

Southwest Montgomery Green Street

Connecting the West Hills with the Willamette River

October 2009

Prepared by:

[nev-ū-non]
Nevue Ngan Associates

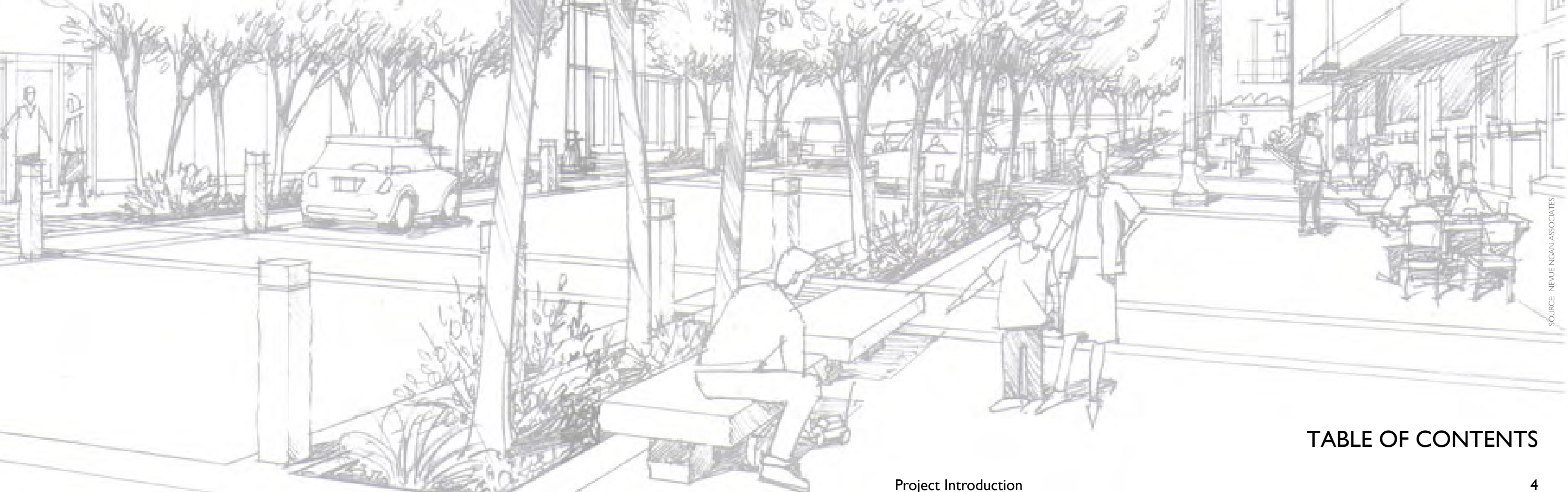
For:



ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

*Investing in
Portland's Future*

PDC
PORTLAND
DEVELOPMENT
COMMISSION



SOURCE: NEVUE NGAN ASSOCIATES

TABLE OF CONTENTS

Project Committee

- Portland Development Commission*
- Lisa Abuaf**
- Portland Bureau of Environmental Services*
- Emily Hauth**
- Portland State University*
- Ernest Tipton**
- Gerding Edlen Development*
- Damin Tarlow**

Project Consultants

- Nevue Ngan Associates*
- Ben Ngan**, urban design and landscape architecture
- Kevin Robert Perry, ASLA**, urban design and landscape architecture
- David Goodyke**, urban design and landscape architecture
- Mark Sanborn**, illustrator

- Sisul Engineering*
- Doug Johnson**, Civil Engineering
- Adriana Kovacevic**, Civil Engineering

Project Introduction	4
Project Site Context	5
SW Montgomery Street Conceptual Site Plan	6
Elements of the SW Montgomery Green Street	
Water	8
Mobility	10
Creating Spaces and Preserving Places	11
Balancing Parking	12
Planting Options	14
Paving Options	15
Permanent Furnishings	16
Flexible Furnishings	17
Green Infrastructure	18
Entry Features	19
SW Montgomery Street Illustrated Plans	
SW 11th - SW 10th Avenue	20
SW 10th - SW 9th Avenue	22
SW 9th - SW Park Avenue	24
SW Park - SW Broadway	26
SW Broadway - SW 6th Avenue	28
Urban Center Plaza	30
SW 5th - SW 4th Avenue	32
SW 4th - SW 3rd Avenue	34
Pettygrove Park	36
Continued Stewardship	38
Next Steps	39
Appendices	
Appendix A - Stormwater Allocation	40
Appendix B - Stormwater Performance Calculations	48

PROJECT INTRODUCTION



PROJECT STATEMENT

Through a collaborative effort, the Portland Development Commission (PDC), Bureau of Environmental Services (BES) Portland State University (PSU), and Gerding Edlen Development, Inc. are pursuing a multi-block plan that incorporates a variety of sustainable stormwater management strategies throughout the emerging neighborhood at the south end of Portland's downtown. This plan effort is known as the Montgomery Green Street Blocks. The plan area incorporates the right-of-way from SW 11th Avenue east to Pettygrove Park via SW Montgomery Street. The Central City University District Plan emphasizes the development of this neighborhood south of SW Market Street and north of I-405 as an area where University uses mesh with City of Portland goals and designates SW Montgomery Street as a key pedestrian corridor. Simultaneous multi-block development along SW Montgomery Street will dramatically build upon the long-term efforts advanced by the City, PSU, private developers, and businesses over the past four decades. The strategic convergence of these elements will successfully activate the neighborhood, enhance the pedestrian experience, foster sustainability, and continue to build a community culture. This concept design document provides only a "vision" of what can occur along SW Montgomery Street. As the project continues to move forward towards implementation, further study of the design elements will be needed including approval from the Design Commission and the City Engineer.

KEY PROJECT MILESTONES

- 1988** The Portland Central City Plan identified SW Montgomery Street as a pedestrian walkway, calling for improvements for pedestrians and bicyclists, including improvements in paving, street trees, street furniture, street crossing signalization, sidewalk widening, and street closure, where appropriate.
- Jan 2006** PDC, City of Portland, PSU, and Gerding Edlen Development hold an initial design workshop that sets the project's larger themes and identifies SW Montgomery Street as a significant downtown green street project.
- April 2007** City Council approved a resolution in April 2007 to promote and incorporate the use of green street facilities in public and private development.
- June 2008** The project selects Nevue Ngan Associates (NNA) design team to develop the SW Montgomery Green Street Conceptual Design.
- Nov 2008** PDC, City of Portland, PSU, and Gerding Edlen Development hold the second design workshop and public open house. The NNA design team introduces the first corridor-wide design options.
- April 2009** The Oregon Sustainability Center (OSC) begins an intensive design process including integration of the SW Montgomery Green Street right-of-way improvements with the proposed OSC project site.
- August 2009** The SW Montgomery Green Street Conceptual Plan is completed including the Design Development Drawings for the block between SW 4th and SW 5th Avenue (OSC site).
- Sept 2009** The first of nine blocks of the SW Montgomery Green Street is built at the plaza space between Smith Memorial Student Union and Cramer Hall on the Portland State University campus.

PROJECT SITE CONTEXT



CONCEPTUAL SITE PLAN

SW 11th to SW 10th Avenue

SW 10th to SW 9th Avenue

South Park Blocks

SW 9th Avenue to SW Broadway

SW Broadway to SW 6th Avenue



SMALL STREET...BIG IDEAS

The Southwest Montgomery Green Street aims to be Portland's boldest green street project to date. The 9-block study area, located from SW 11th Avenue to SW 2nd Avenue, demonstrates how in even the most urban conditions, downtown streets can be retrofitted not only to fully manage stormwater runoff but to create and integrate vibrant pedestrian spaces.

The conceptual site plan reflects input gathered through multiple design workshops and open houses. Most, if not all, of these initial ideas are integrated in the final concept plan, including:

- Incorporating the vision to connect the West Hills with the Willamette River along SW Montgomery Street.
- Emphasizing the concept of expansion/contraction through episodic spaces as one moves through the corridor.
- Visual continuity, especially from the West Hills into the city center.
- Defining the Urban Center Plaza as a hub or bull's eye of activity with other activities radiating from it.
- Developing water as a theme or recurring physical element that is brought to the surface.

- Emphasizing SW Montgomery Street as a highly pedestrian-oriented and continuous streetscape that responds to the unique conditions found at each block throughout the corridor.

- Incorporating Lawrence Halprin's Portland Open Space Sequence concept of connecting the urban fabric with strong themes using water, landscaping, art and movement.

The following pages provide a detailed block-by-block conceptual design for the SW Montgomery Green Street starting at SW 11th Avenue and ending at Pettygrove Park. Within these design concepts are several new and innovative ideas for Portland streets. As one moves through the concept plan corridor block-by-block, take note of the general project goals and specific green street design goals identified on the opposite page.

In addition to the conceptual design, Appendix A illustrates, for each block, the overall stormwater catchment areas, stormwater planter sizes, general sizing criteria, and whether the green street elements have additional capacity to accept stormwater from future redevelopment activity. Appendix B provides a more engineered analysis of the stormwater performance along the corridor.

CONCEPTUAL SITE PLAN

Urban Center Plaza

SW 5th Avenue to SW 4th Avenue

SW 4th Avenue to SW 3rd Avenue

Pettygrove Park



SOURCE: NEVUE NGAN ASSOCIATES

GENERAL PROJECT GOALS

- Enhance Portland's current reputation as an incubator for collaborative and innovative sustainable design and development.
- Develop a model for sustainable practices by incorporating sustainable stormwater management approaches into the site design and celebrating all the elements of a vibrant urban environment.
- Create a primary means of connectivity among amenities such as the University, fountains, parks, auditoriums, museums, theaters, and shopping; within walking distance of many central city business district jobs, also connect to the greater metropolitan area via the streetcar, future light rail, and numerous transit mall bus lines.
- Serve as an environmental research stewardship opportunity for PSU students and the surrounding community. Foster sustainability as a relationship between academic, residential, and business communities.
- Expand the Urban Center Plaza's success as an active city plaza and let that success extend throughout the entire project corridor.
- Use the SW Montgomery Green Street to connect the overall area to an eco-district.
- Explore whether an eco-district designation affects circulation connections.

SPECIFIC GREEN STREET DESIGN GOALS

- Create wider sidewalks and "curbless" street conditions that allow for various site furnishings adjacent to ground floor retail areas. Blocks that carry auto traffic should have active retail with one lane of traffic and one lane of parking with the option to close for pedestrian-only special events.
- Introduce a visually continuous landscaped stormwater planter that acts as a "stormwater spine" or common thread through multiple blocks and creates a "green" east/west connection through downtown and the PSU district.
- Integrate right-of-way green street design with adjacent developments including the planned Oregon Sustainability Center. Explore the potential of creating shared stormwater planters to accept both street and building rooftop runoff.
- Introduce the use of green roof awnings and green walls throughout new building development.
- Integrate green street elements, while honoring the character found particularly at the South Park Blocks, Urban Center Plaza, and Pettygrove Park.

ELEMENTS: WATER

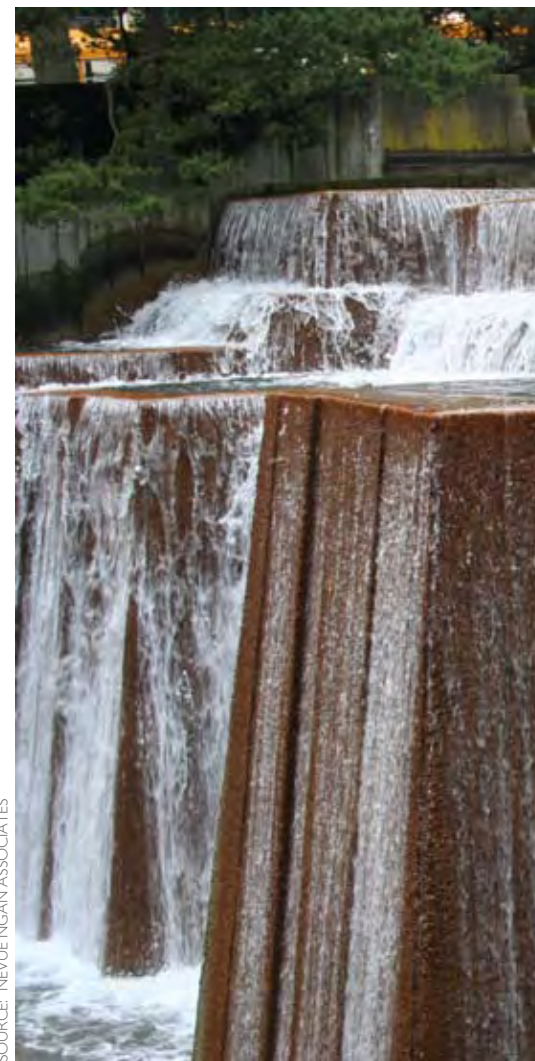


SOURCE: NEVUE NGAN ASSOCIATES

Fountains

Water provides a unifying element along the SW Montgomery Green Street corridor. A string of existing fountains along SW Montgomery Street help create an identity for the entire district. These water features provide active water nodes; intermittent and discrete, iconic and legible elements to gather around and enjoy. This concept plan proposes a new fountain at the intersection of SW 10th Street and SW Montgomery Avenue to introduce an active water node within this important transitional space. Beyond this, a small contemplative sculpture and pool sits within the rhythm of landscape features where the South Park Blocks intersect SW Montgomery Street. Three blocks east in the bustling hardscape of the Urban Center Plaza, three linear stone rills and pools activate extensive stairs and ramps. The Dreamer reclines at the east end of the corridor; a large bronze sculpture above a large pool of water within the serene Pettygrove Park. This node marks the intersection of the Halprin Open Space Sequence of fountains and the SW Montgomery Green Street.

