Cascadia Center for Sustainable Design and Construction

1501 E Madison Street

Early Design Guidance Packet

March 17, 2010

DPD Project # 3011010

Cascadia Center Vision

The Bullitt Foundation is spearheading a visionary effort to develop the Cascadia Center for Sustainable Design and Construction in Seattle's Central Area. The Center will be one of the nation's first mid-rise commercial buildings to achieve "living building" status, a new benchmark for environmental sustainability. The Foundation and its partners will use the project to promote innovative sustainable building technologies and practices in Seattle's urban neighborhoods, the Northwest and around the world. As the first urban building of its kind, the Center will serve as a community resource for urban sustainability education and help reduce the environmental impact of building construction and operations.

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Point32

Project Goals

The creation of the Cascadia Center for Sustainable Design and Construction is a response to the impact of buildings, which currently account for an estimated 39% of carbon dioxide emissions, 65% of waste and 70% of electrical use in the United States. The development of the six-story, approximately 50,000 sf commercial building will set a new standard for performance-based design and advance new approaches for sustainable construction. As an early contribution to the project, the Bullitt Foundation purchased a highly visible property in the Central Area, a target zone for economic development. This strategic location scores 98 of 100 on Walk Score, an index that reflects attributes such as mixed income, mixed use, density, access to public transportation, and proximity to schools, parks and local businesses.

Advancing Urban Sustainability

The goals for the Cascadia Center are ambitious and forward thinking. In addition to meeting LEED Platinum and the 2030 Challenge, more challenging is the intent to achieve the goals of The Living Building Challenge. The Challenge is performance-based and evaluated after one year of the building's operation. It has 20 imperatives, including: responsible site selection; 100% on-site renewable energy generation; 100% of water needs provided by harvested rainwater; and on-site waste management. Interactive building 'dashboards' will provide a continual feedback loop to building occupants of net zero energy and water use on an annualized basis. Highly efficient electrical and mechanical systems, a photovoltaic array and an innovative wastewater management system will be visible educational features of the building. Building occupants will rely largely on public transportation and share a limited number (4-6) of electric cars provided on-site. The building will be built to last 250 years, and designed to adapt to changing needs and emerging technologies.

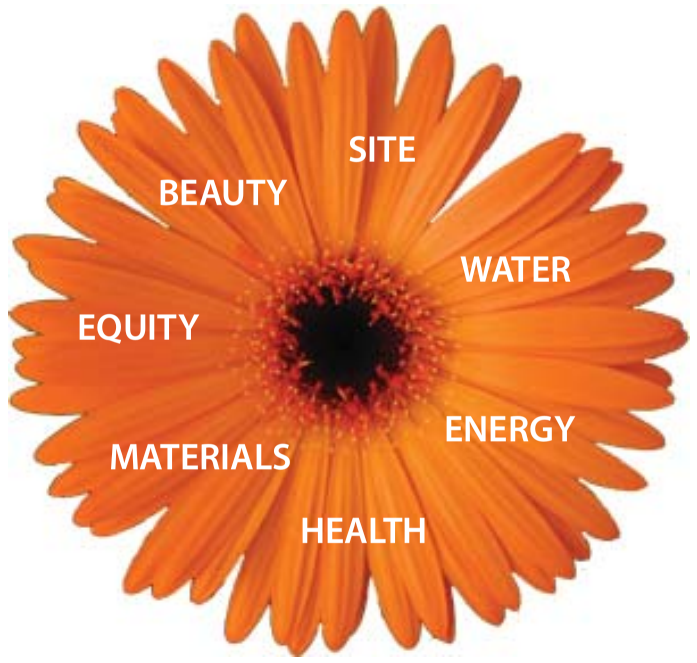
Serving the Central Area

The project site was chosen for its high visibility and accessibility, and offered a highly suitable location for new commercial development in a neighborhood that is predominantly residential yet striving for economic development. In fact, the Central Area Action Plan identified targeted improvements for the Madison-Miller neighborhood to include improved walkability, economic development that takes advantage of the strategic positioning of Madison Street as a vibrant connector, sensitive infill development and the creation of interesting urban spaces. The site's proximity to McGilvra Place Park has led to early discussions with City agencies and private partners to identify strategies for creating a vibrant public space adjacent to the Center, the opportunity to promote sustainable site development, and an improved pedestrian crossing of Madison Street that will serve nearby retail businesses, schools and churches.

Support for the Center

The Cascadia Center is a collaborative vision of the Bullitt Foundation, a team of leading Northwest architects, engineers and contractors, the University of Washington College of Built Environments, and Cascadia, the Pacific Northwest-based chapter of the U.S. and Canada Green Building Councils. It is anticipated that the building will house both the Cascadia Region Green Building Council and the International Living Building Institute (www.ilbi.org) and become a public resource center for living building projects worldwide. The project team is forming alliances with many public and private partners. The Seattle City Council recently passed an Ordinance to establish a demonstration program in support of "living building" pilot projects. The program will be used to evaluate and potentially modify land use codes and standards that discourage sustainable building practices in the urban environment.

Living Building Challenge



Aspirations for Energy Independence and Sustainability

The most challenging aspect of the project will be a serious attempt to achieve the goals of "The Living Building Challenge Version 2.0" described by the Cascadia Region Green Building Council (www.cascadiagbc.org).

The Living Building Challenge

Living Buildings are required to be self-sufficient for energy and water needs and meet advanced standards for elements such as material use and quality of the indoor environment. The Living Building Challenge requires meeting 20 "Imperatives" within seven organizing "Petals", including: responsible site selection; 100% on-site renewable energy generation; 100% of water needs provided by harvested rainwater; and on-site waste management. The program is performance-based and evaluated after one year of the building's operation.

A preliminary analysis of the Living Building Challenge provides a starting point for future investigations by the design and development team.

Seattle's Living Building Pilot Program

Seattle's land use code doesn't currently allow for the unique characteristics required to meet living building standards. On December 14, 2009, the Seattle City Council adopted an ordinance that creates a pilot project to allow for entirely self-sustaining green buildings in Seattle. The Living Building Ordinance, (C.B. 116740) will allow up to 12 unique "living buildings" to be developed in Seattle over the next three years.

The goal of the Living Building Pilot Program is to encourage the development of buildings that meet the Living Building Challenge by allowing departures from code requirements that might otherwise discourage or prevent buildings from meeting this standard.

Site Petal

The intent of the Site Petal is to clearly articulate where it is acceptable for people to build, how to protect and restore a place once it has been developed, and to encourage the creation of communities that are once again based on the pedestrian rather than the automobile.

1. Limits to Growth

Projects may only be built on greyfields or brownfields and previously developed sites.

RESPONSE: The site is a previously developed urban property, and given its current state of limited development presents an opportunity for much greater density. It is not adjacent to any sensitive habitat areas.

2. Urban Agriculture

All projects must integrate opportunities for agriculture appropriate to the scale and density of the project using its Floor Area Ratio as the basis for calculation

RESPONSE: We are currently seeking an interpretation of which Transect the site falls under. The site may fall under either Transect L5, Urban Center Zone (medium-to-high density mixed-use development found in the first "ring" of a larger city) or L6, Urban Core Zone (high-to very high-density mixed use development found in large cities and metropolises). The requirements for Urban Agriculture are different for Transects L5 and L6. Under current guidelines L5 transects are required to have 5% of the building's floor area devoted to Urban Agriculture when the FAR is between 2.0 and 2.99. Our FAR is 4.25. Under L6 there is no requirement for Urban Agriculture.

3. Habitat Exchange

For each hectare of development, an equal amount of land must be set-aside in perpetuity as part of a habitat exchange.

RESPONSE: The Bullitt Foundation has already been responsible for preserving natural areas hundreds of thousands of times larger than the size of this site, so it expects to retroactively receive credit for this achievement.

4. Car Free Living

For Building and Neighborhood projects, the proposed development may not lower the density of the existing site or the catchment area of the Transect.

RESPONSE: The project is proposed to be 100% commercial office, balancing the predominate residential, retail and restaurant use in the area, which will provide more daytime uses in this location and the opportunity for ideal housing/jobs balance as required by the LBC. The User's guide for this prerequisite has not yet been published, so further verification will be on-going.

The project increases the density from the existing one story restaurant and surface parking, and was chosen because it is close to existing public bus routes and to future light rail and streetcar systems. The new project will include ample bicycle parking for employees and visitors. In general, the developer will discourage driving, but recognizes the need for a few parking spaces on the site for electric hybrid cars shared by the tenants.

Water Petal

The intent of the Water Petal is to realign how people use water and redefine 'waste' in the built environment, so that water is respected as a precious resource.

5. Net zero water

One hundred percent of occupants' water use must come from captured precipitation or closed loop water systems that account for downstream ecosystem impacts and that are appropriately purified without the use of chemicals.

RESPONSE: Clean roof water will be collected, stored in a cistern, and treated before being pumped to fixtures to meet the overall water demand. Collected urine, and greywater from sinks and showers, and compost from composting toilets will be stored in tanks located in the mechanical room and combined together to serve as fertilizer for on-site vegetation. The on-site planted areas will be sized to evapotranspire all of the greywater/urine collected within the building.

6. Sustainable Water Discharge

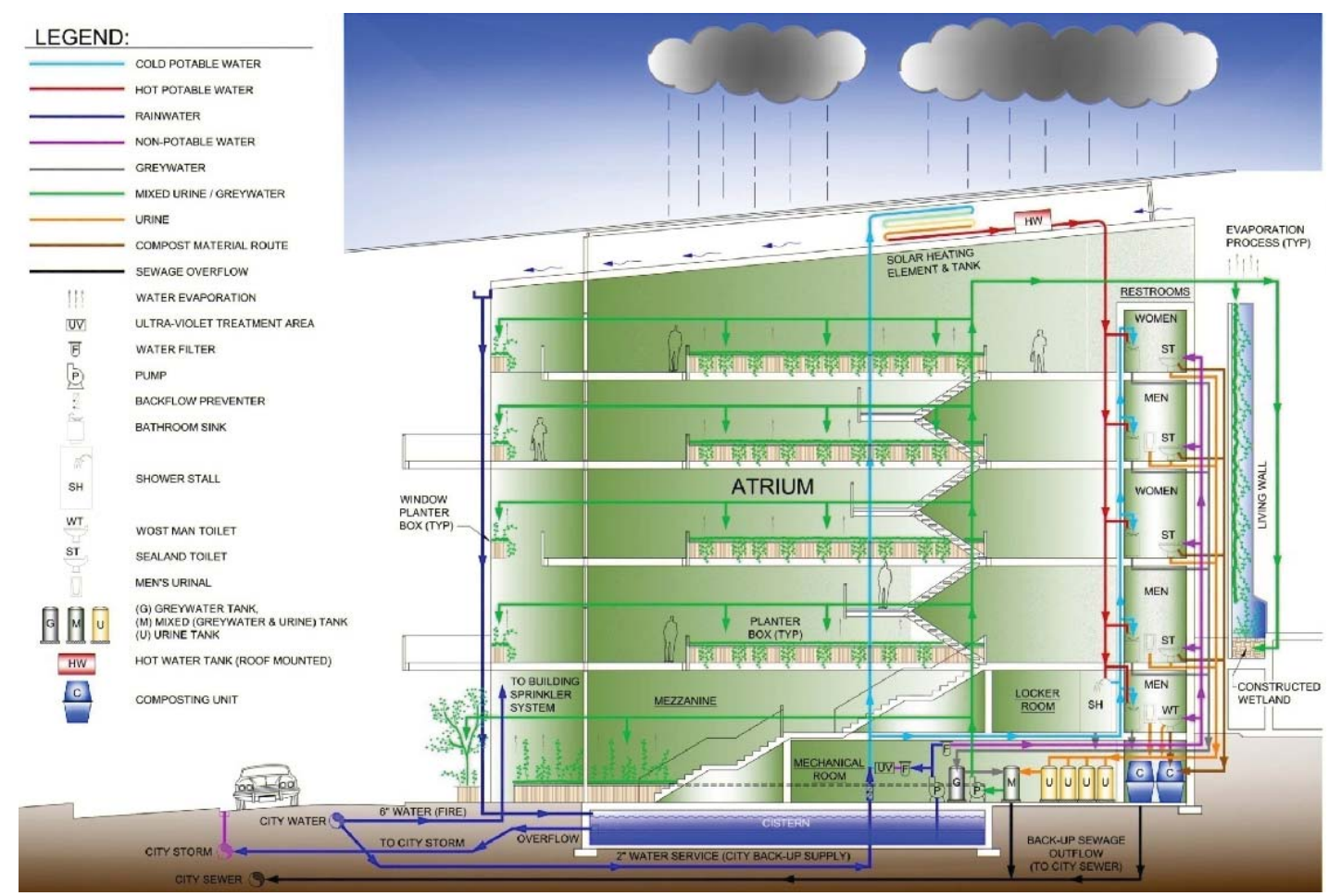
"100% of stormwater and building water discharge must be managed on-site and integrated into a comprehensive system to feed the project's demands."

RESPONSE: Although much of the rainwater falling on the site will be collected, stored, treated, and used for potable and non-potable uses within the building, the stormwater detention design strives to closely mimic the flows of the pre-development condition of the site. This will be achieved through an active detention volume discharged at a pre-development (old growth forest) design rate. By releasing the stormwater at this rate, it will help to mimic the pre-development hydrology of the downstream water bodies, particularly Lake Union.

There is a small amount of parking for the building. This parking will be located beneath the building, as to not create additional pavement surfaces outside of the building footprint. This strategy helps to keep potential pollutants from being washed offsite, and increases the project density for the site.

As described in Imperative 5, the "wastewater" that flows within the building will be collected and stored separately before being distributed to vegetated areas. Planting areas may be designed as constructed wetlands or enclosed within greenhouse/solariums to maximize evapotranspiration. The nutrients from the "wastewater" provide a naturally balanced fertilizer to the plants and soil. This provides the final step to the closed loop water and nutrient system for the building.

By sizing indoor and outdoor planting areas to handle the daily "wastewater" production, an efficient balance is achieved thereby eliminating the need for irrigation and sewage disposal.



Water Use Diagram

Energy Petal

The intent of the Energy Petal is to signal a new age of design, wherein the built environment relies solely on renewable forms of energy and operates year round in a pollution-free manner.

7. Net Zero Energy

100 percent of the building's energy use must be supplied by on-site renewable energy, on a net annual basis.

RESPONSE: This is a very serious challenge in Seattle. On-site renewable energy sources are limited to sunlight, subterranean heat, and wind, with the recognition that the vast majority of required energy will come from the sun. Because Seattle's sunlight is very limited, even when calculated on an annualized basis, every element will have to be drawn from the most energy-efficient designs, technologies, construction methods and materials.

Based on the amount of sunlight falling on the site and the energy conservation measures described within this Petal, the previous chart shows the energy use of the proposed buidling as compared to average and code-compliant office buidlings of its type.

With the goal of net zero energy, we have identified the following preliminary strategies: optimizing building form and orientation to take advantage of passive design; incorporate only the most efficient heating systems while eliminating cooling; utilize the most efficient solar energy technology; and provide a fully daylit interior to eliminate lighting loads.

Building Form, Orientation and Overall Design:

- Position building for balanced daylight and maximum solar gain from south and west-facing facades. Use very efficient windows.
- Create narrow floor plates to facilitate natural ventilation, achieve required daylight, and reduce build-up of internal heat in core areas.
- Maximize roof area and south-facing vertical wall area to accommodate solar panels and/or building integrated photovoltaic panels.
- Locate and make visible unconditioned circulation stairs on building exterior to encourage physical exercise and reduce energy demands.

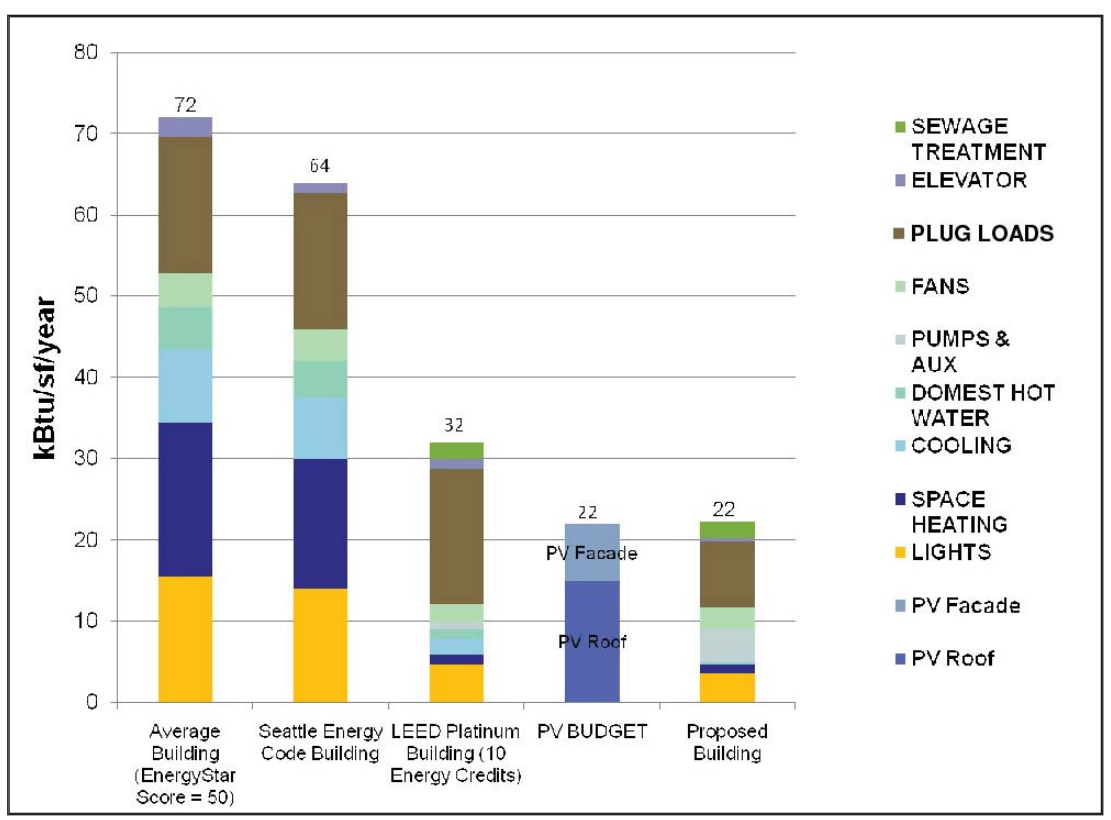
Heating and Cooling:

- Widen acceptable temperature ranges in circulation spaces where people spend less time (stairwells, lobbies, corridors).
- Increase vertical and horizontal insulation to minimize seasonal heat gain and heat loss.
- Use passive ventilation as primary source of cooling and to regulate healthy air.
- Use ground source heat pumps and solar hot water to increase efficiency and performance of heating and cooling systems.
- Rely on radiant heating & cooling delivered through in-floor, ceiling panel and/or radiator applications as determined by final building type, form and use.

