sustainable sources easily re-used material.

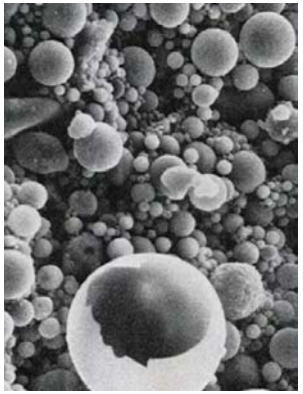


**Figure 6 : GGBS and Fly Ash**

- Structural Steel ork Steel is being considered for the above grade parts of the structure. It reduces demand of the foundations and also on the lateral system – resulting in reduced material in the construction of these elements. Steel has the follo ing attributes from an environmental point of vie
  - The ma ority of ra materials are from recycled steel
  - Steel has the potential to be dismantled and re-used.
- The follo ing methods can be employed to reduce steel s environmental demand
  - Optimi e the eight of steel members
  - se composite construction here the concrete slabs become the top flanges of the members
  - se members built from plates or castellated members to further optimi e the steel member eights
  - Specify steel products to be fabricated at plants close to the construction site minimi ing transport energy demands.

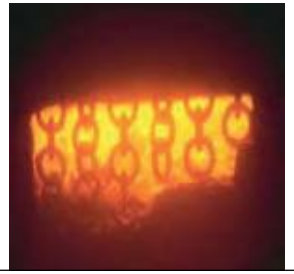


**Figure 7 : Steelwork Recycling**

- The follo ing approaches may be taken to reduce the environmental demands of structural steel use
  - se steel produced as close to the ob site as possible.
  - se composite beam design as it significantly reduces the total steel required for a given loading.
  - Investigate the suitability of castellated beams.
  - Use braced frames instead of moment-resisting frames in the lateral-load-resisting system, as they generally save on the overall steel tonnage.
  - Use wide-flange sections instead of tube and pipe sections hen there is no significant difference in weight, as wide-flange sections usually contain a higher percentage of recycled steel (in some applications, particularly compression, a lower-weight section may be possible if tubes are used instead of ide flanges .

**Additional Materials Strategies**

- Explore prefabrication for components. Waste ill be reduced, production increased, quality improved. Any aste that is generated is more likely to be recycled.
- Explore pre-assembly.
- Specify sustainable form ork materials e.g. sustainable wood, easily re-used material.

### 1.3.5 Indoor Environmental Quality

#### 1.3.5.1 Base Project Design Strategies for LEED® Gold Certification

**Construction**

- IA management plan
- protection of all VAC systems during construction
- thorough cleaning of all VAC systems and duct ork prior to occupancy

**Acoustics**

- While not a part of the EE system acoustics are critical for a successful pro ect. The pro ect team ill focus on several aspects of acoustic design to ensure its success
  - exterior noise mitigation – through façade construction
  - interior noise control – focusing on noise attenuation from space to space especially from core equipment rooms to tenant spaces as well as in the residential and retail spaces.
  - interior sound quality – focusing on proper absorption, sound masking, etc.
  - mitigation of site noise sources – particularly HVAC plant equipment, generators, etc.
  - VAC noise control
    - residences
      - maximum of 3 sones for all exhaust fans including toilet exhaust and range hoods
      - location and ducting of HVAC equipment to meet NC criteria
    - offices
      - location of mechanical equipment, mechanical room wall construction, and duct layout to meet NC35 criteria at typical office spaces and NC30 at

**Air Quality**

- Increased levels of fresh air and monitored delivery
  - ventilation rates that exceed ASHRAE requirements by 30%.
  - monitoring of outside air flo rates at all VAC units.
  - continuous controlled filtered fresh air for the residences.
  - operable indo s at residential units as noted above.
- igh levels of air filtration
  - meet or exceed ME V 13 for commercial *and* residential VAC systems
  - E A filters and or high efficiency electrostatic filters may have market benefits in residential units. These may be package options for o ners as a premium to the base allo ance.
- Control of indoor pollutants
  - low emitting materials (meet or exceed requirements for all applicable LEED credits . rea formaldehyde containing materials in particular should be avoided in the residences.
  - maintain recommended clearances bet een exhausts and air intakes
  - pollutant source control via extract systems
    - includes appropriate extract systems and automated controls in residences e.g. bathroom fans with built-in humidity sensors for automated control)
  - no use of building air systems during construction except for testing ad usting balancing and commissioning
  - humidity control. While no active humidity control is planned for the commercial office systems the residential systems may have an option package for a humidifier and direct humidity control to improve indoor air quality.
  - positively pressurized building – office and residential in particular the use of fully ducted residential fresh air systems in lieu of trickle vents hich prevent adequate building pressure control and can lead to IA issues including moisture issues.
  - balanced airflo for intermittent exhaust fans greater than 200 CFM – particularly residential kitchen range hoods
  - limit use of permanent carpet in residences as it can trap dirt allergens and other indoor pollutants
  - ventilate residences and other fully finished areas after construction prior to occupancy. tili e EE NC 2.2 guidelines for flushout procedure.
- Air sealing particularly at residences
  - blo er door tests of each unit to ensure air tightness (1.25 square inches of leakage per 100 square ft of enclosure). This is required if smoking is permitted inside the units. Since the project is considering a project-wide smoking ban testing of all units may not be required, however the team is considering limited blo er door testing on a spot-check basis to verify construction methods.
  - air sealing of all demising alls doors to common corridors vertical risers and hori ontal penetrations to ensure proper air sealing bet een units to avoid potential ETS cross contamination, required if smoking is permitted inside the units
- Condensation control

- avoidance of thermal bridges
- insulation of slab edges particularly at balconies
- highly insulating indo systems

- Smoking ban
  - smoking ill be banned on residential balconies and all public gathering areas near operable openings to the building.
  - smoking may be banned within the entire project, including retail and residential units – this is currently under evaluation by the developer

**Thermal Comfort**

- esign systems to meet AS AE comfort guidelines at Seattle exterior design conditions.
- rovide core and shell systems that allo for adequate thermal zoning and individual control ithout undo TI expense commercial office
- Provide HVAC systems that allow for proper sub-zoning of residences as required due to multiple orientations or large unit floor plates. ecommend more than 1 thermal control one for units greater than 1 S .
  - rovide enhanced local comfort for certain areas such as bathrooms via radiant floor heating.

**Daylight & Views**

- Vie potential from interior spaces The envelope and floor plan are designed such that at least 90% of the interior spaces can have a view to the exterior provided appropriate internal partitions gla ed are utili ed.

### 1.3.6 Innovation

In addition to the possible innovation credits listed above the follo ing potential innovations have been proposed by various members of the design and construction team

- o nto n density bonus
- 100% covered parking
- Alternative transportation bonus
- 95%+ construction waste diversion
- ublic education program
- reen housekeeping program
- Skanska s ISO 14 1 certification as eneral Contractor

## 1.4 LEED® Core and Shell Summary

This summary indicates the current proposed EE path for the pro ect ith the design as it currently stands.

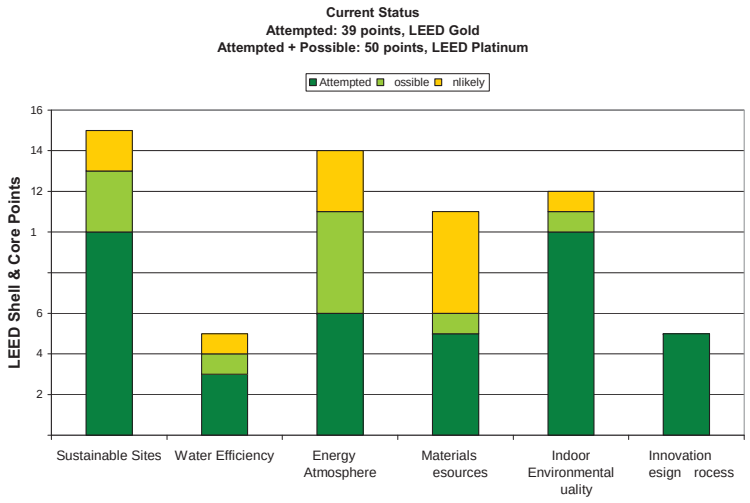



**Figure 8 : Current LEED® Core and Shell Summary Dashboard**

| Yes | | o | | | |
|---|---|---|---|---|---|
| 10 | 3 | 2 | **Sustainable Sites** | | 15 oints |
| Y | | | Prereq 1 | **Construction Activity Pollution Prevention** | Required |
| 1 | | | Credit 1 | **Site Selection** | 1 |
| 1 | | | Credit 2 | **Development Density & Community Connectivity** | 1 |
| | | 1 | Credit 3 | **Brownfield Redevelopment** | 1 |
| 1 | | | Credit 4.1 | **Alternative Transportation:** ublic Transportation Access | 1 |
| 1 | | | Credit 4.2 | **Alternative Transportation:** icycle Storage Changing ooms | 1 |
| 1 | | | Credit 4.3 | **Alternative Transportation:** Low-Emitting and Fuel-Efficient Vehicles | 1 |
| | | 1 | Credit 4.4 | **Alternative Transportation:** arking Capacity | 1 |
| | 1 | | Credit 5.1 | **Site Development:** rotect or estore abitat | 1 |
| | 1 | | Credit 5.2 | **Site Development:** Maximi e Open Space | 1 |
| 1 | | | Credit 6.1 | **Stormwater Design:** uantity Control | 1 |
| 1 | | | Credit 6.2 | **Stormwater Design:** uality Control | 1 |
| 1 | | | Credit 7.1 | **Heat Island Effect,** Non-Roof | 1 |
| 1 | | | Credit 7.2 | **Heat Island Effect,** oof | 1 |
| | 1 | | Credit | **Light Pollution Reduction** | 1 |
| 1 | | | Credit | **Tenant Design & Construction Guidelines** | 1 |

| Yes | | o | | | |
|---|---|---|---|---|---|
| 3 | 1 | 1 | **Water Efficiency** | | 5 oints |
| 1 | | | Credit 1.1 | **Water Efficient Landscaping:** educe by 50% | 1 |
| | 1 | | Credit 1.2 | **Water Efficient Landscaping:** o otable se or o Irrigation | 1 |
| | | 1 | Credit 2 | **Innovative Wastewater Technologies** | 1 |
| 1 | | | Credit 3.1 | **Water Use Reduction:** 20% Reduction | 1 |
| 1 | | | Credit 3.2 | **Water Use Reduction:** 30% Reduction | 1 |

| Yes | | o | | |
|---|---|---|---|---|
| 6 | 5 | 3 | **Energy & Atmosphere** | 14 oints |

| | | | | |
|---|---|---|---|---|
| Y | | | Prereq 1 | **Fundamental Commissioning of the Building Energy Systems** Required |
| Y | | | Prereq 2 | **Minimum Energy Performance** Required |
| Y | | | Prereq 3 | **Fundamental Refrigerant Management** Required |

*Note for EAc1: All LEED for Core and Shell projects registered after June 26th, 2007 are required to achieve at least two (2) points under EAc1.

| | | | | |
|---|---|---|---|---|
| 2 | 4 | 2 | Credit 1 | **Optimize Energy Performance** 1 to |
| | | | | 10.5% New Buildings or 3.5% Existing uilding enovations 1 |
| | | | | 2 14% New Buildings or 7% Existing uilding enovations 2 |
| | | | | 17.5% New Buildings or 10.5% Existing uilding enovations 3 |
| | | | | 21% New Buildings or 14% Existing uilding enovations 4 |
| | | | | 24.5% New Buildings or 17.5% Existing uilding enovations 5 |
| | | | | 28% New Buildings or 21% Existing uilding enovations 6 |
| | | | | 31.5% New Buildings or 24.5% Existing uilding enovations 7 |
| | | | | 35% New Buildings or 28% Existing uilding enovations |
| | | 1 | Credit 2 | **On-Site Renewable Energy** 1 |
| | 1 | | Credit 3 | **Enhanced Commissioning** 1 |
| 1 | | | Credit 4 | **Enhanced Refrigerant Management** 1 |
| 1 | | | Credit 5.1 | **Measurement & Verification** - Base Building 1 |
| 1 | | | Credit 5.2 | **Measurement & Verification** - Tenant Sub-metering 1 |
| 1 | | | Credit 6 | **Green Power** 1 |

| Yes | | o | | |
|---|---|---|---|---|
| 5 | 1 | 5 | **Materials & Resources** | 11 oints |

| | | | | |
|---|---|---|---|---|
| Y | | | Prereq 1 | **Storage & Collection of Recyclables** Required |
| | | 1 | Credit 1.1 | **Building Reuse:** Maintain 25% of Existing Walls loors oof 1 |
| | | 1 | Credit 1.2 | **Building Reuse:** Maintain 50% of Existing Walls loors oof 1 |
| | | 1 | Credit 1.3 | **Building Reuse:** Maintain 75% of Interior Non-Structural Elements 1 |
| 1 | | | Credit 2.1 | **Construction Waste Management:** Divert 50% from Disposal 1 |
| 1 | | | Credit 2.2 | **Construction Waste Management:** Divert 75% from Disposal 1 |
| | | 1 | Credit 3 | **Materials Reuse:** 1% 1 |
| 1 | | | Credit 4.1 | **Recycled Content:** 10% post-consumer + ½ pre-consumer 1 |
| 1 | | | Credit 4.2 | **Recycled Content:** 20% post-consumer + ½ pre-consumer 1 |
| 1 | | | Credit 5.1 | **Regional Materials:** 10% Extracted, Processed & Manufactured Regionally 1 |
| | 1 | | Credit 5.2 | **Regional Materials:** 20% Extracted, Processed & Manufactured Regionally 1 |
| | | 1 | Credit 6 | **Certified Wood** 1 |

| Yes | | o | | |
|---|---|---|---|---|
| 10 | 1 | 1 | **Indoor Environmental Quality** | 11 oints |

