

6 MASTER PLAN



MASTER PLAN

Grand Center Vision

As the participatory planning process evolved, the Design Team documented a vision for the community which is summarized by the six statements below. These statements were reviewed and refined by members of the subcommittees during the design phase of the project. The following visions statements and their respective strategies guided the development of the design, the transportation approach and land use planning throughout the planning process.

Vision Statements and Strategies

1. Grand Center is a diverse Community

Strategies: Diversity of uses, users and cultures
Connection of neighborhoods, business districts and institutions
Infusion of dense residential development
Added neighborhood businesses and services
"Front porch" feeling for all institutions and business

2. Art and life unify a distinctive community

Strategies: Reinforcement of the art anchors
Public realm design that respects the needs of the venues
Branding for activity zones of visual and performing arts
Public spaces for permanent and temporary art
Public realm design that is unique and special for Grand Center

3. Access to, within and through Grand Center is logical and intuitive

Strategies: Parallel routes on Vandeventer and Compton
Local venue and business traffic on Grand
Coordinated parking entrances/exiting strategies
"No fault" circulation
Great wayfinding and branding in and beyond the community
Strategies for manipulation of GPS mapping instructions

4. The pedestrian experience is transformed

Strategies: Design for the pedestrian experience
Wider sidewalks
Better lighting and wayfinding
Active street level businesses
Pedestrian destinations and street venues
Subdivide long blocks with mid-block crossings
Infill of empty and dark surface lots with active uses
Programmed green spaces and plazas
Great access to public transit and bike facilities
Vehicular, bicycle and pedestrian traffic balance

5. Parking solutions support the future of Grand Center

Strategies: Denser parking capacity
Reduction of demand for parking
Mixed use infill development with parking garages
Strategic locations to serve venue and business patrons
More efficient use of large surface lots
Coordinated parking operations
Valet parking, cab stands and public transit options
Shuttle from MetroLink Grand Center Station
Shared car options (WeCar)

6. Underutilized properties lead to purposeful redevelopment

Strategies: Mixed use infill with parking garages
Inclusion of residential use
Pedestrian routes around and through are integral to design
Active street uses and "front porch" at the street
Shapes spaces and streets
"Mission teeth" are filled along the street frontage
Distinctive, honest design for Grand Center

Transportation Recommendations

A Bold Vision

In order for the community to think about a bold vision for Grand Center, fundamental questions about transportation had to be asked and answered. The outcome of the traffic investigation enabled stakeholders to think about reducing the width of Grand Boulevard and widening the sidewalks. Below is a discussion of the outcome of the transportation recommendations.

The Transportation Recommendations

The transportation challenge of the community is a complex set of interconnected variables supporting the desire to make Grand Boulevard the heart of the district, a place where the community can gather and move freely between destinations. The main conflict to this goal is the vehicular dominance of Grand Boulevard. To bring a pedestrian focus to the forefront, through-rips need to be shifted to alternative routes. Residents and visitors need to be encouraged to arrive and depart Grand Center from the east and west. Connections to uncomplicated pedestrian paths need to be clear and strong for all modes of travel.

The Great Streets plan tested two assumptions from the Framework Plan: 1) The capacity of Grand can handle evening peak traffic with one travel lane in each direction and 2) alternative parallel routes have the capacity to reduce traffic volumes on Grand for through-trips. The findings revealed that there is sufficient capacity to shift the way vehicles get to, from, and through Grand Center.

Before key recommendations of the plan can take place such as lane removal and sidewalk expansion on Grand, alternative routes need to be improved. An initial focus on the improvement and establishment of efficient vehicular routes allows for all the pedestrian improvements to follow.

The following are transportation goals and associated strategies for the Grand Center plan.

Transportation Goal	General Strategies
Provide efficient ingress and egress for Grand Center that is easily identifiable and user friendly.	<i>Promote the usage of alternate arrival and departure routes through the education of patrons, improved network management, event parking strategies, and other district "defining" streetscape improvements.</i>
Create a safe and friendly pedestrian and cyclist environment through the usage of traffic calming strategies.	<i>Provide safe pedestrian crossings at all intersections, with attention given to accommodating event pedestrian volumes at intersections in close proximity to the major venues.</i>
Modify traffic patterns on Grand Avenue to be more conducive to venue and retail users.	<i>Support the local orientation of this segment of Grand by providing strong connections and good wayfinding to alternative and parallel corridors.</i>

When realized, Grand Center will have functionally complete streets that balance modes of transportation. Specific improvement recommendations for the implementation of the Great Streets Plan for Grand Center are:

Vehicular

1. Enhance vehicular network connectivity
 - a. Reconnect Theresa Avenue to Lindell Boulevard
 - b. Improve lighting on Olive Street west of Spring to encourage use
 - c. Implement special event signal timing plans for Olive and Washington during venue peaks
 - d. Extend Grand Center branding, wayfinding and lighting on Olive, Washington, Locust, Samuel Shepard and Delmar to Vandeventer and Compton
2. Improve physical conditions of parallel routes:
 - a. Vandeventer
 - Repair pavement
 - Remove curb parking on the east or west side to improve driver comfort
 - Improve signal times
 - Enhance streetscape

- b. Compton
- Improve pavement striping
 - Prohibit on-street parking between Delmar Boulevard and Olive Street
 - Redesign Compton between Olive Street and Laclede Avenue to obtain two lanes in each direction with dedicated parking
 - Remove curb parking from west side between Laclede Avenue and Market Street

3. Improve driver information

- a. Coordinate with Missouri Department of Transportation (MoDOT) to modify freeway signage
 - Grand Center wayfinding at interstate exits for alternative routes
 - Wayfinding (Interstate "shield" signage) within district for exiting using alternative routes
- b. Coordinate, upgrade and extend wayfinding throughout and beyond the district
- c. Public and patron education campaign to promote alternative route usage
- d. Seek ways to manipulate GPS/navigation device/cell phone driving directions and position of final destinations in Grand Center

Pedestrian

1. Enhance Pedestrian Network
 - a. Widen sidewalks and create safe intersections for pedestrians and drivers
 - b. Build new curb ramps to meet ADA and provide visually graphic crosswalks for visibility in day or night
 - c. Improve locations of pedestrian signal button locations at intersections for better accessible access and safety
 - d. Improve pedestrian signal crossing times and special programming for venue peaks
 - e. Quickly shift the vehicular mode of travel to a pedestrian mode as patrons enter the district.

Bike and Transit

1. Strengthen access to and use of public transit and bike facilities
 - a. Improve public realm conditions, wayfinding signage and lighting to transit and bike facilities
 - b. Create strong visual linkages to transit opportunities and bike facilities
 - c. Create an off-street pedestrian and bike facility (Midtown Loop Trail) on Spring with a partnership with Great Rivers Greenway
 - d. Connect on-street bike routes (Bike St. Louis) and proposed Midtown Loop Trail to all major destinations, employment centers and residential areas in Grand Center
 - e. Capitalize on the newness of future articulated buses to be operated on Grand to change perceptions about public transportation and gain ridership
 - f. Reposition new bus stops along Grand to provide access on the south and north ends of the community and interface better with the Delmar route

Parking

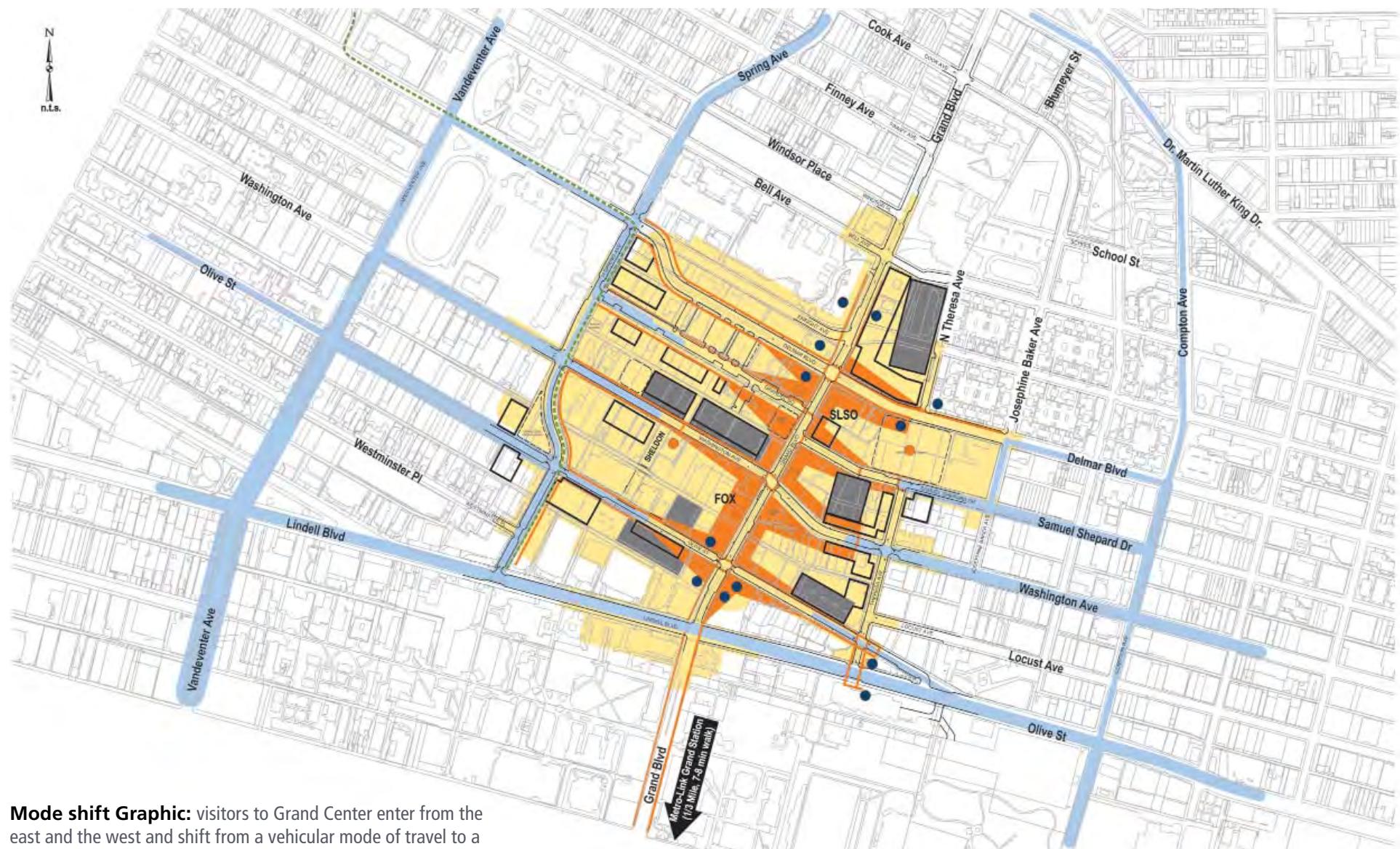
1. Choreograph parking access and exiting
 - a. Promote the use of alternative and parallel routes to access the community through signage, wayfinding, public information campaigns, etc.
 - b. Create new mixed use parking facilities on the east and west edges of the community to allow visitors park quickly upon entering the district
 - c. Create and employ venue exit traffic management plans
 - d. Investigate and implement alternative payment methods for parking facilities (kiosks, credit card payments) to speed up and stagger payment process
 - e. Stagger visitor access and exiting with enticing activities before and after performances



2. Reduce parking demand

- a. Promote public transit and bicycle use through improved facilities, wayfinding, public information, etc.
- b. Investigate and implement WeCar, car-sharing facility
- c. Maximize parking resources with shared facilities for daytime uses and evening/event uses
- d. Promote mixed use infill development with a mix of services so that residents don't need cars

Improving how people get to, from, and through Grand Center opens the door for a bold design vision that dramatically improves the look and feel of the public realm. The next sections of the Master Plan illustrate these proposed physical improvements.



The Design Vision

Grand Center, a hub of entertainment venues in St. Louis, needs a compelling vision to complement its world-class institutions. The iconic "steeple to steeple" Grand Boulevard view corridor is the most striking architectural memory of the Grand Center community. Whereas surface parking lots have become the dominant spaces in the community—areas of "void" in a once vibrant part of the City of St. Louis.

The Issues

Grand Center's sidewalks are too narrow and its streets are too wide. The pedestrian experience is marginalized and lacks basic pedestrian comfort and safety considerations. The current street widths are more than adequate for traffic flow and this condition promotes higher vehicular speeds. The existing pedestrian corridors are conventional and do not physically express or capture the essence of the place.

The existing replica "acorn" lights served their purpose in the early days of Grand Center revitalization and now appear out of date for the contemporary entertainment district that Grand Center has become. Although the historic lights were never truly authentic to this neighborhood when they were installed, it was a common trend to remove "cobra head" street lights when looking to transform streets into pedestrian environments. The poles are spaced closely at 30 ft. on center and create a three-dimensional "picket-fence" visual barrier. Because the poles are short and the acorn light fixture is inefficient, they are placed close together to provide the appropriate lighting levels. The by-product of this is a very cluttered and congested sidewalk. The distinguished landmark buildings are awkwardly blocked when viewing from the sidewalk.

Place Making

The image preference survey completed by the participants during the Public Open House revealed preferences for engaging nocturnal experiences. Preferred images of other precedent streetscapes revealed a desire to create a more vibrant nightlife with intimate places to dine and linger before and after events.

How Great Streets Apply

Great Streets are representative of their "place." Making the pedestrian environment safer, more gracious with simple elegant materials will rightfully acknowledge and express the high quality architecture and cultural institutions that represent Grand Center as a "place." The design will: 1) transform the nocturnal pedestrian/vehicular experience; 2) reveal the great views of the buildings at eye level and enhance the pedestrian experience with state-of-the-art durable and elegant materials, sculptural stone benches, seasonal planting, street trees, wayfinding and public art; and 3) the design will attract future development—making this diverse community a better place to live, enjoy and experience.

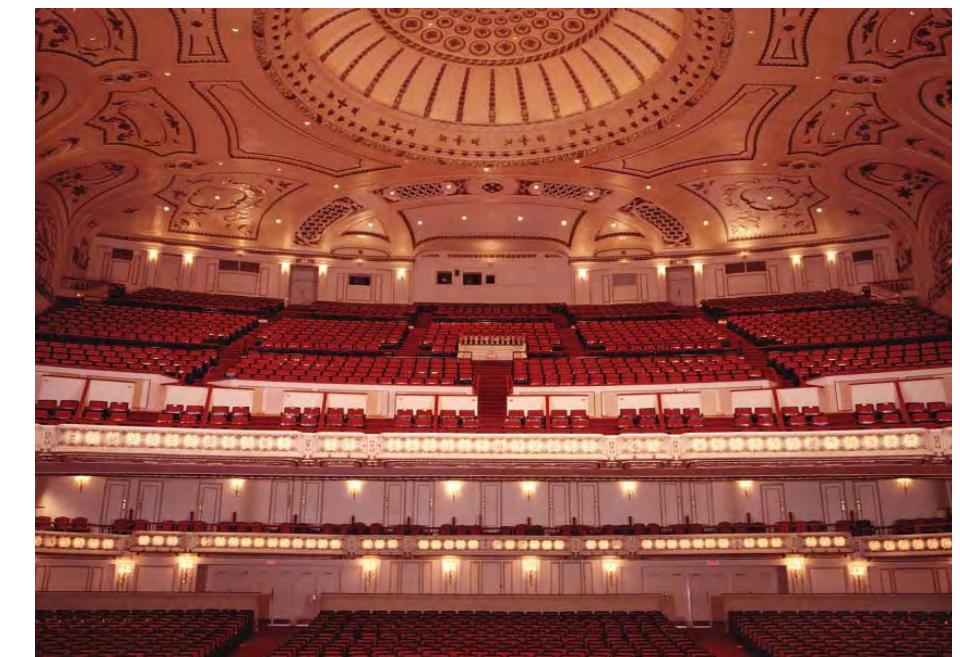
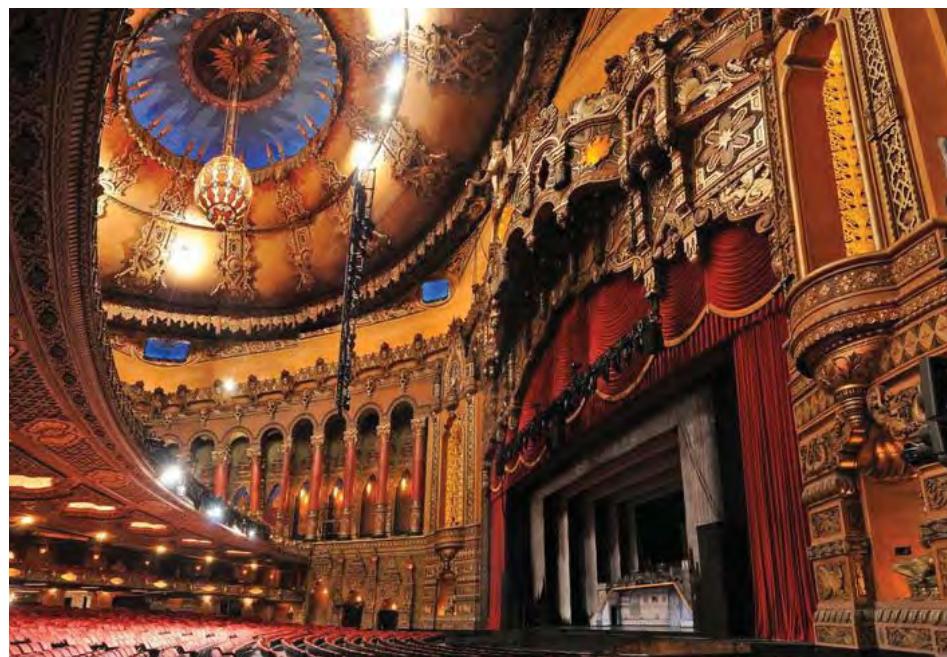
In order to comprehend, digest and then design all elements of the neighborhood and streetscape into a coherent whole, a multi-disciplinary team focused on Great Street "layers." These "layers" all had to be specifically woven together to make an integrated whole.



Right: Light poles create a 'picket fence' effect and block views

THE DESIGN CONCEPT

The design concept is inspired by the majestic historic theaters, performance stages, galleries, schools and Grand Center's "The Intersection of Art and Life" motto. Historic photos of the Fabulous Fox and the St. Louis Theater (Powell Hall) illustrate the visual power of the architectural room they created with the street. The ornate facades and neon marques add to the glamor and excitement. In its heyday, going to a show on this memorable street must have suspended its patrons from reality for a brief time. The design concept is intended to be unique in St. Louis and be a physical landmark for citizens, tourists and neighborhood residents.



Left: Fox Theater
Right: Powell Theater

"STREET AS URBAN STAGE"

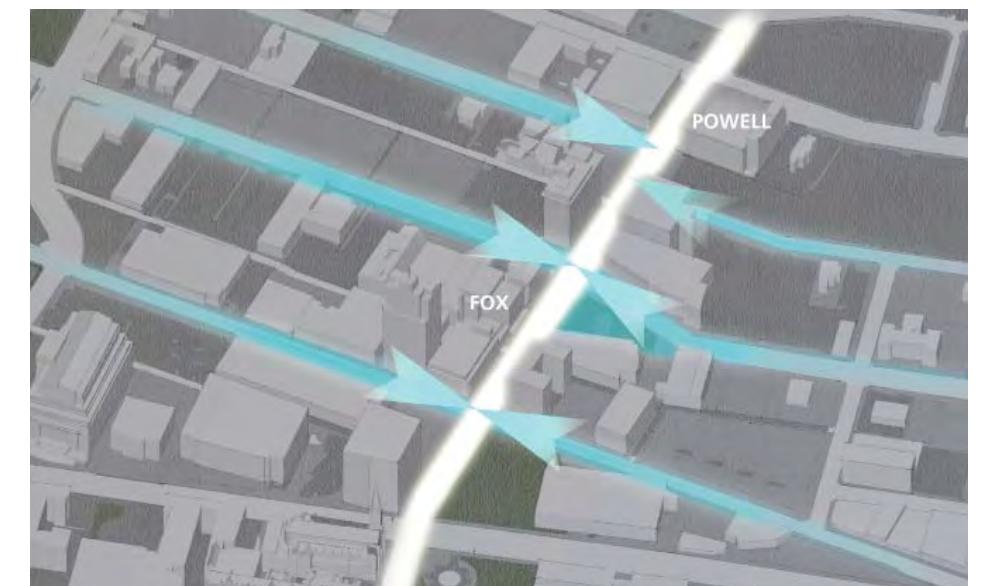
The visual and performing arts are no longer contained within buildings. The street becomes the stage; transforming the public right of way into an urban stage—creating a setting for a vibrant, active, diverse, flexible space where people and vehicles are "on-stage."

Lighting will be the key to this design vision. The core element of any stage, theatrical lighting highlights the main attraction, does not detract from its setting and makes everything clear for its audience. New tall light armatures will line Grand providing safety as well as dramatic lighting for this grand stage. The tall buildings of Grand Boulevard define walls of this stage.

The night-time pedestrian experience is heightened when traveling down main cross streets like Washington and Olive within a linear "room" defined by a delicate constellation light ceiling - small fixtures suspended with very thin wire cables span over the streets. The lights are spaced like stars in the sky along the streets leading to Grand, progressively intensifying in density. At each intersection the ceilings of light dramatically lift to reveal open sky and magically unveil Grand Boulevard. There is a crescendo of light at Grand, the spine of the community. Lighting and the urban stage makes a very suitable story for this place.



First Night at Grand Center: The street is a stage



Revealing the spine: the crescendo to Grand Boulevard



Top: Grand Center Spine Plan

0' 20' 40' 80'

Grand Spine Plan

The core spine of Grand Boulevard is an important central space for the Grand Center Community. The absence of trees between Delmar and Olive preserves the historic "steeple to steeple" view

PLACE-MAKING

"Streets as Urban Stage" is a "place making" concept that is relevant for Grand Center because it is a physical design statement that demonstrates the unique qualities that only Grand Center has to offer in St. Louis. It is designed to build lasting memories and encourage repeat visits. Most importantly, it is meant to express the character of a diverse community and its residents. The Great Streets of the world are theaters where pedestrians are the "actors" on their community stage.



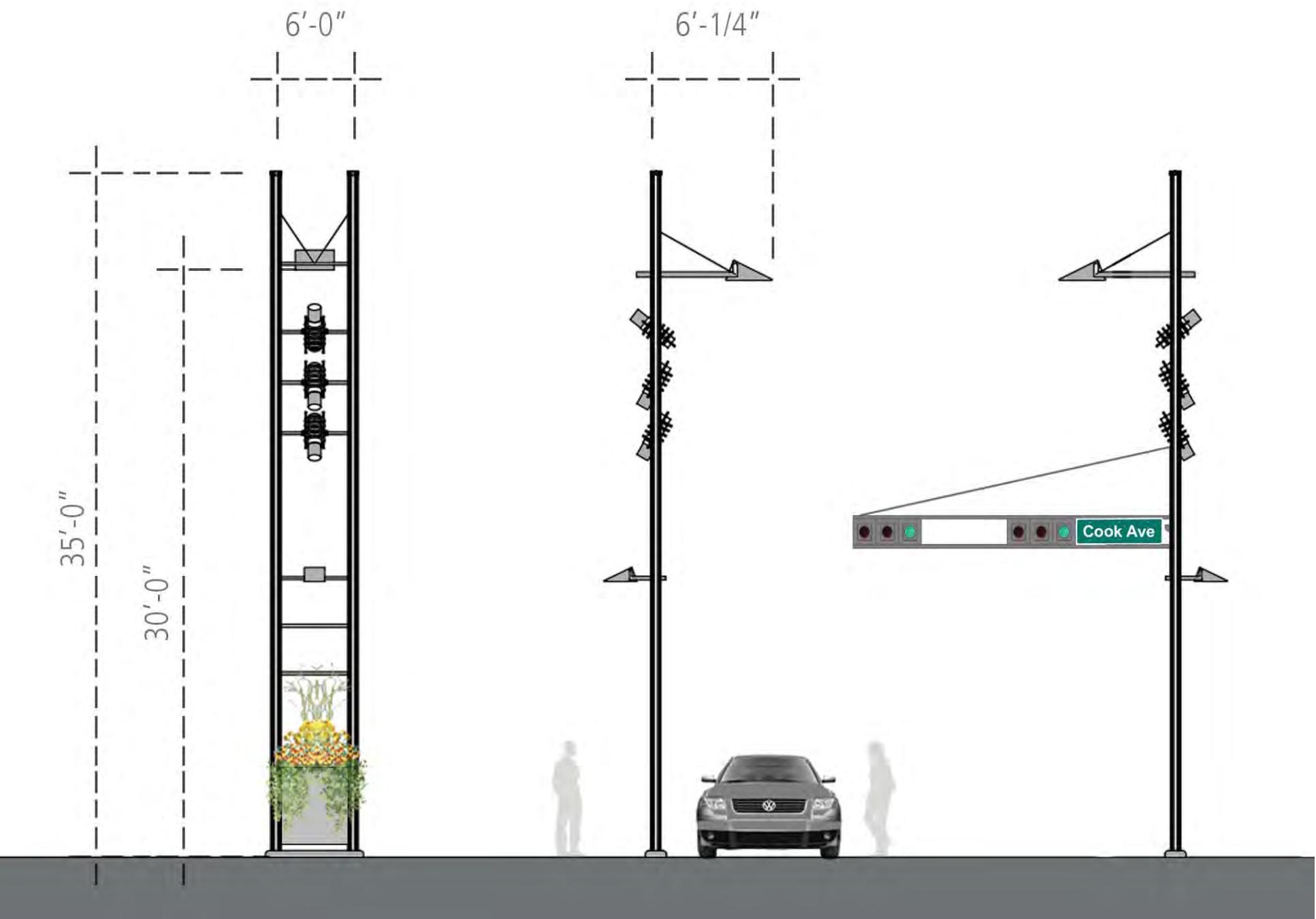
Right: Concept Sketches--Grand Boulevard Lighting Feature

Elements of the Design

The design elements are simple, durable and elegant with a special focus on lighting.

Lighting

The idea of the "architecture" of the light fixture was inspired by backstage lighting; where multiple flexible lights would be mounted on tall poles expressed honestly with a minimalist aesthetic defining a flexible track of lights. The fixture design was initially conceived of a "ladder" with various levels of light for sidewalk and street. A planter is integrated at the base to soften the hardness of the Grand streetscape that is designed not to have trees.





Left:
Washington Boulevard -- Lighting boards Concept Sketch

Right:
Washington Boulevard -- Lighting boards nighttime Concept Sketch





Stage

At the heart of Grand Center is Strauss Park

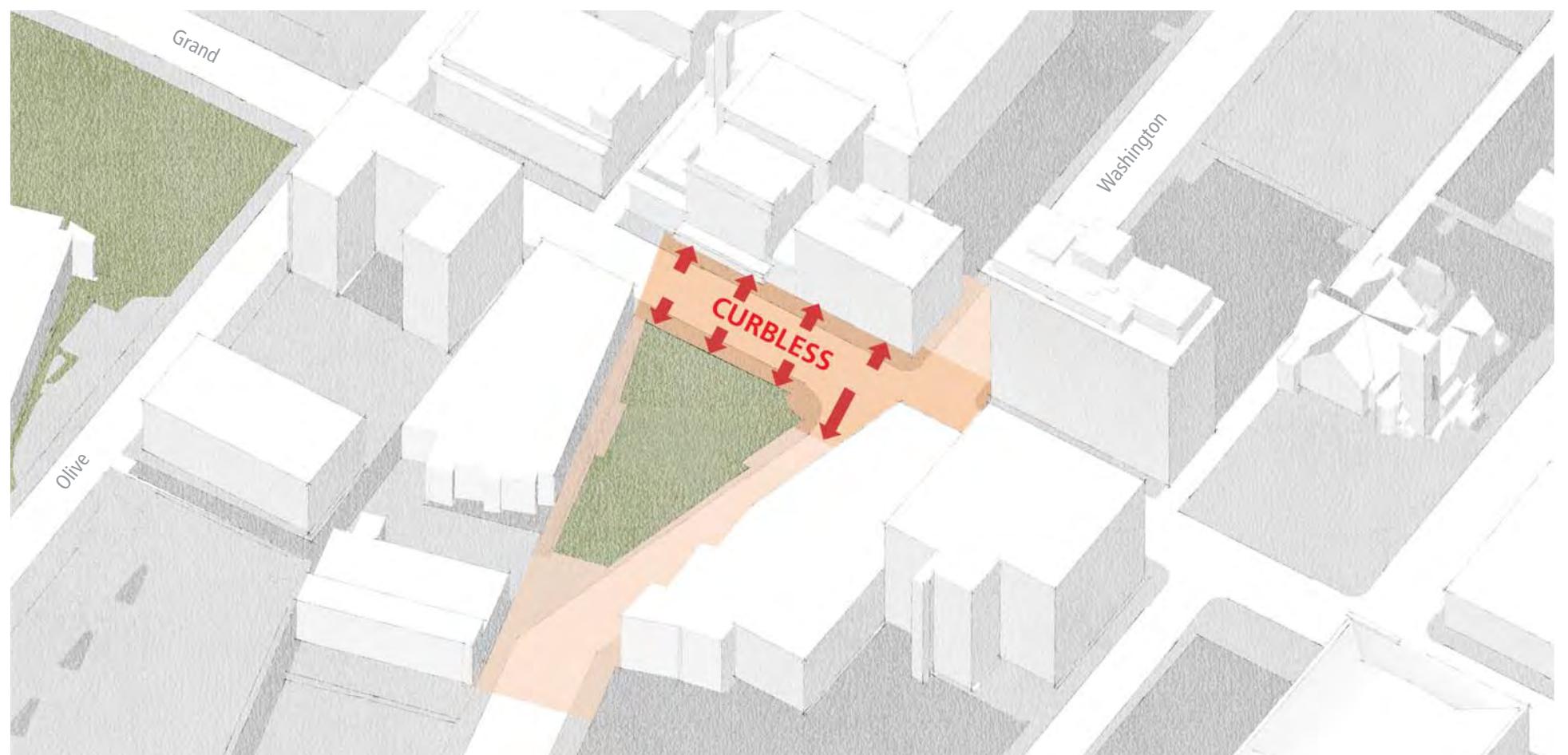
The triangular space on sloped ground is dramatic. The large mature trees are a neighborhood asset. To strengthen the park, adjoining spaces and buildings as a room, a curbless Grand Boulevard between the mid-block crossing and Washington Boulevard is proposed. It establishes a space designed for people to use for special events and continues to provide daily use of the major thoroughfare. Bollards and long benches are placed along this edge on both sides for pedestrian safety and for visual and physical cues for drivers.

Left: Strauss Park Detailed Plan



The whole area between the buildings and over the street will have a "carpet" of durable paving to visually express the "floor" of the room. Similarly, suspended lights above a section of Washington will create a "ceiling" effect. These lights will be placed throughout and in the trees of the park creating an aesthetically beautiful setting—the park becomes an urban stage along with the streets.

Right: Strauss Park Paving Diagram

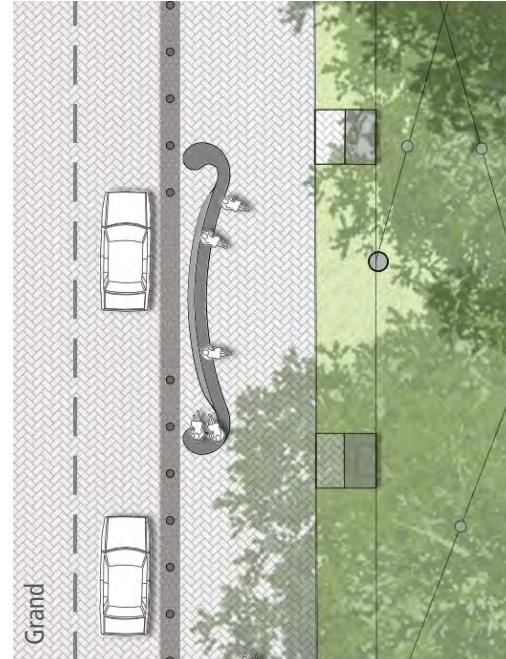


Seating

The configuration of the curbless Grand Boulevard required a barrier to protect pedestrians. A long bench was designed to be both barrier and a monumental-scale bench. Three of these are located along Grand: one in front of the Fox, one at Powell Hall and one centered along Strauss Park on Grand. A "cousin" bench was designed to be a complement to the long bench and includes a planter. The inspiration for the sculptural form of the bench was derived from the form of musical notes, instruments and the St. Louis flag—depicting the Mississippi and Missouri rivers. The benches and bench planters are carved of gray granite with curvilinear shapes and bull nose detailing. A tactile, soft and smooth feeling is expressed and a concave curvilinear form. It lures people to congregate before or after a show or as a place to have lunch. When not being used as a bench, the design is meant to be an elegant piece of sculpture along the sidewalk.