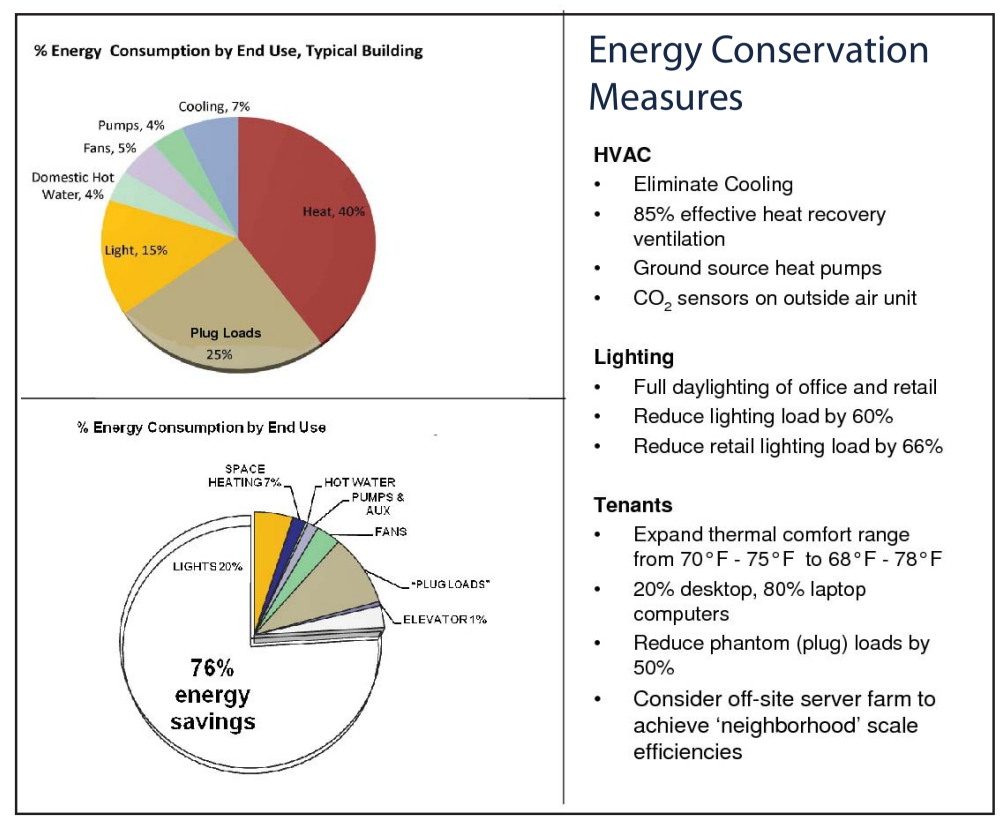
Solar Equipment:

- Maximize solar energy potential through building integrated and freestanding photovoltaic arrays.
- Sloped roof of southwest-facing pitch to maximize solar gain.
- Secondary use of photovoltaic panels as exterior element of building envelope (e.g. rainscreen).
- Provide flexibility as future technology develops.

Alternative technologies such as Concentrated Photovoltaics perform well in climates with a modest ratio of direct beam radiation such as Tuscon or Reno, as opposed to the cloudy sky we experience in Seattle.



Energy Use and Solar Budget



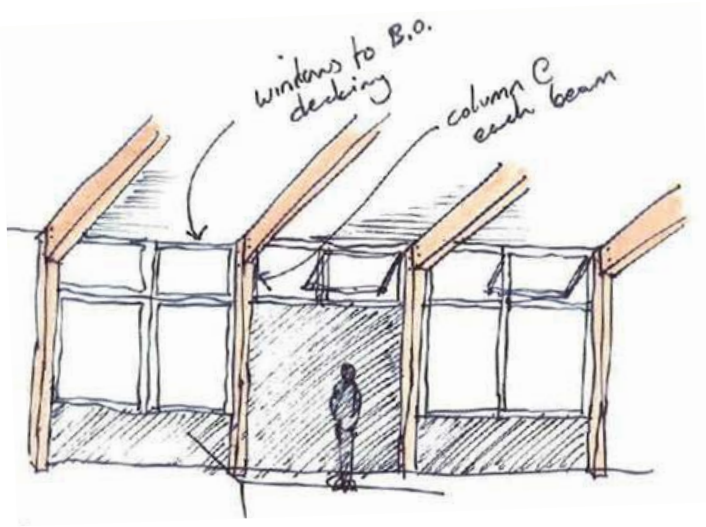
Energy conservation measures and energy savings compared to typical buildings

Health Petal

Daylighting and Glazing:

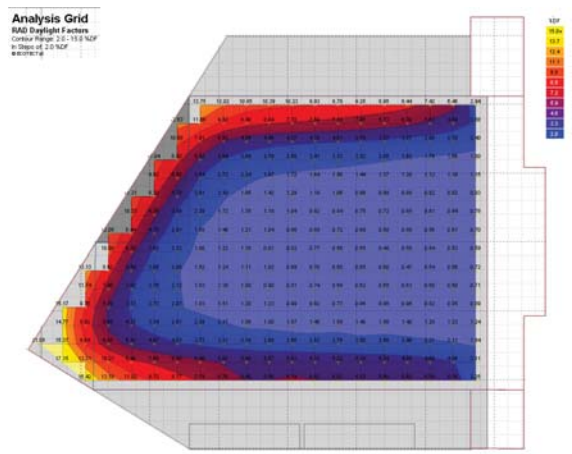
- Take advantage of sunlight and skylight to illuminate indoor environments at a level that is appropriate for programmatic and visual comfort.
- Incorporate sophisticated exterior shading devices to control solar load on the building skin and limit interior glare, as well as increased area for photovoltaic arrays.
- Reduce electric light use relative to the presence of daylight to minimize power consumption and interior heat gains.
- Employ the most efficient electric lighting systems that meet legitimate needs.
- Analyze energy performance of various glazing systems and impact on overall building design.

The three diagrams to the right compare daylighting levels for various design features. These were modeled on the third floor at 3:00 pm. Yellow represents the brighest, and blue the darkest daylighting. The first shows a theoretical best case daylighighting scenario with a fully-glazed facade. The second diagram shows the preferred concept with portions of opaque facade. In this case, the center of the building is barely meeting daylighting standards. The third diagram shows an increased floor-to-floor height which brings adequate daylight into most of the center of the building. This investigation is ongoing.

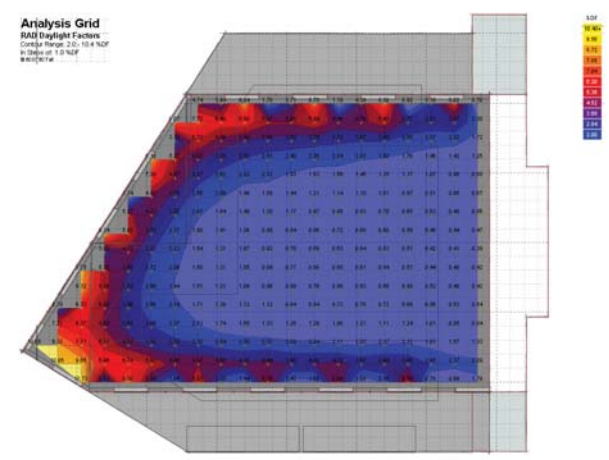


Sketch showing transom windows for maximum daylight.

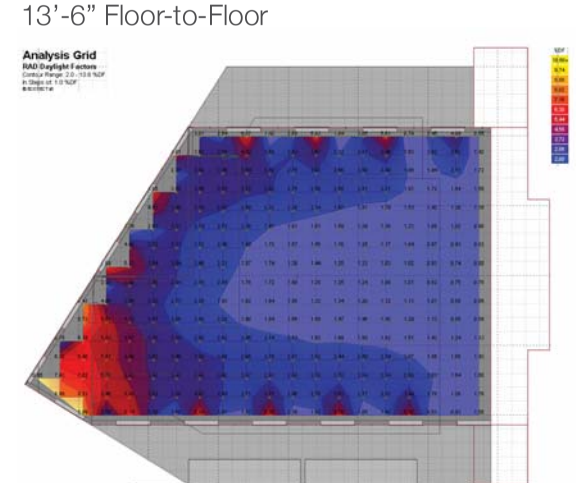
Best Case



Design Case



13'-6" Floor-to-Floor



Comparative preliminary daylighting study

8. Healthy Air

Every occupiable space must have operable windows that provide access to fresh air and daylight.

RESPONSE: The building has been daylight modeled for conditions on overcast as well as sunny days to ensure all occupants benefit from natural light (see diagrams below). Ventilation strategies being pursued include operable windows and fresh air venting as part of the mechanical systems being designed.

The building's form and orientation will be influenced by natural ventilation requirements and the need to mitigate noise and dirt emanating from motor vehicle traffic on Madison Avenue.

9. Civilized Environment

To promote good indoor air quality buildings must meet the following criteria:
- *Entryways must have an external dirt track-in system and an internal dirt track-in system contained within a separate entry space.*
- *All kitchens, bathrooms, copy rooms, janitorial closets and chemical storage spaces must be separately ventilated and exhaust directly to outside air.*
- *Ventilation rates must be designed to comply with ASHRAE 62.1-2007 and equipment must be installed to monitor levels of carbon dioxide (CO_2), temperature and humidity.*
- *Smoking must be prohibited within the project boundary.*

RESPONSE: The building will meet all of these criteria.

10. Biophilia

The project must be designed to include elements that nurture the innate human attraction to natural systems and processes. Each of the six established Biophilic Design Elements must be represented for every 2,000 m2 of the project:
- *Environmental features*
- *Natural shapes and forms*
- *Natural patterns and processes*
- *Light and space*
- *Place-based relationships*
- *Evolved human-nature relationships*

RESPONSE: The Cascadia Center is designed to expose building users and visitors to natural processes on site. First, the site was selected for its proximity to McGilvra Place Park and the opportunity to establish a strong connection between indoor and outdoor environments. The building's orientation to the south and west, and reliance on solar energy will be expressed through the visible PV array; the amount of energy generated will be communicated through building dashboards in the lower floor entry lobby. Water processes will also become visible features within the building and on site, where planted bioswales and pervious paving will demonstrate sustainable water management. The public entry plaza proposed for the building's 15th Avenue entrance will provide a gathering place for visitors and tenants underneath the canopy of the existing Sycamore trees.

Materials Petal

The intent of the Materials Petal is to induce a successful materials economy that is non-toxic, transparent and socially equitable.

11. Red List

The building cannot contain any of a list of 13 materials that have been determined to be unhealthy at some stage in their life cycle. Although eliminating hazardous building materials is attainable, sourcing approved materials that are attractive, effective, durable, and affordable from appropriate distances may be more challenging to achieve.

RESPONSE: The building will meet these criteria. A general contractor is on the team to help identify alternative materials. The building industry is largely responsible for many of these materials and chemicals in use. For example, approximately three-quarters of all PVC is in building materials. Some of the other items on the list such as cadmium, lead, mercury and phthalates are also used as plasticizers and stabilizers for PVC.

Living Building Challenge recognizes that it is a tall order to eliminate the Red List in all cases due to current market limitations. There are several program exceptions that are footnoted in the LBC standard, and as a last resort, we will be able to use a product if there are no suitable alternatives. However, in this case we must communicate with manufacturers to share expectations about product ingredients. This involves sending a letter to the manufacturer stipulating that the product purchase does not constitute an endorsement – and include a statement that requests that the company stops using the Red List material.

12. Embodied Carbon Footprint

The project must account for the total footprint of embodied carbon (tCO2e) from its construction and projected replacement parts through a one-time carbon offset tied to the project boundary.

RESPONSE: The Foundation will assume responsibility for this requirement by paying the incremental cost of some renewable energy project that will actually cause less coal, oil, or gas to be burned.

13. Responsible Industry

The project must advocate for the creation and adoption of third-party certified standards for sustainable resource extraction and fair labor practices. Applicable raw materials include stone and rock, metal, and timber.
For timber, all wood must be certified by the Forest Stewardship Council (FSC), from salvaged sources, or from the intentional harvest of timber onsite for the purpose of clearing the area for construction.

RESPONSE: The project plans to use all FSC certified wood.

14. Appropriate Sourcing

The project must incorporate place-based solutions and contribute to the expansion of a regional economy rooted in sustainable practices, products and services.

RESPONSE: This imperative identifies appropriate sourcing distances for materials and also applies limits to the location of the primary design team. The zones correlate with product density and function. Heavy materials that typically are used as structural components have the tightest radius. This encourages place-based and climate appropriate solutions for a building's shell or an infrastructure project's most commonly used material. On the opposite side of the spectrum, renewable energy technologies have the largest radius.

The distance that materials will travel to the construction site will follow these guidelines:

Ideas:	From anywhere
Renewable Technologies	15,000 km
Adaptable high performance assemblies	5,000 km
Consultant travel	2,500 km
Lightweight materials	2,000 km
Medium weight materials	1,000 km
Heavy materials	500 km

15. Conservation + Reuse

All projects teams must strive to reduce or eliminate the production of waste during design, construction and operation in order to conserve natural resources. All projects must comply with the following:

Project teams must create a material conservation management plan that explains how the project optimizes materials and in each of the following phases:
- *Design Phase, including the consideration of appropriate durability in product specification*
- *Construction Phase, including product optimization and collection of wasted materials*
- *Operation Phase, including a collection plan for consumables and durables*
- *End of Life Phase, including a plan for Adaptable Reuse and Deconstruction.*

During construction, teams must divert wasted material from landfills to the following levels:

Metals	*95 percent*
Paper and cardboard	*95 percent*
Soil and biomass	*100 percent*
Rigid foam, carpet, and insulation	*90 percent*
All others (weighted average)	*80 percent*

RESPONSE: As the design develops, we will implement these criteria, and a general contractor will help guide the process. To minimize wasted materials, project teams must consider impacts during the design, construction, operation, and end-of-life phases of a development by developing a Material Conservation Management Plan. In it, teams are encouraged to consider appropriate durability of products. Our approach is to design a 250+ year structure, a 50+ year thermal envelope and a 25+ year active technology in order for the building to be as flexible and adaptable over time as possible.

Equity Petal

The intent of the Equity Petal is to correlate the impacts of design and development to its ability to foster a true sense of community.

16. Human Scale and Human Places

The project must be designed to create human-scaled rather than automobile-scaled places, so that the experience brings out the best in humanity and promotes culture and interaction. In context of the character of each Transect, there are specific maximum (and sometimes minimum) requirements for paved areas, street and block design, building scale and signage that contribute to livable places.

RESPONSE: The building will be designed to engage and connect with both Madison Street and a new pedestrian plaza on15th Avenue. It is envisioned that the building and site will become an active place for the community. Human scaled elements of the building will include fine-grained detailing, clear glass at the ground floor, and interpretive elements oriented towards passers-by.

17. Democracy + Social Justice

For all projects types located in Transect L3-L6, street furniture must be provided for and accessible to all members of society.

RESPONSE: The project will include universal design features such as entrances at grade, an elevator, and outdoor public seating associated with the 15th Avenue entrance.

18. Rights to Nature

The project may not block access to, nor diminish the quality of, fresh air, sunlight and natural waterways for any member of society or adjacent developments.

RESPONSE: The project conforms to the criteria for fresh air and sunlight and is not adjacent to a natural waterway, though natural storm drainage will be celebrated on the site through the use of bioswales. The site occupies a corner and an alley, and abuts only one other building. In the preferred concept, our building steps back from its east neighbor to allow resident access to fresh air and sunlight.

In this urban context, the building does shade the adjacent east structure's roof and west windows. However, when and if the adjacent site develops to its full zoning envelope, both buildings will have access to rooftop solar energy production. The requirements for the L5 and L6 Transects are under development and should be released in the Spring of 2010. Given the project's underlying zoning, and the building setback we are proposing, we anticipate being able to conform to this imperative.

Beauty Petal

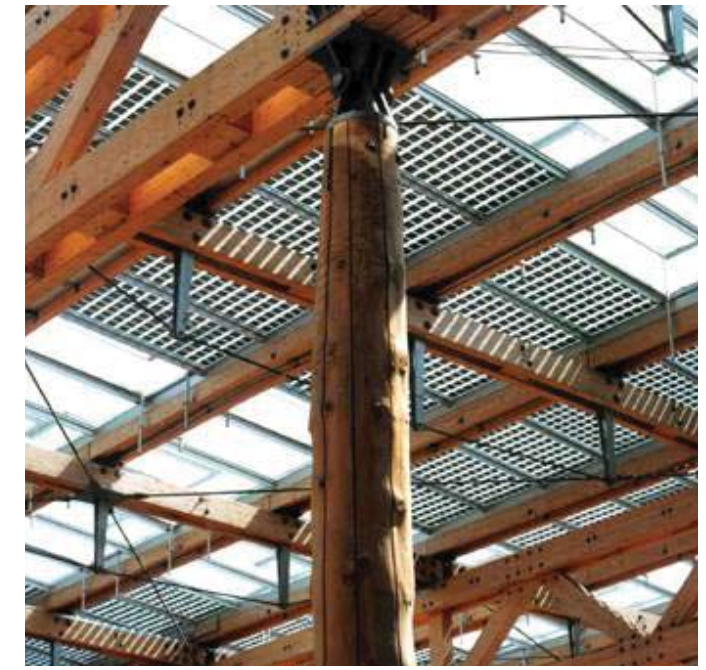
The intent of the Beauty Petal is to recognize the need for beauty as a precursor to caring enough to preserve, conserve, and serve the greater good.

19. Beauty + Spirit

The project must contain design features intended solely for human delight and the celebration of culture, spirit and place appropriate to its function.

RESPONSE: The project provides an opportunity to create a place that is aesthetically pleasing as much as it is environmentally sustainable. The project will contain design features intended solely for human delight and the celebration of culture, spirit, and its Capitol Hill neighborhood. And, in our ideal outcome, it will contain features that are so obviously appropriate and functional in a Cascadian context that they will blaze a fresh trail in regional design.

The Capitol Hill, Central Area and Pike/Pine neighborhoods each have rich cultural identities. And set in the greater context of the primeval forest and splendid waterways of the region, the project has much inspiration from which to draw. The building will celebrate its place and culture with natural light, wood to capture the Northwest spirit, and glazing to bring trees and the outside community "into" the buidling. While specific details have not yet been developed, we are inspired by natural trees, filtered light, flowing water and graffiti.



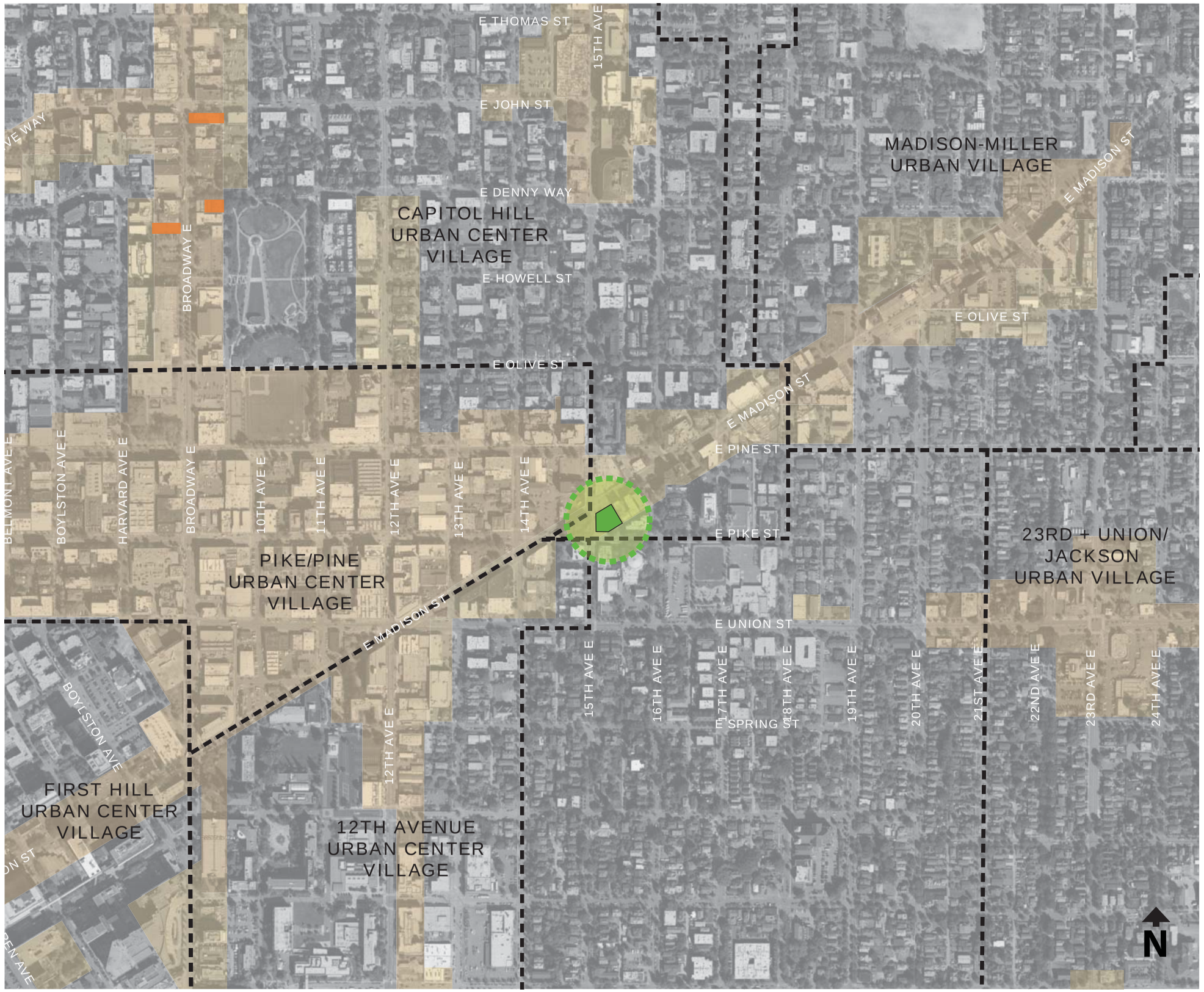
20. Inspiration + Education

Educational materials about the performance and operation of the project must be provided to the public to share successful solutions and to motivate others to make change.