The stormwater spine connects these nodes of water with passive water channels to convey stormwater. These may occasionally be activated and dramatic during intense rain events, but most of the time they provide an implied water connection through their form, placement in the landscape and planting. These long continuous channels will symbolically link the nodes together and connect the West hills with the Willamette River.



SOURCE: NEVUE NGAN ASSOCIATES

The dynamic Ira Keller Fountain.



SOURCE: NEVUE NGAN ASSOCIATES

Only two blocks away from the Urban Plaza, the reflecting pool at Pettygrove Park is a place of quiet and tranquility.



SOURCE: WHEREIN.PDX.COM

Often unnoticed, the Source Fountain marks the beginning of Halprin's vision.



SOURCE: NEVUE NGAN ASSOCIATES

The "Farewell to Orpheus" fountain at the Park Blocks is a popular seating refuge for PSU students.

Stormwater

The creation of a green street entails changing perspectives of how streets will be used. A green street reexamines the auto-dominated public realm. It assumes new roles by providing spaces for gathering or resting, room for outdoor business expansion, wildlife habitat, flexible space for events, fostering of the urban forest and, of course, capturing and treating stormwater. In our rainy climate, this last role is particularly important and a significant amount of space is dedicated to stormwater treatment along the SW Montgomery corridor. While still a fairly new practice, the construction of functional urban rain gardens is fairly well understood, yet a wide range of opportunities exist to allow these planted areas to surpass their utilitarian functions and serve the street as a placemaking amenity. The SW Montgomery Green Street looks to a diverse range of precedents and analogs for inspiration. Precedents come from as far as Europe to examples from as close as here in Portland where natural streams and rivers provide the ultimate inspiration. The stormwater facilities will incorporate seating and bridges for pedestrians and will beautify the street with verdant planting, the revelation and celebration of water, and the careful use of materials for check dams, bridges and grating. These elements and ideas will be synthesized and developed to match site opportunities along SW Montgomery.



The stormwater planters along SW Montgomery and Epler Hall recycles rainwater back into the building for reuse.



SOURCE: KEVIN ROBERT PERRY, CITY OF PORTLAND

The SW 12th Avenue Green Street (2005) uses a series of stormwater planters and is located immediately adjacent to SW Montgomery Street.



SOURCE: JEFF BATES

Surface conveyance of stormwater is a primary goal for the SW Montgomery Green Street.



SOURCE: DENISE FONG

A bold example of a stormwater channel in Europe.



SOURCE: JOHN HARVEY PHOTO.COM

A forest stream provides the design template for the corridor.



SOURCE: NEVUE NGAN ASSOCIATES

A water channel meanders through a downtown street in Aspen, Colorado.



SOURCE: NEVUE NGAN ASSOCIATES

This is a conventional fountain, but it could just as easily be a stormwater conveyance detail for the SW Montgomery Green Street.



SOURCE: KEVIN ROBERT PERRY, CITY OF PORTLAND

Subtle design details highlight the beauty of stormwater management.

ELEMENTS: MOBILITY

The SW Montgomery Green Street promotes the sharing of the corridor for a wide and varied set of uses. This linear space will provide space to grow trees, treat stormwater, and move through on foot, bike, street car and by vehicle. Careful design choices enable the space to be shared comfortably and safely by this diverse set of users. A “curbless” street profile and generous pedestrian spaces allow walkers to move through café tables, benches and planters. Bollards limit the driving and parking surface and allow pedestrians to cross mid-block or bikes to pull off and park easily. This type of activity will require drivers to slow down and move cautiously along the block. The street car tracks are flush with the street so other users can move across them easily. Even the stormwater planters are frequently bridged to enable the filtering of people across the block. Green street amenities include covered or clustered bike parking, and “Juice Points” near parking spaces to enable the plug-in charging of electric cars.



Wayfinding for pedestrians in downtown Philadelphia.



Separating bikes and pedestrians.



Pedestrians, habitat and water share a corridor.



Space shared by cars and pedestrians.



Separated bike travel.



Planting and pedestrian-scaled lights along a multi-modal corridor.

ELEMENTS: CREATING SPACES AND PRESERVING PLACES



SOURCE: NEVUE NIGAN ASSOCIATES

A “festival street” in Portland’s Chinatown allows the street to be closed off for special events.



SOURCE: WWW.FLICKR.COM/HUMANDESIGN

A wide pedestrian-only street allows for ample walking space, significant landscaping, and the ability to support cafe seating adjacent to businesses.

The character of SW Montgomery Street is eclectic by nature. The corridor links diverse spaces from the verdant, contemplative Pettygrove Park or Park Blocks and cutting-edge sustainable design surrounding the Oregon Sustainability Center, to large, paved urban plazas and mixed-use city blocks with all forms of transportation. The SW Montgomery Green Street seeks to preserve or embellish the spaces along the corridor and provide a connection to all of the amenities. Rather than prescribe one design solution for all the blocks, the Green Street design responds to, accommodates and enhances the places that already exist. Pedestrian spaces will be enlarged and enhanced with permanent elements like the curbsless street profile and the continuous stormwater spine. Elements like planters, benches, tables and chairs will occupy parts of the parking zone to encourage the development of eclectic spaces.



SOURCE: GRANDALL ARAMBULA

The streetcar moves through the Urban Center Plaza.



SOURCE: WWW.FLICKR.COM/STOVALLB

Pettygrove Park has a distinguished and quiet character.



SOURCE: WWW.URBANLOGIC.COM

Planters create a subtle boundary between through space and seating.

ELEMENTS: BALANCING PARKING

Parking along the Montgomery Green street will be fully integrated into the streetscape. The use of a more holistic approach has led to a street design where the right-of-way becomes a more flexible space responding to its users and to special circumstances. By creating a driving and parking zone for cars at the same grade as the sidewalk, an opportunity exists to occupy some or all of that space for other uses. For instance, a street festival could close the street to cars and the space between buildings would act as a large plaza for a day or a week. Alternatively, moveable furnishings placed within the parking zone can replace cars and create a new place for cafe seating. Another option might replace a parking space with bike racks, enabling up to 12 bikes to use a space otherwise occupied by a single car. Additionally, many new bike racks and bike parking areas reinforce the pedestrian and bike use of the corridor and diminish the dominant use of the spaces by vehicles. The businesses along the street can participate in the street's shape and function. Limited driving and parking options for cars, new spaces for pedestrian-supported businesses, expanded pedestrian areas and new planted areas with trees will all combine to develop this street corridor into a welcoming environment for bikes and pedestrians. The chart on the opposite page illustrates how bike and vehicular parking are accommodated along the SW Montgomery Green Street.



Bike racks replace on-street car parking.



Cafe seating within the parking zone defined with planters.



Trees within the parking zone define parking spaces.



Bike parking amenities include racks and covered spaces.



"Juice Point" or electric car charging station.



Seating area within the parking zone defined with planters.

ELEMENTS: BALANCING PARKING

Block	Bicycle Parking			Vehicle Parking			Existing Conditions and Signage
	Existing	Proposed	Change	Existing	Proposed	Change	
Montgomery Street at:							
11th to 10th							
North	0	0	+15	0	0	0	street closed to car traffic street closed to car traffic
South	0	15		0	0		
Total block	0	15		0	0		
10th to 9th							
North	1	11	+13	5	0	-8	90 minute parking, 1 loading space
South	13	16		7	4		
Total block	14	27		12	4		
9th to Park							
North	0	0	0	0	0	0	street closed to car traffic street closed to car traffic
South	0	0		0	0		
Total block	0	0		0	0		
Park to Broadway							
North	5	15	-6	0	0	0	street closed to car traffic street closed to car traffic
South	29	13		0	0		
Total block	34	28		0	0		
Broadway to 6th							
North	2	6	+28	8	0	-19	3 hour parking 5 hour parking
South	15	39		11 motorcycle	0		
Total block	17	45		19	0		
6th to 5th							
North	28	28	0	0	0	0	street closed to car traffic street closed to car traffic
South	0	0		0	0		
Total block	28	28		0	0		
5th to 4th							
North	0	12	+19	6	0	-2	1 hour carpool w/ permit 6 am-10 pm M-F, 1 parking 5 min. only
South	0	7		0	4		
Total block	0	19		6	4		
GRAND TOTAL			+69			-18 Auto -11 Motorcycle	

ELEMENTS: PLANTING OPTIONS

Much of the planted area along the SW Montgomery Green Street occurs within stormwater planters or in tree wells along the roadway. The planting palette is inspired by the pre-settlement forest communities to reflect the connection between the hills and the river. Native trees can shade the street and buildings. Native understory is often well-adapted to bio-retention conditions. Reintroducing native plant species will help attract native wildlife. Using predominately native plants in the stormwater planters provides a connection to larger native ecosystems, however, some ornamental plant species can be used for added visual interest, especially if they have been proven to perform well within stormwater facilities.

The correct selection of plants is an important aspect of stormwater management. An important stormwater reduction strategy is “interception”: the ability of plants to capture and hold rainfall before it hits the ground surface. Native conifers, with their large size and fine texture are highly effective in intercepting stormwater. Other plant groups provide different functions for stormwater treatment such as the uptake of water from the soil. Part of choosing a plant palette for a stormwater facility involves finding plants that will perform well when Portland is receiving its rain, largely in the cooler months and when many plants go dormant. Equally important is choosing plant species that are drought-tolerant and require minimal maintenance. There is still a lot that can be learned in choosing plants for stormwater management. The SW Montgomery Green Street could help in this learning process by acting as a “living laboratory” for plant study. The stormwater facilities along the corridor could be divided into distinct planting types that can be measured and analyzed. To improve the performance of the landscaped stormwater facilities, PSU potentially could provide the monitoring and testing necessary to determine the value of specific plant material for treating stormwater. Some suggested planting types are as follows:

Cool Season Grasses:

Cool Season Grasses start their growth early in the spring and continue growth until the rain and cool weather ends. They go dormant during hot, dry months of summer, but resume growth in the fall when the rain returns.

Examples:

Deschampsia cespitosa
Festuca Idahoensis “Siskyou Blue”
Juncus patens “Elk’s Blue”

Tufted Hairgrass
 Fescue
 Rush



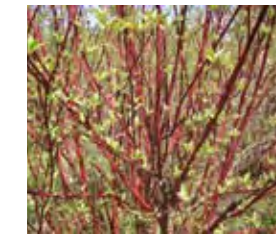
Deciduous Shrubs and Trees

Woody plants that lose their leaves each fall. These plants can provide shade and screening in the summer and openness in the darker, winter months.

Examples:

Cornus sericea
Populus tremuloides
Quercus garryana

Redtwig Dogwood
 Quaking Aspen
 Oregon White Oak



Warm Season Grasses

Warm season grasses break dormancy in mid-spring and grow during the hot summer months. Because of their extensive root system, these plants conserve water and nutrients. These grasses have a low water requirement and remain green and growing during dry conditions.

Examples:

Schizachyrium scoparium
Panicum virgatum ‘Heavy Metal’
Miscanthus sinensis “Gracillimus”

Little Bluestem
 Heavy Metal Switchgrass
 Maiden Grass



Broadleaf Evergreen Shrubs and Trees

Woody plants that retain their leaves each fall. The plants provide a pleasant verdant aesthetic and may transpire stormwater longer than their deciduous counterparts.

Examples:

Arbutus menziesii
Gaultheria Shallon
Vaccinium ovatum

Madrone
 Salal
 Evergreen Huckleberry



Herbs and Forbs

Herbs and Forbs may be annuals, biennials or perennials, but all are defined by the fact they do not form secondary woody growth. These plants all resprout, or regrow from their roots.

Examples:

Iris douglassiana
Polystichum munitum
Liriope sp.

Douglas Iris
 Swordfern
 Lilyturf



Conifers

The fine needles or scales of these evergreens can hold hundreds of gallons of rain, reducing stormwater runoff. These cool season growers are actively uptaking and transpiring water in the cool weather when our region receives the vast majority of its rain.

Examples:

Chamecyparis nootkatensis
Pinus ponderosa
Thuja plicata

Alaskan Yellow Cedar
 Ponderosa Pine
 Western Redcedar



ELEMENTS: PAVING OPTIONS



SOURCE: WWW.PROPERSCALEBLOGSPOT.COM

Boardwalk along Jamison Square in downtown Portland.



SOURCE: WWW.PICASSA.COM/GRANDPA_HOO

Boardwalks can easily accommodate all users of the street and can also support seating.



SOURCE: WWW.URBANLOGIC.COM

Varying paver colors can help define space.



SOURCE: NEVUE NGAN, ASSOCIATES

A rhythm of colored concrete interlaced with planting.



SOURCE: NEVUE NGAN, ASSOCIATES

A curbsless street with bollards and tactile strips separates sidewalk and parking.



SOURCE: NEVUE NGAN, ASSOCIATES

Brick is often an attractive sidewalk material.



SOURCE: WWW.AGRAYSONITYPEPAD.COM

Change in pavers conveys water and separates parking and driving lanes.