| | | | | |
|---|---|---|---|---|
| Y | | | Prereq 1 | **Minimum IAQ Performance** Required |
| Y | | | Prereq 2 | **Environmental Tobacco Smoke** ETS **Control** Required |
| 1 | | | Credit 1 | **Outdoor Air Delivery Monitoring** 1 |
| 1 | | | Credit 2 | **Increased Ventilation** 1 |
| 1 | | | Credit 3 | **Construction IAQ Management Plan:** uring Construction 1 |
| 1 | | | Credit 4.1 | **Low-Emitting Materials:** Adhesives Sealants 1 |
| 1 | | | Credit 4.2 | **Low-Emitting Materials:** aints Coatings 1 |
| 1 | | | Credit 4.3 | **Low-Emitting Materials:** Carpet Systems 1 |
| 1 | | | Credit 4.4 | **Low-Emitting Materials:** Composite Wood Agrifiber roducts 1 |
| 1 | | | Credit 5 | **Indoor Chemical & Pollutant Source Control** 1 |
| | | 1 | Credit 6 | **Controllability of Systems:** Thermal Comfort 1 |
| 1 | | | Credit 7 | **Thermal Comfort:** esign 1 |
| | 1 | | Credit .1 | **Daylight & Views:** aylight 75% of Spaces 1 |
| 1 | | | Credit 8.2 | **Daylight & Views:** Views for 90% of Spaces 1 |

| Yes | | o | | |
|---|---|---|---|---|
| 5 | | | **Innovation & Design Process** | 5 oints |

| | | | | |
|---|---|---|---|---|
| 1 | | | Credit 1.1 | **Innovation in Design** ublic Educational Component 1 |
| 1 | | | Credit 1.2 | **Innovation in Design** ensity bonus 1 |
| 1 | | | Credit 1.3 | **Innovation in Design** Alt. Transport bonus 1 |
| 1 | | | Credit 1.4 | **Innovation in Design**: 100% covered parking 1 |
| 1 | | | Credit 2 | **LEED® Accredited Professional** 1 |

| Yes | | o | | |
|---|---|---|---|---|
| 39 | 11 | 12 | **Totals (pre-certification estimates)** | 61 |

**Certified:** 23 to 27 points, **Silver:** 28 to 33 points, **Gold:** 34 to 44 points **Platinum:** 45 to 61 points

## 1.5 LEED® Commercial Interiors Summary

This summary indicates possible credits and paths ithin the current Shell and Core design that ill allo for latinum certification for office tenants under the Commercial Interiors program. Actual paths to ards EE Commercial Interiors certification ill be decided by each tenant and is outside the scope of the Shell and Core pro ect. The goal of the shell and core design is to minimi e limitations for future tenants in achieving Commercial Interiors certification up to the latinum level.

| Yes | | o | |
|---|---|---|---|
| 6 | | 1 | **Sustainable Sites** |

| | | | |
|---|---|---|---|
| 3 | | | Credit 1 |
| | | | 3 **Select a LEED Certified Building** |
| | | | **OR Locate the tenant space in a building with following characteristics:** |
| | | | Option 1A 1 |
| | | | Option 1 Storm ater Management ate and uantity |
| | | | Option 1C Storm ater Management Treatment |
| | | | Option 1D Heat Island Reduction: Non-Roof |
| | | | Option 1E Heat-Island Reduction: Roof |
| | | | Option 1 ight ollution eduction |
| | | | Option 1G Water Efficient Irrigation: Reduce by 50% |
| | | | Option 1 Water Efficient Irrigation o otable se or o Irrigation |
| | | | Option 1I Innovative Waste ater Technologies |
| | | | Option 1J Water Use Reduction: 20% Reduction |
| | | | Option 1K Onsite Renewable Energy |
| | | | Option 1 Other uantifiable Environmental erformance |
| 1 | | | Credit 2 **Development Density and Community Connectivity** |
| 1 | | | Credit 3.1 **Alternative Transportation: Public Transportation Access** |
| 1 | | | Credit 3.2 **Alternative Transportation: Bicycle Storage & Changing Rooms** |
| | | 1 | Credit 3.3 **Alternative Transportation: Parking Availability** |

| Yes | | o | |
|---|---|---|---|
| | 2 | | **Water Efficiency** |

| | | | |
|---|---|---|---|
| | 1 | | Credit 1.1 **Water Use Reduction -** 20% Reduction |
| | 1 | | Credit 1.2 **Water Use Reduction -** 30% Reduction |

| Yes | | o | | |
|---|---|---|---|---|
| 12 | | | **Energy & Atmosphere** | |
| Y | | | Prereq 1 | **Fundamental Commissioning** |
| Y | | | Prereq 2 | **Minimum Energy Performance** |
| Y | | | Prereq 3 | **CFC Reduction in HVAC&R Equipment** |
| | | | **NOTE for EAc1**: All LEED for Commercial Interiors projects registered after June 26th, 2007 are required to achieve at least two (2) points under EAc1. ro ect from achieving any combination of the 4 sub-credits under EAc1. | |
| 3 | | | Credit 1.1 | **Optimize Energy Performance -** ighting o er |
| | | | | Option A: Reduce lighting power density to 15% below the standard |
| | | | | Option B: Reduce lighting power density to 25% below the standard |
| | | 3 | | Option C: Reduce lighting power density to 35% below the standard |
| 1 | | | Credit 1.2 | **Optimize Energy Performance** - Lighting Controls |
| 2 | | | Credit 1.3 | **Optimize Energy Performance** - HVAC |
| | | | | Option A: Equipment Efficiency and Zoning & Controls |
| | | | | Option educe esign Energy Cost |
| 2 | | | Credit 1.4 | **Optimize Energy Performance** - Equipment and Appliances |
| | | | | 70% of ENERGY STAR eligible equipment is ENERGY STAR rated |
| | | 2 | | 90% of ENERGY STAR eligible equipment is ENERGY STAR rated |
| 1 | | | Credit 2 | **Enhanced Commissioning** |
| 2 | | | Credit 3 | **Energy Use, Measurement & Payment Accountability** |
| | | 2 | | Case A: Projects with area less than 75% of total building area |
| | | | | Case B: Projects with area 75% or more of total building area |
| 1 | | | Credit 4 | **Green Power** |

| Yes | | o | | |
|---|---|---|---|---|
| 9 | 5 | | **Materials & Resources** | |
| Y | | | Prereq 1 | **Storage and Collection of Recyclables** |
| 1 | | | Credit 1.1 | **Tenant Space, Long Term Commitment** |
| | 1 | | Credit 1.2 | **Building Reuse, Maintain 40% of Interior Non-Structural Components** |
| | 1 | | Credit 1.3 | **Building Reuse, Maintain 60% of Interior Non-Structural Components** |
| 1 | | | Credit 2.1 | **Construction Waste Management, Divert 50% From Landfill** |
| 1 | | | Credit 2.2 | **Construction Waste Management, Divert 75% From Landfill** |
| | 1 | | Credit 3.1 | **Resource Reuse, 5%** |
| | 1 | | Credit 3.2 | **Resource Reuse, 10%** |
| | 1 | | Credit 3.3 | **Resource Reuse, 30% Furniture and Furnishings** |
| 1 | | | Credit 4.1 | **Recycled Content, 10% (post-consumer + 1/2 pre-consumer)** |
| 1 | | | Credit 4.2 | **Recycled Content, 20% (post-consumer + 1/2 pre-consumer)** |
| 1 | | | Credit 5.1 | **Regional Materials, 20% Manufactured Regionally** |
| 1 | | | Credit 5.2 | **Regional Materials, 10% Extracted and Manufactured Regionally** |
| 1 | | | Credit 6 | **Rapidly Renewable Materials** |
| 1 | | | Credit 7 | **Certified Wood** |

| Yes | | o | | | |
|---|---|---|---|---|---|
| 14 | 3 | | **Indoor Environmental Quality** | | 17 oints |
| Y | | | Prereq 1 | **Minimum IAQ Performance** | Required |
| Y | | | Prereq 2 | **Environmental Tobacco Smoke (ETS) Control** | Required |
| 1 | | | Credit 1 | **Outside Air Delivery Monitoring** | 1 |
| 1 | | | Credit 2 | **Increased Ventilation** | 1 |
| 1 | | | Credit 3.1 | **Construction IAQ Management Plan, During Construction** | 1 |
| 1 | | | Credit 3.2 | **Construction IAQ Management Plan, Before Occupancy** | 1 |
| 1 | | | Credit 4.1 | **Low-Emitting Materials, Adhesives and Sealants** | 1 |
| 1 | | | Credit 4.2 | **Low-Emitting Materials, Paints and Coatings** | 1 |
| 1 | | | Credit 4.3 | **Low-Emitting Materials, Carpet Systems** | 1 |
| 1 | | | Credit 4.4 | **Low-Emitting Materials, Composite Wood and Laminate Adhesives** | 1 |
| 1 | | | Credit 4.5 | **Low-Emitting Materials, Systems Furniture and Seating** | 1 |
| 1 | | | Credit 5 | **Indoor Chemical and Pollutant Source Control** | 1 |
| 1 | | | Credit 6.1 | **Controllability of Systems, Lighting** | 1 |
| | 1 | | Credit 6.2 | **Controllability of Systems, Temperature and Ventilation** | 1 |
| 1 | | | Credit 7.1 | **Thermal Comfort** - Compliance | 1 |
| 1 | | | Credit 7.2 | **Thermal Comfort** - Monitoring | 1 |
| | 1 | | Credit .1 | **Daylight & Views** - Daylight 75% of Spaces | 1 |
| | 1 | | Credit 8.2 | **Daylight & Views** - Daylight 90% of Spaces | 1 |
| 1 | | | Credit .3 | **Daylight & Views** - Views for 90% of Seated Spaces | 1 |

| Yes | | o | | |
|---|---|---|---|---|
| 5 | | | **Innovation & Design Process** | 5 oints |
| 1 | | | Credit 1.1 | **Innovation in Design** rovide Specific Title 1 |
| 1 | | | Credit 1.2 | **Innovation in Design** rovide Specific Title 1 |
| 1 | | | Credit 1.3 | **Innovation in Design** rovide Specific Title 1 |
| 1 | | | Credit 1.4 | **Innovation in Design** rovide Specific Title 1 |
| 1 | | | Credit 2 | **LEED™ Accredited Professional** 1 |

| Yes | | o | | |
|---|---|---|---|---|
| 46 | 10 | 1 | **Project Totals (pre-certification estimates)** | 57 oints |

**Certified:** 21 to 26 points, **Silver:** 27 to 31 points, **Gold:** 32 to 41 points, **Platinum:** 42 to 57 points

## 1.6 Preliminary Energy Model Results

reliminary EE compliant energy models ere created based on the current design and an ASHRAE 90.1-2004 Appendix G compliant baseline building. The preliminary models exclude the portions of the retail along James Street and the garage instead focusing on the to er energy consumption both residential and commercial . The purpose of these models is to identify preliminary energy performance and compare the current performance against project requirements and other pro ect tracking metrics. The model also identifies opportunities for improved performance amongst the ma or building systems.

### 1.6.1 Summary of Results, Commercial & Residential Tower Combined

The energy savings results ere found to be highly sensitive to internal load assumptions particularly related to office plug loads and data closet load assumptions. The data closet load assumptions affect both office energy consumption net reduction and residential energy consumption net increase due to increased boiler run time . The follo ing summary illustrates the predicted energy savings for the commercial and residential to er.

### 1.6.2 Load case descriptions

High load case (baseline assumption): 1.5 W/SF plug loads in office, 75 W/SF for 230 SF of data closet at each office floor ighting at SEC min.

Medium load case: 1 W/SF plug loads in office, 50 W/SF for 230 SF of data closet at each office floor, ighting at SEC min.

Low load case: 0.75 W/SF plug loads in office, 25 W/SF for 230 SF of data closet at each office floor,

Very low load case: 0.75 W/SF plug loads in office, 10 W/SF for 230 SF of data closet at each office floor  office lighting at  .  W S  ith perimeter daylight dimming controls  residential lighting po  er density reduced from baseline of  .7 W S  to 0.5 W/SF (assumed to be via increased hardwired fluorescent fixtures), reduced residential equipment power density from 0.75 W/SF to 0.6 W/SF  assumed to be via specification of EnergyStar appliances .

### 1.6.3 Energy Savings Summary

| | High Load | Med. Load | Low Load | Very Low Load |
|---|---|---|---|---|
| AS  AE  aseline E  I (kBtu/SF-yr) | 76.9 | 68.5 | 60.9 | 56.7 |
|  roposed  uilding E  I (kBtu/SF-yr) | 64.6 | 52.7 | 44.5 | 39.1 |
|  roposed  esidential Boiler run-time (hrs/yr) | | | 46 | 34 |
|  roposed Energy Savings vs.  aseline | 16% | 23% | 27% | 31% |
| LEED EA Cr1 Points | 2 | 4 | 5 | 6 |

The results above sho  the importance in understanding the sensitivity of load assumption for both  EE  EA Credit 1 point attainment as  ell as in comparison against  hole building energy use intensity metrics such as the 2030 Challenge. Ultimately internal load assumptions are predominantly outside the control of the shell and core design team.  o  ever  understanding their impact is critical for a comprehensive understanding of the nature of energy use  ithin the pro ect.

The savings noted above do not include the retail spaces  the parking garage and basement  and exterior lighting. All of these additional loads must be accounted for in the final  EE  energy modeling and comparison.