RESPONSE: Given the public and private nature of the building, the design will need to consider issues of safety and security for building occupants and visitors. In addition, the Living Building Challenge requires that non-sensitive areas of the building must be held open to the public at least one day per year to facilitate direct contact with a truly sustainable building.

It is this project's main goal to act as a road map for other projects, teaching people about the design decisions made and systems used. Examples of educational tools include: websites with real-time utilities tracking; 3D interfaces that highlight systems and their functionality; display areas onsite that publicize the project's metering systems; and classes that will be taught onsite about the design and construction process.

Neighbohood Centers



LEGEND: Future Light Rail Station | Neighborhood Commercial | Site

Aerial view showing Urban VIllage/Planning Area Boundaries and neighborhood commercial centers

This project will complete development at an important convergence of three neighborhoods: the Central Area, Capitol Hill and Pike/Pine.

The Central Area Neighborhood Plan includes the site within its planning boundaries. The Central Area Action Plan identified specific development goals for the Madison-Miller neighborhood that include: improved walkability; economic development that takes advantage of the strategic positioning of Madison Street as a neighborhood zone connector; sensitive infill development; and the creation of interesting urban spaces. While the site does not fall within this urban village, the importance of improving the experience and development along Madison is clear.

The site is located on Capitol Hill, one of Seattle's most vibrant and visible mixed-use neighborhoods. It is home to several colleges and universities, public and private schools, medical centers and hospitals, locally owned shops and restaurants, parks, museums and a wide variety of housing. While located within the Capitol Hill Urban Center Village boundaries, the site is not specifically addressed in the Capitol Hill Plan.

This project lays across the street from the Pike/Pine Urban Center VIllage, and the site is more specifically addressed by the Pike Pine Neighborhood Plan. It notes that Pike Street would benefit from slower traffic, consolidated parking and narrowing. A desire to expand the Triangle Park (McGirvra Place Park) into Pike street Right of Way is also noted.

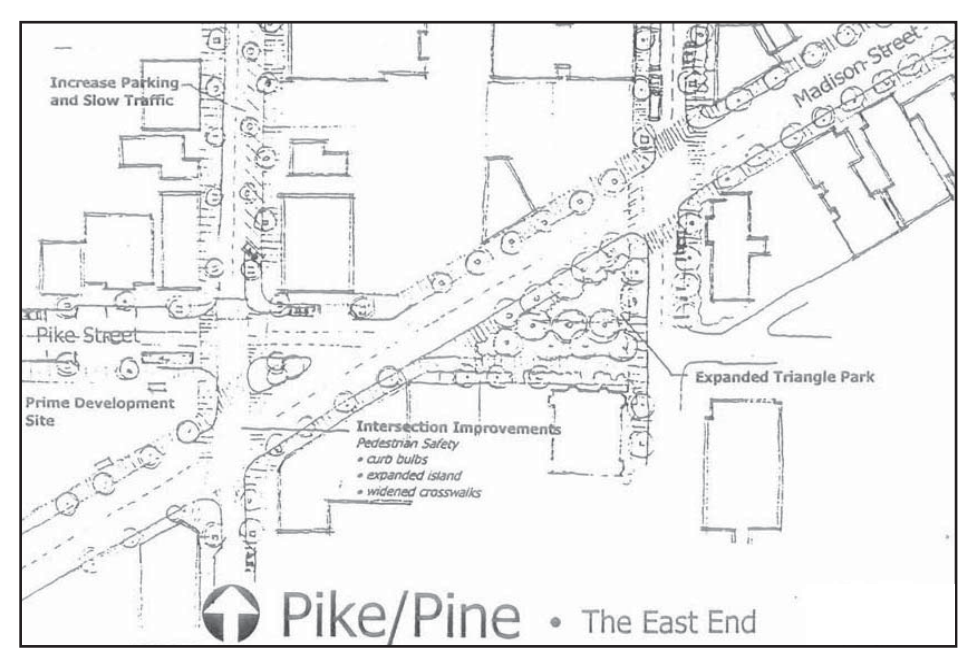
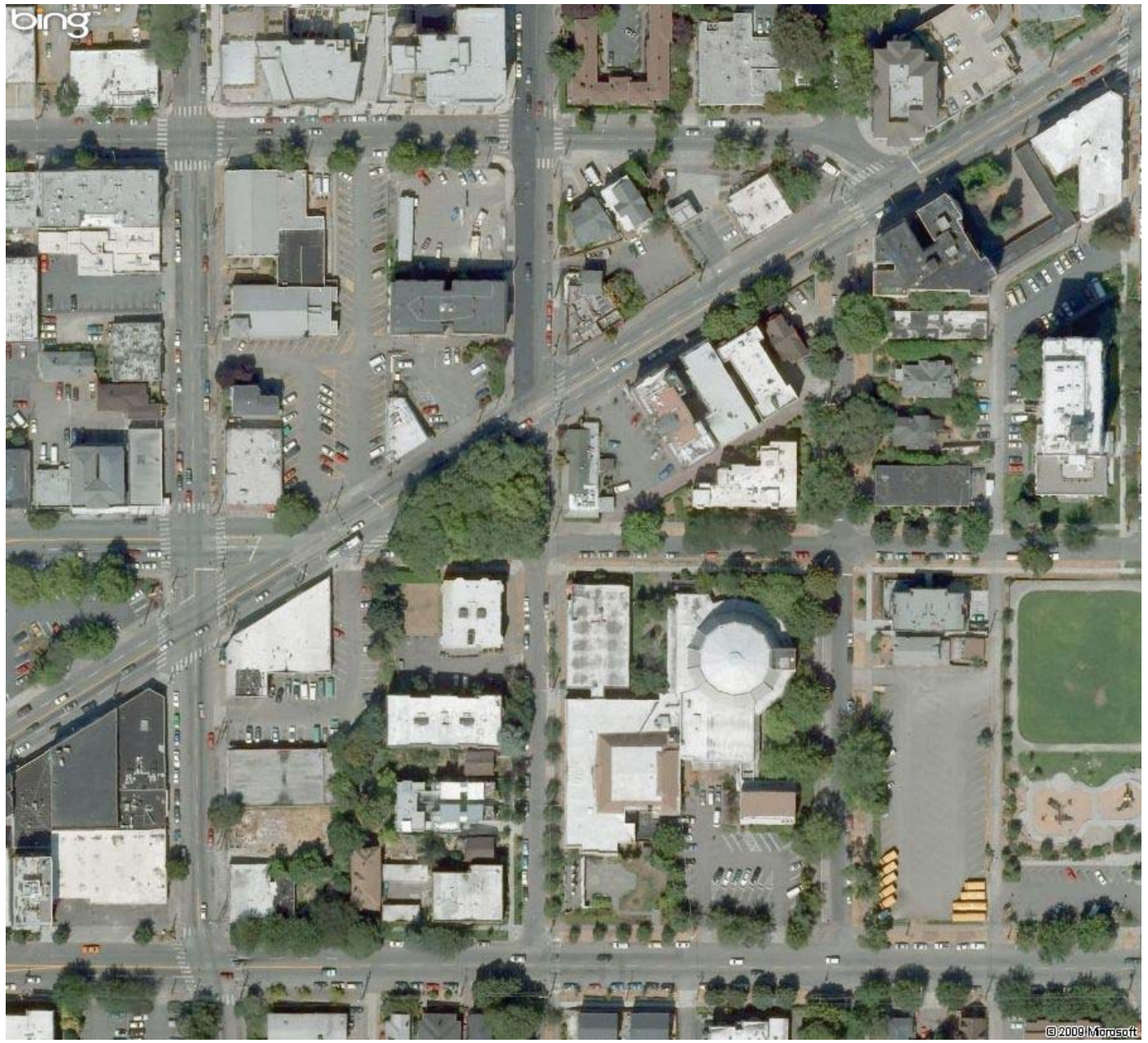


Diagram from Pike/Pine Neighborhood Plan which proposes an expansion of McGilvra Park across Pike Street

Immediate Context



Aerial photograph showing McGilvra triangle park in the center

The location has many attributes, which makes it a highly desirable property for achieving development goals.

The site is convenient to downtown Seattle, offering easy, efficient access to the Foundation's grantees, colleagues, community leaders, students and visitors from out-of-town.

The site is on major bus routes leading to and from Seattle's downtown. It is just 0.6 miles from Sound Transit's Capitol Hill light rail station in the Broadway business district (scheduled to be operational in 2016).

Madison Street is a heavily trafficked and rapidly developing corridor where a "living building" can command significant 'drive-by' attention. This building's frontage on 15th Avenue, rising above the adjacent McGilvra pocket park, will be visible for several blocks by travelers heading east on Madison and Pike Streets.

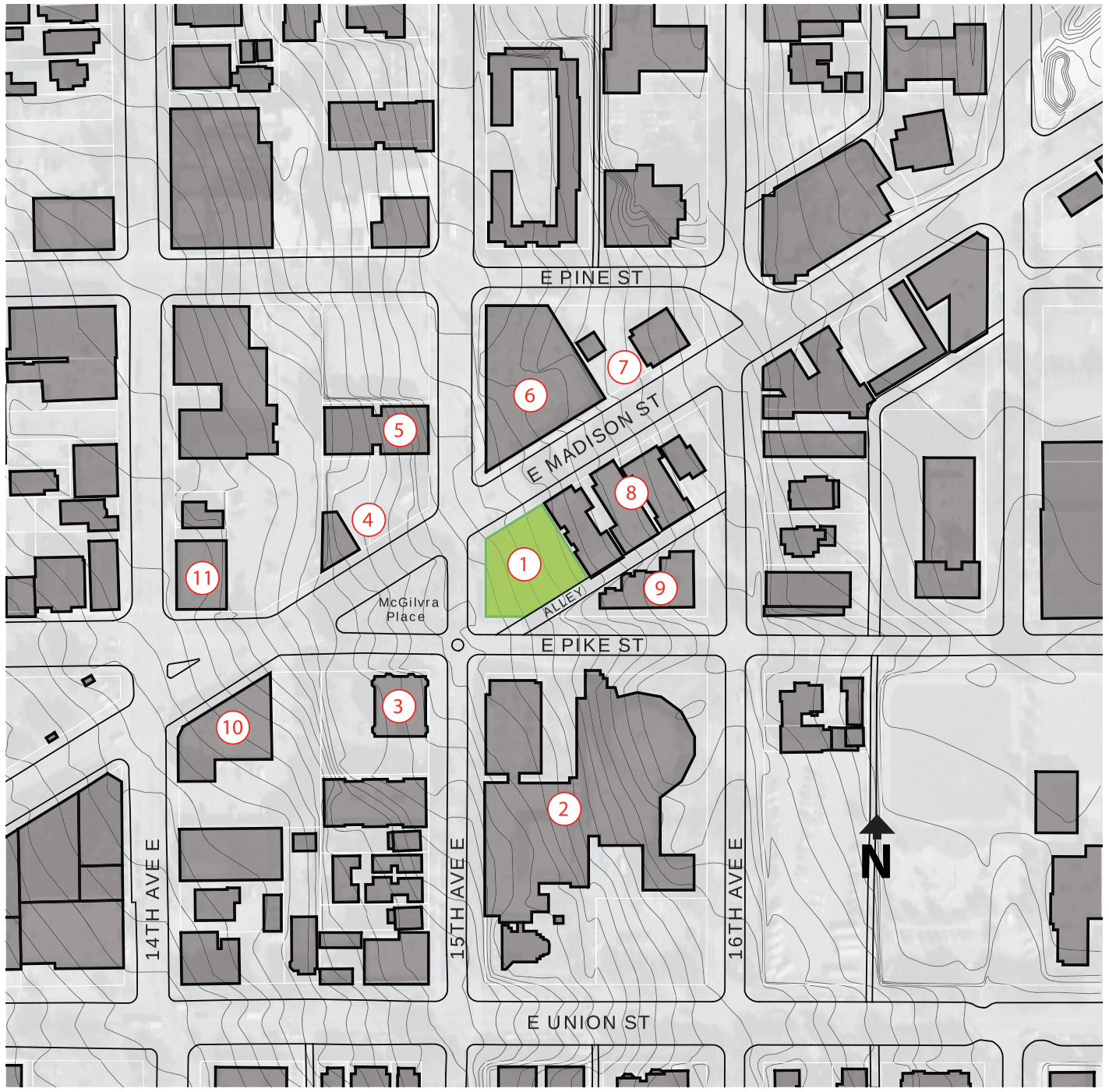
On Matt Lerner's "walkability index" [http://www.walkscore.com], the site scores 98 out of a possible 100, reflecting neighborhood attributes such as mixed income and mixed use, density, access to transportation, parks, schools, local businesses and neighborhood services.

Beyond McGilvra park to the west are stunning views of the Seattle skyline, and views of the Olympic Mountains. On clear days, Mount Rainer will dominate the view to the south.

The site's adjacency to McGilvra Place park and a short block of 15th Avenue with limited vehicular use presents an opportunity to create a more useable public space and feature green infrastructure projects that are complementary to the building project. These opportunities include: improving the pedestrian crossing of Madison Avenue; the addition of new street trees and planted bioswales to treat surface runoff and reduce non-point source pollution of downstream water bodies; and eliminating physical barriers to the existing park as well as replacing high-maintenance turf with plantings that provide seasonal interest and habitat.

3D Model shown from southwest

Immediate Context



1. SITE
2. Temple de Hirsh Sinai & Seattle Academy
3. Apartment Building
4. Former Taco Time
5. Apartment Building
6. The Pearl Apartments
7. 7-Eleven
8. Apartment Buildings, 1511-1523 Madison
9. Condominiums
10. Commercial Building
11. Commercial Building

The architectural character of the immediate area is extremely varied and includes a variety of buildings exhibiting styles popular at the time of their development. Nearby buildings include early 20th century brick/terra cotta 4-5 story apartments, contemporary 7-story metal-clad mixed-use buildings, modern institutional buildings, as well as mid-century one-story auto-oriented commercial buildings of various materials.

Streetscape

E MADISON STREETSCAPE FACING SOUTH

15Th AVENUE STREETSCAPE

E MADISON STREETSCAPE FACING NORTH

Site Analysis

Site Characteristics

Located at 1501 Madison Street, the site fronts on East Madison Street, 15th Avenue East, and an alley. It slopes uphill at an approximately 10% grade from 15th Avenue to the East, where it meets a neighboring apartment building. The 10,000 square foot site is currently occupied by a small, single-story wood-framed structure and associated surface parking lot.

Shading

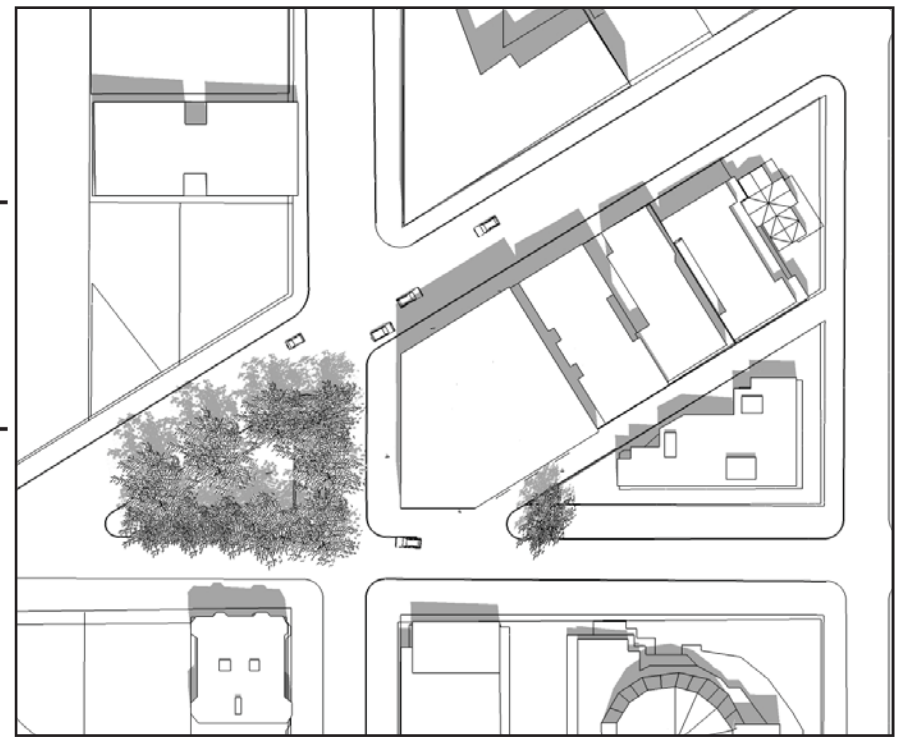
(23.47A.012.D.6)