Certain design elements will serve to unify the blocks into a legible corridor. Primary among these is the continuous stormwater planter as well as the choice of paving material. Paving material offers a wayfinding tool for pedestrians, autos, and bicyclists, but they also demarcate space. Paving choices contribute color, texture, sound, and can even help tell a story. For the SW Montgomery Green Street, a mixture of materials, styles, colors, and patterns is envisioned. Paving styles may differ from block-to-block to help create the character of individual blocks. Some paving elements should repeat along the entire corridor to create the feel of an interconnected pedestrian streetscape.

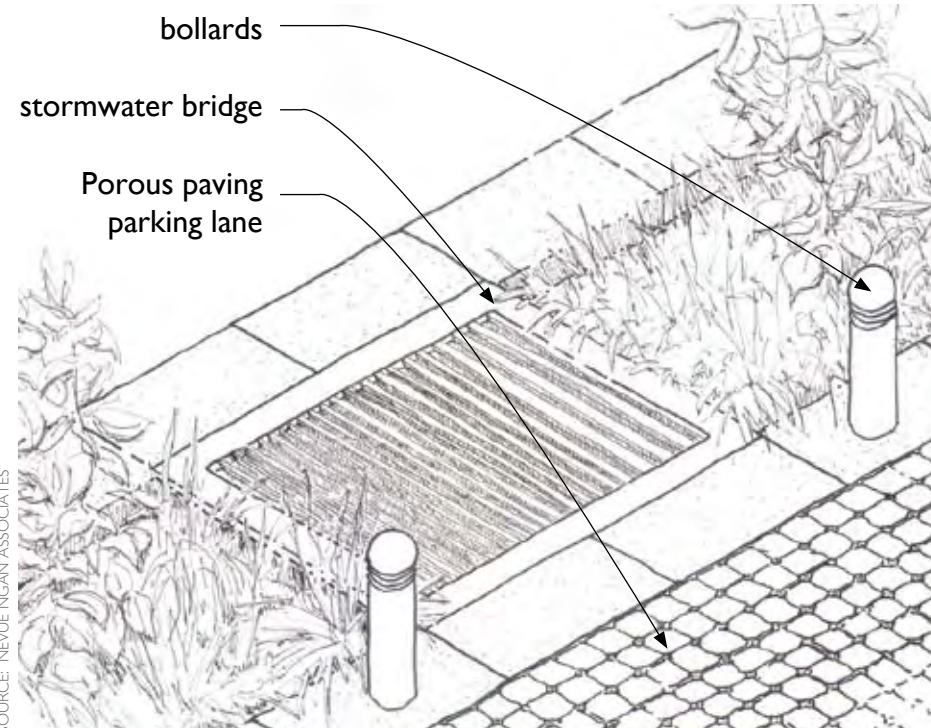


SOURCE: WWW.LANDSCAPEONLINE.COM

A highly decorative paving inscription tells the story of a watershed at the Baltimore Aquarium.

ELEMENTS: PERMANENT FURNISHINGS

The SW Montgomery Green Street will introduce new street furnishings, some permanently installed and others, such as moveable planters, will help provide flexibility in smaller spaces. Among the installed “fixed” furnishings, street lighting contributes significantly to street ambience. The City of Portland offers attractive single and twin ornamental pedestrian lights, but additional lighting considerations include the energy-efficient, low-maintenance LED lighting and lights that are Dark Sky compliant. Lighting within the plant materials and trees would create a unique nighttime impression. Since the street is curbsless, bollards are used to guide automobile traffic. Steel, stone or wood options should be considered and reviewed to provide a functional, unique element to the streetscape. Juice points installed near parking spaces could enable electric vehicles to recharge.



A typical crossing at the stormwater planter to provide maximum space for water to flow.



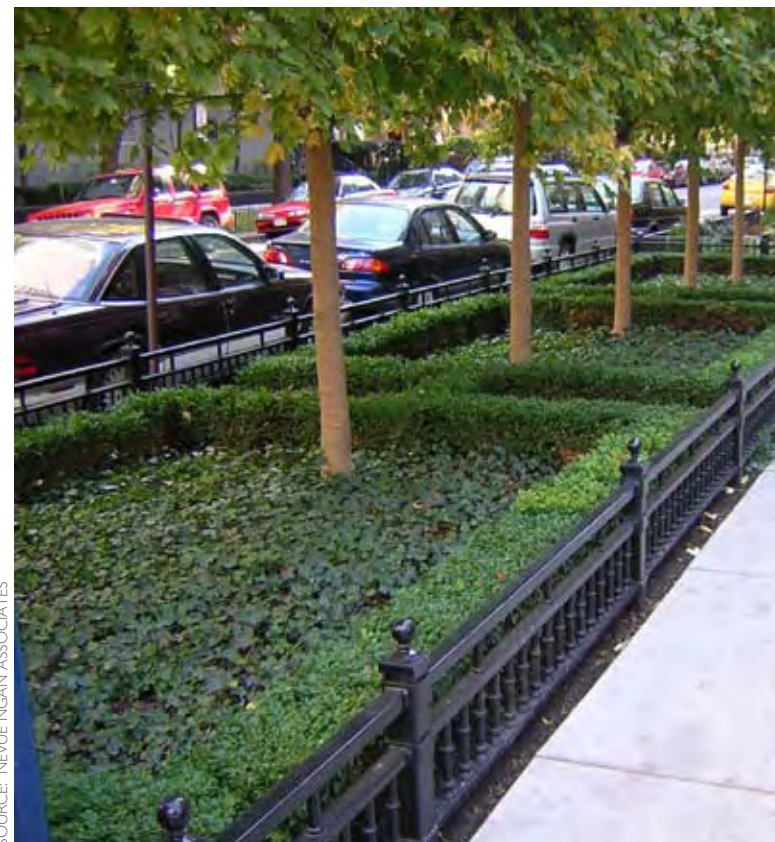
Bollards separate the sidewalk from the parking zone along this curbsless street.



Low-railings can be designed to meet any type of aesthetic.



“Juice Point” or electric car charging station.



Low-railings around stormwater facilities can define spaces but also alert pedestrians to a change in grade.



LED Street light offer a low glare, high-efficiency and low maintenance option.



LED lighting along a streetscape.



Bollards can be made from a variety of style, shapes, and materials.

Lighted bollard options

ELEMENTS: FLEXIBLE FURNISHINGS



SOURCE: MATTHEW BLACKETT

Moveable planters come in all shapes, styles, materials, and colors and can help define the character of the streetscape.



SOURCE: NEVUE NGAN ASSOCIATES

Moveable planters are placed within the parking zone of this downtown street to provide outdoor restaurant seating.

Complimenting the eclectic string of blocks along the SW Montgomery Green Street, a family of materials and furnishings create the distinct sense of place and lend legibility to the corridor. The flexible furnishings encourage community members to help shape and participate in the life on the street. Moveable planters and benches offer some options to community members along the corridor: in areas with on-street parking spaces, an adjacent owner could request planters and or outdoor street furniture be used to create additional sidewalk space instead of a parking space(s). This individual would be responsible for planting and tending the containers but would in turn be allowed to use the planters to create a semi-enclosed seating or gathering area that could support the business or residence.



SOURCE: WWW.BROOKSMEADOW.COM

Creating flexible space with tables, umbrellas, and seating.



SOURCE: WWW.EXPORECHICAGO.ORG

Planters with lush landscaping can help “green” a street with minimal infrastructure investment.



SOURCE: NEVUE NGAN ASSOCIATES

Moveable planters define cafe seating within the parking zone.



SOURCE: NEVUE NGAN ASSOCIATES

An example of creating space with flexible furnishings in Portland's South Auditorium district.

ELEMENTS: GREEN INFRASTRUCTURE



SOURCE: NEVUE NGAN ASSOCIATES

EXISTING: A typical building facade at SW Broadway and Montgomery Street.



SOURCE: NEVUE NGAN ASSOCIATES

EXISTING: The skybridge crossing SW Broadway along SW Montgomery Street.



SOURCE: NEVUE NGAN ASSOCIATES

OPPORTUNITY: This photo-simulation shows a planted awning with skylights to provide covered bicycle parking and capture rainwater, plus a green wall system installed on the building to soften the building facade.



SOURCE: NEVUE NGAN ASSOCIATES

OPPORTUNITY: This photo-simulation shows the introduction of a green wall system added to the PSU skybridges to evoke the forested condition of the West Hills.



SOURCE: PHILLIPS FAREVAAS SMALLENBERG

Green roofs offer the opportunity to capture stormwater runoff and provide habitat for wildlife (and people too).



SOURCE: GRAEME HOPKINS

A 50-foot high "living wall".

The SW Montgomery Green Street corridor can be incrementally improved through the addition of green infrastructure elements where opportunities present themselves. Green roof systems in the form of pre-grown mats of sedums, mosses and small grasses potentially can be installed on canopies or existing roofs to provide an extremely lightweight system that offers all the benefits of a green roof: slows stormwater, beautifies, transpires rain, absorbs carbon dioxide and provides habitat for birds, insects, and butterflies. Structural soil cells support driving and parking while also providing a large volume of uncompacted soil for growing trees and/or detaining stormwater. Soil cells could be placed under sidewalks and parking zones to treat large quantities of stormwater and nurture a healthy urban forest. Self-supporting green wall (aka "living wall") systems that anchor to existing buildings (or skybridges) allows for a retrofit application that will not compromise an existing building envelope.



SOURCE: WWW.BUNGALOVBLISS.WORDPRESS.COM

Multiple layers of vegetation in the Pacific Northwest forest.

ELEMENTS: ENTRY FEATURES



SOURCE: NEVUE NGAN ASSOCIATES

A low-stone wall, plinths, and planted urn acts as a distinctive entry feature along a downtown street.



SOURCE: NEVUE NGAN ASSOCIATES

A water-themed sculpture and entry feature in Washington D.C.



SOURCE: NEVUE NGAN ASSOCIATES

A low ornamental seatwall acts as an entry along a downtown street.



SOURCE: NEVUE NGAN ASSOCIATES

A whimsical sculpture on a plinth along a Portland streetscape.

Every block along the SW Montgomery Green Street is unique from each other. Because of this, an opportunity exists to incorporate public art, interpretative signage, or entry features that highlight the corridor or a particular block. The concept plan identifies a 4-foot square raised concrete pad formed into the inside of each entry stormwater planter as a space to announce each block. The concept is analogous to the subtle entry features that Halprin used at street intersections for the Portland Open Space Sequence (see photo below).

The proposed entry features along the SW Montgomery Green Street could be of a temporary or permanent nature. One idea for PSU student involvement would be to provide an entry art feature that reflected a different education department (e.g. Geology, Architecture, Sculpture, etc.). Alternatively, more permanent public art could be commissioned. Decorative planters, well-landscaped urns, simple depressions to catch and hold rainwater, or basalt columns could easily be placed as entry features. Whimsical art, interpretative signage, or intriguing lighting displays could also serve as entry features. Whatever the solution might be, these threshold pieces help signal the unique Green Street corridor through this dynamic city district.



SOURCE: NEVUE NGAN ASSOCIATES

A subtle Halprin-designed entry plinth near Pettygrove Park.

SW 11TH AVENUE TO SW 10TH AVENUE



SOURCE: NEVUE NGAN ASSOCIATES

An well-designed example of a stormwater planter within Portland's South Waterfront District (Designed by Walker Macy).

Decades ago, the SW Montgomery Street corridor was vacated on this block to construct the Science Building 2 improvements. A pedestrian walk bends around the south side of the building and a new building is planned on the vacant lot to the south. This block of green street retains the skinny, pedestrian-only nature of the corridor, and focuses energy at the intersection of SW 10th Avenue and SW Montgomery Street. The intersection functions as a circulation “knuckle”: cars are forced to head north, pedestrians and bikes moving west leave the line of the corridor and bend around Science Building 2. Stormwater gathered from the remodelled Science Building 2 rooftop will trickle alongside a ramp westward before hitting the ground and returning east toward the river. The foot of the West Hills lies a couple of blocks beyond, and the Walk of the Heroines is one block to the south. SW Montgomery Street guides pedestrians east all the way to the Willamette River. A new fountain or public art element is placed at the center of a curbsless plaza to emphasize this circulation knuckle and allows various pedestrian crossing routes to blend across the space. Bollards guide car traffic and the rest of the users of the SW 10th Avenue/SW Montgomery Street intersection are free to pass through or congregate within the plaza space.