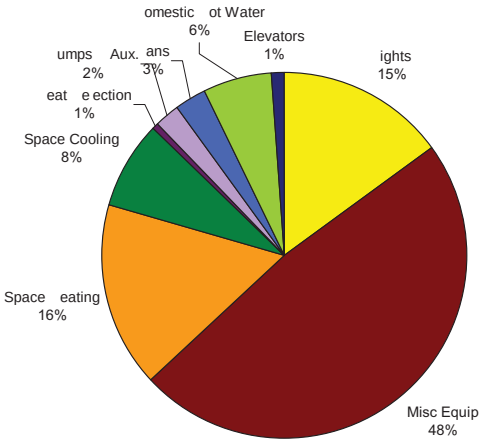



**Figure 9 : Proposed energy use by category, high load case (note residential HVAC fan energy is included in the cooling and heating consumption)**

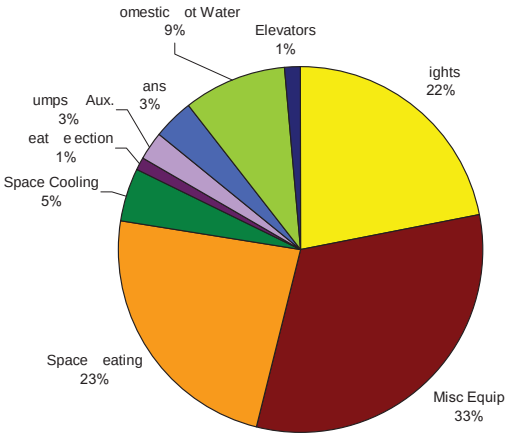



**Figure 10 : Proposed energy use by category, low load case (note residential HVAC fan energy is included in the cooling and heating consumption)**

### 1.6.4 Carbon Emissions

Carbon emissions  ere calculated for each of the proposed and AS  AE baseline energy models for

site combustion of natural gas is based on a rate of 11.7 lbs per therm. These rates are based on a recent report by the ational ene able Energy Laboratory, which recommends that state-average rates be used to evaluate carbon emissions to properly account for the overall grid mix actually feeding energy to a given site.

Estimated carbon savings relative to the AS AE baseline range from 66 to 6 tons of $CO_2$ per year for the to er portions of the pro ect.

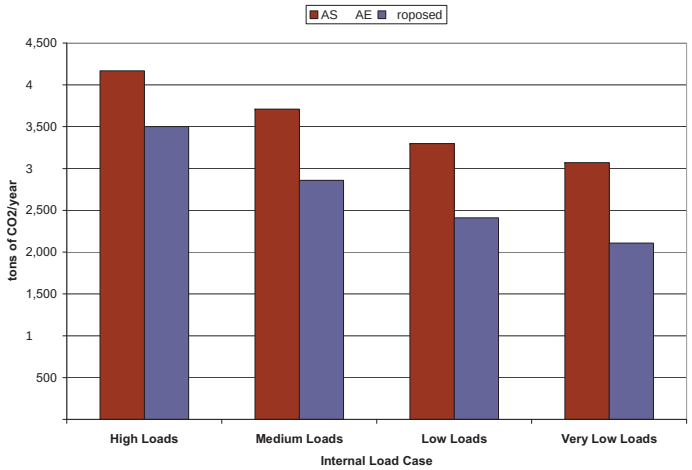



**Figure 11 : Carbon emissions & savings by internal load case**

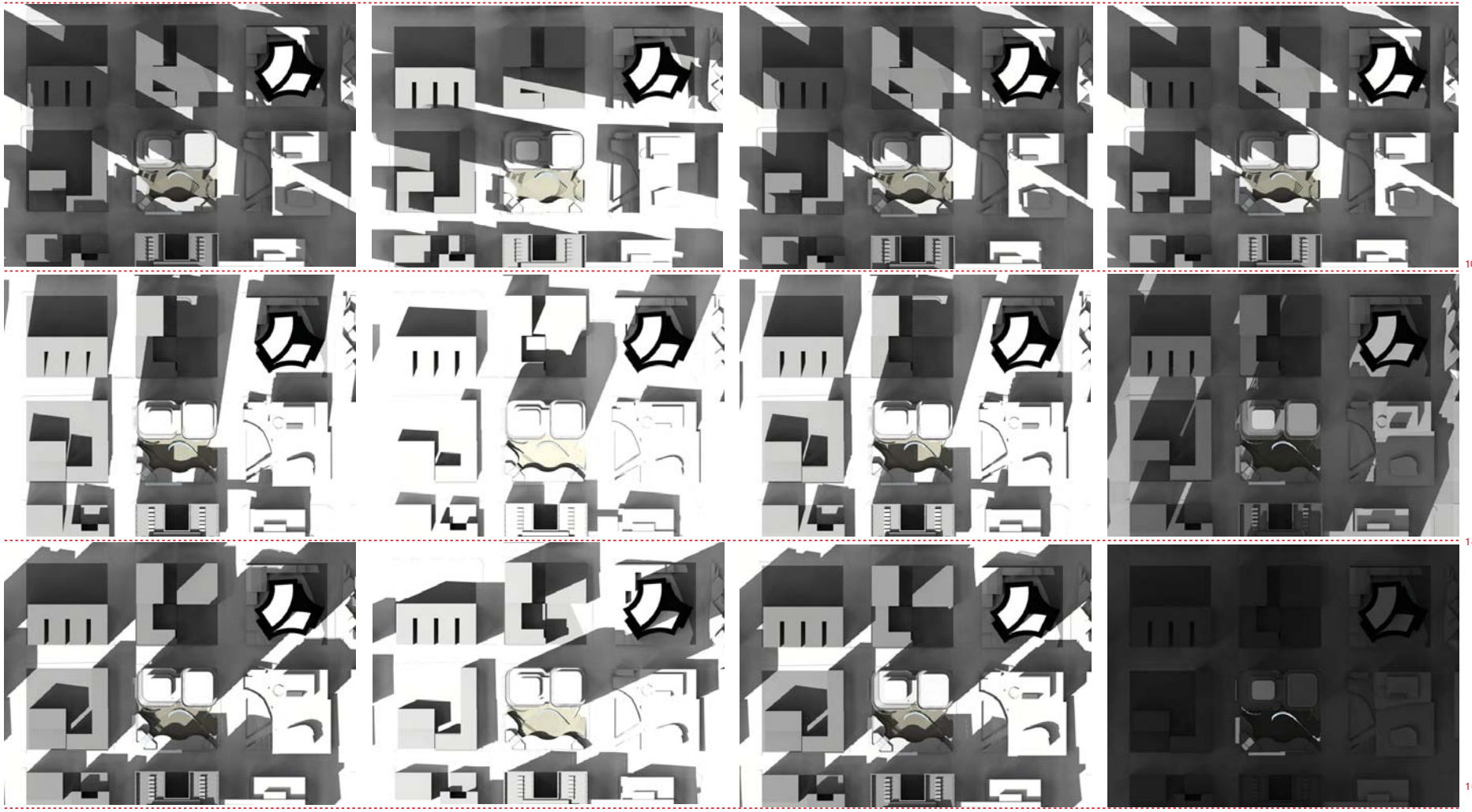
## 2.6
## Design Response
Solar Studies

March

June

September

December



10 am

14 pm

16 pm

## 2.7
## Design Board Objectives

| High Priority Design Guidelines | Design Response |
|---|---|
| **A. Site Planning and Massing** | |
| A-1 Respond to the physical environment. Compose the building's massing in response to geographic conditions and patterns of urban form. | Refer to section 2.1 and 2.2 |
| A-2 Enhance the skyline. Design the upper portion of the building to promote visual interest and variety in the downtown skyline. | Refer to section 2.4 |
| **B. Architectural Expression** | |
| B-1 Respond to the neighborhood context. Develop an architectural concept and compose the major building elements to reinforce desirable urban features existing in the surrounding neighborhood. | Refer to section 2.1 and 2.2 |
| B-2 Create a transition in bulk & scale. Compose the massing of the building to create a transition to the height, bulk, and scale of development in neighboring or nearby less-intensive zones. | Refer to section 2.1 and 2.2 |
| B-3 Reinforce the positive urban form and architectural attributes of the immediate area. Consider the predominant attributes of the immediate neighborhood and reinforce desirable siting patterns, massing arrangements and streetscape characteristics of nearby development. | Refer to section 2.1 and 2.2 |
| B-4 Design a well-proportioned & unified building. Compose the massing and organize the publicly accessible interior and exterior spaces to create a well-proportioned building that exhibits a coherent architectural concept. Design the architectural elements and finish details to create a unified building, so that all components appear integral to the whole. | Refer to section 2.1 and 2.2 |
| **C. The Streetscape** | |
| C-1 Promote pedestrian interaction. Spaces for street level uses should be designed to engage pedestrians with the activities occurring within them. Sidewalk-related spaces should be open to the general public and appear safe and welcoming. | Refer to section 2.1 and 2.2 |
| C-2 Design facades of many scales. Design architectural features, fenestration patterns, and materials compositions that refer to the scale of human activities contained within. Building facades should be composed of elements scaled to promote pedestrian comfort, safety, and orientation. | Refer to section 2.2 |
| C-3 Provide active, not blank, facades. Buildings should not have large blank walls facing the street, especially near sidewalks. | Refer to section 2.2 |
| C-4 Reinforce building entries. To promote pedestrian comfort, safeties, and orientation, reinforce building entries. | Refer to section 2.2 |
| C-5 Encourage overhead weather protection. Encourage project applicants to provide continuous, well-lit, overhead weather protection to improve pedestrian comfort and safety along major pedestrian routes | Refer to section 2.2 |

| | |
|---|---|
| **D. Public Amenities** | |
| D-1 Provide inviting & usable open space. Design public open spaces to promote a visually pleasing, safe, and active environment for workers, residents, and visitors. Views and solar access from the principal area of the open space should be especially emphasized. | Refer to section 2.2 and 2.3 |
| D-2 Enhance the building with landscaping. Enhance the building and site with substantial landscaping—which includes special pavements, trellises, screen walls, planters, and site furniture, as well as living plant material. | Refer to section 2.3 |
| D-3 Provide elements that define the place. Provide special elements on the facades, within public open spaces, or on the sidewalk to create a distinct, attractive, and memorable "sense of place" associated with the building. | Refer to section 2.2 and 2.3 |

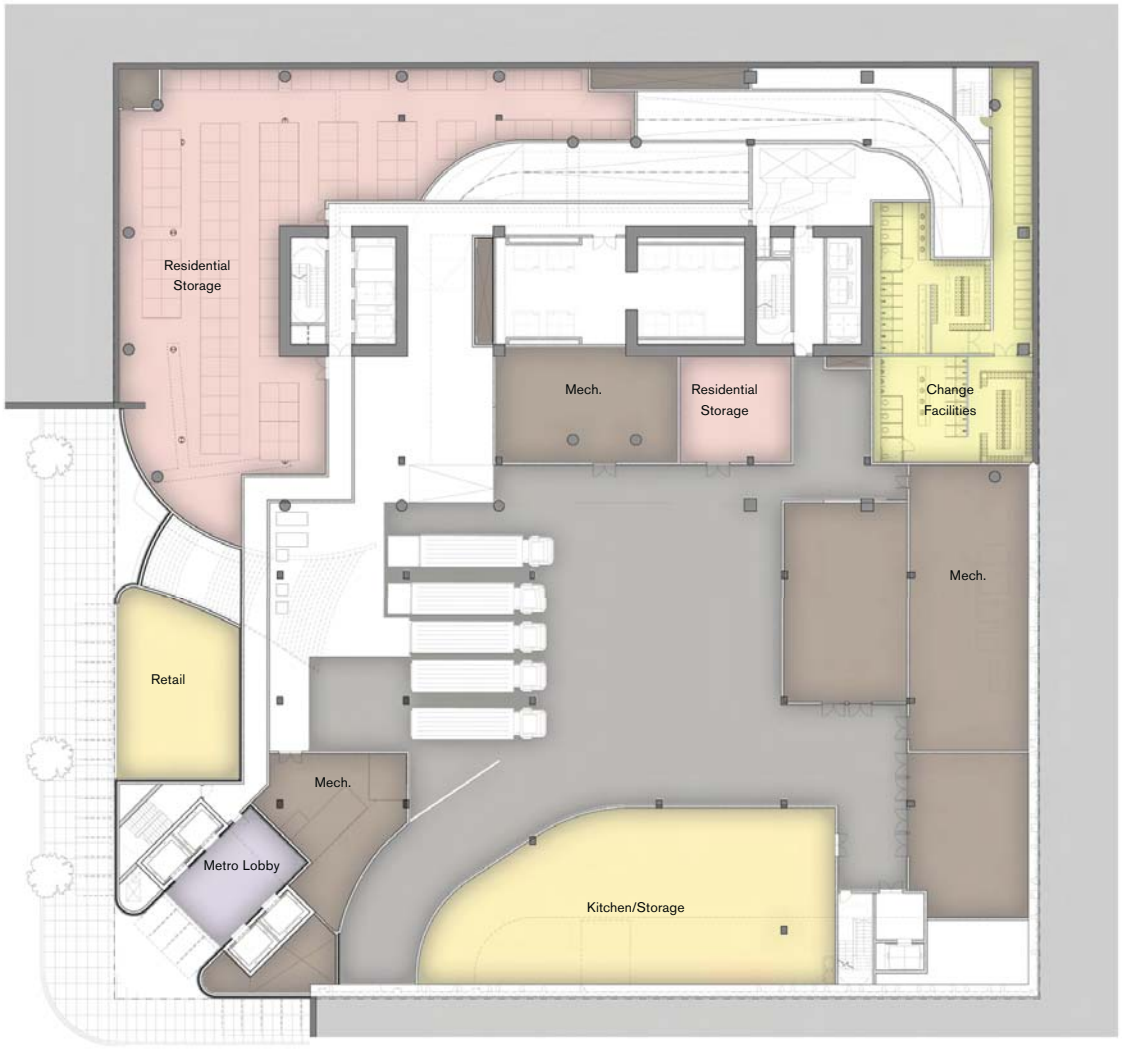
| | |
|---|---|
| **E. Vehicular Access** | |
| E-1 Minimize curb cut impacts. Minimize adverse impacts of curb cuts on the safety and comfort of pedestrians. | Refer to section 2.1 |
| E-2 Integrate parking facilities. Minimize the visual impact of parking by integrating parking facilities with surrounding development. Incorporate architectural treatments or suitable landscaping to provide for the safety and comfort of people using the facility as well as those walking by. | Refer to section 2.1 |
| E-3 Minimize the presence of service areas. Locate service areas for trash dumpsters, loading docks, mechanical equipment, and the like away from the street front where possible. Screen from view those elements which for programmatic reasons cannot be located away from the street front. | Refer to section 2.1 |