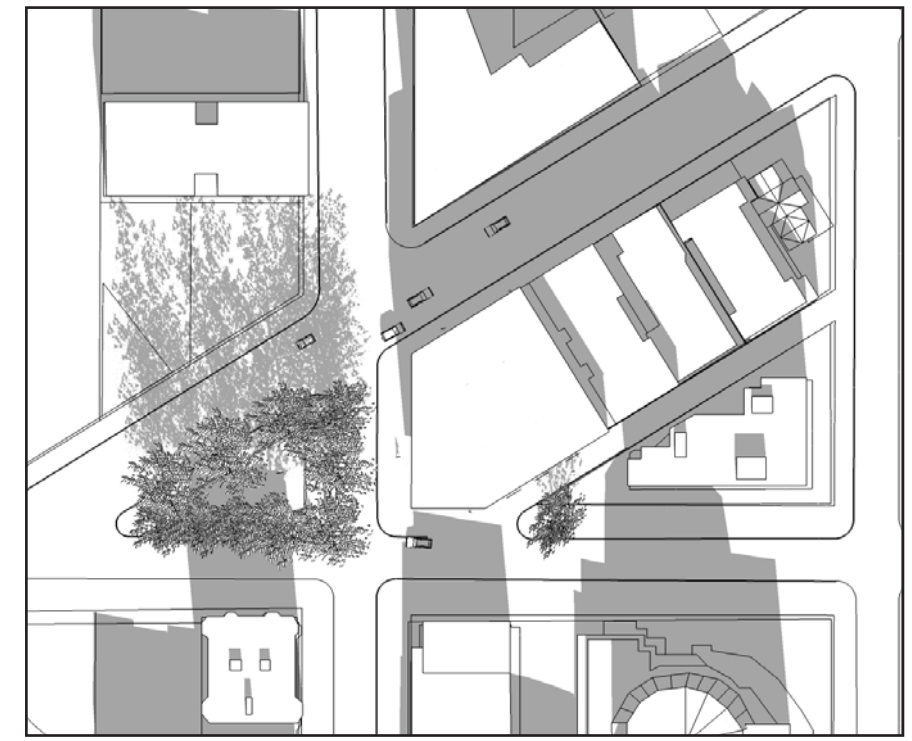
June 21st

September + March 21st

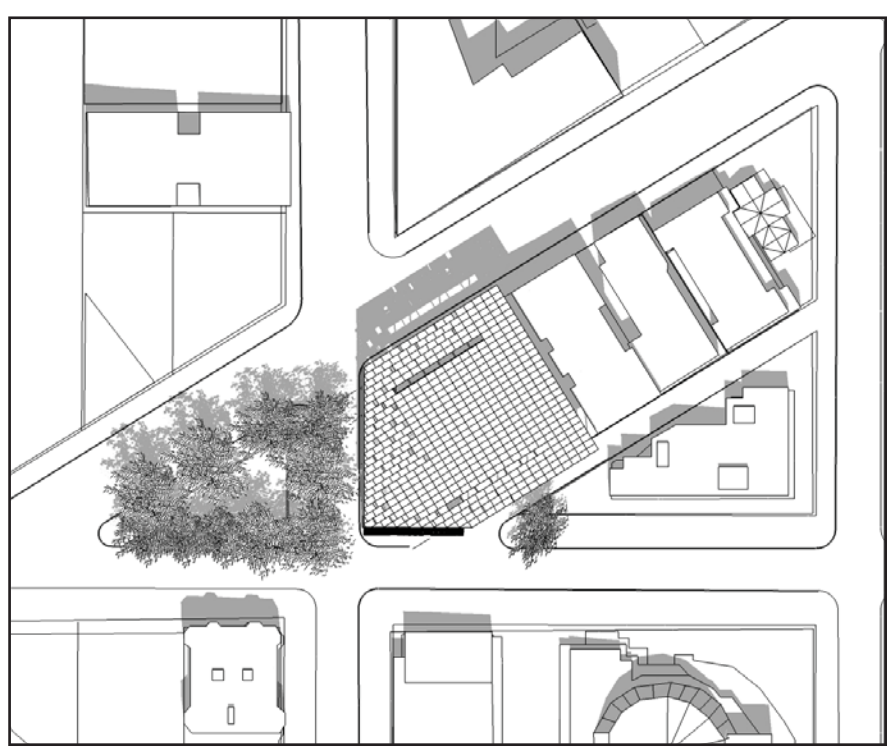
January 21st

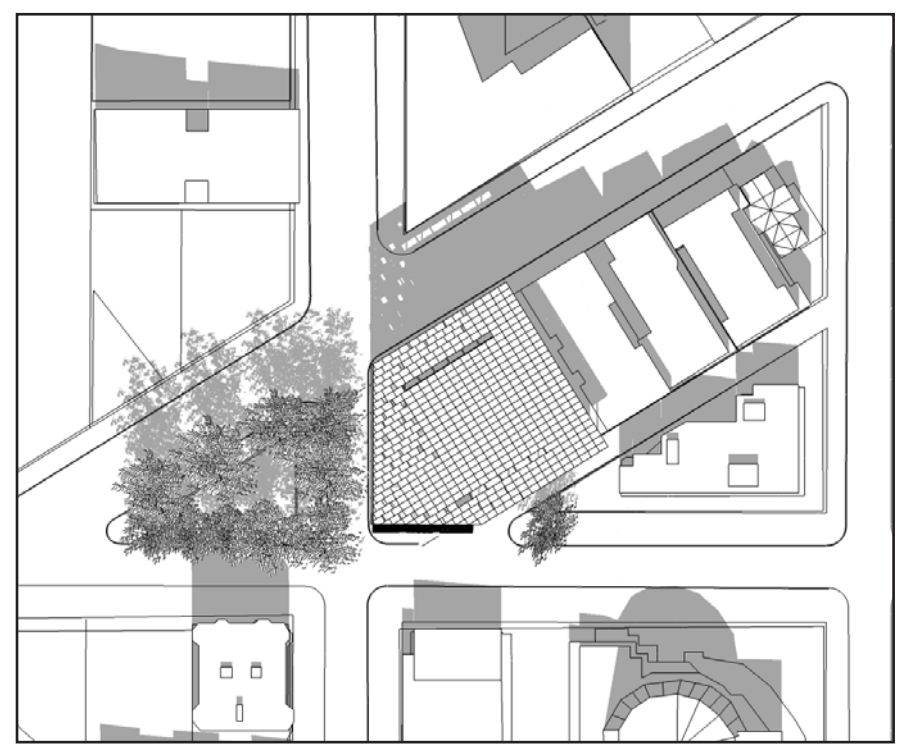
Code Compliant Concept at Noon

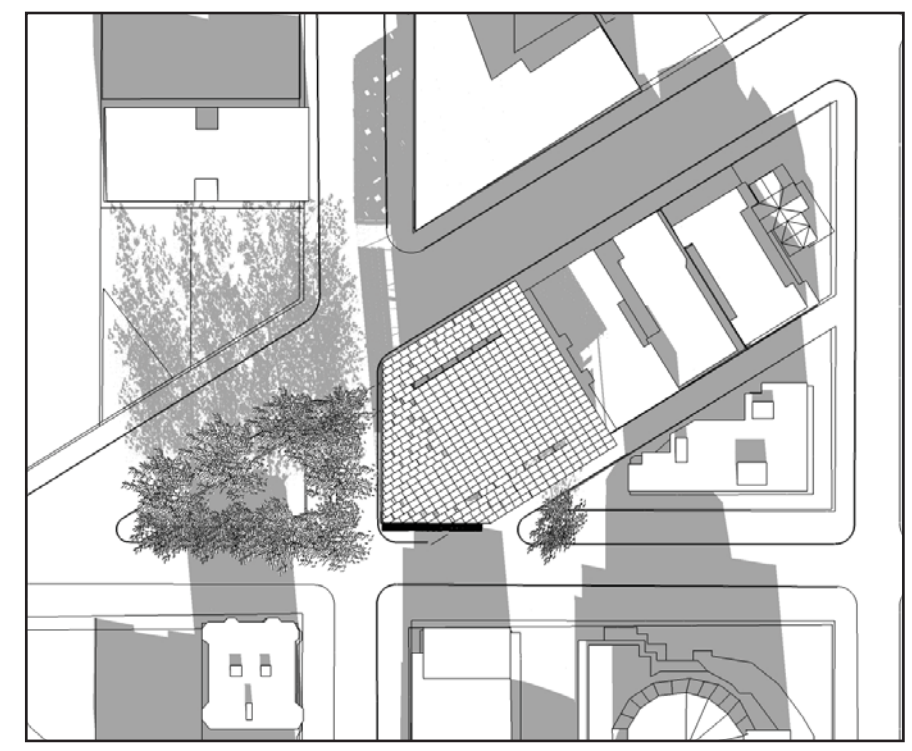




Preferred Concept at Noon





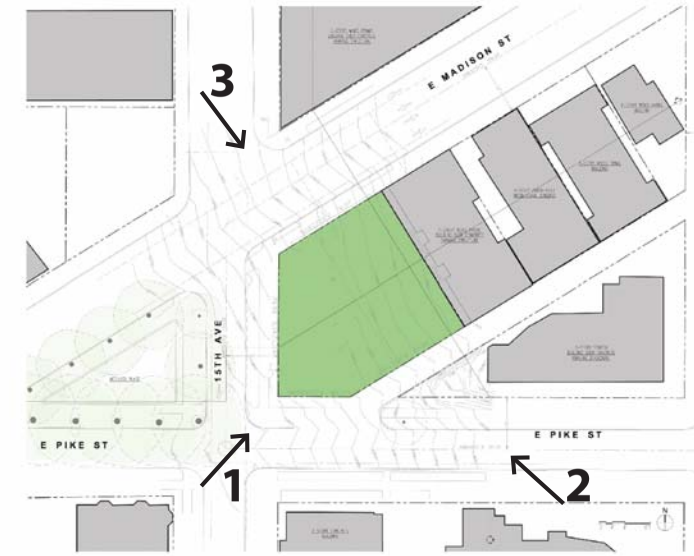


Site Analysis

1. *View of Site from Traffic Circle at 15th and Pike*

2. *View of Site from Southeast*

3. *View of Site from Northwest*



Key Plan

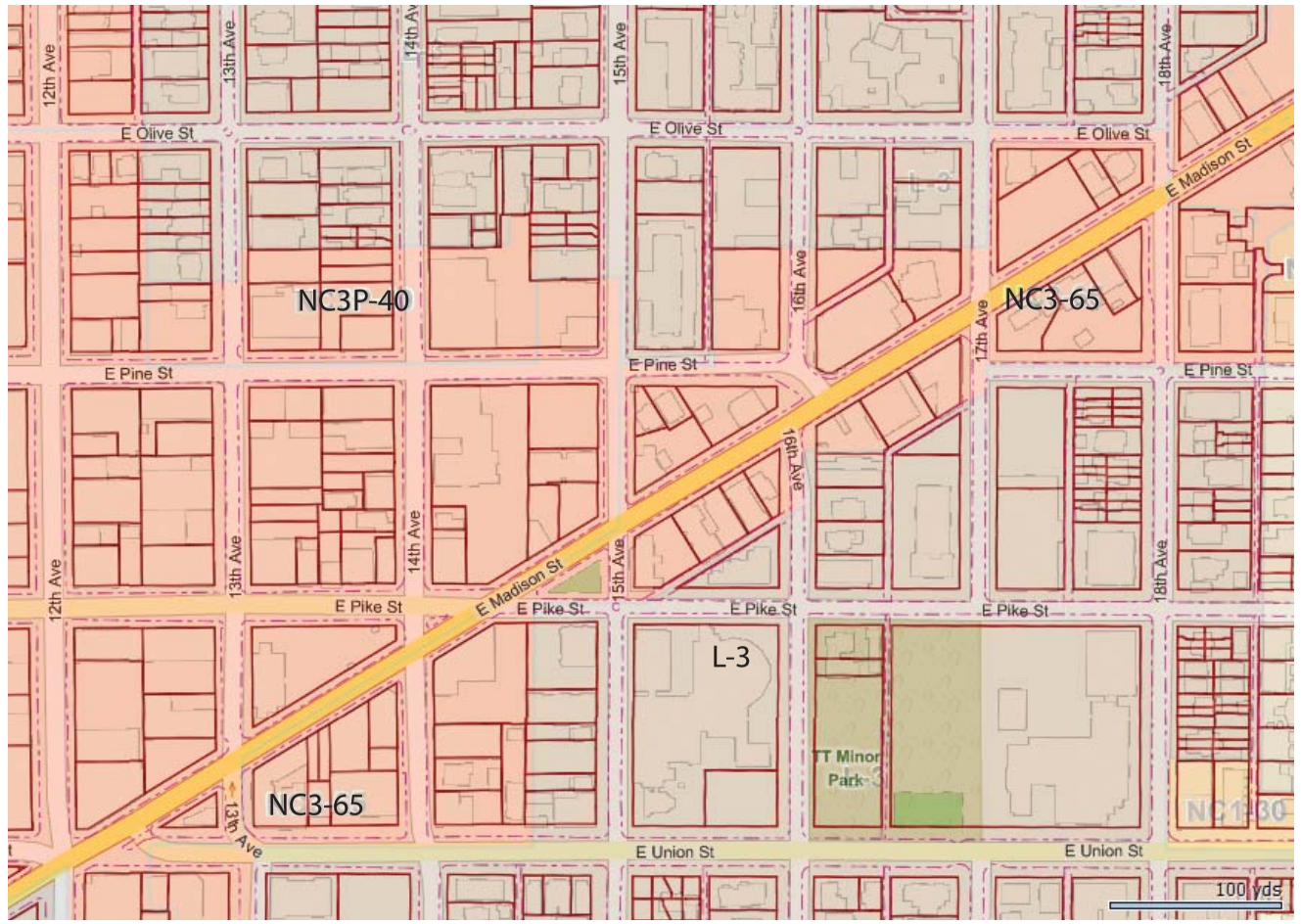
Street Character

East Madison Street
East Madison is a mjor throughoufare with two lanes of traffic in each direction. The street cuts thorugh the rectilinear street grid and creates triangle lots and views to downtown along its length. At the site, there is no parallel parking allowed, narrow sidewalks, and very little room for planting. The change in grade along Madison is a challenge for access.

15th Avenue East
Between Madison and Pike Streets, 15th Avenue E has very limited automobile use due to right-turn-only and no-parking designations. The calm traffic offers an exceptional pedestrian environment with the 100-year-old Sycamore trees across the street in McGilvra Place Park. The limited vehicle traffic and pleasant environment presents an excellent opportunity for extending the Park across 15th Avenue. This proposal, currently named the "McGilvra Place Green Infrastructure Project", is pursuing funding under the Parks and Green Spaces Levy Opportunity Fund.

Pike/Alley
At the site, E Pike Street is used by drivers travelling east into the Central Area. The street contains multifamily buildings facing the Park, and planting strips. The alley running parallel to Madison has a historic character with brick paving.

Zoning & Land Use Code Analysis



Zoning Map

Land Use and Permitting

Of primary interest is the building's height and scale, governed by the neighborhood commercial zone (NC3-65') that allows for a 65' building, and a total building area of 42,500 square feet for a commercial structure. The site falls within the Capitol Hill Urban Center Village, an overlay zone with site planning and building design goals specific to the neighborhood. Although parking is not a zoning requirement, 4 electric or plug-in hybrids stalls will be provided for building tenants, accessed off the alley.

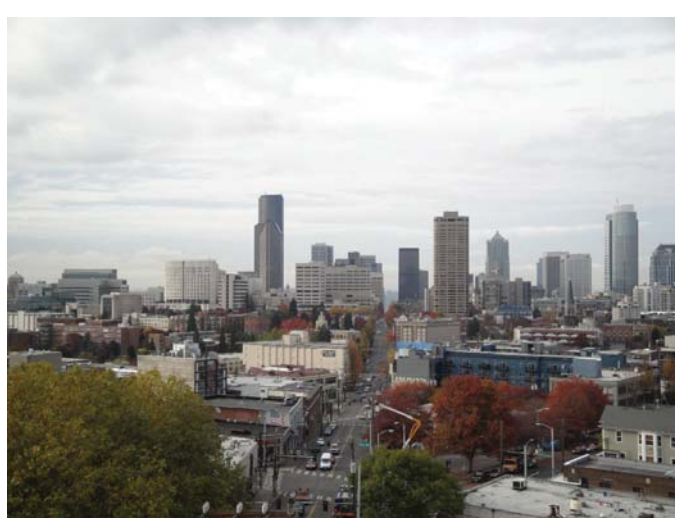
Address	1501 E Madison St., Seattle, WA
Site Area	10,000 SF
Site Zoning	NC3- 65
Overlay	Capitol Hill Urban Center Village
Pedestrian Zone	No
Adjacent Zoning South	L-3
Adjacent Zoning East	NC3-65
Existing Alley Width	16 feet
Permitted Uses	Office, retail, serices, eating and drinking estblishments permitted outright per 23.47A.004, Chart A.
Street Level Uses	23.47A.005, C. Another permitted use must separate parking from street level façade.
Street Level Standards	Commercial depth = 30' average (15' minimum).
Structure Height	Base Height - 65.0 ft Add for slope 1.5 ft (1ft for every 6% of slope) Total 66.5 ft (at low end of site).
Rooftop features	H.4. May extend up to 15' above maximum height limit so long as all features do not exceed 25% of roof area b. Stair and elevator penthouses c. Mechanical equipment.
Solar Collectors	A. May exceed total height by 7 ft with unlimited coverage, but must be set back 10 ft from north property line (setback may be reduced with shading study per 23.47A.012.D.6). B. May exceed total height by 15 ft, but limited to 20% coverage; 25% coverage if other features such as stair/elevator penthouses or screened mechanical equipment
Floor Area Ratio (FAR)	FAR of 4.25 for mixed use. 4.25 x 10,000 sf = 42,500 sf Above grade parking contributes to FAR.
Setback Requirements	No adjacent residential zoning. No setback required at Grade on Alley. Align with adjacent buildings per 23.53.030.G.8.
Utility Setback	Overhead power lines run along 15th Avenue parallel and close to the site property line. City Light typically requires a setback from the primary electrical distribution zone for maintenance purposes.
Landscaping	Green Factor score of 0.30 required in NC3 zone. Green Factor score of 0.40 required if project pursues DPD Priority Green permitting process.
Parking Location	Parking must be accessed from alley when available or feasible.
Required Alley Width	The required alley width in this location is 20 ft. The actual alley width is 16ft.
Required Parking	None required in Commercial Zones in Urban Centers per 23.54.015.B.2.

Design Guidelines: Site Planning

A-1 Responding to Site Characteristics

The siting of buildings should respond to specific site conditions and opportunities such as non-rectangular lots, location on prominent intersections, unusual topography, significant vegetation and views or other natural features.

RESPONSE: The site occupies a prominent location along Madison near the top of the hill at the intersection of several neighborhoods. The siting of the building on the lot will take advantage of its location near McGilvra Place Park, where the Center's main entrance will occur off a small plaza near the sidewalk along 15th Avenue E. Commercial entrances will occur off Madison, the main commercial street in the area. The upper floors of the building will take advantage of views to downtown and to Mount Rainier.



A-2 Steetscape Compatibility

The siting of buildings should acknowledge and reinforce the existing desirable spatial characteristics of the right-of-way.

Capitol Hill-specific supplemental guidance:
- *Retain or increase the width of sidewalks.*
- *Provide street trees with tree grates or in planter strips, using appropriate species to provide summer shade, winter light, and year-round visual interest.*
- *New development in commercial zones should be sensitive to neighboring residential zones.*

RESPONSE: The building will reinforce the increasingly pedestrian-oriented redevelopment patterns along Madison Street and the pedestrian nature of 15th Avenue. Sidewalk width will be maintained on both streets, and street trees will be added. The existing curbcuts and surface parking lot will be removed.

A-5 Respect for Adjacent Sites

Buildings should respect adjacent properties by being located on their sites to minimize disruption of the privacy and outdoor activities of residents in adjacent buildings.

RESPONSE: The new building will minimize the impact on privacy and outdoor activities of residents in neighboring buildings. In the preferred scheme, greenhouses located on the southeast of the building will present a quiet green facade to the neighboring condominiums to the southeast across the alley.

The apartment building east of the site has windows and balconies set back 5' and 10' from the property line to the west. While zoning allows our building to be located on the east property line, in our preferred concept we are setting the building back 5'-6" (with the exception of our exit stair) to preserve the apartment building's access to light and air. This is consistent with the pattern of development on the block, where small courtyards and lightwells bring light into apartment units.

Design Guidelines: Bulk, Height & Scale

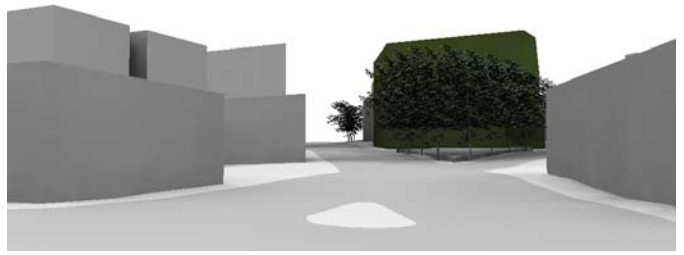
B-1 Height, Bulk and Scale Compatibility

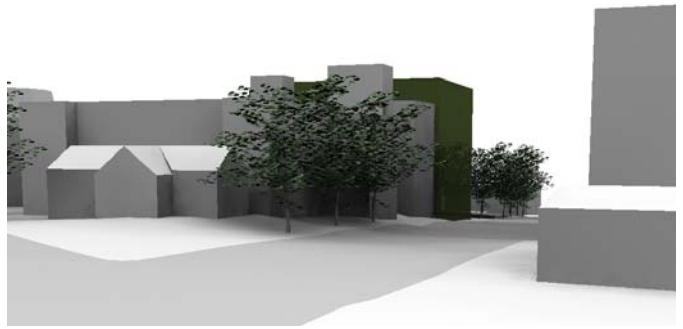
Projects should be compatible with the scale of development anticipated by the applicable Land Use Policies for the surrounding area and should be sited and designed to provide a sensitive transition to near-by, less intensive zones. Projects on zone edges should be developed in a manner that creates a step in perceived height, bulk, and scale between anticipated development potential of the adjacent zones.

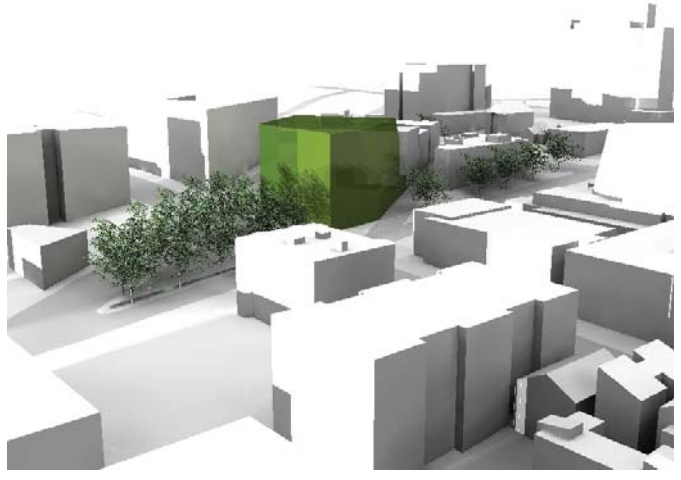
Capitol Hill-specific supplemental guidance:
• Break up building mass by incorporating different façade treatments to give the impression of multiple, small-scale buildings, in keeping with the established development pattern.
• Consider existing views to downtown Seattle, the Space Needle, Elliott Bay and the Olympic Mountains, and incorporate site and building design features that may help to preserve those views from public rights-of-way.
• Design new buildings to maximize the amount of sunshine on adjacent sidewalks throughout the year.