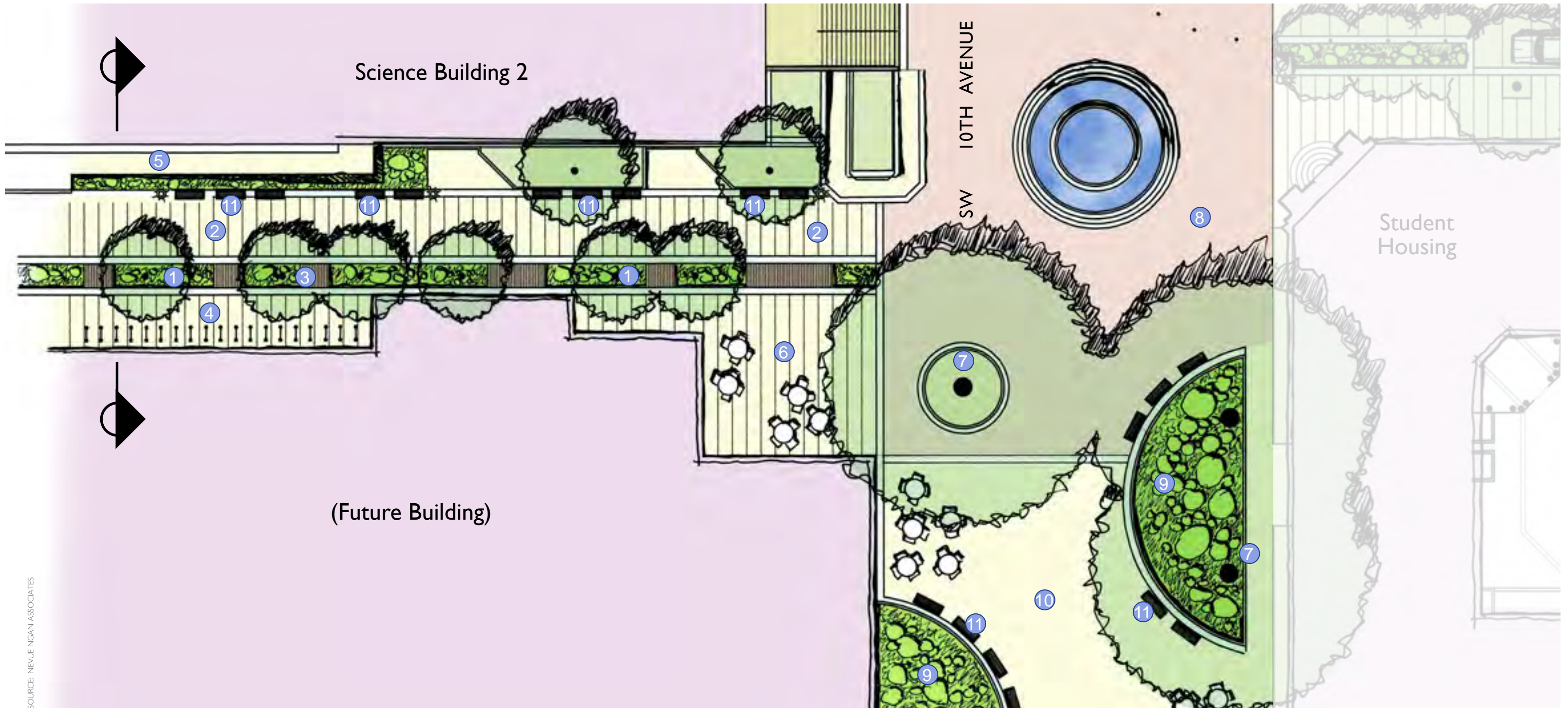


SOURCE: NEVUE NGAN ASSOCIATES

0 5 10 20 40



SW 11TH AVENUE TO SW 10TH AVENUE



SOURCE: NEVUE NCAN ASSOCIATES

- 1 SW Montgomery Street stormwater spine. This 5' wide stormwater planter, with significant landscaping and street trees, retains stormwater to a design depth of 4" to 6".
- 2 Sidewalk zones are widened to allow for a generous pedestrian through zone, cafe and park seating, moveable planters, and street lighting,
- 3 Stormwater bridges/boardwalks allow pedestrians to cross the stormwater spine.

- 4 Bike parking to service future building and Science Building 2.
- 5 New ADA accessible ramp to Science Building 2 features a narrow stormwater planter that captures roof runoff and allows it to run along the north side of SW Montgomery Street.
- 6 Potential entrance to the future building with outdoor seating for a small cafe or coffee house.
- 7 Existing trees to be preserved.

- 8 Brick plaza space creates free pedestrian movement around a circular art/fountain feature.
- 9 Circular stormwater facilities collect runoff from both SW 10th Avenue and building rooftops.
- 10 SW 10th Avenue is closed to vehicular traffic and converted into a plaza space for food cart vendors and outdoor seating.
- 11 Pedestrian seating.

SW 10TH AVENUE TO SW 9TH AVENUE



SOURCE: NEVUE NGAN ASSOCIATES

The green street between SW 10th and SW 9th Avenues responds to the primarily residential condition with a woonerf-inspired form. This type of street, often referred to as a “Living Street”, prioritizes public space for pedestrians and cyclists over the use of cars. The street level has been raised to curb height and the paving extends right up to the apartment buildings, blurring the line between public and private, between street and sidewalk. This creates a responsive space that can change through time to reflect the needs of the users. The existing pull-through vehicular space is now shared with pedestrians to become a courtyard for the existing housing and ground floor restaurants. Pedestrian uses can expand or contract, introducing furniture and plants into this realm, asking cars to slow down and find their own way through the space. This block establishes the line the stormwater will travel as it moves toward the river. The curbsless street simply sheds water into the slightly recessed stormwater spine and leaves a large, flexible ground plane. In addition to a lane of parallel parking, cars are provided a single west-bound travel lane defined by bollards while allowing pedestrians and bicyclists free to move across the entire space.

Water moves through a pedestrian-only Main Street in Aspen, Colorado.



SOURCE: NEVUE NGAN ASSOCIATES



SW 10TH AVENUE TO SW 9TH AVENUE



SOURCE: NEVUE NICAN ASSOCIATES

- 1 SW Montgomery stormwater spine. This 5' wide stormwater planter, with significant landscaping and street trees, retains stormwater to a design depth of 4" to 6".
- 2 SW Montgomery allows for one-way eastbound vehicular traffic. The street is "curbless" to allow all modes of traffic to be integrated on one horizontal plane.
- 3 Sidewalk zones are widened to allow for a generous pedestrian through zone, cafe and park seating, moveable planters, street lighting, and bike parking.

- 4 Stormwater bridges/boardwalks allow pedestrians to cross the stormwater spine.
- 5 Ornamental street lighting will be placed at the block's street corners and at mid-block locations.
- 6 Flexible space parking zone. Cars can park in this space, or it can be closed off for additional sidewalk activities.
- 7 Tactile warning strips alert pedestrians to oncoming traffic from vehicles.
- 8 Existing trees to be preserved.

- 9 Secondary stormwater planters accept stormwater from additional sidewalk space.
- 10 Ornamental art/landscape features at intersection demarcate the block's entry points.
- 11 Brick plaza space allows free pedestrian movement around a circular art/fountain feature.
- 12 Bollards protect pedestrian zones and stormwater landscape areas.
- 13 Pedestrian seating.

- 14 Lone Plaza can potentially be closed to vehicular traffic and opened up as a large pedestrian space for outdoor cafe seating
- 15 Larger pedestrian bridges for access into Lone Plaza, or used for vehicular access.
- 16 Street intersection extends the sidewalk paving treatment into the street reinforcing the strong east-west pedestrian connectivity of SW Montgomery Street.
- 17 Bike racks.

SW 9TH AVENUE TO SW PARK AVENUE

The South Park Blocks are a cherished green corridor in downtown Portland characterized by big trees, ample walkways and plenty of seating. Although the SW Montgomery Green Street crosses this park space, the intent is for the Park Blocks to maintain its existing character. The concrete paving is regraded to allow stormwater to sheet flow into the SW Montgomery stormwater spine. New seating opportunities and new landscaping are added to the park space. The continuum of the Park Blocks is only slightly interrupted to allow this green street gesture to cross it. The pedestrian corridor is reinforced with additional trees and benches that face the “Farewell to Orpheus” fountain.



“Farewell to Orpheus” water fountain in the South Park Blocks on the Portland State University campus.

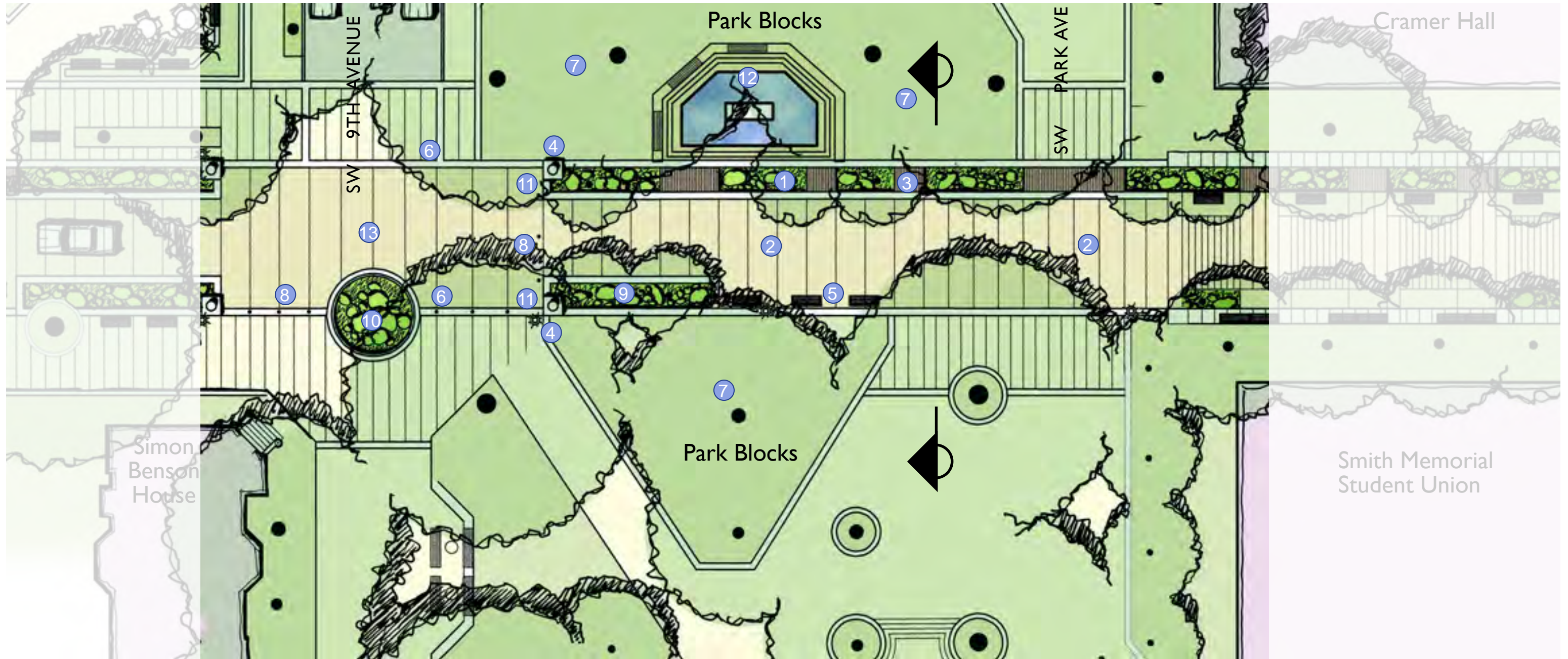


SOURCE: NEVUE NGAN ASSOCIATES

SOURCE: NEVUE NGAN ASSOCIATES



SW 9TH AVENUE TO SW PARK AVENUE



SOURCE: NEVUE NGAN ASSOCIATES

- 1 SW Montgomery stormwater spine. This 5' wide stormwater planter, with significant landscaping and street trees, retains stormwater to a design depth of 4" to 6".
- 2 Pedestrian travel only except for University or emergency vehicle access.
- 3 Stormwater bridges/boardwalks allow pedestrians to cross the stormwater spine.
- 4 Ornamental street lighting will be placed at the block's street corners.
- 5 New seating within the plaza space.
- 6 Tactile warning strips alert pedestrians to oncoming traffic from vehicles and mass transit.
- 7 Existing trees and landscaping to be preserved.
- 8 Bollards restrict vehicles from entering Park Blocks.
- 9 Secondary 5' wide stormwater planters accept stormwater from additional sidewalk space.
- 10 Circular stormwater planter collects runoff from adjacent sidewalk areas and provides a strong focal entry from SW 9th Avenue leading into PSU.
- 11 Ornamental art/landscape features at intersection demarcate the block's entry points.
- 12 Existing fountain "Farewell to Orpheus" and pedestrian seating.
- 13 Street intersection extends the sidewalk paving treatment into the street reinforcing the strong east-west pedestrian connectivity of SW Montgomery Street.

SW PARK AVENUE TO SW BROADWAY



A photo-simulation of a vegetated green wall and roof awning on the Cramer Hall south facade.



A built green wall ("vertical garden") in Paris, France designed by Patrick Blanc.

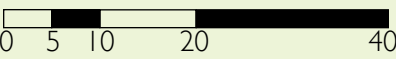


The gateway skybridge on SW Broadway with a vegetated facade could showcase PSU's commitment to sustainability.