## Plans

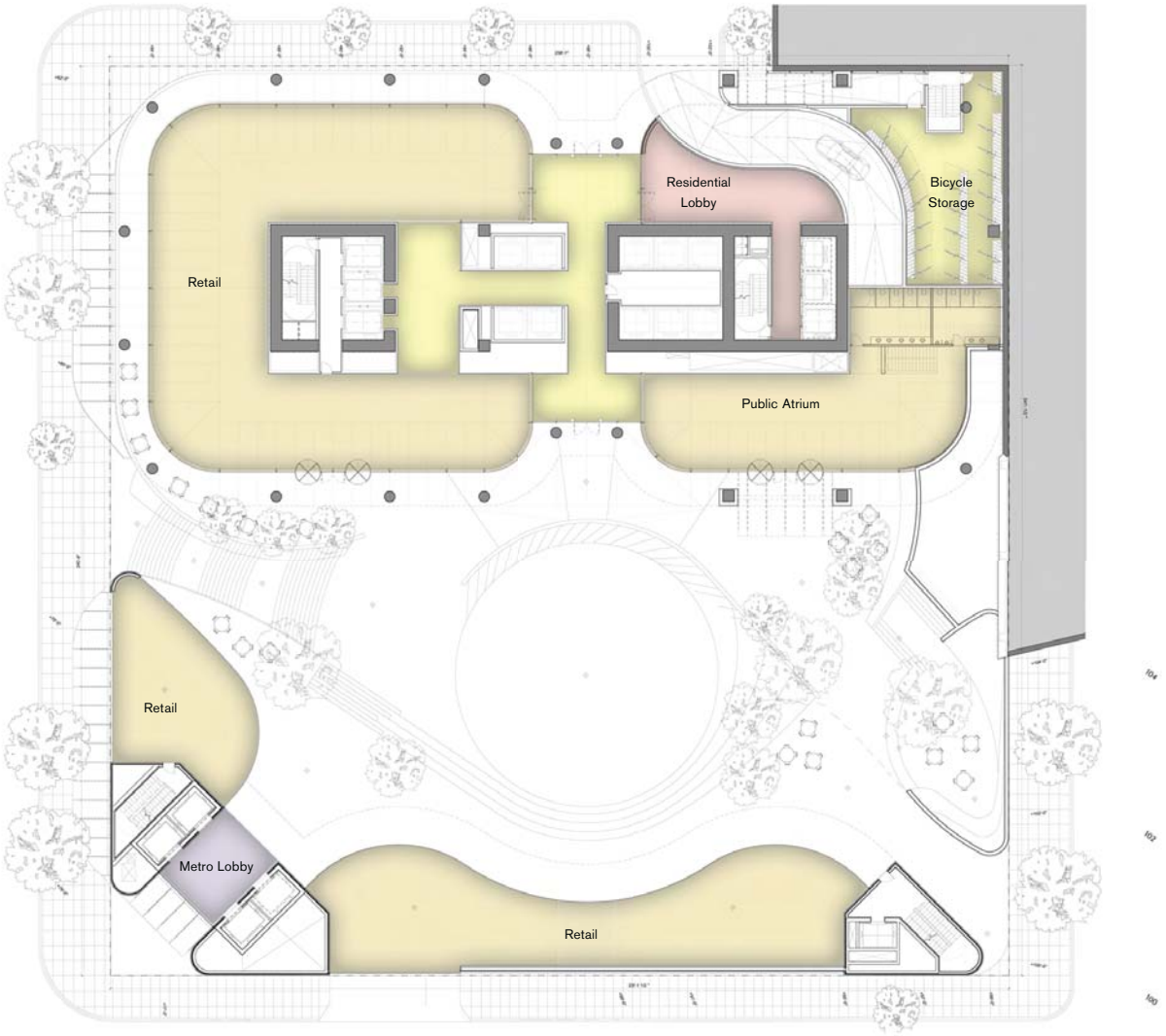
# 3

## 3.1
## Typical Basement Level Plan

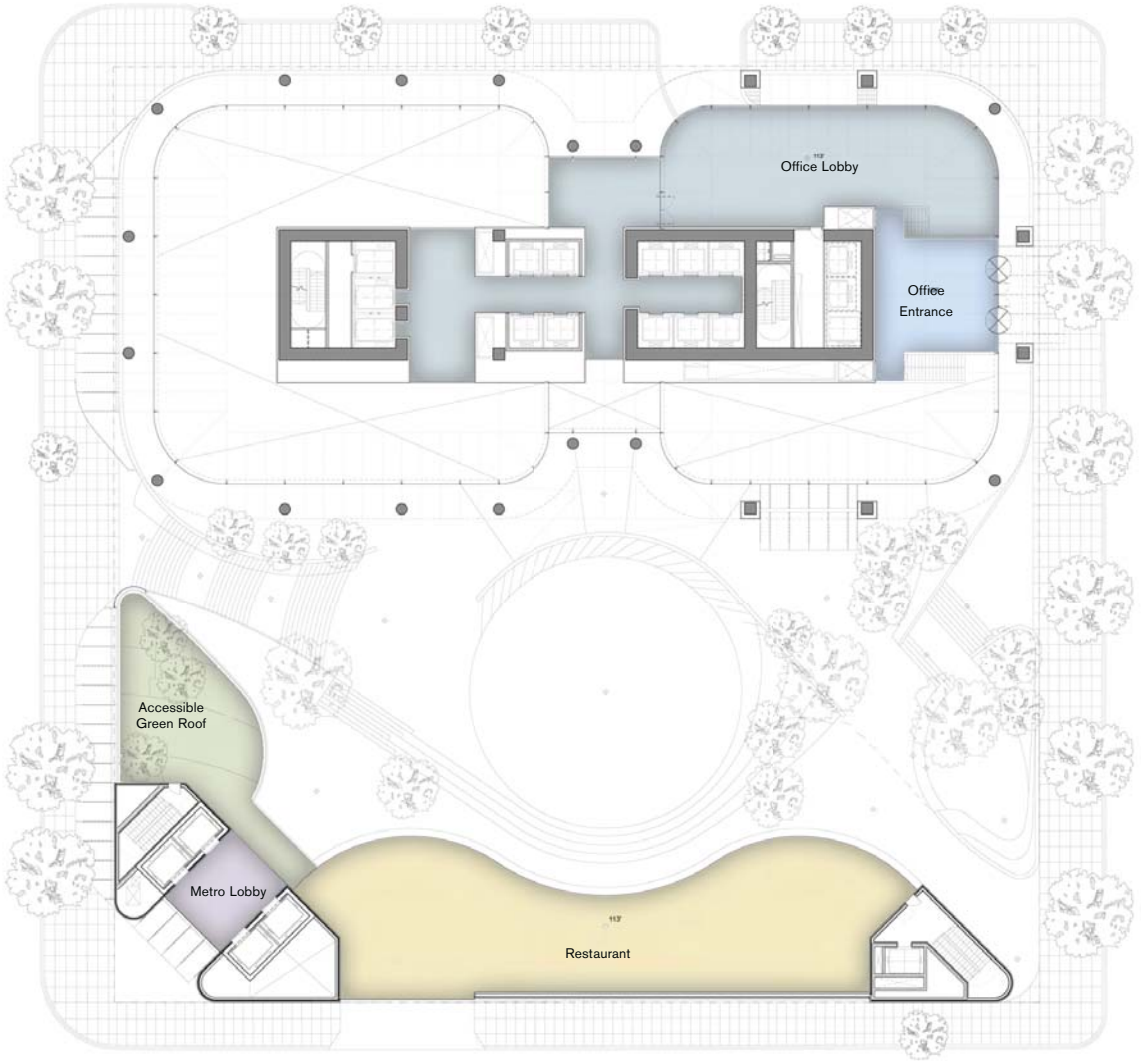
## 3.2
## Third Avenue Level Plan



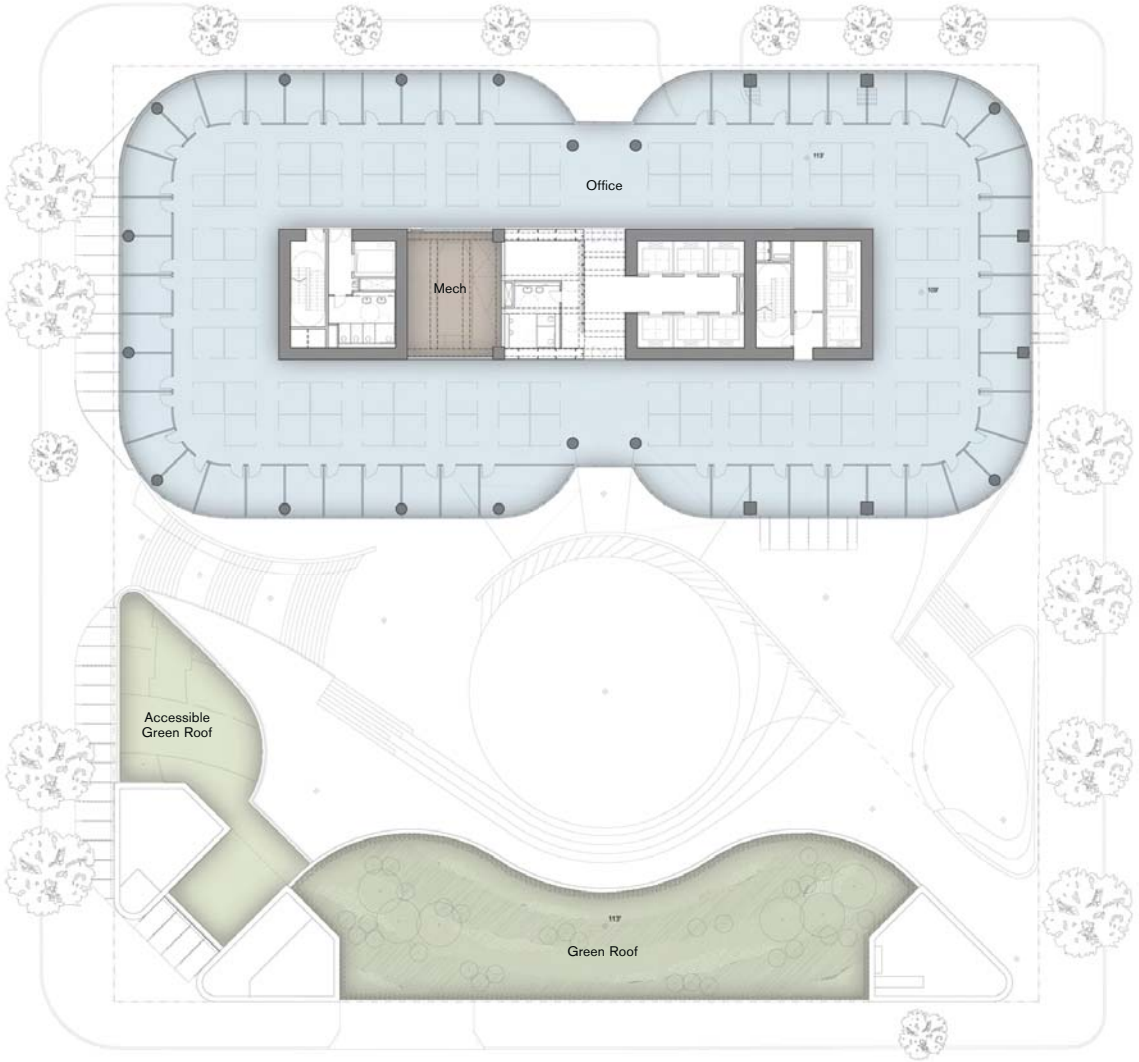
## 3.3
## Plaza Level Plan



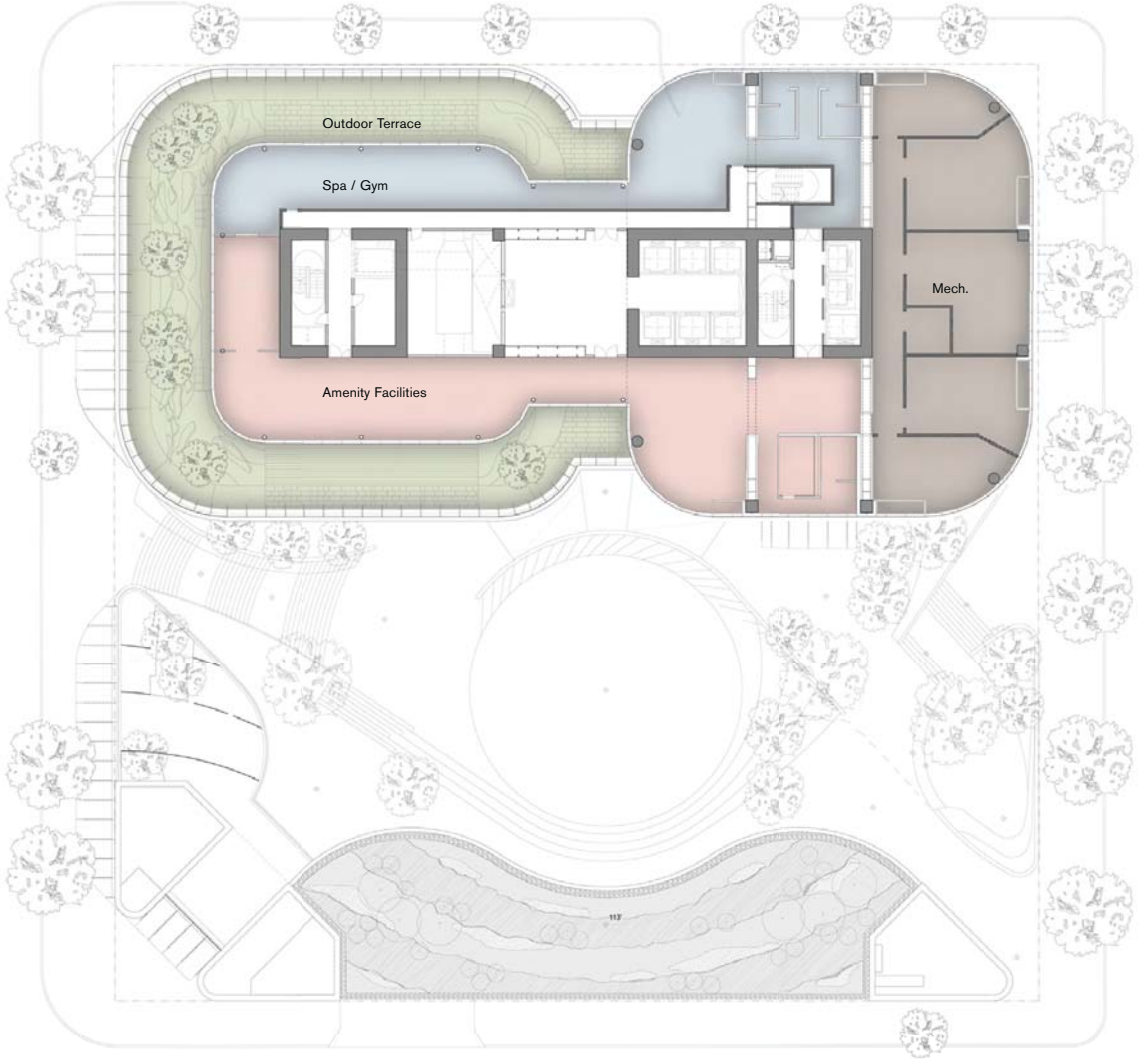
## 3.4
## Upper Level Plaza Plan



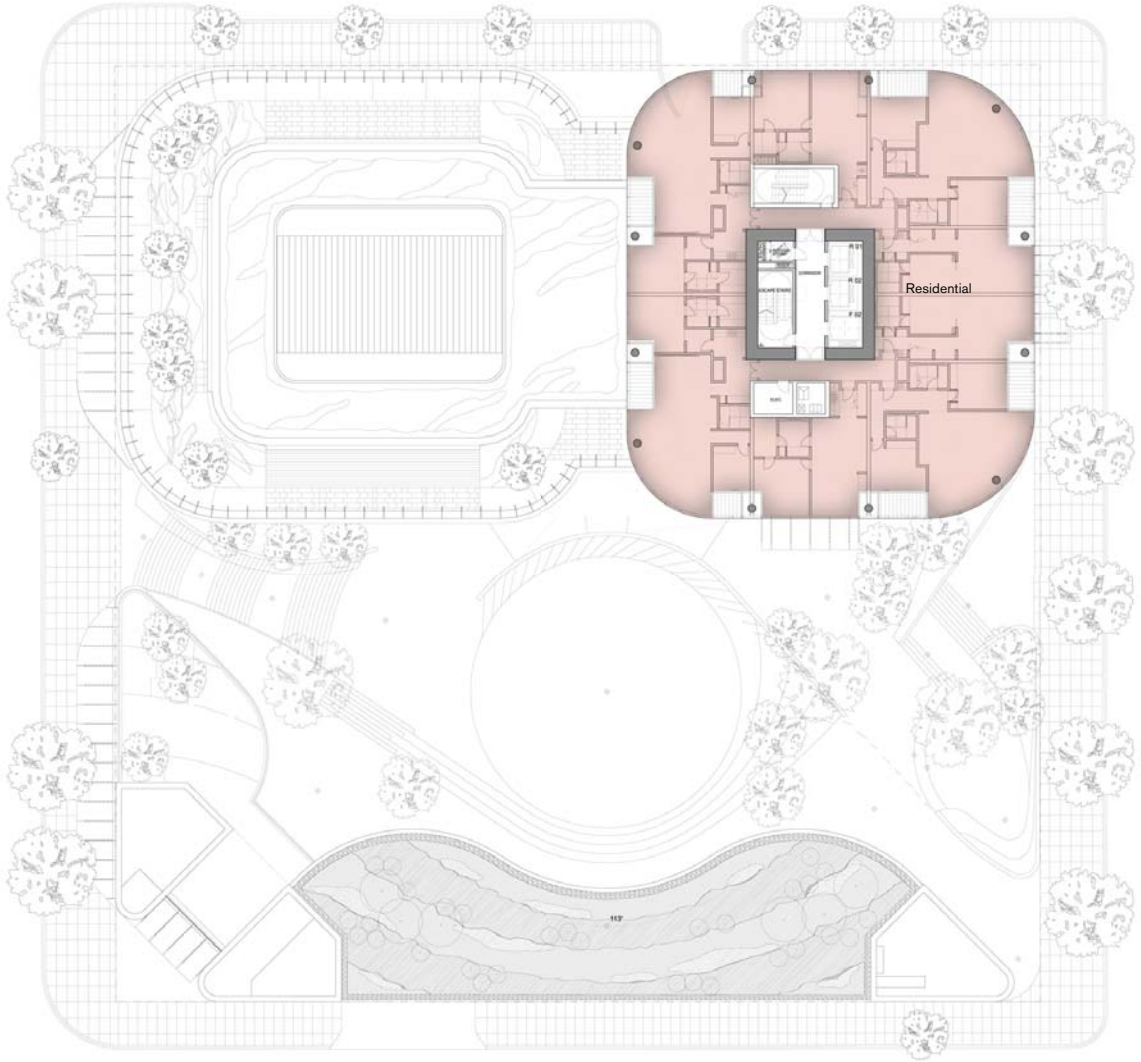
## 3.5
## Typical Office Level Plan



## 3.6
## Amenity Level Plan

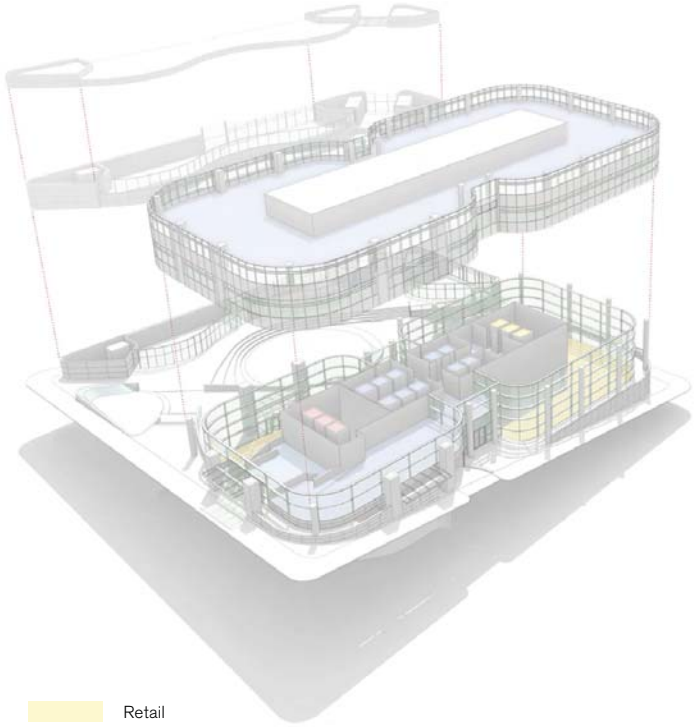


## 3.7
## Typical Residential Level Plan

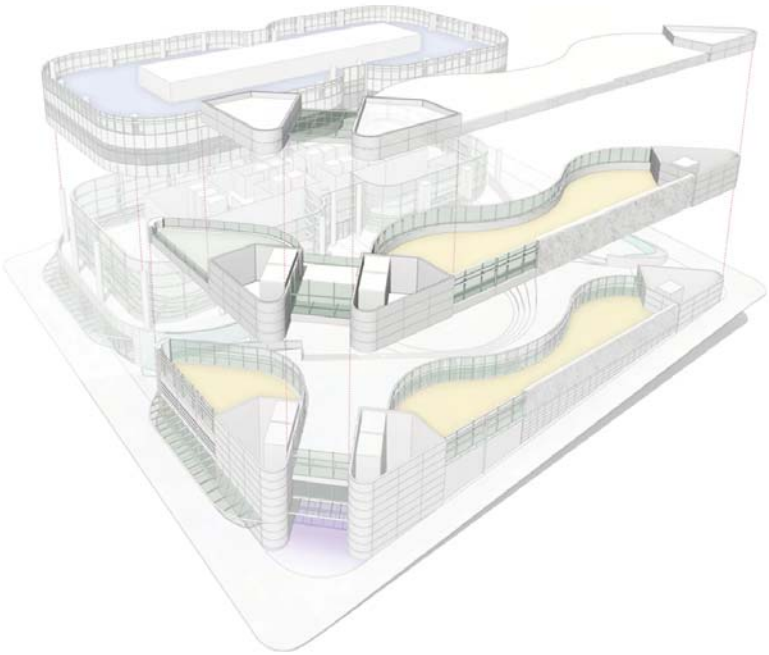


## 3.8
## Program Summary

Retail Programme Diagram: Northern Retail (Tower)



Retail Programme Diagram: Southern Retail



Retail

Metro

Office

Green Roof

Residential

## Facade Treatment and Materials

# 4

## 4.1
## Ground Level Buildings
Facade Material Palette

**Key**

1. Limestone
2. Green Wall
3. Backpainted Low Iron Glass
4. Anodised Aluminium
5. Stainless Steel
6. Louvered Metal Doors
7. Clear Low Iron Glass
8. Stone Fins
9. Glass Balustrade
10. Water Wall