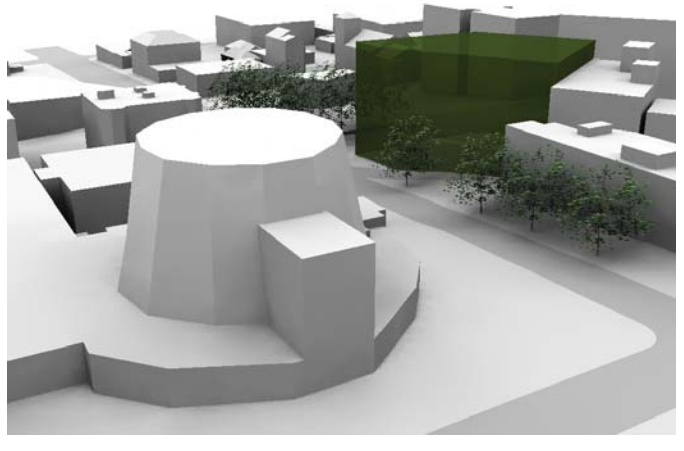
RESPONSE: The mass of the new building will respect adjacent development patterns along Madison Street, which is becoming increasingly built out along property lines. Above the ground floor commercial spaces, the preferred concept's massing will step back approximately 15' from both the Madison Street and the alley sides of the building to meet daylighting goals and reduce massing impact on neighboring structures. This will provide relief along the street wall as well as outside space for building occupants. The building will not block public right-of-way views to downtown and surrounding mountains.

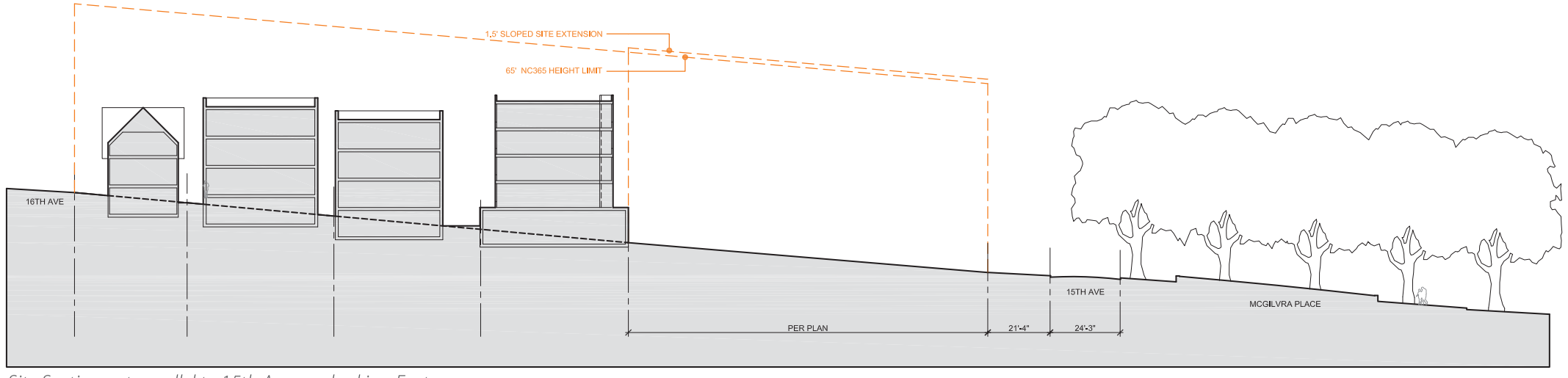
It should be noted that living buildings require more mechanical and plumbing-oriented spaces than required for less energy efficient buildings. The design team is incorporating much of this space below grade to minimize the building's bulk and maintain consistency with adjacent development. As mechanical equipment, the rooftop photovoltaic canopy is subject to Fire Department review, and may need to float above the roof plane if fire fighting needs require this.



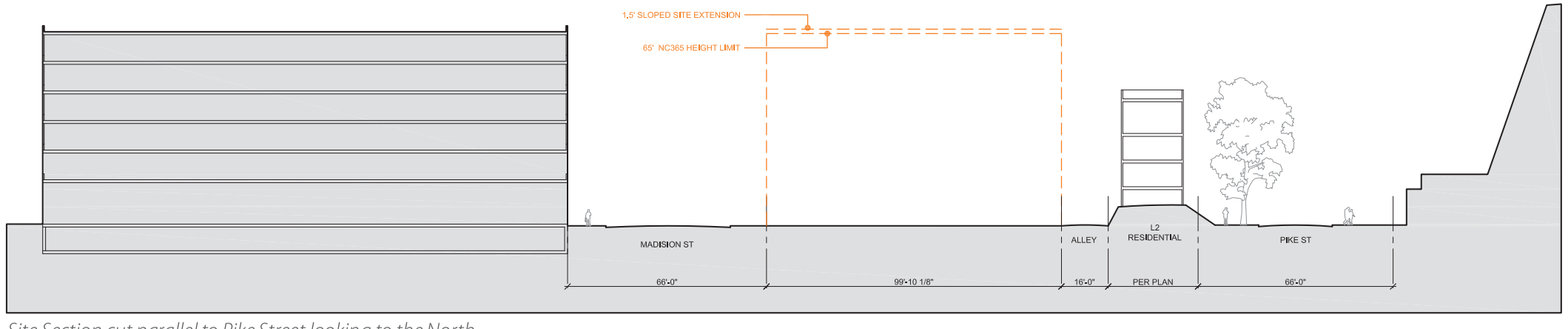








Site Section cut parallel to 15th Avenue, looking East



Site Section cut parallel to Pike Street looking to the North

Design Guidelines: Bulk, Height & Scale

The design of the solar photovoltaic canopy has been analyzed in numerous configurations with a number of controlling factors.

Design Constraints

- using the allowable gross floor area with a very aggressive EUI target of 22, requires approximately 17,000sf of the most efficient solar technology available.
- given that our site is only 10,000sf, and the roof plane is the most effective way to capture solar energy, we are proposing extending the roof plane out to the curb lines as a first step to reach our energy production goal. To make up the final deficit, the south façade provides the most effective unobstructed solar access for vertical integration of PV.

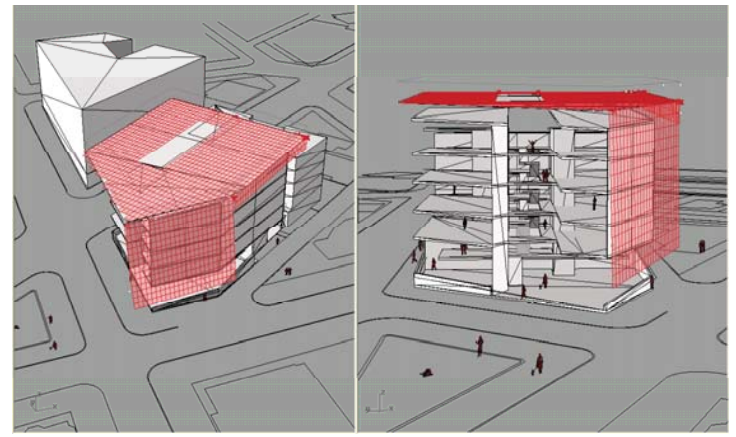
Optimal Angle and Orientation

- The ideal inclination of a fixed solar panel in Seattle is 25 degrees with an orientation just west of south.
- Achieving a 25 degree slope is problematic given our zoning envelope. With a single inclined array we either cut into our buildable area or we extend some 85 feet above our allowable height along Madison.
- Sloping individual panels, or large areas of the roof, is problematic because of shading concerns. Panels have to be spaced out so that they do not shade one another.
- While the inclined planes result in higher efficiency ratings per panel, the spacing required to prevent shading results in a net loss of power production.

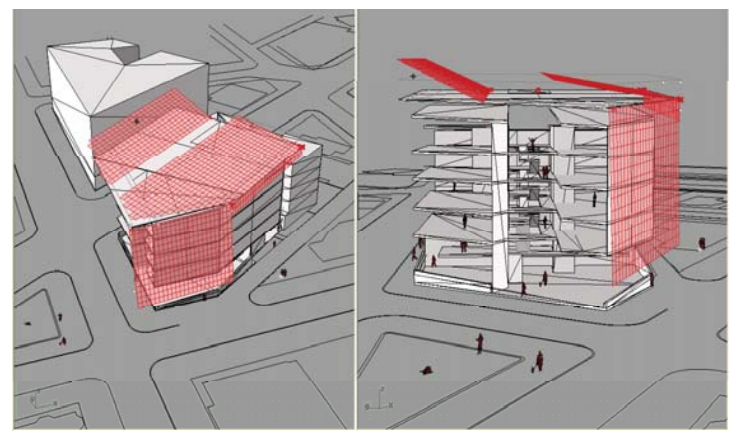
Final Array Configuration

- Our analysis concluded that an uninterrupted roof plane in combination with a large south facing vertical array best preserved gross square footage, minimized shading of adjacent properties and meets the power demands of the proposed building. The array will be designed so that as technology improves over time, the area of PV coverage will be reduced so that in the future

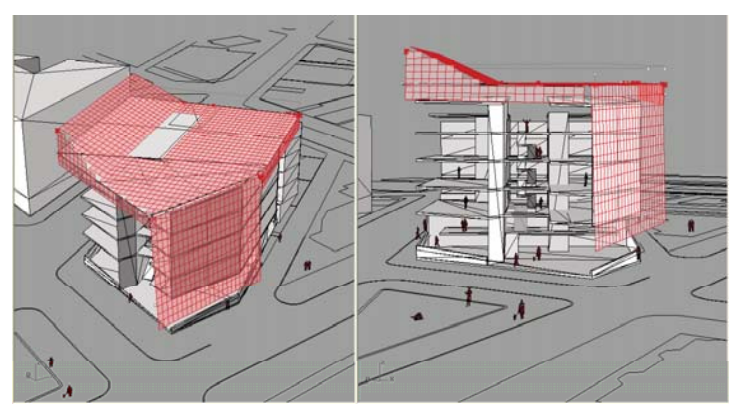
Scheme 2 - FLAT ROOF ARRAY (15 deg tilt @ Back):
ROOF (5 deg West) = 11,573sf = 187,000 kWh/yr
SOUTHEAST WALL = 750sf = 9,000 kWh/yr
SOUTH WALL = 4,015sf = 50,000 kWh/yr *(3,500kWh/yr/row)*
246,000 kWh/yr (BASE)



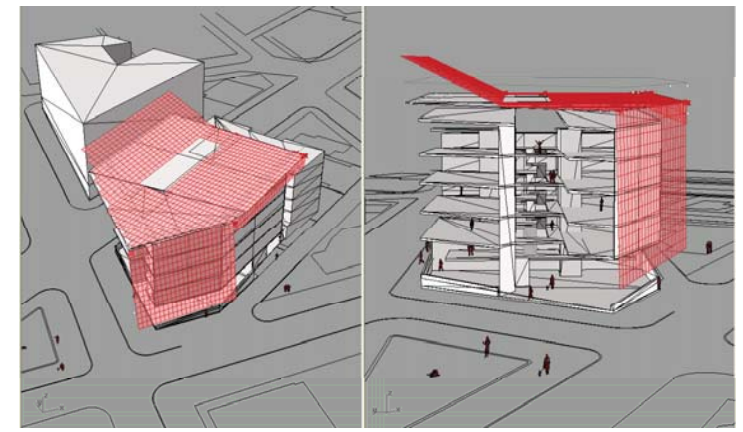
Scheme 3 - TILTED ROOF ARRAY (25 deg tilt @ Back):
ROOF (10 deg Southeast) = 6,522sf = 111,000 kWh/yr
ROOF (25 deg Southeast) = 3,966sf = 70,000 kWh/yr
SOUTHEAST WALL = 750sf = 9,000 kWh/yr
SOUTH WALL = 4,015sf = 50,000 kWh/yr *(3,500kWh/yr/row)*
240,000 kWh/yr (-6K v. BASE)



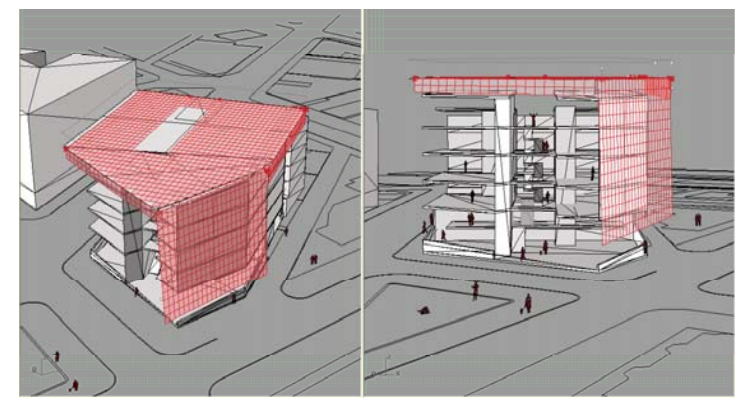
Scheme 3 - TILTED ROOF ARRAY (25 deg tilt @ Back):
ROOF (5 deg West) = 7,582sf = 123,000 kWh/yr
ROOF (25 deg Southeast) = 4,165sf = 73,500 kWh/yr
SOUTHEAST WALL = 750sf = 9,000 kWh/yr
WEST WALL = 848sf = 8,500kWh/yr
SOUTH WALL = 4,015sf = 50,000 kWh/yr *(3,500kWh/yr/row)*
264,000 kWh/yr (+19K v. BASE)



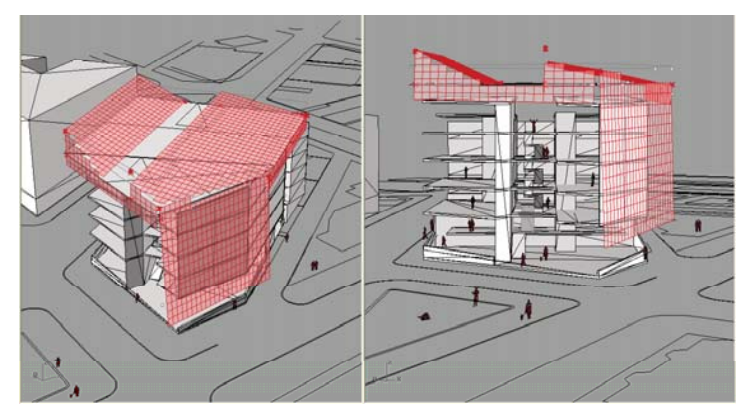
Scheme 3 - TILTED ROOF ARRAY (25 deg tilt @ Back):
ROOF (5 deg West) = 7,258sf = 123,000 kWh/yr
ROOF (25 deg Southeast) = 4,514sf = 80,000 kWh/yr
SOUTHEAST WALL = 750sf = 9,000 kWh/yr
SOUTH WALL = 4,015sf = 50,000 kWh/yr *(3,500kWh/yr/row)*
262,000 kWh/yr (+18K v. BASE)



Scheme 2 - FLAT ROOF ARRAY (15 deg tilt @ Back):
ROOF (10 deg West) = 11,198sf = 181,000 kWh/yr
SOUTHEAST WALL = 750sf = 9,000 kWh/yr
WEST WALL = 500sf = 5,000 kWh/yr
SOUTH WALL = 4,015sf = 50,000 kWh/yr *(3,500kWh/yr/row)*
245,000 kWh/yr (BASE)

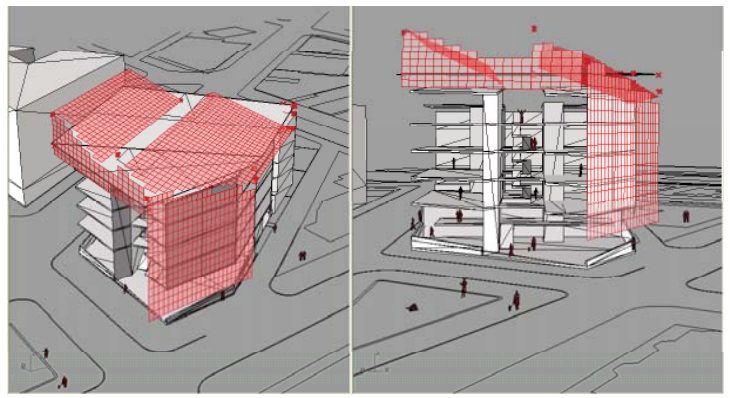


Scheme 4 – DOUBLE TILTED ROOF ARRAY (10 & 25 deg tilt):
ROOF (10 deg Southeast) = 6,522sf = 111,000 kWh/yr
ROOF (25 deg Southeast) = 3,966sf = 63,000 kWh/yr
SOUTHEAST WALL = 750sf = 9,000 kWh/yr
WEST WALL = 761sf = 9,000kWh/yr
SOUTH WALL = 4,015sf = 51,000 kWh/yr *(3,500kWh/yr/row)*
243,000 kWh/yr (- 2K v. BASE)



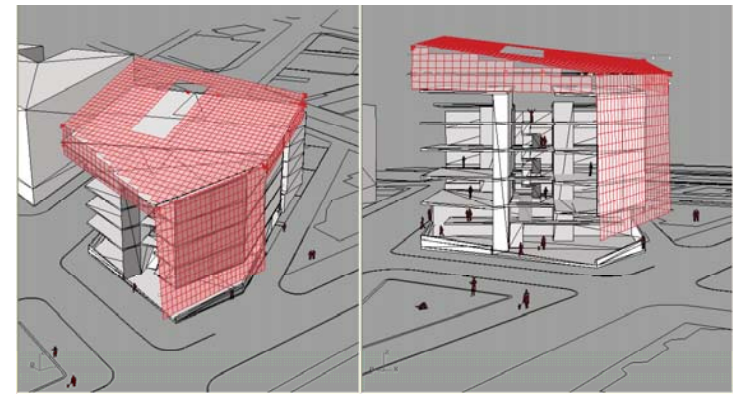
Scheme 4B – DOUBLE TILTED ROOF ARRAY (10 & 25 deg tilt):

ROOF (20 deg Southeast) = 6,522sf = 114,500 kWh/yr
ROOF (25 deg Southeast) = 4,115sf = 73,000 kWh/yr
WEST WALL = 1,384sf = 14,000kWh/yr
SOUTH WALL = 3,915sf = 48,500 kWh/yr *(3,500kWh/yr/row)*
250,000 kWh/yr (+ 5K v. BASE)



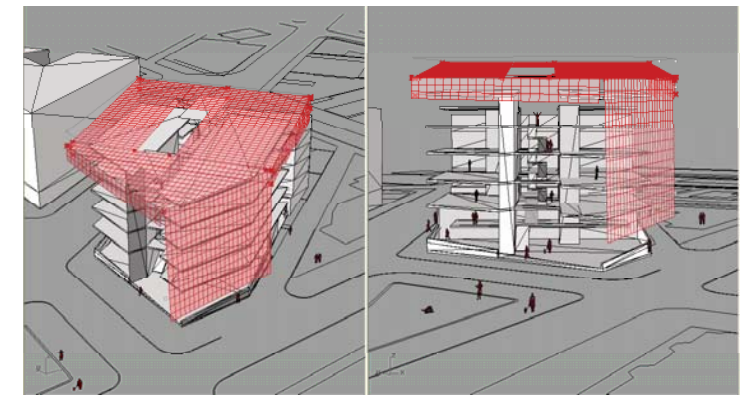
Scheme 5 - FLAT ROOF ARRAY (10 deg tilt to South):

ROOF (5 deg West) = 11,198sf = 193,500 kWh/yr
SOUTHEAST WALL = 873sf = 10,000 kWh/yr
WEST WALL = 985sf = 10,000 kWh/yr
SOUTH WALL = 4,015sf = 50,000 kWh/yr *(3,500kWh/yr/row)*
263,500 kWh/yr (+ 18.5K v. BASE)



Scheme 6 – FOLDED ROOF ARRAY (10 & 25 deg tilt):

ROOF (5 deg Southwest) = 3,068sf = 50,500 kWh/yr
ROOF (10 deg Southwest) = 8,542sf = 143,500 kWh/yr
SOUTHEAST WALL = 1,023sf = 12,000 kWh/yr
WEST WALL = 786sf = 8,000kWh/yr
SOUTH WALL = 4,015sf = 50,000 kWh/yr *(3,500kWh/yr/row)*
264,000 kWh/yr (+ 19K v. BASE)