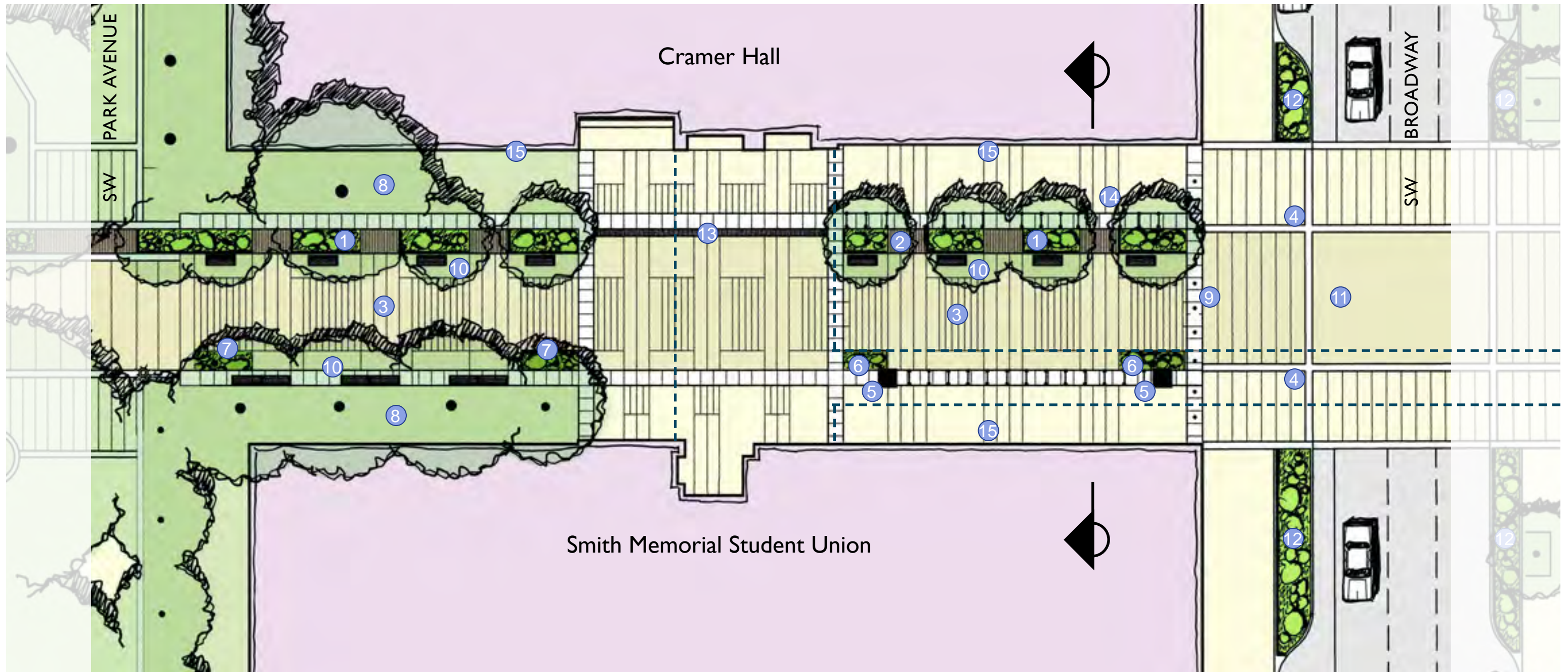
The block between the South Park Blocks and SW Broadway is defined by a plaza space between Smith Memorial Student Union and Cramer Hall. The curbless street profile and prominent stormwater spine continues across the block. Private vehicles are excluded from the space, and the "Deliveries and Loading Zone" has been moved to SW Broadway Avenue. The new plaza moves seating from the center of the space to the edges, adds additional bike parking and expands the existing planted areas. The new stormwater spine helps soften the northern half of the space. Already a huge pedestrian and student destination, this gateway between the Park Blocks and PSU's campus will provide more flexible space to move through or gather within. Green roofs and walls are also a future possibility for the buildings, and a small green roof could shelter new bike parking zones along the façade of Cramer Hall. Green, vegetated walls could also soften the vertical and horizontal surfaces of the east-west skybridge, emphasizing the forest in the city and creating a metaphorical nursery log and green gateway over the street.



SOURCE: NEVUE NGAN ASSOCIATES



SW PARK AVENUE TO SW BROADWAY



SOURCE: NEVUE NGAN ASSOCIATES

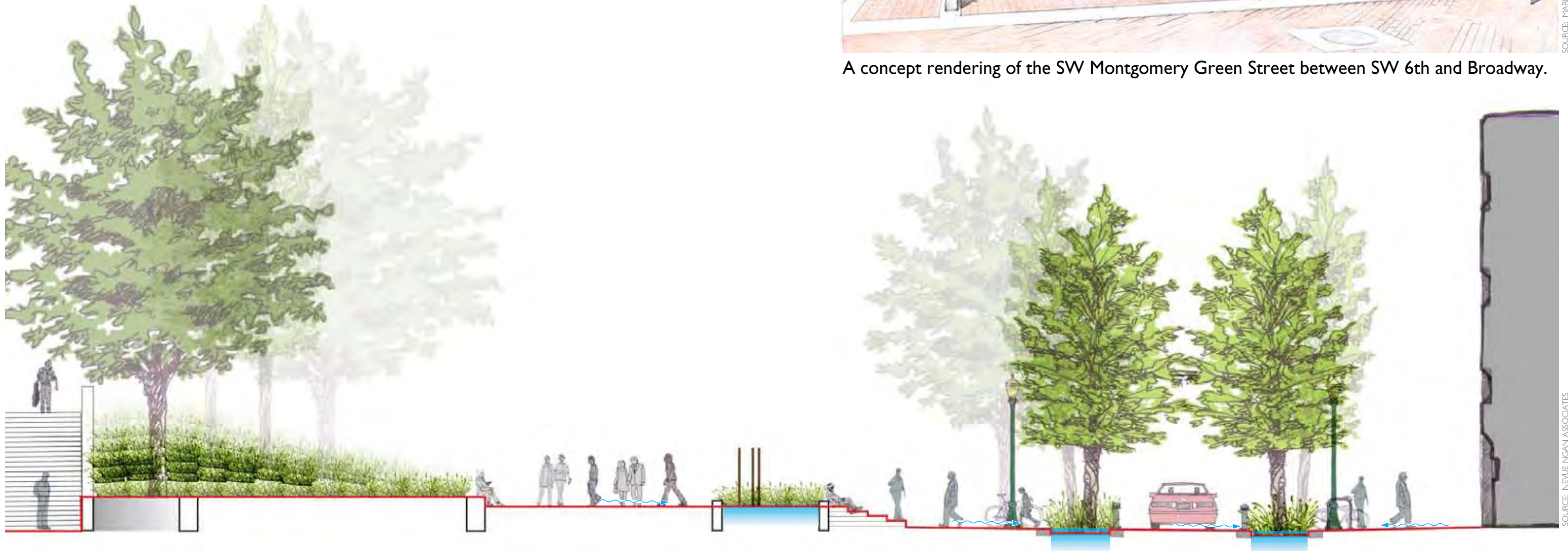
- 1 SW Montgomery stormwater spine. This 5' wide stormwater planter, with significant landscaping and street trees, retains stormwater to a design depth of 4" to 6". The stormwater planter is designed as a non-infiltrating, flow-through planter due to extensive underground structure.
- 2 Stormwater bridges/boardwalks allow pedestrians to cross the stormwater spine.
- 3 Specially colored concrete paving to be used at Smith Memorial Student Union and Cramer Hall.
- 4 Tactile warning strips alert pedestrians to oncoming traffic from vehicles.
- 5 Existing skybridge structural columns.
- 6 Secondary shallow stormwater planters at the base of the columns accept stormwater from the skybridge.
- 7 New landscape areas.
- 8 Preserved trees and enhanced landscape.
- 9 Bollards separate vehicular movement through SW Montgomery except for University and emergency response vehicles.
- 10 New seating within the plaza space.
- 11 Street intersection extends the sidewalk paving treatment into the street reinforcing the strong east-west pedestrian connectivity of SW Montgomery Street.
- 12 Stormwater curb extensions capture runoff from SW Broadway.
- 13 The entry into Cramer Hall and underground structures interrupt the stormwater spine but a trench drain allows runoff to be conveyed between stormwater planters.
- 14 Large capacity bike parking zones.
- 15 Potential location for vegetated green wall.

SW BROADWAY TO SW 6TH AVENUE

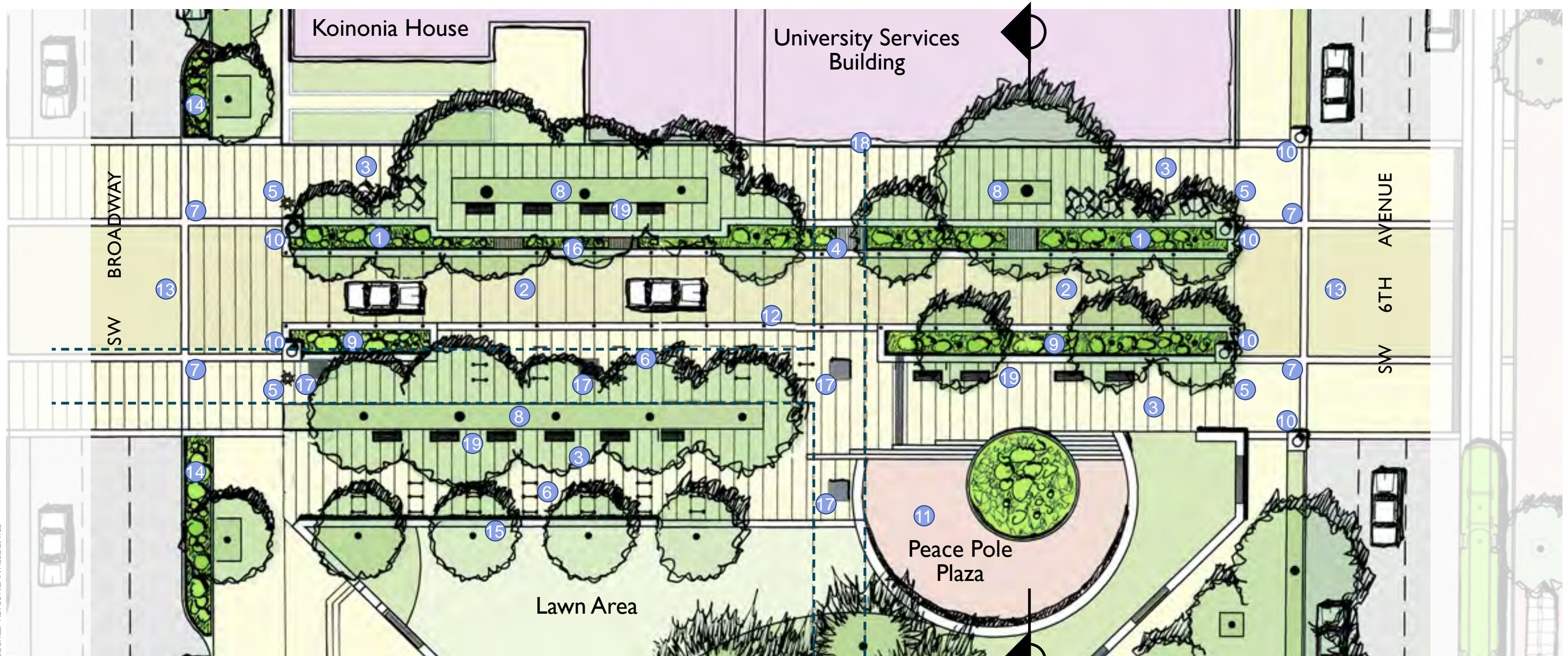
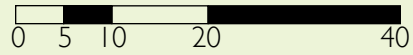
The block between SW Broadway and 6th is characterized by four physical attributes: A significant drop in grade from west to east, a large setback of the campus building with a sloping lawn to the south, the dominant presence of the skybridge, and existing large canopy street trees. The green street takes advantage of this slope and the setback by constructing a small mid-block plaza adjacent with stairs leading from the sidewalk. The center of the plaza has low planting that creates a more visible location for the 'Peace Poles' art installation. The paved area between the plaza and SW Broadway on the south side of the street also expands into the lawn to accommodate additional bike parking. Four large street trees on the north side of the street are preserved. The resulting smaller walkway between the tree trunks and the stormwater spine will have a few benches. This streetscape approach enables the occasional or eventual closing of this street to cars for pedestrians and bicyclists. The potential for new ground-floor retail will help activate the new, wider sidewalk zones. If redevelopment occurs, a portion of the stormwater runoff from the buildings could also be introduced within the stormwater spine. Vegetated green walls can be applied to the skybridge columns and buildings to mimic the multiple layers of the natural forest.



A concept rendering of the SW Montgomery Green Street between SW 6th and Broadway.



SW BROADWAY TO SW 6TH AVENUE



SOURCE: NEVUE NGAN ASSOCIATES

- 1 SW Montgomery stormwater spine. This 5' wide stormwater planter, with significant landscaping and street trees, retains stormwater to a design depth of 4" to 6".
- 2 SW Montgomery allows for one-way eastbound vehicular traffic. The street is "curbless" to allow all modes of traffic to be integrated on one horizontal plane.
- 3 Sidewalk zones are widened to allow for a generous pedestrian through zone, cafe and park seating, moveable planters, street lighting, and bike parking.
- 4 Stormwater bridges/boardwalks allow pedestrians to cross the stormwater spine.

- 5 Ornamental street lighting will be placed at the block's street corners and at mid-block locations.
- 6 Flexible space that can be used for large capacity bike parking and/or food carts.
- 7 Tactile warning strips alert pedestrians to oncoming traffic from vehicles and mass transit
- 8 Existing trees to be preserved.
- 9 Secondary 5' wide stormwater planters accept stormwater from additional sidewalk space.

- 10 Ornamental art/landscape features at intersection demarcate the block's entry points.
- 11 Elevated brick plaza space allows stormwater to flow into a circular stormwater planter. The existing Peace Pole installation is relocated to this space to form the "Peace Pole Plaza."
- 12 Bollards protect landscape and bike parking areas.
- 13 Street intersection extends the sidewalk paving treatment into the street reinforcing the strong east-west pedestrian connectivity of SW Montgomery Street.

