

Seattle Center Campus Signage Plan • Sign Location Plan

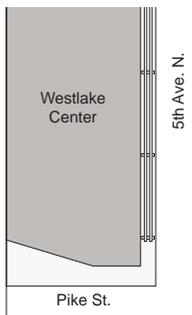


Existing Sign Locations



KEY

-  **S** Seattle Center Readerboard (static)
-  **E** Seattle Center Readerboard (electronic)
-  **S** Facility Readerboard (static)
-  **E** Facility Readerboard (electronic)
-  Directory / Map
-  Directional
-  Northwest Rooms, Center House, Monorail Building ID
-  Parking ID



Westlake Center Monorail Station Detail

Seattle Center Campus Signage Plan • Sign Location Plan

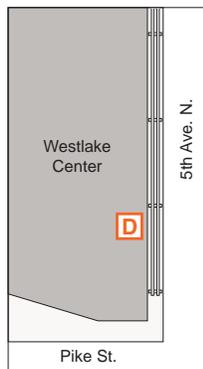


Proposed Sign Locations - Early Implementation Plan (2009-2010)

Monorail to Westlake Center

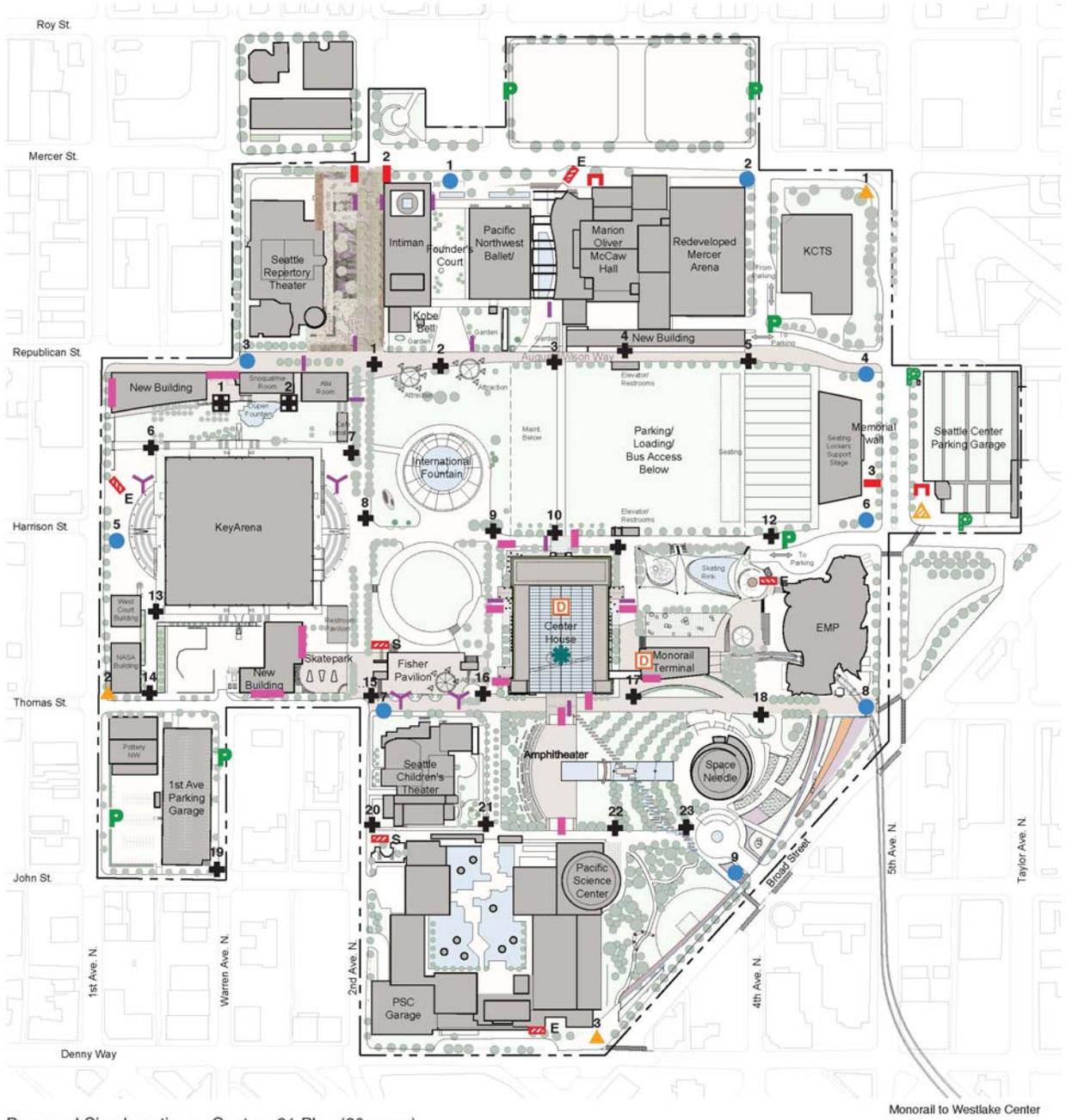
KEY

- Entry Marker
- ▲ Seattle Center Readerboard
- ▲ Seattle Center Readerboard (existing)
- Facility Readerboard
- ▨ S Facility Readerboard (existing; static)
- ▨ E Facility Readerboard (existing; electronic)
- Northwest Rooms, Center House, Seattle Center Pavilion, Monorail Building ID
- + Directional (with campus map)
- ⊞ Northwest Rooms Orientation Map / Directional (with campus map)
- P Parking ID
- P Parking ID (existing)
- Temporary Event Signage (various locations across site)
- D Digital Marketing Display



Westlake Center Monorail Station Detail

Seattle Center Campus Signage Plan • Sign Location Plan



Proposed Sign Locations - Century 21 Plan (20 years)

KEY

- Entry Marker (with campus map)
- ▲ Seattle Center Readerboard
- ▲ Seattle Center Readerboard (existing)
- Facility Readerboard
- S Facility Readerboard (existing; static)
- E Facility Readerboard (existing; electronic)
- Northwest Rooms, Center House, Mural Amphitheatre, Seattle Center Pavilion Building / Area ID
- ⊕ Directional (with campus map)
- ⊕ Northwest Rooms Orientation Map / Directional (with campus map)
- P Parking ID
- P Parking ID (existing)
- Y Seattle Center Poster Vitrine
- Facility Poster Vitrine
- ≡ Temporary Event Signage (various locations across site)
- ♿ Accessible Signage (various locations across site)
- Regulatory Signage (various locations across site)
- i Interpretive Signage (various locations across site)
- Electronic Kiosk
- ⊗ Digital Icon
- D Digital Marketing Display



Westlake Center Monorail Station Detail

SIGN SYSTEM

Seattle Center has an inventory of signage from many different eras that lacks clarity of purpose, function or design. To improve the legibility of the sign system on campus, a new signage hierarchy is needed. Proposed new signage can be categorized by sign type, location and function, as follows:

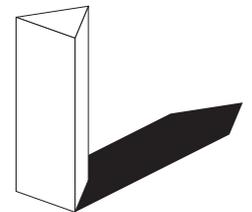
Perimeter Campus Signage

These signs are located around the perimeter of the campus and make the most visible impression on the public. They need to attract and orient visitors to the campus appropriately and positively. The City's Sign Code applies to signage in or near any public Right of Way, and added constraints based on the Code may factor into the design of any of these signage types.

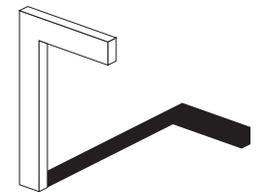
1. **Entry Marker** - This object will mark significant campus entries. The scale is large enough to be seen from a distance and its form is welcoming when walking by or through it. It will enhance the Seattle Center brand in a highly visible way and create the sensation of crossing a threshold into a unique and special place.
2. **Campus Readerboard** - The function of this sign type is to communicate information about the activities and events occurring at Seattle Center to vehicular traffic and pedestrians. In addition, this sign type provides the prime opportunity to extend the Seattle Center brand. Placement will be at several strategic and highly visible locations with sufficient dwell time to allow a full reading of information displayed on the sign. It will have a distinct presence and be large in scale. Traditional static readerboards will be replaced over time with new digital technology, displaying a unique mix of text and graphics.
3. **Facility Readerboard** – This sign type, located adjacent to specific facilities, communicates the events at that facility, and are typically on the perimeter of the campus. These signs are smaller in scale than campus readerboards and feature text and limited graphics only. Over time, static signs will be replaced with digital readerboards, allowing some campus messaging in addition to facility information. With the McCaw Hall readerboard as a precedent, new digital readerboards for the Intiman and Seattle Repertory Theatres will be installed in 2010. They will provide enhanced visibility for the resident arts organizations and Seattle Center on Mercer Street, one of the key goals of the Theater District plan. It is anticipated that the Seattle Opera construction at the former Mercer Arena will also add a unique facility readerboard to the Theatre District.
4. **Parking Identity** - The goal for this signage element is to provide clear identification for the entrances to Seattle Center's garages, making a distinction between other privately operated parking facilities and extending the Seattle Center brand. Using the new parking identity at the 5th Ave N garage as a precedent, new signage for the Mercer Street and 1st Avenue North garages will be installed in 2010.



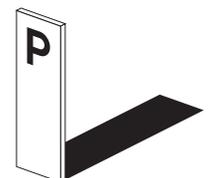
● Entry Marker (with campus map)



▲ Seattle Center Readerboard



■ Facility Readerboard



■ Parking ID

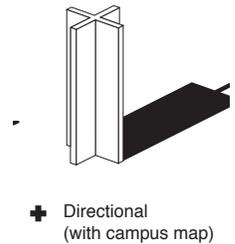
Internal Signage

Several types of signs are needed to help orient visitors on foot through the campus once they arrive. Generally, these are smaller in scale than perimeter signage, but should convey a similar vocabulary to reflect the campus' brand.

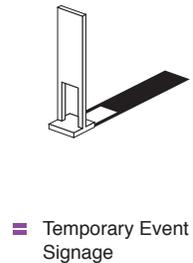
5. **Building Identity** - The primary function is to provide a clear identity for each building from all primary approaches to that building. The identity may be attached to the building itself, either flush or as a blade sign, or be freestanding alongside the building.



6. **Directional/Directory** - The primary function is to guide patrons to a destination. This sign type will include both directional signage to aid in wayfinding and a campus directory map. The campus map will educate the user about the entire site as well as nearby attractions and amenities in surrounding neighborhoods. A sub-set of this sign type may also be used for orientation within a suite of facilities, such as the Northwest Rooms.



7. **Event Signage** - These moveable structures are used to announce daily events around the campus. They need to be durable, weather proof and vandal resistant and easy for clients and staff to attach and remove announcements.



8. **Electronic Kiosk** - These free standing pedestals, utilizing digital technology, will provide patrons detailed and real time event information. They may be thought of as an "electronic brochure" that is accessible at key sites around campus, starting with the parking garages to provide information before patrons cross onto the campus.



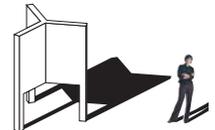
9. **Digital Media Network Displays** – This is a digital message system displaying a mix of campus information, entertainment and advertising on screens and monitors at strategic locations. Early demonstration sites have been targeted for the Monorail stations and Center House.



Other Signage

A collection of smaller and incidental signs throughout the campus provide additional information, communicating more detailed information including: upcoming events, project details, safety protocols and universal access.

- 10. **Poster Vitrine** - This sign type will be used to promote all campus events and will give opportunities to both resident organizations and event promoters to display their posters throughout the campus.



Y Seattle Center Poster Vitrine

- 11. **Accessible Signage** - This sign type directs patrons with mobility challenges, including wheelchair users, to accessible building and campus entrances. This sign type addresses the federal accessibility standards mandated by the American with Disabilities Act Accessibility Guidelines (ADAAG) established in 1994.



♿ Accessible Signage

- 12. **Regulatory Signage** - This sign type regulates people's behavior or prohibit certain activities within the campus, Content is a combination of rules established by Seattle Center and regulatory authorities such as the City of Seattle.



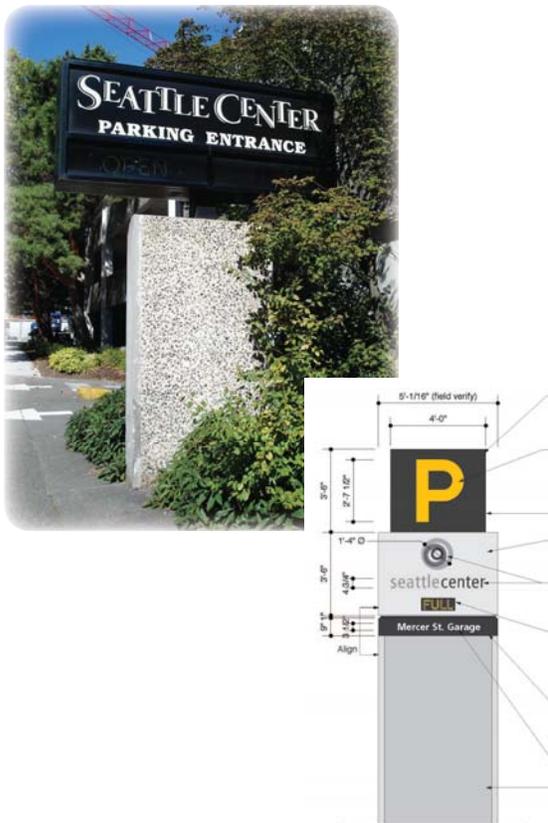
● Regulatory Signage

- 13. **Interpretative Signage** - This sign type provides patrons with information to help them interpret the meaning of specific projects or the entire campus environment. The content could be historical information and/or information about how green technology is used on the site.



i Interpretive Signage

Existing /New -- Mercer St Garage



Existing /New -- 1st Ave N Garage



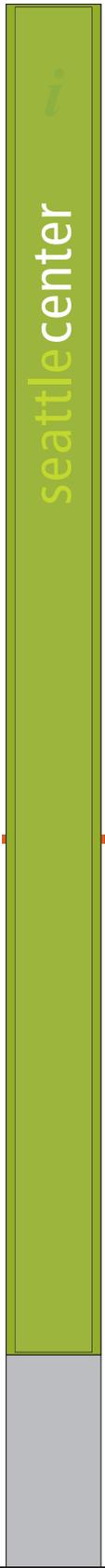
Existing -- 5th Ave N Garage



Parking identity signage for all garages on campus will be modeled after the signage design of the new 5th Ave N Garage, opened in July 2008. Automated PARC systems have been installed in two of three garages on campus: Mercer and 5th Ave N. When installed at the 1st Ave N Garage in the future, Seattle Center will look at automated or wireless real-time parking status messaging. Actively managing campus parking can help ease traffic congestion around the Center.



Campus directories (above) and blade directional signs (below) will be replaced with new combined directional/directory signage (right) at key interior intersections and campus entries. The new signs will both de-clutter and streamline signage on campus, and highlight Seattle Center's new logo and sense of place.



GUIDELINES AND POLICIES

Digital Signage and Graphic Capabilities: With the advent of digital readerboards and video displays and the introduction of this technology to Seattle Center in the mid-1990s, new opportunities have been created to convey the Seattle Center brand, and guidelines and policies are needed to guide digital signage design.