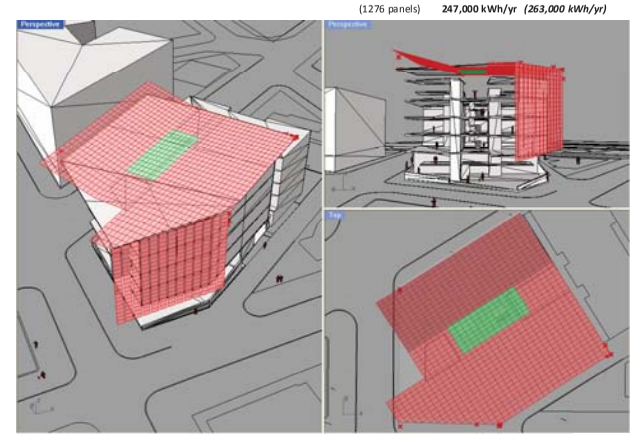


Scheme 1 – South Spaced 10.5" (15 deg tilt @ North Roof):

ROOF SOUTH (5 deg West):	6,272sf =	(503 panels)	101,500 kWh/yr	
ROOF MIDDLE (5 deg West):	611sf =	(49 panels)	10,000 kWh/y	
	349sf * 30% = 105sf =	(28 panels)	1,500 kWh/yr	
ROOF NORTH (5 deg West & 15 deg SE):	4,539sf =	(364 panels)	78,500 kWh/yr	
SOUTH WALL:	2,918sf =	(234 panels)	36,000 kWh/yr	
		(1178 panels)	**227,500 kWh/yr**	

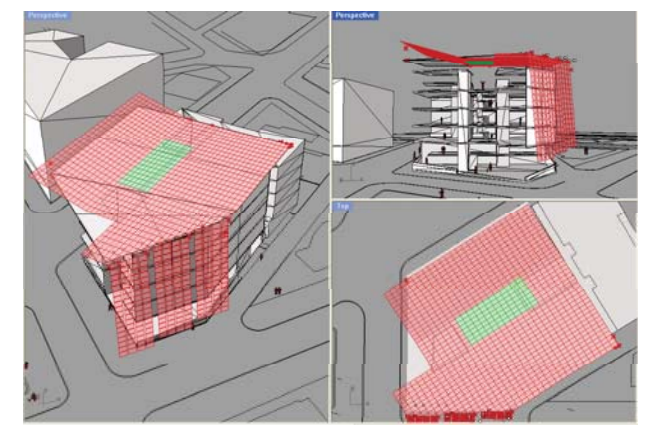
Scheme 1a – South Spaced 10.5" (15 deg tilt @ North Roof):

Panel Orientation	Area	Panel #	Sanyo 205	SunPower 315	
ROOF SOUTH (5 deg West):	6,272sf =	(503 panels)	101,500 kWh/yr	*(110,500 kWh/yr)*	
ROOF MIDDLE (5 deg West):	611sf =		(49 panels)	10,000 kWh/yr	
	524sf * 70% = 367sf =		(42 panels)	7,000 kWh/yr	
(Sliding roof section)	1,048sf * 75% = 785sf =		(84 panels)	12,000 kWh/yr	
ROOF NORTH (5 deg West & 15 deg SE):	4,539sf =		(364 panels)	78,500 kWh/yr	*(85,500 kWh/yr)*
SOUTH WALL:	3,080sf =		(247 panels)	38,000 kWh/yr	
			(1276 panels)	**247,000 kWh/yr**	***(263,000 kWh/yr)***



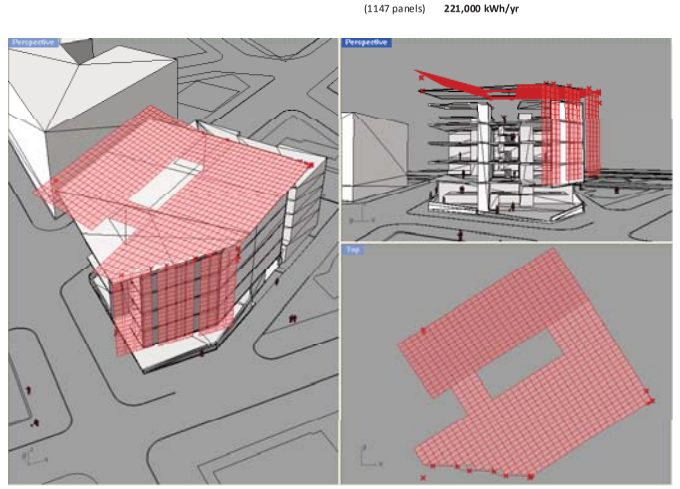
Scheme 2a – South Stepped Out West (15 deg tilt @ North Roof):

Panel Orientation	Area	Panel #	Sanyo 205	SunPower 315	
ROOF SOUTH (5 deg West):	6,285sf =	(504 panels)	101,500 kWh/yr	*(110,500 kWh/yr)*	
ROOF MIDDLE (5 deg West):	611sf =		(49 panels)	10,000 kWh/yr	
	524sf * 70% = 367sf =		(42 panels)	7,000 kWh/yr	
(Sliding roof section)	1,048sf * 75% = 785sf =		(84 panels)	12,000 kWh/yr	
ROOF NORTH (5 deg West & 15 deg SE):	4,539sf =		(364 panels)	78,500 kWh/yr	*(85,500 kWh/yr)*
SOUTH WALL (85 deg tilt)	2,694sf =		(216 panels)	36,000 kWh/yr	
			(1259 panels)	**245,000 kWh/yr**	**(261,000 kWh/yr)**



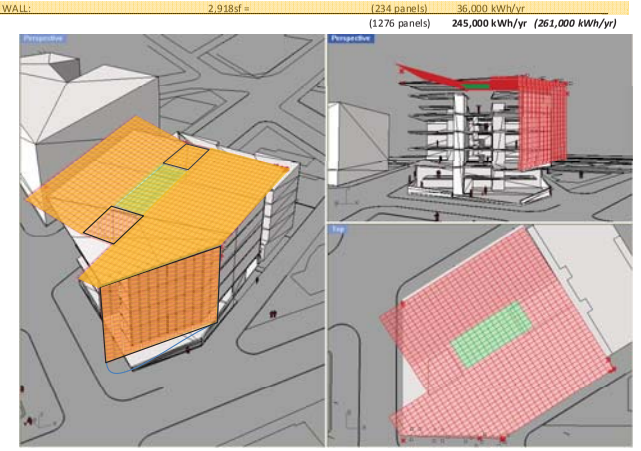
Scheme 3 – South Stepped Out East (15 deg tilt @ North Roof):

ROOF SOUTH (5 deg West):	6,023sf =	(483 panels)	97,500 kWh/yr	
ROOF MIDDLE (5 deg West):	611sf =	(49 panels)	10,000 kWh/y	
	349sf * 30% = 105sf =	(28 panels)	1,500 kWh/yr	
ROOF NORTH (5 deg West & 15 deg SE):	4,539sf =	(364 panels)	78,500 kWh/yr	
SOUTH WALL:	2,693sf =	(216 panels)	33,500 kWh/yr	
		(1147 panels)	**221,000 kWh/yr**	



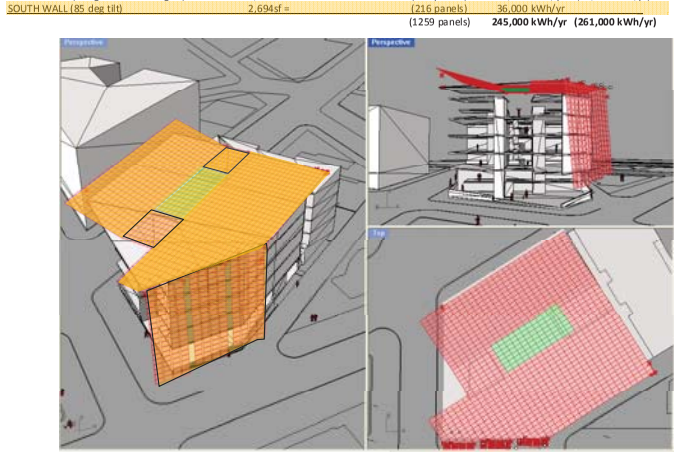
Scheme 1a – South Spaced 10.5" (15 deg tilt @ North Roof):

Panel Orientation	Area	Panel #	Sanyo 205	SunPower 315	
ROOF SOUTH (5 deg West):	6,272sf =	(503 panels)	101,500 kWh/yr	*(110,500 kWh/yr)*	
ROOF MIDDLE (5 deg West):	611sf =		(49 panels)	10,000 kWh/yr	
	524sf * 70% = 367sf =		(42 panels)	7,000 kWh/yr	
(Sliding roof section)	1,048sf * 75% = 785sf =		(84 panels)	12,000 kWh/yr	
ROOF NORTH (5 deg West & 15 deg SE):	4,539sf =		(364 panels)	78,500 kWh/yr	*(85,500 kWh/yr)*
SOUTH WALL:	2,918sf =		(234 panels)	36,000 kWh/yr	
			(1276 panels)	**245,000 kWh/yr**	***(261,000 kWh/yr)***



Scheme 2a – South 3-Panel Array (15 deg tilt @ North Roof – 5 deg tilt @ South Wall):

Panel Orientation	Area	Panel #	Sanyo 205	SunPower 315	
ROOF SOUTH (5 deg West):	6,285sf =	(504 panels)	101,500 kWh/yr	*(110,500 kWh/yr)*	
ROOF MIDDLE (5 deg West):	611sf =		(49 panels)	10,000 kWh/yr	
	524sf * 70% = 367sf =		(42 panels)	7,000 kWh/yr	
(Sliding roof section)	1,048sf * 75% = 785sf =		(84 panels)	12,000 kWh/yr	
ROOF NORTH (5 deg West & 15 deg SE):	4,539sf =		(364 panels)	78,500 kWh/yr	*(85,500 kWh/yr)*
SOUTH WALL (85 deg tilt)	2,694sf =		(216 panels)	36,000 kWh/yr	
			(1259 panels)	**245,000 kWh/yr**	**(261,000 kWh/yr)**



Design Guidelines: Architectural Elements & Materials

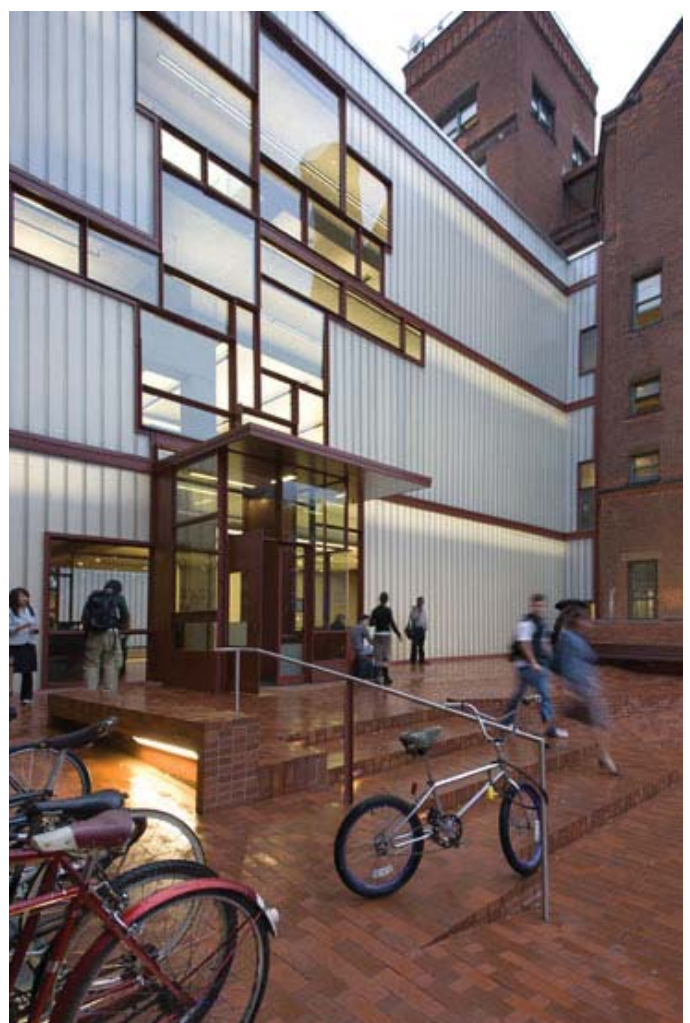
C-1 Architectural Context

New buildings proposed for existing neighborhoods with a well-defined and desirable character should be compatible with or complement the architectural character and siting pattern of neighboring buildings.

RESPONSE: As mentioned in the Urban Design Analysis section, the architectural character of the immediate area is extremely varied. Our proposed building will have contemporary detailing which highlights sustainability elements. Its massing and siting will complement the desirable massing and siting of the adjacent buildings. Included on this page are examples of buildings we believe add to the high quality of the built environment in the neighborhood, city and beyond.

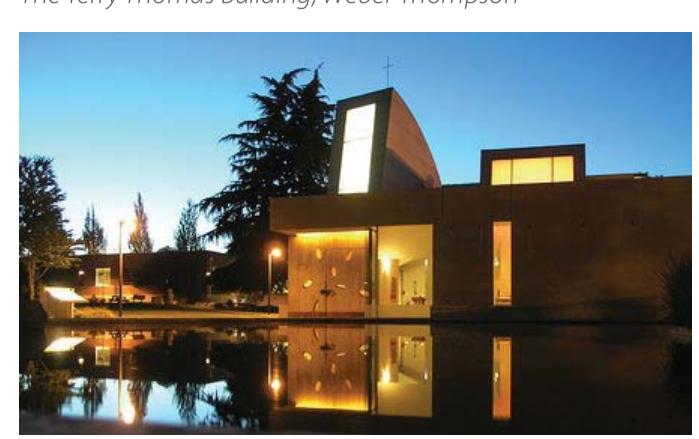
Seattle Academy gymnasium, Miller Hull

1310 E. Union St. lofts, Miller Hull


Pratt Institute, Stephen Holl

The Modern Wing, Renzo Piano

The Terry Thomas Building, Weber Thompson

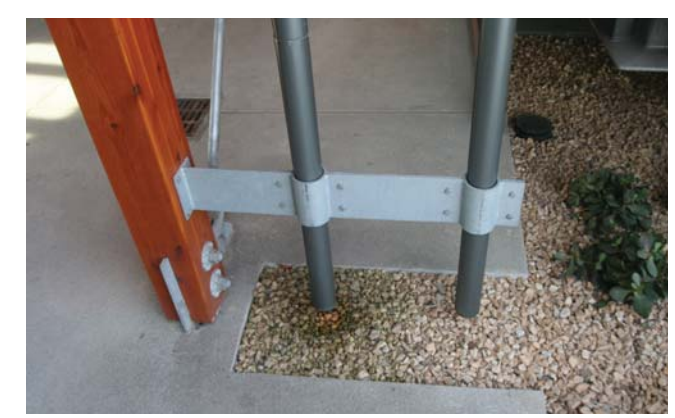

Chapel of St. Ignatius at Seattle University, Stephen Holl

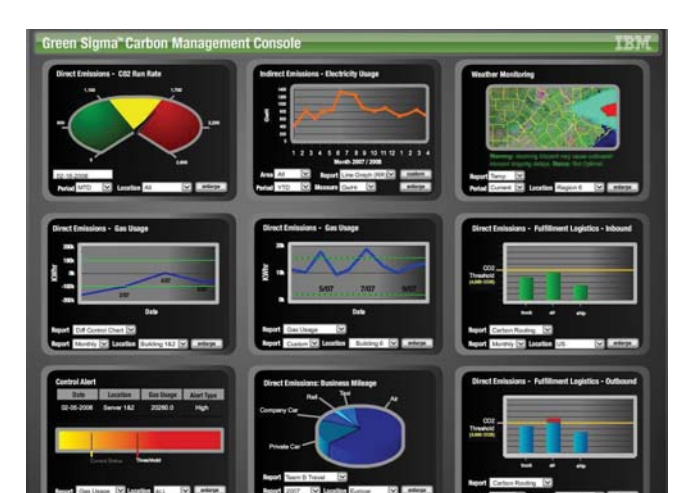
C-3 Human Scale

The design of new buildings should incorporate architectural features, elements and details to achieve a good human scale.

Capitol Hill-specific supplemental guidance:
• Incorporate building entry treatments that are arched or framed in a manner that welcomes people and protects them from the elements and emphasizes the building's architecture.
• Improve and support pedestrian-orientation by using components such as: non-reflective storefront windows and transoms; pedestrian-scaled awnings; architectural detailing on the first floor; and detailing at the roof line.

RESPONSE: Detailing of the building will include human-scaled elements with fine-grained detailing, clear glass at the ground floor, and interpretive elements oriented towards passers-by. Among many possible options, elements could include "dashboards" showing energy use, or moments that highlight water use.





Design Guidelines: Pedestrian Environment

D-1 Pedestrian Open Spaces and Entrances

Convenient and attractive access to the building's entry should be provided. To ensure comfort and security, paths and entry areas should be sufficiently lighted and entry areas should be protected from the weather. Opportunities for creating lively, pedestrian-oriented open space should be considered.

Capitol Hill-specific supplemental guidance:
• Provide entryways that link the building to the surrounding landscape.
• Create open spaces at street level that link to the open space of the sidewalk.
• Building entrances should emphasize pedestrian ingress and egress as opposed to accommodating vehicles.

RESPONSE: The building will offer immediate access from the public sidewalks with generous and articulated entries with ample overhead weather protection. Entry alcoves off the sidewalk are proposed in some of the proposed schemes. Pedestrians are prioritized over automobiles.

Design Guidelines: Landscaping

E-1 Reinforce Existing Landscape Character of the Neighborhood

Where possible, and where there is not another overriding concern, landscaping should reinforce the character of neighboring properties and abutting streetscape.

RESPONSE: Landscaping will complement and extend the landscape along 15th Avenue, including planting strips and street trees. New street trees will improve the quality of Madison Street which has very few trees in this location.

E-2 Landscaping to Enhance the Building and/or Site

Landscaping, including living plant material, special pavements, trellises, screen walls, planters, site furniture and similar features should be appropriately incorporated into the design to enhance the project.

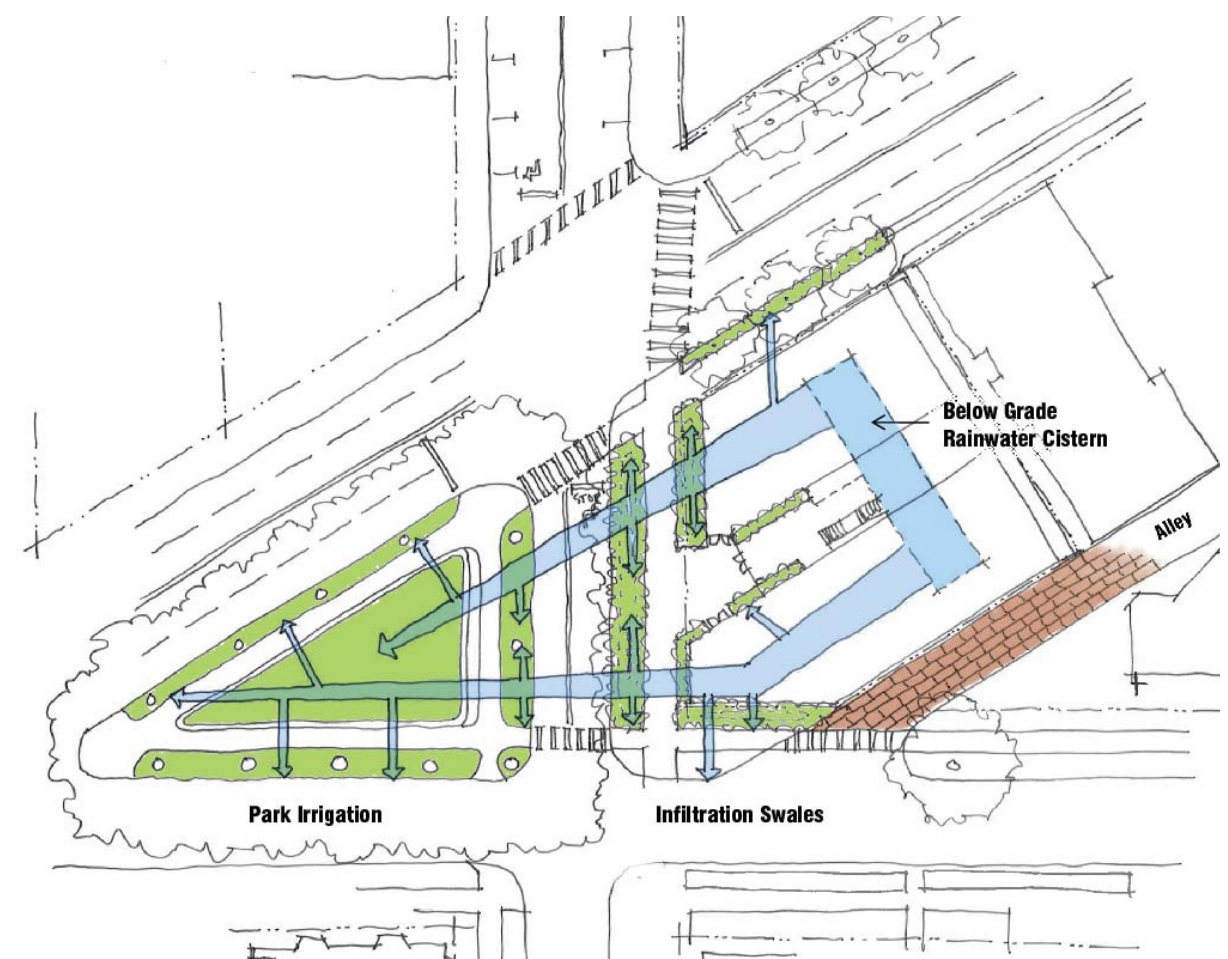
RESPONSE: Landscape design will highlight the building as a sustainable addition to the neighborhood. Bioswales, pervious paving and other elements will be designed to complement the building.