- 14 Stormwater curb extensions capture runoff from SW Broadway.
- 15 18" high retaining wall expands sidewalk space allowing for seating and bike parking.
- 16 The stormwater spine is narrowed to 2.5' wide to preserve existing large-canopy trees.
- 17 Existing skybridge structural columns.
- 18 Potential location for vegetated green wall.
- 19 Pedestrian seating.

URBAN CENTER PLAZA



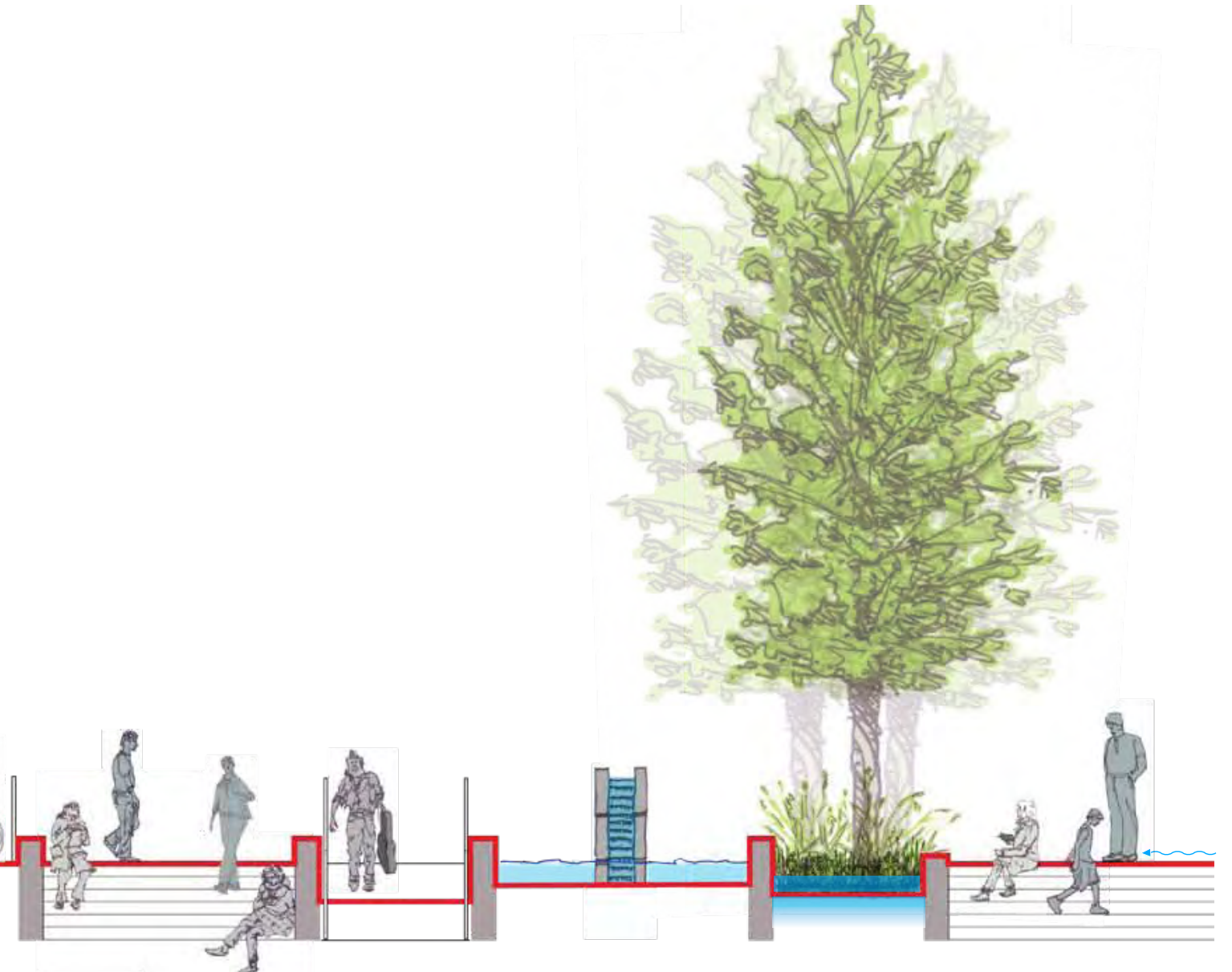
SOURCE: MARK SANBORN

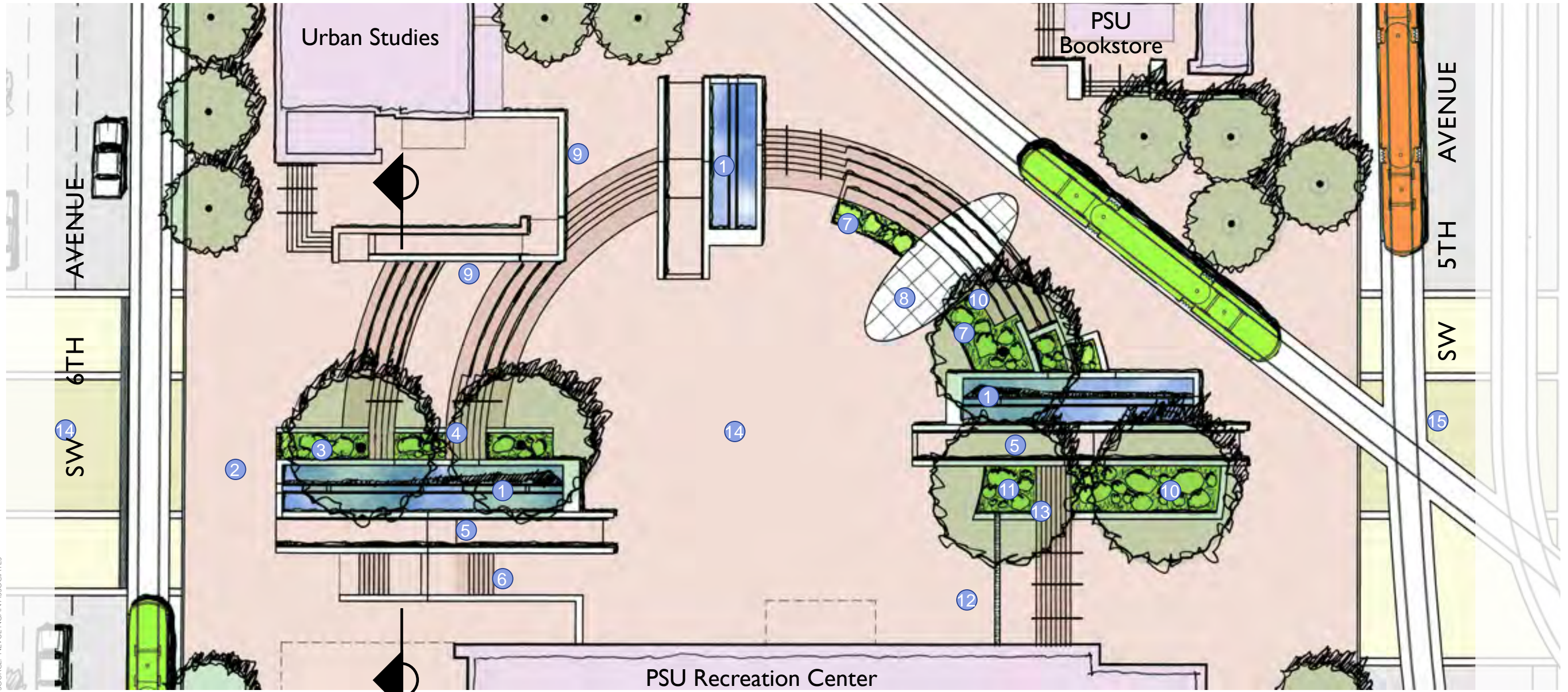
A concept rendering of the Urban Center Plaza with the addition of new landscaping.

*T*his unique plaza shares urban and University characteristics; providing a large open gathering space with ample space for chairs and tables and plenty of seating on low walls and steps. The plaza is graced with three fountains and a streetcar line bisects it diagonally. This hub of activity connects the Recreation Center and the School of Public and Urban Affairs in a busy transit hub highly used by locals, students, and tourists. Small businesses located on the ground floor open on to the plaza with classrooms and other University rooms on upper floors. Additionally, embedded within the brick hardscape are several pieces of public art that enrich the plaza in the form of a constellation of small granite stones and larger granite ovals. To reinforce the green street component of the corridor, three stormwater planters are integrated into the existing form of the Urban Center Plaza. These will provide a green oasis within the plaza for shade-seekers and help capture and treat stormwater from the surrounding hardscape. During intense storm events, stormwater can cascade down a series of planted “steps” within the plaza’s new landscape features.



SOURCE: NEVUE NGAN ASSOCIATES





SOURCE: NEVUE NGAN ASSOCIATES

- 1 Existing plaza water fountains to remain.
- 2 A trench drain collects stormwater runoff from adjacent sidewalk and plaza spaces and conveys it to the stormwater planter to the east.
- 3 5' wide stormwater planter, with significant landscaping and street trees, retains stormwater to a design depth of 4" to 6".
- 4 Plaza stairs extend into the stormwater planter to allow runoff to cascade down the staircase intense storm events.
- 5 Existing ADA ramp to remain.
- 6 Existing stairs to remain.
- 7 New stormwater planter matches the existing circular form of the Urban Plaza and accepts runoff from the upper portion of the plaza space. Stormwater is also allowed to cascade down a series of stormwater cells during intense storm events.
- 8 Existing granite ellipse art piece to remain.
- 9 Potential location for vegetated green wall.
- 10 Existing circular seatwalls to be modified to seamlessly blend the new stormwater planter into the plaza form.
- 11 10' wide stormwater planter, with significant landscaping and street trees, retains stormwater to a design depth of 4"-6"
- 12 A trench drain collects stormwater runoff from the Urban Plaza and conveys it to the stormwater planter to the north.
- 13 Plaza stairs extend into the stormwater planter to allow runoff to cascade down the staircase intense storm events.
- 14 Existing plaza brick work to remain. Moveable landscaped planters and seating could potentially be placed within the plaza space.
- 15 Street intersection extends the sidewalk paving treatment into the street reinforcing the strong east-west pedestrian connectivity of SW Montgomery Street.

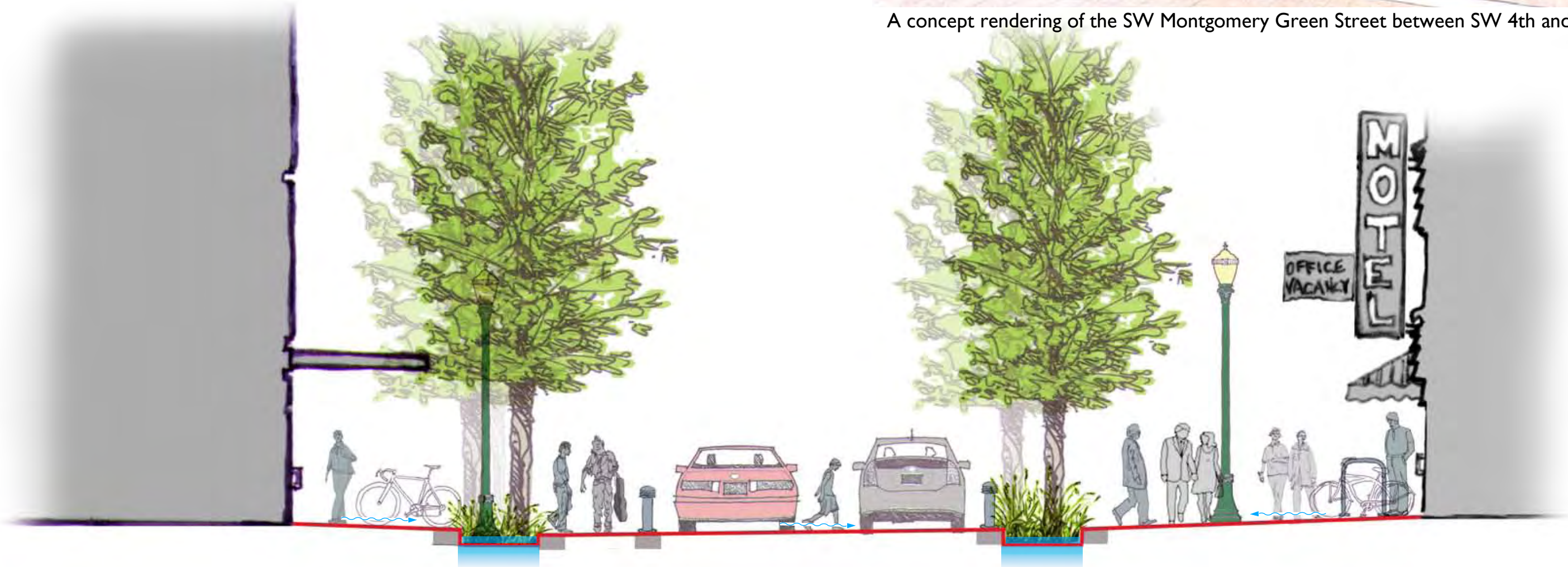
SW 5TH AVENUE TO SW 4TH AVENUE

This multi-modal block will be a good example of sustainability, while providing a verdant counterpoint to the brick and stone Urban Studies Plaza to the west. The Oregon Sustainability Center (OSC) aspires to create a net-zero building, and the landscape around it needs to reflect this ambitious and green goal. The landscape and building will share space and systems, connecting interiors and exteriors. Similar to other blocks, bollards rather than curbs guide the remaining one lane of traffic and one lane of parallel parking. The parking space becomes programmable space that can be shaped with moveable planters. The stormwater spine extends along the block with new seating and planting. The OSC will be a striking presence on the south side of the street, its façade is likely to be a mosaic of windows, green walls, solar panels awnings and habitat features. Additionally, it steps back from the street on the west end of the block expanding the public right-of-way. The streetcar cuts diagonally across this block, too, only here it passes over a sunken planting of small trees and ferns crisscrossed with boardwalks that join a large common deck adjacent to the building. Secondary stormwater planters are at the west and east ends of the south side of the street adding lushness and increasing the treatment capability.