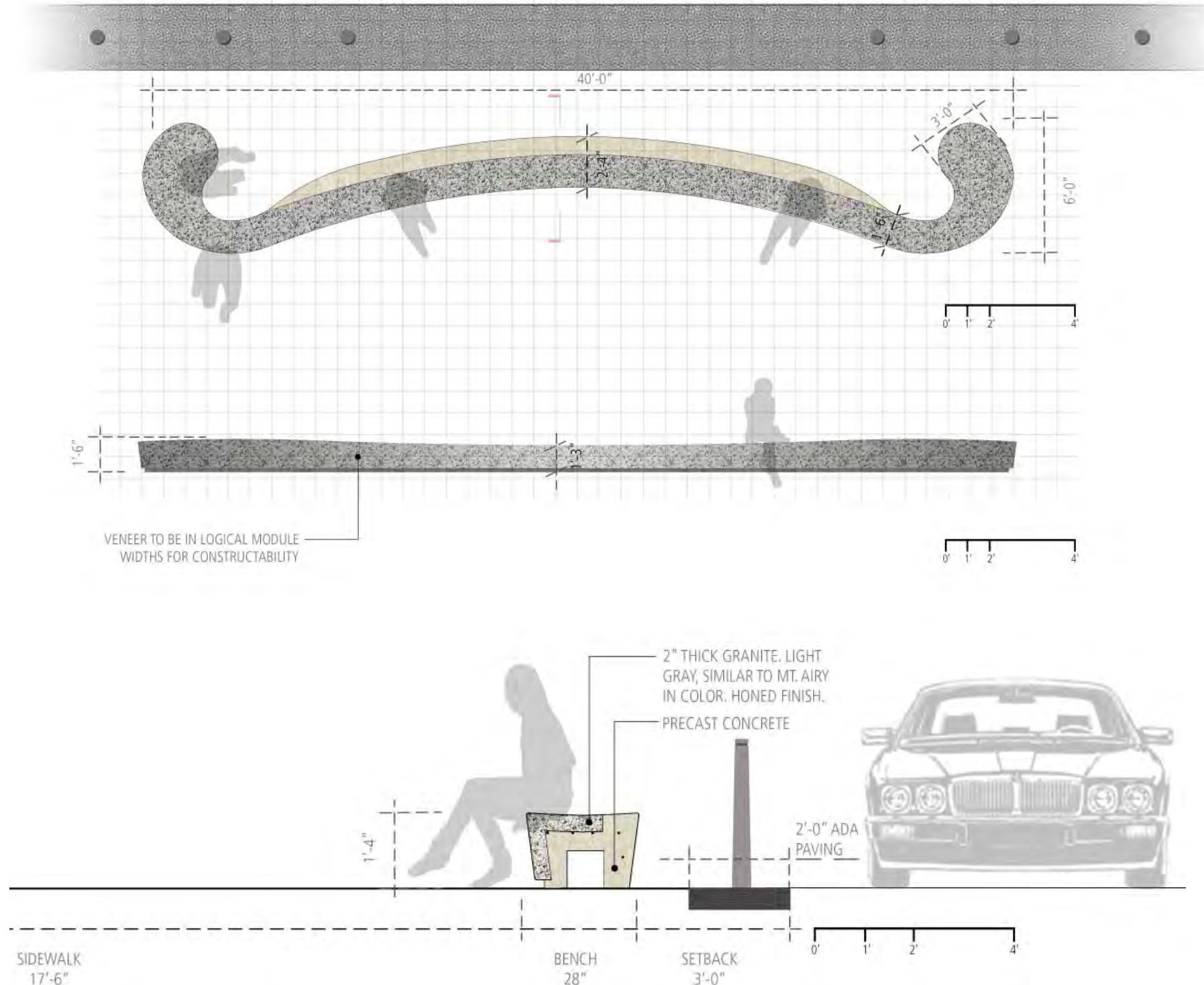
Bottom Left and Right: Musical Notation--Bench Inspirations





Long Bench

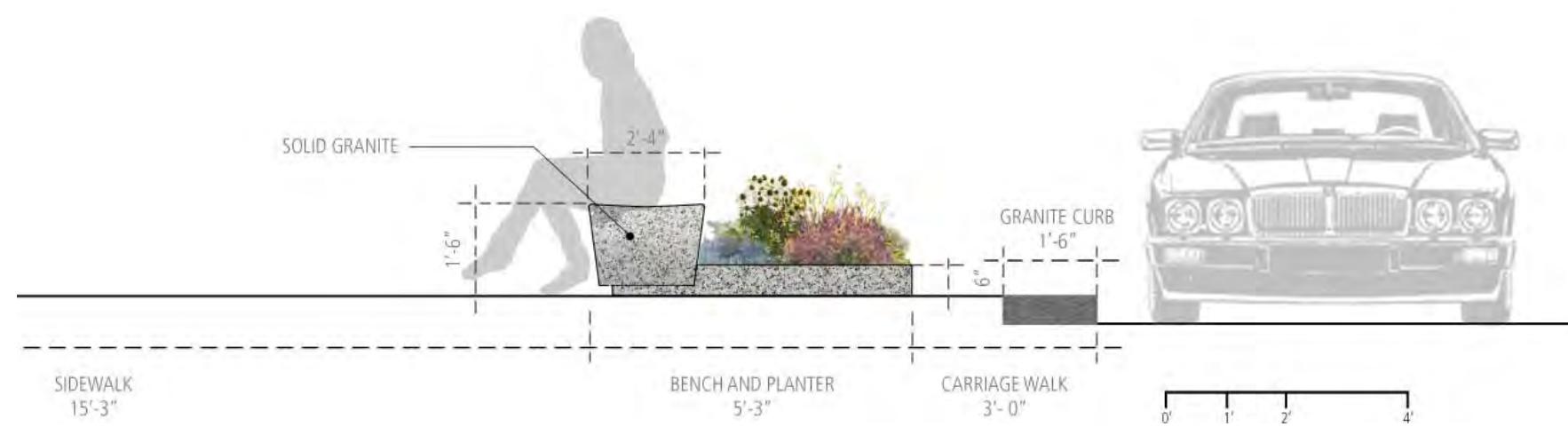
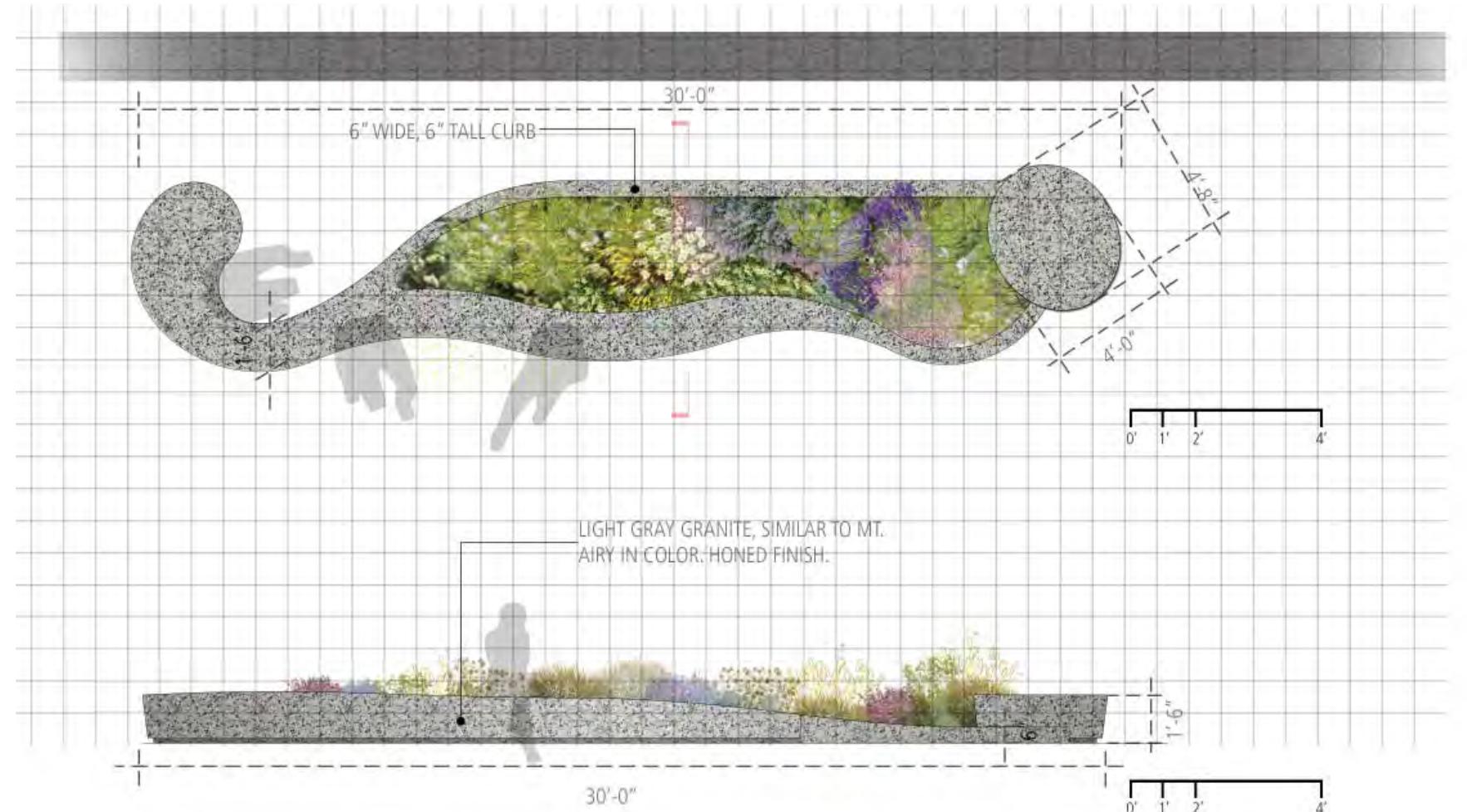
Top Left: Benches Placement
Top Right: Plan View
Bottom Right: Sections

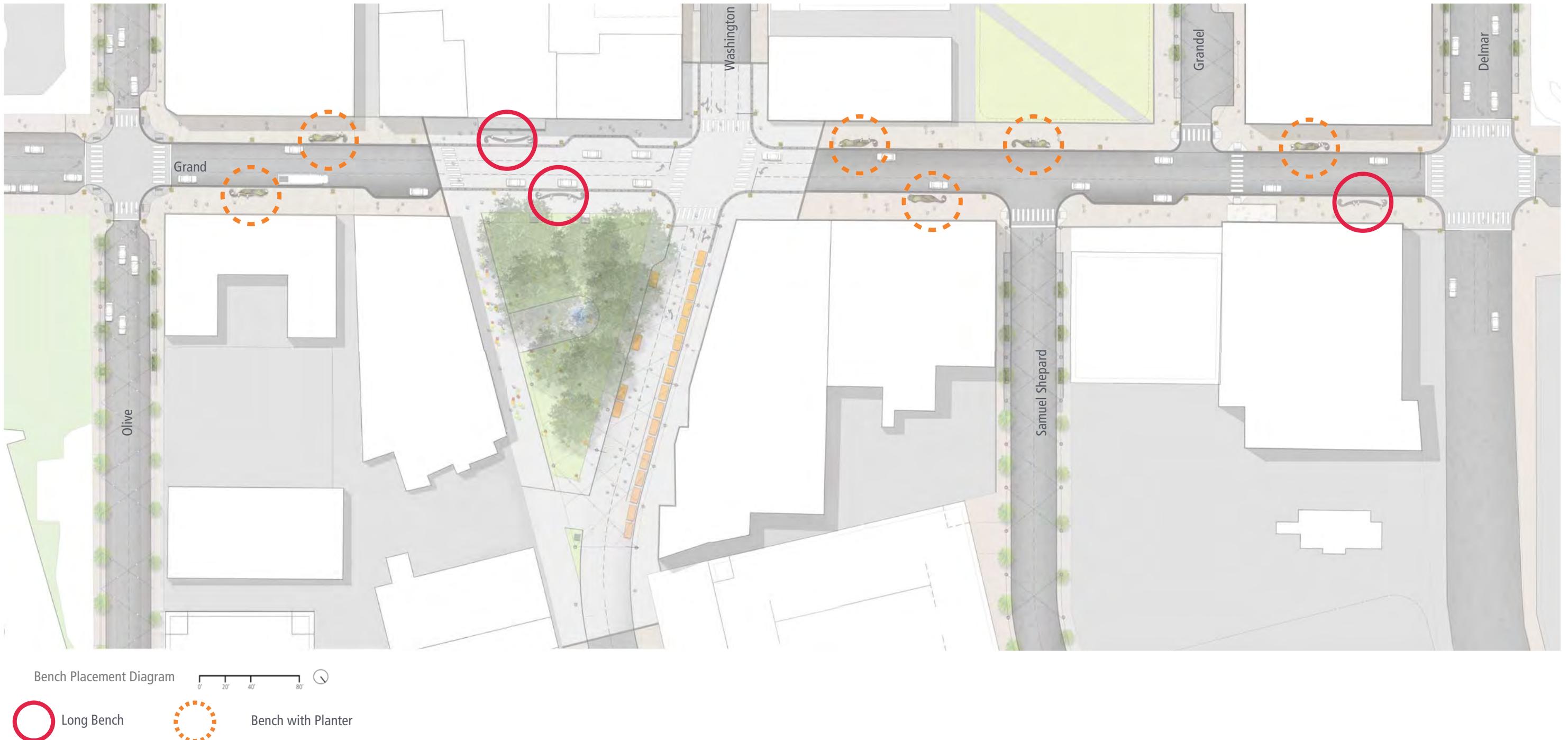




Bench with Planter

Top Left: Benches Placement
Top Right: Plan View
Bottom Right: Sections

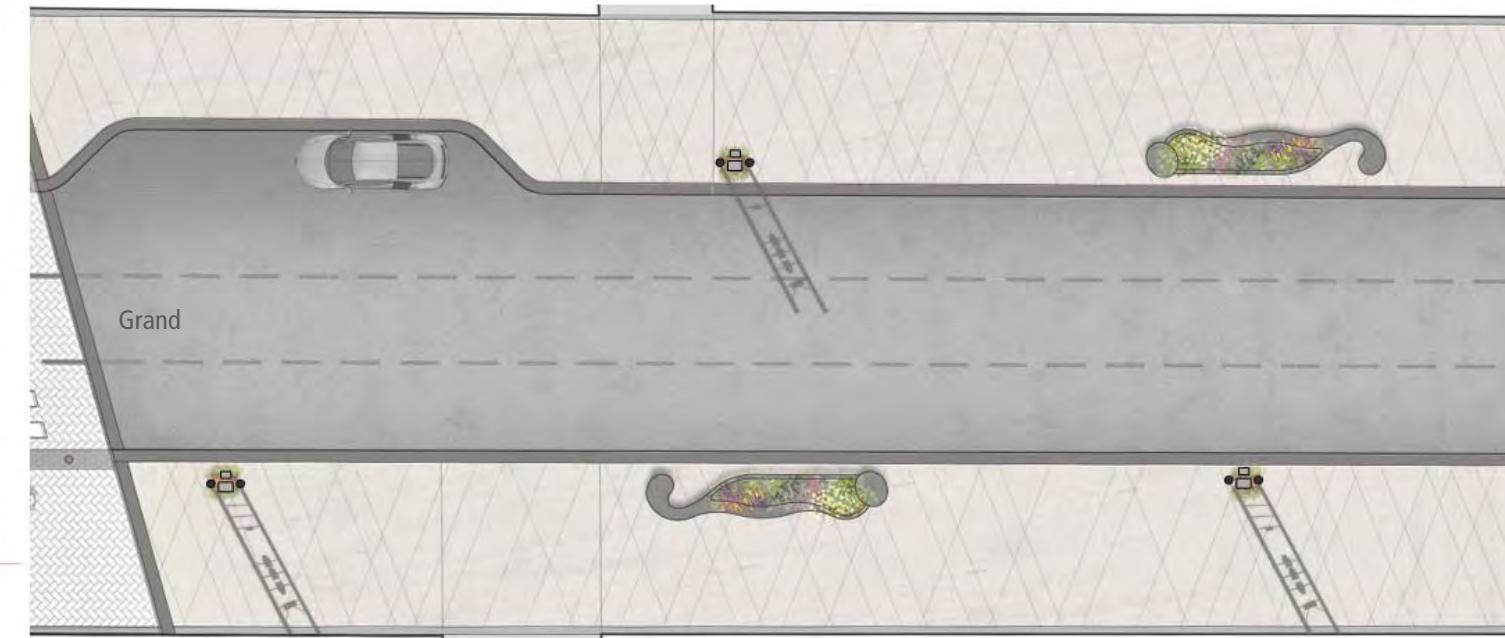




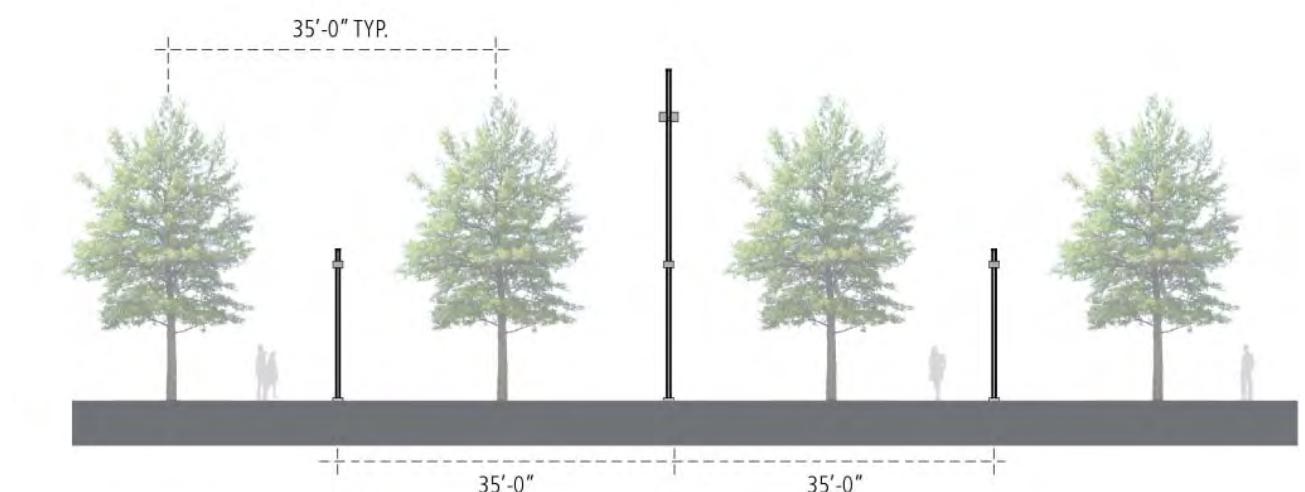
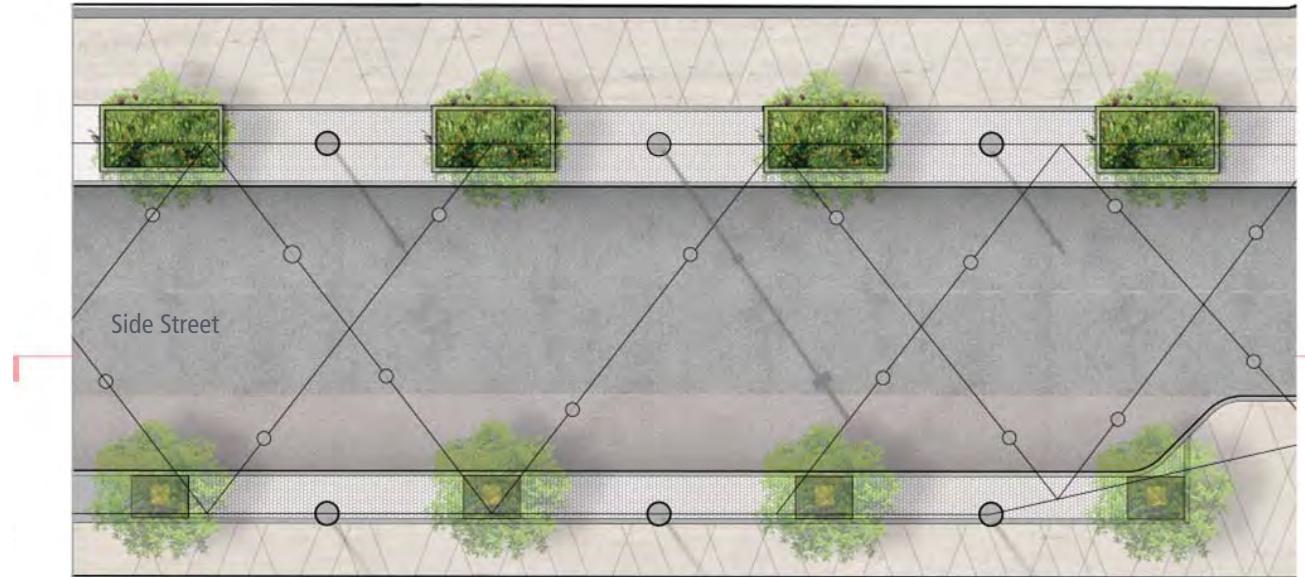
Coherence of all the Elements Together

All famous pedestrian streets in the world have a balanced visual coherence integrating all elements into a unified "whole" artistic composition. Combining trees, lighting armatures, suspended overhead lighting, benches, planters, pavement materials, way finding signage and open spaces for public art is our design response to creating an identity for the space. There are numerous memorable places that will physically express "community" when arriving or passing through on a daily basis.





Top Left: Grand Boulevard Site Plan
Bottom Left: Side Street Typical Section



Top Right: Side Street Typical Plan
Bottom Right: Side Street Typical Section



TRANSFORMATION STREETSCAPE "BEFORE" & "AFTER" DESIGN VISION



Before

The design includes both editing and removal of old elements as well as the addition of new elements. Lighting is often seen as the most important physical streetscape improvement for both enhancement of safety and identity for the community. For Grand Center, this is particularly true. By removing the heavy light poles, views of the street, sidewalks and historic buildings are revealed.

Grand Boulevard Transformation

The "before" image shows a very hard environment, existing lights, a middle turning lane and narrow sidewalks. The "after" vision provides a much more generous pedestrian walkway on both sides of the street and eliminating the former turning lane. Light armatures, planters and sculptural benches complete making the pedestrian experience much more vibrant and adding planting softens the environment with seasonal color.



The nighttime view illustrates the transformation in light quality as it pertains to safety and the lighting design making the street much more animated. Opportunities to highlight building or apply light images are possible.





Before

Washington Boulevard Transformation

Currently the large paved space adjacent to the Fox Theater is used for large semi-trucks delivering and removing stage equipment and patron parking. The idea is to improve the view corridor with a large mural art wall elevated off the ground for eye-level safe visibility. This idea can be executed with video or a combination video/art. The goal is to create a dynamic screen and art platform to allow the space behind to function as it does today.





Before

Strauss Park Transformation

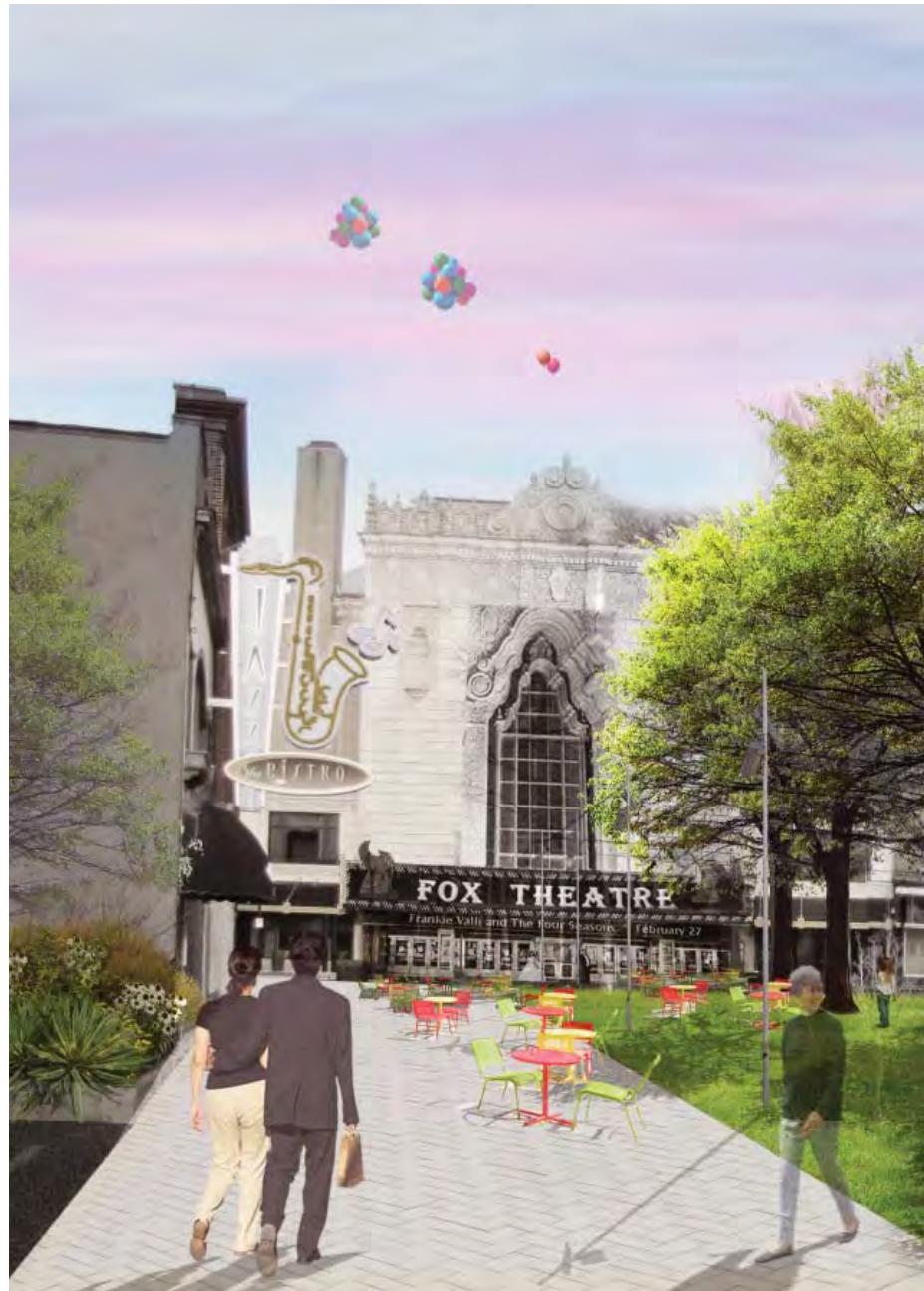
Strauss Park is the "Central Park" of the community. Its unique position and shape makes it a great place to gather during the day or at special events. We have used extreme design restraint for this park.

The "before" view illustrates the density of the acorn fixture layout and newly planted trees on the south walk. The design proposal recommends removing the small trees and carefully pruning the mature trees higher in order to see the Fabulous Fox central archway as you travel from the east on Washington—this is another design "revealing" solution which can be easily achieved.

The "after" design vision illustrates the overhead wires with suspended lights. These are the same as the side streets. This will allow flexible lighting and eliminates pole lighting in the center so that the park can be more open for use. The rendering also shows farmers' market canopies in the parking areas on Washington Boulevard adjacent to the Third Baptist Church - creating an opportunity for a market environment for special events.



After



Fox Theatre View

The south walkway is slightly widened for café restaurant seating creating a simple straight edge to the park. This aligned sidewalk becomes the mid-block crossing on Grand Boulevard. This raised crosswalk defines the "curbless" paved plaza.



Before

Olive Street Transformation

The existing Olive Street "before" shows the very narrow sidewalks and sparse tree planting. The proposed vision narrows the roadway, providing porous paving parking with street trees. The overhead lighting is suspended from the light fixtures.



After

The Nighttime View

At nighttime, the overhead lights suspended with wire come alive. Not solely being decorative, these lights contribute to the streets' lighting level.



Nighttime View



Before

Cook Gateway Transformation

The existing conditions of Cook Avenue at Grand Boulevard are very sparse with few street trees. The threshold to the "steeple to steeple" St. Alphonsus Rock Church and Grand Boulevard corridor is transformed as a gateway with the Grand lighting armature, street trees, storm water rain garden parkways, gateway signage, and porous paving parking. The grand scale of the light armatures creates the new identity when arriving to Grand Center from the north.

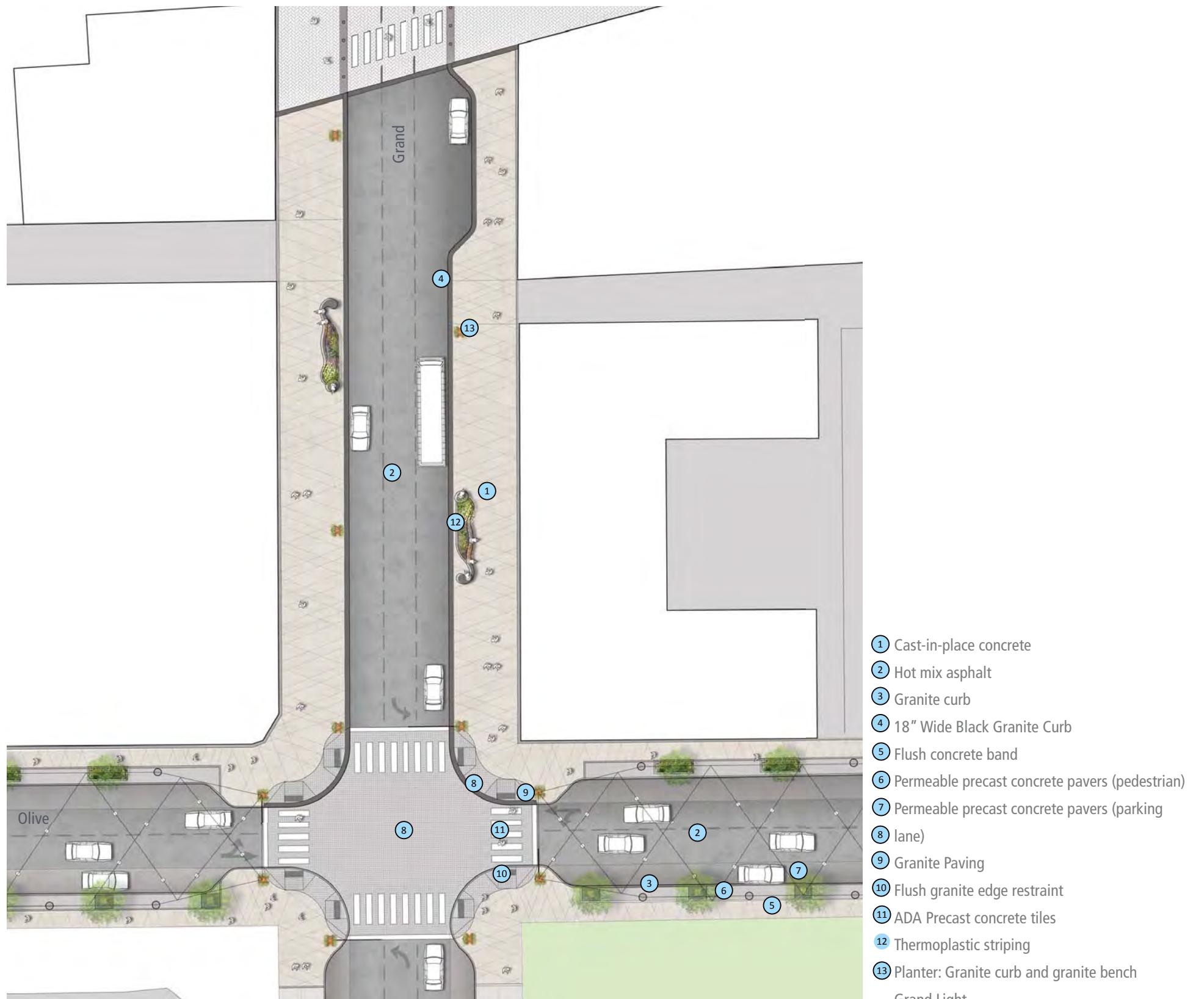


After

MATERIALS

Grand Center's streetscape material palette is chosen for its simplicity, restraint, and practicality. Its neutral composition complements the landmark deco style of the neighborhood's limestone and granite buildings. Conventional materials – concrete and asphalt make up a large part of the hardscape, maintaining truthfulness to regional sources and constructability.