Electronic technology and a digital media network:

- Provide the maximum flexibility for changeable messages and for the scope of messaging capability (announce multiple events occurring that day, with times and places; announce coming events; thank sponsors; provide ticket information; make public information announcements, etc).
- Allow for variety in the presentation of the message and possible use of images, animation and program content to reinforce the Seattle Center brand and cohesion of the Seattle Center campus.
- Can be programmed and controlled remotely, significantly reducing the labor and time for changing manual signage, and can support an integrated hierarchy of digital displays, from large format LED's to plasma or LCD displays.
- Can distribute real-time event information, programming content and advertising to multiple locations enabling the Center to showcase the programming of the resident organizations.

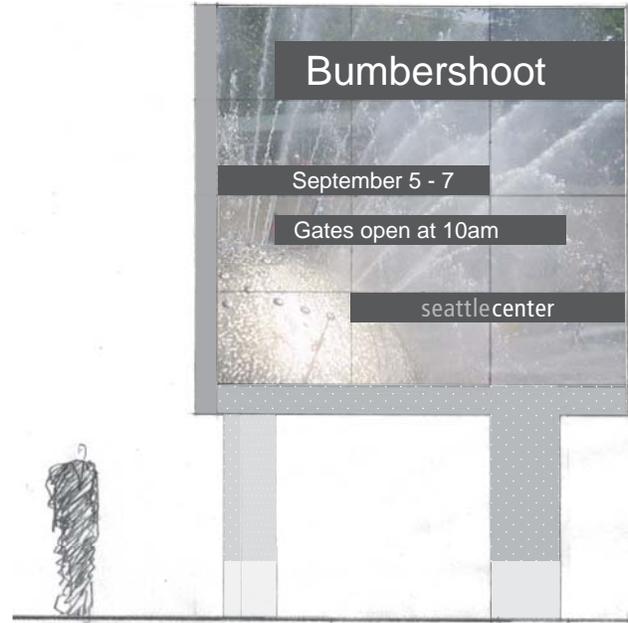
A few key and fundamental tenets for integrating electronic technology and a digital media network at the Seattle Center campus include:

- Large LED displays will be used at the perimeter of Seattle Center and include both campus-wide and facility specific readerboards. LED displays will not be used internally to the campus so as to preserve the sense of place and expanse of open spaces.
- Campus readerboards will have 4-color or 8-color LED capability. This technology will allow both event information and iconic images of the campus to be presented to vehicular traffic at the perimeter, bringing a sense of the "Center of the Center" to the edges.
- Facility Readerboards will be smaller than campus readerboards and will be a single color LED for text and limited graphic displays only.
- The goal is an integrated system where campus-wide messages can appear on facility readerboards and specific facility information can appear on the campus readerboards to create a cohesive sense of Seattle Center and its resident organizations.
- Through the use of color, materials or shape, the design of the structure and enclosure for campus readerboards shall have a consistent appearance.
- Facility readerboards may share unique design characteristics with the building they promote, or have a distinctive use of materials or color.
- The Seattle Center full logo or the logotype treatment alone will be consistently displayed on the structure of both campus and facility readerboards.
- The Digital Media Network will be an integrated system of small screen digital displays (plasma or LCD) and electronic kiosks mounted in areas with sufficient patron density and dwell time, such as the monorail stations, Center House Food Court, and/or Seattle Center parking garages, and include real-time event information, programming content and outside advertising to provide service to patrons, enhance the Seattle Center brand and contribute revenue to support the system costs.

Digital readerboards already exist at the new 5th Ave N Garage, KeyArena and McCaw Hall. These early signs will be used as the design precedent for future digital readerboard designs.



Existing

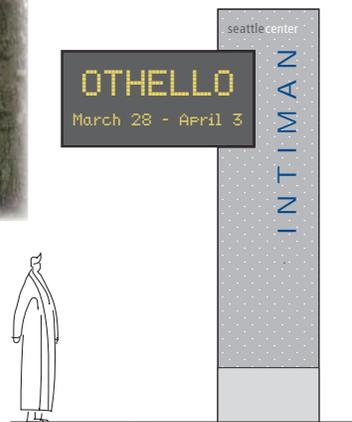


New

Seattle Center is currently scheduled to replace the static perimeter readerboards as part of the first phase of Campus Signage Improvements in 2009-2010. Three static facility readerboards along Mercer St. (Seattle Rep, Intiman and Exhibition Hall) are scheduled for replacement with two new digital facility readerboards (Seattle Rep and Intiman with the Exhibition Hall sharing time on both as needed) in spring 2010 and replacement of the campus readerboards at Broad/Denny, 5th Ave N/Mercer St and 1st Ave N/Thomas St will follow in late 2010.



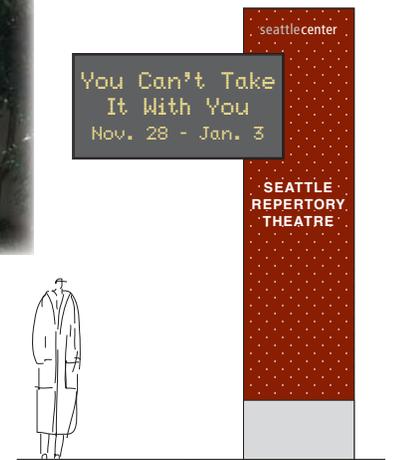
Existing



New



Existing



New

Shown here are both existing Intiman Theatre and Seattle Repertory Theatre readerboards, along with the Theater Commons facility digital readerboards proposed to replace them in 2010 (Graphics by WPA)

As new digital readerboards are phased in and static readerboards are phased out, these design guidelines may need to be revisited and updated. All new Seattle Center perimeter readerboards will need to comply with the City of Seattle Sign Code, be sensitive to and minimize any impacts on neighbors, and be mindful of a spare and uncluttered design aesthetic for perimeter streets that surround Seattle Center.

Readerboard Content, Use and Operational Guidelines – will be established by the Seattle Center Marketing staff and Seattle Center Director and revisited, as needed. They will address technical, formatting and shared signage protocols, among other issues. Current practice allows for sponsorship fulfillment on readerboards, subject to the conditions of the campus sponsorship policy. The aesthetics of the content, presentation, use of images, and use of color, movement, and symbols can and should be addressed in these guidelines. At a minimum, they will address font, type size, number of lines of text, use of color, use of animation, speed of changing messages, brightness of the messages, allowable purposes of messages, and extent of resident organization participation. All decisions regarding size of typeface, color or use of animation in the programming of perimeter readerboards must comply with existing codes and ordinances and general graphic principles for display to the motoring public. They must also conform to Seattle Center Logo Guidelines, issued in July 2009.

Digital Media Network & Electronic Kiosk Guidelines – as these sign types are developed and brought on-line, the Seattle Center Marketing staff and Seattle Center Director will develop specific guidelines for this system. It is envisioned that advertising and program content provided by Seattle Center clients and resident organizations will be appropriate to these small-scale displays. Proportional division of event information, programming content and advertising are yet to be finalized and policies and procedures for resident organizations' participation in both the benefits and costs of these systems are still to be determined.



Seattle Center has identified a new logo (above left) that will be incorporated into campus signage. Iconic Century 21 World's Fair logo (right) will continue to be an inspiration for Seattle Center's 50th Anniversary planning efforts as they unfold.



Century 21
Lighting Plan
and Guidelines

Introduction

Seattle Center's Exterior Lighting Master Plan was developed and published by Candela in 2006 to provide a framework for major site lighting upgrades. Four principle objectives were established:

- **Wayfinding** – for pedestrians as they traverse the campus in the evening
- **Safety & Security** – to enhance the real and perceived sense of safety after dark
- **Aesthetics** – to help make the campus welcoming, inviting, fresh, dramatic and/or playful
- **Environmentally Sustainable Design** - to serve as a demonstration of environmental stewardship and energy efficiency

The Exterior Lighting Master Plan analysis of the campus concludes:

There are distinct areas within the Seattle Center that naturally divide it into visually and functionally unique settings. These divisions not only determine a visitor's destination, but provide visual cues to wayfinding and offer excellent opportunities to enhance the experience and create special treasures places. As a way of dividing the entire campus into comprehensible elements, both functional and visual divisions have been made.

The four functional and visual areas are:

- **Pedestrian Pathways**
- **Campus Entries**
- **Destination Places**
- **Public Art**

Seattle Center has completed a major pedestrian pathway upgrade in 2007 and begun incremental improvements in the other functional and visual areas. We will follow the plan throughout implementation of the Seattle Center Century 21 Master Plan. Sustainable design and environmental stewardship, including concern for glare and night sky pollution, have become a priority for Seattle Center and will be evident in lighting projects going forward.

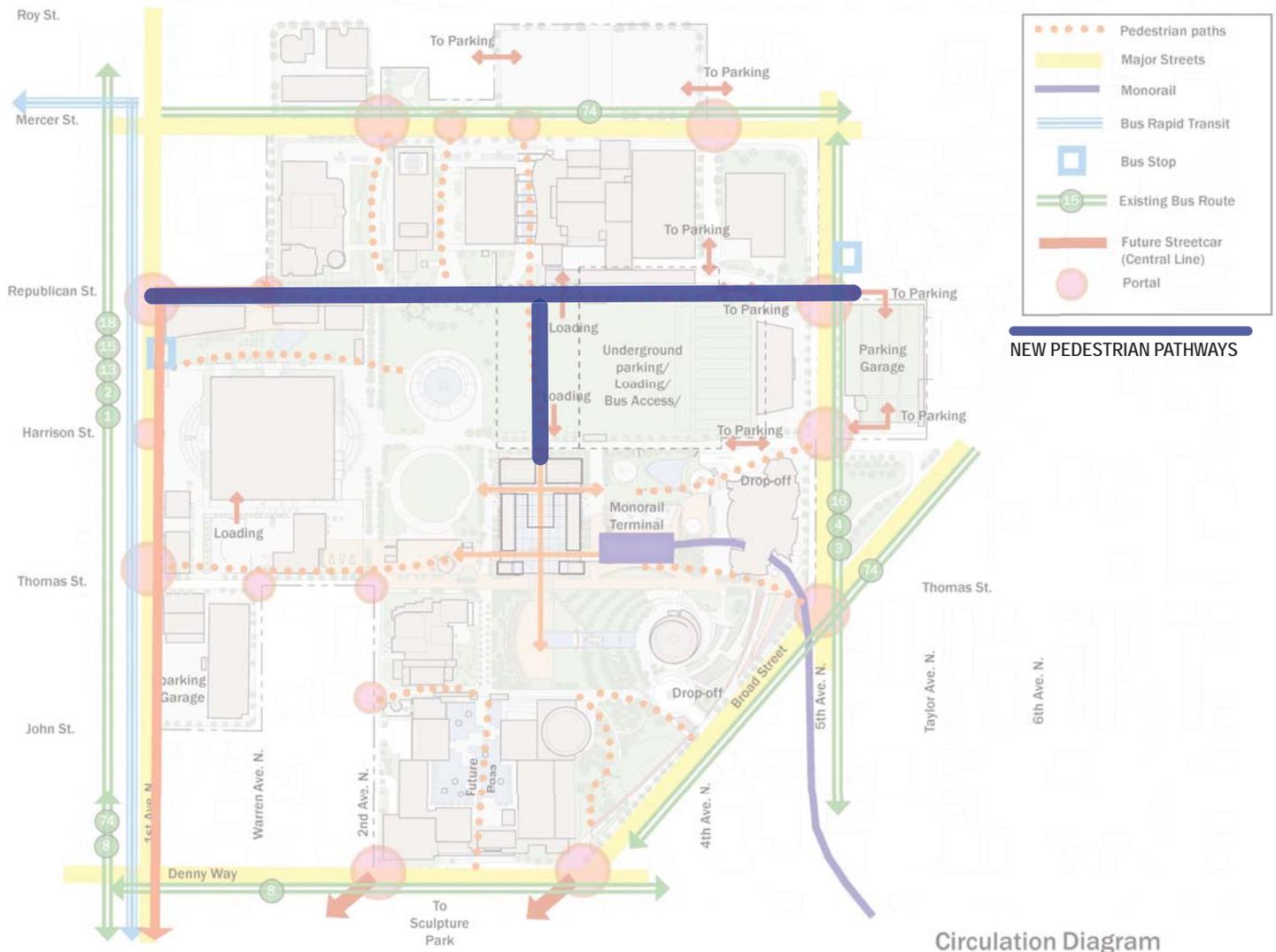
The complete *2006 Exterior Lighting Master Plan* follows this introductory section. Details of our recent accomplishments are summarized in the pages that follow.

Pedestrian Pathways

Based on this plan, major upgrades were made to the existing pedestrian pathway lighting to provide a more consistent illumination to meet the plan's wayfinding and safety and security goals, and to reduce energy use and realize more sustainable lighting technology. The plan articulates different options for fixture placement to create improved pathway lighting. These were implemented on the campus and have served as the site standard for the early implementation Century 21 Master Plan projects, namely the Broad St. Green restoration and Theater Commons.

The pathway lighting standard will continue to inform the new important pedestrian pathways through the Campus envisioned in the Century 21 Master Plan, including August Wilson Way, a major east-west corridor from the Uptown Urban Center to the Bill and Melinda Gates Foundation, and the north-south path from McCaw Hall, through Center House, to Pacific Science Center.

Seattle Center is working with City Light on a number of energy efficient lighting initiatives in our campus facilities and is eager to work with them on new LED pedestrian light fixtures that are proposed for our perimeter streets. Implementation of new LED lighting may eventually extend to our campus garages in the ongoing Citywide effort to conserve energy.



Campus Entries

The Century 21 Master Plan reinforces the importance of Seattle Center's entries. The emphasis on a porous campus perimeter and extending the reach of the campus entries to include neighborhood connections also creates opportunities for lighting to play a significant role in the aesthetics at the perimeter of the campus.

Examples of early implementation project elements that demonstrate this goal include the recessed blue LED lighting along the Broad St Green seat wall and the warm theatrical lighting at the Theater Commons entrance.