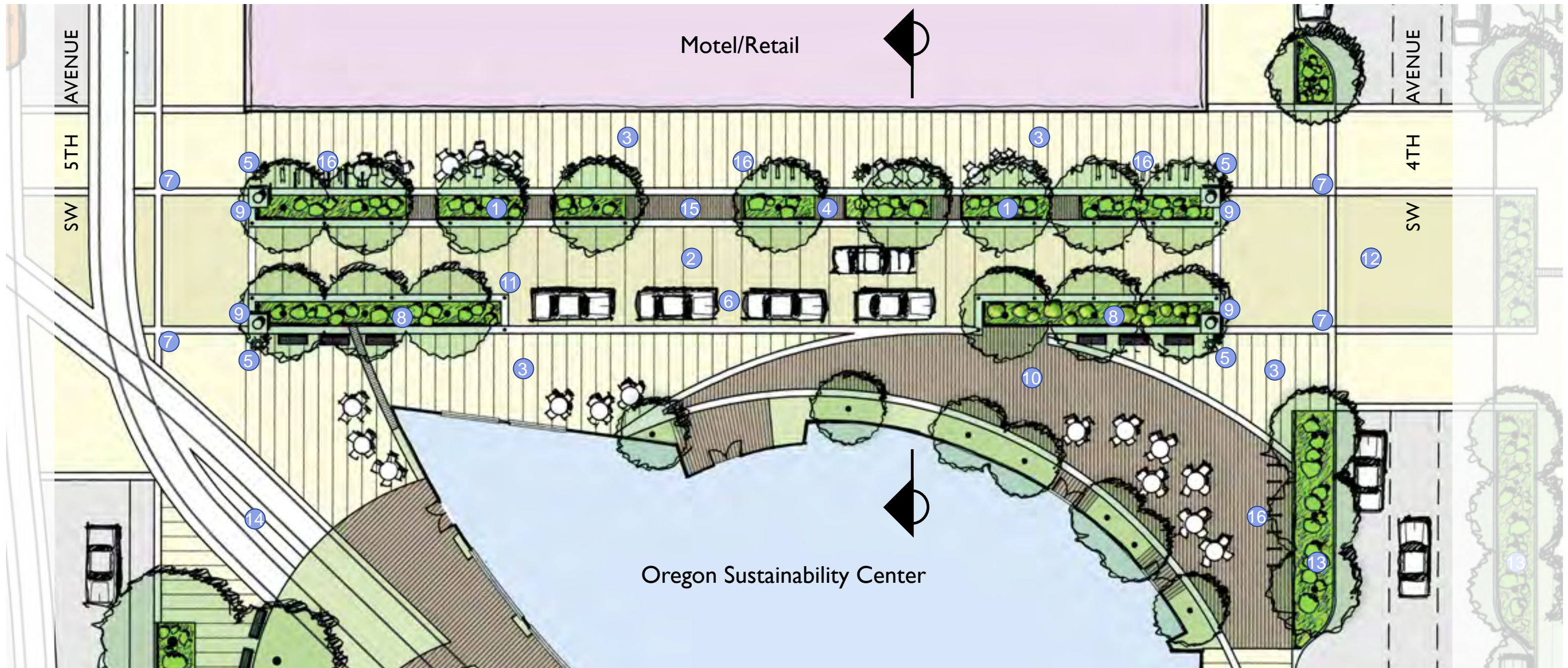
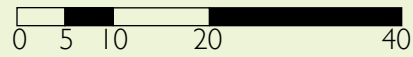
A concept rendering of the SW Montgomery Green Street between SW 4th and 5th Avenue.

SOURCE: NEVUE NGAN ASSOCIATES



SOURCE: MARK SANBORN

SW 5TH AVENUE TO SW 4TH AVENUE



SOURCE: NEVUE NGAN ASSOCIATES

- 1 SW Montgomery stormwater spine. This 5' wide stormwater planter, with significant landscaping and street trees, retains stormwater to a design depth of 4"-6".
- 2 SW Montgomery allows for one-way eastbound vehicular traffic. The street is "curbless" to allow all modes of traffic to be integrated on one horizontal plane.
- 3 Sidewalk zones are widened to allow for a generous pedestrian through zone, cafe and park seating, moveable planters, street lighting, and bike parking.
- 4 Stormwater bridges/boardwalks allow pedestrians to cross the stormwater spine.
- 5 Ornamental street lighting will be placed at the block's street corners and at mid-block locations.
- 6 Flexible space parking zone. Cars can park in this space or it can be closed off for additional sidewalk activities.
- 7 Tactile warning strips alert pedestrians to oncoming traffic from vehicles and mass transit.
- 8 Secondary 5' wide stormwater planters accept stormwater from additional sidewalk space and overflow from the Oregon Sustainability Center.
- 9 Ornamental art/landscape features at intersection demarcate the block's entry points.
- 10 Boardwalk allows stormwater and graywater overflow from the Oregon Sustainability Center to flow under the walkway and into the adjacent stormwater planter for treatment.
- 11 Bollards protect landscape areas.
- 12 Street intersection extends the sidewalk paving treatment into the street reinforcing the strong east-west pedestrian connectivity of SW Montgomery Street.
- 13 Stormwater curb extensions capture runoff from SW 4th Avenue.
- 14 The Portland Streetcar realignment allows two-way travel through the Oregon Sustainability Center site.
- 15 Vehicle bridge for hotel parking.
- 16 Bike parking.

SW 4TH TO SW 3RD AVENUE



SOURCE: NEVUE NGAN ASSOCIATES

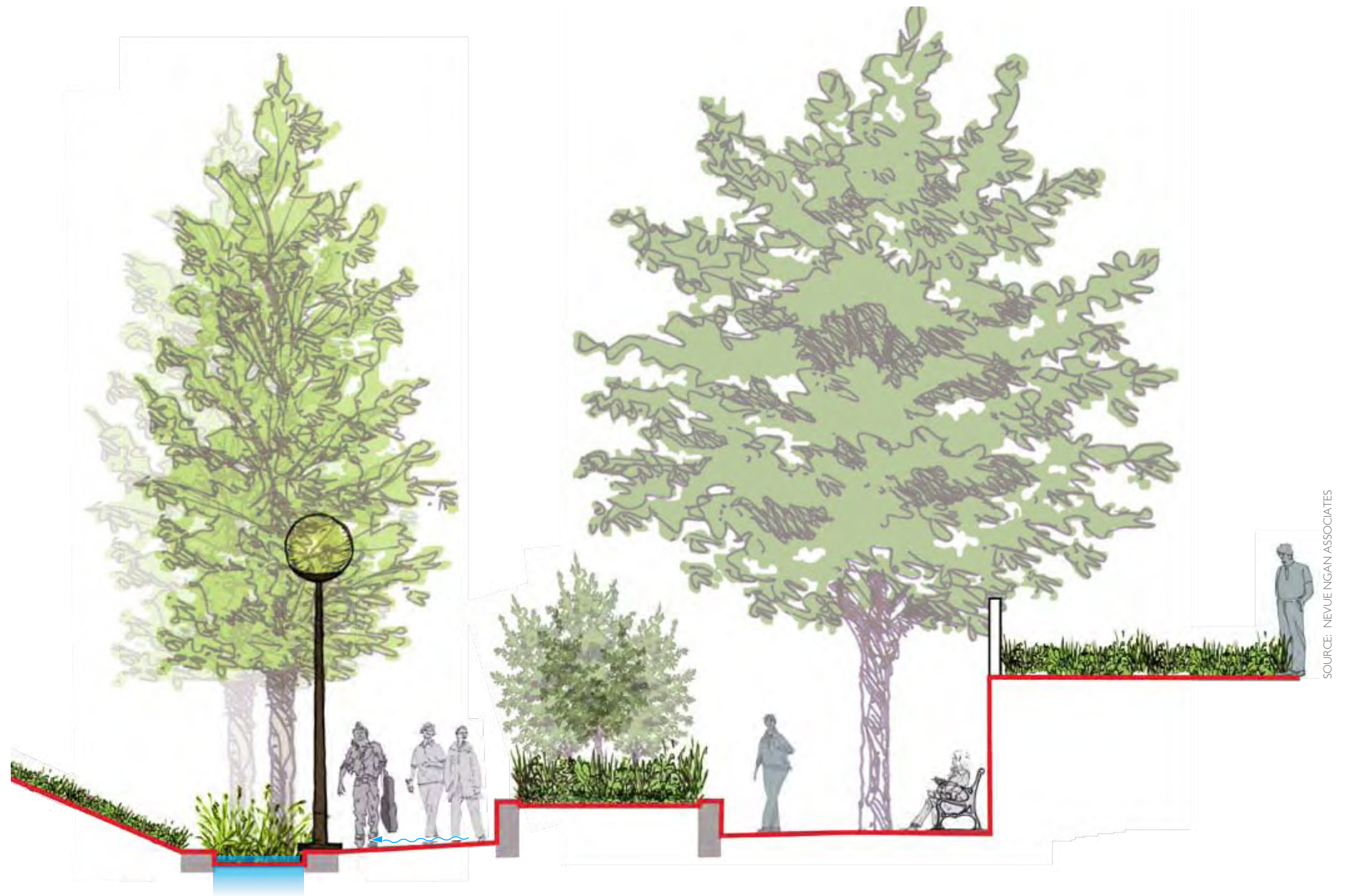
SW Montgomery Street looking east with the new CYAN/PDX building to the left. The new stormwater spine would be located just right of the existing light poles.



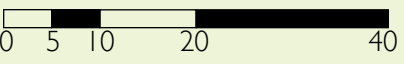
SOURCE: NEVUE NGAN ASSOCIATES

SW Montgomery Street looking west. The new stormwater spine would replace the overgrown landscaping located just left of the existing stairs.

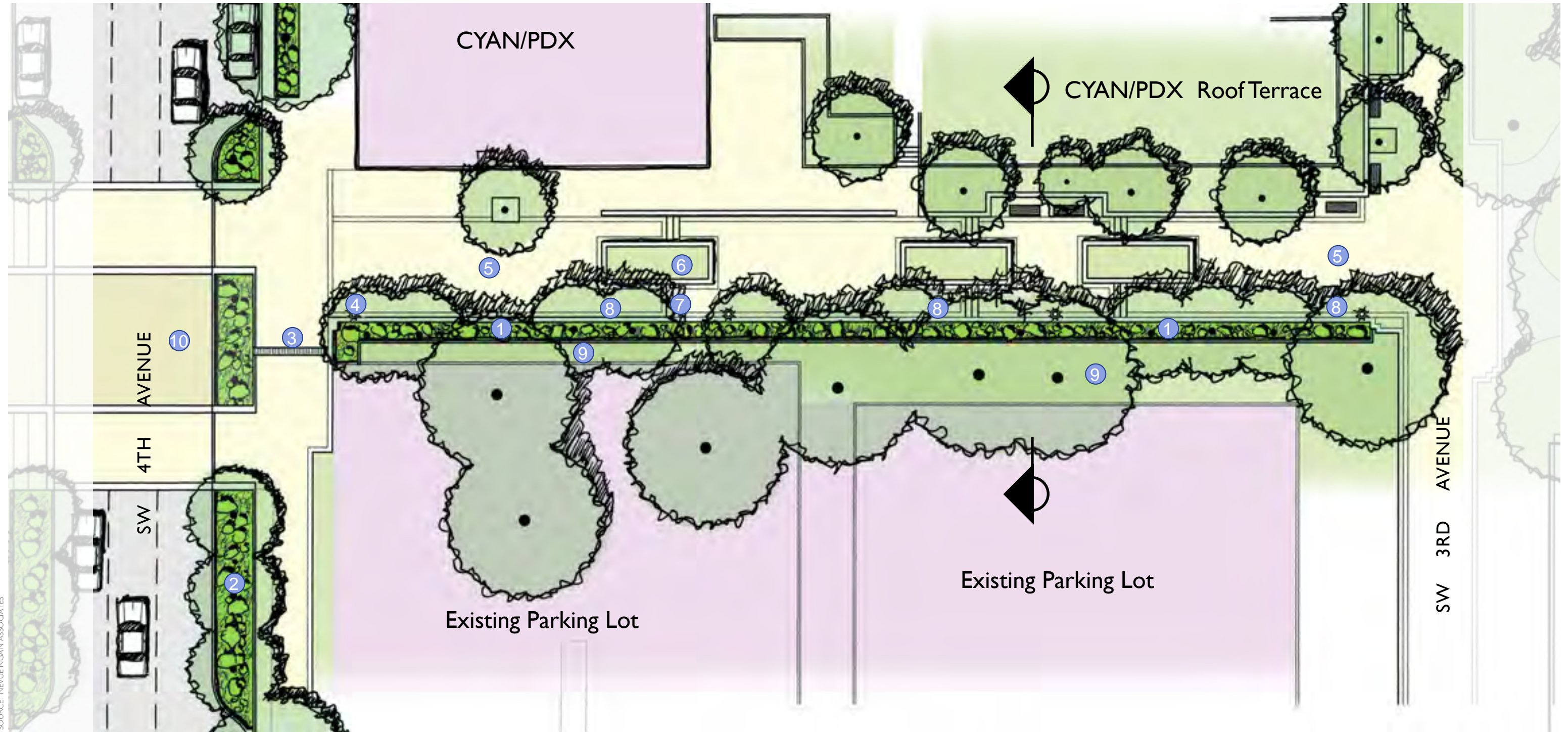
This block's scale shrinks down to a pedestrian-only walkway. The recent construction of the CYAN/pdx building helps frame and provide a more dramatic entrance to Lawrence Halprin's Pettygrove Park. The SW Montgomery Green Street proposes the continued preservation this space's concrete planters, sidewalk, stairs, and light poles but also introduces the green street corridor's stormwater spine along the south pathway edge. New, low-growing, and predominantly native planting replaces the existing vegetation to create a more open, pedestrian-friendly environment. The new improvements along the corridor intends to reinforce the historic significance of Lawrence Halprin's Portland Open Space Sequence and could perhaps contain interpretative signage. In addition, future discussions should occur to determine the appropriateness of ADA and bicycle access through this block.