The finish materials discussed herein will be found throughout Grand Center's public realm, evoking it as one cohesive place. These elements, in conjunction with the architecture, attribute to the aesthetic and the unique design feel of the community.



Trees

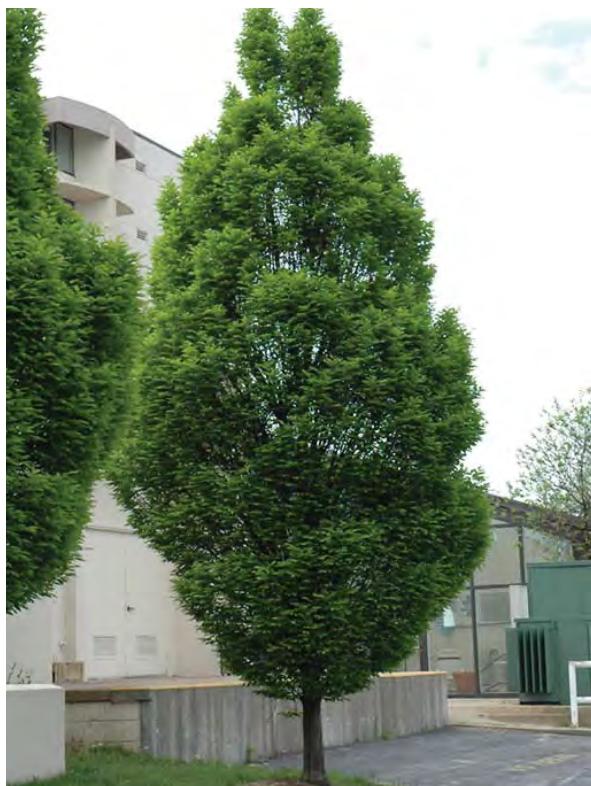
Street trees in Grand Center will be species recommended for their urban tolerance by the City of St. Louis Forestry Division:

<http://stlouis-mo.gov/government/departments/parks/forestry/documents/street-tree-information.cfm>

Street trees will not be the same on every block. Any given species cannot offer a one size fits all solution. Different tree characters and forms address different land uses. Tree diversity promotes flexibility in terms of availability and installation sequencing while offering interest, and combating catastrophic epidemics. Street trees in Grand Center will be specified to be balled and burlapped, installed at 4" caliper size, and limbed up to 7'-0", minimal.

Street trees are usually canopy trees that cast effective shade, live long, and have strong branching. However, some locations where a punch of color or shorter species is needed will warrant ornamental flowering trees.*

Right: A palette of street tree favorites chosen to exhibit a variety of characters from the city of St. Louis list



Common Name: European Hornbeam
Scientific Name: *Carpinus betulus*



Common Name: Crabapple *
Scientific Name: *Malus* sp



Common Name: Ginkgo
Scientific Name: *Ginkgo biloba*



Common Name: Baldcypress
Scientific Name: *Taxodium distichum*



Common Name: Kentucky Coffeetree
Scientific Name: *Gymnocladus dioicus*



Common Name: Elm, Hybrid
Scientific Name: *Ulmus* sp



Common Name: Freeman Maple
Scientific Name: *Acer x freemanii*



Common Name: Sugar Maple
Scientific Name: *Acer saccharum*



Common Name: Tulip Tree
Scientific Name: *Liriodendron tulipifera*



Common Name: London Planetree
Scientific Name: *Platanus x acerifolia*



Common Name: Swamp White Oak
Scientific Name: *Quercus bicolor*



Common Name: Willow Oak
Scientific Name: *Quercus phellos*

Right: A palette of street tree favorites chosen to exhibit a variety of characters from the City of St. Louis list

Open Parkway Planter

Where the distance from the face of curb to the edge of right-of-way is 12 feet wide or greater, street trees will be planted in an open parkway planter.

Tree Grate

Where the distance from the face of curb to the edge of right-of-way is greater than 10 feet wide, but less than 12 feet wide, street trees will be planted with a tree grate.

No Tree

Where the distance from the face of curb to the edge of right-of-way is less than 10 feet wide, street trees will not be planted.

Open parkway planters are preferred to tree grates as soil compaction and other maintenance issues arise overtime with tree grate assemblies.

Note

When the distance from the face of curb to edge of right-of-way is greater than 12 feet, the open parking planter will be wider. Maintain a consistent 6 foot walk zone, typical on side street.



Left: Sidewalk between 10' and 12' wide:
tree grate needed

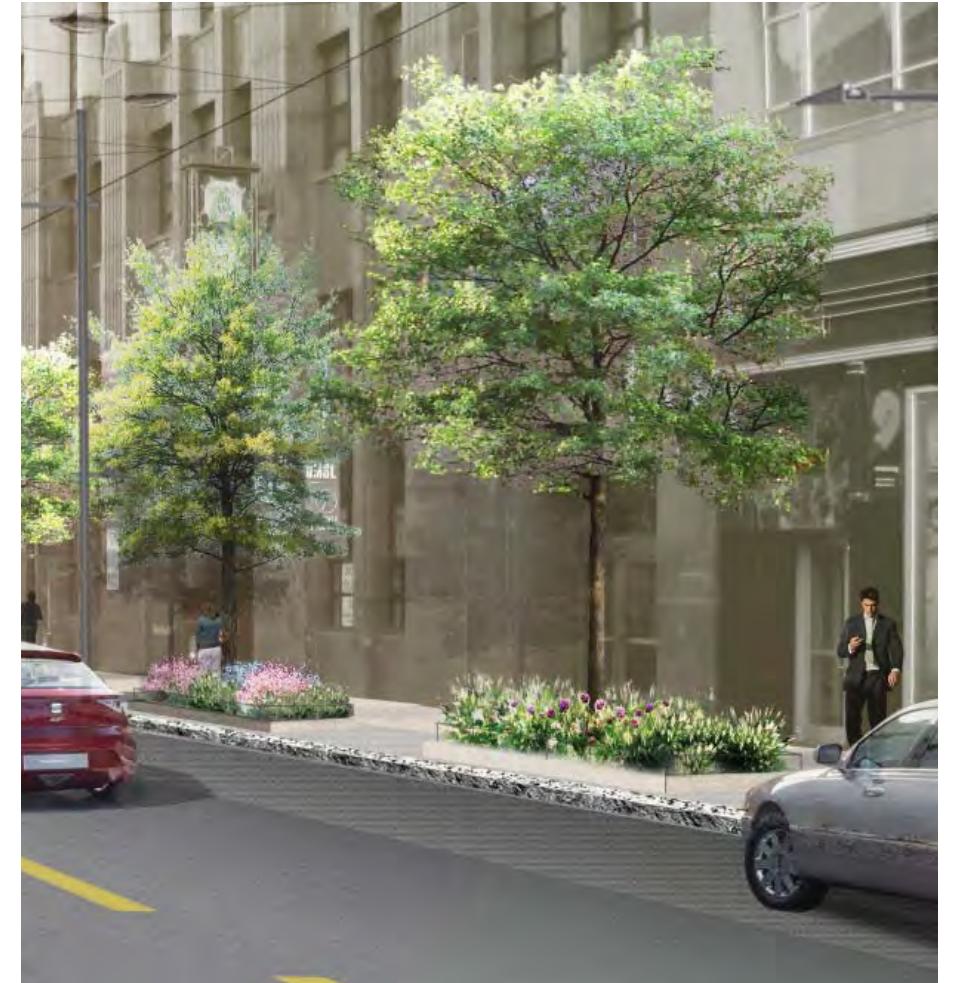
Right: Sidewalk ≥ 12' wide: tree in open pit

Understory Plants

Understory plants will also be chosen for their urban tolerance. Though no plant is maintenance free, some do not require as much maintenance. Assuming soils are freely draining, an idea is to introduce a sedum palette under the street trees in the raised street tree planter. A sedum mix, if grown in the right conditions, can offer a green understory with little need for maintenance.

Other perennials, chosen for their hardiness, seasonal interest, form, texture and color should be considered for open parkway planter.

Left: Washington Boulevard Understory Planter
Right: Olive Street Understory Planter





Rain Gardens

Rain gardens are a best management practice employed to manage stormwater. They are an effective measure in St. Louis and will be included in the arsenal of BMP's utilized in Grand Center. Rain gardens are designed with a specified soil profile and vegetated to be able to absorb and infiltrate runoff water during storm events.

The desired outcome is to incorporate rain gardens on the east side of Grand Boulevard between Bell and Cook. This stretch has the width needed and currently displays an excess of runoff that needs to be managed.

Rain gardens should not be considered an appropriate solution for all of Grand Center. A level of maintenance is needed to keep rain gardens looking and functioning well. Their aesthetic is one of naturalistic planting and this look will be reserved for the area selected.

Rain Garden Plants

Rain garden plants are more difficult to specify than typical parkway beds because they need to be able to live in briefly saturated soils during heavy rain events, but will also need to endure dry conditions. Many rain gardens fail because the plants are not getting enough water. These plants need to be drought tolerant. Rain garden plants that are native to the region are preferred and salt tolerance is strongly advised. These images comprise a simple, but strong rain garden palette for Grand Center based on the criteria above.



Common Name: Red Buckeye
Scientific Name: *Aesculus pavia*



Common Name: Butterfly Weed
Scientific Name: *Asclepias tuberosa*



Common Name: Purple Coneflower
Scientific Name: *Echinacea purpurea*



Common Name: Rattlesnake Master
Scientific Name: *Eryngium yuccifolium*



Common Name: Butterfly Weed
Scientific Name: *Liatris spicata* (L.) Willd



Common Name: Ninebark
Scientific Name: *Physocarpus opulifolius*



Common Name: Black-eyed Susan
Scientific Name: *Rudbeckia hirta*



Common Name: Little Bluestem
Scientific Name: *Schizachyrium scoparium*



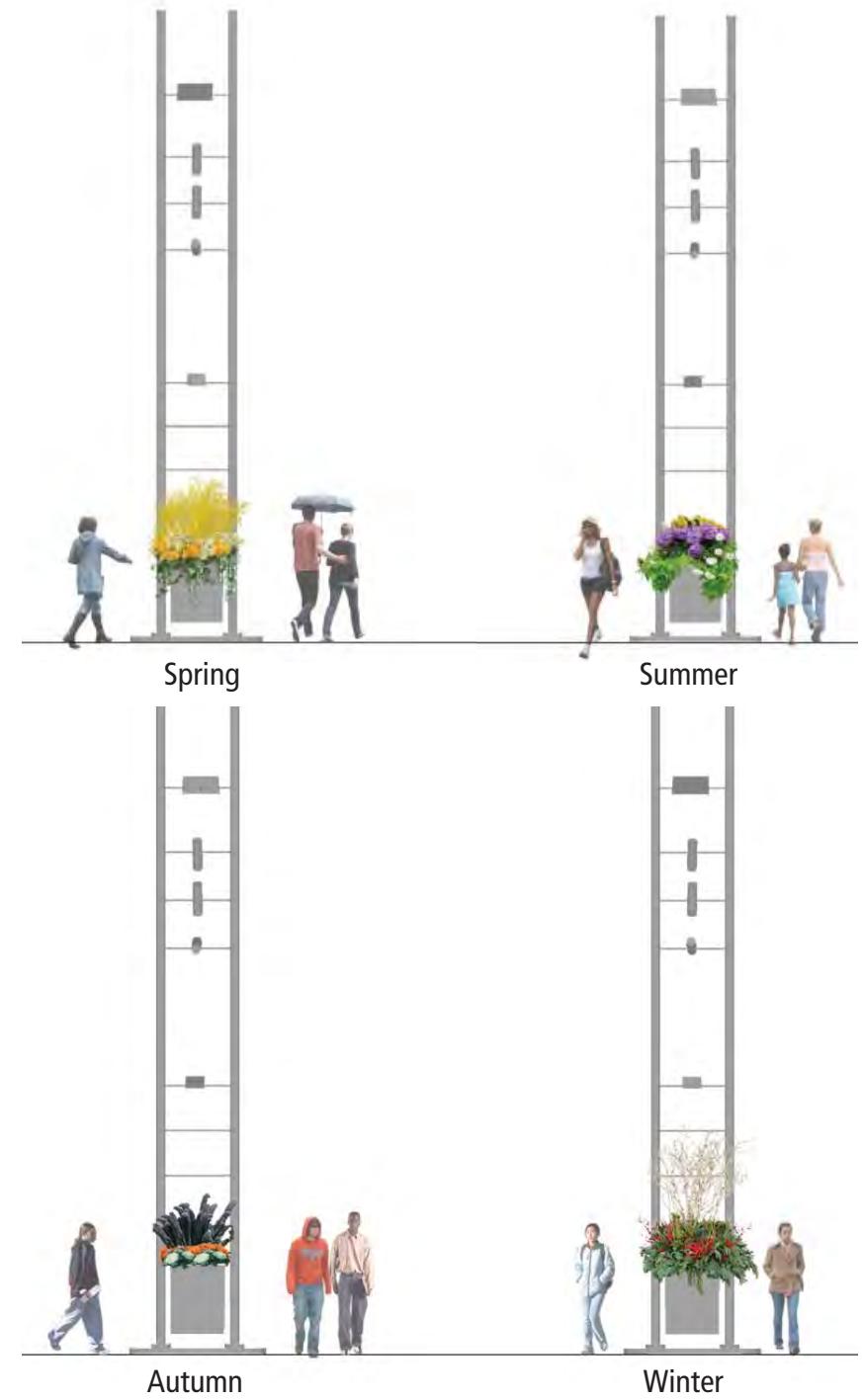
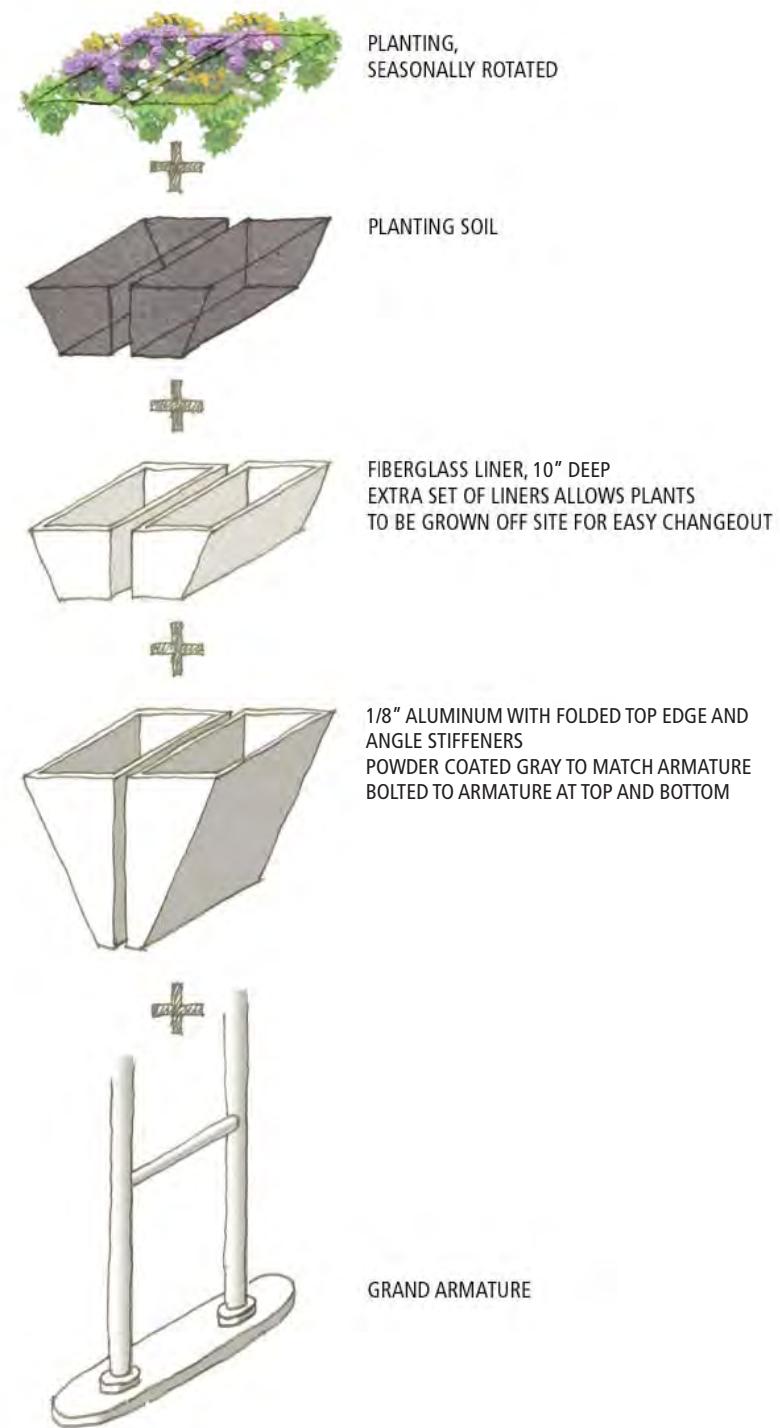
Common Name: Prairie Dropseed
Scientific Name: *Sporobolus heterolepis*

Seasonal Armature Planters

Armature planters are found only on Grand Boulevard. They contribute to making Grand "grand". Without trees on Grand Boulevard, the street would look bare if it did not have a green component. In addition, the digital survey results revealed a desire for plantings in the community. Vegetation on Grand is concentrated in manageable forms that include 1) planters integrated with the sculptural benches between Olive and Delmar; 2) tree lawns between Delmar and Cook; 3) planters at the base of street trees and 4) planters integrated with the Grand Armatures. These are vertical and horizontal strategies that are designed to not block views.

The Armature planter is permanently affixed to the light armatures on Grand Boulevard from Olive to Cook. This planter will be a metal enclosure with a fiberglass liner. This planter will be changed out seasonally, meaning it will be planted with an annual display. There will be four change-outs per year: spring, summer, fall, winter. There is an efficiency if Grand Center owns two liners per planter. One can be in place in the armature planter, while the other is at the nursery growing the next season's rotation. In the course of one evening, all the planters can be changed out to unveil the new season's pop, grown in and ready to impress.

Left: Armature Planters Components Diagram
Right: Armature Planter Seasonal Planting



Plant maintenance

A note about maintenance for trees, understory planting and seasonal planters. Automatic irrigation will be installed in all planting beds. Vegetated streetscapes are living organisms. Grand Center is an urban environment, and the planting will require a committed maintenance program to succeed. A strong public / private partnership is recommended. The most successful maintained streetscapes have neighborhood and city financial partnerships.

Planting soil mix

Just as trees need a foundation of good soil, so do all plants. A good planting soil mix will be provided 2 feet in depth at shrub and grand plane planting beds. Soil mix will be provided 1 foot in depth of turfgrass areas. Properly specified soil mixes can be sourced through local soil blenders.

Right: Grand Boulevard Street Planting



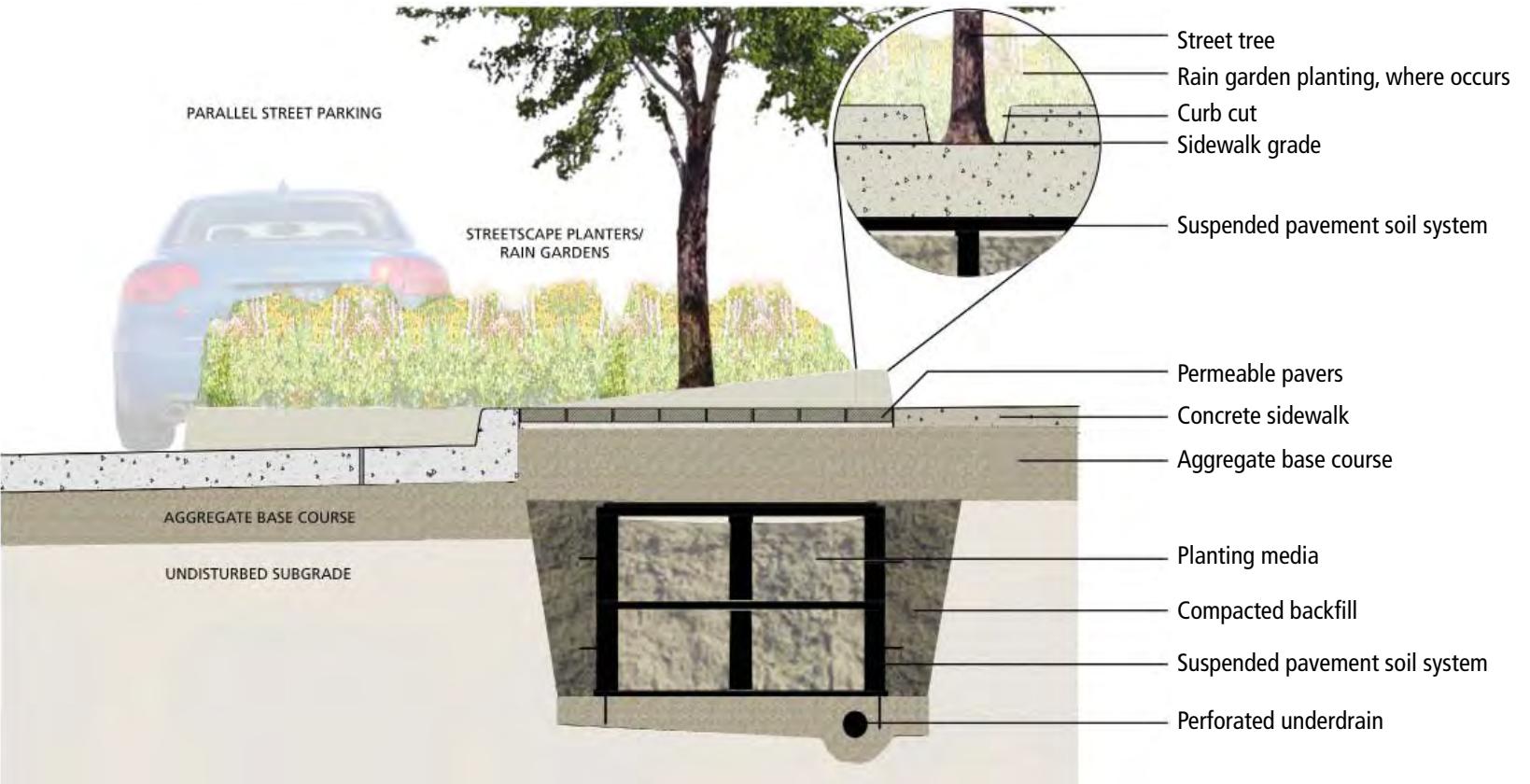
Suspended Pavement Soil Systems/Structural Soil

Soil is the foundation for plant material. Urban conditions typically do not allow trees the adequate soil volume or quality needed to thrive. Tree root systems extend far horizontally, and in an urban environment, the root zone can extend under the sidewalk, curb, and road. These areas typically have compacted soils. Soil compaction stunts tree growth and leads to early fatality. Proper planting soils are free draining to allow water, air, and nutrient movement. There are two main soil systems that can be used in the streetscape to resist compaction – suspended pavement soil systems and structural soils.

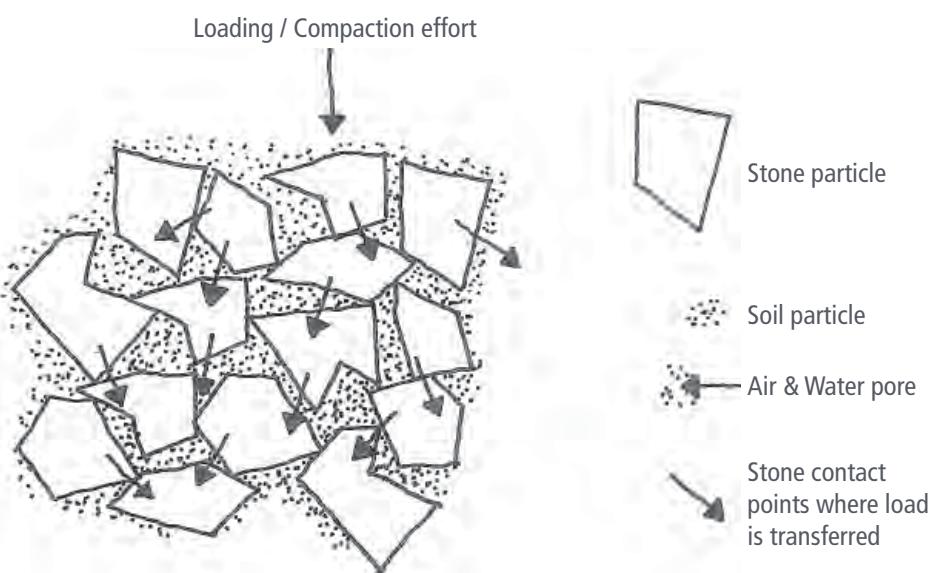
Suspended pavement soil systems are best specified as modular - composed of a frame and deck. Sidewalks and roads can be constructed on top of the deck and planting soil is sandwiched between the decking, giving root systems space to grow. Another soil system is more generically referred to as structural soils. Structural soils have larger aggregate that can support sidewalks and roads above while maintaining the void space root systems need to grow. Different structural soil mixes can be blended at local soil supply outlets.

Inconsistencies in structural soil mixes can sometimes render poor soil conditions. A soil consultant is recommended on any large streetscape project to ensure proper mix ratios and compaction rates. Though more expensive than structural soils, suspended pavement soil systems are the preferred alternative because the pavement systems above are not dependent upon the soil mix for load bearing. When installed on a small scale, suspended pavement soil systems are a good way of adding value to the infrastructure. Incremental projects should consider budgeting for this.

Structural soil should be specified to a depth of 3 feet in a continuous trench along the back of curb between the trees. Ideally, 1,200 cubic feet is a reasonable minimum volume of good soil to support one functional large canopy tree.



Top: Suspended pavement soil system and rain garden, where occurs



Bottom Left: Structural soil diagram
Bottom Right: Structural soil

Porous paving – pedestrian and vehicular

Porous paving is a strategy used to address the combined sewer system and poor draining soils in Grand Center. Porous paving allows water to infiltrate on the spot. This is beneficial because it minimizes runoff that contributes to erosion and sewer capacity breaches. Porous paving comes in many forms: Porous concrete, porous asphalt, and porous unit pavers.

Porous unit pavers are selected for Grand Center's vision, to contribute to the look and function of the streetscape. The color range will be warm gray to tonally match the concrete sidewalk adjacent. The herringbone pattern will make reference to the community's brick and cobblestone streetscape past while implementing a technology of today.

The porous paving will be installed in the Amenity Zone on the streetscape. This is the zone at the back of curb between the street trees. This is also the zone where the suspended pavement soil system / structural soil is found in a continuous trench. Having porous paving over a continuous trench of good soil allows water, air, and nutrients to infiltrate and access by the trees' root systems. This strategy allocates water to where it should be.

Porous unit pavers will also be installed in the parking lane of many of the streets in Grand Center. Porous paving parking lanes assist in water collection where long spans of impervious street exist between drain structure. Compared to other porous materials, porous unit pavers are easier to maintain by road crews and are less abrasive under turning vehicular movement. It is the preferred material from the perspective of the Metropolitan Sewer District (MSD) because pavers are modular and able to be removed, set aside and re-installed when utility work is necessary.



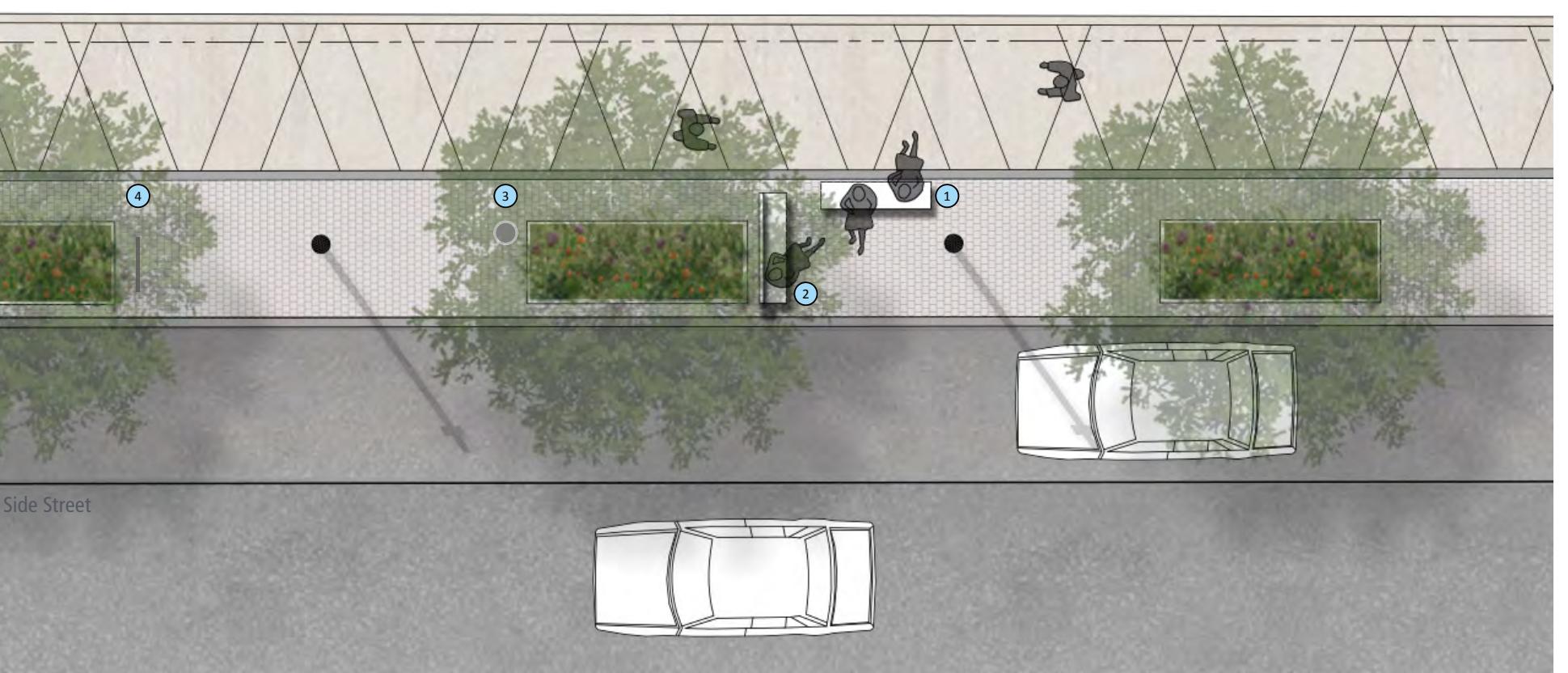
Top Left: Porous Paving on the Road
Top Right: Porous Paving at pedestrian
Bottom: Right-of-Way Zone Plan Diagram

Site furniture

Catalog furniture will be incorporated into the streetscape only where appropriate are specified at the time of implementation.