1

2



3

4

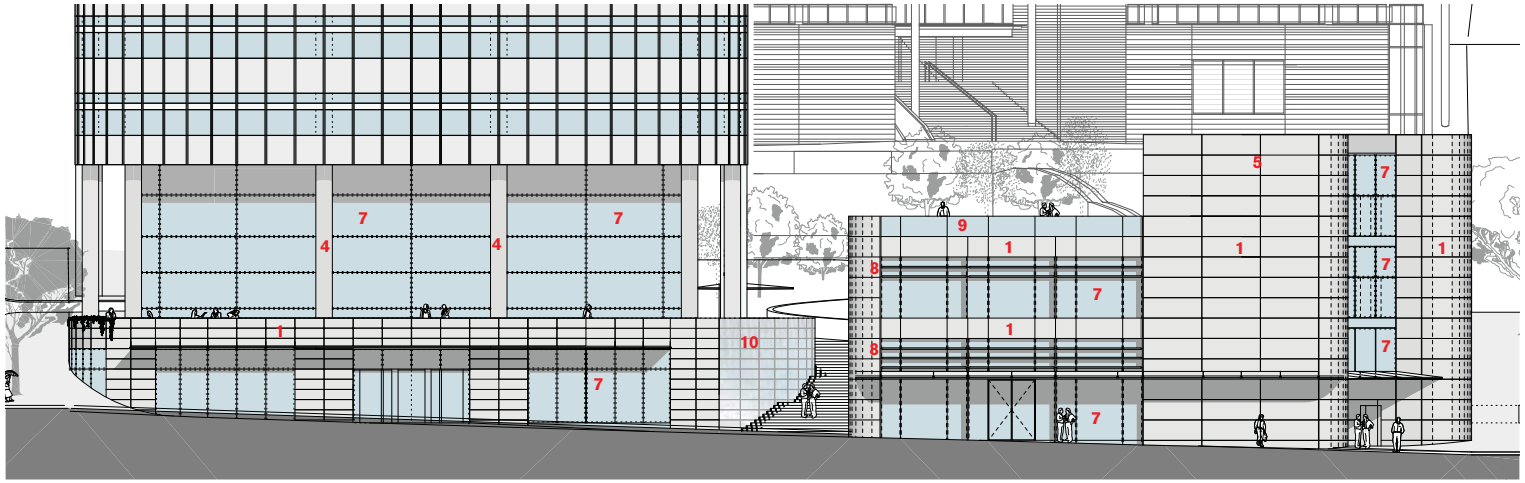
6

5

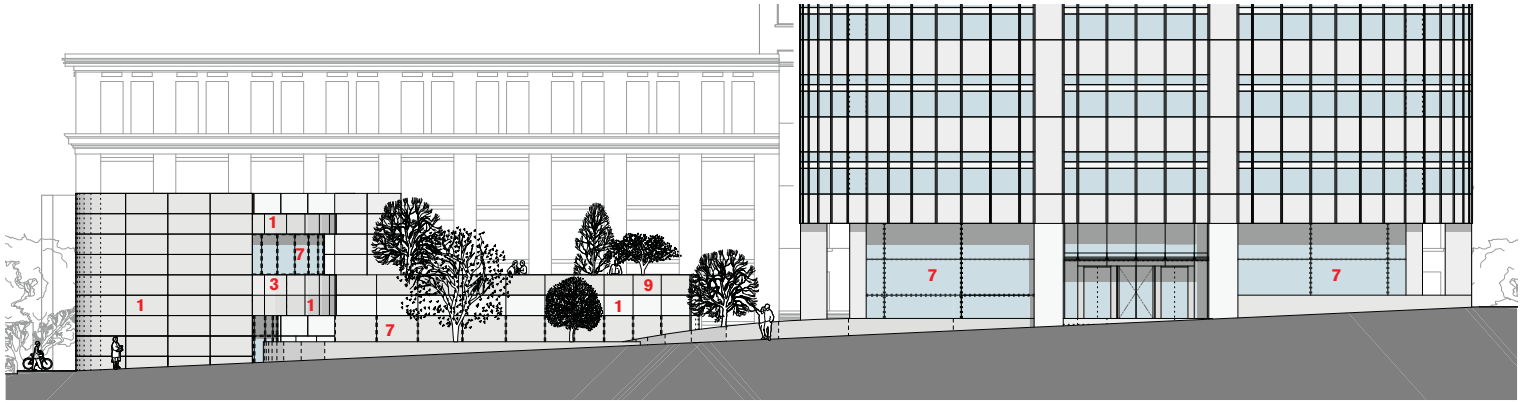


7

## 4.2
## Ground Level Buildings
3rd and 4th Avenue




Elevation 1 - Third Avenue




Elevation 2 - Fourth Avenue

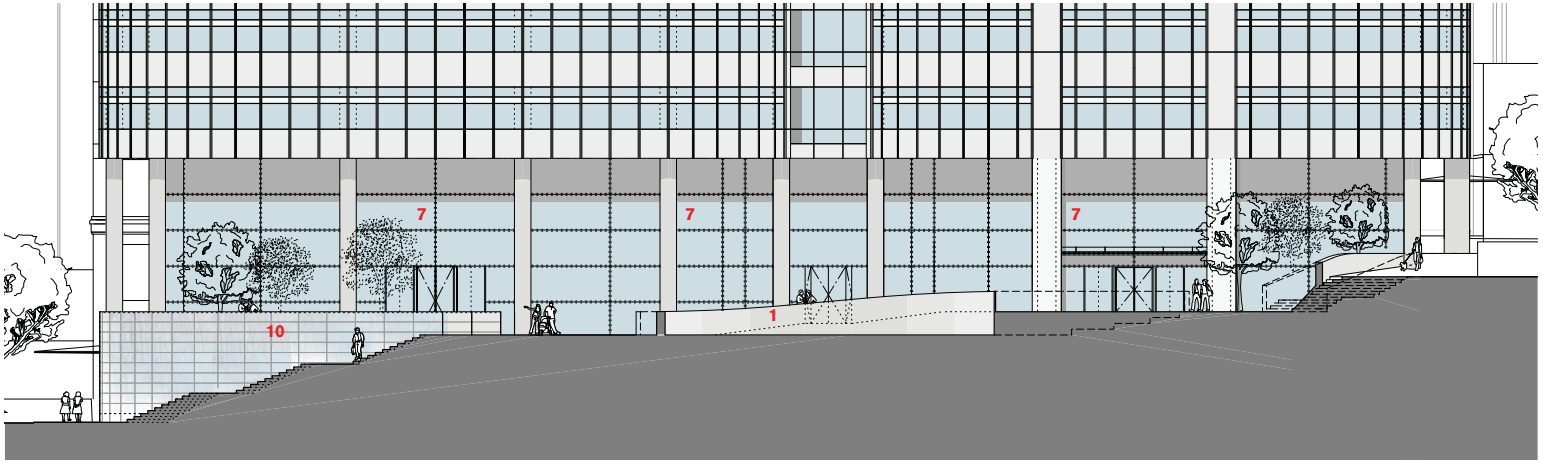
**Key**

1. Limestone
2. Green Wall
3. Backpainted Low Iron Glass
4. Anodised Aluminium
5. Stainless Steel
6. Louvered Metal Doors
7. Clear Low Iron Glass
8. Stone Fins
9. Glass Balustrade
10. Water Wall

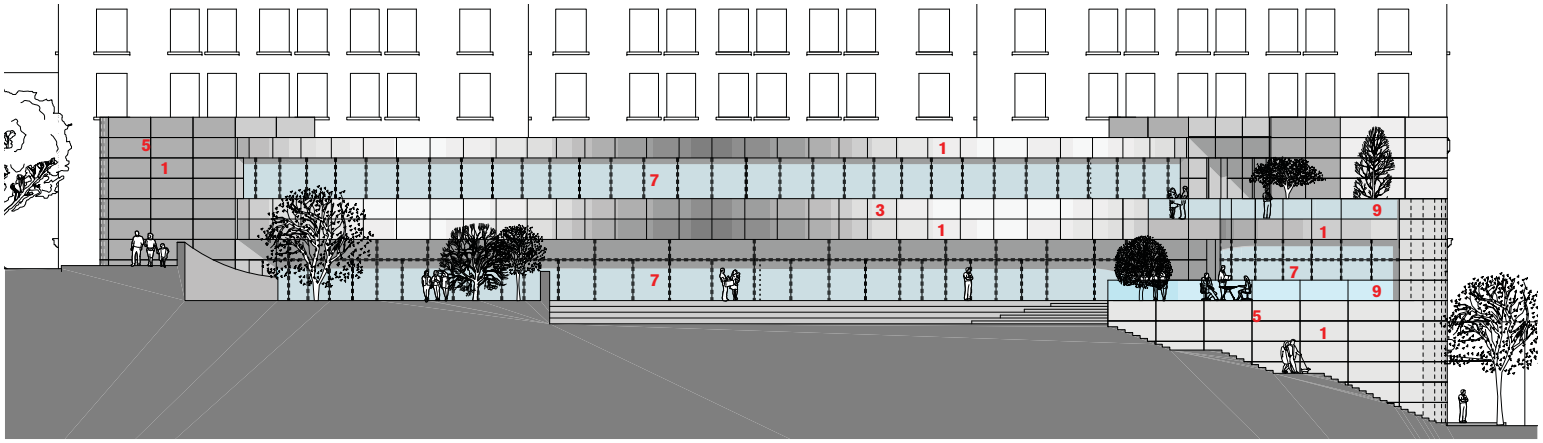
## 4.3
## Ground Level Buildings
Plaza Elevations

**Key**

1. Limestone
2. Green Wall
3. Backpainted Low Iron Glass
4. Anodised Aluminium
5. Stainless Steel
6. Louvered Metal Doors
7. Clear Low Iron Glass
8. Stone Fins
9. Glass Balustrade
10. Water Wall

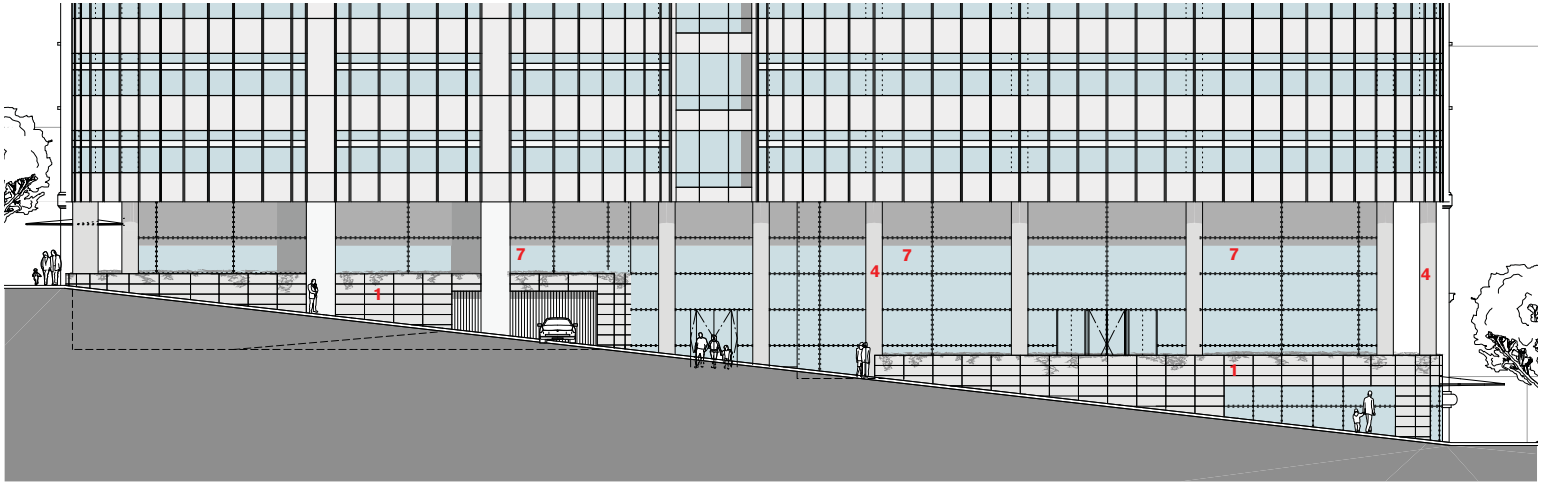



Elevation 1 - North-East Plaza Elevation

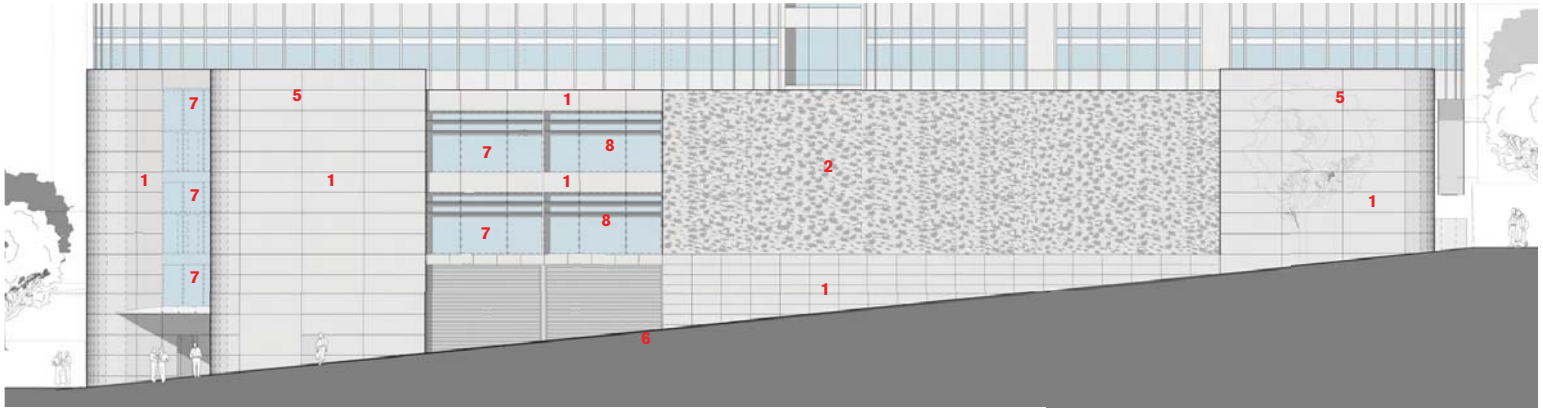



Elevation 2- South-West Plaza Elevation

## 4.4
## Ground Level Buildings
Cherry and James Street Elevations




Elevation 3- Cherry Street Elevation




Elevation 4- James Street Elevation

**Key**

1. Limestone
2. Green Wall
3. Backpainted Low Iron Glass
4. Anodised Aluminium
5. Stainless Steel
6. Louvered Metal Doors
7. Clear Low Iron Glass
8. Stone Fins
9. Glass Balustrade
10. Water Wall

## 4.5
## Office Tower, Residential Tower + Amenity Level
Facade Material Palette

**Key**

1. Anodised Aluminium
2. Stainless Steel
3. Green Wall
4. Backpainted Low Iron Glass
5. Fritted Low Iron Glass
6. Clear Low Iron Glass