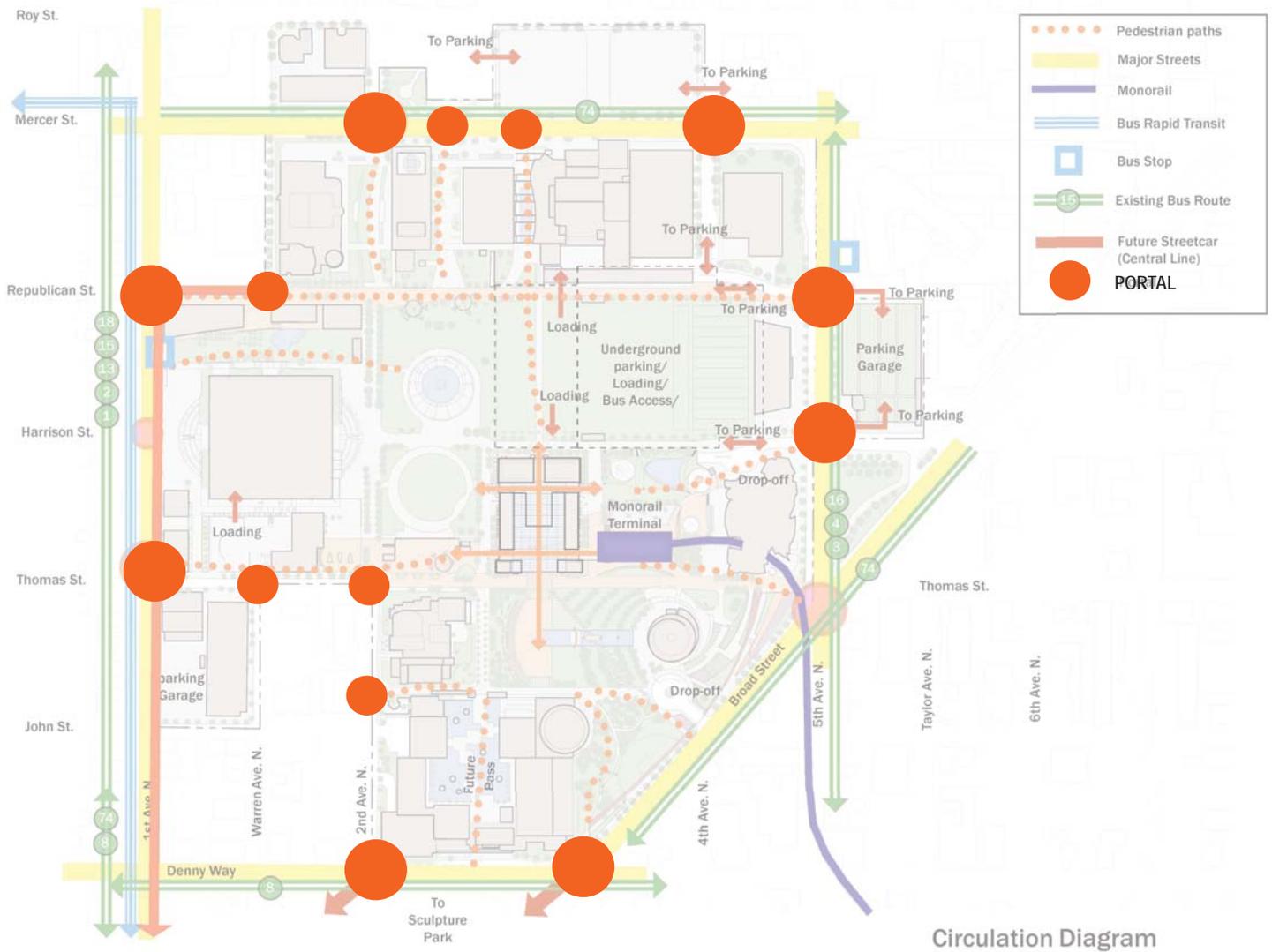


The arrival experience to Seattle Center's campus often begins at the parking garages adjacent to the campus. Lighting plays an important role in welcoming and establishing a sense of arrival to a unique place at the 5th Ave N Garage Plaza.



Image Courtesy NBBJ Architects

Implementation of the Century 21 Master Plan will put new emphasis on many of the existing campus entries including those at both the east and west ends of August Wilson Way and the 5th Ave N entrances at Harrison St. and Thomas St. Lighting will be an important visual element to reinforce the goals of the Master Plan at these entries and campus edges.



Destination Places and Public Art

Seattle Center is rich in unique architectural expressions and public art. Many of these elements have existing lighting, but new innovations in lighting technology and energy efficiency offer opportunities to refresh building facades and showcase public art.

The historic north entrance of the Center House was transformed in 2006 by implementing new lighting technology.



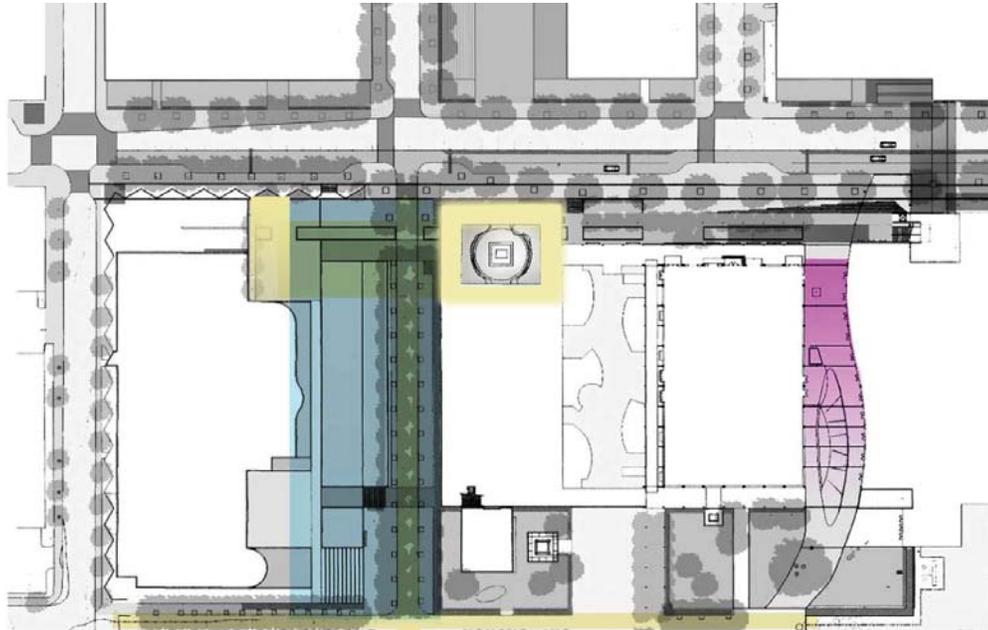
New lighting was installed at the DuPen Fountain summer 2008, and a project with City Light is underway to create new energy efficient lighting for Paul Horiuchi's *Seattle Mural*.



An excellent example of both destination place and public art lighting is the new skatepark completed in 2009. The public art along Thomas St., illuminated by recessed LED strips, enlivens both the street and the park and serves both safety and wayfinding functions.



The Theater Commons project is creating the Donnelly Gardens, the first landscaped area at Seattle Center that will be illuminated for night-time viewing to create a new amenity for evening theater patrons. The juxtaposition of warm entry lighting and cool “moonlight” garden lighting reinforces the Theater District lighting concepts.



Theater Commons Lighting Concept Plan (GGN Ltd)

There are numerous opportunities throughout the campus to highlight destination places and public art through lighting, and the Century 21 Master Plan creates additional areas to be showcased in the future, especially within the redeveloped Fun Forest and Memorial Stadium zones.

The Exterior Lighting Master Plan has informed all the projects completed since its inception; the 5th Ave N Garage, Broad St. Green renovation, the Skatepark and Theater Commons. By applying the clearly articulated goals and analysis to the design of these projects, the functional safety and security need and the aesthetic reach of the lighting plan were achieved.

The Exterior Lighting Master Plan will continue to guide campus development and expand the role of lighting throughout implementation of the Century 21 Master Plan, challenging Seattle Center to do more with lighting campus-wide, and recognizing the whole 74 acre campus in its entirety. As a critical element of the Century 21 Design Guidelines, the lighting plan will be implemented in phases as funding opportunities, new development proposals, tenant vacancies and other priorities allow. Seattle Center will also continue to look for opportunities to incorporate sustainable design and new green technology in future lighting design and operations.



EXTERIOR LIGHTING MASTER PLAN

19 JULY 2006

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INTRODUCTION

The Seattle Center Lighting Master Plan is an initiative of the Seattle Center staff and leadership as a positive step in the process of invigorating the public experience at Seattle Center. Linking the cultural, entertainment, educational and environmental aspects of the facility's mission to the night time experience through lighting will provide visitors with a unified experience and establish the Seattle Center as a destination of choice for residents and tourists alike.

Seattle Center has identified four objectives for the exterior campus lighting. These objectives are:

- As wayfinding for pedestrians as they traverse the campus in the evening;
- As a safety and security element to enhance the real and perceived sense of safety in use of the grounds after dark;
- As an aesthetic feature of the design of campus facilities intended to be welcoming, inviting, fresh, dramatic and/or playful; and,
- As a demonstration of environmental stewardship through the use of the most energy efficient fixtures and equipment, consistent with the purposes of campus lighting.

Candela undertook a survey of the designated main pedestrian pathways to identify how well these four objectives are currently achieved and to recommend improvements. That survey is documented in the Seattle Center Lighting Assessment, dated March 8, 2006.

Undertaking specific, well-coordinated improvements guided by the four objectives will strengthen the Center's distinctive identity and enhance its connection to the city it serves. The goal of this document is to establish design intent and standards to be followed when future improvements are being made to the exterior lighting. Targeted design efforts will be required to establish the specifics of these improvements.

The four objectives are the lens through which lighting for each of several areas and objects are viewed. Each section below includes a summary of how the improvement discussed meets the four objectives, and what design criteria are necessary to achieve them. Evaluation and weighting of priorities will be an ongoing process, affected by budgets and schedules. This Plan is intended as a tool to inform that process.

SEATTLE CENTER CAMPUS

There are distinct areas within the Seattle Center that naturally divide it into visually and functionally unique settings. These divisions not only often determine a visitor's destination, but provide visual cues to wayfinding and offer excellent opportunities to enhance the experience and create special treasured places. As a way of dividing the entire campus into comprehensible elements, both functional and visual divisions have been made.

Campus entries are the first impression visitors have of the facility's personality. This makes them a unique and primary element to be considered. Specific entries are addressed in terms of how lighting can be used to enhance their appearance and connect them visually to nearby venues.

Likewise, the experience of traveling the Pedestrian Pathways within the campus leaves a lasting impression of the spirit and content of the Seattle Center experience. On a very basic level these pathways need to provide a sense of safety and ease along with the welcoming experience. Because that experience includes objects and surfaces that surround the pathways, and not just the horizontal surface of the path itself, pedestrian pathways are treated as a general category with a number of sub categories that address the total visual environment.

The use of lighting to enhance already established Destination Places can extend the experience over a longer period of the day and even transform it into a different experience. Lighting itself can create special places at night that don't exist during the daytime, bringing the magic of color, sparkle, and movement to an otherwise normal pedestrian experience. Specific places on campus where potential currently exists for enhancement with light, as well as guidelines for future installations are addressed under the heading of Destination Places.

The lighting of Public Art in a facility that functions as both a daytime and nighttime gathering place is an important visual cue to its cultural commitment. Since artwork can also be a marvelous way to provide excitement and visual interest to an area, it is important to consider this aspect of the numerous public artworks on campus.

There are locations on campus where minor changes to existing light fixtures would greatly improve the visual situation and aid orientation. The Miscellaneous Maintenance category will encompass recommendations for improving these fixtures.

Each of these divisions will be used to encompass different aspects of lighting that can be used to enliven and decode Seattle Center for visitors, and make it the place of choice for an evening of culture, entertainment and companionship.

Light Sources

Our perception of the quality of the visual environment around us is greatly affected by the quality of the light that is illuminating the objects we see. There are two properties of the color of light that we can measure and use to determine how the visual environment will appear.

"Color temperature" is a measure of the "whiteness" of a light source. We often refer to light as warm (yellow/orange) or cool (blue/white). This refers to the color temperature of the light. "Color rendering" is a standard by which a light source reveals the true color of an object or material.

The human eye is more sensitive to a blue-white light source under low (night time) lighting levels than it is to warmer, more yellow sources. Recent research indicates that less light is required from blue-white sources than from yellow light sources under night time conditions. This condition, combined with the superior color rendering of ceramic metal halide light sources, means that ceramic metal halide is a superior source for outside at night where good visibility is desired. It enhances the perception of safety because people can more clearly identify elements in the environment. Establishing metal halide as the primary light source for exterior lighting on the Seattle Center campus will both promote a sense of safety and security, and contribute to energy savings.

As LED technology is improving, it is becoming a very good source for accent and supplementary lighting. It mixes quite well with metal halide is available in the same range of color temperatures. Although it is not suitable as the primary light source for the campus at this point, it should be considered for suitable applications.

<i>Standardizing on metal halide as the primary light source meets objectives:</i>	
<i>Wayfinding:</i>	<i>Uniformity of color provides clearer visual cues for orientation.</i>
<i>Safety & Security:</i>	<i>Good color rendering enhances identification of people and objects.</i>
<i>Aesthetics:</i>	<i>Good color quality enhance the visual environment.</i>
<i>Environment:</i>	<i>Energy efficient and long life lamps reduce waste and maintenance.</i>

CAMPUS ENTRIES

Well designed and functioning entries will draw people into the Seattle Center and create a sense of anticipation. A lively atmosphere that is evident from surrounding streets will attract people beyond those attending specific events, and create a sense of arrival for all visitors. This is of primary importance in creating an image of the Center as "welcoming, inviting, fresh, dramatic and playful."

In addition to the attract function of entries, they must also fulfill the wayfinding needs for visitors. If it is not obvious where a visitor should enter, there will be some discomfort that will lead to feelings of questionable safety. There should be no doubt that an entry is safe and that it leads into an environment that will continue to present that level of comfort to the visitor.

The primary pedestrian entrances to the Center are identified on the map below.

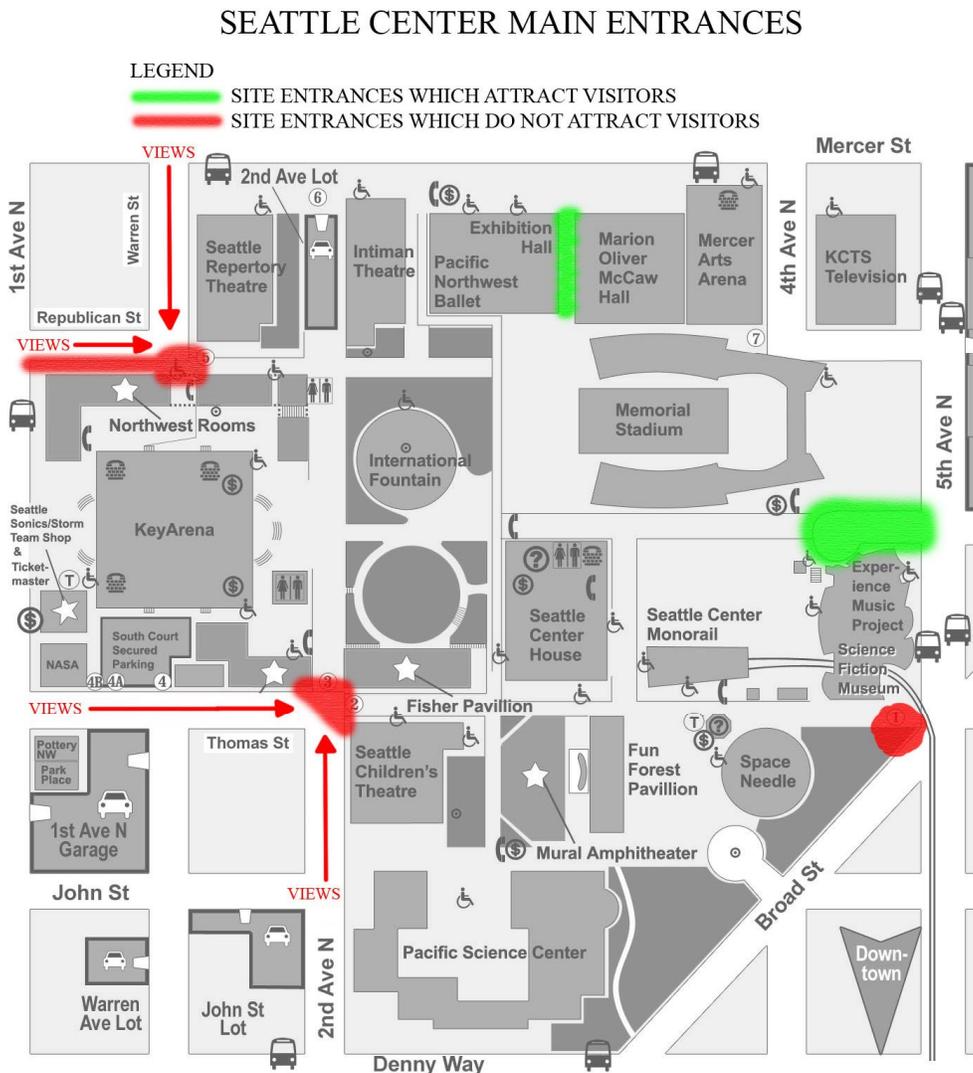


Figure 1: Map of Seattle Center with main pedestrian entrances highlighted.