For seating, intimate and conversation friendly 'L' shaped nooks can be achieved through strategic bench placement within the amenity zone. Backless benches are optimal when oriented parallel to the curb, promoting dual facing seating.

Additionally, a family of catalog benches, trash and recycle receptacles, bike racks, and bollard will be established with the owner during design development.



Right: Typical Site Furniture Plan

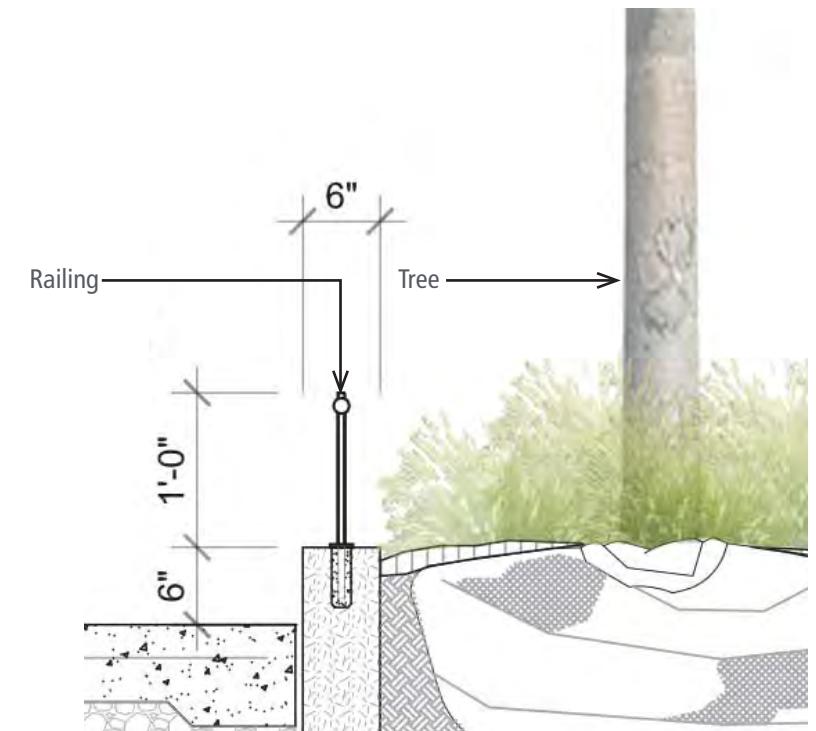
- (1) Bench, backless
- (2) Bench, with back
- (3) Trash receptacle
- (4) Bike rack

Planter Curbs and Railings

Planter curbs and railings are utilized to protect plant material and soil conditions in open tree pits. A 6 inch curb with a 12 inch railing discourages pedestrians and pets from stepping on the vegetation. A planter curb also protects the soil from becoming contaminated by salty winter runoff.

The planter curbs will match the cleft face granite header curbs at the street edge. The planter rail will be a catalog stainless steel product to maintain a consistent level of quality in metal craftsmanship as the project gets phased. Seating can be integrated with the planter rail as an option.

Top Left: Planter Railing
Top Right: Railing and Curb Details

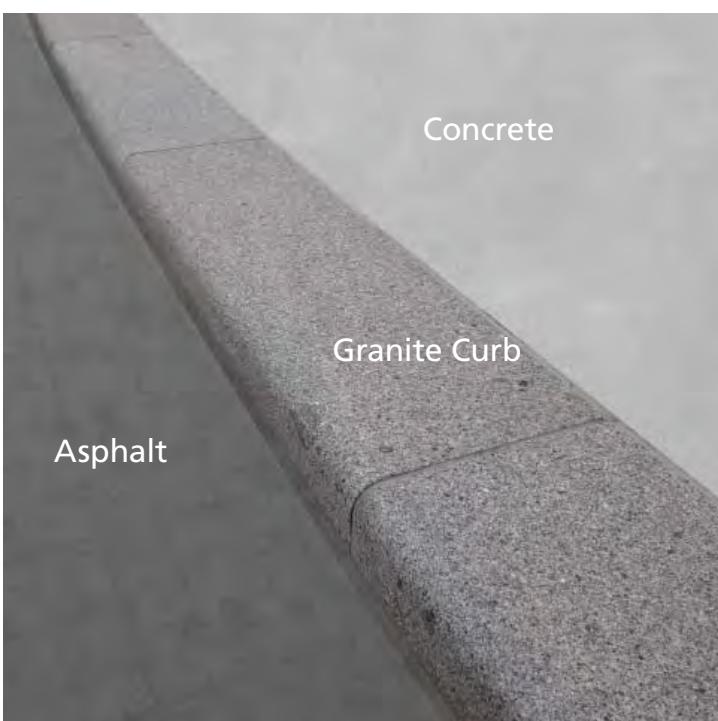


Street Curbs – standard and specialty

Curbs are an element in the street that run continuously and while often unnoticed, they present an opportunity to make an impact on the material vocabulary of Grand Center. The spine of Grand Center on Grand Boulevard between Olive and Delmar is celebrated with a robust 18 inch wide granite curb with a bull nose edge. This granite will be a black color. A curb of this scale signifies the prominence of Grand Boulevard.

All other curbs in Grand Center will be the City standard cleft face granite header curb. These are intended to be reused or replaced only where necessary during construction.

Bottom Left: 18 inch Wide Granite Curb with Bullnose
Bottom Right: Black Granite Curb Color

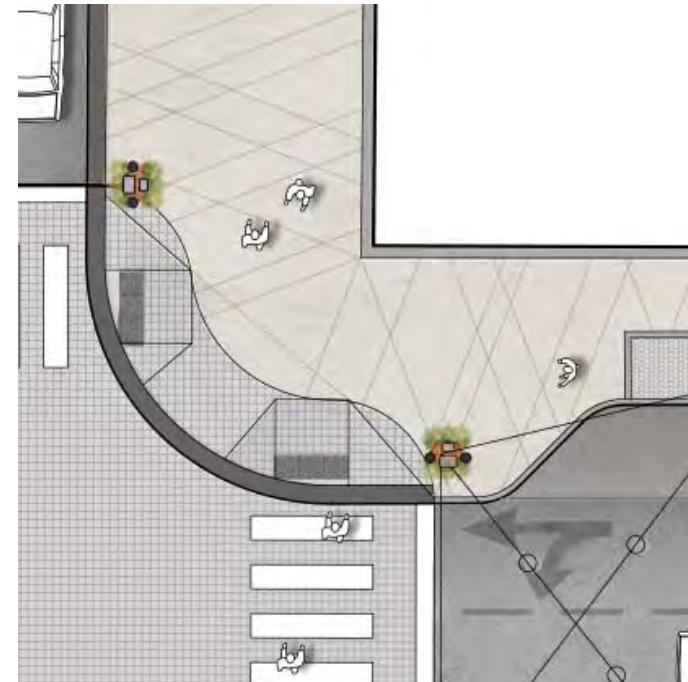


Concrete Sidewalks

The sidewalk (walk zones) in Grand Center will be cast-in-place concrete, warm gray / buff in color. With the absence of street trees on Grand Boulevard, the amenity zone porous paving will not be exposed as it typically is on the side streets. On Grand Boulevard, the cast-in-place concrete will extend from typically building face to back of curb. A sparkle grain finish system will be applied to the top coat of the typical concrete sidewalk, adding a subtle touch of white sparkle to reflect in the sun and at night. The use of this material is consistent with existing sidewalks and adds a bit of drama to this entertainment district.

Sparkle concrete will be on all sidewalks except on Grandel Square, Delmar Boulevard, Samuel Shepard Drive, and Spring Avenue. These streets will have standard warm gray / buff concrete, without the sparkle application.

All concrete sidewalks will be scored in way that is unique to Grand Center. Two oblique angles will crisscross throughout the concrete field, giving the walk zone interest and movement. These joints will be saw cut. A typical band will be poured at the building face. A common datum line will be struck parallel to the typical building face per block, and offset approximately 1 foot, and will mark the limit of the band. With an expansion joint separator, the criss crossing saw cut joints adjacent can be achieved without a problem of overrun.



Top: Sparkle Concrete

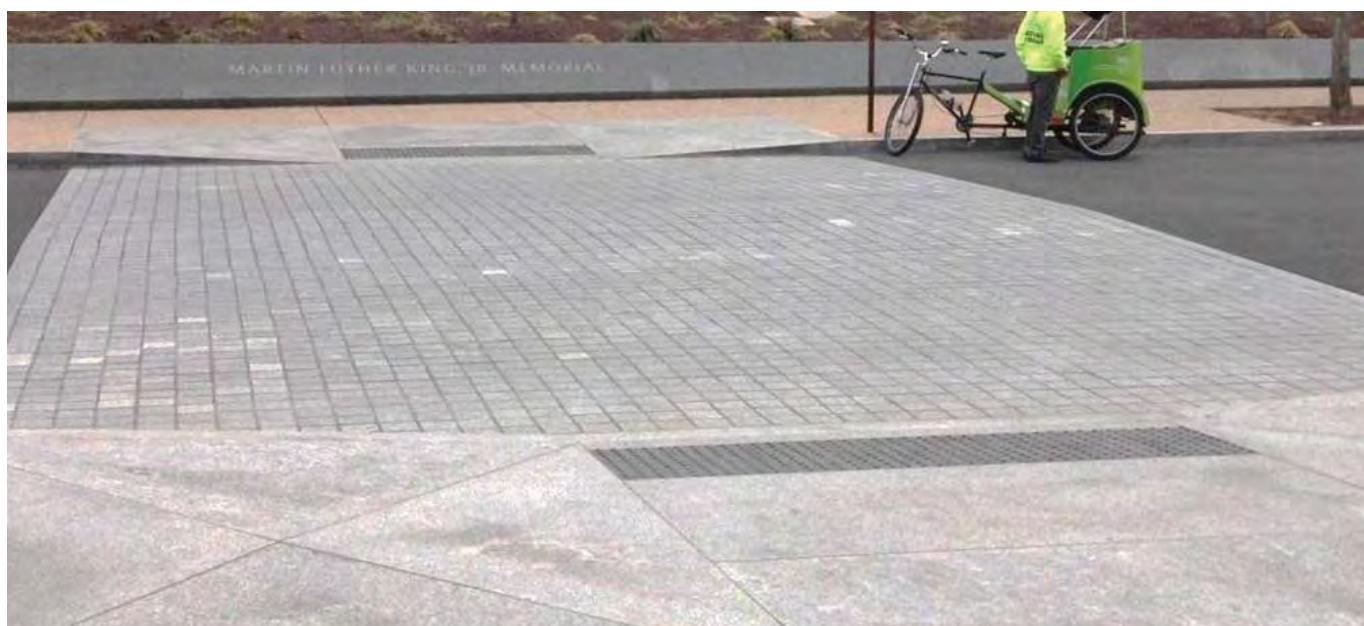
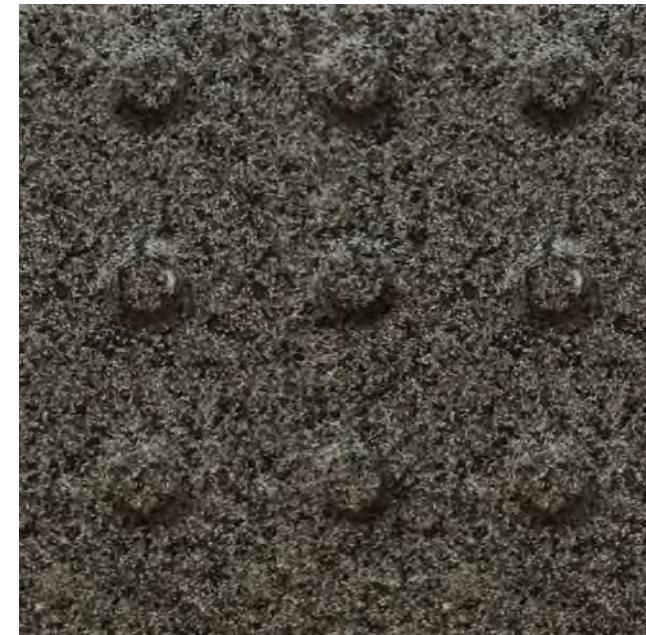
Bottom: Example of Concrete Scoring

Granite paving – Pedestrian and Vehicular

Granite paving will be found in the special spaces throughout Grand Center. This includes the curb ramps and crosswalks in the four gateway intersections, the midblock crossing at the Sheldon, and Strauss Park's extended surfacing. For pedestrian zones, a flamed finish 2 inch paver will be bituminous set on a 4 inch reinforced concrete slab. For vehicular zones, a flamed finish 3 1/2 inch paver will be bituminous set on an 8 inch reinforced concrete slab. The paving pattern on the vehicular surfacing will be done in a herringbone or similar pattern to promote interlock. The granite will be Mt. Airy or similar.

Detectable Warning Tiles – standard and specialty

Detectable warning tiles will be at every curb ramp. This is typically a 2 foot square precast concrete paver, charcoal gray in color. In the four gateway intersections and at the curbless zone at Strauss Park, the detectable warning will be 2 foot square granite to match the black 18 inch wide granite curbing found at Grand Boulevard.



Top Left: Mt. Airy Granite or similar

Top Right: Granite Detectable Warning

Bottom: Example of Granite Paving at Vehicle/Pedestrian Crossing

Roadway Pavement

The typical road pavement in Grand Center will be hot mixed asphalt. There is exception in the areas that will receive porous unit pavers and in the special intersections that will receive concrete or granite as noted.

Crosswalk

All crosswalks will receive the continental crosswalk configuration (repeated 24" thermoplastic marking – 24" void). Crosswalk areas and the intersections at gateways intersections will have granite vehicular paving to match the granite paving slated elsewhere in Grand Center. Crosswalk areas and the intersections at secondary nodes will have vehicular rated concrete, warm gray / buff to match Grand Center's standard concrete. All other typical crosswalk areas and intersections will be standard hot mixed asphalt with painted striping.



Right: Special Materials Diagram



Lighting Recommendations

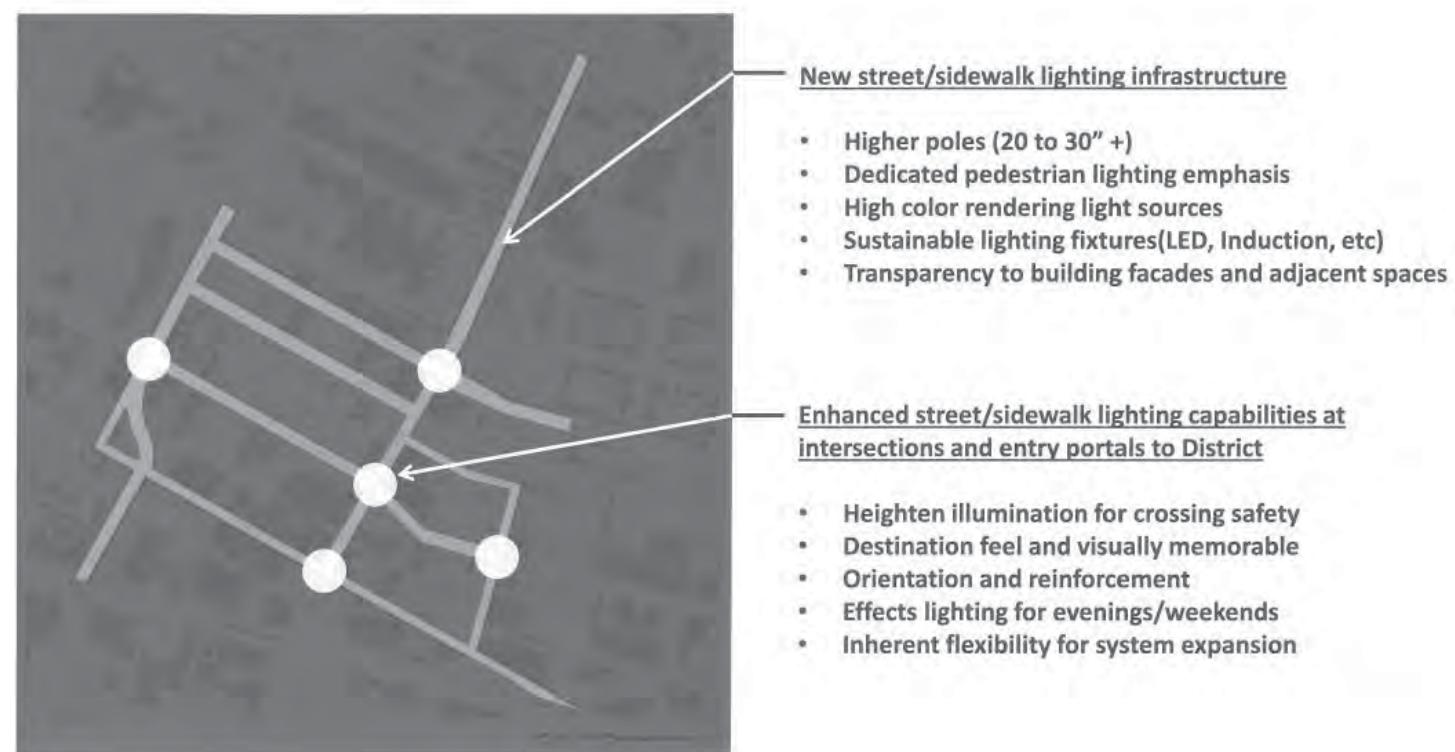
Outcomes

The design vision puts the primary emphasis on lighting. Not only will it play a key role in the revitalization of Grand Center's streetscapes, it should provide the following outcomes:

- Measurable and perceived improvements in safety and security
- Heightened visibility of Grand Center businesses and institutions through an overall reduction of lighting pole equipment, diminished light source glare and improved color rendering
- Enhanced sense of place and destination through creation of dynamic and appropriate lighting themes in equipment and illumination effectiveness
- Improved user orientation and comfort for nighttime visitors to Grand Center
- Improved day-to-day user satisfaction in the nighttime environment
- Highlighted properties with lighting to add to the streetscape's nighttime experience
- Improve on energy and power profiles through reduction of overall needs
- Improved operations and maintenance of lighting systems through improved technology and materials
- Long term flexibility and growth in the lighting infrastructure, including the interface of lighting support equipment with signage, graphics, wayfinding, signaling, surveillance, landscape and other ancillary needs

Design Strategies

The proposed Great Street lighting design solutions employ a number of lighting application techniques to improve the existing lighting conditions and embrace the common overall goals for the project. A visual hierarchy of lighting applications has been evolved to provide clarity and organization to the Grand Center district. The lighting designs are intended to illustrate the intent and desired outcome of the concept. In future implementation phases, the aesthetic appearance, function and locations will be refined with stakeholder, technical and engineering input.



Lighting Hierarchy Drawing: lighting emphasis strategy

Grand Boulevard

The expanse of the Grand Boulevard streetscape, from Lindell on the south to Cook on the north, will be illuminated by a new lighting pylon system that alternates sides of the street. The pylon will serve as the vertical support for three principal light sources:

1) a high-wattage full cutoff LED source mounted at approximately 30 feet to provide uniform street and sidewalk illumination; 2) a low-wattage full cutoff LED source mounted at 12 to 14 feet to provide pedestrian scale and heightened illuminance at the pylon; and 3) up to three LED or metal halide adjustable floodlights/accent lights to highlight special areas, amenities, art or building features along the Grand Center frontage.

The curbless area at Grand, Strauss Park and Washington Avenue, will employ lower pedestrian scaled poles with either adjustable accent lights for trees, art and amenities, or cutoff optics LED area lights. It will also feature a low wattage LED tensile cable lighting system stretched across the street, which will also be applied at the intersections at Olive, Washington, Gradel and Delmar, east and west of Grand.



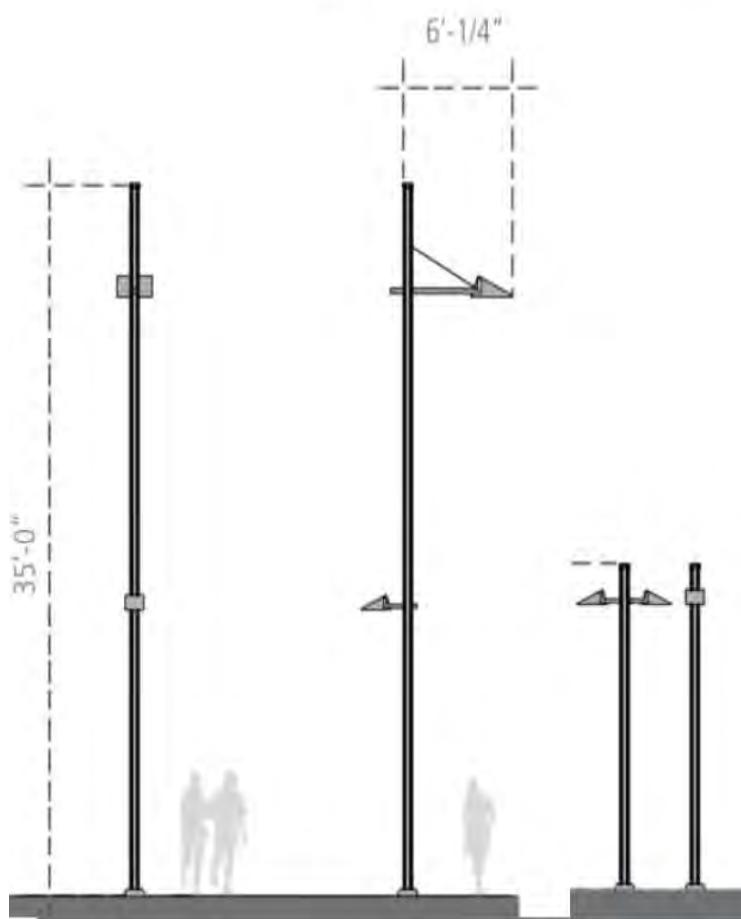
Grand Boulevard Armatures: street, pedestrian and flood lighting

Main Cross Streets (Olive, Washington, Grandel, Delmar)

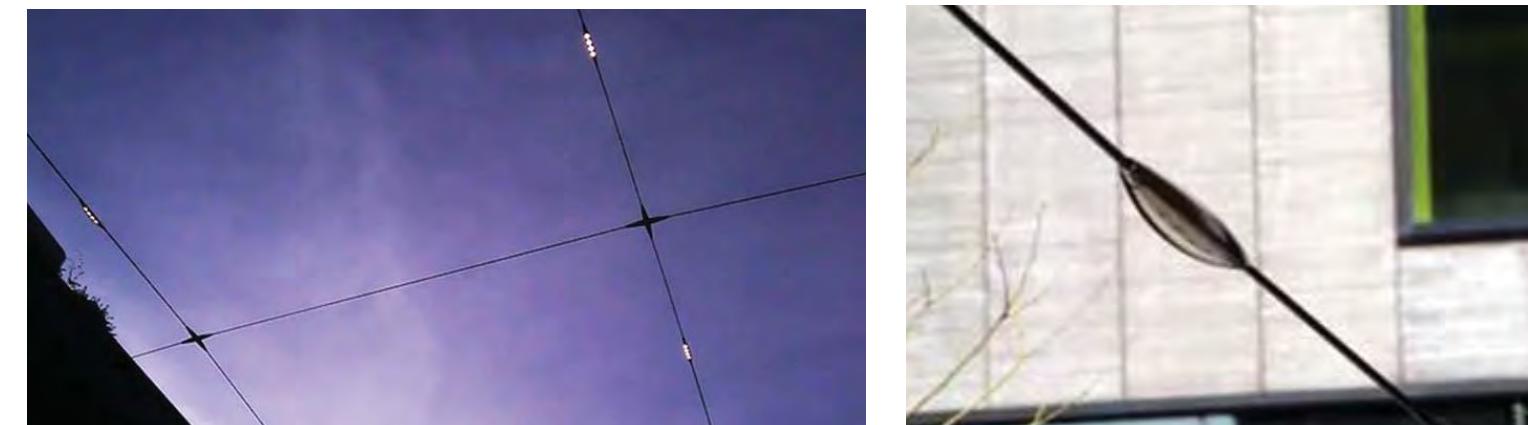
These streets intersect Grand Boulevard and are home to many of the principal art, entertainment and hospitality venues in Grand Center. The streetscape pole-based lighting system that will serve these arteries, will consist of a deployment of 30 foot poles, alternating street sides, at 150 to 180 foot spacing. They will each operate a high wattage full cutoff LED source mounted at approximately 28 feet to provide uniform street and sidewalk illumination; a low wattage full cutoff LED source mounted at 12 to 14 feet to provide pedestrian scale and heighted illuminance at the pole. Between these poles, at a 12 to 14 foot height, will be pedestrian-scaled pole with an identical low wattage full cutoff LED source for sidewalk illumination continuity and scale.

LED Tensile Cable Lighting

The block leading up to each street's intersection with Grand will also feature a low wattage LED tensile cable lighting system stretched across the street. The density of its LED's will increase as the street approaches the Grand intersection, reinforcing the sense of arrival.



Main Cross Street Lights: Washington, Olive, Grandel and Delmar



Overhead Tensile Cable Lighting: creating a "ceiling" of light on main cross streets



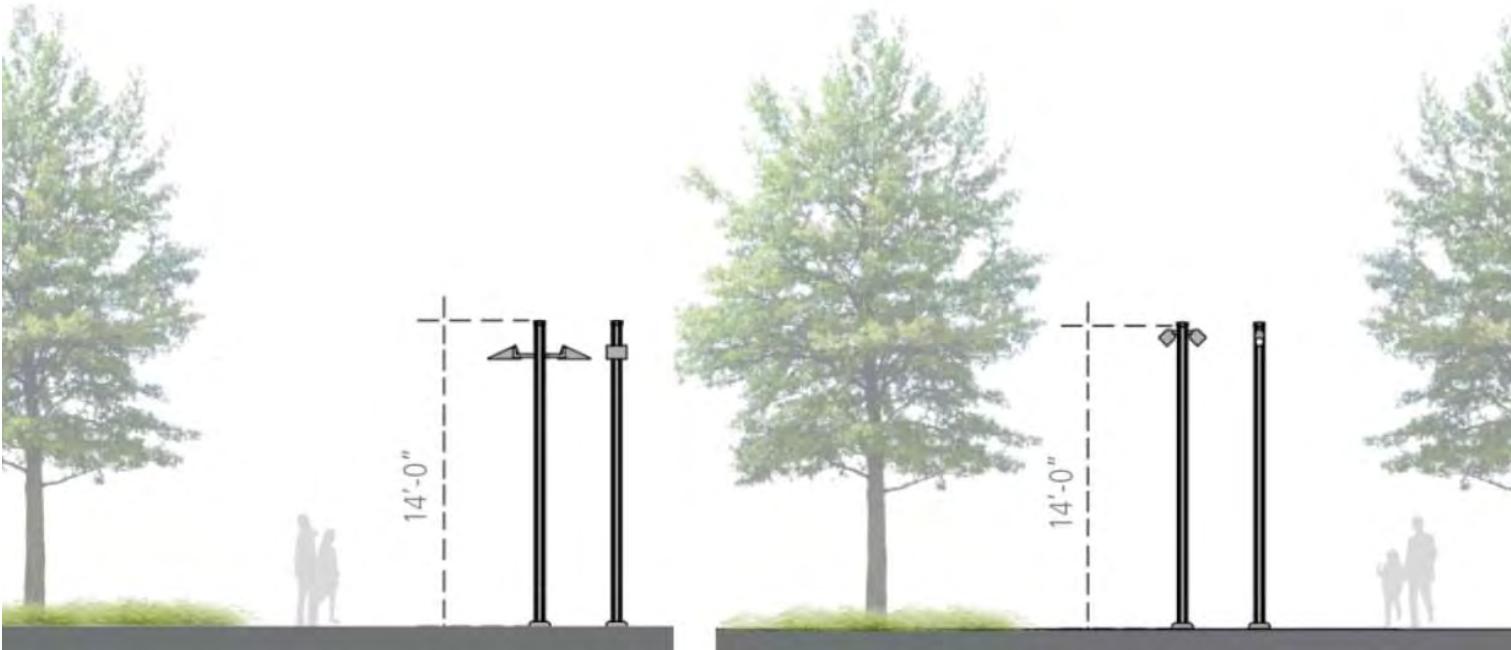
Main Cross Street Lighting: evening view of Olive with overhead tensile cable lighting

Minor Cross Streets (Spring, Sam Shepard, Theresa)

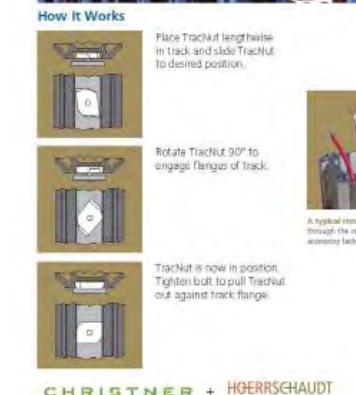
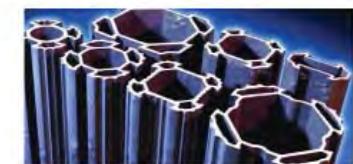
These streets run parallel to Grand connect the major cross streets. The streetscape pole-based lighting system that will serve these streets will utilize poles at a 16 foot height, with a low or mid wattage full cutoff LED source for both street and sidewalk illumination continuity. This pole height strikes a balance between the lower pedestrian-driven height and the dedicated street-only stature.

Overall

The lighting systems described for the streetscapes throughout Grand Center work together to provide a visually coherent, singular vision for the community's nighttime environment. Common materials and application techniques recognize the need for operational sustainability and long term expansion of the community.



Minor Connector Street Lights: Theresa and Samuel Shepard



RANDY BURKETT LIGHTING DESIGN 38



RANDY BURKETT LIGHTING DESIGN 39

Armature Pole Assembly: a pre-engineered pole system

Branding & Wayfinding Recommendations

Improving the Grand Center Experience

Based on analysis of the current state, opportunities for improved signage and wayfinding for the Grand Center district can be organized into the four major experience categories.

Approach

- **Directional signage**

Opportunity for Increased directional signage outside district

Arrival / Wayfinding

- **Gateway signage**

Opportunity to announce and identify area

- **Street signage (& branded wayfinding elements)**

Opportunity to improve legibility and continuity

Experience

- **Pedestrian-scaled signage**

Opportunity to improve pedestrian wayfinding

- **Branded wayfinding elements (& street signage)**

Opportunity for consistent use of branded elements

- **Sculptural signage**

Opportunity to identify locations in the physical environment

- **Cross-Education**

Opportunity to educate and inform

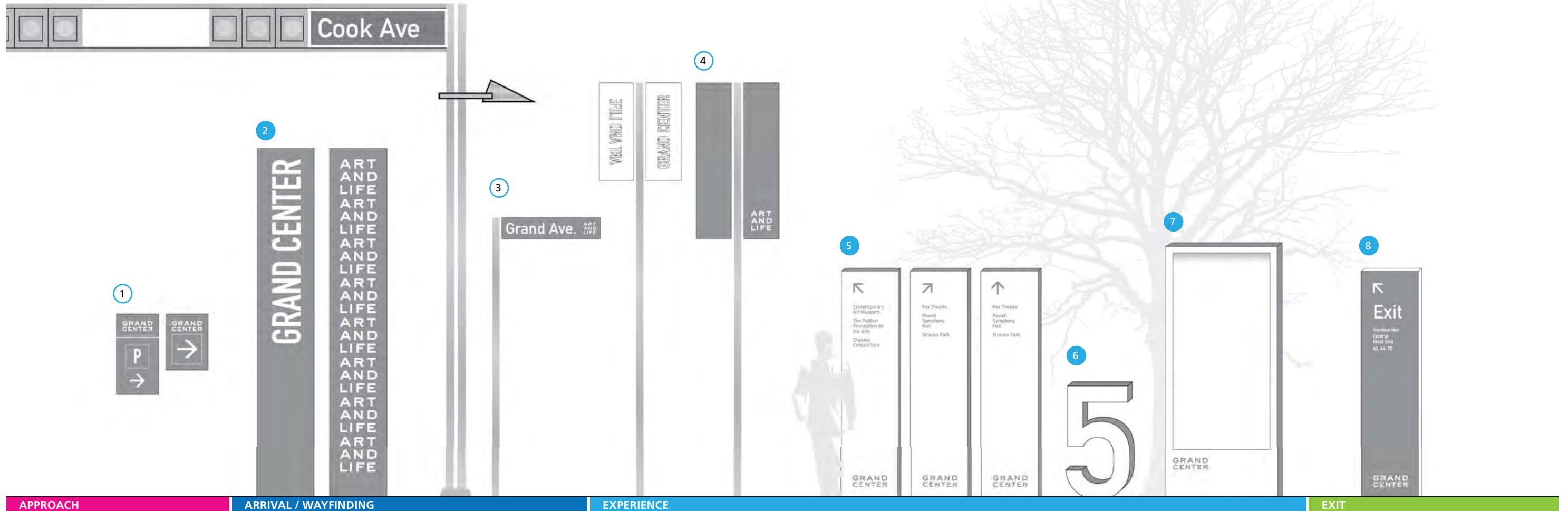
Exit

- **Exit signage**

Opportunity to encourage use of alternate exit routes



Opportunity: Expanded Signage System Concepts



Improving the Current System

Recommendations to improve current elements include increased out-of-district directional signage **1**, updated mast-arm and pole-mounted street signs **3** and consistent application of branded elements such as pole banners **4**.