E-3 Landscape Design to Address Special Site Conditions

The landscape design should take advantage of special on-site conditions such as high-bank front yards, steep slopes, view corridors, or existing significant trees and off-site conditions such as greenbelts, ravines, natural areas, and boulevards.

Capitol Hill-specific supplemental guidance:
• Maintain or enhance the character and aesthetic qualities of neighborhood development to provide for consistent streetscape character along a corridor.
• Supplement and complement existing mature street trees where feasible.
• Incorporate street trees in both commercial and residential environments in addition to trees onsite.
• Commercial landscape treatments that include street trees.

RESPONSE: The site has a unique opportunity to demonstrate green infrastructure and site sustainability as a compliment to the building. The developer is exploring a conversion of 15th Avenue into a park boulevard to complement and enhance McGilvra Place Park as a public amenity. Within the 2600sf existing park, the proposed project would include replacement of turf with low-maintenance shrubs and herbaceous plants, the addition of public seating, and connection to an innovative wastewater and stormwater treatment system for the overall project. Improvements to 15th Avenue would be developed in cooperation with a City Interdepartmental Team that was formed to help guide the project. The project is referred to as the McGilvra Place Green Infrastructure Project and is pursuing funding under the Parks and Green Spaces Levy Opportunity Fund.



Concept 1: Lightwell (Code Compliant)

Concept
This concept builds from lot line to lot line around a central interior light well. The concept seeks to maximize the amount of floor area with access to natural daylight with a twenty-four foot deep floor plate running continuously along the perimeter of the site. The resulting interior light well accommodates vertical circulation and facilitates natural ventilation. Commercial spaces occupy the ground floor off of 15th Avenue, and parking is accessed from the alley. Upper floor offices spaces are accessed through a large covered exterior entry court on 15th.

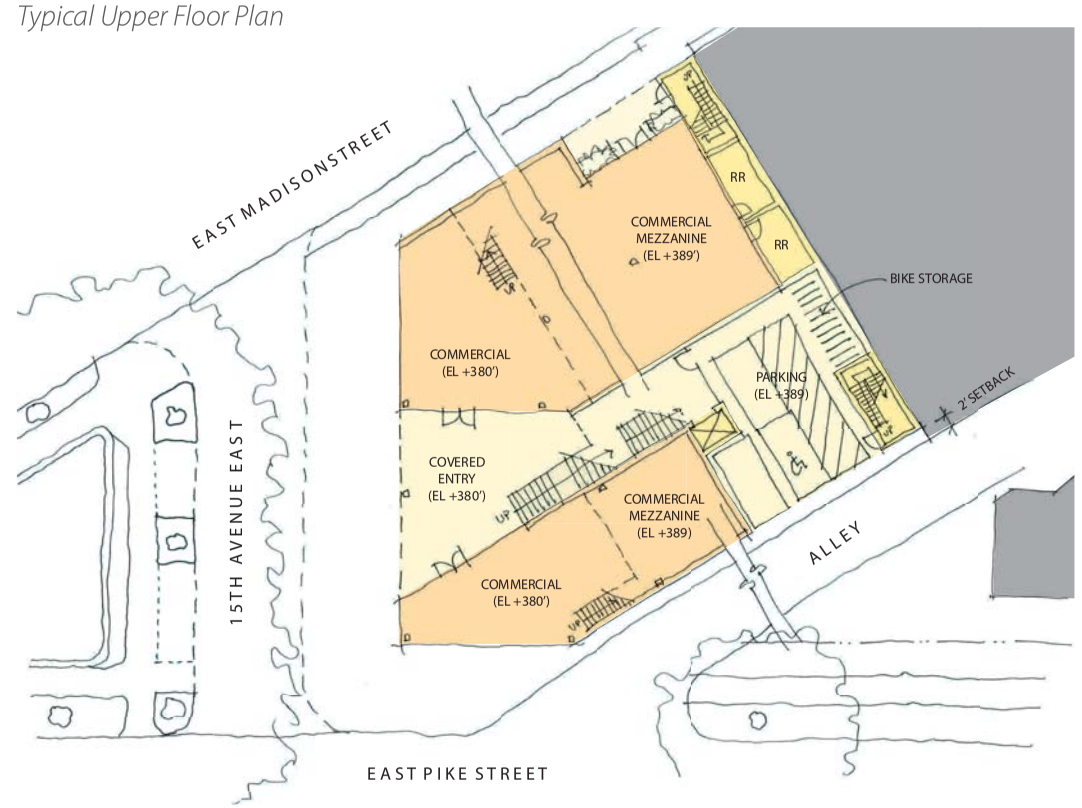
From an urban design perspective the light well concept provides simple massing with the only exception the entry court off 15th.

Performance:
- works well for daylighting
- works well for natural ventilation
- open air light well results in high surface area-to-volume ratio does not perform well thermally, driving up the energy use index for the building
- net zero energy cannot be achieved

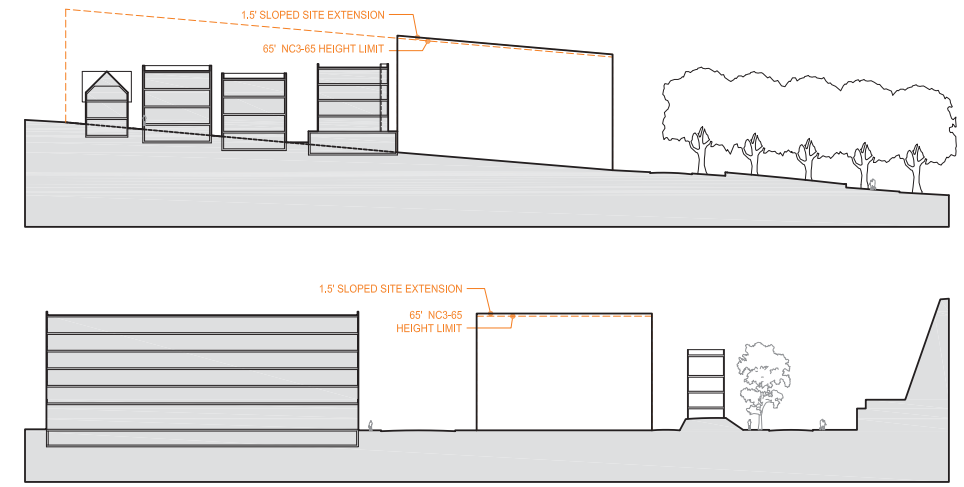
Pros:
- fully code compliant
- photovoltaic canopy is least intrusive of all schemes

Cons:
- net zero energy cannot be achieved (see above)
- enclosed courtyard space does not engage beyond the site
- bulky massing
- building is taller than existing structures on the block
- zero setback along all property lines
- allowable FAR cannot be achieved due to lack of photovoltaic area and light well required for day light

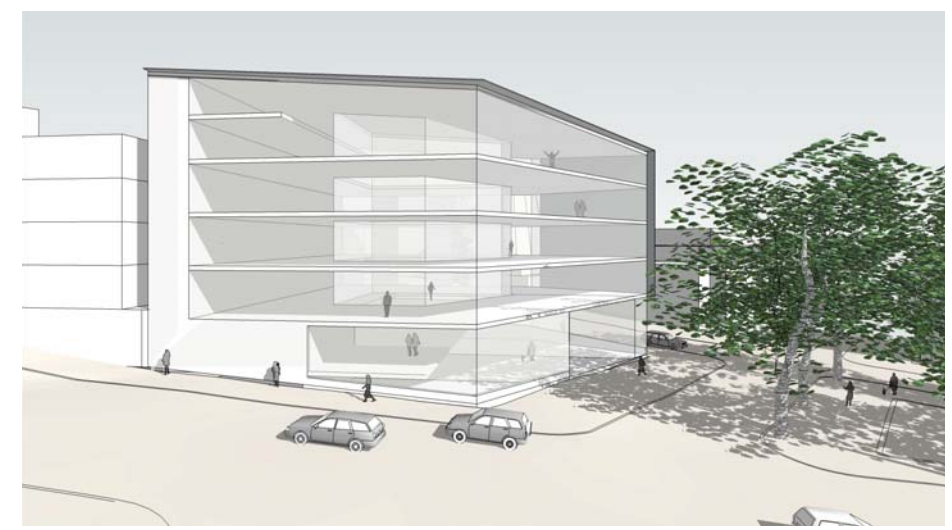
Typical Upper Floor Plan



Street Level Plan



Site Sections



View from the Northwest/Madison

View from the Southwest/15th Avenue

Concept 2: Central Atrium

Concept
Our second concept is to split the building into two halves, with a daylit central atrium space opening out to the park and marking the building entry. Ground floor commercial spaces are accessible from 15th Avenue. As grade climbs along Madison, a commercial mezzanine is accessible from the sidewalk. Parking is located on the south east portion of the site with access from the alley.

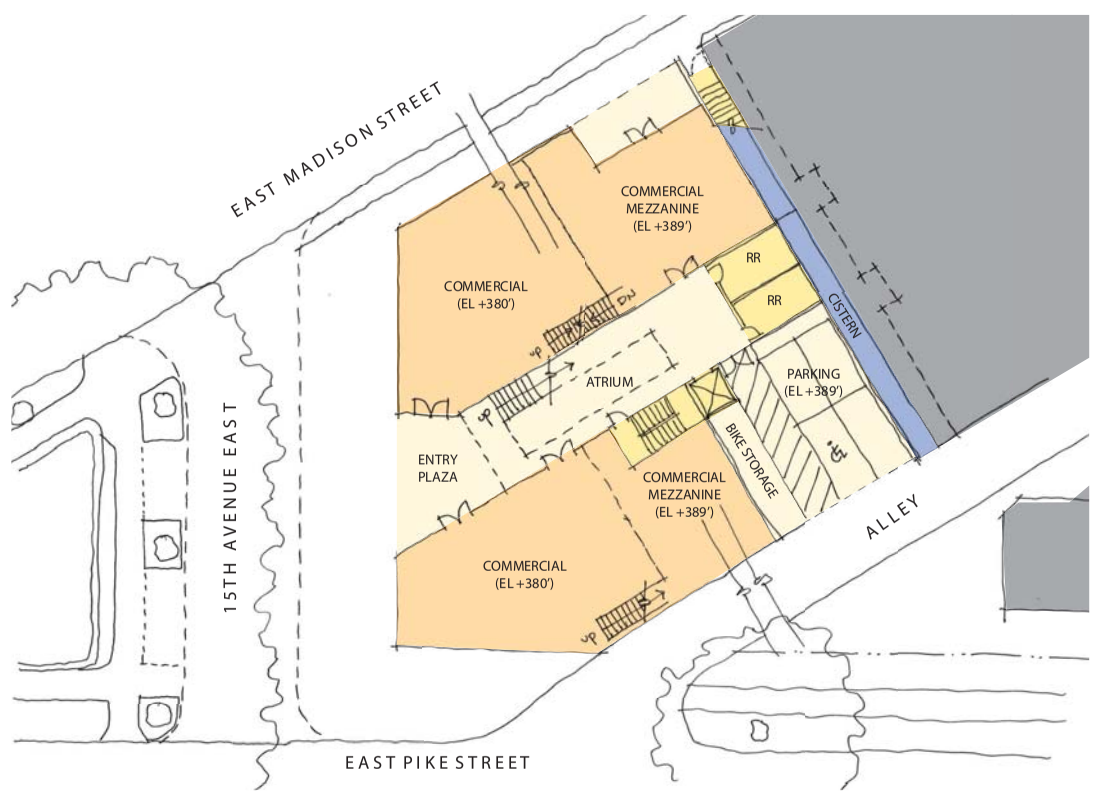
The central atrium serves to break down the internal mass of the project and open up to McGilvra Park. Mechanical and electrical systems are expressed in the atrium with interpretive panels and digital reader boards to help tell the story of a net-zero Living Building. Large exterior balconies are located on the 15th Avenue elevation to further engage McGilvra Park. At the ground floor large operable doors can fully open the atrium to the park.

Performance:
- atrium allows daylight to penetrate to the center of the large site, providing a fairly even daylight factor through all occupiable areas
- central atrium allows for optimal natural ventilation taking advantage of the stack affect
- high surface area-to-volume ratio does not perform well thermally, driving up the energy use index for the building

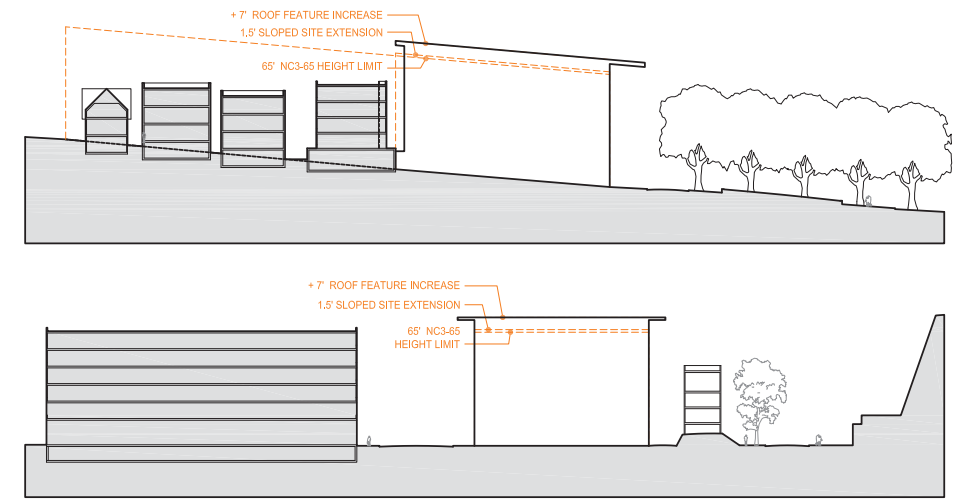
Pros:
- allowable FAR can be achieved with PV roof overhangs into the rights-of-way
- central atrium space engages McGilvra Park and 15th Avenue
- building sets back along east property line for improved access to light and air
- separate office (Madison) and commercial (15th) entrances activate the streets

Cons:
- building massing along Madison and alley is bulky
- building is taller than existing structures on the block

Typical Upper Floor Plan



Street Level Plan



Site Sections

View from the Northwest/Madison

View from the Southwest/15th Avenues

Concept 3: Terraced (Preferred Concept)

Concept
Our preferred building concept is a simpler form, with upper floors stepped back from the base at the Madison St. and alley facades. As in the atrium concept, commercial spaces are entered from 15th Avenue. Parking is entered and exited from the alley only.

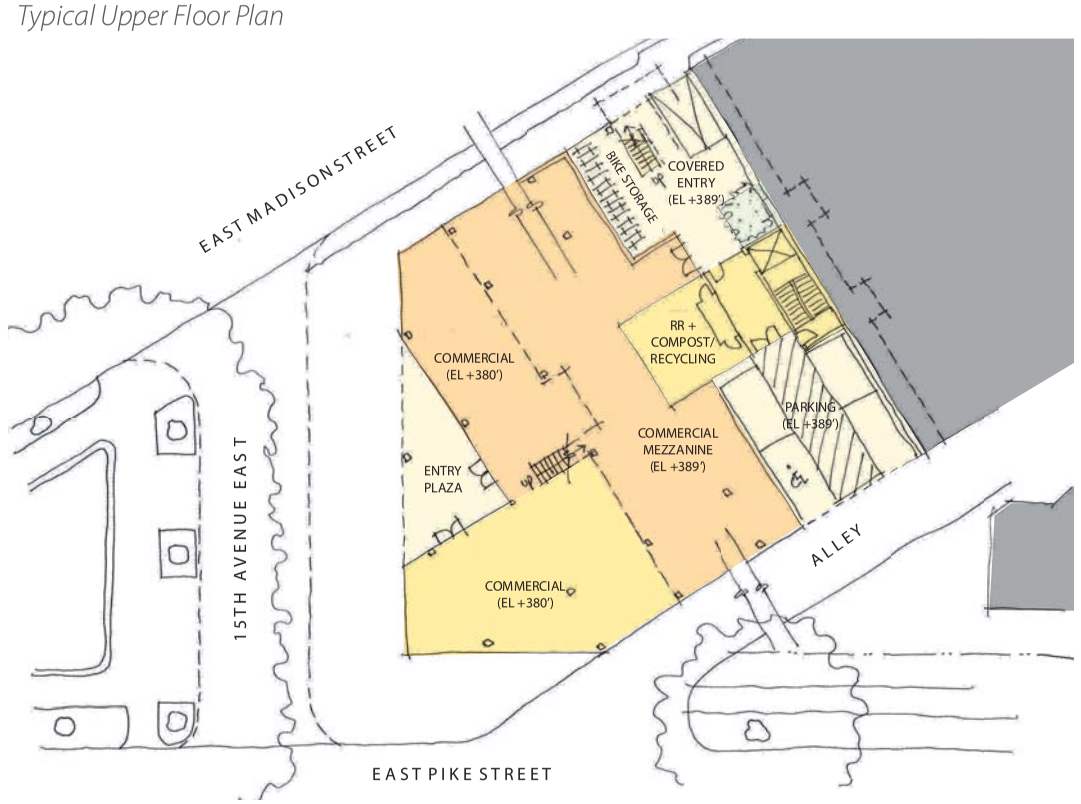
The stepped back upper floors also provide relief from the increasingly "built-out" massing along Madison. Columns supporting the photovoltaic canopy create a sense of rhythm along the street and bring a civic scale to the project. In this concept the upper floor office entrance is separated from the ground floor commercial entrance which allows the project to more actively engage both primary street frontages. The Madison entry features a gracious stair rising the height of the project with landings cantilevering out over the sidewalk. The stair will be a beacon along Madison and clearly mark the entry to the office portion of the project. The ground floor commercial entry is located along 15th Avenue and is set back from the property line creating an outdoor room that engages the park. Large exterior decks will be landscaped and provide outdoor gathering spaces for building occupants.

Performance:
- stepped back massing provides less surface area-to-volume ratio which performs well thermally
- narrow floor plate with increased floor-to-floor height meets the minimum daylight levels of the Living Building Challenge
- terraced area on the south facing the ally and L3 zone provide opportunity for onsite vegetation to help treat waste water.