Entrances highlighted in green identify current locations where excitement is created by architecture and art, and enlivened by lighting. The Blades at the Harrison Street entrance set an intensifying rhythm for the visitor approaching the interior of the Center, and the lighting, though static, enhances that beat. The Kreielsheimer Promenade, with its magical mesh screens drenched in dynamic color is the epitome of an entrance playing its role to the hilt.

Entrances highlighted in red identify locations that should be major pedestrian entry points because of proximity to parking, restaurants and public transportation. Yet these intersections not only fail to attract, but actually create confusion as to whether they are visitor or service entries.

Republican Street & Warren Avenue North

The entrance at the intersection of Republican Street and Warren Avenue North is barely visible, tucked behind commercial buildings and dimly illuminated. This is the closest entry to the lively group of restaurants at the northwest corner of Seattle Center, and should be a major point of entry for pedestrians. It should be easily visible from the intersections of Republican/First and Warren/Mercer, each one block away. Features and lighting at this entrance should be bright, dynamic and colorful to establish its visibility from that distance.

Artwork, architecture, signage and special lighting effects are all candidates for improving the visibility from afar, and establishing this as a unique point of entry. "I'll meet you by the Giant Purple People Eater." Everyone will know where that is! An intensive design exercise is called for here to create something special. The wall of the Northwest Rooms extending west along Republican should be considered part of this entry experience.

Coordination with improvements to the pedestrian pathway leading east from this intersection is very important as well. Once this intersection is established as a major entry, the welcoming atmosphere must continue into the "Center of the Center." The pathway improvements will be addressed later in this document.



Figure 2: View of Northwest Seattle Center entrance from Republican Street. Enhanced lighting in this area will help define this location as a main pedestrian entrance.

Thomas Street & Second Avenue North

This is an entry with lots of possibilities. The proximity to the Children's Theatre, Fisher Pavilion and Center House, along with a substantial amount of nearby parking makes it a natural major entry. The billboard wall to the west of Fisher Pavilion is a potentially valuable piece of the solution since it can be viewed from the south along Second Avenue North. Colorful presentations that are well-illuminated with the sign lights above will create a focus. The view from Thomas needs to be enlivened in a way that works with that.

Adding illumination to the pole-mounted banners in front of the Children's Theatre, and extending that concept to the corner would be a simple fix that would add color and interest to the corner. This technique would also work very well with the illuminated signage on the billboard wall discussed above.

The addition of pedestrian lighting to the sidewalks of the first blocks west and south of the intersection would help as well. These sidewalks are outside of the Seattle Center's boundaries. It is highly recommended that Seattle City Light be encouraged to add appropriate pedestrian light poles for these two blocks. They are not adequately illuminated for an area immediately leading to a major civic amenity.

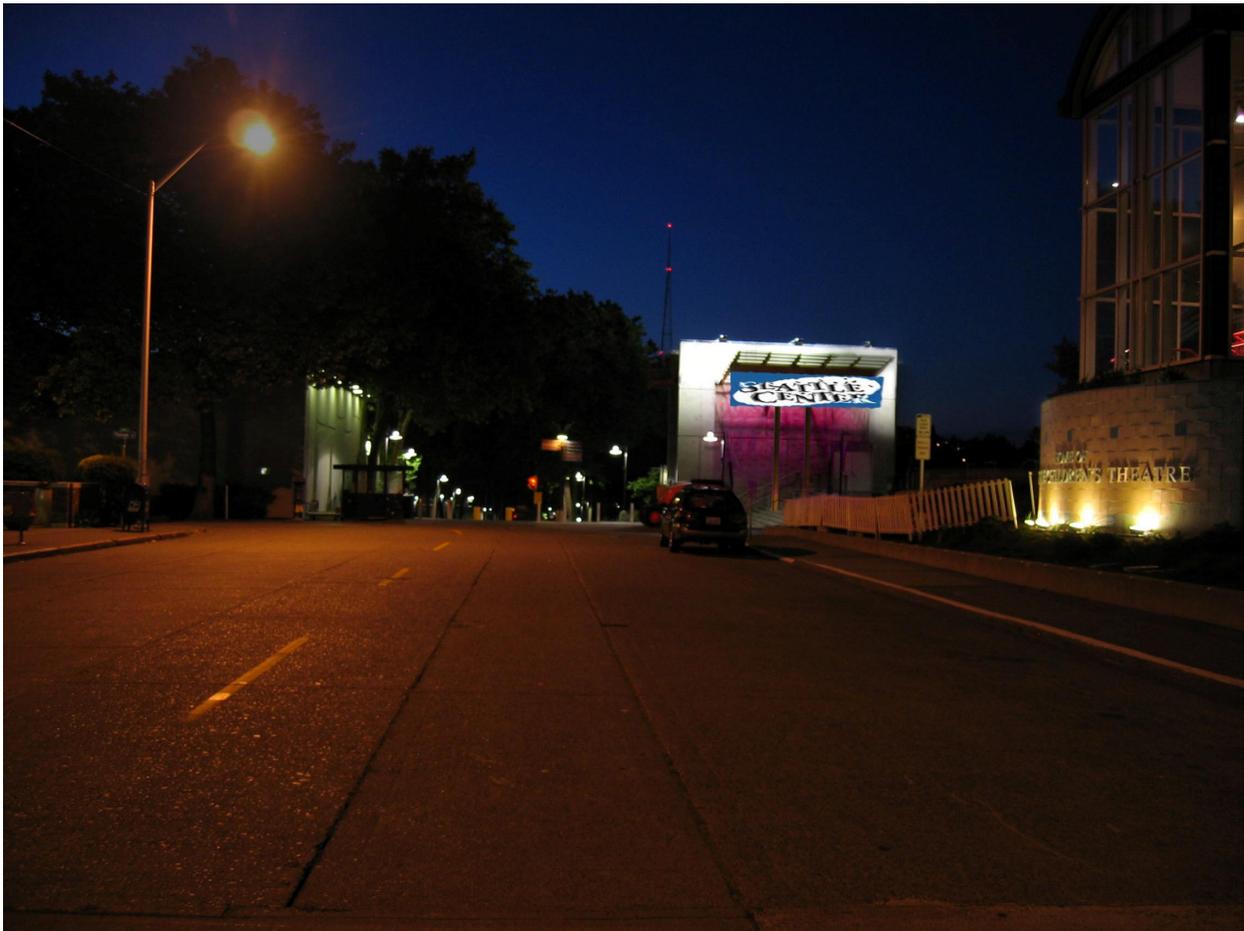


Figure 3: View of Seattle Center West entrance from Second Avenue North. Lighting and signage on Fischer Pavilion elevator walls will help draw visitors into the Center.

Broad Street, Thomas Street & Fifth Avenue North

There is a lot happening around the Broad Street/Thomas Street/Fifth Avenue North entrance. EMP's Science Fiction Icon stoops to conquer; the monorail whips by; and EMP itself swirls and dips into almost darkness to the south. It feels like you've reached the destination, not just begun to enter. Even the Space Needle in the near distance doesn't seem like a sure destination with the more brightly illuminated circular entry to the south.

The group of trees just south of Thomas Street offers one opportunity. Uplighting these trees would begin to balance the experience between EMP and the dark grassy knoll to the south. Adding an element of color, like the small group of trees on the west side of EMP would be even better. Dynamic color or the addition of a bright colorful element that is illuminated would be better yet. EMP is so much to compete with, that something fantastical and over-the-top would succeed here. Since there are a number of artworks located in the area south of this intersection, establishing this as the northeast corner of Seattle Center's sculpture park would be ideal. Further discussion of lighting for the artwork is presented later in this document.

Enhanced lighting at campus entries meets objectives:

<i>Wayfinding:</i>	<i>Makes entry locations visible and obvious to visitor. Connection to restaurants and transportation hubs is improved.</i>
<i>Safety & Security:</i>	<i>Better visibility of pedestrians enhances identification and comfort level.</i>
<i>Aesthetics:</i>	<i>Establish a sense of anticipation, whimsy, grandeur that says WOW.</i>
<i>Environment:</i>	<i>Use energy effective sources and design techniques to maximize impact.</i>

PEDESTRIAN PATHWAYS

Once the visitor is within the grounds, maintaining orientation and a sense of security is best accomplished with good visibility and an organized visual environment. Currently, there is little uniformity to the illumination of the pedestrian walkways throughout the site. Light poles are not spaced consistently, some poles are single-headed while others are two-headed, and pole bases are a variety of sizes and materials.

SEATTLE CENTER MAIN PEDESTRIAN PATHS

LEGEND

- █ MAIN INTERIOR PEDESTRIAN PATHS: FOUNTAIN AND PAVILION QUADRANGLES
- █ MAIN INTERIOR PEDESTRIAN PATHS OUTSIDE OF QUADRANGLES
- █ MAIN SITE PERIMETER PEDESTRIAN PATHS

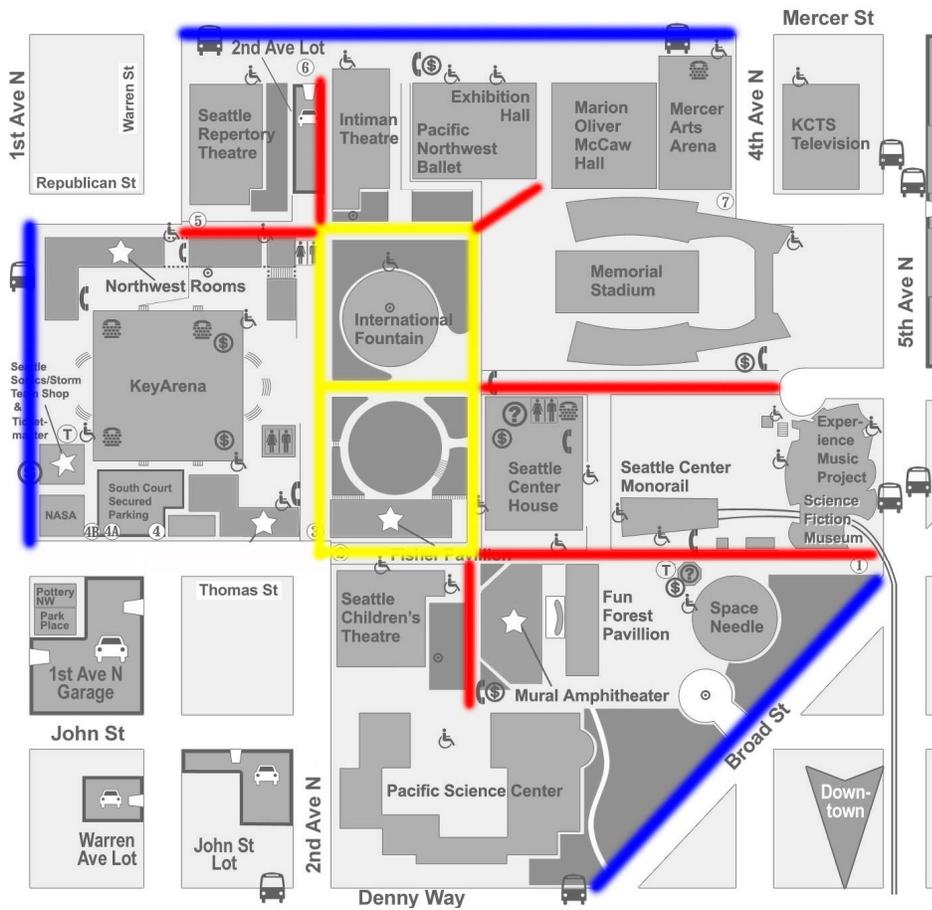


Figure 4: Map of Seattle Center main pedestrian paths.

Consistent fixture spacing will not only provide more uniform light levels throughout the site, but also create a more appealing visual environment. This is most important along the main pedestrian corridors, but should ideally be applied to all pedestrian paths on site and some along the perimeter. While different light levels on pedestrian ways may result from specific functional requirements or decorative elements of the surrounding structures, the base layer of light for pedestrian circulation should be met throughout.

The Illuminating Engineering Society of North America recommends ranges of light levels for specific environments. Their recommendations for pedestrian ways distant from roadways are presented in the following table. The Seattle Center should be cognizant of these recommendations to ensure an acceptable level of visual acuity and comfort. However, there are other factors to consider in applying these recommendations. First, Seattle Center is a public facility that is used by a great number of people at all hours of the day and night. It is a festive environment that invites visitors to enjoy themselves in a variety of venues. As such, light levels somewhat higher than average minimums are desirable. Second, it should be recognized that the surrounding visual environment contributes to the visual acuity and perceived sense of safety even more than the actual light level on the ground. Because of this, as design of these areas is completed, the total visual environment within the field of view should be addressed in a holistic manner.

Table 1: IESNA Recommended Average Maintained Illuminance Levels for Pedestrian Ways*

	Minimum Average Horizontal Illuminance**	Average Vertical Illuminance
Sidewalks Adjacent to Roadways	0.5 Foot-Candles	1.0 Foot-Candles
Sidewalks Distant from Roadways	0.5 Foot-Candles	0.5 Foot-Candles
Pedestrian Stairways	0.5 Foot-Candles	1.0 Foot-Candles

* Taken from Table 2 IESNA DG-5-94; Recommended Lighting for Walkways and Class 1 Bikeways.

** Uniformity ratios should not be greater than 10:1 maximum to minimum

There are three realistic methods for creating this uniform scenario. Each results in a different level of budget commitment and site disruption.

Option One: New Pedestrian Light Poles & Fixtures

Changing the pedestrian light pole fixtures to a new, more optically precise fixture would, in the long run, provide more even light on the pathways, using less energy and fewer overall poles and fixtures.