Expanding upon the Current System

Recommendations to expand the current system include introducing 5 new sign types: Gateway signage **2**, pedestrian-scaled signage **5**, sculptural signage **6** cross-education kiosks **7** and exit signage **8**.

Opportunity: Announce



Gateway Signage

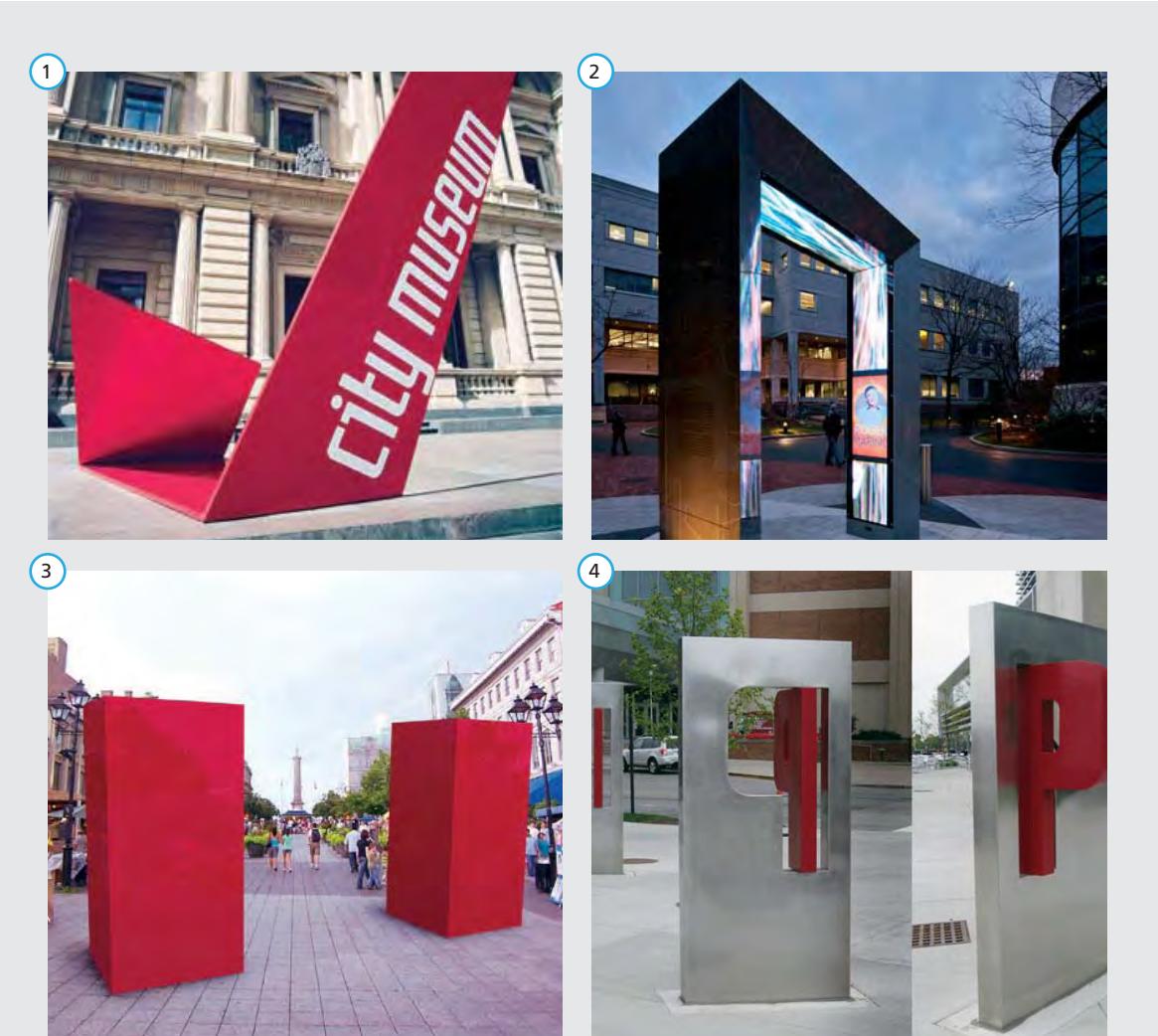
ARRIVAL

Function

- + Identify district 'gateways'
- + Create a 'sense of arrival'
- + Reinforce district name
- + Serve as landmark / point of reference

Content Opportunity

- + Grand Center identification



Benchmark Examples

- 1 City Museum, Melbourne, 2 Tribute Park, Northeastern University, 3 Know Canada and 4 University of Purdue.

Opportunity: Place-making



Pole Banners

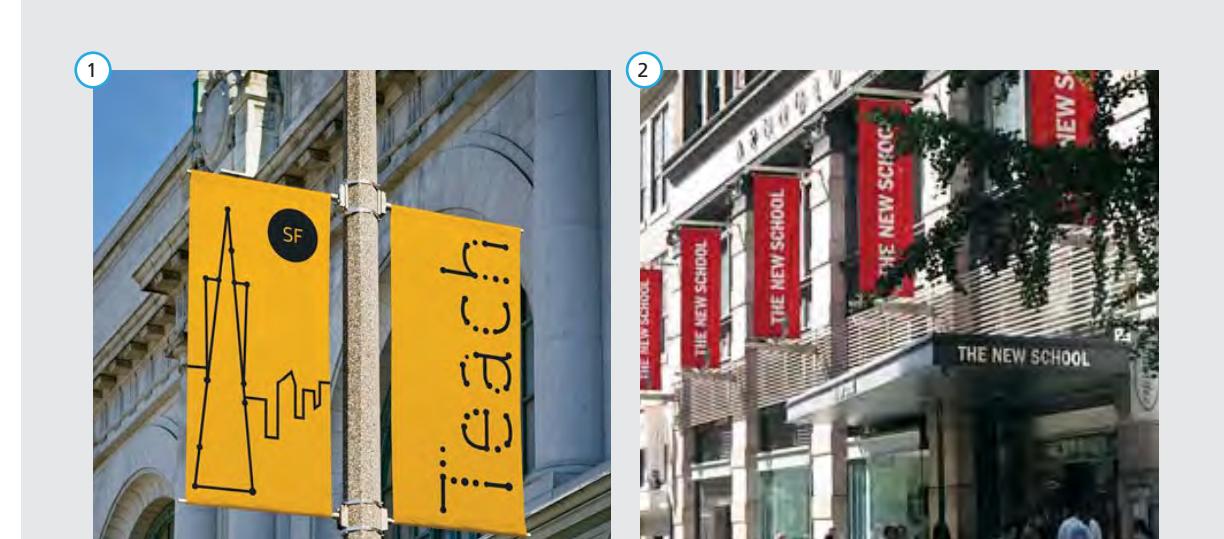
EXPERIENCE

Function

- + District identification
- + Event / venue promotion
- + Wayfinding & place-making

Content Opportunity

- + District identification and promotional content for venues and current / upcoming events



Benchmark Examples

- 1 Teach Campaign, concept, 2 The New School, New York, 3 Nottingham Trent University, UK, and 4 Metal banner, H Street, Washington DC.

Opportunity: Wayfinding



Pedestrian-scaled wayfinding **EXPERIENCE**

Function

- + Improve wayfinding for pedestrians
- + Announce 'what's ahead'
- + Reinforce district brand

Content Opportunity

- + Directional arrows
- + Venue and / or business names
- + Grand Center brand



Opportunity: Surprise, Play



Sculptural Signage

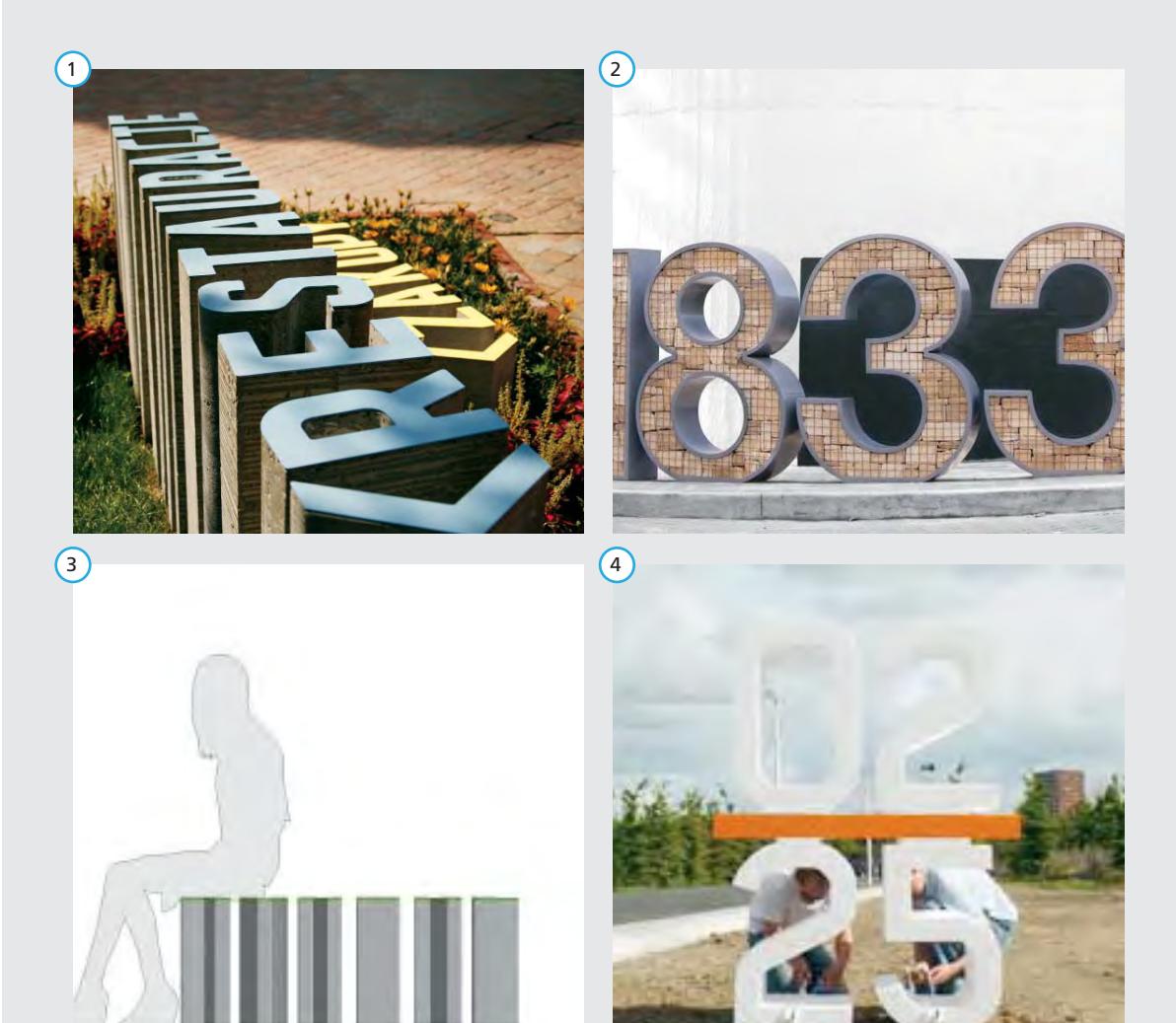
EXPERIENCE

Function

- + Identify district locations in the physical environment
- + Introduce an element of 'play' or 'surprise'
- + Serve as wayfinding, sculpture, seating or photo opportunity

Content Opportunity

- + Numeral, name or other identifying element



Benchmark Examples

- 1 Manufaktura wayfinding, 2 Battery Point Sculpture Trail, Washington DC, 3 Manufaktura wayfinding, and 4 Festival wayfinding, Utrecht, Netherlands.

Opportunity: Educate



Cross-Education Kiosk EXPERIENCE

Function

- + Cross-promote district venues & events
- + Reinforce brand through district identification
- + Serve as an information hub
- + Community curated

Content Opportunity

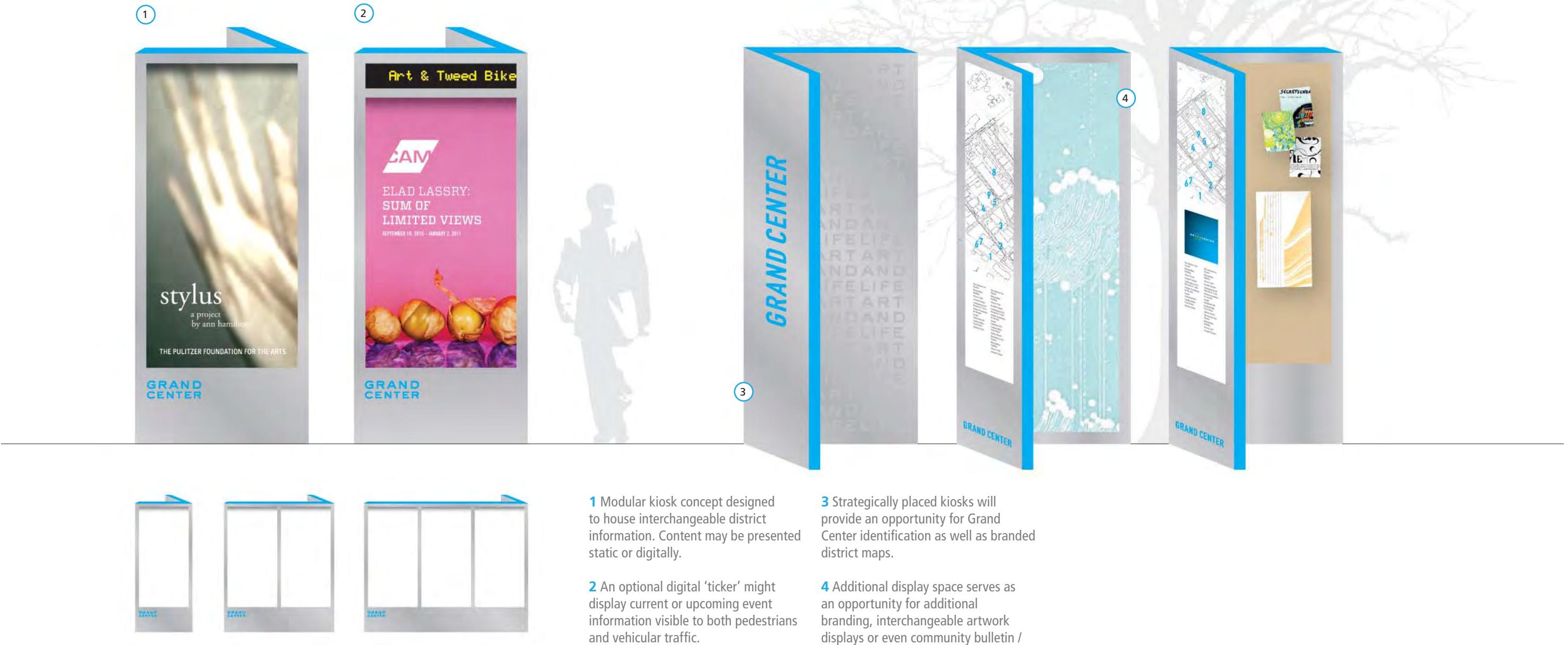
- + Current event information & promotion
- + District map
- + Opportunity for art displays or community announcements
- + Grand Center identification



Benchmark Examples

1, 2 Walt Disney Concert Hall, Los Angeles Philharmonic, 3 Freedom Trail kiosk in Boston Common, and 4 New York City Information Center, interactive map.

Opportunity: Cross-Education Kiosk, Concept



Branding & Wayfinding Conclusions

Great Streets are representative of their place...

Branded signage and wayfinding plays a crucial role in creating successful and memorable visitor experiences.

Effective systems not only provide guidance for navigating space, but also help to strengthen the connection between targeted locations (for example, Fox Theatre) and their broader surroundings (the Grand Center district). This 'sense of place' is created through consistent use of visual cues that tie back to the overall Grand Center brand.

... and facilitate mobility.

Implementing recommendations for new and improved signage elements will not only facilitate the functional goals of the district, but will help reshape the entire visitor experience — approach, arrival, wayfinding, experience and exit.



Sustainable Stormwater Recommendations

Not only are using sustainable stormwater practices beneficial for the environment by slowing, reducing and cleaning stormwater, they are also required by regulation. Stormwater runoff is regulated by the Metropolitan Sewer District (MSD) and the Environmental Protection Agency (EPA). Any improvement/redevelopment will require review and approval by MSD including the stormwater management plan. In the past, improvement of the water quality and reduction in volume of stormwater before entering combined sanitary and storm sewers in MSD's service areas was not required. More stringent regulations have recently been adopted by MSD. Grand Center is in the Bissell Service Area. Any disturbance greater than 1 acre or an increase in runoff of 2 cubic feet per second (cfs) in the Bissell Service Area will be required to meet both the water quality and the volume reduction requirements. Each phase of this project is likely to trigger both requirements. As such, sustainable practices have been proposed in each phase to address the requirements. They are a component of how streets become Great Streets.

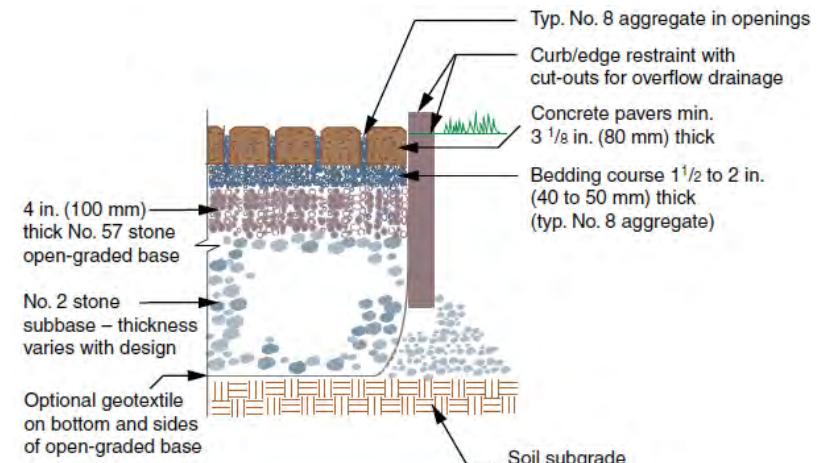
Several sustainable stormwater strategies are integrated with the public realm improvements for Grand Center. These include:

- Porous Pavement Systems
- Bump-out Rain Gardens
- Bio-filter Strips
- Porous Alleys
- Infill Roof Drainage
- Water Capture/Reuse

Porous Pavement Systems

Porous pavement is a material that allows water to soak into the soil below. It will receive, store and infiltrate (absorb) rain from mild rainfall events. The amount of water that is effectively processed through a porous system is dependent on several components such as the actual pavement surface (concrete, asphalt, pavers, and gravel) and storage layer below the pavement, which can be controlled through design. Other components, such as the existing underlying soil can be a limiting factor. The inability of the underlying soils to effectively drain water through will allow water to be stored in the aggregate layer below the pavement. But this condition is likely not to allow the volume of water generated by prolonged rain events or multiple events to be absorbed.

To avoid prolonged saturation of the pavement and subgrade with stormwater, one or more small perforated pipes are located at the bottom of the aggregate layer to meet the storage capacity for the particular area. There are several ways to design porous paving. An example can be seen above.



Porous Pavers Section source: Interlocking Concrete Pavement Institute



Sustainable Stormwater Strategies

Location

Because storm water is collected on the cross streets south of Delmar, porous paving systems are proposed in the parking lanes on Olive, Washington and northern sections on Grand. In addition, a similar system will be utilized on the entire street section on Grandel Square. A summary of the potential stormwater volume reduction for Grand Center is detailed in the table below.

Porous Pavement	Total Size	Total Storage Volume	Anticipated Volume Reduction
	(SF)	(CF)	(CF)
Grand – Lindell to Delmar	3,195	700	17,500
Grand – Delmar to Bell	1,728	400	10,000
Grand – Bell to Cook	13,254	3,100	71,000
Washington – Grand to Spring	18,672	4,300	67,000
Olive – Grand to Spring	10,146	2,300	67,000
Olive – Grand to Theresa	11,004	2,500	70,000
Theresa – Olive to Sam Shepard	18,800	4,400	100,000
Sam Shepard	7,840	1,800	45,000
Gradel Square	20,945	4,800	120,000
Delmar – Grand to Spring	13,114	3,000	70,000
Spring – Lindell to Delmar	53,127	12,300	310,000

This is a total 881,170 CF of storm water each year that will not enter the sewer system. This amount of water would fill the old Busch Stadium 1.7 times.

Future Maintenance and Durability of Porous Pavements

Porous pavers are the recommended material for the designated porous pavement areas in the project area. Several studies claim that porous paver systems are very durable and long lasting with proper maintenance. The City of St. Louis has experience installing and maintaining porous pavers in their Green Alley pilot projects. They see advantages of a modular material that can be taken up and replaced when doing repairs. MSD has approved porous pavers as an alternative to porous asphalt and concrete. However, this is a material that is not considered standard and it requires specialty maintenance with a vacuum-sweeping street cleaning machine to remove materials that clog its ability to absorb water. Vacuuming and sweeping is recommended at least once or twice a year. Private maintenance funding from Grand Center may be required. However, there are many examples of installations that have had no vacuuming, and have maintained adequate stormwater surface infiltration. An added feature of all porous pavements is their ability to infiltrate melted snow, thereby reducing snow plowing and the risk of hazardous ice patches.

Bio-filter Strips

Bio-filter strips are landscaped areas that manage and treat stormwater runoff using a conditioned planting soil bed and planting materials to filter runoff stored within a long linear depression. The method combines physical filtering and adsorption of stormwater with biological processes. They allow the stormwater to be stored and treated before it enters the piping system. This slows the flow of stormwater into the sewer system and improves the water quality before the stormwater enters the Mississippi River.

A large bio-filter strip is proposed along Spring Ave north of Olive adjacent to the potential Midtown Loop Trail. A filter strip at this location serves as a final capture point of several sources of runoff. The drainage from Spring that does not infiltrate into the porous parking will sheet flow into the filter. In addition, the bikeway will sheet flow into the filter. Finally, the excess drainage from the cross streets (Delmar, Gradel Square, Olive, Washington) can be directed to the this filter.



Filter Strip Examples

Benefits of bio-filters include:

- Long, linear areas provide significant water quality and volume impact benefits
- Stormwater west of Grand drains to bio-filters on Spring, allowing for "chained" or connected systems and greater impact
- Bio-filters capture adjacent roadway drainage, bike greenway and cross street drainage
- Midtown Loop Trail/greenway is enhanced by their appearance and sustainable function

Rain Gardens

Rain gardens are similar to bio-filters in the way that they manage and treat stormwater runoff using a conditioned planting soil bed and native planting materials to filter runoff stored within a shallow depression. They are located along the curb and within the parking lanes where they "bump-out" to be in the direct flow of the storm water traveling on the street. They also combine physical filtering, adsorption with biological processes. On sites with moderately permeable soils, some portion of the stormwater quality volume in these systems can be absorbed into the soil. Like bio-filters, they allow the stormwater to be stored and treated before it enters the piping system. This slows the flow of stormwater into the sewer system and improves the water quality before the stormwater enters the Mississippi River. Rain Gardens are proposed on Grand Avenue North of Bell and along Gradel Square.

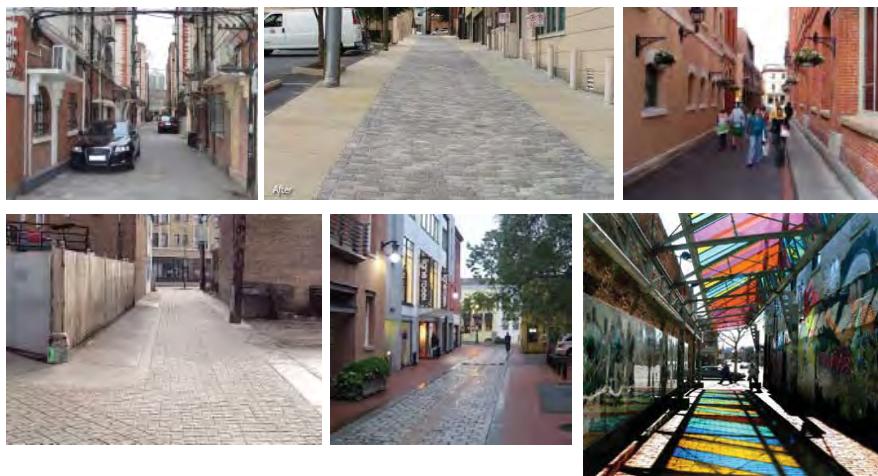


Bumpout Rain Garden Examples

Location	Total Size (SF)	Number of Rain Gardens	Total Storage Volume (CF)	Anticipated Volume Reduction (CF)
Bio-filter Strip				
Spring Ave (N of Olive)	23,350	-	28,875	290,000
Bump-out Rain Gardens				
Grand (Bell to Cook)	1,980	4	3,800	90,000
Gradel Square	5,560	8	10,500	123,000

Porous Alleys

Many of the alleys in the Grand Center district serve both a utilitarian function and are used as pedestrian thoroughfares from parking areas to Grand Boulevard. In addition, the alleys serve as major stormwater drainage channels. As these alleys are improved to enhance the function and the safety, the stormwater can be managed in a sustainable way. The use of porous paving can improve the aesthetic value of the alley while still allowing the utility function to be maintained and provide a storm water quality and volume reduction benefit. Converting an existing traditionally paved alley to a porous paving system can reduce the volume of stormwater runoff by as much as 40 percent.



Porous Alley Examples

Special Projects

Opportunities exist within the district to provide large-scale stormwater management solutions. These are also potential pedestrian destinations within the community that would have the added benefit of providing substantial areas in which to funnel the stormwater. Multiple strategies can be used within these areas to increase the impact of the stormwater solutions. These include joint use of rain gardens, pervious area, porous pavement, and stormwater capture/water reuse. The table above details the potential benefit from grouping BMPs together to maximize the overall stormwater benefit.

This potential total volume of storm water that could be managed in special spaces in Grand Center is around 185,900 gallons every year. That is over 202 miles of gallon milk jugs sitting side by side.

Stormwater BMP Feature	Drainage Area (Acres)	Design Storm Flow (cfs)	WQv Design (ft3)	Required WQ Feature Area (ft2)	Existing Runoff Volume (CF)	Proposed Runoff Volume (CF)	Cistern Volume (Gallons)
Performance Green	3.18	11.8	11904	7040	432000	238000	67000
Spring Park	2.86	10.6	10701	7970	436000	211000	60000
Parking Plaza	3.21	11.9	10466	7650	389000	208000	59000
Parking Garage & Filter Strip	2.54	9.4	9522	7900	344995	168000	53000

Cisterns could be integrated into the design for Grand Center's special spaces. Storm water is directed to cisterns that store the water for reuse. The square footage of porous pavements in the parking lanes in the entire Great Streets project is estimated to be about 170,000 square feet. Approximately 430,000 cubic feet (3,213,124 gallons) of storage for water is provided for under the porous pavements. Instead of being stored in porous pavements for slow-release into the storm sewer system, this same water could be directed to underground or above ground cisterns to be stored for reuse as water for landscape irrigation or use in water features.

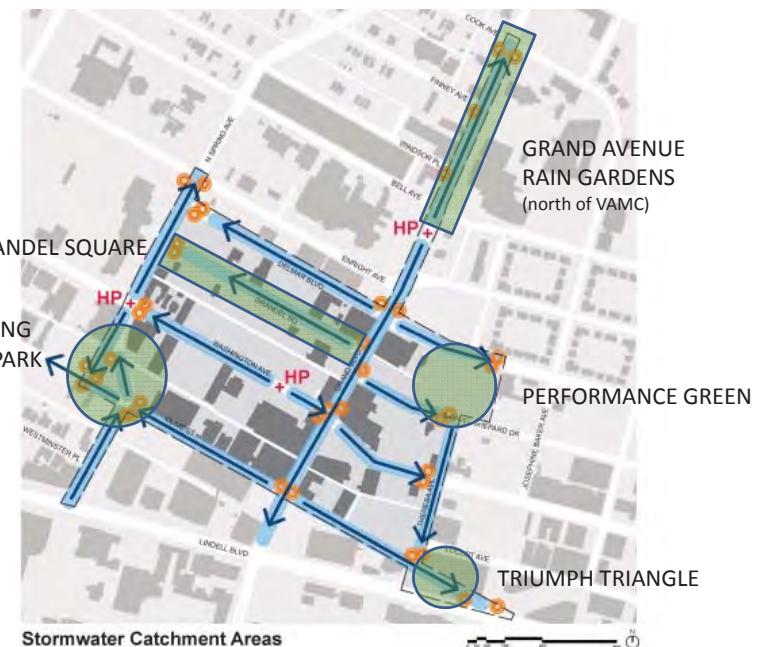
Infill/Redevelopment Roof Drainage

As Grand Center continues to redevelop, there are potential opportunities to incorporate private stormwater management/treatment that meet the design objectives of the district. Implementation of low impact development strategies will allow Grand Center to redevelop in a sustainable manner. Low impact development encourages the developer to maintain the sites pre-development runoff rates by minimizing

imperious area, use of stormwater BMPs, vegetated roofs, etc. Storm water facilities such as cisterns and biological filters can be retrofitted at existing downspouts on existing buildings or incorporated in to new mixed use development and parking garages. Creative ideas can be incorporated that are in line with the public art focus of Grand Center and provide storm drainage benefits.

Funding for Green Infrastructure

Sustainable stormwater practices are often overlooked in private redevelopment. For projects in Grand Center, there may be financial assistance to offset the cost. The location of the study area within the Bissell Watershed makes low impact redevelopment projects available for financial assistance as part of the Metropolitan St. Louis Sewer District's Stormwater Grant Program. As part of their Long Term Control Plan in St. Louis, MSD will spend \$100 million to construct green infrastructure and promote low impact development (LID) in watersheds that have combined sewers that discharge to the Mississippi River. The techniques that have been recommended in the master plan are good candidate for grant funding.



Special Project Areas



Infill/Redevelopment Roof Drainage: could be integrated with art opportunities

Public Art Recommendations

The New Strategy

Public art is an essential component of Great Streets and part of what makes Grand Center unique in the region. Grand Center, Inc. and the institutions in Grand Center and throughout the region should continue to foster and support a vibrant public art presence in the District. The following sets forth a vision, principles and specific strategies related to an ongoing public art initiative.

Public Art Vision Statement

Grand Center Inc. supports the presentation of visually engaging and artistically innovative permanent and temporary public art that contributes to the overall vitality of the district and its identity as the cultural hub for the region and a center for creativity.