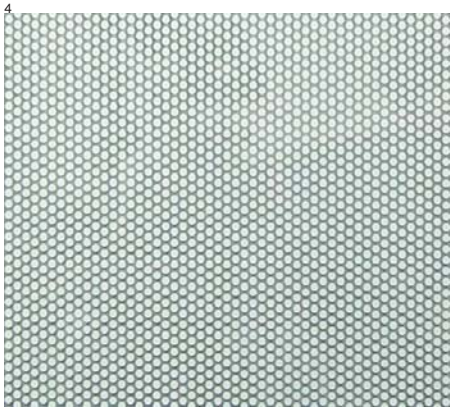
1

2

3



4

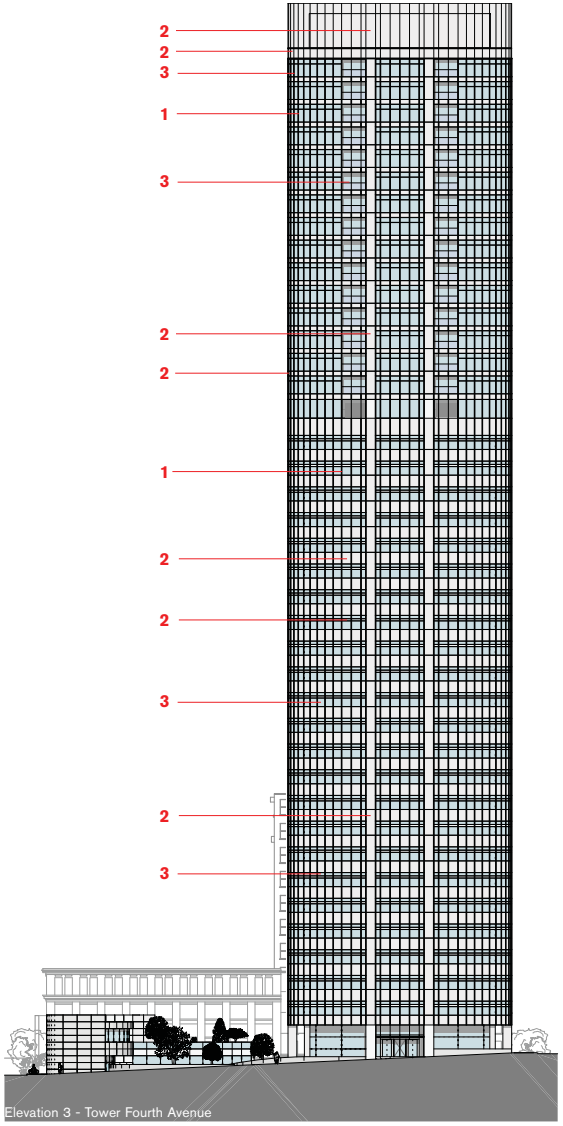


5

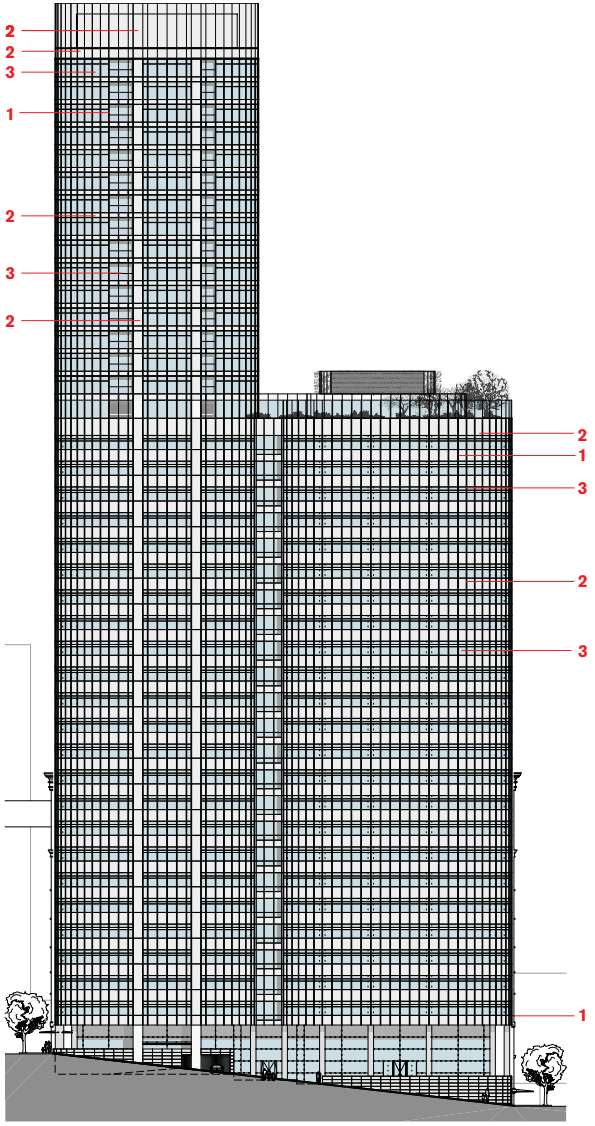


6

## 4.6
## Tower Building
Full Elevations




Elevation 3 - Tower Fourth Avenue




**Key**

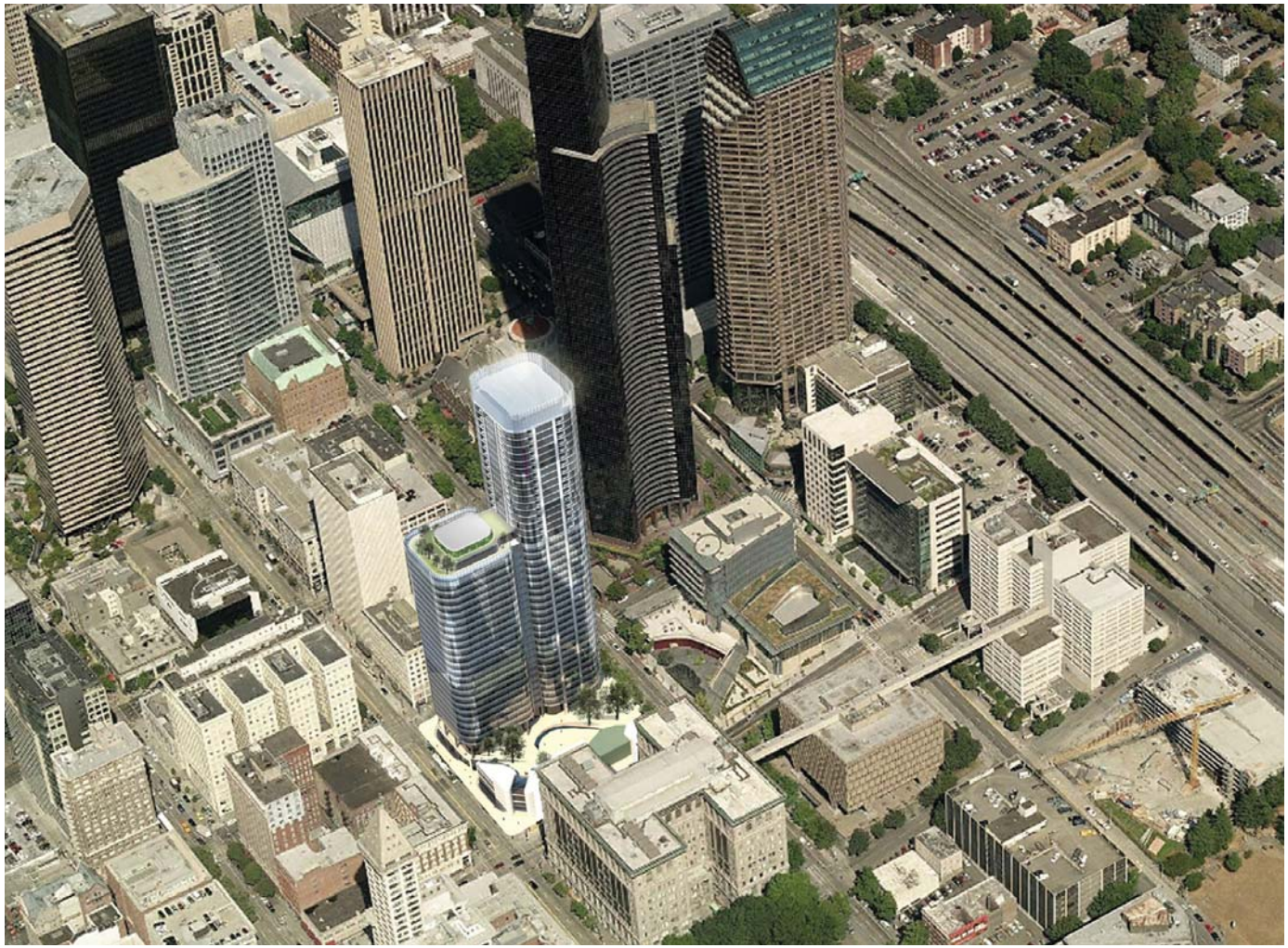
1. Anodised Aluminium
2. Fritted Low Iron Glass
3. Clear Low Iron Glass
4. Stainless Steel
5. Green Wall

## Site Views

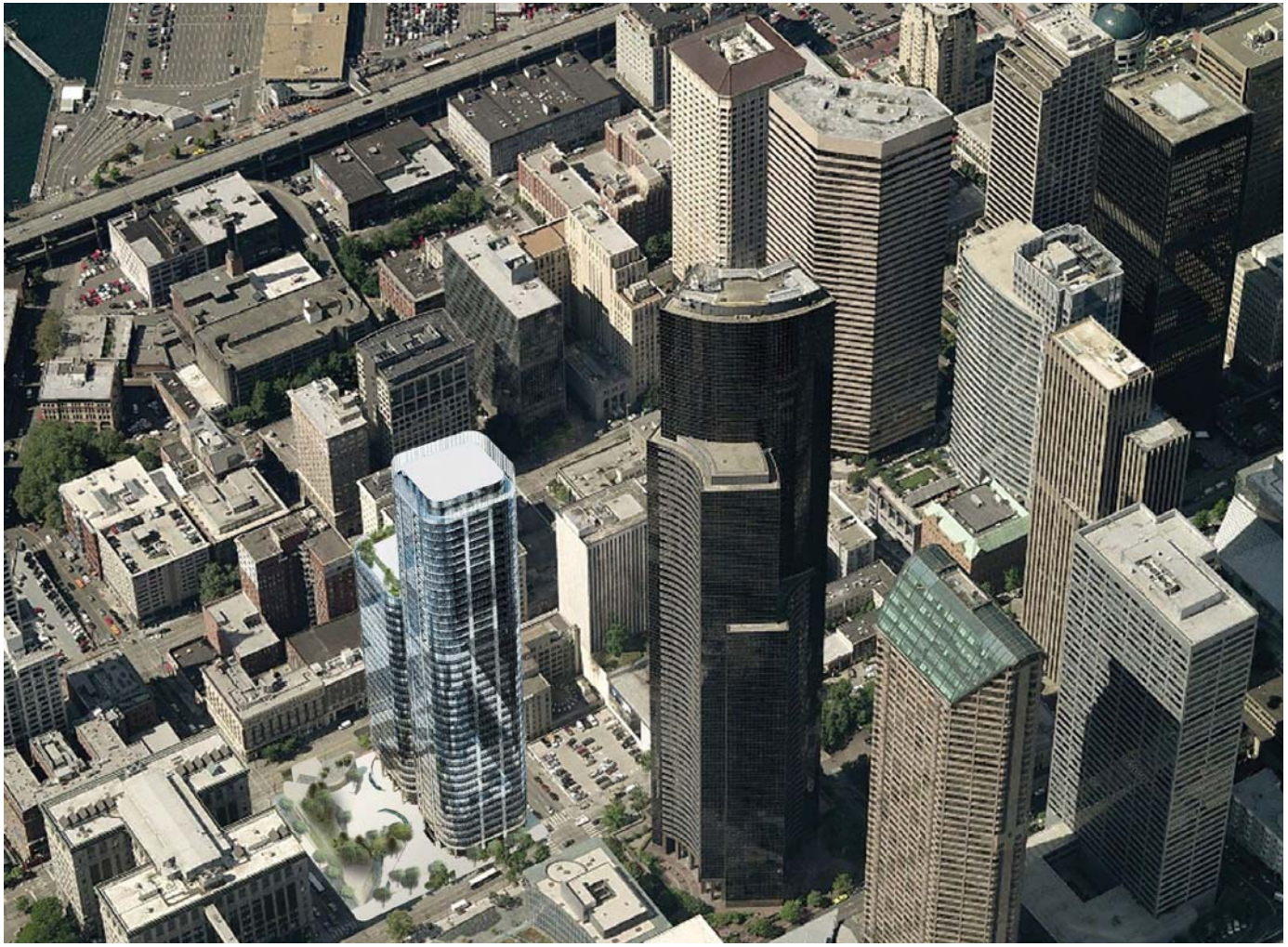
# 6

**6.1**
**Photomontage**
West from Harborview Viewpoint

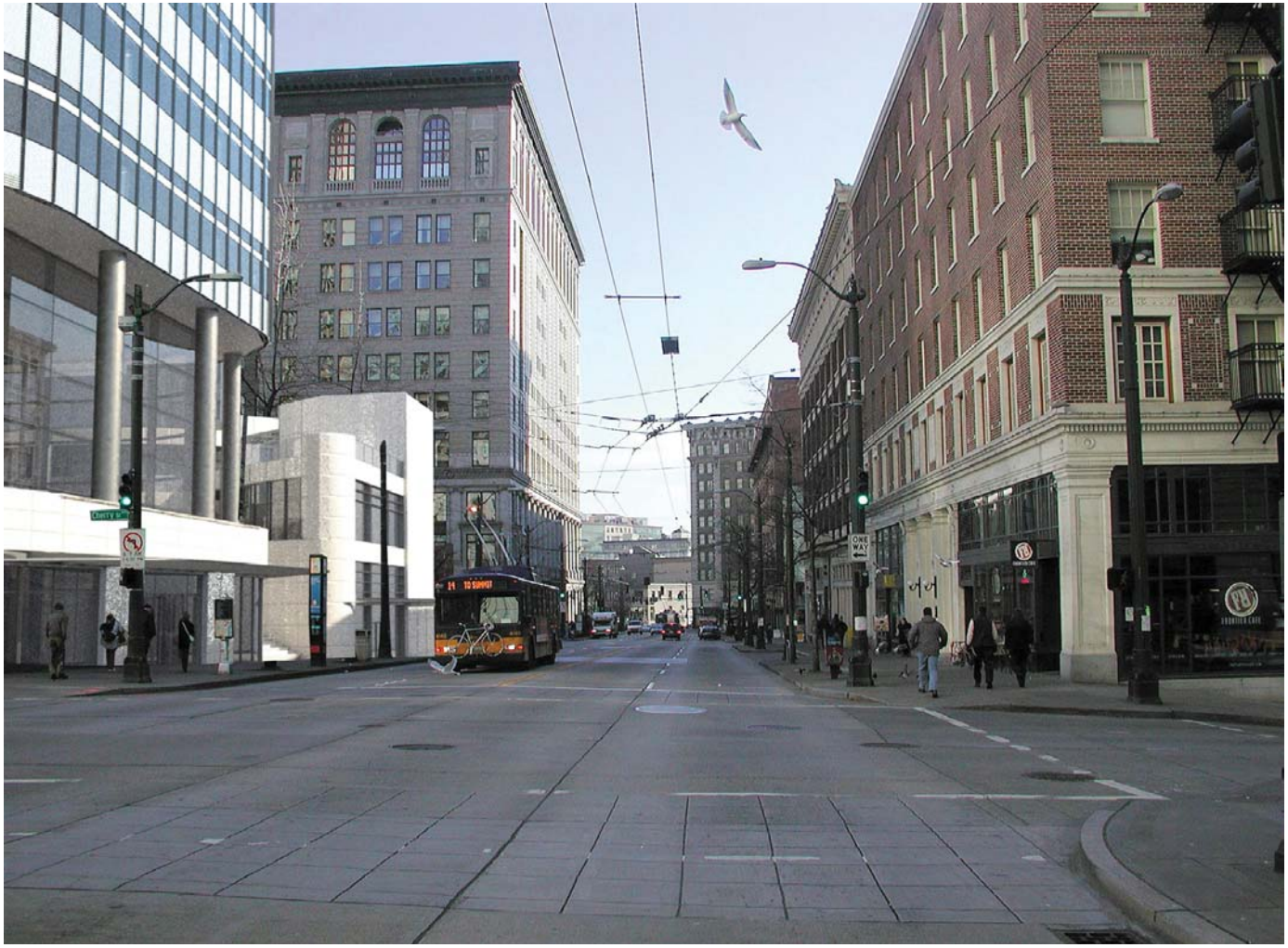
**6.2**
**Photomontage**
Aerial View Looking North