The fixtures currently in use do not have internal reflectors that help to distribute light in a particular way. They simply spread light in a somewhat omni-directional manner, altered only by the shade of the fixture blocking the light in the upward direction.

Commonly used fixtures now incorporate reflectors that distribute the light in specific patterns depending on where it is needed. This creates a more energy effective lighting design that results in wider spacing between poles while, at the same time, maintaining more uniformity over the pathway. With careful design and an alternating-side pattern, pole spacing could be as much as 75' which is significantly greater than the current spacing. Light levels could be lower than the levels in the brightest areas of the campus, and higher in other areas while reducing the overall energy use.

The most economically realistic way to accomplish this conversion over the entire campus would be to use a fixture that has a similar appearance to the existing fixtures so that the transition can be accomplished in stages. However, for a more obvious exhibition of change, a new fixture head type could be selected. Existing poles could still be used.

A typical layout for this option would utilize single headed poles spaced at a maximum distance of 75 feet on center. Poles would be located on both sides of a pathway in an alternating pattern as shown in the sketch to the right.

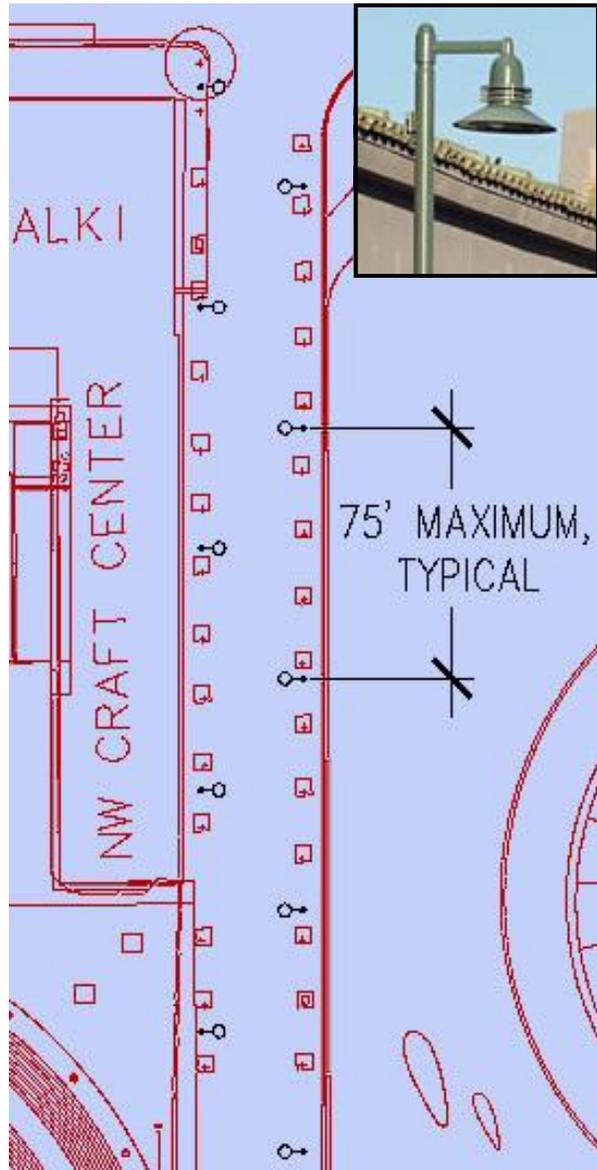


Figure 5: Typical pole layout and spacing for Option 1. Also shown is an example of a typical new proposed pedestrian post-top fixture.

<i>Option One pole layout meets objectives:</i>	
<i>Wayfinding:</i>	<i>Makes upcoming pedestrian path locations visible and obvious to visitor. Uniform light levels improve orientation.</i>
<i>Safety & Security:</i>	<i>Better visibility of pedestrians enhances identification and comfort level.</i>
<i>Aesthetics:</i>	<i>Uniform color and pattern of fixtures creates balanced effect.</i>
<i>Environment:</i>	<i>Fewer fixtures and lamps reduce energy and maintenance cost.</i>

Option Two: Two-headed Pedestrian Light Poles Using Existing Fixture Types

The lighting along the walkway adjacent to the Northwest Craft Center creates a pleasant, comfortable walking environment. The poles along this corridor have two fixture heads each and are spaced approximately 60 feet on center with an alternating offset pattern on the two sides of the path. Because the fixtures are non-directional in their light distribution, uniformity is created by using close pole spacing. This results in the higher overall light level. The illumination levels are actually higher than IES recommendations, between 1.0-2.5 foot-candles. Because this area is often the liveliest part of the campus, it does not seem over-illuminated.

Option two uses this typical spacing as a guide to layout the lighting along all of the main pedestrian corridors on site. This option would relocate many of the existing poles and fixtures on site to achieve a consistent pole spacing throughout. There is an added construction cost associated with this option due to the large amount of trenching required to provide power to new fixture locations, and many of the existing poles would have to be relocated to achieve consistent spacing. Some additional fixture heads would also be required. They would match the existing fixtures.

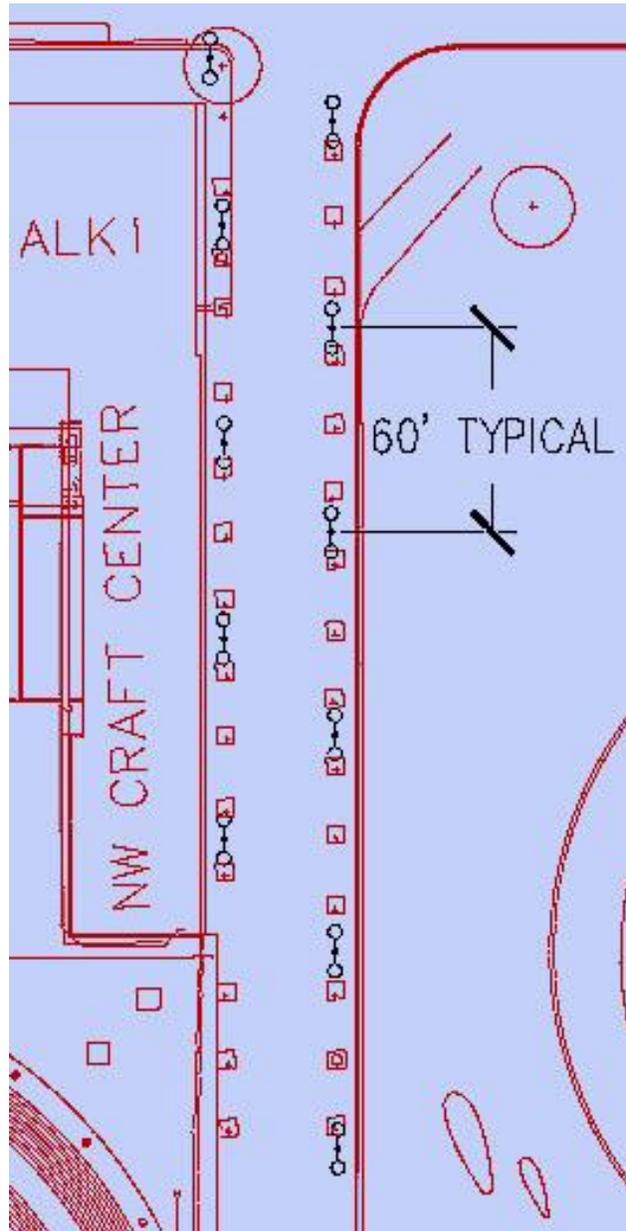


Figure 6: Typical pole layout and spacing for Option 2.

Option Two pole layouts meet some objectives better than others:

- | | |
|-------------------------------|---|
| <i>Wayfinding:</i> | <i>Makes upcoming pedestrian path locations visible and obvious to visitor.
Uniform light levels improve orientation.</i> |
| <i>Safety & Security:</i> | <i>Better visibility of pedestrians enhances identification and comfort level.</i> |
| <i>Aesthetics:</i> | <i>Uniform color and pattern of fixtures creates balanced effect.</i> |
| <i>Environment:</i> | <i>Use more energy, fixtures and maintenance than Option One.</i> |

Option Three: Adding New Pedestrian Light Poles and Fixtures Where Needed

The existing pedestrian path lighting includes areas where sufficient light levels are achieved, and other areas where this is not the case. There are significant spacing variations and pole/fixture configurations that detract from the overall visual environment. However, the least cost option for improving pedestrian walkway lighting would be to infill new equipment only into the areas where the light levels are below recommendations and pedestrians do not feel safe. In this option, poles currently on the site would not be relocated.

Although the cost for this option is significantly lower than the other two, it fails to meet the criteria for an improved visual environment.

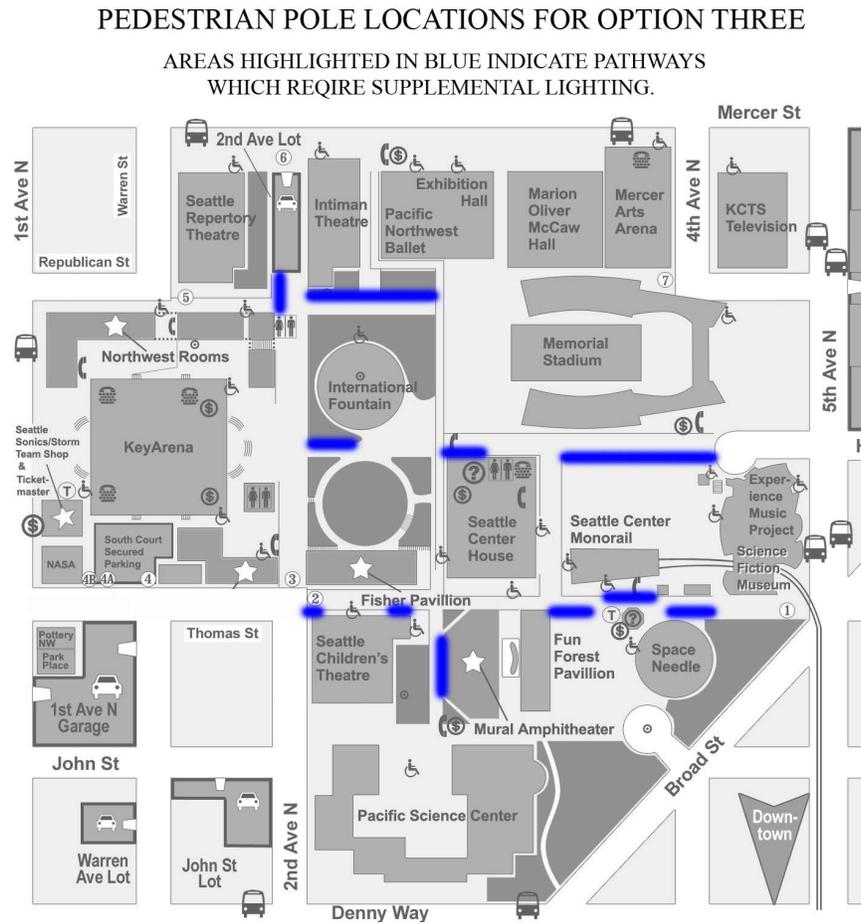


Figure 7: Map of Seattle Center indicating areas where supplemental lighting is required on pedestrian paths for Option 3.

<i>Option Three pole layouts meet fewer objectives than the other two options:</i>	
<i>Wayfinding:</i>	<i>Makes upcoming pedestrian path locations visible and obvious to visitor.</i>
<i>Safety & Security:</i>	<i>Better visibility of pedestrians enhances identification and comfort level.</i>
<i>Aesthetics:</i>	<i>Non-uniform pattern is less effective in creating consistent appearance.</i>
<i>Environment:</i>	<i>Use more energy and fixtures Option One, but less than Option Two.</i>

Recommended Hybrid Solution for Pedestrian Path Lighting

As a way to balance design, energy and economic issues, there is an excellent hybrid of these options that would meet the objectives while identifying the central quadrangle around the International Fountain and Fisher Pavilion as the center of festivities.

This plan incorporates Option One for the pedestrian paths leading from the perimeter of the campus into the central quadrangle. The intention is to provide even light with a high degree of visual acuity for pedestrians traveling along the lesser-used paths. These include some of the darker pathways on campus where supplementary illumination is clearly needed. Under any circumstance, new pole locations will have to be established, and new fixtures added. Using the most efficient type of fixture that provides glare-free illumination is the most responsible and economic way to accomplish this objective. The more optically sophisticated fixtures look almost identical to the existing fixtures except the internal globe is replaced by an efficient reflector.

In the central quadrangle, the existing lighting is doing an excellent job of providing a higher level of light that creates a festive atmosphere throughout most of the area. Following Option Three in this area will provide supplementary light where needed in areas that are somewhat darker, and will continue the active appearance throughout this central quadrangle. Economies can be achieved with the reuse of some of the fixtures and poles that will be replaced with the Option One poles on the other paths.

The overall campus will still appear unified with the same appearance for the pedestrian pole fixtures, while the Seattle Center's commitment to environmental stewardship will be maintained with the new efficient fixture layout. The budget commitment will be minimized by reusing many existing fixtures.

SEATTLE CENTER MAIN PEDESTRIAN PATHS HYBRID LIGHTING SOLUTION

LEGEND

- █ PEDESTRIAN PATHWAYS ILLUMINATED BY OPTION 3
- █ PEDESTRIAN PATHWAYS ILLUMINATED BY OPTION 1.

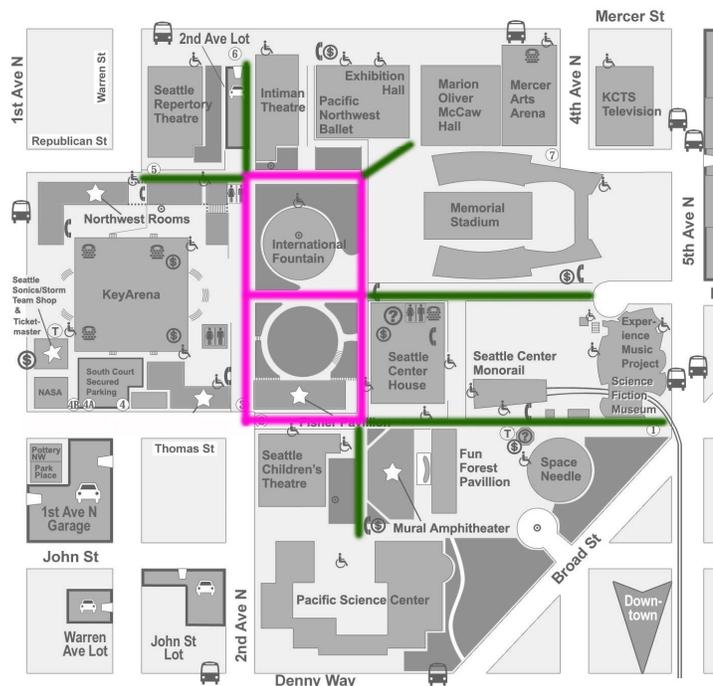


Figure 8: Map of Seattle Center illustrating hybrid solution for pedestrian path lighting.