Principles

- Public art should be part of what makes a **complex and complete urban fabric** in Grand Center.
- Commissioned artwork builds upon the identity of "arts district" to include a place where **art is made** and new ideas are cultivated.
- Artistry can be infused into the built environment, bringing a creative spark and element of craftsmanship to design.
- Emphasis should be placed on public art projects that **invite participation and interaction**.
- Public art in Grand Center should be of **high artistic quality and integrity**.

Strategies

Art Integrated into the Design of Streets and Public Spaces

The Great Streets Plan outlines a plan for elegant and functional streets and active public spaces. As these projects move into schematic and final design, artists could be commissioned to work collaboratively with the design team to infuse art into the overall design.

Plaza and Park Design

Imagine visiting a plaza in Grand Center and having the experience of walking into a work of art. Imagine a flexible space that can be used for temporary public art, concerts, plays, readings and other performances.

The Framework Plan identifies, and the Great Streets plan supports, new and re-developed public parks and plazas. An artist can be engaged in the design or re-design of plazas and public spaces in Grand Center to bring a sense of creativity and imagination to the spaces.

Next Steps: As these spaces go into design, conduct an invitational call to select an artist to be a part of the design team. The selected artist should have experience working in collaboration with architect, landscape architects and/or urban designers in the design and activation of public spaces. The artist's scope of work for this phase would parallel the scope of the design team in terms of level of planning and design.



Art Integrated into the Design of Private and Public Facilities

Stormwater Solutions

Imagine functional and visually engaging works of art that help slow-down and cleanse stormwater before it re-enters the environment or the sewer system.

Artists can work collaboratively with engineers to develop solutions ranging from stormwater gardens to harvesting water from buildings.

Next Steps: Encourage the owners/developers of facilities to commission an artist to be involved in the design of stormwater systems. Seek out a partnership with MSD or other institutions to have the artist's work be part of a demonstration or educational project.

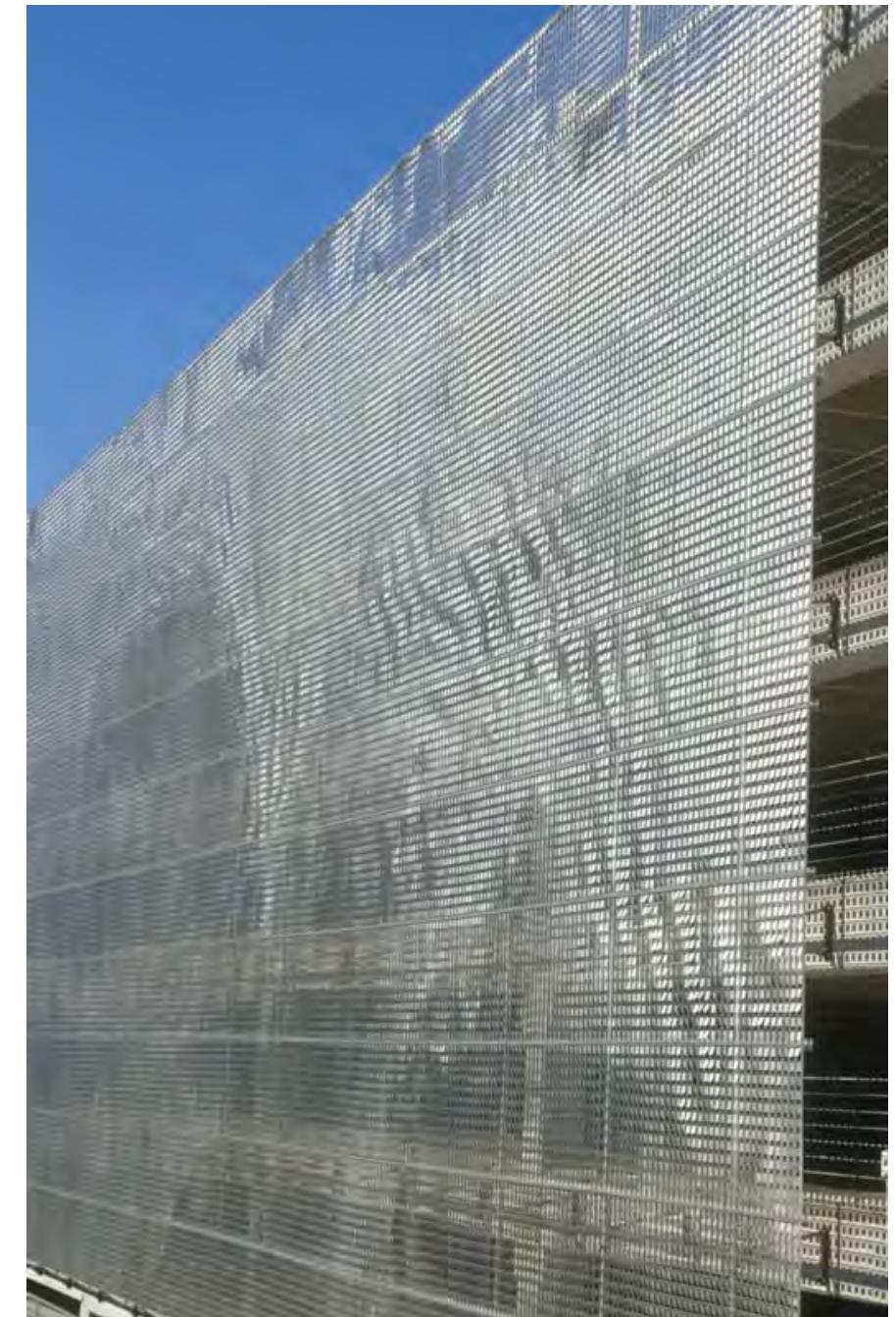


Art in Private Development

Imagine new buildings in Grand Center combining architectural excellence with artistic excellence.

As new commercial and residential buildings, parking garages, and other facilities come on-line, in addition to high architectural standards, integrating public art should also be considered.

Next Steps: Encourage developers to commission artwork as part of their facilities. Look into how art requirements or criteria can be built into new zoning for the District.



Ongoing Art Initiatives

Temporary Public Art

Imagine each visit to Grand Center bringing different visual surprises, inspiring you to walk around, explore and interact with unique works of art that can only be found here.

Grand Center, Inc. should continue commissioning and supporting the presentation of temporary public art throughout the district on a regular basis.

Next Steps: 1) Grand Center, Inc. should secure funding to develop and ongoing temporary public art initiative. This initiative could include one to two large-scale temporary installations a year, and one to two smaller installations, creating a rotating gallery of work year-round. Art projects could be sited in different public locations in the District owned or controlled by Grand Center, Inc. 2) Grand Center, Inc. should communicate regularly with the Grand Center-based visual arts organizations, encouraging them to consider temporary public art as part of their curatorial programs and providing information to them about the support that Grand Center, Inc. can provide.



Neighborhood Projects

Imagine approaching Grand Center by car, bus, bike or on foot and seeing art projects that celebrate Grand Center as a neighborhood and are visual cues you are getting near the district.

Grand Center, Inc. should commission and support and encourage Grand Center artist institutions, community organizations and property owners to commission permanent and temporary community-based, neighborhood-scale artworks.

Next Steps: 1) Neighborhood Projects could be a commissioned by Grand Center, Inc. as part of the temporary art initiative described above, and could perhaps start with properties they own or that are owned by the The Land Reutilization Authority (LRA.) This entity receives the titles to all tax delinquent properties not sold at the Sheriff's sale. 2) Grand Center, Inc. should communicate regularly with the Grand Center-based visual arts organizations, community organizations, and property owners, encouraging them to consider neighborhood art projects.

Art Lab

Imagine Grand Center as the premiere place where artists from around the country come to prototype, test and build large-scale projects.

Grand Center has affordable space, and St. Louis has the cultural and industrial resources to support artists in creating new work. Artists could build and debut work here before taking on it to major national and international exhibitions and festivals.

Next Steps: Art Lab would require significant collaboration and some initial funding to get off the ground. Pitch the idea to art institutions, galleries, educational intuitions and funders. Inventory spaces in Grand Center that could be converted into for-lease studio space for large-scale projects.

Implementation

In 2011-2012, Grand Center, Inc. developed Temporary Public Art Guidelines through a grant from the National Endowment for the Arts. These guidelines, developed with input from visual arts stakeholders in the District and throughout the region, identified a process for selecting artists for temporary public art projects, and reviewing proposals for temporary art projects initiated by outside organizations. The implementation strategy for the projects and programs described above build upon the recommendations in these Guidelines.



Visual Arts Panel

The Grand Center Temporary Public Art Guidelines recommend the development of a Visual Arts Panel. The role of this panel should be expanded to include serving in an advisory capacity to Grand Center, Inc. to review all public art projects that Grand Center, Inc. initiates and supports.

Public Art Projects Commissioned by Grand Center

Grand Center, Inc. will directly commission public art projects by either:

- Commissioning artists directly with the support of an independent consultant or curator and review by the Grand Center Visual Arts Panel, or
- Partnering with a visual arts organization that will serve as a curator for the project, with review by the Grand Center Visual Arts Panel.

Public Art Projects Commissioned through City-led Processes

Grand Center, Inc. will work with the Board of Public Service to develop and implement the artist selection process. The Visual Arts Panel will make recommendations regarding artist selection and will review and provide feedback on artist concepts. If the artist is working as part of a design team, a representative of the team will also be involved in the selection and review.

Public Art Projects Commissioned by Others

If the public art project is on property owned or controlled by Grand Center, Inc., or if the commissioning entity is receiving financial or in-kind support from Grand Center, Inc., then the Visual Arts Panel may request review and approval of artist selection and artist concept.

The Master Plan & Street Sections

The Master Plan for Grand Center is the culmination of the layers of design, the layers of technical expertise and the layers of the Great Streets Principles. After the Framework Plan, preparation of this Master Plan is the next but not final step in the planning and implementation strategy that will see these great streets built. The Master Plan along with the street sections will serve as the road map to implementation over the next number of years.

Street Sections

In conjunction with the plan vision established in the Framework Plan, proposed street sections were prepared for Grand, Washington, Olive, Spring and Theresa. These sections illustrated the recommended traffic lane configurations, travel lane widths and sidewalk widths. The activities of the Great Streets project were geared to scrutinize these assumptions and add additional levels of analysis, community engagement and technical input to come away with a refined recommendation.

Traffic capacity verification and underground utility investigation were two of the most critical factors in making the final recommendation for each of the major streets in the study area. A review of existing local streetscapes that represented similar character, land use and right-of-way width to the conditions for various streets in Grand Center helped stakeholders visualize potential outcomes. These local streets such as Delmar in the University City Loop, Manchester in Maplewood, South Grand near Tower Grove Park and an out-of-town-example, Main Street in Ann Arbor, Michigan served as precedents for this planning effort.

The existing and proposed sections Grand Center on the following pages, illustrate a typical area of each street corridor.

GREAT STREETS PRECEDENTS



Delmar Boulevard, University City



Central Avenue, Clayton



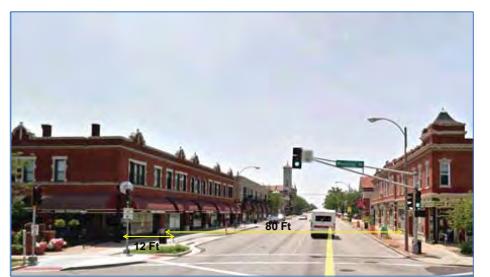
Manchester Avenue, Maplewood



Euclid Avenue at Maryland Avenue, Central West End



South Grand Avenue Median, St. Louis



South Grand Avenue Streetscape, St. Louis



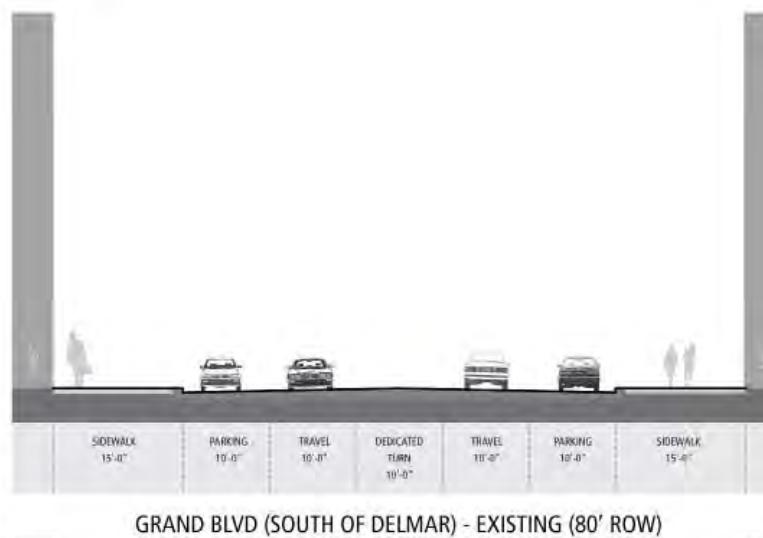
Forsyth Blvd., Washington University Bikeway



Main Street, Ann Arbor, MI

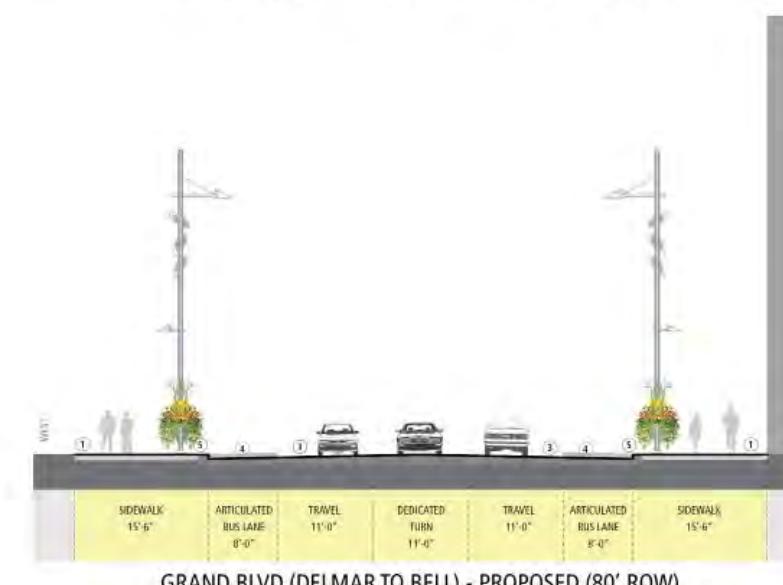
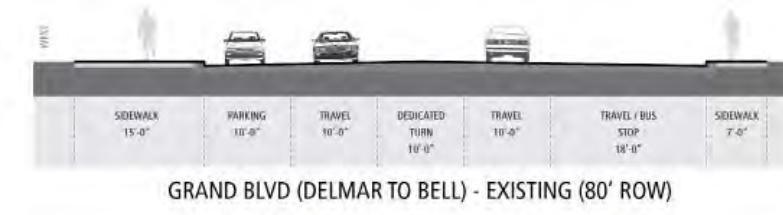
Grand Boulevard – south of Delmar

On-street parking has been removed and the sidewalks have been expanded to over 23' wide on both sides. One traffic lane in each direction and a center turn lane are proposed. The lane width has been narrowed to 11" wide to further enhance the traffic calming potential of this new street section. The proposed generously sized sidewalks are now in proper scale to the height of the buildings and for the lively pedestrian crowds coming and going from the performance venues. A decision was made to omit street trees on this section of Grand.



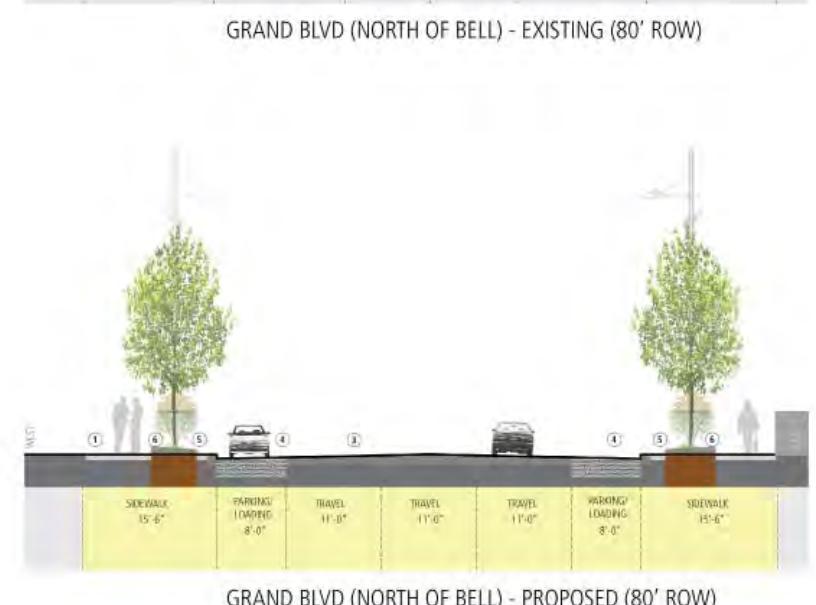
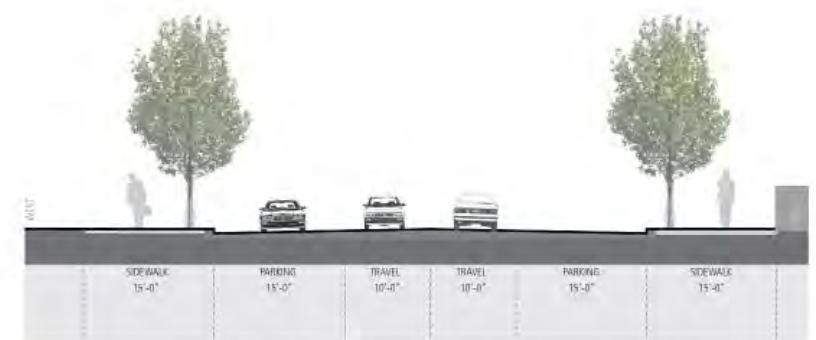
Grand Boulevard – Delmar to Bell

On-street parking has been preserved except where bump-outs define new articulated Metro bus pull-ins and where bio-filters are proposed. The travel and turn lanes are the same as the street section south of Delmar. In the pedestrian zone, generous sidewalks are maintained.



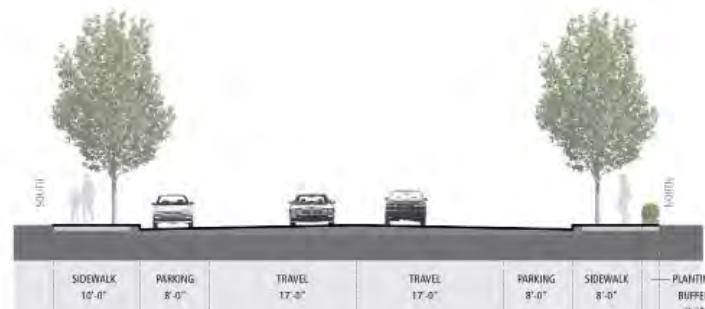
Grand Boulevard – Bell to Cook

On-street parking has been preserved except where bump-outs define new bio-filters – planted areas that collect, slow down and clean stormwater before it enters the sewer system. The travel and turn lanes are the same as the street section south of Delmar. In the pedestrian zone, a new grass parkway is proposed and a generous sidewalk is maintained.



Washington Avenue – west of Grand

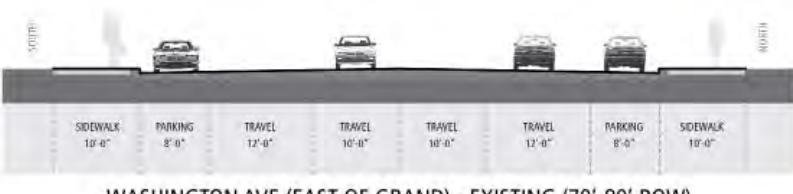
On-street parking and curb-side loading as well as one travel lane in each direction have been preserved but the width of the lanes have been significantly reduced to "right-size" the street and allow sidewalks to be widened. A concentration of venues on the section of Washington between Spring and Grand, require curb-side drop-off, loading, bus marshaling and semi-truck parking. The on-street parking spaces do double duty for these uses as well. Sustainable features include porous pavement in the parking/loading lanes and street tree zone. The travel lanes are 12' to allow 2' of additional space in the parking lanes when wide vehicles such as buses and semi-trucks are parked in the on-street parking spaces. Dedicated on-street or off-street bike lanes were discussed but these are in direct competition with wider the sidewalks. Shared vehicle and bike travel lanes (sharrows) are proposed for Washington.



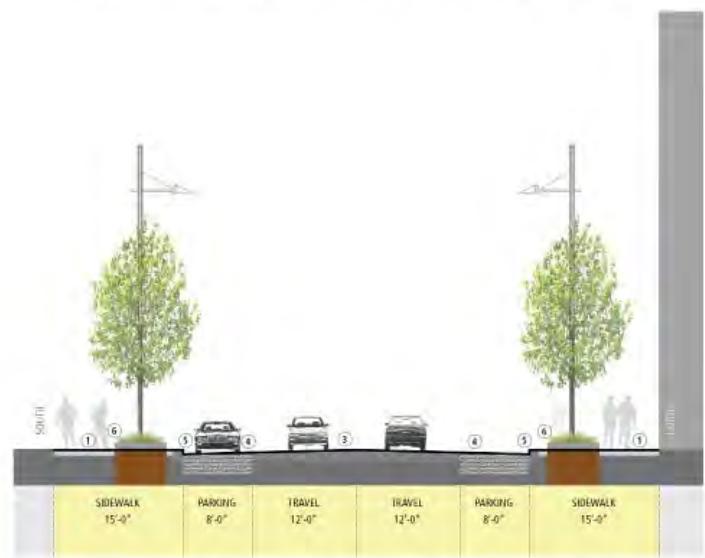
WASHINGTON AVE (WEST OF GRAND) - EXISTING (70' ROW)

Washington Avenue – east of Grand

On-street parking and one travel lane in each direction have also been preserved for these sections of Washington and have also been "right-sized" to provide a traffic calming effect. The right-of-way varies dramatically in width. All the left over space can be dedicated to sidewalks and pedestrian amenities. Sustainable features include porous pavement in the parking/loading lanes and street tree zone. Dedicated on-street or off-street bike lanes were discussed but these are in direct competition with wider the sidewalks. Shared vehicle and bike travel lanes (sharrows) are proposed for Washington.



WASHINGTON AVE (EAST OF GRAND) - EXISTING (70'-80' ROW)



WASHINGTON AVE (WEST OF GRAND) - PROPOSED (70' ROW)

Olive Street

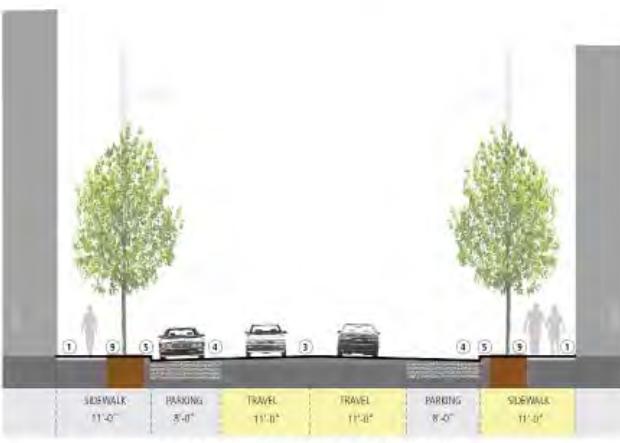
Alternative proposals where considered for Olive that included removal of on-street parking on the north side to widen sidewalks. Discussion with stakeholders and the needs of adjacent land -uses verified that the existing section of Olive remains viable for the future and includes on-street parking on both sides and one travel lane in each direction. Sustainable features include porous pavement in the parking lanes and street tree zone. Dedicated bike lanes were discussed but the space is not available. Shared vehicle and bike travel lanes (sharrows) are proposed for Olive.



OLIVE ST - EXISTING (60' ROW)



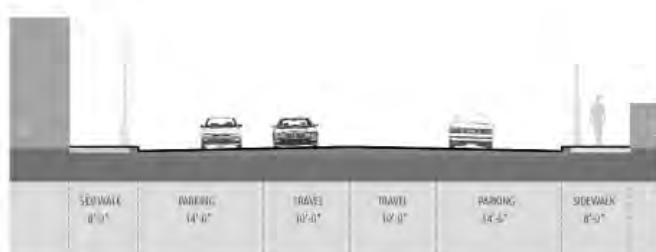
WASHINGTON AVE (EAST OF GRAND) - PROPOSED (70'-80' ROW)



OLIVE ST - PROPOSED (60' ROW)

Spring Avenue – south of Olive

A 65' right-of-way is available at this section of Spring. The travel lanes are wide and the sidewalks are very narrow. This is an important pedestrian connection to and from Saint Louis University. On-street parking is needed for adjacent businesses but even with on-street parking on both sides and a travel lane in both directions, there is room to consider an off-street, dedicated bike and pedestrian trail. The Midtown Loop Trail study is looking at the opportunities in more detail but the Grand Center Master Plan anticipates this type of facility on the east side of Spring.



N SPRING AVE (SOUTH OF OLIVE) - EXISTING (65' ROW)

Spring Avenue – north of Olive

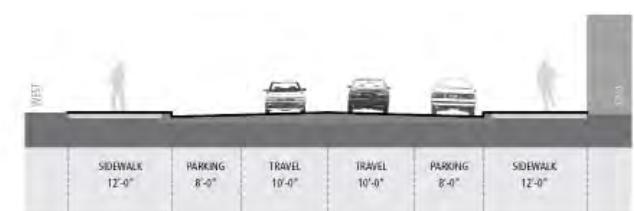
The right-of-way north of Olive is very large at 85' wide and will accommodate the extension of the bicycle/pedestrian extending from the south. On-street parking is maintained as this is a good parking street for the community and adjacent land uses such as the arts institutions and Cardinal Ritter High School. With the additional space, sustainable storm water opportunities such as bio-filters can be integrated into the street and bike/pedestrian trail on the east side of Spring



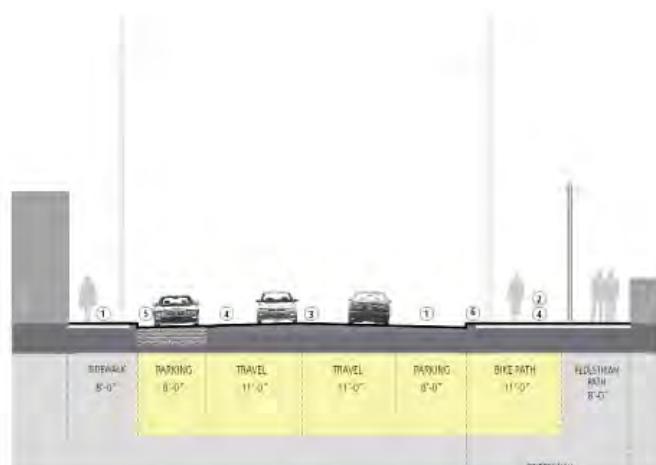
N SPRING AVE (NORTH OF OLIVE) - EXISTING (80' ROW)

Theresa Avenue

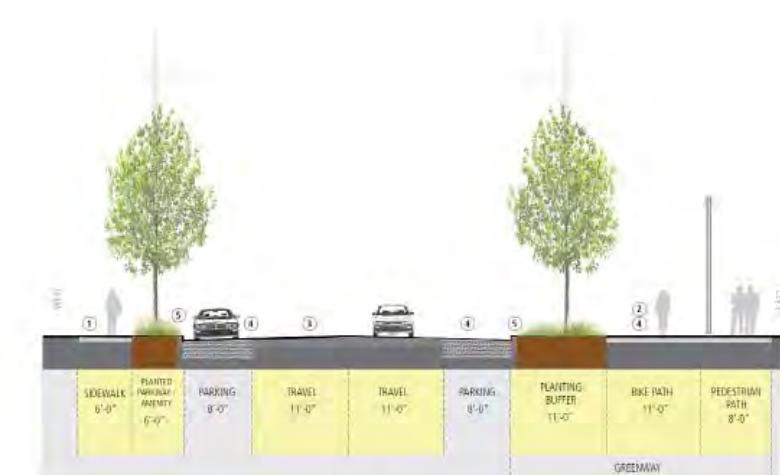
The proposed street section for Theresa is principally the same as it is today. However, the Framework Plan called for an additional 10' setback beyond the right-of-way into private property to provide for a generous pedestrian promenade on the west side of the street. This concept has been maintained in the Great Streets plan due the opportunities it provides when planning for infill development within adjacent parking lots.



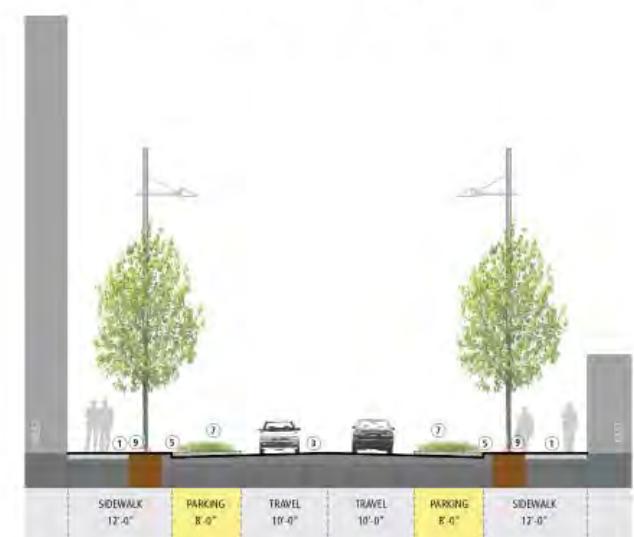
THERESA AVE - EXISTING (60' ROW)



N SPRING AVE (SOUTH OF OLIVE) - PROPOSED (65' ROW)



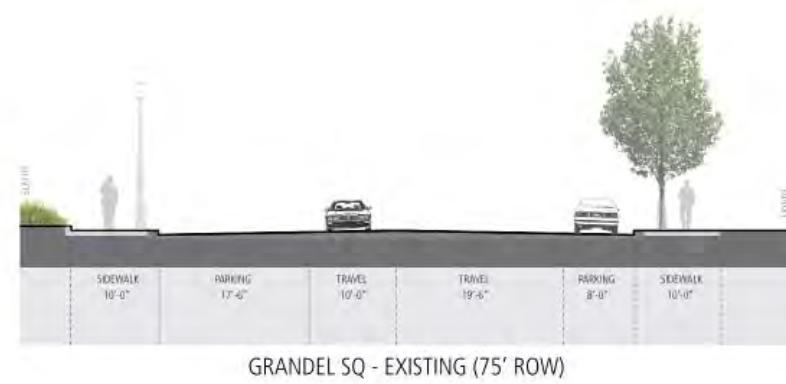
N SPRING AVE (NORTH OF OLIVE) - PROPOSED (80' ROW)



THERESA AVE - PROPOSED (60' ROW)

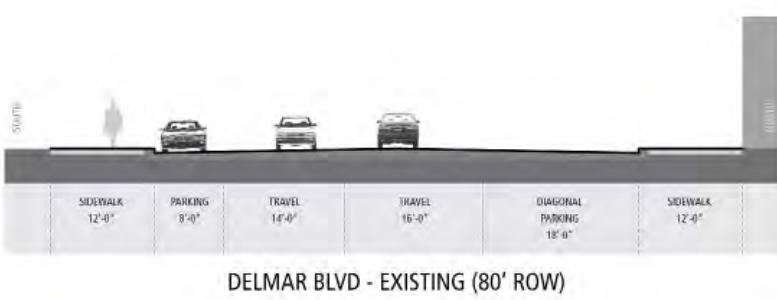
Grandel Square

This street is a segment of a street that runs from Spring to Grand. Alternatives have been discussed over the years and have included closing the street, making it one way, etc. Only a few buildings are left on Grandel and the street has become a parking resource over the years for the VA Medical Center, Powell Hall and the Grandel Theater. Currently, the Grand Center Arts Academy is putting pressure on this street for student drop-off. The Great Streets plan proposes to formalize this parking resource with head-in, 90 degree parking, like a typical parking bay in a parking lot. Additional right-of-way is needed on the north side of the street to accommodate a 60' parking bay with parking on both sides and two-way traffic in the middle. This "parking street" provides parking for daytime and evening uses. Sustainable features include the opportunity to pave the entire street with a porous pavement and incorporate bioretention and other sustainable features.