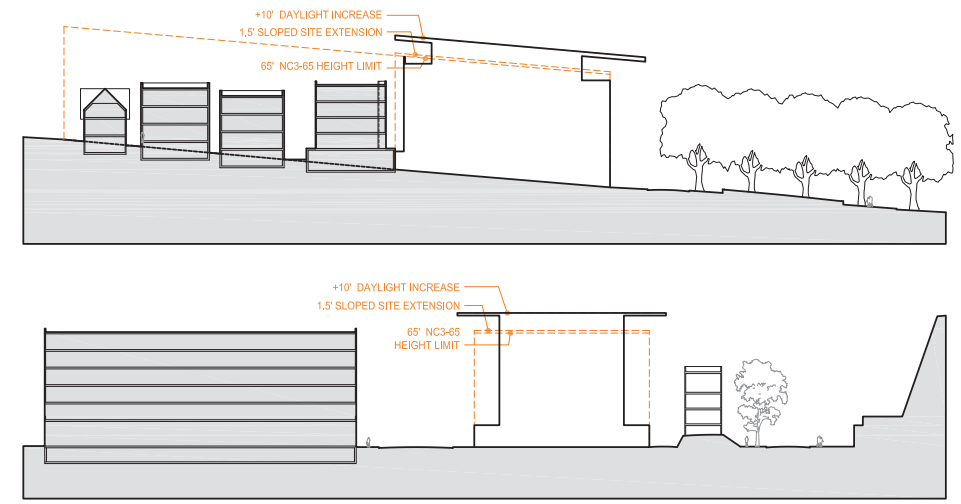
Pros:
- allowable FAR is achievable with PV roof overhangs into the rights-of-way
- set-back upper floors along Madison and alley provide variation
- main stair is a design opportunity along Madison, as is the greenhouse along the alley (visible from 15th and Pike
- separate office (Madison) and commercial (15th) entrances activate the streets
- best overall energy performance of all three design concepts

Cons:
- building is taller than existing structures on the block
- least efficient natural ventilation strategy of all three schemes

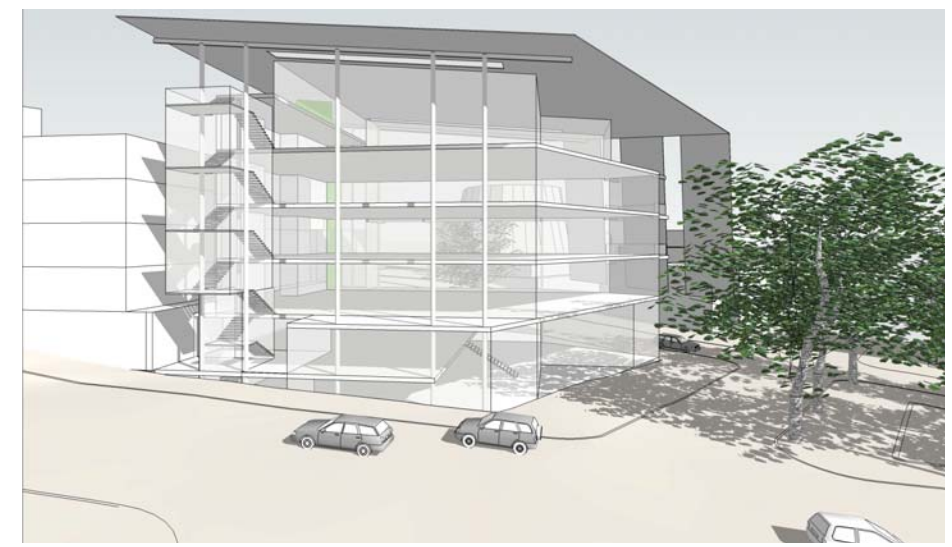
Typical Upper Floor Plan



Street Level Plan



Site Sections

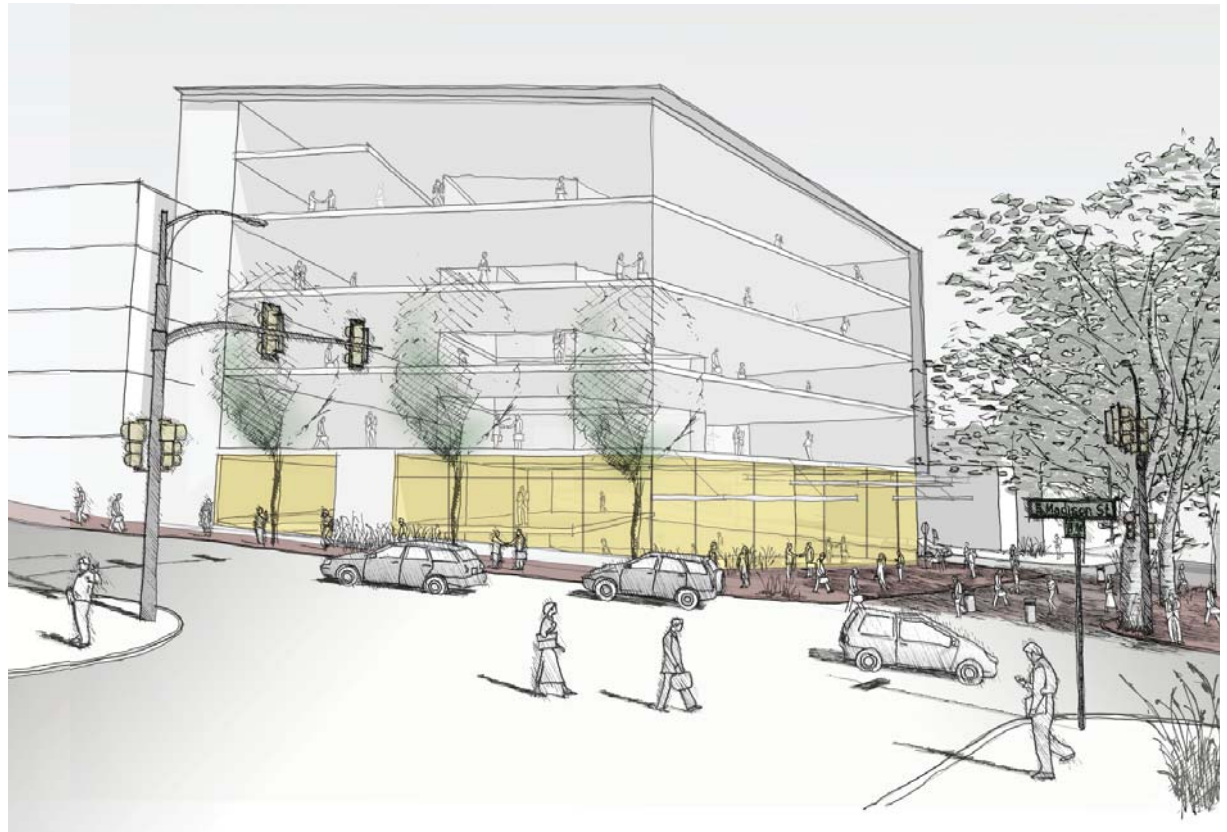


View from the Northwest/Madison

View from the Southwest/15th Avenues

Street Level Perspectives

Concept 1: Code Compliant



Concept 1: Looking South from 15th Avenue

Concept 1: Looking North on 15th Avenue

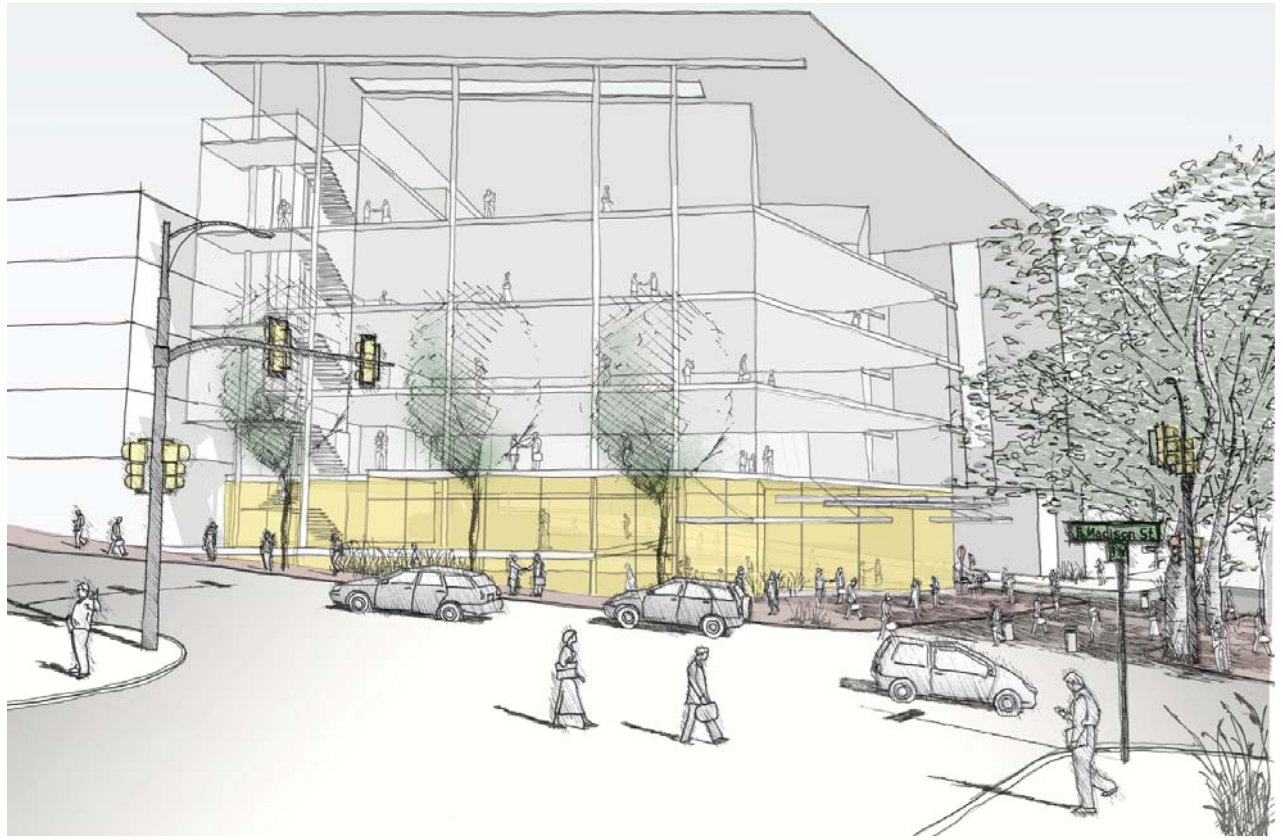
Concept 2: Central Atrium

Concept 2: Looking South from 15th Avenue

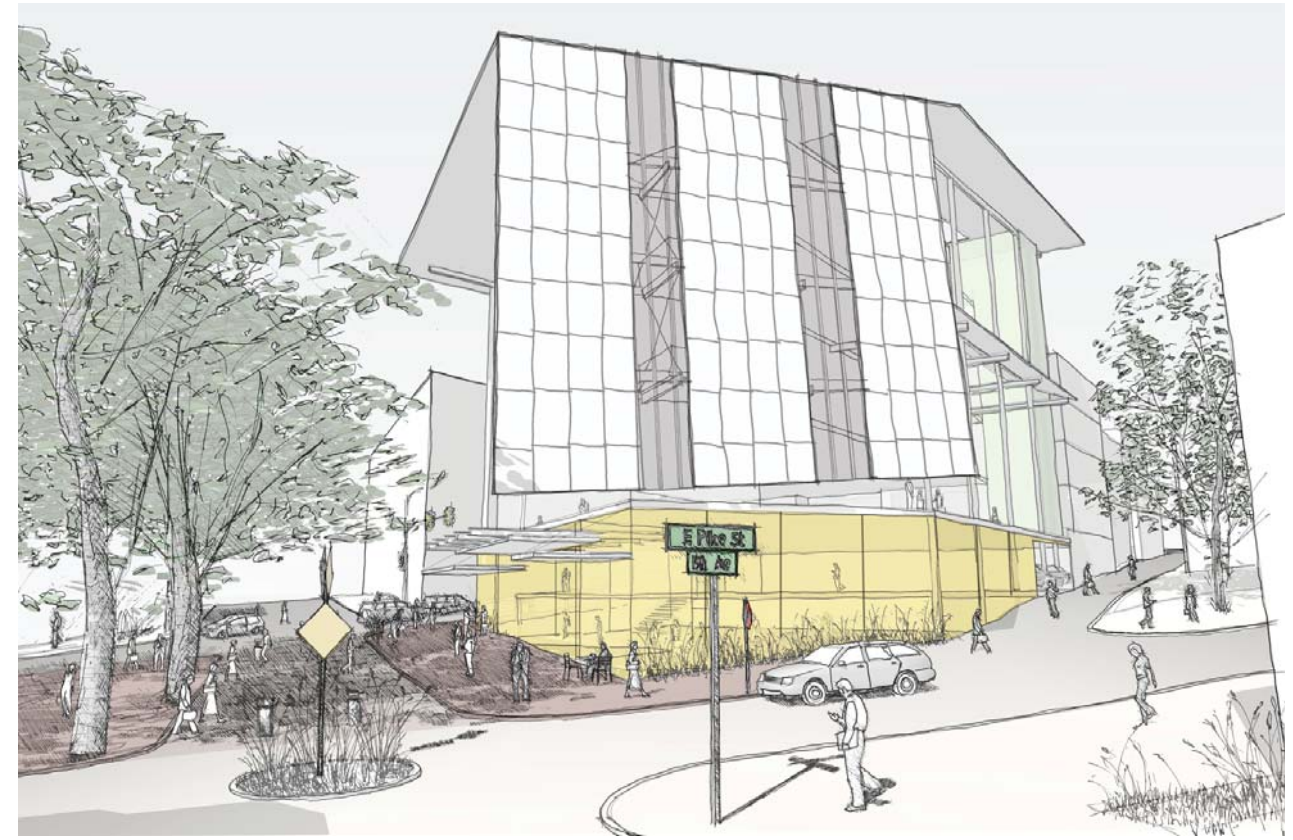
Concept 2: Looking North on 15th Avenue

Street Level Perspectives

Concept 3: Terraced (Preferred)



Concept 3: Looking South from 15th Avenue



Concept 3: Looking North on 15th Avenue

Summary of Potential Departures

Background and Analysis:

The Living Building Challenge is a green building rating system created by the International Living Building Institute to recognize buildings meeting the highest level of sustainability.

In order to meet the stringent performance standards of the Living Building Challenge, buildings generally rely upon innovative building design techniques and features including natural day lighting and ventilation, solar capture, rainwater capture and use, wastewater treatment and reuse, and ultra-efficient heating, ventilation and air-conditioning (HVAC) systems. These systems can substantially increase design complexity and necessitate early integrated design processes to insure that all systems are compatible and work in an efficient manner, and that each performance goal can be met. These innovative systems may also necessitate alternative building massing, non-traditional exterior and roof top features, or other elements that were not envisioned when existing codes were adopted. Existing codes were designed to provide minimum standards rather than the flexibility to consider radically different building strategies. Additionally, projects may meet the Living Building Challenge through incorporation of uncommon urban accessory uses such as agricultural uses that use waste streams such as treated wastewater.

Departures:

In addition to existing criteria governing departures from development standards, additional departures may be allowed if an applicant demonstrates that such departures would better meet the goals of the Living Building Challenge and would not conflict with adopted design guidelines. In recommending any departure from development standards, the DRB must consider the extent to which the anticipated environmental performance of the building would be substantially compromised without the departures.

In addition to the Land Use Code departures currently allowed through design review, the following standards may be relevant to this proposal and may also be modified or waived for buildings qualifying for the Living Building Challenge:

- floor area ratios, up to 15% above the otherwise applicable limit;
- maximum size of use;
- structure height (up to 10 feet generally plus additional height for rooftop features) above limit;
- solid-waste containers storage;
- downtown parking access; and street, alley and easement requirements

Potential Departures

				Departure request applies		
Title	**Code Reference**	**Potential Proposed Departure**	**Rationale**	**Concept 1: Light well**	**Concept 2: Atrium**	**Concept 3: Terraced**
23.40.060.D.2.d Living Building Pilot Ordinance FAR Increase	**2**. Scope of Departures. In addition to the departures allowed under Section 23.41.012.B, departures for projects participating in the Living Building Pilot Program established under Section 23.40.060 may also be granted for the following: **d.** Floor Area Ratios up to 15 percent above the otherwise applicable limit	The Allowable FAR for this site is 4.25 and results in 42,500 GSF. 15% x 42,500 = 48,875 GSF. Both Concepts 2 and 3 are approximately 48,000 GSF.	The amount of space required for mechanical and water treatment systems is much greater in a Living Building.	NA	Y	Y
23.40.060.D.2.e Living Building Pilot Ordinance Structure Height Increase	**2.** Scope of Departures. In addition to the departures allowed under Section 23.41.012.B, departures for projects participating in the Living Building Pilot Program established under Section 23.40.060 may also be granted for the following: **f.** Structure height, (up to 10 feet generally plus additional height for rooftop features)	An increase in height from the base allowed by zoning (66'-6") to 75'-0"	Additional floor to floor height is required to achieve the day lighting criteria established by the Living Building Challenge. This increase in the floor to floor results in an additional 10 feet to the building's height but does not increase occupiable space above the zoning height limit of 65 feet.	NA	NA	Y
		PV Array may be up to 10 feet above roof	Additional height for the PV array is required for the following reasons: a. a flat PV array would result in decreased energy production due to dirt and residue build up. A minimum of 5 degree slope will be largely "self cleaning" b. increasing the slope of the array from 5 degrees to 15 degrees improves efficiency by approximately 10% c. Any shadow that crosses the face of the PV will render a large portion of the entire array inoperative. Therefore the elevator overrun, stair to the roof and even vents and other mechanical equipment that might be located on the roof will need to be below the array.	NA	Y	Y
23.47A.008.3 Street Level Development Standards-Transparency	**b.** Nonresidential uses at street level shall have a floor-to-floor height of at least 13 feet.	Due to the sloping site on E Madison, a floor to floor of between eleven to twelve feet is proposed from floor 2 to floor 3. The Building's main entrance is located on 15th Ave, where the floor to floor is proposed to be 20 feet.	The site slopes approximately nine vertical feet. In order to make the entrances accessible from both 15th Ave, E Madison and the alley parking entrance, a consistent 13 foot floor to floor cannot be achieved.	NA	Y	Y
**23.53.035 Structural Building Overhangs	**A.** Structural building overhangs are encroachments into public property that include cornices, eaves, sills, belt courses, bay windows, balconies, facade treatment and other architectural features. 1. Vertical clearance shall be a minimum of eight (8) feet from the sidewalk. a. The maximum horizontal projection shall be three (3) feet	Facade treatment/architectural feature: Fifteen (15) feet by three (3) foot stair overhang along the E Madison facade.	The architectural feature departures meet several objectives. The stairwell on Madison Street is designed as a prominent architectural feature that will help achieve the energy reduction goals necessary to meet the Living Building Challenge. Set slightly proud of the north facade, the stairwell successfully marks the main entrance for the building's upper floors. With a high degree of transparency and views west to downtown and east down Madison Street, the stair is designed to be easily accessible and attractive to building users, thus lessening the dependence on elevators and energy.	NA	NA	Y
	4. balconies, and similar features that increase either the floor area of the building above grade, shall be limited as follows: a. The maximum horizontal projection shall be three (3) feet	Architectural feature/balcony: Stepped balconies along the Pike Street façade will meet the vertical PV array. The largest at the 3rd floor projects Twenty (20) feet by sixteen (16) feet	The balconies on the south facade take advantage of the structural system necessary to support the vertical PV array, and establish high quality outdoor spaces for building tenants. Doors will also function as sources for fresh air and natural ventilation. With use, the balconies will help activate the building facade, and provide users with great views of McGilvra Place Park and downtown beyond.	NA	Y	Y
23.53.030: Existing Alleys; width	**D.** Minimum Widths Established. 1. The minimum required width for an existing alley right-of-way shall be: 4. NC3 20' **G.** Exceptions. The Director, after consulting with the Director of the Department of Transportation, may modify or waive the requirements for dedication, paving and drainage, setbacks, grading and no-protest agreements, if it is determined that one (1) or more of the following conditions are met. The Director may require access to be from a street if alley improvements are also waived. **8**. One (1) or more substantial principal structures on the same side of the block as the proposed project are located in the area needed for future expansion of the right-of-way and the structure(s)' condition and size make future widening of the remainder of the right-of-way unlikely; **9.** Widening and/or improving the right-of-way is not necessary because it is adequate for current and potential pedestrian and vehicular traffic, for example, due to the limited number of lots served by the development or because the development on the right-of-way is at zoned capacity	Propose maintaining existing 16' wide brick paved alley	The alley with its brick pavement creates a nice pedestrian character on the block. All existing principal structures are built to the property lines. Zone to the south is L3 and fully built out.	NA	Y	Y

*** The Projects seeks to Permit the portion of the Photovoltaic Array that lies outside the property line under a Term Permit. The array directly above the roof plane will pursue a departure for roof feature height as described under the LBC Pilot Ordinance. It is anticipated that as technology improves and PV becomes more efficient, the PV over the property line will no longer be required.*