Hybrid pole layout meets objectives:

- | | |
|-------------------------------|---|
| Wayfinding: | <i>Makes upcoming pedestrian path locations visible and obvious to visitor.
Uniform light levels improve orientation.</i> |
| Safety & Security: | <i>Better visibility of pedestrians enhances identification and comfort level.</i> |
| Aesthetics: | <i>Uniform color and pattern of fixtures creates balanced effect for each area while indicating different levels of activity.</i> |
| Environment: | <i>Using efficient new fixtures reduce energy and maintenance costs.</i> |

Canopied Pedestrian Paths

The two covered walkways along the eastern side of the International Fountain and Fisher Pavilion would be very pleasant pedestrian experiences if the color and distribution of the lighting were improved. They are currently illuminated with quite glary fixtures, one canopy with high pressure sodium sources and the other with metal halide sources.

Glare is a visual issue, particularly at night, because the human eye focuses on the brightest source in its visual field. When that source is overly bright compared to other areas in the field of view, those darker areas actually appear even darker than they are in contrast to the bright source. This is the primary reason that shielding of light sources is so important when a sense of security is a priority.

In order to improve the visual environment under these canopies, the fixtures need to be replaced with some that can distribute the light mostly down toward the path, but with a little upward to maintain the sparkle that the illuminated glazing provides. The light should not be emitted between 45° and 90° from vertical, which is the area that causes glare. The light on the path itself should be maintained to levels and uniformity ratios similar to surrounding pathways. Examples of fixtures that would satisfy these criteria can be seen on the following page.

Adding light on walls adjacent to the canopies and on surrounding landscape elements will further improve the visibility and sense of safety.

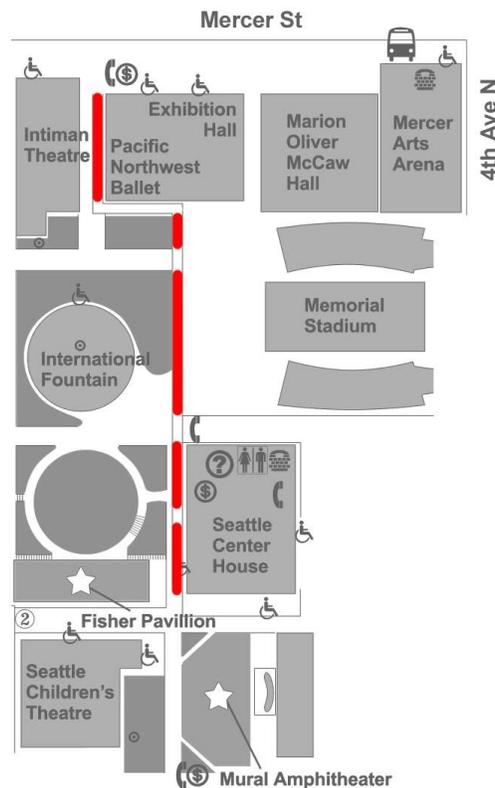


Figure 9: Partial Seattle Center map showing locations of canopied pedestrian paths.

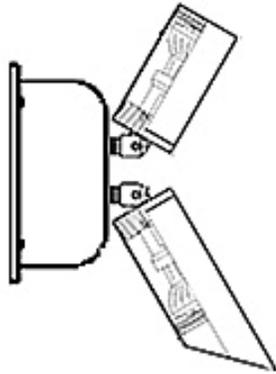


Figure 10: Double headed accent fixtures, with one head directed up to illuminate the canopy, and one directed at the pathway can provide the required functionality without the glare. The uplight component requires a wide spread distribution, probably with the use of a spread lens or reflector, and the downlight component requires source shielding to meet the criteria.



Figure 11: A lensed fixture with a single lamp can satisfy the criteria as long as the source is shielded from view with an internal or external element.



Figure 12: Rendered image of enhanced canopy lighting and landscape lighting beyond.

Enhanced canopy lighting meets objectives:

- | | |
|-------------------------------|---|
| <i>Wayfinding:</i> | <i>Uniformity with surrounding light levels is critical.</i> |
| <i>Safety & Security:</i> | <i>Reduced glare enhances visibility and apparent safety.</i> |
| <i>Aesthetics:</i> | <i>Reduced glare creates more pleasing environment.</i> |
| <i>Environment:</i> | <i>Sources are similar to existing in energy use.</i> |

Lighting Vertical Surfaces and Elements Adjacent to Pathways

Where there are vertical surfaces adjacent to pedestrian walkways it is extremely advantageous to illuminate them. The reflected light supplements the pathway lighting and improves the visibility of all surroundings. This enhanced vertical illumination increases the pedestrian's sense of safety. Lighting landscape elements adjacent to pathways can have a similar effect. Dark landscape areas can make pedestrians feel unsafe. Just enough lighting to reveal the interior of the landscape area helps assure people that no one is hiding within. There are several locations on campus where this lighting technique will enhance the visual environment and also present opportunities for adding color and whimsy to the pedestrian experience.

The north canopy discussed on the previous pages would benefit from both wall washing and landscape lighting.

The north wall of the San Juan and Olympic Rooms along Republican Avenue is a prime candidate for wallwashing or uplighting with some element of color or pattern. As the approach to the theater district from the south, a splash of color or pattern, or even a projection that announces a current event would enliven the pedestrian experience and enhance the feeling of having arrived at a special place. A surface mounted, uplight/wall wash type fixture located in the planting bed would be very effective in providing a wash of white or colored light on the wall. An exterior grade pattern projector could also be used to enliven the image or even provide information about events. A projector would have to be located across the pathway for optimum projection angle.



Figure 13: Rendered image of North wall of San Juan and Olympic Rooms, looking West. Adding colored light or projecting a pattern on this wall will enliven the entrance.

There are a number of locations on campus where high pressure sodium and mercury vapor light fixtures are located under building overhangs. As a general rule they do not provide effective light for either the wall or pathway but degrade the visual environment. Replacing these fixtures with a metal halide downlight that provides a regular pattern of light on the wall and distributes light to the pedestrian and planting areas is a priority in the effort to unify the visual environment. One-to-one replacement is most likely a good option, although each condition needs to be reviewed individually. The beam spread of the fixture needs to provide an attractive scallop on the wall surface, or else have a wall wash distribution to even the light out across the surface. The map on the next page indicates the locations of where these fixtures are currently installed.



Figure 14: Partial Seattle Center map showing locations of fixtures mounted beneath building overhangs.

Lighting vertical surfaces and landscape elements along pathways with low-glare fixtures meets objectives:

- | | |
|-------------------------------|---|
| <i>Wayfinding:</i> | <i>Vertical surfaces offer good cues to pedestrians.</i> |
| <i>Safety & Security:</i> | <i>Better visibility of pedestrians enhances identification and comfort level. Elimination of dark areas reassures pedestrians.</i> |
| <i>Aesthetics:</i> | <i>Illuminated surfaces create visual rooms with interesting walls.</i> |
| <i>Environment:</i> | <i>Use energy effective sources and design techniques to maximize impact.</i> |

Perimeter Pathways

Pedestrian walkways surrounding the Seattle Center Campus are an important part of the image that the Center presents to the community. They are the approaches to the entries, and have their own role in creating anticipation. They should be organized in appearance and represent the campus functions that abut them.

Broad Street from the Science Center to the Space Needle Entry

The extensive lawn areas along Broad Street are dark and forbidding at night. While the art works scattered around the area present a lot of potential (discussed in the Public Art section), the sidewalk south of the Space Needle circular drive is particularly uninviting. There are several possibilities for adding pathway lighting to this area to enhance its appeal.

While it is not desirable to encourage visitors to cross the lawn, it would be very easy to establish a quickening of pace as a pedestrian approaches the Space Needle. Using "The Blades" as a model, bollards can be located along the Broad Street sidewalk with the spacing shortening as the Space Needle entry approaches. Though barely perceptible, this technique will create an increased brightness that will subtly attract without overwhelming surrounding elements. Using bollards similar to those surrounding the Space Needle circular drive will create a seamless experience and quicken the pace of passersby.

Another possibility would be to add pedestrian light fixtures to the path that winds through the *Illiad* sculpture along the side of Pacific Science Center.

Enhanced lighting at Broad Street meets objectives:

<i>Wayfinding:</i>	<i>Makes entry locations visible and obvious to visitor.</i>
<i>Safety & Security:</i>	<i>Brightening adjacent lawn area reduces mystery factor.</i>
<i>Aesthetics:</i>	<i>Establish a sense of place.</i>
<i>Environment:</i>	<i>Use energy effective sources and design techniques to maximize impact.</i>

DESTINATION PLACES

The goal of making the Seattle Center campus “welcoming, inviting, fresh, dramatic and/or playful” is accomplished very well in a number of ways and places. The challenge is to unify the experience and extend it throughout the campus in a cost and energy effective way. Creating discrete areas with unique or special lighting effects can establish special places that people remember and return to. Excellent examples are the neon sculptures in the plaza south of the San Juan Room, the Dupen Fountain of Creation, the colorfully-uplit trees southwest of EMP, The Blades sculpture on Harrison, Kreielsheimer Promenade, and the soon-to-be-constructed Poetry Garden.

An important aspect of creating these special places is to locate them at some distance from each other so that the experiences stand out. If everything is special, nothing is. Every technique does not apply to every situation. That's what makes it unique.

Uplighting Trees

Uplighting trees can have a dramatic or playful effect, depending on the way in which it is done and the structure of the trees being illuminated. The small trees by EMP are too small yet to provide drama, but the color lends a playful air that delights. On the other hand, the mature weeping willow west of the Space Needle drop-off is a marvelous candidate for uplighting for dramatic effect. Depending on the position of uplights, it could be made to appear a glowing green ball or a soft green canopy above a twisted structure of substantial branches. Either way, it would provide a lovely backdrop to the drop-off rather than a black void.



Figure 15: Trees near EMP are uplight with a splash of color which creates a dramatic effect.

It is important to select trees that will take the light and transform their appearance with it. Trees with interesting branching structure, unique bark or seasonal color are good candidates for uplighting. Ever-green conifers should usually be avoided as their branching structure is messy and lighting them from outside the canopy flattens them out. Ceramic metal halide is the best source to use because of its good color quality. It can enhance both the greens of the leaves and the browns of the trunk and branches.

It is also important to add the lighting in groups to maximize the effect. Three or four surface-mounted adjustable fixtures aimed at a major mature tree will provide sufficient light to make it stand out. Two or three fixtures are fine for smaller trees, but the distribution of light up into the entire width of the canopy will provide the best appearance. In large groves, groups should be identified to create a pattern of lightness and shadow. In groves with depth, some trees in back should be illuminated to provide visual depth to the grove.

In the area between Pacific Northwest Ballet and Intiman Playhouse pedestrian poles light the curving pathway to a low level that should be supplemented. Rather than adding more poles, inserting tree uplights that illuminate some of the trees and perhaps some of the walls behind would improve the visual environment while creating a more special place. A careful look at the entire plaza is important in determining which trees are best to uplight. Sufficient numbers of fixtures should be added to provide a sense of the shape of the path as it curves through the plaza.

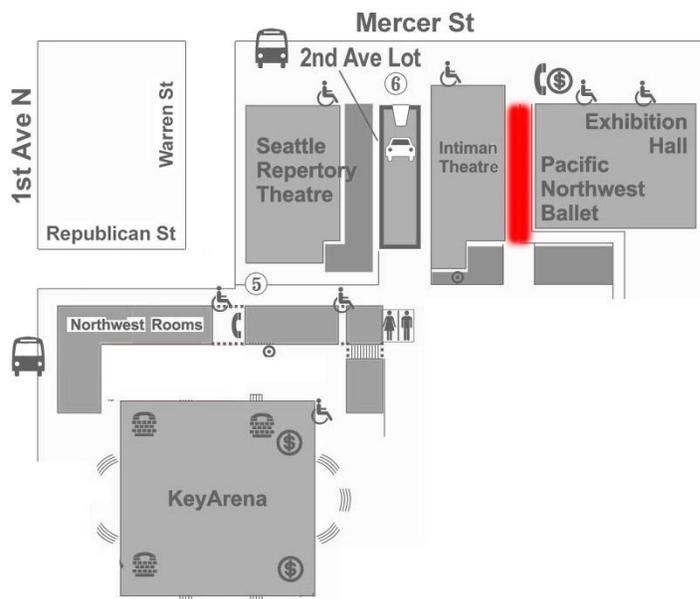


Figure 16, left: Partial Seattle Center map showing areas that would benefit from tree uplighting.

Figure 17, above: Typical tree uplight fixture.

<i>Uplighting trees meet objectives:</i>	
<i>Wayfinding:</i>	<i>Visual cues to reveal details of plantings enhance orientation.</i>
<i>Safety & Security:</i>	<i>Light in surrounding plantings increases pedestrian comfort.</i>
<i>Aesthetics:</i>	<i>Lighting trees enhances park-like appearance.</i>
<i>Environment:</i>	<i>Use carefully-place, energy effective sources to maximize impact.</i>

International Fountain Plaza

The area immediately south of the International Fountain is currently quite dark. Although it is technically a pedestrian pathway, it widens to a plaza-sized space that presents a perfect opportunity to surprise visitors with a magical lighting experience.

Pedestrian poles are not desirable in this area because they would break it up visually and separate the two halves of the open area. Better options would be low-level or even ground-recessed fixtures that are bright, colorful and lively. An interactive element would be ideal. LED tiles that illuminate or make sounds when stepped on, or turtle type light fixtures that spread patterns of light across the ground are possibilities to consider.

This is really the central destination place for the campus. It is very much worth a creative design effort to develop concepts for lighting will delight visitors.

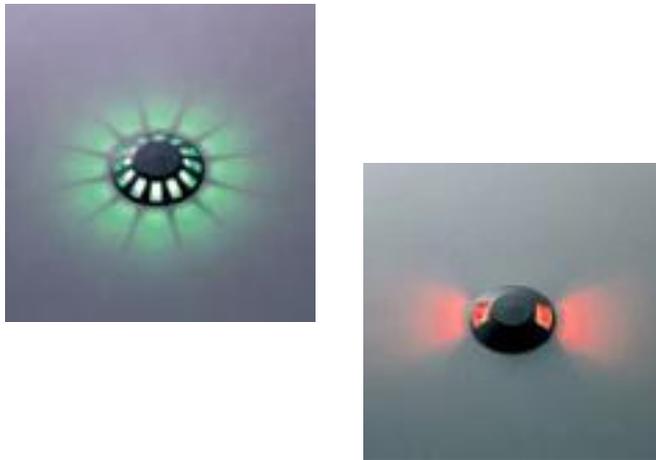


Figure 18: Examples of semi-recessed LED fixtures with light patterns.

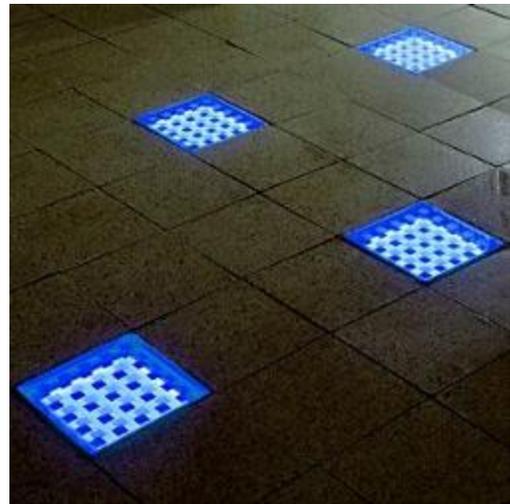


Figure 19: Example of recessed LED tiles.