SOURCE: NEVUE NGAN ASSOCIATES



SW 4TH AVENUE TO SW 3RD AVENUE



SOURCE: NEVUE NIGAN ASSOCIATES

- 1 SW Montgomery stormwater spine. This 3-4' wide stormwater planter, with significant landscaping and street trees, retains stormwater to a design depth of 4"-6".
- 2 Stormwater curb extensions capture runoff from SW 4th Avenue.
- 3 A trench drain conveys stormwater overflow from SW 4th Avenue into the stormwater spine.
- 4 Install an interpretative sign that announces the Lawrence Halprin Park Series.
- 5 Existing exposed aggregate paving to remain.
- 6 Existing center planters to remain. Potentially replant to enhance landscape aesthetics
- 7 Existing stairs to remain.
- 8 Renovate all existing light fixtures for aesthetics and functionality as well as energy efficiency in accordance with the Cultural Landscape Foundation guidelines
- 9 Renovate existing landscape areas from English Ivy to a low-growing mixture of Pacific Northwest native planting.
- 10 Street intersection extends the sidewalk paving treatment into the street reinforcing the strong east-west pedestrian connectivity of SW Montgomery Street.

PETTYGROVE PARK



Bicyclists are degrading the existing landscaping in Pettygrove Park.

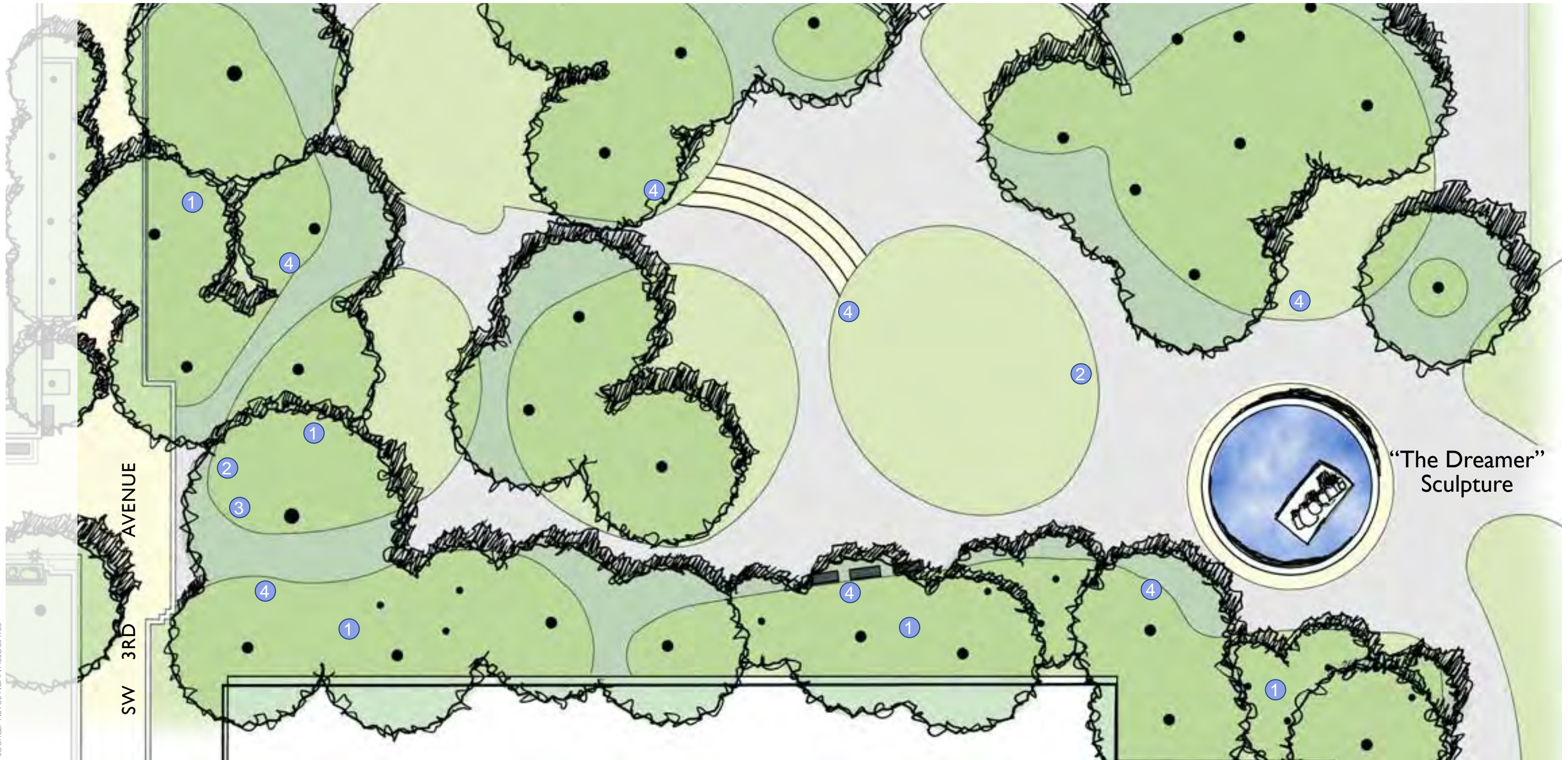


Many of the existing light poles are in need of restoration.

*T*his Lawrence Halprin masterpiece marks the current eastern terminus of the SW Montgomery Green Street corridor. This fitting ending provides a brilliantly conceived and executed park, offering a surprising verdant landscape hidden amongst the city. Eventually this destination will be joined to the river to amplify the green and pedestrian networks conceptualized in this plan. Though there are no planned strategies to manage stormwater from Pettygrove Park, several environmental improvements can be made. For example, English Ivy, a nuisance plant species especially for the forested areas in Portland could be converted to a Pacific Northwest forest understory mix as a more sustainable option. Another option might improve the substantial damage to landscape areas caused by bicyclists. The existing lighting within Pettygrove park has been vandalized and could be restored and enhanced with more energy-efficient technologies. A plan to address these issues should be developed in accordance with the Halprin Landscape Conservancy’s guidelines. These recommended improvements in addition to the SW Montgomery Green Street design concepts will help provide greater exposure to one of Portland’s important park treasures.



Pettygrove Park looking east towards “The Dreamer” sculpture.



SOURCE: NEVUE NCAN ASSOCIATES

1 The portions of this landscape that are English Ivy have been identified as unsustainable. Options to renovate existing landscape areas to a low-growing mixture of Pacific Northwest native planting could be explored with the Cultural Landscape Foundation.

2 Bicyclists often ride through the park's landscape areas and have greatly impacted the success of the landscape. Options to deter this behavior could be explored with the Cultural Landscape Foundation.

3 Develop and install an interpretative sign in accordance with the Cultural Landscape Foundation guidelines that announces Pettygrove Park and its relationship to the Lawrence Halprin Park Series.

4 Renovate all existing light fixtures in accordance with the Cultural Landscape Foundation guidelines for aesthetics and functionality as well as energy efficiency.

CONTINUED STEWARDSHIP



Informational signage along the SW 12th Avenue Green Street at Portland State University.



Education and monitoring signage at a rain garden site in Fort Wright, Kentucky.



City and citizens join in landscape stewardship efforts in St. Paul, Minnesota.

The design team realizes that exemplary green street and sustainable stormwater design cannot be achieved without considering the long-term care and maintenance. Finding innovative design solutions and creative maintenance programs should be considered during the initial phases of design. Green street design is a relatively new concept and there is much that we can still learn to help advance our understanding of long-term maintenance success. Because the SW Montgomery Green Street is so much a part of the Portland State University campus, a unique opportunity exists for partnerships. Perhaps a hands-on internship or sustainability education program could be created that allows students interested in green building to partner with the City of Portland to monitor and maintain the green street elements. Community members could take on the care and stewardship of the street, for its responsibility should not fall on only one entity's shoulders. To facilitate this role, public education about the corridor will be incorporated into the design in the form of signage. The communication will vary in scale and message depending on the context, and the message may be written by a mix of City, PSU, businesses along the corridor, and interested citizens and volunteers.



Pedestrian-scale signage helps inform the public at the NE Siskiyou Green Street.



Lectures and Forums - Portland State University students involved with sustainability efforts.



Volunteers making a difference at a rain garden in Philadelphia, Pennsylvania.

This document provides an overall and detailed look at the conceptual design for the SW Montgomery Green Street. Within these design concepts are many new and highly innovative ideas that have yet to be designed or built. Significant study remains both at the policy as well as the design level to ensure the success of this green street project. It is encouraging to note that several of the blocks along the Southwest Montgomery Green Street are slated to be built in the near future. Other blocks may not be built for some time. It is important to use this concept plan as a guide when developing more detailed designs for future Green Street implementation. The following are key issues identified as needing further study:

- **Loss of on-street parking.** The concept design includes removing on-street parking on all three vehicular-travel blocks along the corridor. On-street parking serves an important role in the Central City, supporting retail and other short term uses, including serving PSU's students and staff. In addition, parking revenue is a key component of Portland Bureau of Transportation's (PBOT) revenue sources, helping fund key programs. This concept would result in some parking revenue loss for the City unless substitute parking spaces or revenue are identified. The discussion of potentially reconfiguring or removing parking and the fiscal impact to the City needs to be carefully analyzed. PBOT welcomes the addition of bicycle parking. If Montgomery Street is eventually closed to vehicles, all parking spaces would be lost.

- **Traffic circulation.** The concept strives for a design that emphasizes pedestrian and bicycle travel over vehicular access. To accommodate pedestrian and bicycle use, the area dedicated to vehicles is reduced, allowing for one-way operations and emergency response vehicles. A traffic study is needed to determine the effects of potentially reducing vehicle capacity at SW Montgomery Street and/or determining how the street should operate. The study area should be sufficiently large to fully capture traffic impacts. In addition, coordination needs to occur with PBOT to determine that emergency vehicles can adequately access SW Montgomery Street given the proposed design changes within the right-of-way.

- **Streetcar tracks.** Today the streetcar runs on a single track on SW Montgomery Street between SW 4th and SW 5th Avenues. The concept for SW Montgomery Street does not work unless tracks are relocated to the block where the OSC is planned. In addition, at the intersection of SW 5th Avenue and SW Montgomery Street streetcar tracks cross the bicycle lanes at an angle that creates a safety hazard for bicyclists. The proposed concept shows a new configuration for the streetcar, also potentially affecting bicyclists. This issue should be analyzed in more detail to improve bicycle safety.

- **Access to land uses.** Driveway access to existing motel and restaurant, as well as potentially to the proposed Oregon Sustainability Center, needs to be explored in more detail. To be consistent with this proposed concept, future development on adjacent lots should avoid locating driveway access on SW Montgomery Street, if possible.

- **Utility relocation** issues and relocation of existing street elements need to be analyzed in more detail.



SOURCE: NEVUE/NIGAN ASSOCIATES

- **Cross sections.** The street cross section presented proposes significant changes to existing conditions. Stormwater features factor prominently in the cross sections. Also, the proposed curbless street with wider pedestrian space may require the removal/relocation of trees, street lights, etc. More detailed design and engineering analysis is needed as project design advances.

- **Design.** A curbless street that can act as a festival street is an innovative concept that has been implemented in the city, most recently in Old Town and South Waterfront. The ultimate widths of sidewalks, travel lanes, and parking zones have not yet been determined. The design of a curbless street must be carefully considered and reviewed by PBOT as there are ADA issues, among others, that need addressing.

- **Right-of-Way/street vacation issues.** A key question to resolve is whether there is value in changing street ownership. PSU owns most of the property adjacent to the street and some parts of SW Montgomery Street have already been vacated. The issue affects the funding of improvements, the criteria for design and who maintains street elements. Revocable permits with adjacent property owners to own and maintain street elements should be explored. In addition, since the project aims at creating spaces that can be used for special events, a protocol for closing the street should be explored.

- **Maintenance and funding.** Who will maintain the street (and where funding comes from) is closely tied to who owns the right-of-way. Design elements such as movable planters may require additional maintenance and equipment to operate.