Delmar Boulevard

The Delmar right-of-way is also very large. Over time this street has been converted to an angled parking resource for Powell Hall and the VA Medical Center. In anticipation of the expansion of the medical center in the future, the new Delmar section includes on-street parking on both sides, a travel lane in both directions and a center turn lane.



The Master Plan

The Master Plan is the road map for implementation. It lays out the planning and design recommendations described in this document and illustrates their relationships in plan view. Although the proposed improvements are contained within the study area boundary, this Master Plan and all the associated recommendations are design guidelines that can inform other areas of Grand Center. Proposed infill development has been shown for context and to illustrate the opportunity in the community. Other features such as the Art Walk and five significant green spaces in the community represent the next layer of opportunity and refinement.

How to Use the Master Plan

The full Master Plan is illustrated in its entirety for the study area. Then each of the streets in the study area have been sub-divided into public realm corridors and annotated keyed notes to identify materials and features.



Grand Center Great Streets Master Plan
Master Plan

Cost Summary

To assist in the implementation planning over the coming years, the Great Streets project has been broken up into 12 zones. These zones represent logical project areas based on common design character and segments of the streetscape improvements on each street.

The cost summary is defined by total project cost and cost by zone. Refer to the Master Plan for illustrations of the areas of the public realm that are included in each zone.

ZONE 1	\$16 M
ZONE 2	\$2.8 M
ZONE 3	\$4.4 M
ZONE 4	\$6.1
ZONE 5	\$4.4 M
ZONE 6	\$3 M
ZONE 7	\$1 M
ZONE 8	\$4.4 M
ZONE 9	\$3.2
ZONE 10	\$5.5 M
ZONE 11	\$6.1 M
ZONE 12	\$11 M
TOTAL	\$68 MILLION



GREAT STREETS MATERIAL KEY

Lighting

- L1 Intersection signals and lighted street signs
- L2 Grand armature with lights, floods and planters
- L3 Grand armature with lights and planters
- L4 Street light with pedestrian fixture
- L5 Street light - pedestrian scale
- L6 Tree light
- L7 Tension lighting

Sidewalks

- S1 Sparkle concrete, 5"
- S2 Standard concrete, 5"
- S3 Granite paving, pedestrian
- S4 Porous pavers, pedestrian
- S5 Other decorative paving
- S6 Granite planter curbs with planter rail or bench
- S7 Curb ramps, granite detectable warning
- S8 Curb ramps, standard detectable warning
- S9 Granite benches/barriers
- S10 Sparkle concrete, 8"
- S11 Standard concrete, 8"

Roadways

- R1 Granite paving, vehicular
- R2 Porous pavers, vehicular
- R3 Granite curb, 18"
- R4 Granite curb, 6"
- R5 Flush gutter pan/rigid restraint
- R6 Concrete crosswalks
- R7 Raised mid-block crosswalks
- R8 Asphalt overlay
- R9 Thermoplastic stripping
- R10 Painted stripping

Wayfinding

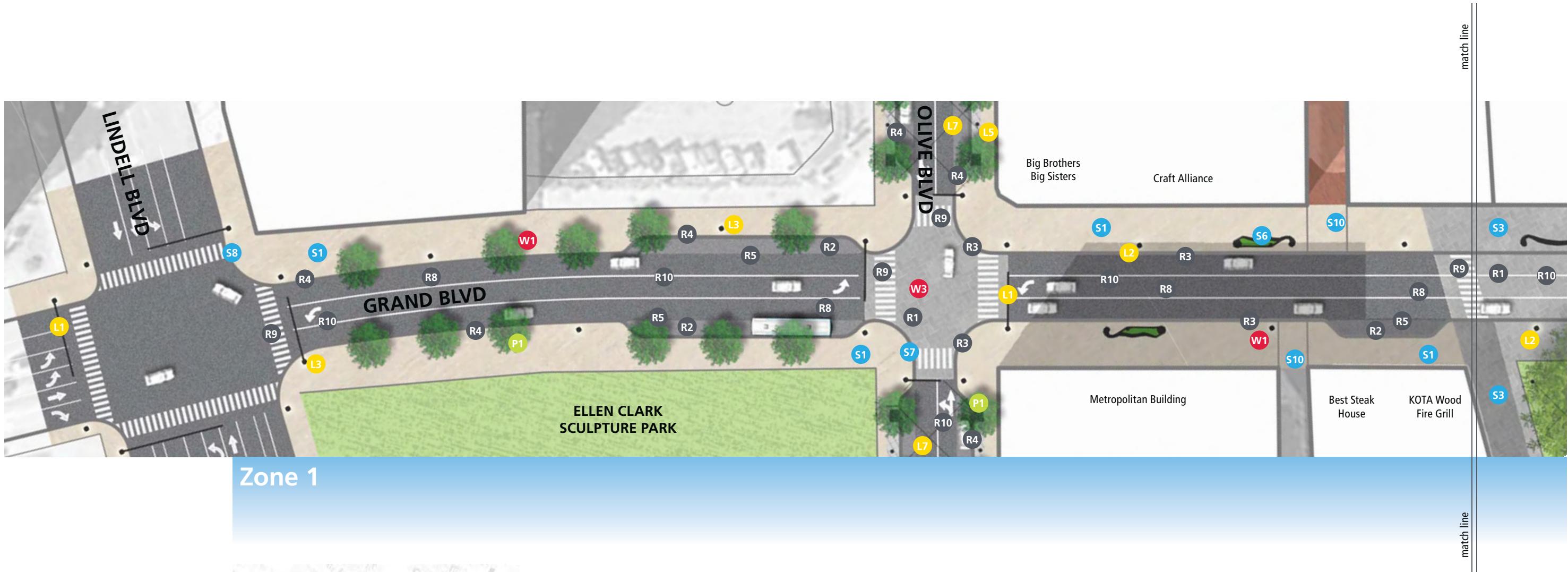
- W1 Pedestrian and exit Signage
- W2 Sculptural signage
- W3 Gateway signage
- W4 Cross-educational kiosk

Planting

- P1 Street trees and structural soil
- P2 Rain garden and plantings
- P3 Bio-filter and plantings