Active low-level lighting at the International Fountain Plaza meets objectives:

<i>Wayfinding:</i>	<i>Color and movement will draw visitors' attention as they approach.</i>
<i>Safety & Security:</i>	<i>Added light in the area will increase comfort level.</i>
<i>Aesthetics:</i>	<i>Playful lighting will enhance the festive atmosphere.</i>
<i>Environment:</i>	<i>Using energy effective fixtures will minimize energy use.</i>
	<i>Using low-brightness fixtures with color will minimize light spill.</i>

Children's Theater Entrance

All rules must have exceptions, and a place where whimsy and imagination are encouraged is certainly the place to consider that. Along the walkway on the north side of the Children's Theatre there are six poles with banners that are not illuminated. Adding light fixtures to these poles and using the banners to light the pedestrian path with reflected light will create a special environment for the entry to the Children's Theatre. Each banner would require two fixtures, one per side, mounted above each banner. Care must be taken to minimize glare while providing sufficient light for circulation. If that cannot be accomplished, then supplementary pedestrian pole fixtures will have to be incorporated. However, this technique will be most effective if supplementary poles are not interfering with the visibility of the banners.

Using this technique only at the Children's Theater will enhance its special character and reinforce its theatrical nature.

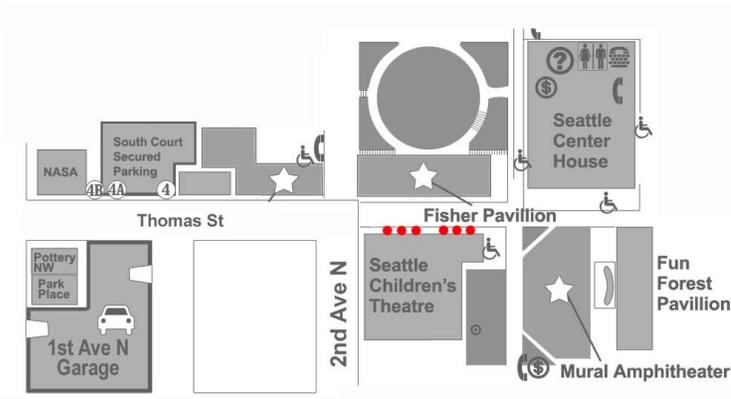


Figure 20, above: Partial Seattle Center map showing locations of currently installed banners to the North of the Children's Theater.

Figure 21, right: Illuminated banner affect.



<i>Banner lighting in front of the Children's Theatre meets objectives:</i>	
<i>Wayfinding:</i>	<i>Indicates the area is a unique destination while maintaining light levels. Connection can be made to adjacent Thomas/3rd campus entry.</i>
<i>Safety & Security:</i>	<i>Maintains good visibility and enhances identification and comfort level.</i>
<i>Aesthetics:</i>	<i>Establish a unique character for the Children's Theatre entrance.</i>
<i>Environment:</i>	<i>Use energy effective sources and design techniques to maximize impact.</i>

Special Structures

The Mural Amphitheater is often a lively place in daylight, and certainly when music is being presented. It could become a place for evening picnics and play if the now-defunct lighting on the mural were replaced. With sufficient light projected onto the mural, reflected light would provide a soft ambient light during evening hours that would be very pleasant to sit near. The existing fixtures need to be removed, and replaced with wet location uplights. These could be either linear fluorescent as the previous source was, or ceramic metal halide. Inspection of the existing electrical feeds and service will be required, and some alterations may be necessary to the concrete wall in which the existing fixtures are located.



Figure 22, left: Rendering of illuminated mural. Fixture 23, above: Example of a linear fluorescent wall wash fixture for illuminating mural.

The Center House is a much-loved structure that actually contains some quite nice Moderne style detailing on the north and south facades. Accenting this detailing and adding circulation light will provide the building with the same presence at night as it has in the daytime. This will be most effectively accomplished with selective illumination of details rather than flood-lighting the entire façade. Both the north and south facades could benefit from similar treatments.

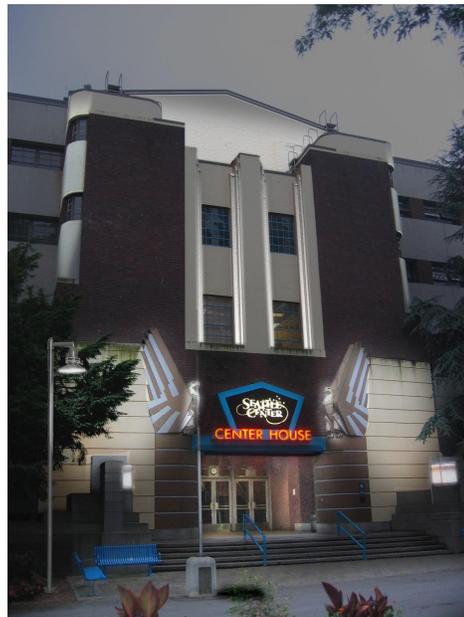


Figure 24: A potential version of the re-lighting of the north façade of the Center House.

<i>Illuminating special structures meets objectives:</i>	
<i>Wayfinding:</i>	<i>Landmarks create visual cues to aid orientation around site.</i>
<i>Safety & Security:</i>	<i>Better visibility of pedestrians enhances identification and comfort level.</i>
<i>Aesthetics:</i>	<i>Establish a sense of place with lighting unique to a structure.</i>
<i>Environment:</i>	<i>Use energy effective sources and design techniques to maximize impact.</i>

The Theatre District

The north edge of the Seattle Center has developed into a real theater district. Although there is variety in the architecture of the buildings, the lighting can unify the image and create a statement about the theatrical content at the same time. The north façade of Pacific Northwest Ballet is a very good example of a relatively simple lighting layout that works with the architecture and presents the building and its arcade as a public space that is welcoming. The downlights provide both light on the walking surface, and have wide distribution so relatively even light washes the wall. The north facade of Mercer Arena has the potential to present the same image with relatively minor changes. This change would make this multi-block experience seem more like the edge of a unified facility, a proscenium around the stage of the Kreielsheimer Promenade.



Figure 25: Lighting under the Pacific Northwest Ballet's canopy creates a welcoming environment.



Figure 26: View of North façade of Pacific Northwest Ballet from across Mercer Street.

Unified lighting of Mercer Street facades meets objectives:

<i>Wayfinding:</i>	<i>Uniformity of surround will make entry point more obvious in contrast.</i>
<i>Safety & Security:</i>	<i>Better visibility of pedestrians enhances identification and comfort level.</i>
<i>Aesthetics:</i>	<i>Establish a uniform campus edge for an improved sense of arrival.</i>
<i>Environment:</i>	<i>Use energy effective sources and design techniques to maximize impact.</i>

PUBLIC ART

Four sculptures located within the expanse of the Broad Street Green are in need of appropriate lighting that will improve their visibility at night and make the public's experience of them more interesting. Accomplishing this would greatly improve the impression that this area is really part of the Seattle Center. Its current dark expanse is rather forbidding and misses a great opportunity to create a lively public face for the campus.

The lighting of sculptures is a unique design task that is best accomplished with a mock-up process. Materials like bronze can take light and reflect it in a variety of ways depending on the surface texture. A mock-up will reveal exactly what different light sources and directions will do. As with all art work, it is important to use the light to enhance the work and reveal the artist's intent rather than subvert it. Therefore, if the artist is available, a consultation is a good idea.

Some possibilities to consider for the four sculptures include:

- Black Lightning: Surface, ground-mounted ceramic metal halide bullet fixtures located in adjacent planter
- Olympic Iliad: Ground recessed ceramic metal halide uplights near sculpture columns
- Moon Gates: Ground recessed point-source of linear LED accent fixtures. Visitor interaction with the sculpture makes metal halide a less ideal source because of heat.
- Moses: Surface, ground mounted ceramic metal halide bullet fixtures. It might be most effective to light the surrounding landscape elements since the sculpture is painted black and will not reflect light well.

The whale sculpture adjacent to the International Fountain is already illuminated by nearby pole-mounted floodlights. The focus and beam spread of those floodlights is in need of adjustment. It is likely that the current equipment is satisfactory and only requires re-lamping and re-aiming. It is also possible that the addition of another fixture to the pole would improve the appearance of the sculpture. The sculpture could take on a more dramatic appearance with improved focusing. Here, again, a mock-up would be a great help in determining the best design solution.

Enhanced lighting for artworks meets objectives:

<i>Wayfinding:</i>	<i>Visible markers provide orientation cues to pedestrians.</i>
<i>Safety & Security:</i>	<i>Lighting of large objects enhances people's comfort level after dark.</i>
<i>Aesthetics:</i>	<i>Expresses commitment to public art and enhances appearance.</i>
<i>Environment:</i>	<i>Use energy effective sources and design techniques to maximize impact.</i>



Figure 27: Iliad Sculpture.

ENVIRONMENTAL STEWARDSHIP

The goal of achieving and demonstrating environmental stewardship is an important one for a public facility like Seattle Center. However, from a lighting point of view, it is also quite a difficult for a public entertainment venue to practice environmental stewardship because the need for novelty to attract visitors can sometimes conflict with both energy and dark skies goals. To achieve as much as possible, a balance must be struck based on clearly defined priorities.

To limit energy use by lighting while still creating an exciting and complex visual environment, the concept of energy effective design must be used. This method of lighting an environment seeks to use the principles of visual perception to illuminate surfaces and objects that have the greatest impact on the perception of brightness or that create positive contrast for accents that enhance rather than degrade visual acuity. Much of the discussion in the previous sections is informed by this concept. Careful distribution of light with appropriate levels of uniformity allows the designer to use minimum light levels. Good color quality light is also an important ingredient. Vertical surfaces, when they are available, are often the most effective element to light because that is what is most evident to humans eyes as we walk around. However, each individual scene must be evaluated on its own.

Energy efficient light sources are important as well. Because the high color quality of ceramic metal halide provides good visibility at low light levels, it is the best current technology to use outdoors.

“Dark Skies” has become a frequent subject in lighting discussions. It refers to the admirable goal of limiting or even eliminating light spill into the night sky so that future generations will be able to experience the kind of sky views that even now are only available outside urban areas. This is where much of the balancing must be done. The kind of wayfinding principles discussed earlier often conflict with this goal. The need for relatively high levels of vertical illuminance required for facial recognition put the requirement for perceived safety in opposition to limiting light spill above ninety degrees. While energy effective design methods can often be applied to these needs as well, there are still areas and times where uplight is both appropriate and desirable. Using low wattage fixtures and scheduling them off after closing hours can make uplighting a relatively guilt-free lighting application.



FIGURE 32: Satellite image of the United States at night. Small amounts of unnecessary light cast into the night sky add together to create an enormous amount of sky glow.

In general, Seattle Center has been heading in an appropriate direction in regards to installing lighting systems while keeping the environment in mind. Most sources on site are metal halide with a cutoff distribution. The pedestrian pole top fixtures have a small amount of “glowy” element to them that aids in wayfinding, so it is a positive thing in this situation. The most recent lighting additions to the site appear to all be metal halide. Many fixtures on site are non-cutoff style. These fixtures, mainly wall packs, emit much of their light upward into the night sky, rather than down, where the light is needed most. When retrofitting these types of fixtures, care should be taken to use cut off style fixtures.

When looking at Seattle Center’s long term plans for lighting upgrades and renovations, LED sources should be considered. Presently, the color consistency between LED lamps is not as reliable as other sources and the output in lumens per watt is not yet equal to metal halide. Also, since this technology is very new, the published lamp life of LEDs is under much scrutiny. However, the advances in LED technology over the past five years have advanced exponentially, and their use in architectural lighting design has become widespread. LED technology may become the premier lighting source of the future and keeping current on the issues and advances surrounding this technology will help the Center to make educated lighting choices in the future.

MISCELLANEOUS / MAINTENANCE

Utility fixtures that illuminate non-public entries along pedestrian pathways should be minimized in number and appearance. Overly bright wall-pack type fixtures draw the eye and make everything around them appear darker in comparison. Rather than the visitor being guided toward a pleasant experience and well-illuminated pathways, these fixtures quickly break the mood. Replacement of these fixtures throughout the site will improve the visual experience and may save energy as well. Many of them are high pressure sodium, and most of them are higher wattage than they need to be.

The appropriate fixture for this application is a low wattage metal halide full-cutoff fixture with a flat lens on the bottom and a distribution that pushes the light away from the wall to prevent an overly bright splash of reflected light. A maximum 39 watt ceramic metal halide lamp should be used. There are now 20 watt ceramic metal halide lamps available, and as more fixtures become available for this lamp, it will become the preferred option for this application.



Figure 28: Examples of full-cutoff style wall pack fixtures.

Fixture Type M1

DESCRIPTION:

Single-headed metal halide pedestrian scale lamp-post fixture, nominal 17" high x 24" diameter. Die-cast aluminum ballast housing. Midsection to contain with white acrylic lens surrounded by solid cast aluminum rings suspended by stainless steel spacers. Heavy-gauge spun-aluminum bottom shade with straight, wide shape. Die-cast aluminum door frame assembly with hinge. Impact-resistant 1/8" glass lens continuously sealed and gasketed watertight to door frame. Specular reflector panels with Type III distribution rigidly mounted inside aluminum housing tray. Reflector and ballast modules to have tool-less removal and quick disconnect wiring plugs. Reflector module to be field rotatable in 90-degree increments. Stainless steel hardware. Electronic ballast. Provide straight mounting arm, nominal 24" long. 10' tall, round, straight, aluminum pole. Manufacturer's standard black finish on fixture housing, mounting arm and pole. Provide pole base cover in black finish as specified on electrical plans. Entire assembly UL listed for wet locations.

MANUFACTURERS:

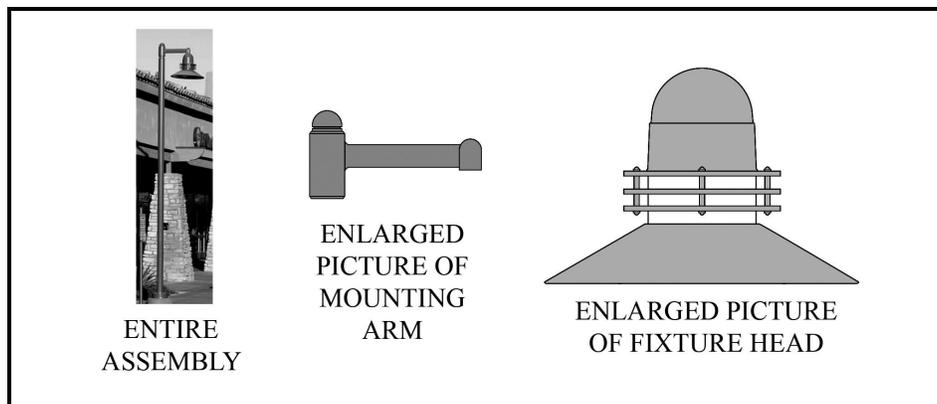
InVue EMM - VA6109 Series; Architectural Area Lighting UCM - SLA20 Series

**LAMP:
WATTS:**

One CMH70/U/830/MED
82

COMMENTS:

Provide complete with above grade concrete pole base and below grade concrete footing as shown on electrical drawings.