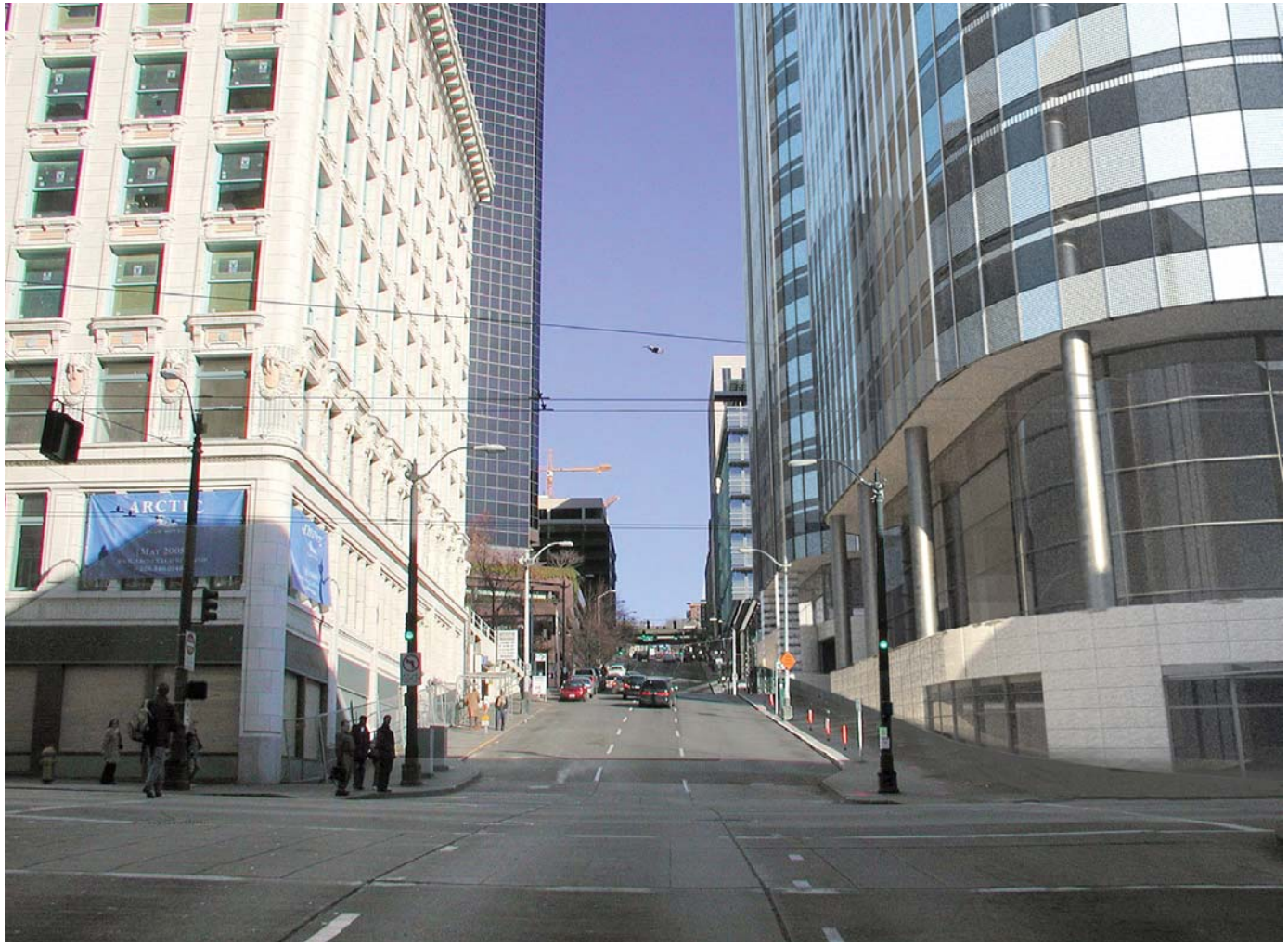
**6.3**
**Photomontage**
Aerial View Looking West



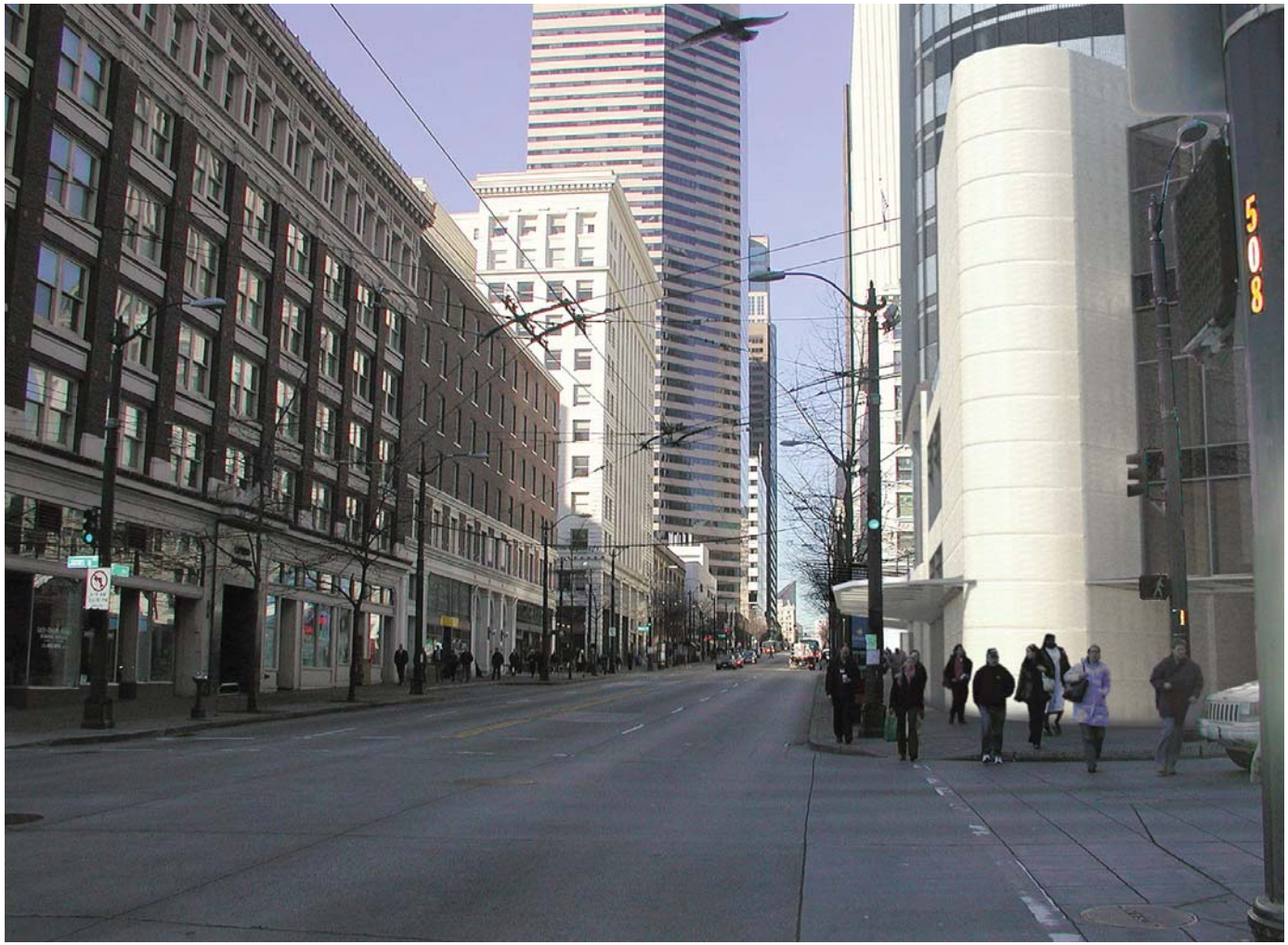
**6.4**
**Photomontage**
South Along Third Avenue



**6.5**
**Photomontage**
East Along Cherry Street




**6.6**
**Photomontage**
North Along Third Avenue



**6.7**
**Photomontage**
West Down Cherry Street

## Departures

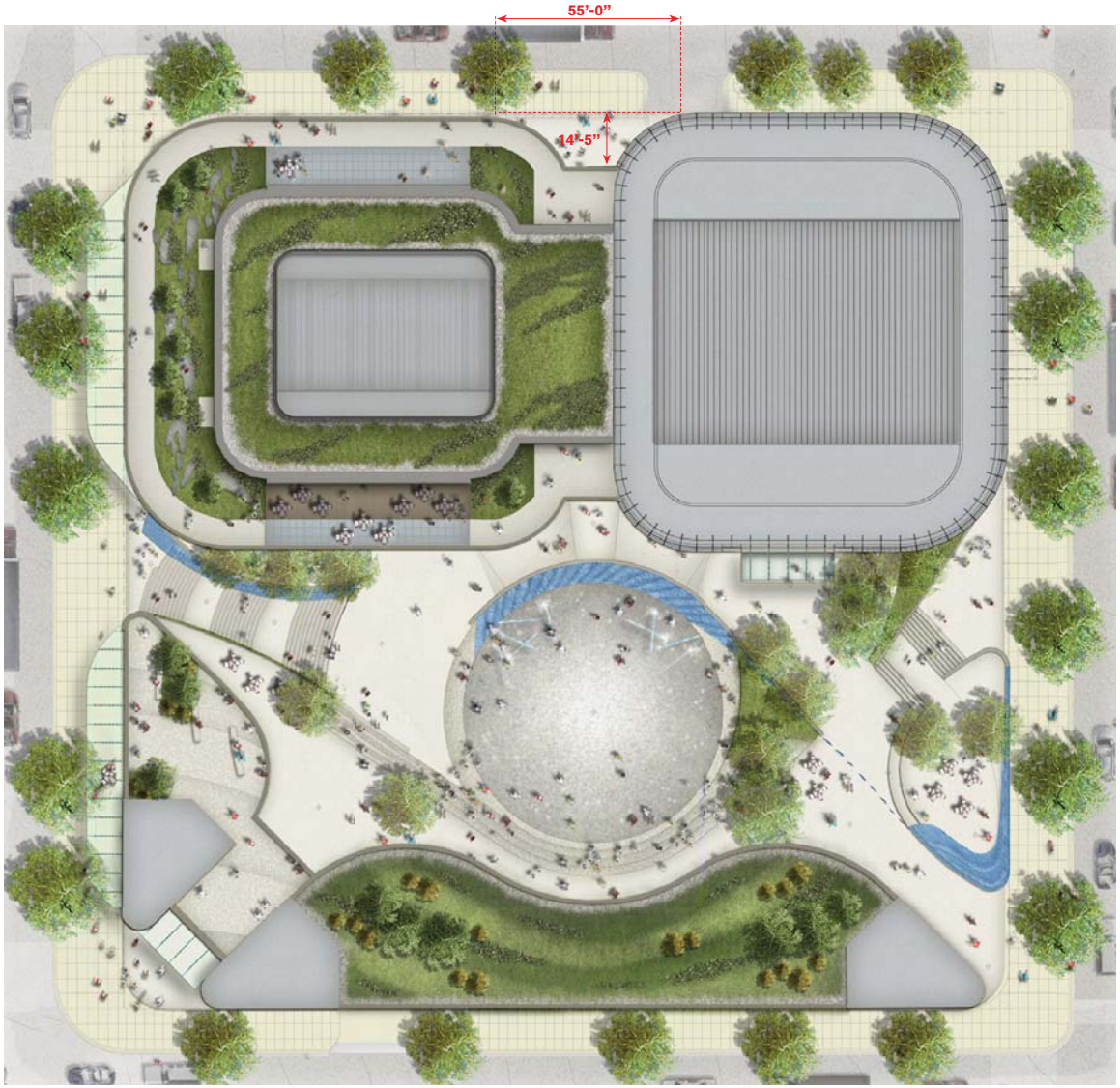
# 6

## 6.1
## Departure Matrix

| Development Standard | Departure Request | Justification |
|---|---|---|
| | | |
| **1 . Overhead Weather Protection** | | |
| **SMC 23.49.0189**<br>Continuous overhead weather protection shall be required for new development along entire street frontage. | Eliminate OWP at James Street and Cherry Street. | Please refer to text and accompaning diagrams in section 2.2 of the report<br>Alternative proposals meet the intent of the code. |
| **2 . Façade Modulation** | | |
| **SMC 23.49.058B**<br>Facade lengths limited to 80' above the 500' elevation and to 100' above the 240' elevation. | Accept 55' x 14.5' recess on Cherry Street meets the intent of the code. | If footprint of tower is maintained, the tower would have to move further south thus reducing the amount of open space on the plaza. |
| **3 . Sidewalk Widths** | | |
| **SMC 23.49.022**<br>Cherry and James Streets are principal streets with 12' sidewalk widths | Existing sidewalk on Cherry St is 11'8".<br>Existing sidewalk on James St is 11'11'.<br>Maintain existing condition | Existing conditions are being maintained. Any change would be of a minimal dimension. |

## 6.2
## Departure Request
## Item 1
Overhead Weather Protection

**6 .3**
**Departure Request**
**Item 2**
Facade Modulation




Typical Office Level Plan

## 6.4
## Departure Request
## Item 3
Sidewalk Widths


Upper Level Plaza Plan