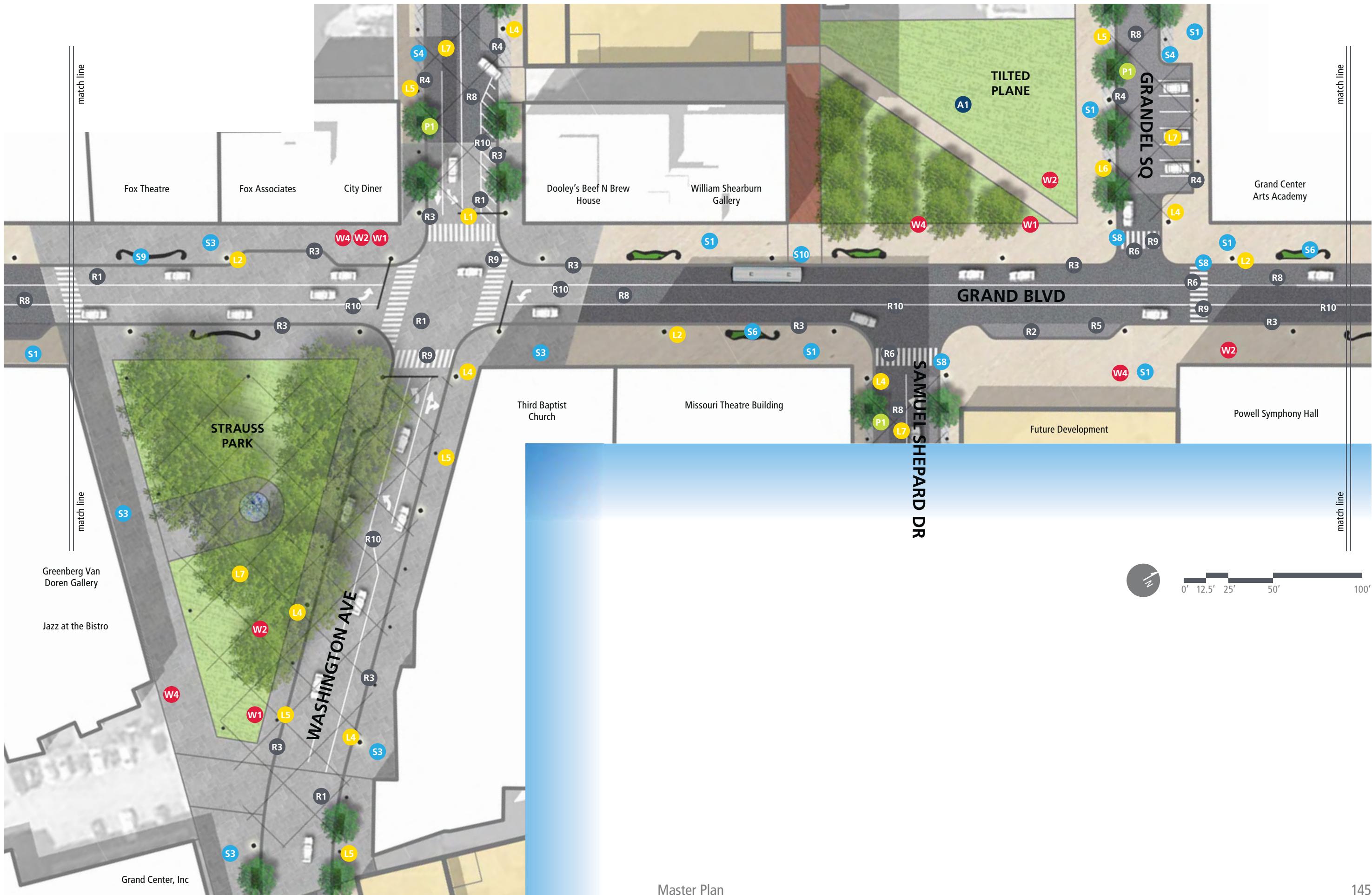
Art

- A1 Public art / special project areas



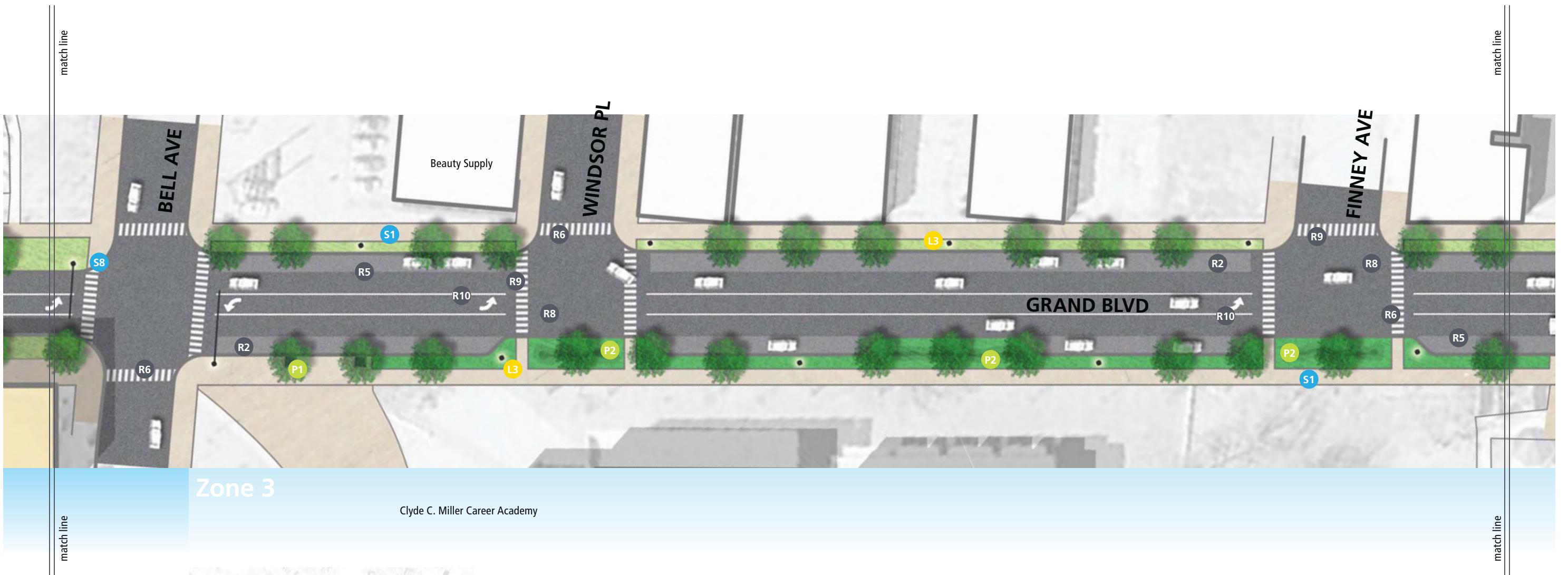
Location Map: Zone 1

1N



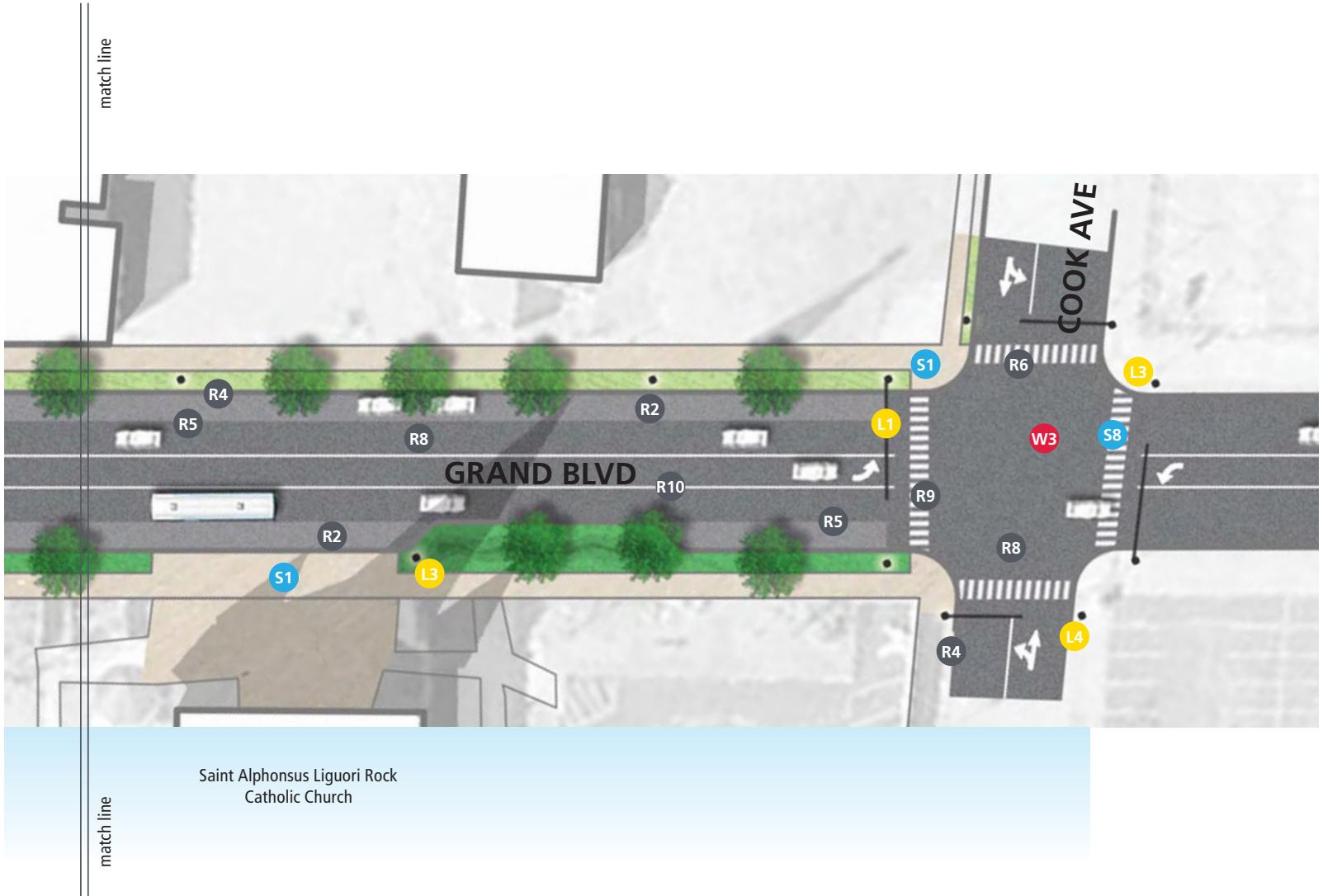
Master Plan

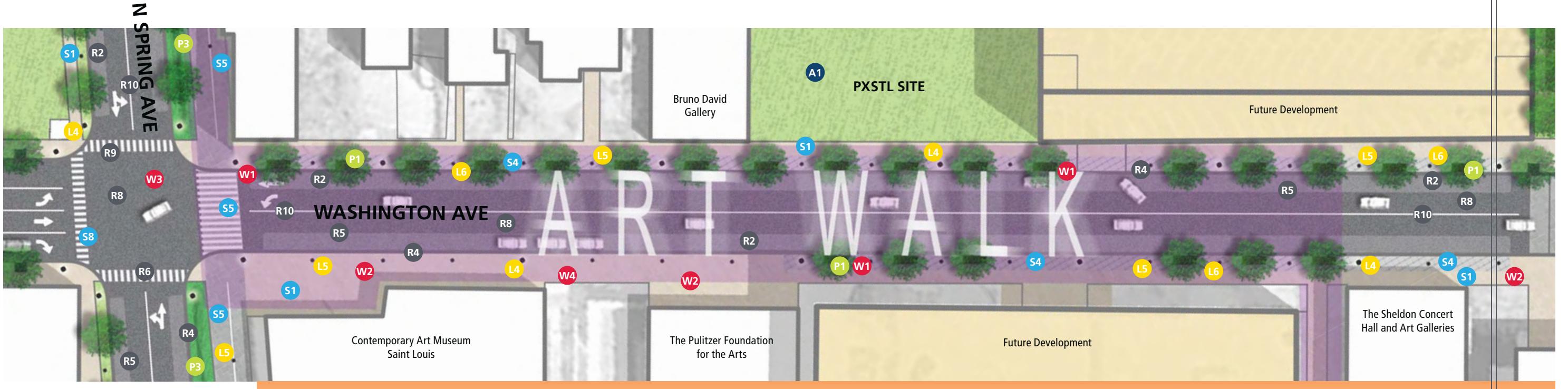




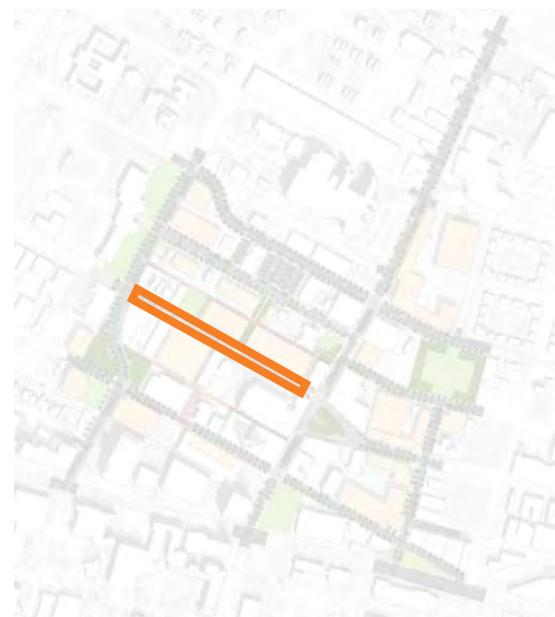
Location Map: Zone 3





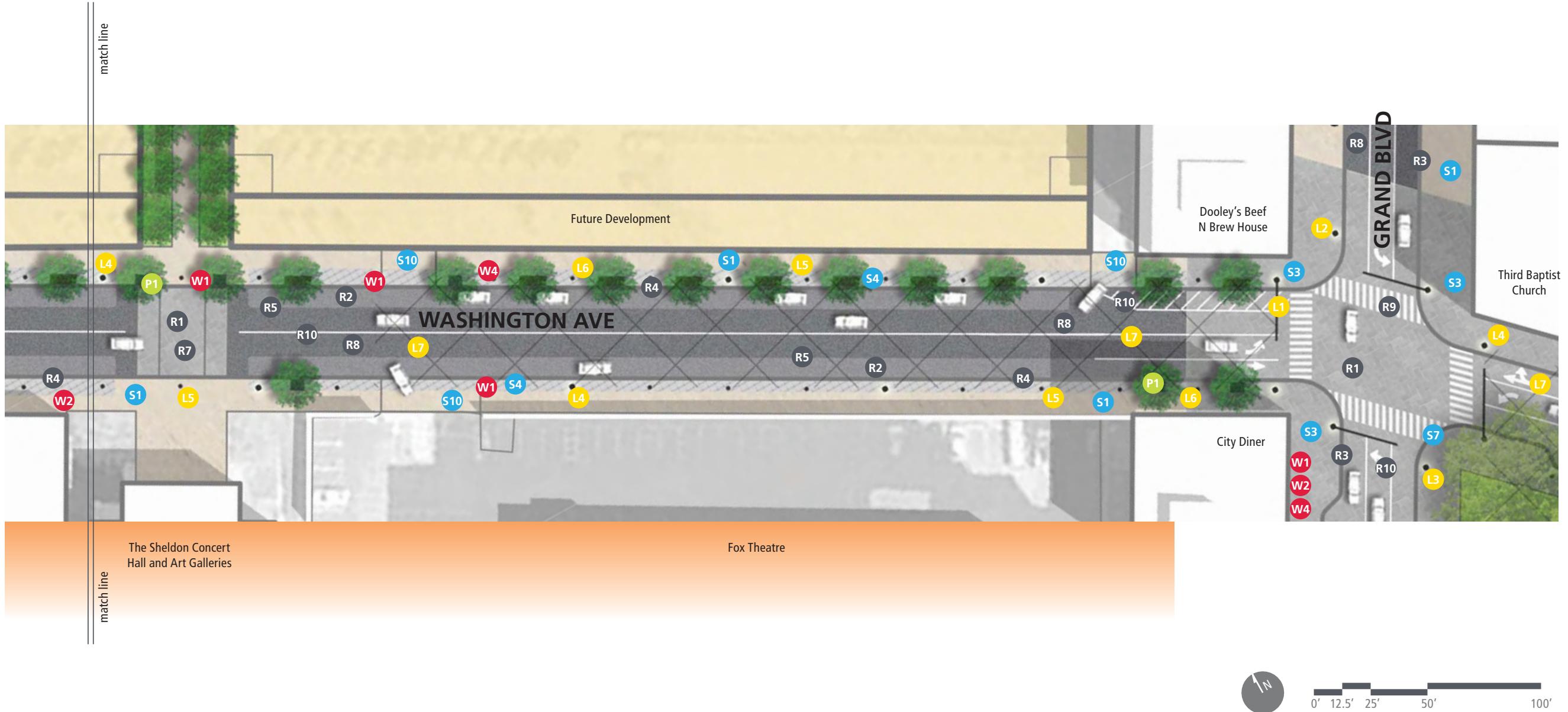


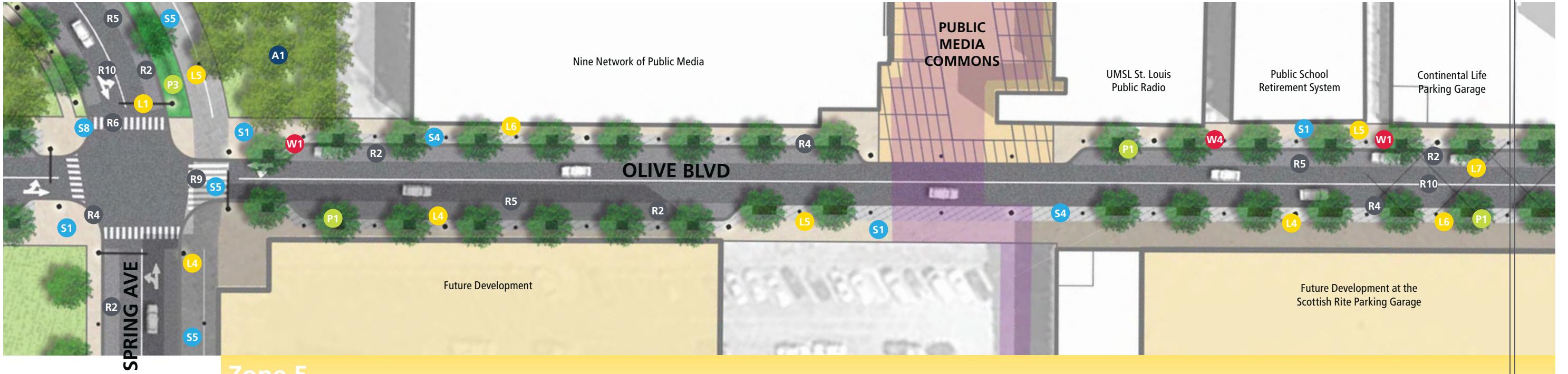
Zone 4



Location Map: Zone 4

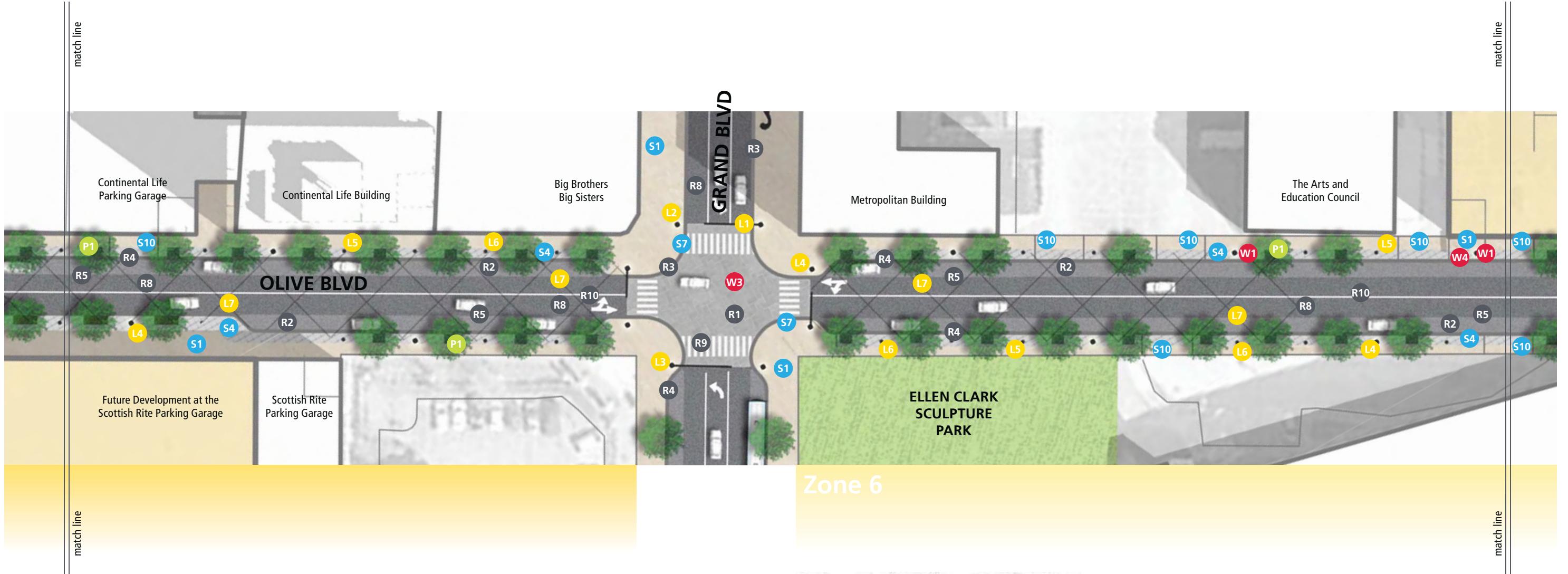






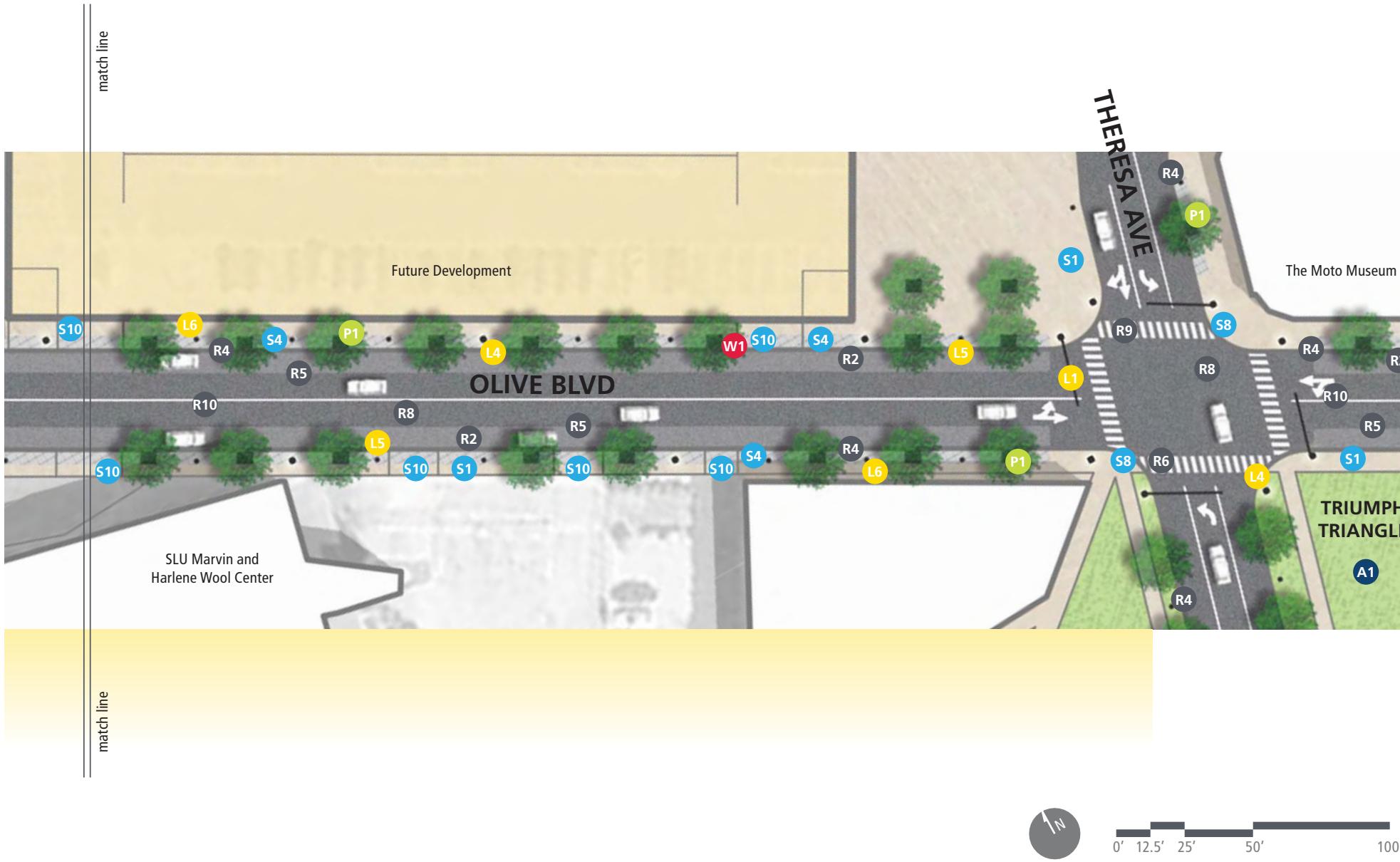
Location Map: Zone 5

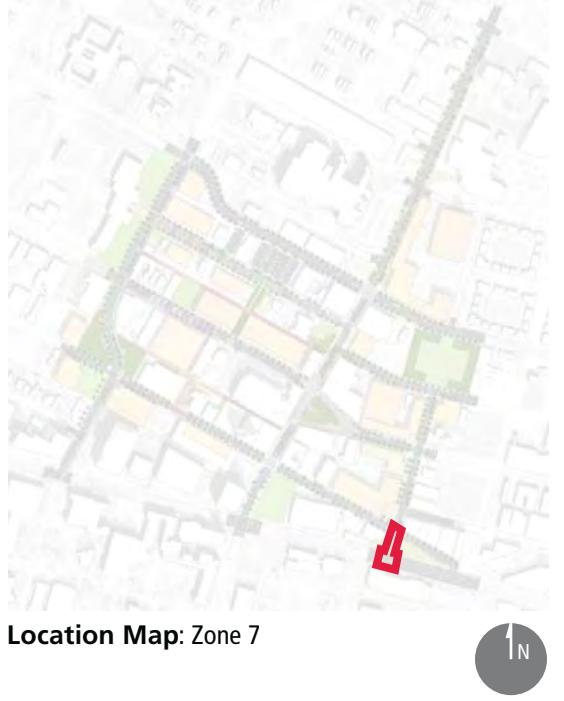




Location Map: Zone 6

1N

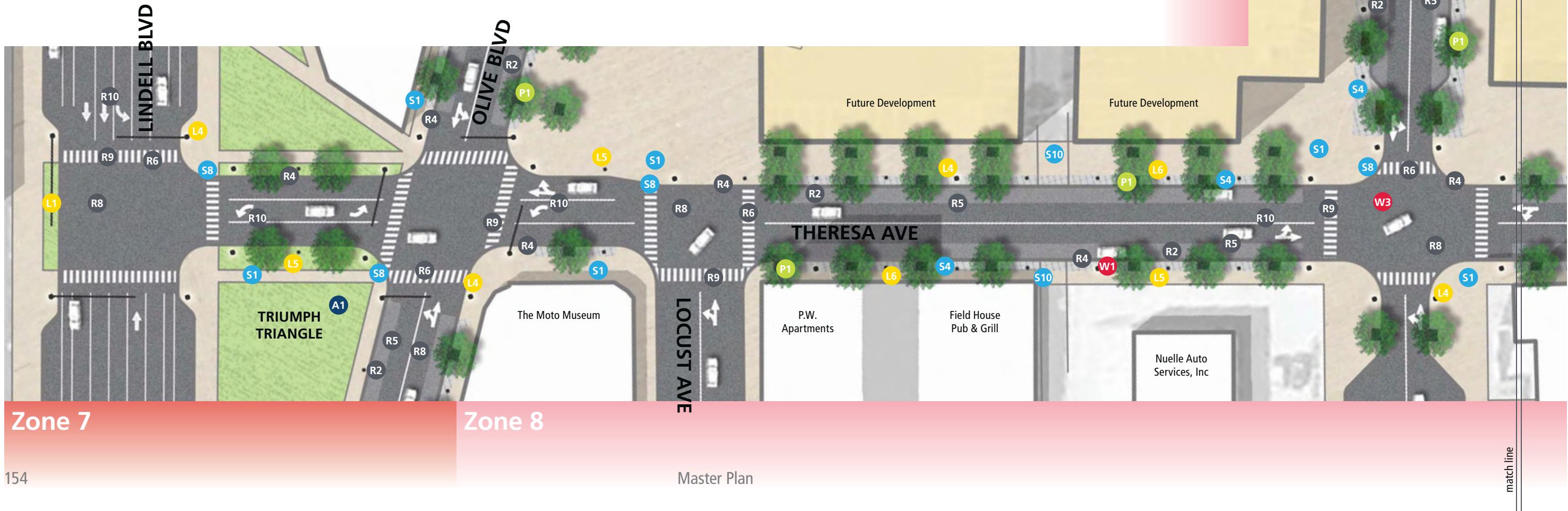




Location Map: Zone 7



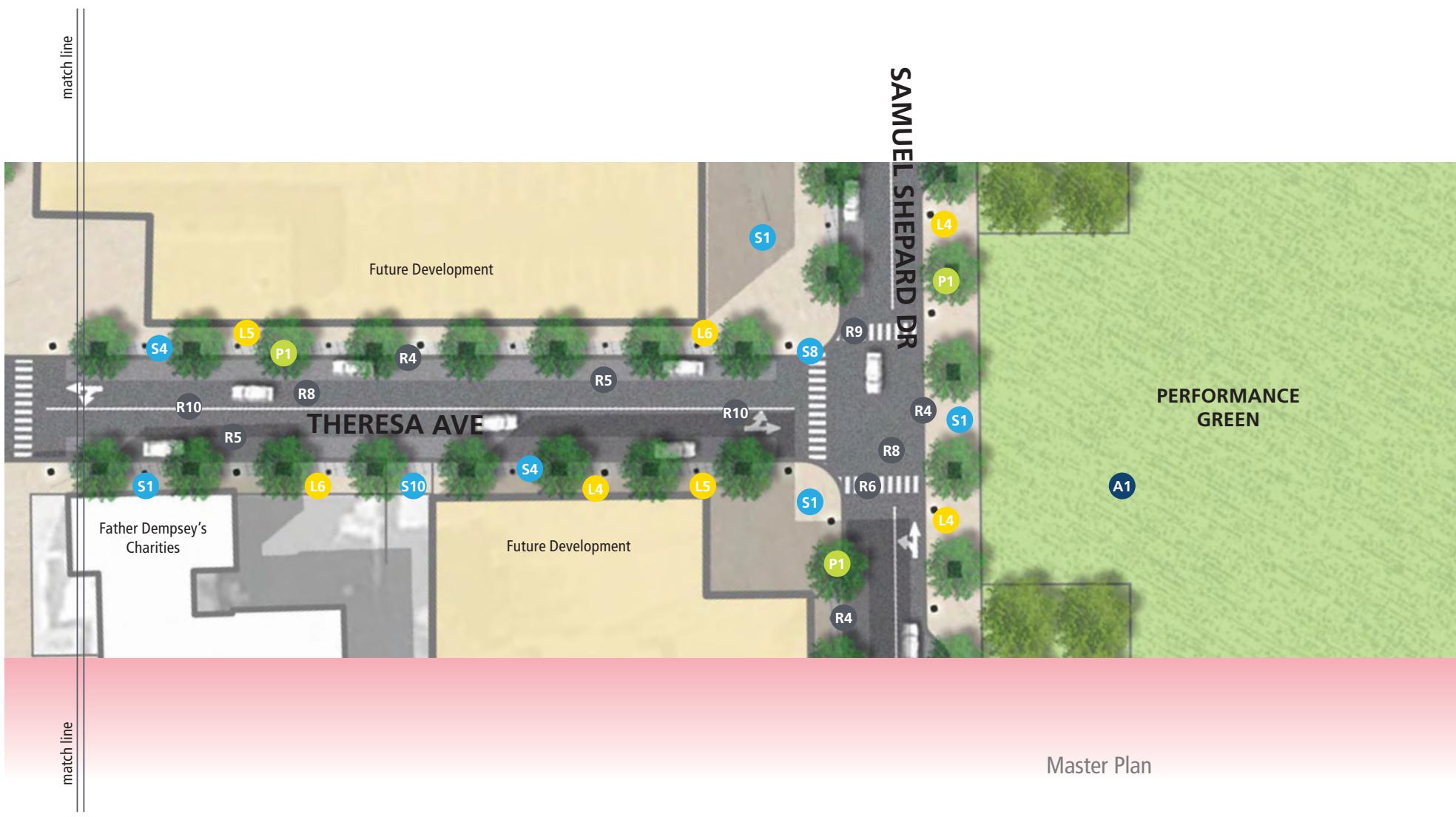
Location Map: Zone 8

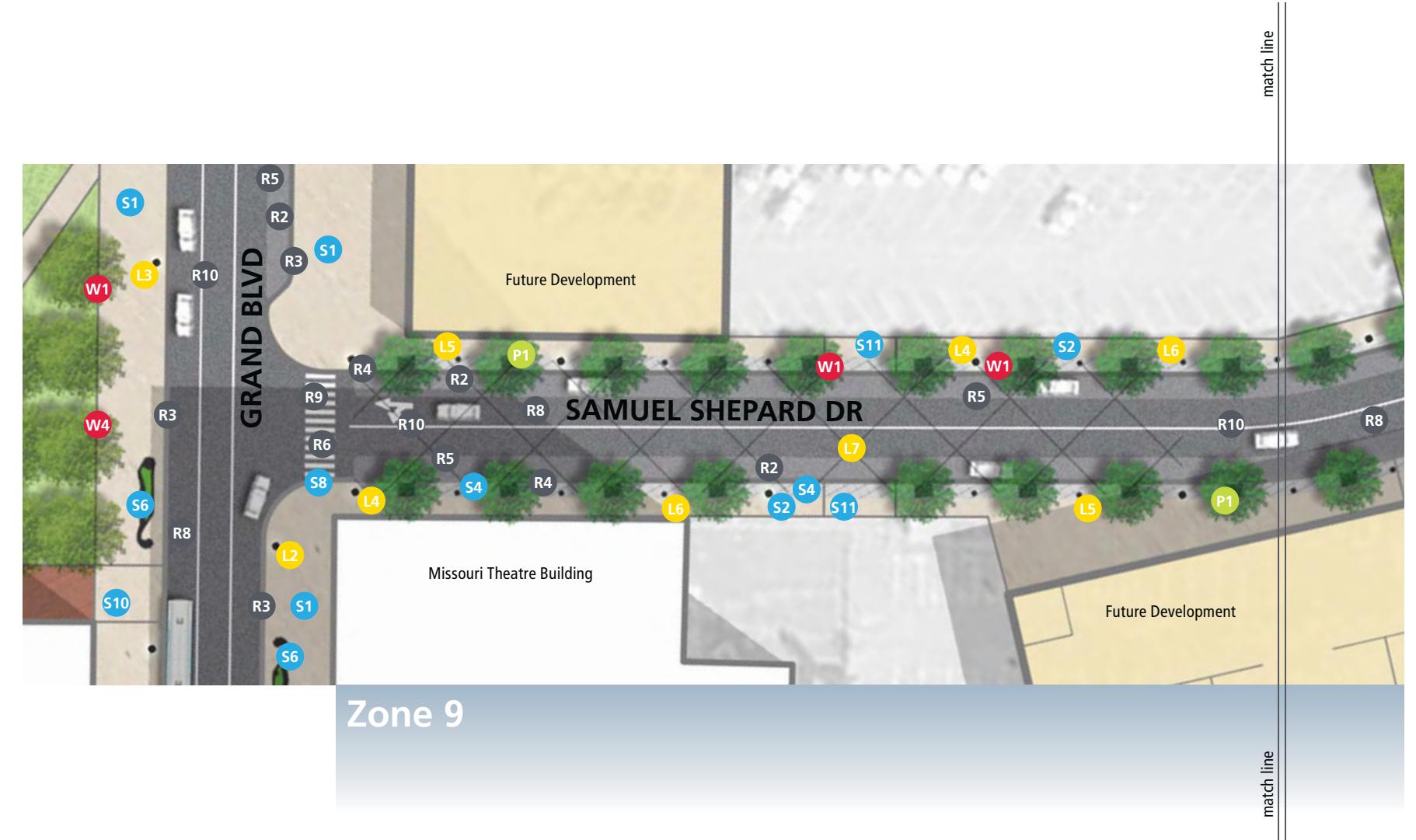


Zone 7

154

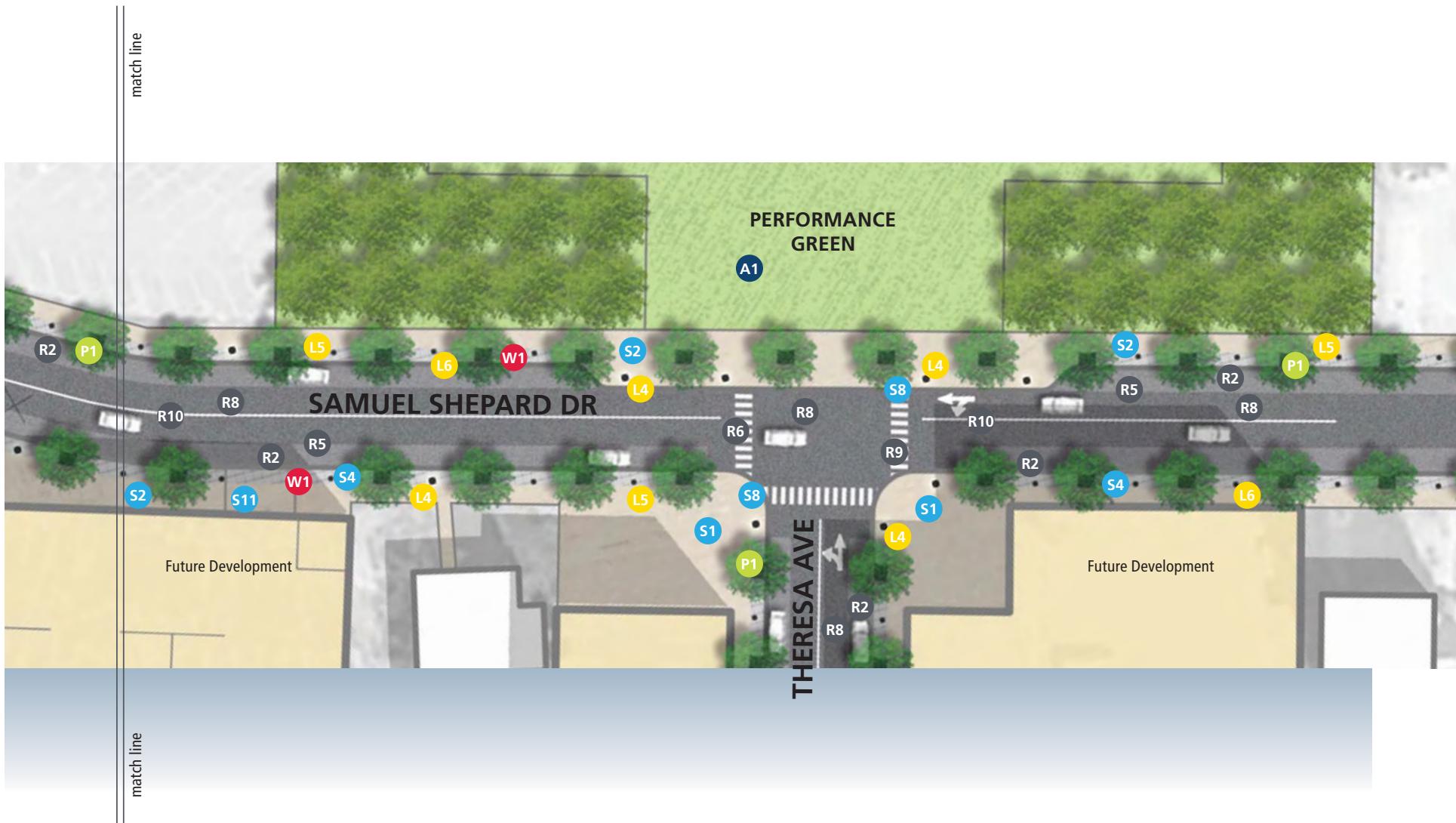
Master Plan





Location Map: Zone 9



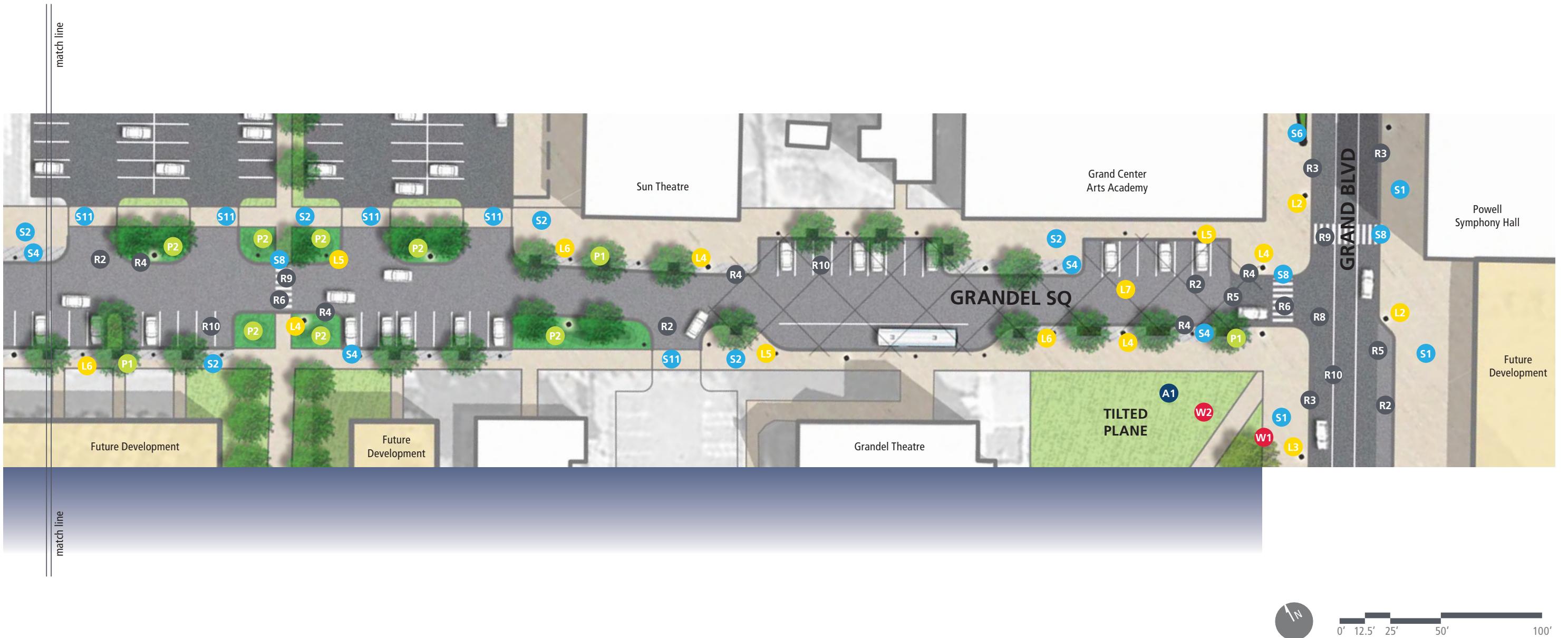


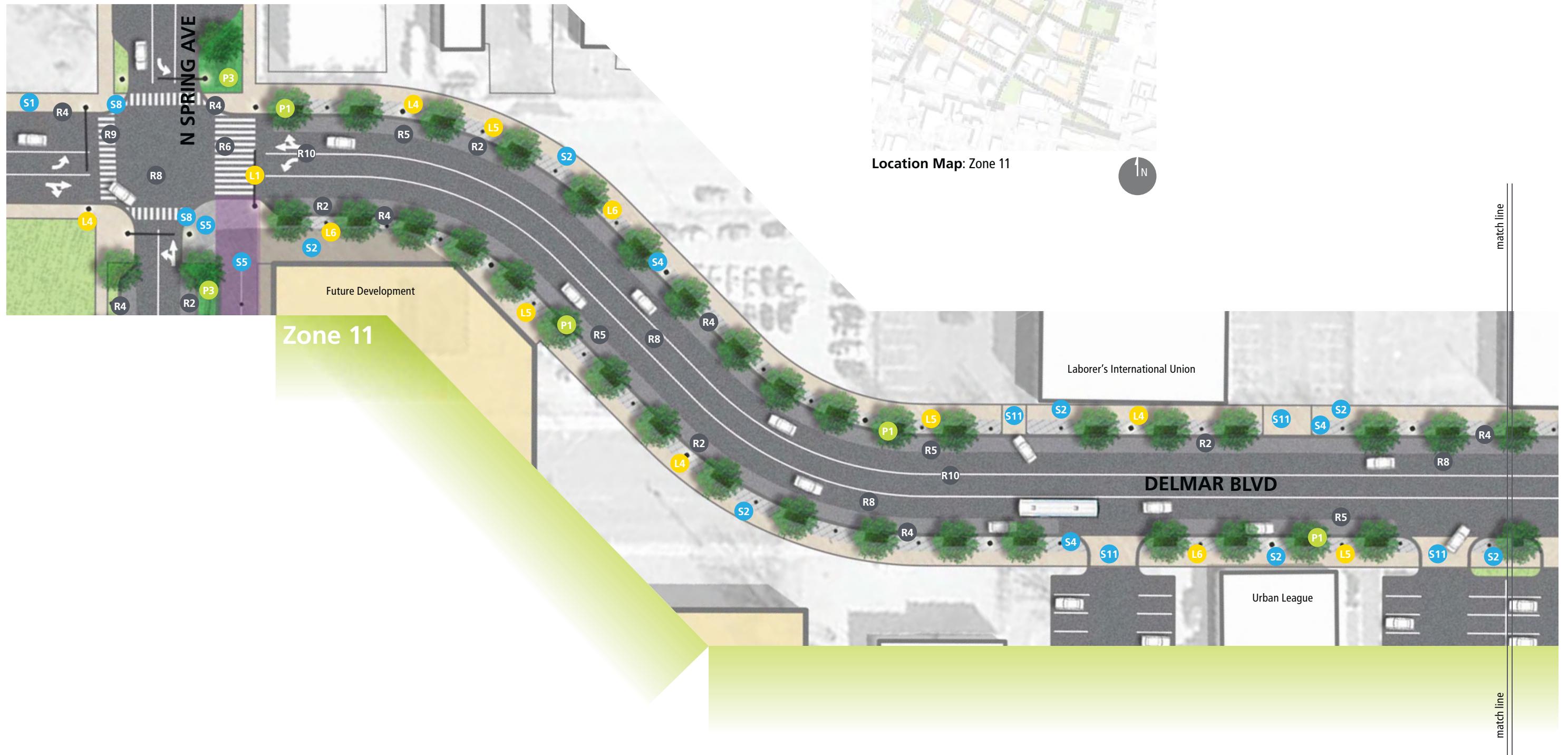
0' 12.5' 25' 50' 100'

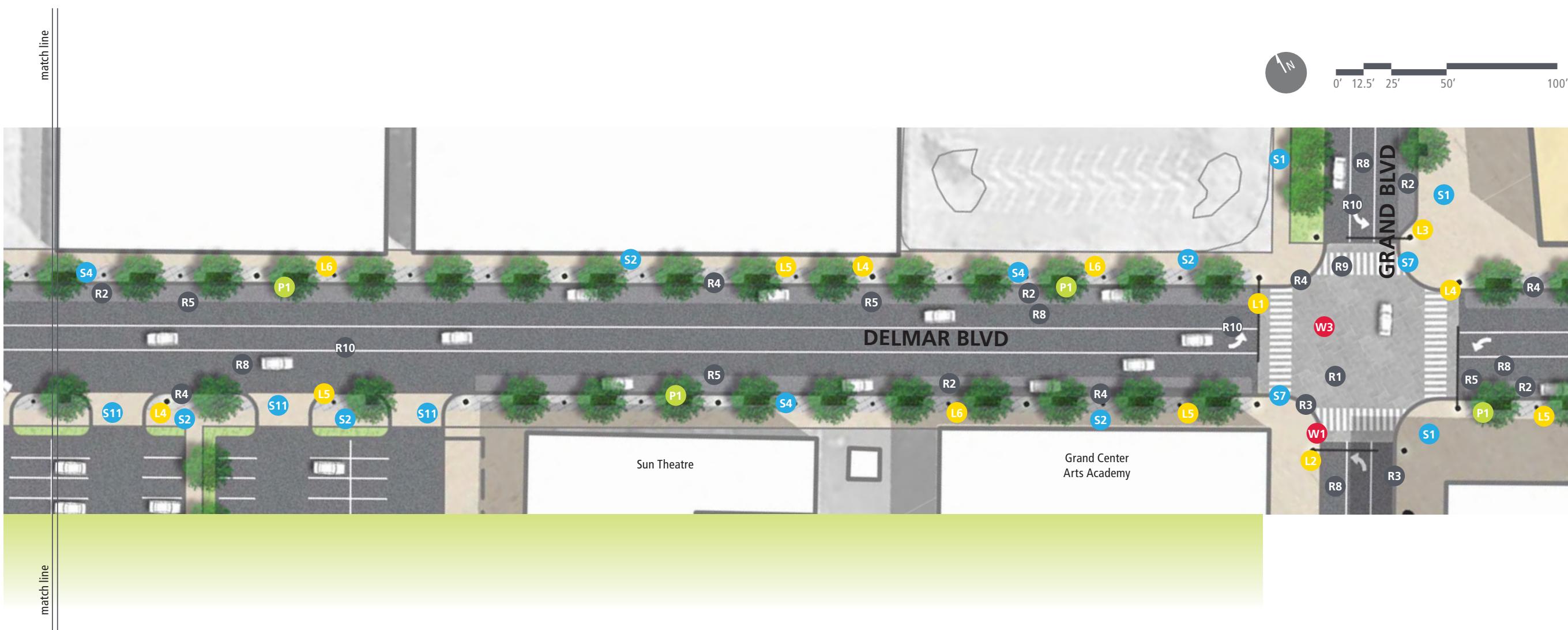


Location Map: Zone 10

1N



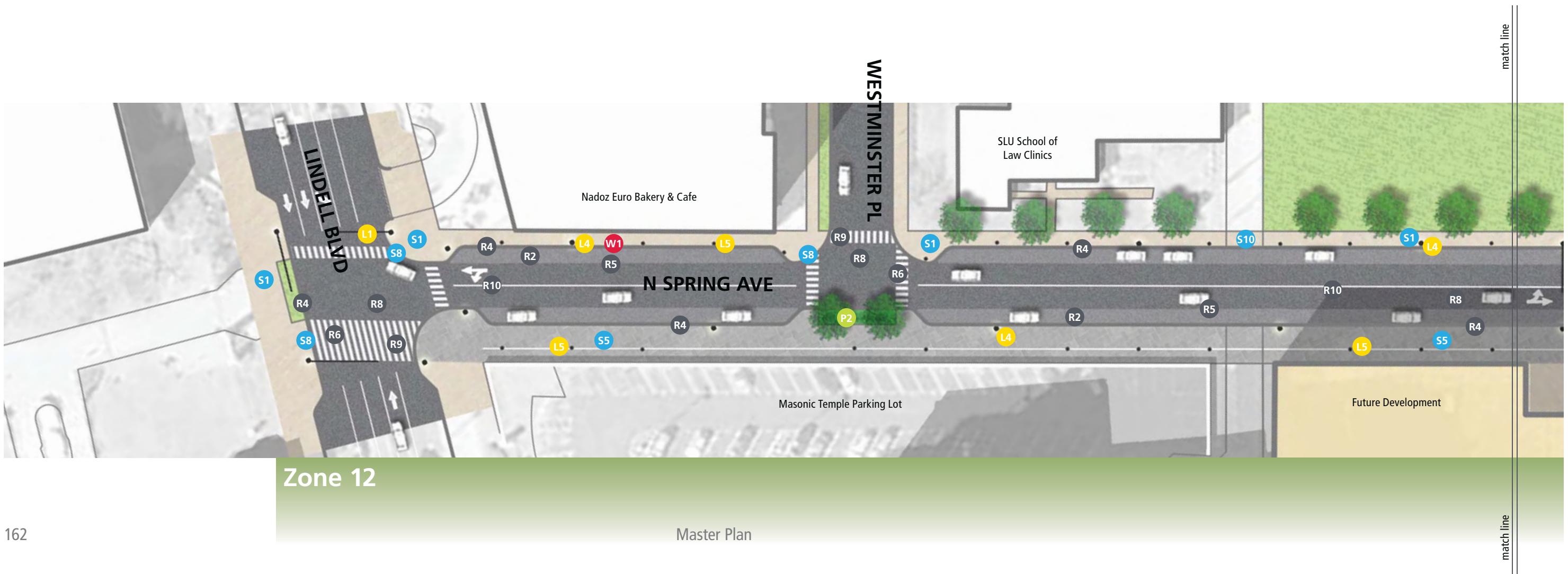


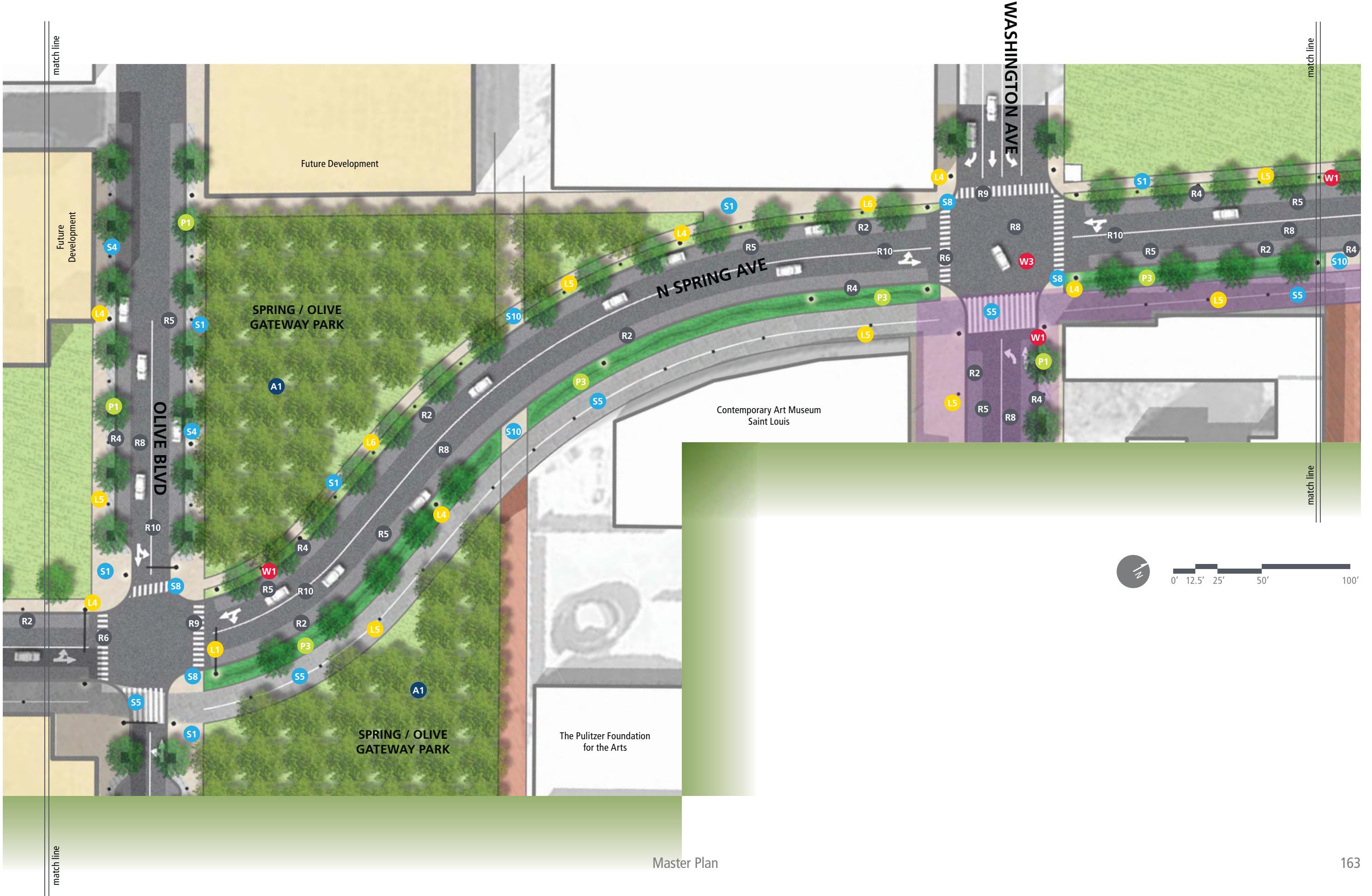




Location Map: Zone 12

1N







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