Fixture drawing is an illustration of one acceptable manufacturer

Fixture Types M2 and M2A

DESCRIPTION:

Double-headed metal halide pedestrian scale lamp-post fixture, nominal 15" high x 23" diameter. Die-cast aluminum top housing. Midsection to contain spun aluminum socket cover surrounded by two solid cast aluminum rings suspended by stainless steel connecting struts. Heavy-gauge spun-aluminum bottom shade with inside surfaces painted white. Clear, U.V. stabilized polycarbonate lamp enclosure. Stainless steel hardware. Electronic ballast. Straight mounting arm, nominal 23" long. 10' tall, round, straight, aluminum pole. Provide black finish on fixture housing, mounting arm and pole. Provide pole base cover with black finish as specified on electrical plans. Entire assembly UL listed for wet locations.

MANUFACTURERS:

Louis Poulsen Nyhaven Series, no substitutions.

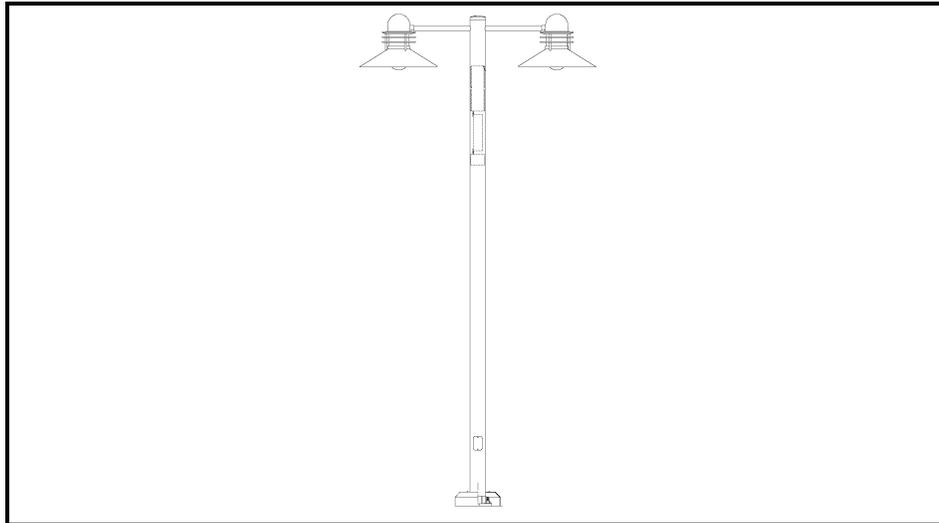
**LAMP:
WATTS:**

Two CMH70/U/830/MED
164

COMMENTS:

Fixture Type M2A is similar to Type M2 except provide GFCI duplex receptacle with weather-proof cover on outside of pole. Locate center of receptacle 6" below top of pole.

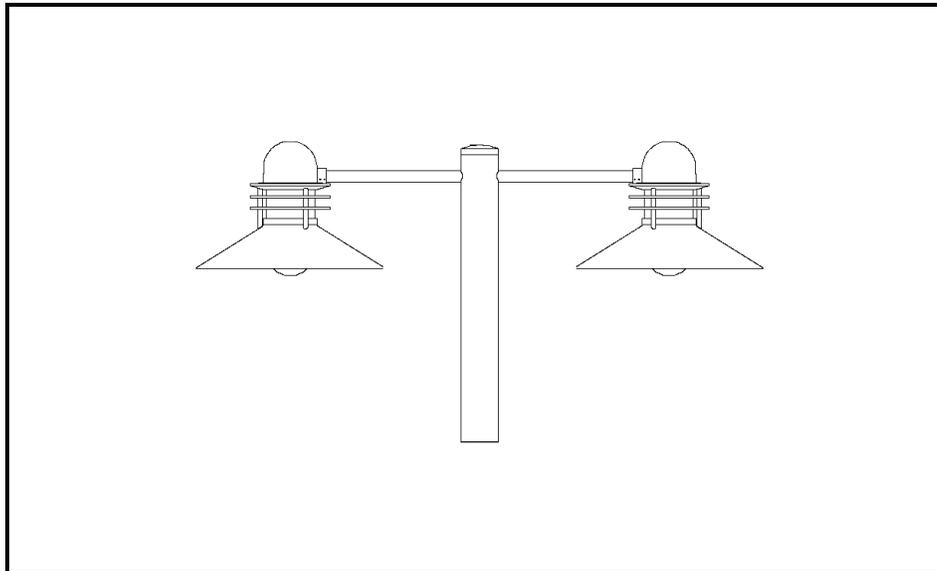
Provide complete with above grade concrete pole base and below grade concrete footing as shown on electrical drawings.



Fixture drawing is an illustration of the acceptable manufacturer

Fixture Type M3

- DESCRIPTION:** Existing double-headed metal halide pedestrian scale lamp-post fixture. Remove fixture head assembly from existing pole and refurbish. Clean fixture housing, inside and out, paint any chipped areas of fixture housing, clean lens and replace lamps.
- MANUFACTURERS:** Louis Poulsen Nyhaven Series, existing fixture.
- LAMP:** Two CMH70/U/830/MED
WATTS: 164
- COMMENTS:** After refurbishing, fixture Type M3 will mount to an existing pole.



Fixture drawing is an illustration of the acceptable manufacturer

Fixture Type M4

DESCRIPTION:

Double-headed metal halide pedestrian scale lamp-post fixture, nominal 15" high x 23" diameter. Die-cast aluminum top housing. Midsection to contain spun aluminum socket cover surrounded by two solid cast aluminum rings suspended by stainless steel connecting struts. Heavy-gauge spun-aluminum bottom shade with inside surfaces painted white. Clear, U.V. stabilized polycarbonate lamp enclosure. Stainless steel hardware. Electronic ballast. Provide black finish on fixture housing and mounting arm. Entire assembly UL listed for wet locations.

MANUFACTURERS:

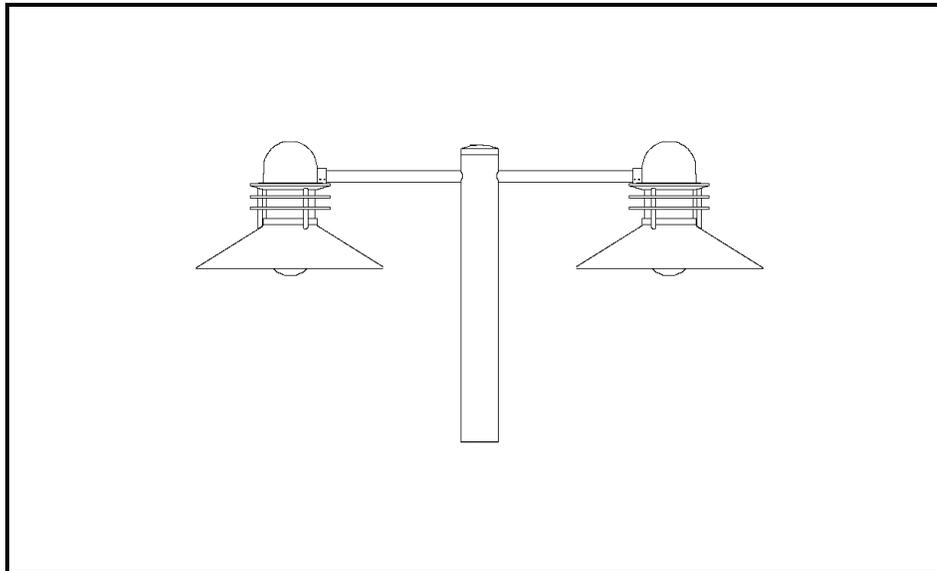
Louis Poulsen Nyhaven Series, no substitutions.

**LAMP:
WATTS:**

Two CMH70/U/830/MED
164

COMMENTS:

Fixture Type M4 mounts to an existing pole. Contractor to verify Type M4 post-top arm assembly is ordered with correct diameter pole-top fitter.



Fixture drawing is an illustration of the acceptable manufacturer

Fixture Type M5

DESCRIPTION:	Wall mounted metal halide sconce. Fixture to be determined.
MANUFACTURERS:	To be determined.
LAMP:	Metal Halide
WATTS:	44 Max
COMMENTS:	This fixture will replace existing fixtures under canopies one for one.

To Be Determined

Fixture drawing is an illustration of one acceptable manufacturer

CANDELA
Architectural Lighting Consultants

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Seattle, WA 98101
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Fax: 206 / 667-0512



EXHIBITION HALL RAMP REPLACEMENT

This project will provide a new ADA compliant ramp that will lead from the sidewalk along the south side of Mercer Street to the Exhibition Hall below. The work includes demolition of the existing east ramp and construction of temporary shoring on the east side of the site. The work includes storm drainage, curbs, cast-in-place concrete ramp and walls, steel handrails and guardrails, and new outdoor light fixtures. The ramp will wind through a new landscaped area installed by Seattle Center gardeners.



OWNER:
Seattle Center

ARCHITECT:
DKA Architecture

STRUCTURAL ENGINEER:
Swenson Say Faget

CIVIL ENGINEER:
SvR Design

GENERAL CONTRACTOR:

SUBCONTRACTORS:

PROJECT FUNDING:
Cumulative Reserve Subfund - REET 1

MEDIA CONTACT:
Deborah Daoust, Seattle Center
206-769-0259

CONTRACTOR EMERGENCY:
After hours contact:



THEATER COMMONS and DONNELLY GARDENS

PROJECT DESCRIPTION: This early project of the Seattle Center Century 21 Master Plan converts the vacated 2nd Ave N Right of Way, between Mercer St and August Wilson Way, and adjacent parking and lawn into a welcoming entry to the Intiman Theatre, Seattle Repertory Theatre and Seattle Center campus. The new one-acre open space includes landscaping features and the sustainable Donnelly Gardens, with native and adaptive species, bio-retention features and new street trees. Hardscape features include an entry court for theater patron drop-off at the north, a terraced plaza at the south and a pedestrian-friendly 2nd Ave N corridor for service vehicles and festival load-in. The project includes limited demolition of building entries to facilitate construction of new entrance canopies, excavation, tree removal, grading and trenching; utility relocation; concrete retaining walls, stairs, and hardscape; soil preparation and tree replacement; and site power and lighting.

OWNER:
Seattle Center

PARTNERS:
Intiman Theatre
Seattle Repertory Theatre

LANDSCAPE ARCHITECT:
Gustafson Guthrie Nichol Ltd

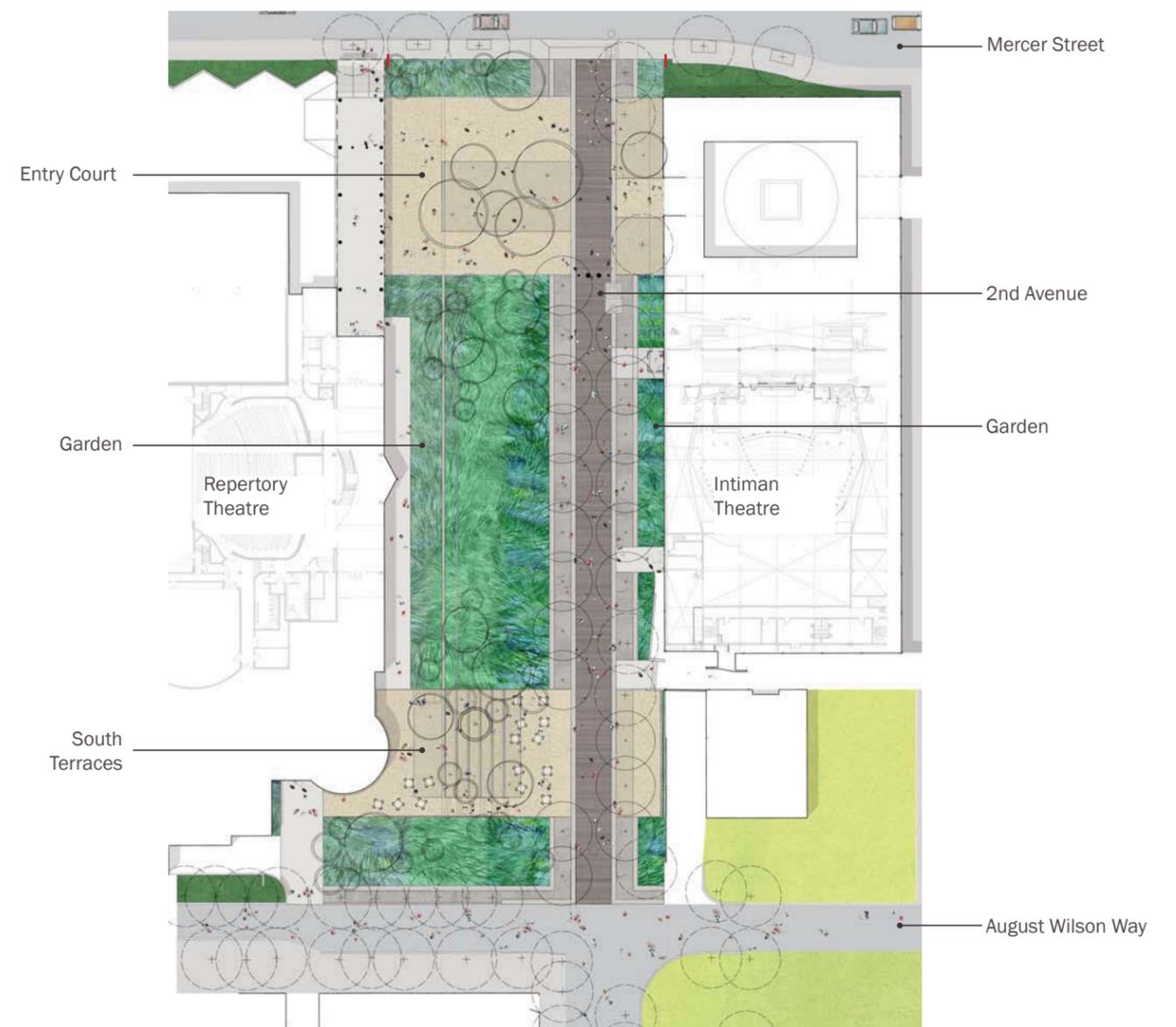
CIVIL AND STRUCTURAL ENGINEER:
Magnusson Klemencic Associates

ARCHITECT:
Weinstein A-U

**ELECTRICAL ENGINEER &
LIGHTING DESIGNER:**
AEI/Pivotal Lighting Design

GENERAL CONTRACTOR:

SUBCONTRACTORS:



PROJECT FUNDING:
This project is a public private partnership combining City of Seattle capital funds and private grants from the Kreielsheimer Foundation.

MEDIA CONTACT:
Deborah Daoust, Seattle Center
206.386.1974